

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 36 / NWNW / 36.861673 / -107.321071	County or Parish/State: RIO ARriba / NM
Well Number: 834H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF78768	Unit or CA Name: ROSA UNIT	Unit or CA Number: NMNM78407E
US Well Number: 3003931421	Operator: LOGOS OPERATING LLC	

Notice of Intent

Sundry ID: 2877963

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 10/09/2025

Time Sundry Submitted: 02:34

Date proposed operation will begin: 10/09/2025

Procedure Description: LOGOS Operating request a change in plans for subject well (based on KB elevation) per the operations plan attached. LOGOS Operating LLC is in the process of preparing a communitization agreement covering the entire spacing unit for the Subject Well, all of which is covered by federal leasehold estate, designating LOGOS Operating LLC as operator thereof. LOGOS Operating LLC will not begin production from the Subject Well until such communitization agreement has been approved by the Bureau of Land Management.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

Rosa_Unit_834H_Extended_Revised_C_102_Plat_20250924_signed_20251009143408.pdf

Logos___Rosa_Unit_834H_AC_Report_p5_Prelim_3_20251009143408.pdf

Rosa_Unit_834H_Operations_Plan_3_string_P5_Prelim3_9.3.2025_20251009143408.pdf

Logos___Rosa_Unit_834H_Wall_p5_Prelim_3_20251009143408.pdf

Logos___Rosa_Unit_834H_Plan_Data_p5_Prelim_3_20251009143408.pdf

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 36 /
NWNW / 36.861673 / -107.321071County or Parish/State: RIO
ARRIBA / NM

Well Number: 834H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMSF78768

Unit or CA Name: ROSA UNIT

Unit or CA Number:
NMNM78407E

US Well Number: 3003931421

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: OCT 10, 2025 10:05 AM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: FARMINGTON

State: NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 10/10/2025

Signature: Kenneth Rennick

C-102 Submit Electronically Via OCD Permitting	State of New Mexico Energy, Minerals & Natural Resources Department OIL CONSERVATION DIVISION	Revised July 9, 2024	
		Submittal Type	☐ Initial Submittal
			☒ Amended Report
		☐ As Drilled	

WELL LOCATION INFORMATION

API Number 30-039-31421	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 834H
OGRID No. 289408	Operator Name LOGOS OPERATING, LLC	Ground Level Elevation 6563'
Surface Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal		Mineral Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal

Surface Location

UL D	Section 36	Township 31N	Range 5W	Lot	Feet from N/S Line 562' NORTH	Feet from E/W Line 466' WEST	Latitude 36.861823 °N	Longitude -107.320981 °W	County RIO ARRIBA
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Bottom Hole Location

UL H	Section 33	Township 31N	Range 4W	Lot	Feet from N/S Line 1944' NORTH	Feet from E/W Line 50' EAST	Latitude 36.858037 °N	Longitude -107.251413 °W	County RIO ARRIBA
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Dedicated Acres 1267.31	Penetrated Spacing Unit N/2 - Section 36, T31N R5W N/2 - Section 31, T31N R4W N/2 - Section 32, T31N R4W N/2 - Section 33, T31N R4W	Infill or Defining Well INFILL	Defining Well API	Overlapping Spacing Unit ☐ Yes ☒ No	Consolidation Code UNITIZATION
Order Numbers R-13457			Well setbacks are under Common Ownership ☐ Yes ☒ No		

Kick Off Point (KOP)

UL E	Section 36	Township 31N	Range 5W	Lot	Feet from N/S Line 1816' NORTH	Feet from E/W Line 500' WEST	Latitude 36.858378 °N	Longitude -107.320918 °W	County RIO ARRIBA
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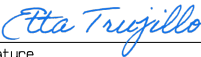
First Take Point (FTP)

UL E	Section 36	Township 31N	Range 5W	Lot	Feet from N/S Line 1952' NORTH	Feet from E/W Line 1122' WEST	Latitude 36.858006 °N	Longitude -107.318741 °W	County RIO ARRIBA
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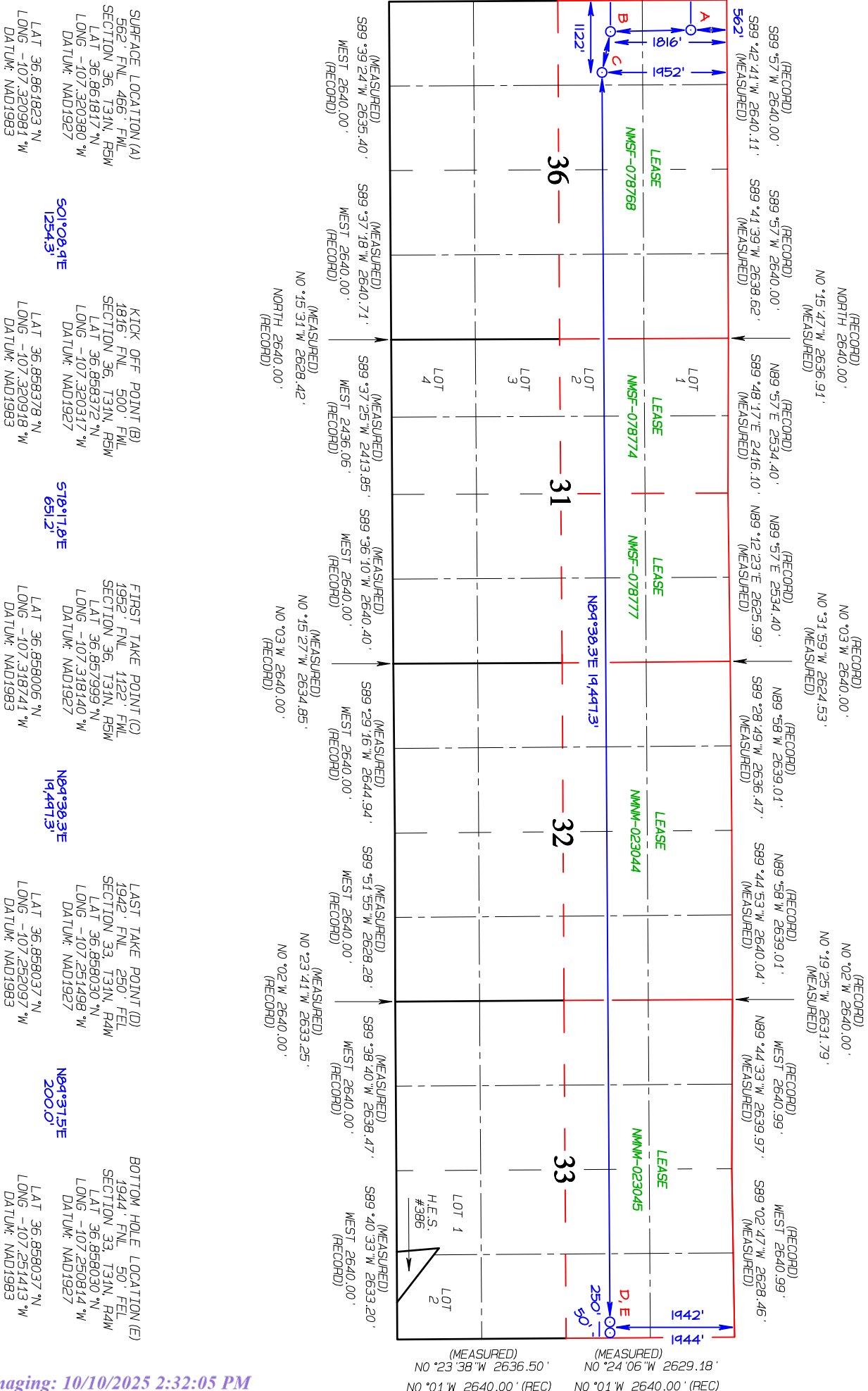
Last Take Point (LTP)

UL H	Section 33	Township 31N	Range 4W	Lot	Feet from N/S Line 1942' NORTH	Feet from E/W Line 250' EAST	Latitude 36.858037 °N	Longitude -107.252097 °W	County RIO ARRIBA
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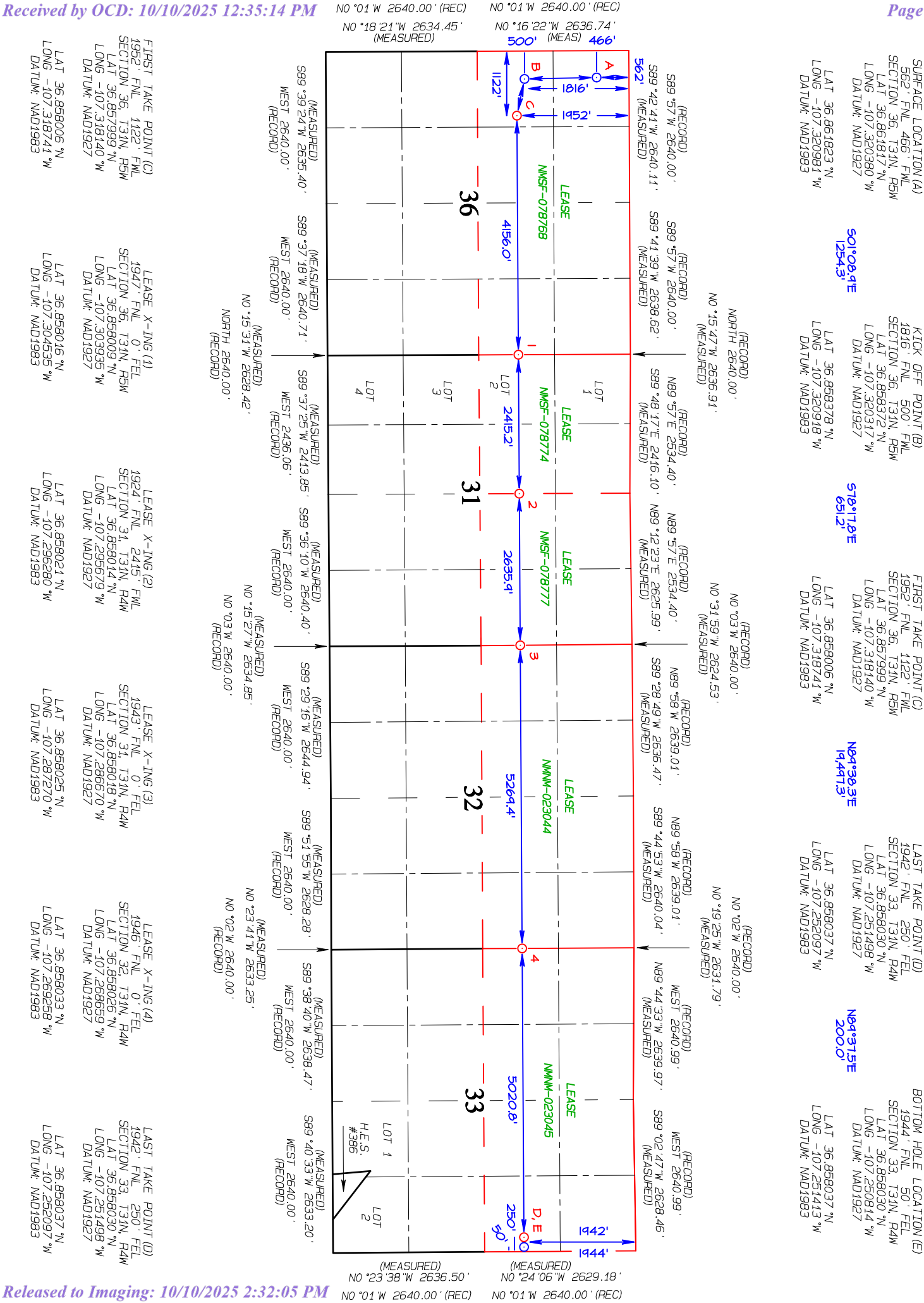
Unitized Area or Area of Uniform Interest ROSA UNIT	Spacing Unit Type ☒ Horizontal ☐ Vertical ☐ Directional	Ground Floor Elevation
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OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and, if the well is a vertical or directional well, 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 a working interest or unleased mineral interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.  Signature 9/25/2025 Date Etta Trujillo Printed Name etrujillo@logosresourcesllc.com E-mail Address	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.  JASON C. EDWARDS Signature and Seal of Professional Surveyor Certificate Number 15269 Date of Survey APRIL 20, 2016
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Rosa Unit #834H



Rosa Unit #834H



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 42

Rosa Unit 834H

OH

p5-Prelim 3

Anticollision Report

11 August, 2025

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Reference	p5-Prelim 3		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Max. CC of 100,000.00usft or Max. SF of 4 or Max. ES of 1,000.0	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date	8/11/2025		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
125.00	290.00	Survey #1 (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
290.00	27,357.78	p5-Prelim 3 (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 31						
Rosa Unit #744H - OH - OH	6,797.72	20,806.96	1,802.52	1,486.58	5.705	CC
Rosa Unit #744H - OH - OH	6,850.00	20,806.96	1,803.97	1,486.50	5.682	ES
Rosa Unit #744H - OH - OH	6,900.00	20,806.96	1,808.04	1,489.60	5.678	SF
Rosa Unit #745H - OH - OH	7,020.10	21,289.96	1,108.99	883.28	4.913	CC, ES
Rosa Unit #745H - OH - OH	7,050.00	21,289.96	1,109.88	883.53	4.903	SF
Rosa Unit #746H - OH - OH	6,900.00	20,952.96	773.37	638.30	5.726	SF
Rosa Unit #746H - OH - OH	6,950.00	20,952.96	764.10	632.08	5.788	ES
Rosa Unit #746H - OH - OH	6,991.43	20,952.96	761.68	632.64	5.903	CC
Rosa Unit 42						
(O) Rosa Unit #601 - OH - OH-SVY	15,683.25	7,518.55	485.67	348.38	3.537	CC, ES, SF
(O) Schalk 32 #001A - OH - OH-SVY	19,058.15	5,134.73	3,736.87	3,672.69	58.227	CC
(O) Schalk 32 #001A - OH - OH-SVY	20,000.00	6,050.00	3,738.39	3,663.11	49.661	ES
(O) Schalk 32 #001A - OH - OH-SVY	20,700.00	6,260.00	3,777.85	3,698.09	47.363	SF
(O) Schalk 32 #003H - OH - OH-SVY	18,007.39	3,930.24	3,951.17	3,883.45	58.343	CC
(O) Schalk 32 #003H - OH - OH-SVY	21,700.00	7,542.33	3,958.78	3,833.99	31.726	ES
(O) Schalk 32 #003H - OH - OH-SVY	22,200.00	7,542.33	4,000.32	3,872.52	31.301	SF
Rosa Unit 830H - OH - OH	0.00	0.00	45.02			
Rosa Unit 830H - OH - OH	300.00	299.72	45.34	44.87	96.341	ES
Rosa Unit 830H - OH - Plan #5	0.00	0.00	45.02			
Rosa Unit 830H - OH - Plan #5	300.00	299.72	45.34	44.87	96.341	ES
Rosa Unit 832H - OH - OH	0.00	0.00	30.21			
Rosa Unit 832H - OH - OH	322.18	322.00	28.23	27.77	62.107	CC, ES
Rosa Unit 832H - OH - p4-Prelim 2	461.48	461.46	27.48	26.64	32.365	CC, ES
Rosa Unit 832H - OH - p4-Prelim 2	27,357.78	27,335.53	2,654.29	2,081.54	4.634	SF
Rosa Unit 834H - OH - OH	290.97	290.00	0.97			
Rosa Unit 834H - OH - OH	27,357.78	290.00	21,517.54	21,418.19	216.588	SF
Rosa Unit 836H - OH - OH	0.00	0.00	15.01			
Rosa Unit 836H - OH - OH	312.06	312.05	13.90	13.45	30.770	CC, ES
Rosa Unit 836H - OH - p5-Prelim 3	460.94	460.92	13.19	12.34	15.490	CC
Rosa Unit 836H - OH - p5-Prelim 3	500.00	500.06	13.25	12.25	13.278	ES
Rosa Unit 836H - OH - p5-Prelim 3	27,357.78	27,164.23	1,258.67	686.54	2.200	SF

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project														Offset Well Error:	0.00 usft
Reference	Offset	Reference	Offset	Rule Assigned:											
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning		
0.00	0.00	20,806.96	7,074.42	0.00	336.82	-55.95	358.90	-531.16	7,174.13						
125.00	125.00	20,806.96	7,074.42	0.05	336.82	-64.63	358.90	-531.16	7,049.62	6,939.74	109.88	64.159			
225.00	224.99	20,806.96	7,074.42	0.19	336.82	-63.89	358.90	-531.16	6,950.00	6,839.99	110.01	63.175			
290.00	289.99	20,806.96	7,074.42	0.28	336.82	-77.60	358.90	-531.16	6,885.26	6,775.16	110.10	62.537			
300.00	299.99	20,806.96	7,074.42	0.29	336.82	-77.60	358.90	-531.16	6,875.30	6,765.19	110.11	62.438			
400.00	399.99	20,806.96	7,074.42	0.42	336.82	-77.60	358.90	-531.16	6,775.73	6,665.48	110.25	61.457			
440.00	439.99	20,806.96	7,074.42	0.47	336.82	-77.60	358.90	-531.16	6,735.90	6,625.59	110.31	61.066			
500.00	499.99	20,806.96	7,074.42	0.50	336.82	138.01	358.90	-531.16	6,676.20	6,565.80	110.39	60.476			
600.00	599.93	20,806.96	7,074.42	0.47	336.82	143.91	358.90	-531.16	6,576.91	6,466.35	110.56	59.487			
700.00	699.70	20,806.96	7,074.42	0.48	336.82	150.53	358.90	-531.16	6,478.02	6,367.26	110.76	58.489			
800.00	799.18	20,806.96	7,074.42	0.52	336.82	155.30	358.90	-531.16	6,379.66	6,268.67	110.99	57.481			
900.00	898.24	20,806.96	7,074.42	0.60	336.82	158.77	358.90	-531.16	6,281.97	6,170.72	111.25	56.465			
1,000.00	996.77	20,806.96	7,074.42	0.69	336.82	161.37	358.90	-531.16	6,185.12	6,073.56	111.57	55.439			
1,074.04	1,069.30	20,806.96	7,074.42	0.77	336.82	162.90	358.90	-531.16	6,114.05	6,002.22	111.83	54.672			
1,100.00	1,094.67	20,806.96	7,074.42	0.79	336.82	162.90	358.90	-531.16	6,089.23	5,977.30	111.93	54.401			
1,200.00	1,192.37	20,806.96	7,074.42	0.91	336.82	162.90	358.90	-531.16	5,993.74	5,881.41	112.33	53.357			
1,300.00	1,290.07	20,806.96	7,074.42	1.02	336.82	162.90	358.90	-531.16	5,898.40	5,785.64	112.76	52.308			
1,400.00	1,387.77	20,806.96	7,074.42	1.15	336.82	162.90	358.90	-531.16	5,803.22	5,689.99	113.23	51.253			
1,500.00	1,485.47	20,806.96	7,074.42	1.27	336.82	162.90	358.90	-531.16	5,708.20	5,594.48	113.72	50.193			
1,600.00	1,583.17	20,806.96	7,074.42	1.40	336.82	162.90	358.90	-531.16	5,613.36	5,499.10	114.26	49.128			
1,700.00	1,680.87	20,806.96	7,074.42	1.53	336.82	162.90	358.90	-531.16	5,518.69	5,403.86	114.83	48.058			
1,800.00	1,778.57	20,806.96	7,074.42	1.67	336.82	162.90	358.90	-531.16	5,424.22	5,308.77	115.45	46.983			
1,900.00	1,876.27	20,806.96	7,074.42	1.81	336.82	162.90	358.90	-531.16	5,329.95	5,213.84	116.11	45.903			
2,000.00	1,973.98	20,806.96	7,074.42	1.95	336.82	162.90	358.90	-531.16	5,235.89	5,119.07	116.83	44.818			
2,100.00	2,071.68	20,806.96	7,074.42	2.09	336.82	162.90	358.90	-531.16	5,142.06	5,024.47	117.59	43.728			
2,200.00	2,169.38	20,806.96	7,074.42	2.24	336.82	162.90	358.90	-531.16	5,048.46	4,930.05	118.41	42.634			
2,300.00	2,267.08	20,806.96	7,074.42	2.39	336.82	162.90	358.90	-531.16	4,955.12	4,835.82	119.30	41.536			
2,400.00	2,364.78	20,806.96	7,074.42	2.55	336.82	162.90	358.90	-531.16	4,862.04	4,741.79	120.25	40.434			
2,500.00	2,462.48	20,806.96	7,074.42	2.70	336.82	162.90	358.90	-531.16	4,769.23	4,647.97	121.27	39.329			
2,600.00	2,560.18	20,806.96	7,074.42	2.86	336.82	162.90	358.90	-531.16	4,676.73	4,554.37	122.36	38.221			
2,700.00	2,657.88	20,806.96	7,074.42	3.02	336.82	162.90	358.90	-531.16	4,584.54	4,461.00	123.54	37.111			
2,800.00	2,755.58	20,806.96	7,074.42	3.19	336.82	162.90	358.90	-531.16	4,492.68	4,367.88	124.80	35.999			
2,900.00	2,853.28	20,806.96	7,074.42	3.35	336.82	162.90	358.90	-531.16	4,401.18	4,275.02	126.16	34.887			
3,000.00	2,950.99	20,806.96	7,074.42	3.52	336.82	162.90	358.90	-531.16	4,310.06	4,182.44	127.61	33.774			
3,100.00	3,048.69	20,806.96	7,074.42	3.69	336.82	162.90	358.90	-531.16	4,219.34	4,090.16	129.18	32.663			
3,200.00	3,146.39	20,806.96	7,074.42	3.87	336.82	162.90	358.90	-531.16	4,129.04	3,998.19	130.85	31.554			
3,300.00	3,244.09	20,806.96	7,074.42	4.04	336.82	162.90	358.90	-531.16	4,039.21	3,906.55	132.66	30.449			
3,400.00	3,341.79	20,806.96	7,074.42	4.22	336.82	162.90	358.90	-531.16	3,949.86	3,815.27	134.59	29.348			
3,500.00	3,439.49	20,806.96	7,074.42	4.40	336.82	162.90	358.90	-531.16	3,861.04	3,724.38	136.66	28.253			
3,600.00	3,537.19	20,806.96	7,074.42	4.58	336.82	162.90	358.90	-531.16	3,772.77	3,633.89	138.88	27.165			
3,700.00	3,634.89	20,806.96	7,074.42	4.77	336.82	162.90	358.90	-531.16	3,685.11	3,543.84	141.26	26.087			
3,800.00	3,732.59	20,806.96	7,074.42	4.95	336.82	162.90	358.90	-531.16	3,598.08	3,454.27	143.82	25.018			
3,900.00	3,830.29	20,806.96	7,074.42	5.14	336.82	162.90	358.90	-531.16	3,511.75	3,365.20	146.55	23.963			
4,000.00	3,928.00	20,806.96	7,074.42	5.33	336.82	162.90	358.90	-531.16	3,426.16	3,276.69	149.48	22.921			
4,100.00	4,025.70	20,806.96	7,074.42	5.53	336.82	162.90	358.90	-531.16	3,341.38	3,188.77	152.61	21.895			
4,200.00	4,123.40	20,806.96	7,074.42	5.72	336.82	162.90	358.90	-531.16	3,257.45	3,101.50	155.95	20.887			
4,300.00	4,221.10	20,806.96	7,074.42	5.92	336.82	162.90	358.90	-531.16	3,174.46	3,014.93	159.53	19.899			
4,400.00	4,318.80	20,806.96	7,074.42	6.12	336.82	162.90	358.90	-531.16	3,092.48	2,929.13	163.35	18.932			
4,500.00	4,416.50	20,806.96	7,074.42	6.32	336.82	162.90	358.90	-531.16	3,011.58	2,844.16	167.42	17.988			
4,600.00	4,514.20	20,806.96	7,074.42	6.52	336.82	162.90	358.90	-531.16	2,931.86	2,760.11	171.75	17.070			
4,700.00	4,611.90	20,806.96	7,074.42	6.73	336.82	162.90	358.90	-531.16	2,853.42	2,677.06	176.37	16.179			
4,800.00	4,709.60	20,806.96	7,074.42	6.94	336.82	162.90	358.90	-531.16	2,776.37	2,595.10	181.26	15.317			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project						Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Reference Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,900.00	4,807.30	20,806.96	7,074.42	7.14	336.82	162.90	358.90	-531.16	2,700.82	2,514.36	186.46	14.485	
5,000.00	4,905.00	20,806.96	7,074.42	7.36	336.82	162.90	358.90	-531.16	2,626.90	2,434.94	191.96	13.685	
5,100.00	5,002.71	20,806.96	7,074.42	7.57	336.82	162.90	358.90	-531.16	2,554.76	2,357.00	197.76	12.918	
5,200.00	5,100.41	20,806.96	7,074.42	7.78	336.82	162.90	358.90	-531.16	2,484.56	2,280.68	203.88	12.186	
5,300.00	5,198.11	20,806.96	7,074.42	8.00	336.82	162.90	358.90	-531.16	2,416.45	2,206.15	210.30	11.491	
5,400.00	5,295.81	20,806.96	7,074.42	8.22	336.82	162.90	358.90	-531.16	2,350.62	2,133.60	217.02	10.831	
5,500.00	5,393.51	20,806.96	7,074.42	8.44	336.82	162.90	358.90	-531.16	2,287.27	2,063.25	224.02	10.210	
5,600.00	5,491.21	20,806.96	7,074.42	8.66	336.82	162.90	358.90	-531.16	2,226.62	1,995.34	231.28	9.627	
5,700.00	5,588.91	20,806.96	7,074.42	8.89	336.82	162.90	358.90	-531.16	2,168.88	1,930.10	238.77	9.083	
5,800.00	5,686.61	20,806.96	7,074.42	9.11	336.82	162.90	358.90	-531.16	2,114.29	1,867.84	246.45	8.579	
5,900.00	5,784.31	20,806.96	7,074.42	9.34	336.82	162.90	358.90	-531.16	2,063.11	1,808.84	254.27	8.114	
6,000.00	5,882.01	20,806.96	7,074.42	9.57	336.82	162.90	358.90	-531.16	2,015.60	1,753.44	262.16	7.688	
6,100.00	5,979.72	20,806.96	7,074.42	9.80	336.82	162.90	358.90	-531.16	1,972.01	1,701.97	270.04	7.303	
6,200.00	6,077.42	20,806.96	7,074.42	10.04	336.82	162.90	358.90	-531.16	1,932.62	1,654.79	277.83	6.956	
6,300.00	6,175.12	20,806.96	7,074.42	10.27	336.82	162.90	358.90	-531.16	1,897.69	1,612.25	285.44	6.648	
6,400.00	6,272.82	20,806.96	7,074.42	10.51	336.82	162.90	358.90	-531.16	1,867.47	1,574.72	292.74	6.379	
6,500.00	6,370.52	20,806.96	7,074.42	10.75	336.82	162.90	358.90	-531.16	1,842.18	1,542.53	299.65	6.148	
6,600.00	6,468.22	20,806.96	7,074.42	10.99	336.82	162.90	358.90	-531.16	1,822.04	1,516.00	306.04	5.954	
6,662.10	6,528.89	20,806.96	7,074.42	11.14	336.82	162.90	358.90	-531.16	1,812.20	1,502.49	309.71	5.851	
6,700.00	6,565.90	20,806.96	7,074.42	11.23	336.82	177.70	358.90	-531.16	1,807.56	1,495.80	311.76	5.798	
6,750.00	6,614.48	20,806.96	7,074.42	11.35	336.82	-165.81	358.90	-531.16	1,803.73	1,489.62	314.11	5.742	
6,797.72	6,660.35	20,806.96	7,074.42	11.47	336.82	-154.22	358.90	-531.16	1,802.52	1,486.58	315.95	5.705 CC	
6,800.00	6,662.53	20,806.96	7,074.42	11.47	336.82	-153.76	358.90	-531.16	1,802.53	1,486.50	316.02	5.704	
6,850.00	6,709.74	20,806.96	7,074.42	11.60	336.82	-145.20	358.90	-531.16	1,803.97	1,486.50	317.47	5.682 ES	
6,900.00	6,755.82	20,806.96	7,074.42	11.72	336.82	-138.92	358.90	-531.16	1,808.04	1,489.60	318.44	5.678 SF	
6,950.00	6,800.49	20,806.96	7,074.42	11.85	336.82	-134.06	358.90	-531.16	1,814.70	1,495.77	318.93	5.690	
7,000.00	6,843.48	20,806.96	7,074.42	11.98	336.82	-130.08	358.90	-531.16	1,823.88	1,504.93	318.95	5.718	
7,050.00	6,884.52	20,806.96	7,074.42	12.12	336.82	-126.62	358.90	-531.16	1,835.48	1,516.99	318.49	5.763	
7,100.00	6,923.35	20,806.96	7,074.42	12.27	336.82	-123.48	358.90	-531.16	1,849.39	1,531.81	317.58	5.823	
7,150.00	6,959.74	20,806.96	7,074.42	12.42	336.82	-120.51	358.90	-531.16	1,865.47	1,549.22	316.25	5.899	
7,200.00	6,993.46	20,806.96	7,074.42	12.60	336.82	-117.61	358.90	-531.16	1,883.57	1,569.05	314.52	5.989	
7,250.00	7,024.30	20,806.96	7,074.42	12.79	336.82	-114.73	358.90	-531.16	1,903.52	1,591.09	312.43	6.093	
7,300.00	7,052.08	20,806.96	7,074.42	12.99	336.82	-111.82	358.90	-531.16	1,925.14	1,615.13	310.01	6.210	
7,350.00	7,076.62	20,806.96	7,074.42	13.22	336.82	-108.86	358.90	-531.16	1,948.24	1,640.95	307.30	6.340	
7,400.00	7,097.78	20,806.96	7,074.42	13.46	336.82	-105.86	358.90	-531.16	1,972.64	1,668.31	304.33	6.482	
7,450.00	7,115.41	20,806.96	7,074.42	13.71	336.82	-102.80	358.90	-531.16	1,998.14	1,696.99	301.15	6.635	
7,500.00	7,129.42	20,806.96	7,074.42	13.99	336.82	-99.72	358.90	-531.16	2,024.54	1,726.75	297.79	6.798	
7,550.00	7,139.71	20,806.96	7,074.42	14.28	336.82	-96.61	358.90	-531.16	2,051.65	1,757.36	294.29	6.972	
7,600.00	7,146.22	20,806.96	7,074.42	14.58	336.82	-93.53	358.90	-531.16	2,079.27	1,788.61	290.67	7.153	
7,650.00	7,148.92	20,806.96	7,074.42	14.90	336.82	-90.49	358.90	-531.16	2,107.23	1,820.27	286.96	7.343	
7,660.51	7,149.00	20,806.96	7,074.42	14.97	336.82	-89.86	358.90	-531.16	2,113.13	1,826.96	286.17	7.384	
7,700.00	7,148.98	20,806.96	7,074.42	15.23	336.82	-89.86	358.90	-531.16	2,135.56	1,852.34	283.21	7.540	
7,800.00	7,148.93	20,806.96	7,074.42	15.92	336.82	-89.86	358.90	-531.16	2,194.52	1,918.77	275.74	7.959	
7,900.00	7,148.88	20,806.96	7,074.42	16.66	336.82	-89.86	358.90	-531.16	2,256.37	1,988.02	268.35	8.408	
8,000.00	7,148.82	20,806.96	7,074.42	17.44	336.82	-89.86	358.90	-531.16	2,320.88	2,059.80	261.08	8.890	
8,100.00	7,148.77	20,806.96	7,074.42	18.25	336.82	-89.86	358.90	-531.16	2,387.84	2,133.87	253.97	9.402	
8,200.00	7,148.72	20,806.96	7,074.42	19.10	336.82	-89.86	358.90	-531.16	2,457.04	2,209.99	247.05	9.946	
8,300.00	7,148.67	20,806.96	7,074.42	19.97	336.82	-89.86	358.90	-531.16	2,528.31	2,287.98	240.33	10.520	
8,400.00	7,148.62	20,806.96	7,074.42	20.86	336.82	-89.86	358.90	-531.16	2,601.47	2,367.63	233.84	11.125	
8,500.00	7,148.57	20,806.96	7,074.42	21.78	336.82	-89.86	358.90	-531.16	2,676.36	2,448.79	227.57	11.760	
8,600.00	7,148.51	20,806.96	7,074.42	22.71	336.82	-89.86	358.90	-531.16	2,752.85	2,531.31	221.54	12.426	
8,700.00	7,148.46	20,806.96	7,074.42	23.67	336.82	-89.86	358.90	-531.16	2,830.81	2,615.07	215.74	13.121	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
8,800.00	7,148.41	20,806.96	7,074.42	24.63	336.82	-89.86	358.90	-531.16	2,910.12	2,699.95	210.17	13.847		
8,900.00	7,148.36	20,806.96	7,074.42	25.62	336.82	-89.86	358.90	-531.16	2,990.66	2,785.84	204.82	14.601		
9,000.00	7,148.31	20,806.96	7,074.42	26.61	336.82	-89.86	358.90	-531.16	3,072.35	2,872.65	199.70	15.385		
9,100.00	7,148.26	20,806.96	7,074.42	27.62	336.82	-89.86	358.90	-531.16	3,155.10	2,960.31	194.79	16.197		
9,200.00	7,148.20	20,806.96	7,074.42	28.64	336.82	-89.86	358.90	-531.16	3,238.82	3,048.73	190.09	17.038		
9,300.00	7,148.15	20,806.96	7,074.42	29.66	336.82	-89.86	358.90	-531.16	3,323.44	3,137.85	185.59	17.908		
9,400.00	7,148.10	20,806.96	7,074.42	30.70	336.82	-89.86	358.90	-531.16	3,408.89	3,227.61	181.27	18.805		
9,500.00	7,148.05	20,806.96	7,074.42	31.74	336.82	-89.86	358.90	-531.16	3,495.11	3,317.97	177.15	19.730		
9,600.00	7,148.00	20,806.96	7,074.42	32.79	336.82	-89.86	358.90	-531.16	3,582.05	3,408.86	173.19	20.683		
9,700.00	7,147.94	20,806.96	7,074.42	33.85	336.82	-89.86	358.90	-531.16	3,669.66	3,500.25	169.40	21.662		
9,800.00	7,147.89	20,806.96	7,074.42	34.92	336.82	-89.86	358.90	-531.16	3,757.88	3,592.10	165.78	22.668		
9,900.00	7,147.84	20,806.96	7,074.42	35.99	336.82	-89.86	358.90	-531.16	3,846.68	3,684.38	162.30	23.701		
10,000.00	7,147.79	20,806.96	7,074.42	37.07	336.82	-89.86	358.90	-531.16	3,936.02	3,777.05	158.97	24.760		
10,100.00	7,147.74	20,806.96	7,074.42	38.15	336.82	-89.86	358.90	-531.16	4,025.86	3,870.08	155.78	25.844		
10,200.00	7,147.69	20,806.96	7,074.42	39.24	336.82	-89.86	358.90	-531.16	4,116.17	3,963.45	152.71	26.954		
10,300.00	7,147.63	20,806.96	7,074.42	40.33	336.82	-89.86	358.90	-531.16	4,206.91	4,057.14	149.77	28.088		
10,400.00	7,147.58	20,806.96	7,074.42	41.42	336.82	-89.86	358.90	-531.16	4,298.07	4,151.12	146.95	29.248		
10,500.00	7,147.53	20,806.96	7,074.42	42.52	336.82	-89.86	358.90	-531.16	4,389.61	4,245.37	144.24	30.432		
10,600.00	7,147.48	20,806.96	7,074.42	43.63	336.82	-89.86	358.90	-531.16	4,481.52	4,339.87	141.64	31.639		
10,700.00	7,147.43	20,806.96	7,074.42	44.73	336.82	-89.86	358.90	-531.16	4,573.76	4,434.61	139.14	32.870		
10,800.00	7,147.38	20,806.96	7,074.42	45.85	336.82	-89.86	358.90	-531.16	4,666.32	4,529.58	136.74	34.125		
10,900.00	7,147.32	20,806.96	7,074.42	46.96	336.82	-89.86	358.90	-531.16	4,759.19	4,624.75	134.43	35.402		
11,000.00	7,147.27	20,806.96	7,074.42	48.08	336.82	-89.86	358.90	-531.16	4,852.33	4,720.12	132.21	36.702		
11,100.00	7,147.22	20,806.96	7,074.42	49.20	336.82	-89.86	358.90	-531.16	4,945.75	4,815.68	130.07	38.023		
11,200.00	7,147.17	20,806.96	7,074.42	50.32	336.82	-89.86	358.90	-531.16	5,039.42	4,911.40	128.01	39.366		
11,300.00	7,147.12	20,806.96	7,074.42	51.44	336.82	-89.86	358.90	-531.16	5,133.32	5,007.29	126.03	40.731		
11,400.00	7,147.07	20,806.96	7,074.42	52.57	336.82	-89.86	358.90	-531.16	5,227.46	5,103.34	124.12	42.116		
11,500.00	7,147.01	20,806.96	7,074.42	53.70	336.82	-89.86	358.90	-531.16	5,321.80	5,199.52	122.28	43.522		
11,600.00	7,146.96	20,806.96	7,074.42	54.84	336.82	-89.86	358.90	-531.16	5,416.35	5,295.85	120.50	44.947		
11,700.00	7,146.91	20,806.96	7,074.42	55.97	336.82	-89.86	358.90	-531.16	5,511.09	5,392.30	118.79	46.392		
11,800.00	7,146.86	20,806.96	7,074.42	57.11	336.82	-89.86	358.90	-531.16	5,606.02	5,488.88	117.14	47.857		
11,815.51	7,146.85	20,806.96	7,074.42	57.28	336.82	-89.86	358.90	-531.16	5,620.76	5,503.87	116.89	48.086		
11,826.17	7,146.84	20,806.96	7,074.42	57.40	336.82	-89.86	358.90	-531.16	5,630.89	5,514.17	116.72	48.244		
11,900.00	7,146.80	20,806.96	7,074.42	58.25	336.82	-89.86	358.90	-531.16	5,701.07	5,585.53	115.54	49.343		
12,000.00	7,146.75	20,806.96	7,074.42	59.39	336.82	-89.86	358.90	-531.16	5,796.28	5,682.29	113.99	50.848		
12,100.00	7,146.69	20,806.96	7,074.42	60.53	336.82	-89.86	358.90	-531.16	5,891.65	5,779.15	112.50	52.372		
12,200.00	7,146.63	20,806.96	7,074.42	61.67	336.82	-89.86	358.90	-531.16	5,987.16	5,876.11	111.05	53.914		
12,300.00	7,146.58	20,806.96	7,074.42	62.82	336.82	-89.86	358.90	-531.16	6,082.83	5,973.17	109.65	55.472		
12,400.00	7,146.52	20,806.96	7,074.42	63.97	336.82	-89.86	358.90	-531.16	6,178.62	6,070.32	108.31	57.048		
12,500.00	7,146.46	20,806.96	7,074.42	65.12	336.82	-89.86	358.90	-531.16	6,274.55	6,167.55	107.00	58.641		
12,600.00	7,146.41	20,806.96	7,074.42	66.27	336.82	-89.86	358.90	-531.16	6,370.61	6,264.87	105.74	60.249		
12,700.00	7,146.35	20,806.96	7,074.42	67.42	336.82	-89.86	358.90	-531.16	6,466.79	6,362.27	104.52	61.873		
12,800.00	7,146.29	20,806.96	7,074.42	68.58	336.82	-89.86	358.90	-531.16	6,563.07	6,459.74	103.33	63.513		
12,900.00	7,146.24	20,806.96	7,074.42	69.73	336.82	-89.86	358.90	-531.16	6,659.47	6,557.28	102.19	65.167		
13,000.00	7,146.18	20,806.96	7,074.42	70.89	336.82	-89.86	358.90	-531.16	6,755.98	6,654.89	101.08	66.836		
13,100.00	7,146.13	20,806.96	7,074.42	72.05	336.82	-89.86	358.90	-531.16	6,852.58	6,752.57	100.01	68.519		
13,200.00	7,146.07	20,806.96	7,074.42	73.21	336.82	-89.86	358.90	-531.16	6,949.28	6,850.31	98.97	70.215		
13,300.00	7,146.01	20,806.96	7,074.42	74.37	336.82	-89.86	358.90	-531.16	7,046.07	6,948.11	97.96	71.925		
13,400.00	7,145.96	20,806.96	7,074.42	75.53	336.82	-89.86	358.90	-531.16	7,142.95	7,045.96	96.99	73.647		
13,500.00	7,145.90	20,806.96	7,074.42	76.70	336.82	-89.86	358.90	-531.16	7,239.92	7,143.87	96.04	75.382		
13,600.00	7,145.84	20,806.96	7,074.42	77.86	336.82	-89.86	358.90	-531.16	7,336.96	7,241.84	95.13	77.129		
13,700.00	7,145.79	20,806.96	7,074.42	79.03	336.82	-89.86	358.90	-531.16	7,434.09	7,339.85	94.24	78.888		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor		
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)		
13,800.00	7,145.73	20,806.96	7,074.42	80.20	336.82	-89.86	358.90	-531.16	7,531.29	7,437.91	93.37	80.657	
13,900.00	7,145.67	20,806.96	7,074.42	81.37	336.82	-89.86	358.90	-531.16	7,628.56	7,536.02	92.54	82.438	
14,000.00	7,145.62	20,806.96	7,074.42	82.54	336.82	-89.86	358.90	-531.16	7,725.90	7,634.18	91.73	84.229	
14,100.00	7,145.56	20,806.96	7,074.42	83.71	336.82	-89.86	358.90	-531.16	7,823.31	7,732.37	90.94	86.029	
14,200.00	7,145.50	20,806.96	7,074.42	84.88	336.82	-89.86	358.90	-531.16	7,920.79	7,830.61	90.17	87.840	
14,300.00	7,145.45	20,806.96	7,074.42	86.06	336.82	-89.86	358.90	-531.16	8,018.32	7,928.89	89.43	89.659	
14,400.00	7,145.39	20,806.96	7,074.42	87.23	336.82	-89.86	358.90	-531.16	8,115.92	8,027.21	88.71	91.488	
14,500.00	7,145.33	20,806.96	7,074.42	88.41	336.82	-89.86	358.90	-531.16	8,213.57	8,125.56	88.01	93.324	
14,600.00	7,145.28	20,806.96	7,074.42	89.59	336.82	-89.86	358.90	-531.16	8,311.28	8,223.95	87.33	95.169	
14,700.00	7,145.22	20,806.96	7,074.42	90.77	336.82	-89.86	358.90	-531.16	8,409.04	8,322.37	86.67	97.022	
14,800.00	7,145.17	20,806.96	7,074.42	91.95	336.82	-89.86	358.90	-531.16	8,506.86	8,420.83	86.03	98.881	
14,900.00	7,145.11	20,806.96	7,074.42	93.13	336.82	-89.86	358.90	-531.16	8,604.73	8,519.32	85.41	100.748	
15,000.00	7,145.05	20,806.96	7,074.42	94.31	336.82	-89.86	358.90	-531.16	8,702.64	8,617.84	84.80	102.621	
15,100.00	7,145.00	20,806.96	7,074.42	95.49	336.82	-89.86	358.90	-531.16	8,800.60	8,716.39	84.22	104.500	
15,200.00	7,144.94	20,806.96	7,074.42	96.68	336.82	-89.86	358.90	-531.16	8,898.61	8,814.96	83.64	106.386	
15,300.00	7,144.88	20,806.96	7,074.42	97.86	336.82	-89.86	358.90	-531.16	8,996.66	8,913.57	83.09	108.276	
15,400.00	7,144.83	20,806.96	7,074.42	99.05	336.82	-89.86	358.90	-531.16	9,094.75	9,012.20	82.55	110.172	
15,500.00	7,144.77	20,806.96	7,074.42	100.24	336.82	-89.86	358.90	-531.16	9,192.88	9,110.86	82.03	112.073	
15,600.00	7,144.71	20,806.96	7,074.42	101.42	336.82	-89.86	358.90	-531.16	9,291.06	9,209.54	81.52	113.978	
15,700.00	7,144.66	20,806.96	7,074.42	102.61	336.82	-89.86	358.90	-531.16	9,389.27	9,308.25	81.02	115.887	
15,800.00	7,144.60	20,806.96	7,074.42	103.80	336.82	-89.86	358.90	-531.16	9,487.52	9,406.98	80.54	117.800	
15,900.00	7,144.54	20,806.96	7,074.42	104.99	336.82	-89.86	358.90	-531.16	9,585.81	9,505.73	80.07	119.716	
16,000.00	7,144.49	20,806.96	7,074.42	106.19	336.82	-89.86	358.90	-531.16	9,684.13	9,604.51	79.62	121.635	
16,100.00	7,144.43	20,806.96	7,074.42	107.38	336.82	-89.86	358.90	-531.16	9,782.48	9,703.31	79.17	123.558	
16,200.00	7,144.37	20,806.96	7,074.42	108.57	336.82	-89.86	358.90	-531.16	9,880.87	9,802.13	78.74	125.482	
16,300.00	7,144.32	20,806.96	7,074.42	109.77	336.82	-89.86	358.90	-531.16	9,979.29	9,900.96	78.32	127.409	
16,400.00	7,144.26	20,806.96	7,074.42	110.96	336.82	-89.86	358.90	-531.16	10,077.74	9,999.82	77.92	129.338	
16,500.00	7,144.21	20,806.96	7,074.42	112.16	336.82	-89.86	358.90	-531.16	10,176.22	10,098.70	77.52	131.269	
16,600.00	7,144.15	20,806.96	7,074.42	113.36	336.82	-89.86	358.90	-531.16	10,274.73	10,197.60	77.14	133.200	
16,700.00	7,144.09	20,806.96	7,074.42	114.56	336.82	-89.86	358.90	-531.16	10,373.27	10,296.51	76.76	135.133	
16,800.00	7,144.04	20,806.96	7,074.42	115.76	336.82	-89.86	358.90	-531.16	10,471.84	10,395.44	76.40	137.066	
16,862.86	7,144.00	20,806.96	7,074.42	116.51	336.82	-89.86	358.90	-531.16	10,533.81	10,457.63	76.18	138.282	
16,866.76	7,144.00	20,806.96	7,074.42	116.56	336.82	-89.85	358.90	-531.16	10,537.65	10,461.49	76.16	138.357	
16,900.00	7,143.98	20,806.96	7,074.42	116.96	336.82	-89.85	358.90	-531.16	10,570.44	10,494.39	76.05	138.999	
17,000.00	7,143.92	20,806.96	7,074.42	118.16	336.82	-89.85	358.90	-531.16	10,669.07	10,593.36	75.70	140.930	
17,100.00	7,143.87	20,806.96	7,074.42	119.36	336.82	-89.85	358.90	-531.16	10,767.72	10,692.35	75.37	142.860	
17,200.00	7,143.81	20,806.96	7,074.42	120.56	336.82	-89.85	358.90	-531.16	10,866.40	10,791.36	75.05	144.790	
17,300.00	7,143.75	20,806.96	7,074.42	121.77	336.82	-89.85	358.90	-531.16	10,965.11	10,890.37	74.74	146.719	
17,400.00	7,143.69	20,806.96	7,074.42	122.97	336.82	-89.85	358.90	-531.16	11,063.84	10,989.41	74.43	148.648	
17,500.00	7,143.64	20,806.96	7,074.42	124.18	336.82	-89.85	358.90	-531.16	11,162.59	11,088.45	74.13	150.575	
17,600.00	7,143.58	20,806.96	7,074.42	125.39	336.82	-89.85	358.90	-531.16	11,261.36	11,187.52	73.84	152.501	
17,700.00	7,143.52	20,806.96	7,074.42	126.59	336.82	-89.85	358.90	-531.16	11,360.16	11,286.59	73.56	154.425	
17,800.00	7,143.47	20,806.96	7,074.42	127.80	336.82	-89.85	358.90	-531.16	11,458.97	11,385.68	73.29	156.347	
17,900.00	7,143.41	20,806.96	7,074.42	129.01	336.82	-89.85	358.90	-531.16	11,557.81	11,484.78	73.03	158.268	
18,000.00	7,143.35	20,806.96	7,074.42	130.22	336.82	-89.85	358.90	-531.16	11,656.66	11,583.89	72.77	160.185	
18,100.00	7,143.30	20,806.96	7,074.42	131.43	336.82	-89.85	358.90	-531.16	11,755.54	11,683.02	72.52	162.101	
18,200.00	7,143.24	20,806.96	7,074.42	132.64	336.82	-89.85	358.90	-531.16	11,854.43	11,782.15	72.28	164.014	
18,300.00	7,143.18	20,806.96	7,074.42	133.86	336.82	-89.85	358.90	-531.16	11,953.34	11,881.30	72.04	165.923	
18,400.00	7,143.13	20,806.96	7,074.42	135.07	336.82	-89.85	358.90	-531.16	12,052.27	11,980.46	71.81	167.830	
18,500.00	7,143.07	20,806.96	7,074.42	136.28	336.82	-89.85	358.90	-531.16	12,151.22	12,079.63	71.59	169.733	
18,600.00	7,143.01	20,806.96	7,074.42	137.50	336.82	-89.85	358.90	-531.16	12,250.18	12,178.81	71.37	171.633	
18,700.00	7,142.96	20,806.96	7,074.42	138.72	336.82	-89.85	358.90	-531.16	12,349.17	12,278.00	71.16	173.529	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH													Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project							Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
18,800.00	7,142.90	20,806.96	7,074.42	139.93	336.82	-89.85	358.90	-531.16	12,448.16	12,377.20	70.96	175.421		
18,900.00	7,142.84	20,806.96	7,074.42	141.15	336.82	-89.85	358.90	-531.16	12,547.18	12,476.41	70.76	177.309		
19,000.00	7,142.78	20,806.96	7,074.42	142.37	336.82	-89.85	358.90	-531.16	12,646.21	12,575.63	70.57	179.193		
19,100.00	7,142.73	20,806.96	7,074.42	143.59	336.82	-89.85	358.90	-531.16	12,745.25	12,674.86	70.39	181.073		
19,200.00	7,142.67	20,806.96	7,074.42	144.81	336.82	-89.85	358.90	-531.16	12,844.31	12,774.10	70.21	182.948		
19,300.00	7,142.61	20,806.96	7,074.42	146.03	336.82	-89.85	358.90	-531.16	12,943.38	12,873.35	70.03	184.818		
19,400.00	7,142.56	20,806.96	7,074.42	147.25	336.82	-89.85	358.90	-531.16	13,042.47	12,972.61	69.86	186.683		
19,500.00	7,142.50	20,806.96	7,074.42	148.47	336.82	-89.85	358.90	-531.16	13,141.57	13,071.87	69.70	188.544		
19,600.00	7,142.44	20,806.96	7,074.42	149.70	336.82	-89.85	358.90	-531.16	13,240.69	13,171.14	69.54	190.399		
19,700.00	7,142.39	20,806.96	7,074.42	150.92	336.82	-89.85	358.90	-531.16	13,339.81	13,270.43	69.39	192.249		
19,800.00	7,142.33	20,806.96	7,074.42	152.15	336.82	-89.85	358.90	-531.16	13,438.95	13,369.72	69.24	194.094		
19,900.00	7,142.27	20,806.96	7,074.42	153.37	336.82	-89.85	358.90	-531.16	13,538.11	13,469.01	69.10	195.933		
20,000.00	7,142.22	20,806.96	7,074.42	154.60	336.82	-89.85	358.90	-531.16	13,637.27	13,568.32	68.96	197.766		
20,100.00	7,142.16	20,806.96	7,074.42	155.83	336.82	-89.85	358.90	-531.16	13,736.45	13,667.63	68.82	199.593		
20,200.00	7,142.10	20,806.96	7,074.42	157.06	336.82	-89.85	358.90	-531.16	13,835.64	13,766.95	68.69	201.415		
20,300.00	7,142.04	20,806.96	7,074.42	158.28	336.82	-89.85	358.90	-531.16	13,934.84	13,866.28	68.57	203.230		
20,400.00	7,141.99	20,806.96	7,074.42	159.51	336.82	-89.85	358.90	-531.16	14,034.06	13,965.61	68.45	205.040		
20,500.00	7,141.93	20,806.96	7,074.42	160.74	336.82	-89.85	358.90	-531.16	14,133.28	14,064.95	68.33	206.843		
20,600.00	7,141.87	20,806.96	7,074.42	161.98	336.82	-89.85	358.90	-531.16	14,232.52	14,164.30	68.22	208.640		
20,700.00	7,141.82	20,806.96	7,074.42	163.21	336.82	-89.85	358.90	-531.16	14,331.76	14,263.65	68.11	210.430		
20,800.00	7,141.76	20,806.96	7,074.42	164.44	336.82	-89.85	358.90	-531.16	14,431.02	14,363.01	68.00	212.214		
20,900.00	7,141.70	20,806.96	7,074.42	165.68	336.82	-89.85	358.90	-531.16	14,530.28	14,462.38	67.90	213.991		
21,000.00	7,141.65	20,806.96	7,074.42	166.91	336.82	-89.85	358.90	-531.16	14,629.56	14,561.75	67.80	215.761		
21,100.00	7,141.59	20,806.96	7,074.42	168.15	336.82	-89.85	358.90	-531.16	14,728.85	14,661.13	67.71	217.525		
21,200.00	7,141.53	20,806.96	7,074.42	169.38	336.82	-89.85	358.90	-531.16	14,828.14	14,760.52	67.62	219.282		
21,300.00	7,141.48	20,806.96	7,074.42	170.62	336.82	-89.85	358.90	-531.16	14,927.45	14,859.91	67.54	221.031		
21,400.00	7,141.42	20,806.96	7,074.42	171.86	336.82	-89.85	358.90	-531.16	15,026.76	14,959.31	67.45	222.774		
21,500.00	7,141.36	20,806.96	7,074.42	173.10	336.82	-89.85	358.90	-531.16	15,126.08	15,058.71	67.37	224.510		
21,600.00	7,141.31	20,806.96	7,074.42	174.34	336.82	-89.85	358.90	-531.16	15,225.41	15,158.12	67.30	226.238		
21,700.00	7,141.25	20,806.96	7,074.42	175.58	336.82	-89.85	358.90	-531.16	15,324.76	15,257.53	67.23	227.959		
21,800.00	7,141.19	20,806.96	7,074.42	176.82	336.82	-89.85	358.90	-531.16	15,424.10	15,356.95	67.16	229.673		
21,900.00	7,141.13	20,806.96	7,074.42	178.06	336.82	-89.85	358.90	-531.16	15,523.46	15,456.37	67.09	231.379		
22,000.00	7,141.08	20,806.96	7,074.42	179.30	336.82	-89.85	358.90	-531.16	15,622.83	15,555.80	67.03	233.079		
22,100.00	7,141.02	20,806.96	7,074.42	180.55	336.82	-89.85	358.90	-531.16	15,722.20	15,655.23	66.97	234.770		
22,136.53	7,141.00	20,806.96	7,074.42	181.00	336.82	-89.85	358.90	-531.16	15,758.51	15,691.56	66.95	235.386		
22,137.77	7,141.00	20,806.96	7,074.42	181.02	336.82	-89.85	358.90	-531.16	15,759.73	15,692.79	66.95	235.407		
22,200.00	7,140.96	20,806.96	7,074.42	181.79	336.82	-89.85	358.90	-531.16	15,821.58	15,754.67	66.91	236.455		
22,300.00	7,140.91	20,806.96	7,074.42	183.04	336.82	-89.85	358.90	-531.16	15,920.97	15,854.11	66.86	238.133		
22,400.00	7,140.85	20,806.96	7,074.42	184.28	336.82	-89.85	358.90	-531.16	16,020.36	15,953.56	66.81	239.803		
22,500.00	7,140.79	20,806.96	7,074.42	185.53	336.82	-89.85	358.90	-531.16	16,119.77	16,053.01	66.76	241.466		
22,600.00	7,140.73	20,806.96	7,074.42	186.78	336.82	-89.85	358.90	-531.16	16,219.18	16,152.46	66.71	243.120		
22,700.00	7,140.68	20,806.96	7,074.42	188.02	336.82	-89.85	358.90	-531.16	16,318.59	16,251.92	66.67	244.768		
22,800.00	7,140.62	20,806.96	7,074.42	189.27	336.82	-89.85	358.90	-531.16	16,418.02	16,351.39	66.63	246.407		
22,900.00	7,140.56	20,806.96	7,074.42	190.52	336.82	-89.85	358.90	-531.16	16,517.45	16,450.85	66.59	248.038		
23,000.00	7,140.50	20,806.96	7,074.42	191.77	336.82	-89.85	358.90	-531.16	16,616.88	16,550.33	66.56	249.662		
23,100.00	7,140.45	20,806.96	7,074.42	193.02	336.82	-89.85	358.90	-531.16	16,716.33	16,649.80	66.53	251.278		
23,200.00	7,140.39	20,806.96	7,074.42	194.28	336.82	-89.85	358.90	-531.16	16,815.78	16,749.28	66.50	252.886		
23,300.00	7,140.33	20,806.96	7,074.42	195.53	336.82	-89.85	358.90	-531.16	16,915.24	16,848.77	66.47	254.486		
23,400.00	7,140.27	20,806.96	7,074.42	196.78	336.82	-89.85	358.90	-531.16	17,014.70	16,948.26	66.44	256.078		
23,500.00	7,140.22	20,806.96	7,074.42	198.04	336.82	-89.85	358.90	-531.16	17,114.17	17,047.75	66.42	257.662		
23,600.00	7,140.16	20,806.96	7,074.42	199.29	336.82	-89.85	358.90	-531.16	17,213.65	17,147.25	66.40	259.239		
23,700.00	7,140.10	20,806.96	7,074.42	200.55	336.82	-89.85	358.90	-531.16	17,313.13	17,246.75	66.38	260.807		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #744H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 3048-B001Mb_MWD+HRGM, 20807-Project							Rule Assigned:					Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
23,800.00	7,140.04	20,806.96	7,074.42	201.81	336.82	-89.85	358.90	-531.16	17,412.62	17,346.25	66.37	262.367	
23,900.00	7,139.99	20,806.96	7,074.42	203.06	336.82	-89.85	358.90	-531.16	17,512.11	17,445.76	66.35	263.919	
24,000.00	7,139.93	20,806.96	7,074.42	204.32	336.82	-89.85	358.90	-531.16	17,611.61	17,545.27	66.34	265.464	
24,100.00	7,139.87	20,806.96	7,074.42	205.58	336.82	-89.85	358.90	-531.16	17,711.12	17,644.78	66.33	267.000	
24,200.00	7,139.81	20,806.96	7,074.42	206.84	336.82	-89.85	358.90	-531.16	17,810.63	17,744.30	66.33	268.528	
24,300.00	7,139.76	20,806.96	7,074.42	208.10	336.82	-89.85	358.90	-531.16	17,910.14	17,843.82	66.32	270.048	
24,400.00	7,139.70	20,806.96	7,074.42	209.36	336.82	-89.85	358.90	-531.16	18,009.67	17,943.35	66.32	271.560	
24,500.00	7,139.64	20,806.96	7,074.42	210.62	336.82	-89.85	358.90	-531.16	18,109.19	18,042.87	66.32	273.065	
24,600.00	7,139.58	20,806.96	7,074.42	211.89	336.82	-89.85	358.90	-531.16	18,208.72	18,142.41	66.32	274.561	
24,700.00	7,139.53	20,806.96	7,074.42	213.15	336.82	-89.85	358.90	-531.16	18,308.26	18,241.94	66.32	276.049	
24,800.00	7,139.47	20,806.96	7,074.42	214.42	336.82	-89.85	358.90	-531.16	18,407.80	18,341.48	66.33	277.529	
24,900.00	7,139.41	20,806.96	7,074.42	215.68	336.82	-89.85	358.90	-531.16	18,507.35	18,441.02	66.33	279.001	
25,000.00	7,139.35	20,806.96	7,074.42	216.95	336.82	-89.85	358.90	-531.16	18,606.90	18,540.56	66.34	280.465	
25,100.00	7,139.30	20,806.96	7,074.42	218.21	336.82	-89.85	358.90	-531.16	18,706.46	18,640.11	66.35	281.921	
25,200.00	7,139.24	20,806.96	7,074.42	219.48	336.82	-89.85	358.90	-531.16	18,806.02	18,739.66	66.37	283.369	
25,300.00	7,139.18	20,806.96	7,074.42	220.75	336.82	-89.85	358.90	-531.16	18,905.59	18,839.21	66.38	284.809	
25,400.00	7,139.13	20,806.96	7,074.42	222.02	336.82	-89.85	358.90	-531.16	19,005.16	18,938.76	66.40	286.241	
25,500.00	7,139.07	20,806.96	7,074.42	223.29	336.82	-89.85	358.90	-531.16	19,104.73	19,038.32	66.41	287.665	
25,600.00	7,139.01	20,806.96	7,074.42	224.56	336.82	-89.85	358.90	-531.16	19,204.31	19,137.88	66.43	289.081	
25,700.00	7,138.95	20,806.96	7,074.42	225.83	336.82	-89.85	358.90	-531.16	19,303.90	19,237.44	66.45	290.489	
25,800.00	7,138.90	20,806.96	7,074.42	227.10	336.82	-89.85	358.90	-531.16	19,403.49	19,337.01	66.48	291.890	
25,900.00	7,138.84	20,806.96	7,074.42	228.38	336.82	-89.85	358.90	-531.16	19,503.08	19,436.58	66.50	293.282	
26,000.00	7,138.78	20,806.96	7,074.42	229.65	336.82	-89.85	358.90	-531.16	19,602.67	19,536.15	66.52	294.667	
26,100.00	7,138.72	20,806.96	7,074.42	230.93	336.82	-89.85	358.90	-531.16	19,702.28	19,635.72	66.55	296.043	
26,200.00	7,138.67	20,806.96	7,074.42	232.20	336.82	-89.85	358.90	-531.16	19,801.88	19,735.30	66.58	297.412	
26,300.00	7,138.61	20,806.96	7,074.42	233.48	336.82	-89.85	358.90	-531.16	19,901.49	19,834.88	66.61	298.773	
26,400.00	7,138.55	20,806.96	7,074.42	234.75	336.82	-89.85	358.90	-531.16	20,001.10	19,934.46	66.64	300.127	
26,500.00	7,138.49	20,806.96	7,074.42	236.03	336.82	-89.85	358.90	-531.16	20,100.72	20,034.04	66.68	301.472	
26,600.00	7,138.44	20,806.96	7,074.42	237.31	336.82	-89.85	358.90	-531.16	20,200.34	20,133.63	66.71	302.810	
26,700.00	7,138.38	20,806.96	7,074.42	238.59	336.82	-89.85	358.90	-531.16	20,299.96	20,233.22	66.75	304.140	
26,800.00	7,138.32	20,806.96	7,074.42	239.87	336.82	-89.85	358.90	-531.16	20,399.59	20,332.81	66.78	305.462	
26,900.00	7,138.26	20,806.96	7,074.42	241.15	336.82	-89.85	358.90	-531.16	20,499.22	20,432.40	66.82	306.777	
27,000.00	7,138.21	20,806.96	7,074.42	242.43	336.82	-89.85	358.90	-531.16	20,598.86	20,531.99	66.86	308.084	
27,100.00	7,138.15	20,806.96	7,074.42	243.71	336.82	-89.85	358.90	-531.16	20,698.49	20,631.59	66.90	309.383	
27,157.78	7,138.12	20,806.96	7,074.42	244.46	336.82	-89.85	358.90	-531.16	20,756.07	20,689.14	66.93	310.130	
27,200.00	7,138.09	20,806.96	7,074.42	245.00	336.82	-89.85	358.90	-531.16	20,798.14	20,731.19	66.94	310.675	
27,300.00	7,138.03	20,806.96	7,074.42	246.28	336.82	-89.85	358.90	-531.16	20,897.78	20,830.79	66.99	311.959	
27,357.78	7,138.00	20,806.96	7,074.42	247.02	336.82	-89.85	358.90	-531.16	20,955.35	20,888.34	67.01	312.698	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH														Offset Site Error:	0.00 usft
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project														Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning		
0.00	0.00	21,289.96	7,363.81	0.00	339.92	-140.01	-639.31	-536.32	7,481.51						
125.00	125.00	21,289.96	7,363.81	0.05	339.92	-146.10	-639.31	-536.32	7,357.36	7,243.29	114.07	64.499			
225.00	224.99	21,289.96	7,363.81	0.19	339.92	-145.43	-639.31	-536.32	7,258.10	7,143.82	114.28	63.512			
290.00	289.99	21,289.96	7,363.81	0.28	339.92	-158.70	-639.31	-536.32	7,193.58	7,079.17	114.42	62.871			
300.00	299.99	21,289.96	7,363.81	0.29	339.92	-158.70	-639.31	-536.32	7,183.66	7,069.22	114.44	62.773			
400.00	399.99	21,289.96	7,363.81	0.42	339.92	-158.70	-639.31	-536.32	7,084.43	6,969.77	114.66	61.789			
440.00	439.99	21,289.96	7,363.81	0.47	339.92	-158.70	-639.31	-536.32	7,044.74	6,930.00	114.74	61.396			
500.00	499.99	21,289.96	7,363.81	0.50	339.92	53.90	-639.31	-536.32	6,985.16	6,870.29	114.87	60.810			
600.00	599.93	21,289.96	7,363.81	0.47	339.92	64.08	-639.31	-536.32	6,885.66	6,770.62	115.05	59.851			
700.00	699.70	21,289.96	7,363.81	0.48	339.92	85.15	-639.31	-536.32	6,786.03	6,670.84	115.19	58.913			
800.00	799.18	21,289.96	7,363.81	0.52	339.92	108.39	-639.31	-536.32	6,686.38	6,571.09	115.29	57.998			
900.00	898.24	21,289.96	7,363.81	0.60	339.92	126.88	-639.31	-536.32	6,586.83	6,471.49	115.34	57.107			
1,000.00	996.77	21,289.96	7,363.81	0.69	339.92	139.34	-639.31	-536.32	6,487.51	6,372.16	115.35	56.240			
1,074.04	1,069.30	21,289.96	7,363.81	0.77	339.92	145.71	-639.31	-536.32	6,414.21	6,298.87	115.33	55.614			
1,100.00	1,094.67	21,289.96	7,363.81	0.79	339.92	145.71	-639.31	-536.32	6,388.54	6,273.22	115.32	55.397			
1,200.00	1,192.37	21,289.96	7,363.81	0.91	339.92	145.71	-639.31	-536.32	6,289.72	6,174.44	115.28	54.561			
1,300.00	1,290.07	21,289.96	7,363.81	1.02	339.92	145.71	-639.31	-536.32	6,190.93	6,075.70	115.23	53.725			
1,400.00	1,387.77	21,289.96	7,363.81	1.15	339.92	145.71	-639.31	-536.32	6,092.19	5,977.00	115.19	52.889			
1,500.00	1,485.47	21,289.96	7,363.81	1.27	339.92	145.71	-639.31	-536.32	5,993.48	5,878.34	115.14	52.053			
1,600.00	1,583.17	21,289.96	7,363.81	1.40	339.92	145.71	-639.31	-536.32	5,894.82	5,779.73	115.09	51.218			
1,700.00	1,680.87	21,289.96	7,363.81	1.53	339.92	145.71	-639.31	-536.32	5,796.21	5,681.16	115.05	50.382			
1,800.00	1,778.57	21,289.96	7,363.81	1.67	339.92	145.71	-639.31	-536.32	5,697.64	5,582.65	115.00	49.546			
1,900.00	1,876.27	21,289.96	7,363.81	1.81	339.92	145.71	-639.31	-536.32	5,599.13	5,484.18	114.95	48.710			
2,000.00	1,973.98	21,289.96	7,363.81	1.95	339.92	145.71	-639.31	-536.32	5,500.67	5,385.77	114.90	47.873			
2,100.00	2,071.68	21,289.96	7,363.81	2.09	339.92	145.71	-639.31	-536.32	5,402.26	5,287.41	114.85	47.036			
2,200.00	2,169.38	21,289.96	7,363.81	2.24	339.92	145.71	-639.31	-536.32	5,303.92	5,189.11	114.81	46.199			
2,300.00	2,267.08	21,289.96	7,363.81	2.39	339.92	145.71	-639.31	-536.32	5,205.64	5,090.87	114.76	45.360			
2,400.00	2,364.78	21,289.96	7,363.81	2.55	339.92	145.71	-639.31	-536.32	5,107.42	4,992.70	114.72	44.521			
2,500.00	2,462.48	21,289.96	7,363.81	2.70	339.92	145.71	-639.31	-536.32	5,009.28	4,894.60	114.68	43.682			
2,600.00	2,560.18	21,289.96	7,363.81	2.86	339.92	145.71	-639.31	-536.32	4,911.21	4,796.57	114.64	42.840			
2,700.00	2,657.88	21,289.96	7,363.81	3.02	339.92	145.71	-639.31	-536.32	4,813.21	4,698.61	114.61	41.998			
2,800.00	2,755.58	21,289.96	7,363.81	3.19	339.92	145.71	-639.31	-536.32	4,715.31	4,600.73	114.58	41.154			
2,900.00	2,853.28	21,289.96	7,363.81	3.35	339.92	145.71	-639.31	-536.32	4,617.49	4,502.94	114.55	40.309			
3,000.00	2,950.99	21,289.96	7,363.81	3.52	339.92	145.71	-639.31	-536.32	4,519.77	4,405.24	114.53	39.462			
3,100.00	3,048.69	21,289.96	7,363.81	3.69	339.92	145.71	-639.31	-536.32	4,422.15	4,307.63	114.53	38.613			
3,200.00	3,146.39	21,289.96	7,363.81	3.87	339.92	145.71	-639.31	-536.32	4,324.64	4,210.12	114.53	37.761			
3,300.00	3,244.09	21,289.96	7,363.81	4.04	339.92	145.71	-639.31	-536.32	4,227.25	4,112.71	114.54	36.907			
3,400.00	3,341.79	21,289.96	7,363.81	4.22	339.92	145.71	-639.31	-536.32	4,129.98	4,015.42	114.56	36.050			
3,500.00	3,439.49	21,289.96	7,363.81	4.40	339.92	145.71	-639.31	-536.32	4,032.84	3,918.24	114.60	35.190			
3,600.00	3,537.19	21,289.96	7,363.81	4.58	339.92	145.71	-639.31	-536.32	3,935.85	3,821.19	114.66	34.327			
3,700.00	3,634.89	21,289.96	7,363.81	4.77	339.92	145.71	-639.31	-536.32	3,839.01	3,724.27	114.74	33.459			
3,800.00	3,732.59	21,289.96	7,363.81	4.95	339.92	145.71	-639.31	-536.32	3,742.34	3,627.50	114.84	32.587			
3,900.00	3,830.29	21,289.96	7,363.81	5.14	339.92	145.71	-639.31	-536.32	3,645.85	3,530.88	114.97	31.711			
4,000.00	3,928.00	21,289.96	7,363.81	5.33	339.92	145.71	-639.31	-536.32	3,549.55	3,434.41	115.14	30.829			
4,100.00	4,025.70	21,289.96	7,363.81	5.53	339.92	145.71	-639.31	-536.32	3,453.46	3,338.12	115.34	29.942			
4,200.00	4,123.40	21,289.96	7,363.81	5.72	339.92	145.71	-639.31	-536.32	3,357.60	3,242.02	115.58	29.049			
4,300.00	4,221.10	21,289.96	7,363.81	5.92	339.92	145.71	-639.31	-536.32	3,261.99	3,146.11	115.88	28.149			
4,400.00	4,318.80	21,289.96	7,363.81	6.12	339.92	145.71	-639.31	-536.32	3,166.65	3,050.41	116.24	27.242			
4,500.00	4,416.50	21,289.96	7,363.81	6.32	339.92	145.71	-639.31	-536.32	3,071.61	2,954.94	116.67	26.327			
4,600.00	4,514.20	21,289.96	7,363.81	6.52	339.92	145.71	-639.31	-536.32	2,976.89	2,859.71	117.18	25.404			
4,700.00	4,611.90	21,289.96	7,363.81	6.73	339.92	145.71	-639.31	-536.32	2,882.53	2,764.74	117.79	24.472			
4,800.00	4,709.60	21,289.96	7,363.81	6.94	339.92	145.71	-639.31	-536.32	2,788.56	2,670.06	118.50	23.532			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
4,900.00	4,807.30	21,289.96	7,363.81	7.14	339.92	145.71	-639.31	-536.32	2,695.03	2,575.68	119.35	22.582	
5,000.00	4,905.00	21,289.96	7,363.81	7.36	339.92	145.71	-639.31	-536.32	2,601.98	2,481.64	120.34	21.622	
5,100.00	5,002.71	21,289.96	7,363.81	7.57	339.92	145.71	-639.31	-536.32	2,509.46	2,387.95	121.51	20.653	
5,200.00	5,100.41	21,289.96	7,363.81	7.78	339.92	145.71	-639.31	-536.32	2,417.54	2,294.66	122.87	19.675	
5,300.00	5,198.11	21,289.96	7,363.81	8.00	339.92	145.71	-639.31	-536.32	2,326.28	2,201.81	124.47	18.689	
5,400.00	5,295.81	21,289.96	7,363.81	8.22	339.92	145.71	-639.31	-536.32	2,235.77	2,109.42	126.35	17.696	
5,500.00	5,393.51	21,289.96	7,363.81	8.44	339.92	145.71	-639.31	-536.32	2,146.11	2,017.57	128.53	16.697	
5,600.00	5,491.21	21,289.96	7,363.81	8.66	339.92	145.71	-639.31	-536.32	2,057.39	1,926.31	131.08	15.695	
5,700.00	5,588.91	21,289.96	7,363.81	8.89	339.92	145.71	-639.31	-536.32	1,969.76	1,835.71	134.05	14.694	
5,800.00	5,686.61	21,289.96	7,363.81	9.11	339.92	145.71	-639.31	-536.32	1,883.37	1,745.87	137.49	13.698	
5,900.00	5,784.31	21,289.96	7,363.81	9.34	339.92	145.71	-639.31	-536.32	1,798.38	1,656.89	141.49	12.711	
6,000.00	5,882.01	21,289.96	7,363.81	9.57	339.92	145.71	-639.31	-536.32	1,715.01	1,568.91	146.10	11.739	
6,100.00	5,979.72	21,289.96	7,363.81	9.80	339.92	145.71	-639.31	-536.32	1,633.51	1,482.11	151.40	10.789	
6,200.00	6,077.42	21,289.96	7,363.81	10.04	339.92	145.71	-639.31	-536.32	1,554.17	1,396.69	157.49	9.869	
6,300.00	6,175.12	21,289.96	7,363.81	10.27	339.92	145.71	-639.31	-536.32	1,477.35	1,312.93	164.42	8.985	
6,400.00	6,272.82	21,289.96	7,363.81	10.51	339.92	145.71	-639.31	-536.32	1,403.44	1,231.18	172.26	8.147	
6,500.00	6,370.52	21,289.96	7,363.81	10.75	339.92	145.71	-639.31	-536.32	1,332.95	1,151.89	181.06	7.362	
6,600.00	6,468.22	21,289.96	7,363.81	10.99	339.92	145.71	-639.31	-536.32	1,266.43	1,075.60	190.83	6.637	
6,662.10	6,528.89	21,289.96	7,363.81	11.14	339.92	145.71	-639.31	-536.32	1,227.41	1,030.06	197.36	6.219	
6,700.00	6,565.90	21,289.96	7,363.81	11.23	339.92	158.90	-639.31	-536.32	1,205.09	1,003.67	201.42	5.983	
6,750.00	6,614.48	21,289.96	7,363.81	11.35	339.92	173.50	-639.31	-536.32	1,178.62	972.00	206.62	5.704	
6,800.00	6,662.53	21,289.96	7,363.81	11.47	339.92	-176.09	-639.31	-536.32	1,155.93	944.41	211.52	5.465	
6,850.00	6,709.74	21,289.96	7,363.81	11.60	339.92	-169.00	-639.31	-536.32	1,137.37	921.41	215.96	5.267	
6,900.00	6,755.82	21,289.96	7,363.81	11.72	339.92	-164.04	-639.31	-536.32	1,123.27	903.48	219.78	5.111	
6,950.00	6,800.49	21,289.96	7,363.81	11.85	339.92	-160.38	-639.31	-536.32	1,113.88	891.02	222.86	4.998	
7,000.00	6,843.48	21,289.96	7,363.81	11.98	339.92	-157.49	-639.31	-536.32	1,109.39	884.31	225.08	4.929	
7,020.10	6,860.23	21,289.96	7,363.81	12.03	339.92	-156.47	-639.31	-536.32	1,108.99	883.28	225.71	4.913 CC, ES	
7,050.00	6,884.52	21,289.96	7,363.81	12.12	339.92	-155.04	-639.31	-536.32	1,109.88	883.53	226.35	4.903 SF	
7,100.00	6,923.35	21,289.96	7,363.81	12.27	339.92	-152.79	-639.31	-536.32	1,115.35	888.71	226.64	4.921	
7,150.00	6,959.74	21,289.96	7,363.81	12.42	339.92	-150.62	-639.31	-536.32	1,125.67	899.72	225.95	4.982	
7,200.00	6,993.46	21,289.96	7,363.81	12.60	339.92	-148.38	-639.31	-536.32	1,140.67	916.34	224.34	5.085	
7,250.00	7,024.30	21,289.96	7,363.81	12.79	339.92	-146.00	-639.31	-536.32	1,160.07	938.20	221.87	5.229	
7,300.00	7,052.08	21,289.96	7,363.81	12.99	339.92	-143.39	-639.31	-536.32	1,183.54	964.87	218.67	5.412	
7,350.00	7,076.62	21,289.96	7,363.81	13.22	339.92	-140.47	-639.31	-536.32	1,210.70	995.85	214.85	5.635	
7,400.00	7,097.78	21,289.96	7,363.81	13.46	339.92	-137.15	-639.31	-536.32	1,241.14	1,030.61	210.54	5.895	
7,450.00	7,115.41	21,289.96	7,363.81	13.71	339.92	-133.35	-639.31	-536.32	1,274.46	1,068.61	205.84	6.191	
7,500.00	7,129.42	21,289.96	7,363.81	13.99	339.92	-129.00	-639.31	-536.32	1,310.23	1,109.34	200.89	6.522	
7,550.00	7,139.71	21,289.96	7,363.81	14.28	339.92	-124.03	-639.31	-536.32	1,348.05	1,152.29	195.76	6.886	
7,600.00	7,146.22	21,289.96	7,363.81	14.58	339.92	-118.42	-639.31	-536.32	1,387.52	1,196.98	190.54	7.282	
7,650.00	7,148.92	21,289.96	7,363.81	14.90	339.92	-112.20	-639.31	-536.32	1,428.28	1,242.98	185.30	7.708	
7,660.51	7,149.00	21,289.96	7,363.81	14.97	339.92	-110.82	-639.31	-536.32	1,436.99	1,252.79	184.20	7.801	
7,700.00	7,148.98	21,289.96	7,363.81	15.23	339.92	-110.82	-639.31	-536.32	1,469.91	1,289.77	180.14	8.160	
7,800.00	7,148.93	21,289.96	7,363.81	15.92	339.92	-110.82	-639.31	-536.32	1,554.65	1,384.14	170.51	9.118	
7,900.00	7,148.88	21,289.96	7,363.81	16.66	339.92	-110.82	-639.31	-536.32	1,641.11	1,479.38	161.73	10.147	
8,000.00	7,148.82	21,289.96	7,363.81	17.44	339.92	-110.82	-639.31	-536.32	1,729.03	1,575.30	153.74	11.247	
8,100.00	7,148.77	21,289.96	7,363.81	18.25	339.92	-110.82	-639.31	-536.32	1,818.20	1,671.76	146.45	12.416	
8,200.00	7,148.72	21,289.96	7,363.81	19.10	339.92	-110.82	-639.31	-536.32	1,908.45	1,768.66	139.79	13.653	
8,300.00	7,148.67	21,289.96	7,363.81	19.97	339.92	-110.82	-639.31	-536.32	1,999.62	1,865.93	133.69	14.957	
8,400.00	7,148.62	21,289.96	7,363.81	20.86	339.92	-110.82	-639.31	-536.32	2,091.60	1,963.49	128.11	16.326	
8,500.00	7,148.57	21,289.96	7,363.81	21.78	339.92	-110.82	-639.31	-536.32	2,184.28	2,061.30	122.99	17.761	
8,600.00	7,148.51	21,289.96	7,363.81	22.71	339.92	-110.82	-639.31	-536.32	2,277.59	2,159.32	118.27	19.258	
8,700.00	7,148.46	21,289.96	7,363.81	23.67	339.92	-110.82	-639.31	-536.32	2,371.44	2,257.51	113.92	20.816	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		409-B001Mb_MWD+HRGM, 21290-Project					Rule Assigned:		Offset Well Error:		0.00 usft			
Reference	Offset	Semi Major Axis												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
8,800.00	7,148.41	21,289.96	7,363.81	24.63	339.92	-110.82	-639.31	-536.32	2,465.77	2,355.86	109.91	22.434		
8,900.00	7,148.36	21,289.96	7,363.81	25.62	339.92	-110.82	-639.31	-536.32	2,560.53	2,454.33	106.20	24.111		
9,000.00	7,148.31	21,289.96	7,363.81	26.61	339.92	-110.82	-639.31	-536.32	2,655.68	2,552.92	102.76	25.843		
9,100.00	7,148.26	21,289.96	7,363.81	27.62	339.92	-110.82	-639.31	-536.32	2,751.17	2,651.60	99.57	27.631		
9,200.00	7,148.20	21,289.96	7,363.81	28.64	339.92	-110.82	-639.31	-536.32	2,846.97	2,750.37	96.60	29.471		
9,300.00	7,148.15	21,289.96	7,363.81	29.66	339.92	-110.82	-639.31	-536.32	2,943.05	2,849.22	93.84	31.363		
9,400.00	7,148.10	21,289.96	7,363.81	30.70	339.92	-110.82	-639.31	-536.32	3,039.39	2,948.12	91.27	33.303		
9,500.00	7,148.05	21,289.96	7,363.81	31.74	339.92	-110.82	-639.31	-536.32	3,135.95	3,047.09	88.86	35.290		
9,600.00	7,148.00	21,289.96	7,363.81	32.79	339.92	-110.82	-639.31	-536.32	3,232.72	3,146.11	86.62	37.323		
9,700.00	7,147.94	21,289.96	7,363.81	33.85	339.92	-110.82	-639.31	-536.32	3,329.69	3,245.17	84.51	39.398		
9,800.00	7,147.89	21,289.96	7,363.81	34.92	339.92	-110.82	-639.31	-536.32	3,426.82	3,344.28	82.55	41.515		
9,900.00	7,147.84	21,289.96	7,363.81	35.99	339.92	-110.82	-639.31	-536.32	3,524.12	3,443.42	80.70	43.670		
10,000.00	7,147.79	21,289.96	7,363.81	37.07	339.92	-110.82	-639.31	-536.32	3,621.57	3,542.60	78.97	45.863		
10,100.00	7,147.74	21,289.96	7,363.81	38.15	339.92	-110.82	-639.31	-536.32	3,719.15	3,641.81	77.34	48.090		
10,200.00	7,147.69	21,289.96	7,363.81	39.24	339.92	-110.82	-639.31	-536.32	3,816.85	3,741.05	75.81	50.350		
10,300.00	7,147.63	21,289.96	7,363.81	40.33	339.92	-110.82	-639.31	-536.32	3,914.67	3,840.31	74.37	52.641		
10,400.00	7,147.58	21,289.96	7,363.81	41.42	339.92	-110.82	-639.31	-536.32	4,012.60	3,939.59	73.01	54.961		
10,500.00	7,147.53	21,289.96	7,363.81	42.52	339.92	-110.82	-639.31	-536.32	4,110.63	4,038.90	71.73	57.308		
10,600.00	7,147.48	21,289.96	7,363.81	43.63	339.92	-110.82	-639.31	-536.32	4,208.75	4,138.23	70.52	59.679		
10,700.00	7,147.43	21,289.96	7,363.81	44.73	339.92	-110.82	-639.31	-536.32	4,306.96	4,237.57	69.38	62.074		
10,800.00	7,147.38	21,289.96	7,363.81	45.85	339.92	-110.82	-639.31	-536.32	4,405.25	4,336.94	68.31	64.489		
10,900.00	7,147.32	21,289.96	7,363.81	46.96	339.92	-110.82	-639.31	-536.32	4,503.61	4,436.32	67.29	66.924		
11,000.00	7,147.27	21,289.96	7,363.81	48.08	339.92	-110.82	-639.31	-536.32	4,602.05	4,535.71	66.34	69.375		
11,100.00	7,147.22	21,289.96	7,363.81	49.20	339.92	-110.82	-639.31	-536.32	4,700.55	4,635.12	65.43	71.843		
11,200.00	7,147.17	21,289.96	7,363.81	50.32	339.92	-110.82	-639.31	-536.32	4,799.11	4,734.54	64.57	74.323		
11,300.00	7,147.12	21,289.96	7,363.81	51.44	339.92	-110.82	-639.31	-536.32	4,897.73	4,833.97	63.76	76.816		
11,400.00	7,147.07	21,289.96	7,363.81	52.57	339.92	-110.82	-639.31	-536.32	4,996.41	4,933.41	62.99	79.319		
11,500.00	7,147.01	21,289.96	7,363.81	53.70	339.92	-110.82	-639.31	-536.32	5,095.13	5,032.87	62.26	81.831		
11,600.00	7,146.96	21,289.96	7,363.81	54.84	339.92	-110.82	-639.31	-536.32	5,193.91	5,132.33	61.58	84.350		
11,700.00	7,146.91	21,289.96	7,363.81	55.97	339.92	-110.82	-639.31	-536.32	5,292.73	5,231.81	60.92	86.875		
11,800.00	7,146.86	21,289.96	7,363.81	57.11	339.92	-110.82	-639.31	-536.32	5,391.60	5,331.29	60.31	89.404		
11,815.51	7,146.85	21,289.96	7,363.81	57.28	339.92	-110.82	-639.31	-536.32	5,406.93	5,346.72	60.21	89.796		
11,826.17	7,146.84	21,289.96	7,363.81	57.40	339.92	-110.55	-639.31	-536.32	5,417.48	5,357.33	60.15	90.067		
11,900.00	7,146.80	21,289.96	7,363.81	58.25	339.92	-110.55	-639.31	-536.32	5,490.48	5,430.77	59.71	91.946		
12,000.00	7,146.75	21,289.96	7,363.81	59.39	339.92	-110.55	-639.31	-536.32	5,589.40	5,530.25	59.15	94.493		
12,100.00	7,146.69	21,289.96	7,363.81	60.53	339.92	-110.55	-639.31	-536.32	5,688.36	5,629.74	58.62	97.040		
12,200.00	7,146.63	21,289.96	7,363.81	61.67	339.92	-110.55	-639.31	-536.32	5,787.36	5,729.24	58.11	99.587		
12,300.00	7,146.58	21,289.96	7,363.81	62.82	339.92	-110.55	-639.31	-536.32	5,886.38	5,828.75	57.64	102.132		
12,400.00	7,146.52	21,289.96	7,363.81	63.97	339.92	-110.55	-639.31	-536.32	5,985.44	5,928.26	57.18	104.673		
12,500.00	7,146.46	21,289.96	7,363.81	65.12	339.92	-110.55	-639.31	-536.32	6,084.54	6,027.78	56.75	107.210		
12,600.00	7,146.41	21,289.96	7,363.81	66.27	339.92	-110.55	-639.31	-536.32	6,183.66	6,127.31	56.35	109.742		
12,700.00	7,146.35	21,289.96	7,363.81	67.42	339.92	-110.55	-639.31	-536.32	6,282.80	6,226.84	55.96	112.267		
12,800.00	7,146.29	21,289.96	7,363.81	68.58	339.92	-110.55	-639.31	-536.32	6,381.98	6,326.38	55.60	114.785		
12,900.00	7,146.24	21,289.96	7,363.81	69.73	339.92	-110.55	-639.31	-536.32	6,481.18	6,425.92	55.26	117.295		
13,000.00	7,146.18	21,289.96	7,363.81	70.89	339.92	-110.55	-639.31	-536.32	6,580.40	6,525.47	54.93	119.796		
13,100.00	7,146.13	21,289.96	7,363.81	72.05	339.92	-110.55	-639.31	-536.32	6,679.65	6,625.03	54.62	122.287		
13,200.00	7,146.07	21,289.96	7,363.81	73.21	339.92	-110.55	-639.31	-536.32	6,778.92	6,724.59	54.33	124.767		
13,300.00	7,146.01	21,289.96	7,363.81	74.37	339.92	-110.55	-639.31	-536.32	6,878.21	6,824.15	54.06	127.236		
13,400.00	7,145.96	21,289.96	7,363.81	75.53	339.92	-110.55	-639.31	-536.32	6,977.52	6,923.72	53.80	129.693		
13,500.00	7,145.90	21,289.96	7,363.81	76.70	339.92	-110.55	-639.31	-536.32	7,076.86	7,023.30	53.56	132.138		
13,600.00	7,145.84	21,289.96	7,363.81	77.86	339.92	-110.55	-639.31	-536.32	7,176.20	7,122.88	53.33	134.569		
13,700.00	7,145.79	21,289.96	7,363.81	79.03	339.92	-110.55	-639.31	-536.32	7,275.57	7,222.46	53.11	136.987		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		409-B001Mb_MWD+HRGM, 21290-Project <th colspan="2">Rule Assigned:</th> <th colspan="4"></th> <th>Offset Well Error:</th> <td>0.00 usft</td>					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis	Offset Wellbore Centre		Distance				Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
13,800.00	7,145.73	21,289.96	7,363.81	80.20	339.92	-110.55	-639.31	-536.32	7,374.96	7,322.05	52.91	139.391		
13,900.00	7,145.67	21,289.96	7,363.81	81.37	339.92	-110.55	-639.31	-536.32	7,474.36	7,421.64	52.72	141.780		
14,000.00	7,145.62	21,289.96	7,363.81	82.54	339.92	-110.55	-639.31	-536.32	7,573.77	7,521.23	52.54	144.154		
14,100.00	7,145.56	21,289.96	7,363.81	83.71	339.92	-110.55	-639.31	-536.32	7,673.20	7,620.83	52.37	146.513		
14,200.00	7,145.50	21,289.96	7,363.81	84.88	339.92	-110.55	-639.31	-536.32	7,772.65	7,720.44	52.22	148.856		
14,300.00	7,145.45	21,289.96	7,363.81	86.06	339.92	-110.55	-639.31	-536.32	7,872.11	7,820.04	52.07	151.183		
14,400.00	7,145.39	21,289.96	7,363.81	87.23	339.92	-110.55	-639.31	-536.32	7,971.58	7,919.65	51.93	153.494		
14,500.00	7,145.33	21,289.96	7,363.81	88.41	339.92	-110.55	-639.31	-536.32	8,071.07	8,019.26	51.81	155.788		
14,600.00	7,145.28	21,289.96	7,363.81	89.59	339.92	-110.55	-639.31	-536.32	8,170.57	8,118.88	51.69	158.066		
14,700.00	7,145.22	21,289.96	7,363.81	90.77	339.92	-110.55	-639.31	-536.32	8,270.08	8,218.50	51.58	160.326		
14,800.00	7,145.17	21,289.96	7,363.81	91.95	339.92	-110.55	-639.31	-536.32	8,369.60	8,318.12	51.48	162.570		
14,900.00	7,145.11	21,289.96	7,363.81	93.13	339.92	-110.55	-639.31	-536.32	8,469.14	8,417.75	51.39	164.796		
15,000.00	7,145.05	21,289.96	7,363.81	94.31	339.92	-110.55	-639.31	-536.32	8,568.68	8,517.38	51.31	167.004		
15,100.00	7,145.00	21,289.96	7,363.81	95.49	339.92	-110.55	-639.31	-536.32	8,668.24	8,617.01	51.23	169.195		
15,200.00	7,144.94	21,289.96	7,363.81	96.68	339.92	-110.55	-639.31	-536.32	8,767.81	8,716.64	51.16	171.369		
15,300.00	7,144.88	21,289.96	7,363.81	97.86	339.92	-110.55	-639.31	-536.32	8,867.38	8,816.28	51.10	173.524		
15,400.00	7,144.83	21,289.96	7,363.81	99.05	339.92	-110.55	-639.31	-536.32	8,966.97	8,915.92	51.05	175.662		
15,500.00	7,144.77	21,289.96	7,363.81	100.24	339.92	-110.55	-639.31	-536.32	9,066.56	9,015.56	51.00	177.783		
15,600.00	7,144.71	21,289.96	7,363.81	101.42	339.92	-110.55	-639.31	-536.32	9,166.16	9,115.21	50.96	179.885		
15,700.00	7,144.66	21,289.96	7,363.81	102.61	339.92	-110.55	-639.31	-536.32	9,265.77	9,214.85	50.92	181.970		
15,800.00	7,144.60	21,289.96	7,363.81	103.80	339.92	-110.55	-639.31	-536.32	9,365.39	9,314.50	50.89	184.037		
15,900.00	7,144.54	21,289.96	7,363.81	104.99	339.92	-110.55	-639.31	-536.32	9,465.02	9,414.16	50.86	186.086		
16,000.00	7,144.49	21,289.96	7,363.81	106.19	339.92	-110.55	-639.31	-536.32	9,564.66	9,513.81	50.84	188.118		
16,100.00	7,144.43	21,289.96	7,363.81	107.38	339.92	-110.55	-639.31	-536.32	9,664.30	9,613.47	50.83	190.132		
16,200.00	7,144.37	21,289.96	7,363.81	108.57	339.92	-110.55	-639.31	-536.32	9,763.95	9,713.13	50.82	192.128		
16,300.00	7,144.32	21,289.96	7,363.81	109.77	339.92	-110.55	-639.31	-536.32	9,863.61	9,812.79	50.82	194.107		
16,400.00	7,144.26	21,289.96	7,363.81	110.96	339.92	-110.55	-639.31	-536.32	9,963.27	9,912.46	50.82	196.068		
16,500.00	7,144.21	21,289.96	7,363.81	112.16	339.92	-110.55	-639.31	-536.32	10,062.94	10,012.12	50.82	198.013		
16,600.00	7,144.15	21,289.96	7,363.81	113.36	339.92	-110.55	-639.31	-536.32	10,162.62	10,111.79	50.83	199.940		
16,700.00	7,144.09	21,289.96	7,363.81	114.56	339.92	-110.55	-639.31	-536.32	10,262.30	10,211.46	50.84	201.849		
16,800.00	7,144.04	21,289.96	7,363.81	115.76	339.92	-110.55	-639.31	-536.32	10,361.99	10,311.13	50.86	203.742		
16,862.86	7,144.00	21,289.96	7,363.81	116.51	339.92	-110.55	-639.31	-536.32	10,424.66	10,373.79	50.87	204.923		
16,866.76	7,144.00	21,289.96	7,363.81	116.56	339.92	-110.73	-639.31	-536.32	10,428.54	10,377.67	50.87	204.996		
16,900.00	7,143.98	21,289.96	7,363.81	116.96	339.92	-110.73	-639.31	-536.32	10,461.69	10,410.81	50.88	205.617		
17,000.00	7,143.92	21,289.96	7,363.81	118.16	339.92	-110.73	-639.31	-536.32	10,561.40	10,510.49	50.91	207.472		
17,100.00	7,143.87	21,289.96	7,363.81	119.36	339.92	-110.73	-639.31	-536.32	10,661.11	10,610.17	50.93	209.310		
17,200.00	7,143.81	21,289.96	7,363.81	120.56	339.92	-110.73	-639.31	-536.32	10,760.83	10,709.86	50.97	211.132		
17,300.00	7,143.75	21,289.96	7,363.81	121.77	339.92	-110.73	-639.31	-536.32	10,860.55	10,809.54	51.00	212.938		
17,400.00	7,143.69	21,289.96	7,363.81	122.97	339.92	-110.73	-639.31	-536.32	10,960.28	10,909.23	51.04	214.727		
17,500.00	7,143.64	21,289.96	7,363.81	124.18	339.92	-110.73	-639.31	-536.32	11,060.01	11,008.92	51.09	216.501		
17,600.00	7,143.58	21,289.96	7,363.81	125.39	339.92	-110.73	-639.31	-536.32	11,159.75	11,108.61	51.13	218.258		
17,700.00	7,143.52	21,289.96	7,363.81	126.59	339.92	-110.73	-639.31	-536.32	11,259.49	11,208.31	51.18	220.000		
17,800.00	7,143.47	21,289.96	7,363.81	127.80	339.92	-110.73	-639.31	-536.32	11,359.23	11,308.00	51.23	221.727		
17,900.00	7,143.41	21,289.96	7,363.81	129.01	339.92	-110.73	-639.31	-536.32	11,458.98	11,407.70	51.28	223.438		
18,000.00	7,143.35	21,289.96	7,363.81	130.22	339.92	-110.73	-639.31	-536.32	11,558.74	11,507.40	51.34	225.134		
18,100.00	7,143.30	21,289.96	7,363.81	131.43	339.92	-110.73	-639.31	-536.32	11,658.50	11,607.10	51.40	226.815		
18,200.00	7,143.24	21,289.96	7,363.81	132.64	339.92	-110.73	-639.31	-536.32	11,758.26	11,706.80	51.46	228.481		
18,300.00	7,143.18	21,289.96	7,363.81	133.86	339.92	-110.73	-639.31	-536.32	11,858.03	11,806.50	51.53	230.132		
18,400.00	7,143.13	21,289.96	7,363.81	135.07	339.92	-110.73	-639.31	-536.32	11,957.80	11,906.21	51.59	231.769		
18,500.00	7,143.07	21,289.96	7,363.81	136.28	339.92	-110.73	-639.31	-536.32	12,057.58	12,005.91	51.66	233.391		
18,600.00	7,143.01	21,289.96	7,363.81	137.50	339.92	-110.73	-639.31	-536.32	12,157.35	12,105.62	51.73	234.999		
18,700.00	7,142.96	21,289.96	7,363.81	138.72	339.92	-110.73	-639.31	-536.32	12,257.14	12,205.33	51.81	236.593		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		409-B001Mb_MWD+HRGM, 21290-Project						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
18,800.00	7,142.90	21,289.96	7,363.81	139.93	339.92	-110.73	-639.31	-536.32	12,356.92	12,305.04	51.88	238.173		
18,900.00	7,142.84	21,289.96	7,363.81	141.15	339.92	-110.73	-639.31	-536.32	12,456.71	12,404.75	51.96	239.739		
19,000.00	7,142.78	21,289.96	7,363.81	142.37	339.92	-110.73	-639.31	-536.32	12,556.50	12,504.47	52.04	241.291		
19,100.00	7,142.73	21,289.96	7,363.81	143.59	339.92	-110.73	-639.31	-536.32	12,656.30	12,604.18	52.12	242.830		
19,200.00	7,142.67	21,289.96	7,363.81	144.81	339.92	-110.73	-639.31	-536.32	12,756.10	12,703.90	52.20	244.355		
19,300.00	7,142.61	21,289.96	7,363.81	146.03	339.92	-110.73	-639.31	-536.32	12,855.90	12,803.61	52.29	245.868		
19,400.00	7,142.56	21,289.96	7,363.81	147.25	339.92	-110.73	-639.31	-536.32	12,955.71	12,903.33	52.37	247.367		
19,500.00	7,142.50	21,289.96	7,363.81	148.47	339.92	-110.73	-639.31	-536.32	13,055.51	13,003.05	52.46	248.854		
19,600.00	7,142.44	21,289.96	7,363.81	149.70	339.92	-110.73	-639.31	-536.32	13,155.33	13,102.77	52.55	250.328		
19,700.00	7,142.39	21,289.96	7,363.81	150.92	339.92	-110.73	-639.31	-536.32	13,255.14	13,202.50	52.64	251.789		
19,800.00	7,142.33	21,289.96	7,363.81	152.15	339.92	-110.73	-639.31	-536.32	13,354.96	13,302.22	52.74	253.238		
19,900.00	7,142.27	21,289.96	7,363.81	153.37	339.92	-110.73	-639.31	-536.32	13,454.78	13,401.94	52.83	254.674		
20,000.00	7,142.22	21,289.96	7,363.81	154.60	339.92	-110.73	-639.31	-536.32	13,554.60	13,501.67	52.93	256.099		
20,100.00	7,142.16	21,289.96	7,363.81	155.83	339.92	-110.73	-639.31	-536.32	13,654.42	13,601.40	53.02	257.511		
20,200.00	7,142.10	21,289.96	7,363.81	157.06	339.92	-110.73	-639.31	-536.32	13,754.25	13,701.13	53.12	258.912		
20,300.00	7,142.04	21,289.96	7,363.81	158.28	339.92	-110.73	-639.31	-536.32	13,854.08	13,800.86	53.22	260.301		
20,400.00	7,141.99	21,289.96	7,363.81	159.51	339.92	-110.73	-639.31	-536.32	13,953.91	13,900.59	53.32	261.678		
20,500.00	7,141.93	21,289.96	7,363.81	160.74	339.92	-110.73	-639.31	-536.32	14,053.75	14,000.32	53.43	263.044		
20,600.00	7,141.87	21,289.96	7,363.81	161.98	339.92	-110.73	-639.31	-536.32	14,153.58	14,100.05	53.53	264.399		
20,700.00	7,141.82	21,289.96	7,363.81	163.21	339.92	-110.73	-639.31	-536.32	14,253.42	14,199.79	53.64	265.743		
20,800.00	7,141.76	21,289.96	7,363.81	164.44	339.92	-110.73	-639.31	-536.32	14,353.26	14,299.52	53.74	267.076		
20,900.00	7,141.70	21,289.96	7,363.81	165.68	339.92	-110.73	-639.31	-536.32	14,453.11	14,399.26	53.85	268.398		
21,000.00	7,141.65	21,289.96	7,363.81	166.91	339.92	-110.73	-639.31	-536.32	14,552.95	14,499.00	53.96	269.709		
21,100.00	7,141.59	21,289.96	7,363.81	168.15	339.92	-110.73	-639.31	-536.32	14,652.80	14,598.73	54.07	271.009		
21,200.00	7,141.53	21,289.96	7,363.81	169.38	339.92	-110.73	-639.31	-536.32	14,752.65	14,698.47	54.18	272.300		
21,300.00	7,141.48	21,289.96	7,363.81	170.62	339.92	-110.73	-639.31	-536.32	14,852.50	14,798.21	54.29	273.579		
21,400.00	7,141.42	21,289.96	7,363.81	171.86	339.92	-110.73	-639.31	-536.32	14,952.36	14,897.96	54.40	274.849		
21,500.00	7,141.36	21,289.96	7,363.81	173.10	339.92	-110.73	-639.31	-536.32	15,052.21	14,997.70	54.52	276.109		
21,600.00	7,141.31	21,289.96	7,363.81	174.34	339.92	-110.73	-639.31	-536.32	15,152.07	15,097.44	54.63	277.358		
21,700.00	7,141.25	21,289.96	7,363.81	175.58	339.92	-110.73	-639.31	-536.32	15,251.93	15,197.19	54.75	278.598		
21,800.00	7,141.19	21,289.96	7,363.81	176.82	339.92	-110.73	-639.31	-536.32	15,351.79	15,296.93	54.86	279.828		
21,900.00	7,141.13	21,289.96	7,363.81	178.06	339.92	-110.73	-639.31	-536.32	15,451.66	15,396.68	54.98	281.049		
22,000.00	7,141.08	21,289.96	7,363.81	179.30	339.92	-110.73	-639.31	-536.32	15,551.52	15,496.42	55.10	282.260		
22,100.00	7,141.02	21,289.96	7,363.81	180.55	339.92	-110.73	-639.31	-536.32	15,651.39	15,596.17	55.22	283.462		
22,136.53	7,141.00	21,289.96	7,363.81	181.00	339.92	-110.73	-639.31	-536.32	15,687.87	15,632.61	55.26	283.898		
22,137.77	7,141.00	21,289.96	7,363.81	181.02	339.92	-110.64	-639.31	-536.32	15,689.10	15,633.84	55.26	283.913		
22,200.00	7,140.96	21,289.96	7,363.81	181.79	339.92	-110.64	-639.31	-536.32	15,751.26	15,695.92	55.33	284.655		
22,300.00	7,140.91	21,289.96	7,363.81	183.04	339.92	-110.64	-639.31	-536.32	15,851.13	15,795.67	55.45	285.839		
22,400.00	7,140.85	21,289.96	7,363.81	184.28	339.92	-110.64	-639.31	-536.32	15,951.00	15,895.42	55.58	287.013		
22,500.00	7,140.79	21,289.96	7,363.81	185.53	339.92	-110.64	-639.31	-536.32	16,050.87	15,995.17	55.70	288.180		
22,600.00	7,140.73	21,289.96	7,363.81	186.78	339.92	-110.64	-639.31	-536.32	16,150.74	16,094.92	55.82	289.337		
22,700.00	7,140.68	21,289.96	7,363.81	188.02	339.92	-110.64	-639.31	-536.32	16,250.62	16,194.67	55.94	290.485		
22,800.00	7,140.62	21,289.96	7,363.81	189.27	339.92	-110.64	-639.31	-536.32	16,350.49	16,294.43	56.07	291.625		
22,900.00	7,140.56	21,289.96	7,363.81	190.52	339.92	-110.64	-639.31	-536.32	16,450.37	16,394.18	56.19	292.757		
23,000.00	7,140.50	21,289.96	7,363.81	191.77	339.92	-110.64	-639.31	-536.32	16,550.25	16,493.94	56.32	293.880		
23,100.00	7,140.45	21,289.96	7,363.81	193.02	339.92	-110.64	-639.31	-536.32	16,650.13	16,593.69	56.44	294.994		
23,200.00	7,140.39	21,289.96	7,363.81	194.28	339.92	-110.64	-639.31	-536.32	16,750.02	16,693.45	56.57	296.101		
23,300.00	7,140.33	21,289.96	7,363.81	195.53	339.92	-110.64	-639.31	-536.32	16,849.90	16,793.21	56.70	297.199		
23,400.00	7,140.27	21,289.96	7,363.81	196.78	339.92	-110.64	-639.31	-536.32	16,949.79	16,892.96	56.82	298.289		
23,500.00	7,140.22	21,289.96	7,363.81	198.04	339.92	-110.64	-639.31	-536.32	17,049.67	16,992.72	56.95	299.372		
23,600.00	7,140.16	21,289.96	7,363.81	199.29	339.92	-110.64	-639.31	-536.32	17,149.56	17,092.48	57.08	300.447		
23,700.00	7,140.10	21,289.96	7,363.81	200.55	339.92	-110.64	-639.31	-536.32	17,249.45	17,192.24	57.21	301.513		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #745H - OH - OH													Offset Site Error:	0.00 usft	
Survey Program: 409-B001Mb_MWD+HRGM, 21290-Project							Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor			
23,800.00	7,140.04	21,289.96	7,363.81	201.81	339.92	-110.64	-639.31	-536.32	17,349.34	17,292.00	57.34	302.573			
23,900.00	7,139.99	21,289.96	7,363.81	203.06	339.92	-110.64	-639.31	-536.32	17,449.23	17,391.77	57.47	303.624			
24,000.00	7,139.93	21,289.96	7,363.81	204.32	339.92	-110.64	-639.31	-536.32	17,549.13	17,491.53	57.60	304.669			
24,100.00	7,139.87	21,289.96	7,363.81	205.58	339.92	-110.64	-639.31	-536.32	17,649.02	17,591.29	57.73	305.705			
24,200.00	7,139.81	21,289.96	7,363.81	206.84	339.92	-110.64	-639.31	-536.32	17,748.92	17,691.05	57.86	306.735			
24,300.00	7,139.76	21,289.96	7,363.81	208.10	339.92	-110.64	-639.31	-536.32	17,848.82	17,790.82	58.00	307.757			
24,400.00	7,139.70	21,289.96	7,363.81	209.36	339.92	-110.64	-639.31	-536.32	17,948.71	17,890.58	58.13	308.773			
24,500.00	7,139.64	21,289.96	7,363.81	210.62	339.92	-110.64	-639.31	-536.32	18,048.61	17,990.35	58.26	309.781			
24,600.00	7,139.58	21,289.96	7,363.81	211.89	339.92	-110.64	-639.31	-536.32	18,148.51	18,090.12	58.40	310.782			
24,700.00	7,139.53	21,289.96	7,363.81	213.15	339.92	-110.64	-639.31	-536.32	18,248.41	18,189.88	58.53	311.776			
24,800.00	7,139.47	21,289.96	7,363.81	214.42	339.92	-110.64	-639.31	-536.32	18,348.32	18,289.65	58.67	312.764			
24,900.00	7,139.41	21,289.96	7,363.81	215.68	339.92	-110.64	-639.31	-536.32	18,448.22	18,389.42	58.80	313.745			
25,000.00	7,139.35	21,289.96	7,363.81	216.95	339.92	-110.64	-639.31	-536.32	18,548.12	18,489.19	58.94	314.719			
25,100.00	7,139.30	21,289.96	7,363.81	218.21	339.92	-110.64	-639.31	-536.32	18,648.03	18,588.96	59.07	315.686			
25,200.00	7,139.24	21,289.96	7,363.81	219.48	339.92	-110.64	-639.31	-536.32	18,747.94	18,688.73	59.21	316.647			
25,300.00	7,139.18	21,289.96	7,363.81	220.75	339.92	-110.64	-639.31	-536.32	18,847.84	18,788.50	59.34	317.602			
25,400.00	7,139.13	21,289.96	7,363.81	222.02	339.92	-110.64	-639.31	-536.32	18,947.75	18,888.27	59.48	318.550			
25,500.00	7,139.07	21,289.96	7,363.81	223.29	339.92	-110.64	-639.31	-536.32	19,047.66	18,988.04	59.62	319.492			
25,600.00	7,139.01	21,289.96	7,363.81	224.56	339.92	-110.64	-639.31	-536.32	19,147.57	19,087.82	59.76	320.428			
25,700.00	7,138.95	21,289.96	7,363.81	225.83	339.92	-110.64	-639.31	-536.32	19,247.48	19,187.59	59.89	321.357			
25,800.00	7,138.90	21,289.96	7,363.81	227.10	339.92	-110.64	-639.31	-536.32	19,347.40	19,287.36	60.03	322.281			
25,900.00	7,138.84	21,289.96	7,363.81	228.38	339.92	-110.64	-639.31	-536.32	19,447.31	19,387.14	60.17	323.198			
26,000.00	7,138.78	21,289.96	7,363.81	229.65	339.92	-110.64	-639.31	-536.32	19,547.22	19,486.91	60.31	324.110			
26,100.00	7,138.72	21,289.96	7,363.81	230.93	339.92	-110.64	-639.31	-536.32	19,647.14	19,586.69	60.45	325.015			
26,200.00	7,138.67	21,289.96	7,363.81	232.20	339.92	-110.64	-639.31	-536.32	19,747.05	19,686.46	60.59	325.915			
26,300.00	7,138.61	21,289.96	7,363.81	233.48	339.92	-110.64	-639.31	-536.32	19,846.97	19,786.24	60.73	326.809			
26,400.00	7,138.55	21,289.96	7,363.81	234.75	339.92	-110.64	-639.31	-536.32	19,946.89	19,886.02	60.87	327.698			
26,500.00	7,138.49	21,289.96	7,363.81	236.03	339.92	-110.64	-639.31	-536.32	20,046.81	19,985.80	61.01	328.580			
26,600.00	7,138.44	21,289.96	7,363.81	237.31	339.92	-110.64	-639.31	-536.32	20,146.73	20,085.57	61.15	329.457			
26,700.00	7,138.38	21,289.96	7,363.81	238.59	339.92	-110.64	-639.31	-536.32	20,246.65	20,185.35	61.29	330.329			
26,800.00	7,138.32	21,289.96	7,363.81	239.87	339.92	-110.64	-639.31	-536.32	20,346.57	20,285.13	61.43	331.195			
26,900.00	7,138.26	21,289.96	7,363.81	241.15	339.92	-110.64	-639.31	-536.32	20,446.49	20,384.91	61.58	332.055			
27,000.00	7,138.21	21,289.96	7,363.81	242.43	339.92	-110.64	-639.31	-536.32	20,546.41	20,484.69	61.72	332.911			
27,100.00	7,138.15	21,289.96	7,363.81	243.71	339.92	-110.64	-639.31	-536.32	20,646.33	20,584.47	61.86	333.761			
27,157.78	7,138.12	21,289.96	7,363.81	244.46	339.92	-110.64	-639.31	-536.32	20,704.07	20,642.13	61.94	334.249			
27,200.00	7,138.09	21,289.96	7,363.81	245.00	339.92	-110.64	-639.31	-536.32	20,746.26	20,684.25	62.00	334.605			
27,300.00	7,138.03	21,289.96	7,363.81	246.28	339.92	-110.64	-639.31	-536.32	20,846.18	20,784.04	62.14	335.445			
27,357.78	7,138.00	21,289.96	7,363.81	247.02	339.92	-110.64	-639.31	-536.32	20,903.91	20,841.69	62.23	335.928			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error: 0.00 usft	
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND							Rule Assigned:						Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)				
0.00	0.00	20,952.96	7,074.90	0.00	233.58	-161.69	-1,607.04	-531.72	7,343.67					
125.00	125.00	20,952.96	7,074.90	0.05	233.58	-165.80	-1,607.04	-531.72	7,222.22	7,100.90	121.32	59.530		
225.00	224.99	20,952.96	7,074.90	0.19	233.58	-165.11	-1,607.04	-531.72	7,125.25	7,003.56	121.69	58.554		
290.00	289.99	20,952.96	7,074.90	0.28	233.58	-179.14	-1,607.04	-531.72	7,062.25	6,940.32	121.93	57.920		
300.00	299.99	20,952.96	7,074.90	0.29	233.58	-179.14	-1,607.04	-531.72	7,052.56	6,930.59	121.97	57.823		
400.00	399.99	20,952.96	7,074.90	0.42	233.58	-179.14	-1,607.04	-531.72	6,955.70	6,833.35	122.35	56.850		
440.00	439.99	20,952.96	7,074.90	0.47	233.58	-179.14	-1,607.04	-531.72	6,916.98	6,794.48	122.51	56.462		
500.00	499.99	20,952.96	7,074.90	0.50	233.58	28.23	-1,607.04	-531.72	6,858.79	6,736.05	122.74	55.883		
600.00	599.93	20,952.96	7,074.90	0.47	233.58	25.78	-1,607.04	-531.72	6,761.25	6,638.16	123.09	54.930		
700.00	699.70	20,952.96	7,074.90	0.48	233.58	29.20	-1,607.04	-531.72	6,663.11	6,539.70	123.41	53.991		
800.00	799.18	20,952.96	7,074.90	0.52	233.58	34.94	-1,607.04	-531.72	6,564.47	6,440.77	123.70	53.068		
900.00	898.24	20,952.96	7,074.90	0.60	233.58	43.61	-1,607.04	-531.72	6,465.44	6,341.48	123.95	52.161		
1,000.00	996.77	20,952.96	7,074.90	0.69	233.58	56.57	-1,607.04	-531.72	6,366.10	6,241.93	124.17	51.271		
1,074.04	1,069.30	20,952.96	7,074.90	0.77	233.58	69.66	-1,607.04	-531.72	6,292.43	6,168.13	124.30	50.624		
1,100.00	1,094.67	20,952.96	7,074.90	0.79	233.58	69.66	-1,607.04	-531.72	6,266.58	6,142.24	124.34	50.399		
1,200.00	1,192.37	20,952.96	7,074.90	0.91	233.58	69.66	-1,607.04	-531.72	6,167.03	6,042.53	124.50	49.534		
1,300.00	1,290.07	20,952.96	7,074.90	1.02	233.58	69.66	-1,607.04	-531.72	6,067.50	5,942.84	124.67	48.670		
1,400.00	1,387.77	20,952.96	7,074.90	1.15	233.58	69.66	-1,607.04	-531.72	5,967.99	5,843.15	124.83	47.808		
1,500.00	1,485.47	20,952.96	7,074.90	1.27	233.58	69.66	-1,607.04	-531.72	5,868.49	5,743.49	125.00	46.947		
1,600.00	1,583.17	20,952.96	7,074.90	1.40	233.58	69.66	-1,607.04	-531.72	5,769.01	5,643.83	125.18	46.087		
1,700.00	1,680.87	20,952.96	7,074.90	1.53	233.58	69.66	-1,607.04	-531.72	5,669.55	5,544.20	125.35	45.230		
1,800.00	1,778.57	20,952.96	7,074.90	1.67	233.58	69.66	-1,607.04	-531.72	5,570.10	5,444.57	125.53	44.373		
1,900.00	1,876.27	20,952.96	7,074.90	1.81	233.58	69.66	-1,607.04	-531.72	5,470.68	5,344.97	125.71	43.519		
2,000.00	1,973.98	20,952.96	7,074.90	1.95	233.58	69.66	-1,607.04	-531.72	5,371.28	5,245.38	125.89	42.666		
2,100.00	2,071.68	20,952.96	7,074.90	2.09	233.58	69.66	-1,607.04	-531.72	5,271.90	5,145.82	126.08	41.814		
2,200.00	2,169.38	20,952.96	7,074.90	2.24	233.58	69.66	-1,607.04	-531.72	5,172.54	5,046.27	126.27	40.964		
2,300.00	2,267.08	20,952.96	7,074.90	2.39	233.58	69.66	-1,607.04	-531.72	5,073.21	4,946.75	126.46	40.116		
2,400.00	2,364.78	20,952.96	7,074.90	2.55	233.58	69.66	-1,607.04	-531.72	4,973.91	4,847.25	126.66	39.269		
2,500.00	2,462.48	20,952.96	7,074.90	2.70	233.58	69.66	-1,607.04	-531.72	4,874.63	4,747.77	126.86	38.424		
2,600.00	2,560.18	20,952.96	7,074.90	2.86	233.58	69.66	-1,607.04	-531.72	4,775.39	4,648.32	127.07	37.581		
2,700.00	2,657.88	20,952.96	7,074.90	3.02	233.58	69.66	-1,607.04	-531.72	4,676.18	4,548.90	127.28	36.739		
2,800.00	2,755.58	20,952.96	7,074.90	3.19	233.58	69.66	-1,607.04	-531.72	4,577.00	4,449.51	127.49	35.900		
2,900.00	2,853.28	20,952.96	7,074.90	3.35	233.58	69.66	-1,607.04	-531.72	4,477.86	4,350.14	127.71	35.062		
3,000.00	2,950.99	20,952.96	7,074.90	3.52	233.58	69.66	-1,607.04	-531.72	4,378.76	4,250.82	127.94	34.225		
3,100.00	3,048.69	20,952.96	7,074.90	3.69	233.58	69.66	-1,607.04	-531.72	4,279.70	4,151.53	128.17	33.391		
3,200.00	3,146.39	20,952.96	7,074.90	3.87	233.58	69.66	-1,607.04	-531.72	4,180.68	4,052.28	128.40	32.559		
3,300.00	3,244.09	20,952.96	7,074.90	4.04	233.58	69.66	-1,607.04	-531.72	4,081.71	3,953.07	128.64	31.729		
3,400.00	3,341.79	20,952.96	7,074.90	4.22	233.58	69.66	-1,607.04	-531.72	3,982.80	3,853.90	128.89	30.900		
3,500.00	3,439.49	20,952.96	7,074.90	4.40	233.58	69.66	-1,607.04	-531.72	3,883.94	3,754.79	129.14	30.074		
3,600.00	3,537.19	20,952.96	7,074.90	4.58	233.58	69.66	-1,607.04	-531.72	3,785.13	3,655.73	129.40	29.250		
3,700.00	3,634.89	20,952.96	7,074.90	4.77	233.58	69.66	-1,607.04	-531.72	3,686.40	3,556.73	129.67	28.429		
3,800.00	3,732.59	20,952.96	7,074.90	4.95	233.58	69.66	-1,607.04	-531.72	3,587.73	3,457.79	129.95	27.609		
3,900.00	3,830.29	20,952.96	7,074.90	5.14	233.58	69.66	-1,607.04	-531.72	3,489.14	3,358.91	130.23	26.793		
4,000.00	3,928.00	20,952.96	7,074.90	5.33	233.58	69.66	-1,607.04	-531.72	3,390.63	3,260.12	130.52	25.978		
4,100.00	4,025.70	20,952.96	7,074.90	5.53	233.58	69.66	-1,607.04	-531.72	3,292.22	3,161.40	130.82	25.166		
4,200.00	4,123.40	20,952.96	7,074.90	5.72	233.58	69.66	-1,607.04	-531.72	3,193.90	3,062.77	131.13	24.357		
4,300.00	4,221.10	20,952.96	7,074.90	5.92	233.58	69.66	-1,607.04	-531.72	3,095.69	2,964.24	131.44	23.551		
4,400.00	4,318.80	20,952.96	7,074.90	6.12	233.58	69.66	-1,607.04	-531.72	2,997.59	2,865.82	131.77	22.748		
4,500.00	4,416.50	20,952.96	7,074.90	6.32	233.58	69.66	-1,607.04	-531.72	2,899.63	2,767.52	132.11	21.948		
4,600.00	4,514.20	20,952.96	7,074.90	6.52	233.58	69.66	-1,607.04	-531.72	2,801.81	2,669.35	132.46	21.151		
4,700.00	4,611.90	20,952.96	7,074.90	6.73	233.58	69.66	-1,607.04	-531.72	2,704.15	2,571.32	132.83	20.358		
4,800.00	4,709.60	20,952.96	7,074.90	6.94	233.58	69.66	-1,607.04	-531.72	2,606.67	2,473.46	133.20	19.569		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
4,900.00	4,807.30	20,952.96	7,074.90	7.14	233.58	69.66	-1,607.04	-531.72	2,509.38	2,375.79	133.60	18.783	
5,000.00	4,905.00	20,952.96	7,074.90	7.36	233.58	69.66	-1,607.04	-531.72	2,412.32	2,278.32	134.00	18.002	
5,100.00	5,002.71	20,952.96	7,074.90	7.57	233.58	69.66	-1,607.04	-531.72	2,315.51	2,181.09	134.42	17.226	
5,200.00	5,100.41	20,952.96	7,074.90	7.78	233.58	69.66	-1,607.04	-531.72	2,218.98	2,084.12	134.86	16.454	
5,300.00	5,198.11	20,952.96	7,074.90	8.00	233.58	69.66	-1,607.04	-531.72	2,122.77	1,987.46	135.31	15.688	
5,400.00	5,295.81	20,952.96	7,074.90	8.22	233.58	69.66	-1,607.04	-531.72	2,026.93	1,891.15	135.78	14.928	
5,500.00	5,393.51	20,952.96	7,074.90	8.44	233.58	69.66	-1,607.04	-531.72	1,931.51	1,795.24	136.27	14.174	
5,600.00	5,491.21	20,952.96	7,074.90	8.66	233.58	69.66	-1,607.04	-531.72	1,836.58	1,699.80	136.78	13.427	
5,700.00	5,588.91	20,952.96	7,074.90	8.89	233.58	69.66	-1,607.04	-531.72	1,742.22	1,604.91	137.31	12.688	
5,800.00	5,686.61	20,952.96	7,074.90	9.11	233.58	69.66	-1,607.04	-531.72	1,648.52	1,510.67	137.85	11.959	
5,900.00	5,784.31	20,952.96	7,074.90	9.34	233.58	69.66	-1,607.04	-531.72	1,555.60	1,417.20	138.40	11.240	
6,000.00	5,882.01	20,952.96	7,074.90	9.57	233.58	69.66	-1,607.04	-531.72	1,463.62	1,324.66	138.97	10.532	
6,100.00	5,979.72	20,952.96	7,074.90	9.80	233.58	69.66	-1,607.04	-531.72	1,372.76	1,233.24	139.53	9.839	
6,200.00	6,077.42	20,952.96	7,074.90	10.04	233.58	69.66	-1,607.04	-531.72	1,283.26	1,143.19	140.07	9.162	
6,300.00	6,175.12	20,952.96	7,074.90	10.27	233.58	69.66	-1,607.04	-531.72	1,195.43	1,054.85	140.58	8.504	
6,400.00	6,272.82	20,952.96	7,074.90	10.51	233.58	69.66	-1,607.04	-531.72	1,109.66	968.65	141.01	7.869	
6,500.00	6,370.52	20,952.96	7,074.90	10.75	233.58	69.66	-1,607.04	-531.72	1,026.47	885.15	141.31	7.264	
6,600.00	6,468.22	20,952.96	7,074.90	10.99	233.58	69.66	-1,607.04	-531.72	946.53	805.13	141.41	6.694	
6,662.10	6,528.89	20,952.96	7,074.90	11.14	233.58	69.66	-1,607.04	-531.72	898.92	757.62	141.30	6.362	
6,700.00	6,565.90	20,952.96	7,074.90	11.23	233.58	86.11	-1,607.04	-531.72	871.48	730.40	141.08	6.177	
6,750.00	6,614.48	20,952.96	7,074.90	11.35	233.58	104.19	-1,607.04	-531.72	838.99	698.58	140.42	5.975	
6,800.00	6,662.53	20,952.96	7,074.90	11.47	233.58	117.28	-1,607.04	-531.72	811.36	672.12	139.24	5.827	
6,850.00	6,709.74	20,952.96	7,074.90	11.60	233.58	126.38	-1,607.04	-531.72	789.28	651.81	137.48	5.741	
6,900.00	6,755.82	20,952.96	7,074.90	11.72	233.58	132.75	-1,607.04	-531.72	773.37	638.30	135.07	5.726 SF	
6,950.00	6,800.49	20,952.96	7,074.90	11.85	233.58	137.27	-1,607.04	-531.72	764.10	632.08	132.02	5.788 ES	
6,991.43	6,836.25	20,952.96	7,074.90	11.96	233.58	140.03	-1,607.04	-531.72	761.68	632.64	129.04	5.903 CC	
7,000.00	6,843.48	20,952.96	7,074.90	11.98	233.58	140.51	-1,607.04	-531.72	761.79	633.40	128.38	5.934	
7,050.00	6,884.52	20,952.96	7,074.90	12.12	233.58	142.81	-1,607.04	-531.72	766.50	642.22	124.28	6.167	
7,100.00	6,923.35	20,952.96	7,074.90	12.27	233.58	144.39	-1,607.04	-531.72	778.09	658.20	119.89	6.490	
7,150.00	6,959.74	20,952.96	7,074.90	12.42	233.58	145.37	-1,607.04	-531.72	796.18	680.79	115.38	6.900	
7,200.00	6,993.46	20,952.96	7,074.90	12.60	233.58	145.81	-1,607.04	-531.72	820.23	709.29	110.95	7.393	
7,250.00	7,024.30	20,952.96	7,074.90	12.79	233.58	145.73	-1,607.04	-531.72	849.60	742.88	106.72	7.961	
7,300.00	7,052.08	20,952.96	7,074.90	12.99	233.58	145.10	-1,607.04	-531.72	883.59	780.79	102.81	8.595	
7,350.00	7,076.62	20,952.96	7,074.90	13.22	233.58	143.81	-1,607.04	-531.72	921.49	822.23	99.27	9.283	
7,400.00	7,097.78	20,952.96	7,074.90	13.46	233.58	141.69	-1,607.04	-531.72	962.62	866.50	96.12	10.015	
7,450.00	7,115.41	20,952.96	7,074.90	13.71	233.58	138.41	-1,607.04	-531.72	1,006.35	912.99	93.36	10.779	
7,500.00	7,129.42	20,952.96	7,074.90	13.99	233.58	133.39	-1,607.04	-531.72	1,052.09	961.13	90.96	11.566	
7,550.00	7,139.71	20,952.96	7,074.90	14.28	233.58	125.58	-1,607.04	-531.72	1,099.34	1,010.44	88.90	12.366	
7,600.00	7,146.22	20,952.96	7,074.90	14.58	233.58	113.16	-1,607.04	-531.72	1,147.63	1,060.49	87.15	13.169	
7,650.00	7,148.92	20,952.96	7,074.90	14.90	233.58	93.96	-1,607.04	-531.72	1,196.57	1,110.90	85.67	13.968	
7,660.51	7,149.00	20,952.96	7,074.90	14.97	233.58	89.03	-1,607.04	-531.72	1,206.90	1,121.52	85.39	14.135	
7,700.00	7,148.98	20,952.96	7,074.90	15.23	233.58	89.03	-1,607.04	-531.72	1,245.76	1,161.37	84.39	14.761	
7,800.00	7,148.93	20,952.96	7,074.90	15.92	233.58	89.03	-1,607.04	-531.72	1,344.34	1,262.18	82.16	16.362	
7,900.00	7,148.88	20,952.96	7,074.90	16.66	233.58	89.03	-1,607.04	-531.72	1,443.11	1,362.84	80.27	17.979	
8,000.00	7,148.82	20,952.96	7,074.90	17.44	233.58	89.03	-1,607.04	-531.72	1,542.04	1,463.40	78.64	19.608	
8,100.00	7,148.77	20,952.96	7,074.90	18.25	233.58	89.03	-1,607.04	-531.72	1,641.10	1,563.86	77.24	21.247	
8,200.00	7,148.72	20,952.96	7,074.90	19.10	233.58	89.03	-1,607.04	-531.72	1,740.26	1,664.25	76.02	22.893	
8,300.00	7,148.67	20,952.96	7,074.90	19.97	233.58	89.03	-1,607.04	-531.72	1,839.52	1,764.57	74.95	24.545	
8,400.00	7,148.62	20,952.96	7,074.90	20.86	233.58	89.03	-1,607.04	-531.72	1,938.85	1,864.85	74.00	26.200	
8,500.00	7,148.57	20,952.96	7,074.90	21.78	233.58	89.03	-1,607.04	-531.72	2,038.25	1,965.09	73.17	27.858	
8,600.00	7,148.51	20,952.96	7,074.90	22.71	233.58	89.03	-1,607.04	-531.72	2,137.71	2,065.28	72.42	29.517	
8,700.00	7,148.46	20,952.96	7,074.90	23.67	233.58	89.03	-1,607.04	-531.72	2,237.21	2,165.45	71.76	31.178	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Rule Assigned:		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
8,800.00	7,148.41	20,952.96	7,074.90	24.63	233.58	89.03	-1,607.04	-531.72	2,336.76	2,265.60	71.16	32.838	
8,900.00	7,148.36	20,952.96	7,074.90	25.62	233.58	89.03	-1,607.04	-531.72	2,436.34	2,365.72	70.62	34.498	
9,000.00	7,148.31	20,952.96	7,074.90	26.61	233.58	89.03	-1,607.04	-531.72	2,535.95	2,465.82	70.14	36.157	
9,100.00	7,148.26	20,952.96	7,074.90	27.62	233.58	89.03	-1,607.04	-531.72	2,635.60	2,565.90	69.70	37.815	
9,200.00	7,148.20	20,952.96	7,074.90	28.64	233.58	89.03	-1,607.04	-531.72	2,735.27	2,665.97	69.30	39.470	
9,300.00	7,148.15	20,952.96	7,074.90	29.66	233.58	89.03	-1,607.04	-531.72	2,834.96	2,766.03	68.94	41.124	
9,400.00	7,148.10	20,952.96	7,074.90	30.70	233.58	89.03	-1,607.04	-531.72	2,934.68	2,866.07	68.61	42.775	
9,500.00	7,148.05	20,952.96	7,074.90	31.74	233.58	89.03	-1,607.04	-531.72	3,034.41	2,966.11	68.31	44.424	
9,600.00	7,148.00	20,952.96	7,074.90	32.79	233.58	89.03	-1,607.04	-531.72	3,134.16	3,066.13	68.03	46.069	
9,700.00	7,147.94	20,952.96	7,074.90	33.85	233.58	89.03	-1,607.04	-531.72	3,233.93	3,166.15	67.78	47.712	
9,800.00	7,147.89	20,952.96	7,074.90	34.92	233.58	89.03	-1,607.04	-531.72	3,333.71	3,266.16	67.55	49.351	
9,900.00	7,147.84	20,952.96	7,074.90	35.99	233.58	89.03	-1,607.04	-531.72	3,433.50	3,366.16	67.34	50.986	
10,000.00	7,147.79	20,952.96	7,074.90	37.07	233.58	89.03	-1,607.04	-531.72	3,533.31	3,466.16	67.15	52.619	
10,100.00	7,147.74	20,952.96	7,074.90	38.15	233.58	89.03	-1,607.04	-531.72	3,633.12	3,566.15	66.97	54.247	
10,200.00	7,147.69	20,952.96	7,074.90	39.24	233.58	89.03	-1,607.04	-531.72	3,732.95	3,666.13	66.81	55.871	
10,300.00	7,147.63	20,952.96	7,074.90	40.33	233.58	89.03	-1,607.04	-531.72	3,832.78	3,766.11	66.67	57.492	
10,400.00	7,147.58	20,952.96	7,074.90	41.42	233.58	89.03	-1,607.04	-531.72	3,932.62	3,866.09	66.53	59.108	
10,500.00	7,147.53	20,952.96	7,074.90	42.52	233.58	89.03	-1,607.04	-531.72	4,032.47	3,966.06	66.41	60.720	
10,600.00	7,147.48	20,952.96	7,074.90	43.63	233.58	89.03	-1,607.04	-531.72	4,132.33	4,066.03	66.30	62.328	
10,700.00	7,147.43	20,952.96	7,074.90	44.73	233.58	89.03	-1,607.04	-531.72	4,232.19	4,166.00	66.20	63.931	
10,800.00	7,147.38	20,952.96	7,074.90	45.85	233.58	89.03	-1,607.04	-531.72	4,332.07	4,265.96	66.11	65.530	
10,900.00	7,147.32	20,952.96	7,074.90	46.96	233.58	89.03	-1,607.04	-531.72	4,431.94	4,365.92	66.03	67.125	
11,000.00	7,147.27	20,952.96	7,074.90	48.08	233.58	89.03	-1,607.04	-531.72	4,531.82	4,465.87	65.95	68.714	
11,100.00	7,147.22	20,952.96	7,074.90	49.20	233.58	89.03	-1,607.04	-531.72	4,631.71	4,565.83	65.89	70.299	
11,200.00	7,147.17	20,952.96	7,074.90	50.32	233.58	89.03	-1,607.04	-531.72	4,731.60	4,665.78	65.83	71.879	
11,300.00	7,147.12	20,952.96	7,074.90	51.44	233.58	89.03	-1,607.04	-531.72	4,831.50	4,765.72	65.78	73.454	
11,400.00	7,147.07	20,952.96	7,074.90	52.57	233.58	89.03	-1,607.04	-531.72	4,931.40	4,865.67	65.73	75.025	
11,500.00	7,147.01	20,952.96	7,074.90	53.70	233.58	89.03	-1,607.04	-531.72	5,031.30	4,965.61	65.69	76.590	
11,600.00	7,146.96	20,952.96	7,074.90	54.84	233.58	89.03	-1,607.04	-531.72	5,131.21	5,065.55	65.66	78.150	
11,700.00	7,146.91	20,952.96	7,074.90	55.97	233.58	89.03	-1,607.04	-531.72	5,231.12	5,165.49	65.63	79.705	
11,800.00	7,146.86	20,952.96	7,074.90	57.11	233.58	89.03	-1,607.04	-531.72	5,331.04	5,265.43	65.61	81.255	
11,815.51	7,146.85	20,952.96	7,074.90	57.28	233.58	89.03	-1,607.04	-531.72	5,346.54	5,280.93	65.61	81.495	
11,826.17	7,146.84	20,952.96	7,074.90	57.40	233.58	88.91	-1,607.04	-531.72	5,357.19	5,291.59	65.60	81.659	
11,900.00	7,146.80	20,952.96	7,074.90	58.25	233.58	88.91	-1,607.04	-531.72	5,430.96	5,365.37	65.59	82.796	
12,000.00	7,146.75	20,952.96	7,074.90	59.39	233.58	88.91	-1,607.04	-531.72	5,530.89	5,465.30	65.59	84.330	
12,100.00	7,146.69	20,952.96	7,074.90	60.53	233.58	88.91	-1,607.04	-531.72	5,630.82	5,565.24	65.58	85.859	
12,200.00	7,146.63	20,952.96	7,074.90	61.67	233.58	88.91	-1,607.04	-531.72	5,730.75	5,665.17	65.58	87.383	
12,300.00	7,146.58	20,952.96	7,074.90	62.82	233.58	88.91	-1,607.04	-531.72	5,830.69	5,765.10	65.59	88.902	
12,400.00	7,146.52	20,952.96	7,074.90	63.97	233.58	88.91	-1,607.04	-531.72	5,930.63	5,865.03	65.59	90.415	
12,500.00	7,146.46	20,952.96	7,074.90	65.12	233.58	88.91	-1,607.04	-531.72	6,030.57	5,964.96	65.61	91.922	
12,600.00	7,146.41	20,952.96	7,074.90	66.27	233.58	88.91	-1,607.04	-531.72	6,130.51	6,064.89	65.62	93.425	
12,700.00	7,146.35	20,952.96	7,074.90	67.42	233.58	88.91	-1,607.04	-531.72	6,230.45	6,164.81	65.64	94.921	
12,800.00	7,146.29	20,952.96	7,074.90	68.58	233.58	88.91	-1,607.04	-531.72	6,330.40	6,264.74	65.66	96.412	
12,900.00	7,146.24	20,952.96	7,074.90	69.73	233.58	88.91	-1,607.04	-531.72	6,430.34	6,364.66	65.68	97.898	
13,000.00	7,146.18	20,952.96	7,074.90	70.89	233.58	88.91	-1,607.04	-531.72	6,530.29	6,464.58	65.71	99.378	
13,100.00	7,146.13	20,952.96	7,074.90	72.05	233.58	88.91	-1,607.04	-531.72	6,630.24	6,564.50	65.74	100.853	
13,200.00	7,146.07	20,952.96	7,074.90	73.21	233.58	88.91	-1,607.04	-531.72	6,730.19	6,664.42	65.77	102.322	
13,300.00	7,146.01	20,952.96	7,074.90	74.37	233.58	88.91	-1,607.04	-531.72	6,830.15	6,764.34	65.81	103.785	
13,400.00	7,145.96	20,952.96	7,074.90	75.53	233.58	88.91	-1,607.04	-531.72	6,930.10	6,864.25	65.85	105.242	
13,500.00	7,145.90	20,952.96	7,074.90	76.70	233.58	88.91	-1,607.04	-531.72	7,030.06	6,964.17	65.89	106.694	
13,600.00	7,145.84	20,952.96	7,074.90	77.86	233.58	88.91	-1,607.04	-531.72	7,130.01	7,064.08	65.93	108.140	
13,700.00	7,145.79	20,952.96	7,074.90	79.03	233.58	88.91	-1,607.04	-531.72	7,229.97	7,163.99	65.98	109.581	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND								Rule Assigned:		Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance				Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
13,800.00	7,145.73	20,952.96	7,074.90	80.20	233.58	88.91	-1,607.04	-531.72	7,329.93	7,263.91	66.03	111.016	
13,900.00	7,145.67	20,952.96	7,074.90	81.37	233.58	88.91	-1,607.04	-531.72	7,429.89	7,363.82	66.08	112.445	
14,000.00	7,145.62	20,952.96	7,074.90	82.54	233.58	88.91	-1,607.04	-531.72	7,529.85	7,463.73	66.13	113.868	
14,100.00	7,145.56	20,952.96	7,074.90	83.71	233.58	88.91	-1,607.04	-531.72	7,629.82	7,563.63	66.18	115.286	
14,200.00	7,145.50	20,952.96	7,074.90	84.88	233.58	88.91	-1,607.04	-531.72	7,729.78	7,663.54	66.24	116.698	
14,300.00	7,145.45	20,952.96	7,074.90	86.06	233.58	88.91	-1,607.04	-531.72	7,829.74	7,763.45	66.30	118.104	
14,400.00	7,145.39	20,952.96	7,074.90	87.23	233.58	88.91	-1,607.04	-531.72	7,929.71	7,863.35	66.36	119.504	
14,500.00	7,145.33	20,952.96	7,074.90	88.41	233.58	88.91	-1,607.04	-531.72	8,029.68	7,963.26	66.42	120.899	
14,600.00	7,145.28	20,952.96	7,074.90	89.59	233.58	88.91	-1,607.04	-531.72	8,129.64	8,063.16	66.48	122.288	
14,700.00	7,145.22	20,952.96	7,074.90	90.77	233.58	88.91	-1,607.04	-531.72	8,229.61	8,163.07	66.54	123.671	
14,800.00	7,145.17	20,952.96	7,074.90	91.95	233.58	88.91	-1,607.04	-531.72	8,329.58	8,262.97	66.61	125.048	
14,900.00	7,145.11	20,952.96	7,074.90	93.13	233.58	88.91	-1,607.04	-531.72	8,429.55	8,362.87	66.68	126.420	
15,000.00	7,145.05	20,952.96	7,074.90	94.31	233.58	88.91	-1,607.04	-531.72	8,529.52	8,462.77	66.75	127.786	
15,100.00	7,145.00	20,952.96	7,074.90	95.49	233.58	88.91	-1,607.04	-531.72	8,629.49	8,562.67	66.82	129.146	
15,200.00	7,144.94	20,952.96	7,074.90	96.68	233.58	88.91	-1,607.04	-531.72	8,729.46	8,662.57	66.89	130.500	
15,300.00	7,144.88	20,952.96	7,074.90	97.86	233.58	88.91	-1,607.04	-531.72	8,829.43	8,762.47	66.97	131.849	
15,400.00	7,144.83	20,952.96	7,074.90	99.05	233.58	88.91	-1,607.04	-531.72	8,929.40	8,862.36	67.04	133.192	
15,500.00	7,144.77	20,952.96	7,074.90	100.24	233.58	88.91	-1,607.04	-531.72	9,029.38	8,962.26	67.12	134.529	
15,600.00	7,144.71	20,952.96	7,074.90	101.42	233.58	88.91	-1,607.04	-531.72	9,129.35	9,062.16	67.20	135.860	
15,700.00	7,144.66	20,952.96	7,074.90	102.61	233.58	88.91	-1,607.04	-531.72	9,229.33	9,162.05	67.28	137.186	
15,800.00	7,144.60	20,952.96	7,074.90	103.80	233.58	88.91	-1,607.04	-531.72	9,329.30	9,261.94	67.36	138.506	
15,900.00	7,144.54	20,952.96	7,074.90	104.99	233.58	88.91	-1,607.04	-531.72	9,429.28	9,361.84	67.44	139.820	
16,000.00	7,144.49	20,952.96	7,074.90	106.19	233.58	88.91	-1,607.04	-531.72	9,529.25	9,461.73	67.52	141.129	
16,100.00	7,144.43	20,952.96	7,074.90	107.38	233.58	88.91	-1,607.04	-531.72	9,629.23	9,561.62	67.61	142.432	
16,200.00	7,144.37	20,952.96	7,074.90	108.57	233.58	88.91	-1,607.04	-531.72	9,729.21	9,661.51	67.69	143.729	
16,300.00	7,144.32	20,952.96	7,074.90	109.77	233.58	88.91	-1,607.04	-531.72	9,829.18	9,761.41	67.78	145.021	
16,400.00	7,144.26	20,952.96	7,074.90	110.96	233.58	88.91	-1,607.04	-531.72	9,929.16	9,861.30	67.87	146.307	
16,500.00	7,144.21	20,952.96	7,074.90	112.16	233.58	88.91	-1,607.04	-531.72	10,029.14	9,961.19	67.95	147.588	
16,600.00	7,144.15	20,952.96	7,074.90	113.36	233.58	88.91	-1,607.04	-531.72	10,129.12	10,061.07	68.04	148.862	
16,700.00	7,144.09	20,952.96	7,074.90	114.56	233.58	88.91	-1,607.04	-531.72	10,229.10	10,160.96	68.13	150.132	
16,800.00	7,144.04	20,952.96	7,074.90	115.76	233.58	88.91	-1,607.04	-531.72	10,329.08	10,260.85	68.23	151.395	
16,862.86	7,144.00	20,952.96	7,074.90	116.51	233.58	88.91	-1,607.04	-531.72	10,391.92	10,323.64	68.28	152.187	
16,866.76	7,144.00	20,952.96	7,074.90	116.56	233.58	88.93	-1,607.04	-531.72	10,395.82	10,327.53	68.29	152.236	
16,900.00	7,143.98	20,952.96	7,074.90	116.96	233.58	88.93	-1,607.04	-531.72	10,429.06	10,360.74	68.32	152.654	
17,000.00	7,143.92	20,952.96	7,074.90	118.16	233.58	88.93	-1,607.04	-531.72	10,529.04	10,460.62	68.41	153.908	
17,100.00	7,143.87	20,952.96	7,074.90	119.36	233.58	88.93	-1,607.04	-531.72	10,629.01	10,560.51	68.50	155.157	
17,200.00	7,143.81	20,952.96	7,074.90	120.56	233.58	88.93	-1,607.04	-531.72	10,728.99	10,660.40	68.60	156.400	
17,300.00	7,143.75	20,952.96	7,074.90	121.77	233.58	88.93	-1,607.04	-531.72	10,828.97	10,760.28	68.70	157.638	
17,400.00	7,143.69	20,952.96	7,074.90	122.97	233.58	88.93	-1,607.04	-531.72	10,928.96	10,860.16	68.79	158.870	
17,500.00	7,143.64	20,952.96	7,074.90	124.18	233.58	88.93	-1,607.04	-531.72	11,028.94	10,960.05	68.89	160.097	
17,600.00	7,143.58	20,952.96	7,074.90	125.39	233.58	88.93	-1,607.04	-531.72	11,128.92	11,059.93	68.99	161.318	
17,700.00	7,143.52	20,952.96	7,074.90	126.59	233.58	88.93	-1,607.04	-531.72	11,228.90	11,159.81	69.09	162.534	
17,800.00	7,143.47	20,952.96	7,074.90	127.80	233.58	88.93	-1,607.04	-531.72	11,328.88	11,259.69	69.19	163.744	
17,900.00	7,143.41	20,952.96	7,074.90	129.01	233.58	88.93	-1,607.04	-531.72	11,428.86	11,359.58	69.29	164.950	
18,000.00	7,143.35	20,952.96	7,074.90	130.22	233.58	88.93	-1,607.04	-531.72	11,528.85	11,459.46	69.39	166.149	
18,100.00	7,143.30	20,952.96	7,074.90	131.43	233.58	88.93	-1,607.04	-531.72	11,628.83	11,559.34	69.49	167.344	
18,200.00	7,143.24	20,952.96	7,074.90	132.64	233.58	88.93	-1,607.04	-531.72	11,728.81	11,659.22	69.59	168.533	
18,300.00	7,143.18	20,952.96	7,074.90	133.86	233.58	88.93	-1,607.04	-531.72	11,828.79	11,759.10	69.70	169.717	
18,400.00	7,143.13	20,952.96	7,074.90	135.07	233.58	88.93	-1,607.04	-531.72	11,928.78	11,858.98	69.80	170.896	
18,500.00	7,143.07	20,952.96	7,074.90	136.28	233.58	88.93	-1,607.04	-531.72	12,028.76	11,958.86	69.91	172.069	
18,600.00	7,143.01	20,952.96	7,074.90	137.50	233.58	88.93	-1,607.04	-531.72	12,128.75	12,058.73	70.01	173.237	
18,700.00	7,142.96	20,952.96	7,074.90	138.72	233.58	88.93	-1,607.04	-531.72	12,228.73	12,158.61	70.12	174.400	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Rule Assigned:		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
18,800.00	7,142.90	20,952.96	7,074.90	139.93	233.58	88.93	-1,607.04	-531.72	12,328.72	12,258.49	70.23	175.558	
18,900.00	7,142.84	20,952.96	7,074.90	141.15	233.58	88.93	-1,607.04	-531.72	12,428.70	12,358.37	70.33	176.711	
19,000.00	7,142.78	20,952.96	7,074.90	142.37	233.58	88.93	-1,607.04	-531.72	12,528.69	12,458.24	70.44	177.858	
19,100.00	7,142.73	20,952.96	7,074.90	143.59	233.58	88.93	-1,607.04	-531.72	12,628.67	12,558.12	70.55	179.001	
19,200.00	7,142.67	20,952.96	7,074.90	144.81	233.58	88.93	-1,607.04	-531.72	12,728.66	12,658.00	70.66	180.138	
19,300.00	7,142.61	20,952.96	7,074.90	146.03	233.58	88.93	-1,607.04	-531.72	12,828.64	12,757.87	70.77	181.271	
19,400.00	7,142.56	20,952.96	7,074.90	147.25	233.58	88.93	-1,607.04	-531.72	12,928.63	12,857.75	70.88	182.398	
19,500.00	7,142.50	20,952.96	7,074.90	148.47	233.58	88.93	-1,607.04	-531.72	13,028.61	12,957.62	70.99	183.520	
19,600.00	7,142.44	20,952.96	7,074.90	149.70	233.58	88.93	-1,607.04	-531.72	13,128.60	13,057.50	71.10	184.637	
19,700.00	7,142.39	20,952.96	7,074.90	150.92	233.58	88.93	-1,607.04	-531.72	13,228.59	13,157.37	71.22	185.750	
19,800.00	7,142.33	20,952.96	7,074.90	152.15	233.58	88.93	-1,607.04	-531.72	13,328.58	13,257.24	71.33	186.857	
19,900.00	7,142.27	20,952.96	7,074.90	153.37	233.58	88.93	-1,607.04	-531.72	13,428.56	13,357.12	71.44	187.960	
20,000.00	7,142.22	20,952.96	7,074.90	154.60	233.58	88.93	-1,607.04	-531.72	13,528.55	13,456.99	71.56	189.057	
20,100.00	7,142.16	20,952.96	7,074.90	155.83	233.58	88.93	-1,607.04	-531.72	13,628.54	13,556.86	71.67	190.150	
20,200.00	7,142.10	20,952.96	7,074.90	157.06	233.58	88.93	-1,607.04	-531.72	13,728.52	13,656.74	71.79	191.238	
20,300.00	7,142.04	20,952.96	7,074.90	158.28	233.58	88.93	-1,607.04	-531.72	13,828.51	13,756.61	71.90	192.321	
20,400.00	7,141.99	20,952.96	7,074.90	159.51	233.58	88.93	-1,607.04	-531.72	13,928.50	13,856.48	72.02	193.400	
20,500.00	7,141.93	20,952.96	7,074.90	160.74	233.58	88.93	-1,607.04	-531.72	14,028.49	13,956.35	72.14	194.473	
20,600.00	7,141.87	20,952.96	7,074.90	161.98	233.58	88.93	-1,607.04	-531.72	14,128.48	14,056.22	72.25	195.542	
20,700.00	7,141.82	20,952.96	7,074.90	163.21	233.58	88.93	-1,607.04	-531.72	14,228.47	14,156.10	72.37	196.606	
20,800.00	7,141.76	20,952.96	7,074.90	164.44	233.58	88.93	-1,607.04	-531.72	14,328.45	14,255.97	72.49	197.666	
20,900.00	7,141.70	20,952.96	7,074.90	165.68	233.58	88.93	-1,607.04	-531.72	14,428.44	14,355.84	72.61	198.720	
21,000.00	7,141.65	20,952.96	7,074.90	166.91	233.58	88.93	-1,607.04	-531.72	14,528.43	14,455.71	72.73	199.771	
21,100.00	7,141.59	20,952.96	7,074.90	168.15	233.58	88.93	-1,607.04	-531.72	14,628.42	14,555.58	72.84	200.816	
21,200.00	7,141.53	20,952.96	7,074.90	169.38	233.58	88.93	-1,607.04	-531.72	14,728.41	14,655.45	72.96	201.857	
21,300.00	7,141.48	20,952.96	7,074.90	170.62	233.58	88.93	-1,607.04	-531.72	14,828.40	14,755.32	73.08	202.893	
21,400.00	7,141.42	20,952.96	7,074.90	171.86	233.58	88.93	-1,607.04	-531.72	14,928.39	14,855.18	73.21	203.925	
21,500.00	7,141.36	20,952.96	7,074.90	173.10	233.58	88.93	-1,607.04	-531.72	15,028.38	14,955.05	73.33	204.952	
21,600.00	7,141.31	20,952.96	7,074.90	174.34	233.58	88.93	-1,607.04	-531.72	15,128.37	15,054.92	73.45	205.975	
21,700.00	7,141.25	20,952.96	7,074.90	175.58	233.58	88.93	-1,607.04	-531.72	15,228.36	15,154.79	73.57	206.993	
21,800.00	7,141.19	20,952.96	7,074.90	176.82	233.58	88.93	-1,607.04	-531.72	15,328.35	15,254.66	73.69	208.007	
21,900.00	7,141.13	20,952.96	7,074.90	178.06	233.58	88.93	-1,607.04	-531.72	15,428.34	15,354.53	73.81	209.017	
22,000.00	7,141.08	20,952.96	7,074.90	179.30	233.58	88.93	-1,607.04	-531.72	15,528.33	15,454.39	73.94	210.022	
22,100.00	7,141.02	20,952.96	7,074.90	180.55	233.58	88.93	-1,607.04	-531.72	15,628.32	15,554.26	74.06	211.022	
22,136.53	7,141.00	20,952.96	7,074.90	181.00	233.58	88.93	-1,607.04	-531.72	15,664.85	15,590.74	74.11	211.387	
22,137.77	7,141.00	20,952.96	7,074.90	181.02	233.58	88.89	-1,607.04	-531.72	15,666.08	15,591.98	74.11	211.399	
22,200.00	7,140.96	20,952.96	7,074.90	181.79	233.58	88.89	-1,607.04	-531.72	15,728.31	15,654.13	74.18	212.018	
22,300.00	7,140.91	20,952.96	7,074.90	183.04	233.58	88.89	-1,607.04	-531.72	15,828.30	15,753.99	74.31	213.010	
22,400.00	7,140.85	20,952.96	7,074.90	184.28	233.58	88.89	-1,607.04	-531.72	15,928.29	15,853.86	74.43	213.997	
22,500.00	7,140.79	20,952.96	7,074.90	185.53	233.58	88.89	-1,607.04	-531.72	16,028.28	15,953.73	74.56	214.980	
22,600.00	7,140.73	20,952.96	7,074.90	186.78	233.58	88.89	-1,607.04	-531.72	16,128.28	16,053.59	74.68	215.959	
22,700.00	7,140.68	20,952.96	7,074.90	188.02	233.58	88.89	-1,607.04	-531.72	16,228.27	16,153.46	74.81	216.934	
22,800.00	7,140.62	20,952.96	7,074.90	189.27	233.58	88.89	-1,607.04	-531.72	16,328.26	16,253.33	74.93	217.904	
22,900.00	7,140.56	20,952.96	7,074.90	190.52	233.58	88.89	-1,607.04	-531.72	16,428.25	16,353.19	75.06	218.870	
23,000.00	7,140.50	20,952.96	7,074.90	191.77	233.58	88.89	-1,607.04	-531.72	16,528.24	16,453.06	75.19	219.832	
23,100.00	7,140.45	20,952.96	7,074.90	193.02	233.58	88.89	-1,607.04	-531.72	16,628.23	16,552.92	75.31	220.790	
23,200.00	7,140.39	20,952.96	7,074.90	194.28	233.58	88.89	-1,607.04	-531.72	16,728.23	16,652.79	75.44	221.744	
23,300.00	7,140.33	20,952.96	7,074.90	195.53	233.58	88.89	-1,607.04	-531.72	16,828.22	16,752.65	75.57	222.693	
23,400.00	7,140.27	20,952.96	7,074.90	196.78	233.58	88.89	-1,607.04	-531.72	16,928.21	16,852.52	75.69	223.639	
23,500.00	7,140.22	20,952.96	7,074.90	198.04	233.58	88.89	-1,607.04	-531.72	17,028.20	16,952.38	75.82	224.580	
23,600.00	7,140.16	20,952.96	7,074.90	199.29	233.58	88.89	-1,607.04	-531.72	17,128.19	17,052.24	75.95	225.518	
23,700.00	7,140.10	20,952.96	7,074.90	200.55	233.58	88.89	-1,607.04	-531.72	17,228.19	17,152.11	76.08	226.451	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 31 - Rosa Unit #746H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS, 450-B001Mb_MWD+HRGM, 6613-MWD+HRGM+MS, 20953-A026Ua_BLIND												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance		Rule Assigned:		Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
23,800.00	7,140.04	20,952.96	7,074.90	201.81	233.58	88.89	-1,607.04	-531.72	17,328.18	17,251.97	76.21	227.381	
23,900.00	7,139.99	20,952.96	7,074.90	203.06	233.58	88.89	-1,607.04	-531.72	17,428.17	17,351.84	76.34	228.306	
24,000.00	7,139.93	20,952.96	7,074.90	204.32	233.58	88.89	-1,607.04	-531.72	17,528.17	17,451.70	76.47	229.228	
24,100.00	7,139.87	20,952.96	7,074.90	205.58	233.58	88.89	-1,607.04	-531.72	17,628.16	17,551.56	76.60	230.145	
24,200.00	7,139.81	20,952.96	7,074.90	206.84	233.58	88.89	-1,607.04	-531.72	17,728.15	17,651.43	76.73	231.059	
24,300.00	7,139.76	20,952.96	7,074.90	208.10	233.58	88.89	-1,607.04	-531.72	17,828.14	17,751.29	76.86	231.969	
24,400.00	7,139.70	20,952.96	7,074.90	209.36	233.58	88.89	-1,607.04	-531.72	17,928.14	17,851.15	76.99	232.875	
24,500.00	7,139.64	20,952.96	7,074.90	210.62	233.58	88.89	-1,607.04	-531.72	18,028.13	17,951.01	77.12	233.777	
24,600.00	7,139.58	20,952.96	7,074.90	211.89	233.58	88.89	-1,607.04	-531.72	18,128.12	18,050.88	77.25	234.676	
24,700.00	7,139.53	20,952.96	7,074.90	213.15	233.58	88.89	-1,607.04	-531.72	18,228.12	18,150.74	77.38	235.570	
24,800.00	7,139.47	20,952.96	7,074.90	214.42	233.58	88.89	-1,607.04	-531.72	18,328.11	18,250.60	77.51	236.461	
24,900.00	7,139.41	20,952.96	7,074.90	215.68	233.58	88.89	-1,607.04	-531.72	18,428.10	18,350.46	77.64	237.348	
25,000.00	7,139.35	20,952.96	7,074.90	216.95	233.58	88.89	-1,607.04	-531.72	18,528.10	18,450.32	77.77	238.232	
25,100.00	7,139.30	20,952.96	7,074.90	218.21	233.58	88.89	-1,607.04	-531.72	18,628.09	18,550.18	77.91	239.111	
25,200.00	7,139.24	20,952.96	7,074.90	219.48	233.58	88.89	-1,607.04	-531.72	18,728.08	18,650.05	78.04	239.987	
25,300.00	7,139.18	20,952.96	7,074.90	220.75	233.58	88.89	-1,607.04	-531.72	18,828.08	18,749.91	78.17	240.860	
25,400.00	7,139.13	20,952.96	7,074.90	222.02	233.58	88.89	-1,607.04	-531.72	18,928.07	18,849.77	78.30	241.728	
25,500.00	7,139.07	20,952.96	7,074.90	223.29	233.58	88.89	-1,607.04	-531.72	19,028.06	18,949.63	78.44	242.594	
25,600.00	7,139.01	20,952.96	7,074.90	224.56	233.58	88.89	-1,607.04	-531.72	19,128.06	19,049.49	78.57	243.455	
25,700.00	7,138.95	20,952.96	7,074.90	225.83	233.58	88.89	-1,607.04	-531.72	19,228.05	19,149.35	78.70	244.313	
25,800.00	7,138.90	20,952.96	7,074.90	227.10	233.58	88.89	-1,607.04	-531.72	19,328.05	19,249.21	78.84	245.167	
25,900.00	7,138.84	20,952.96	7,074.90	228.38	233.58	88.89	-1,607.04	-531.72	19,428.04	19,349.07	78.97	246.018	
26,000.00	7,138.78	20,952.96	7,074.90	229.65	233.58	88.89	-1,607.04	-531.72	19,528.03	19,448.93	79.10	246.866	
26,100.00	7,138.72	20,952.96	7,074.90	230.93	233.58	88.89	-1,607.04	-531.72	19,628.03	19,548.79	79.24	247.709	
26,200.00	7,138.67	20,952.96	7,074.90	232.20	233.58	88.89	-1,607.04	-531.72	19,728.02	19,648.65	79.37	248.550	
26,300.00	7,138.61	20,952.96	7,074.90	233.48	233.58	88.89	-1,607.04	-531.72	19,828.02	19,748.51	79.51	249.387	
26,400.00	7,138.55	20,952.96	7,074.90	234.75	233.58	88.89	-1,607.04	-531.72	19,928.01	19,848.37	79.64	250.220	
26,500.00	7,138.49	20,952.96	7,074.90	236.03	233.58	88.89	-1,607.04	-531.72	20,028.01	19,948.23	79.78	251.050	
26,600.00	7,138.44	20,952.96	7,074.90	237.31	233.58	88.89	-1,607.04	-531.72	20,128.00	20,048.09	79.91	251.877	
26,700.00	7,138.38	20,952.96	7,074.90	238.59	233.58	88.89	-1,607.04	-531.72	20,227.99	20,147.95	80.05	252.700	
26,800.00	7,138.32	20,952.96	7,074.90	239.87	233.58	88.89	-1,607.04	-531.72	20,327.99	20,247.81	80.18	253.520	
26,900.00	7,138.26	20,952.96	7,074.90	241.15	233.58	88.89	-1,607.04	-531.72	20,427.98	20,347.67	80.32	254.337	
27,000.00	7,138.21	20,952.96	7,074.90	242.43	233.58	88.89	-1,607.04	-531.72	20,527.98	20,447.52	80.45	255.150	
27,100.00	7,138.15	20,952.96	7,074.90	243.71	233.58	88.89	-1,607.04	-531.72	20,627.97	20,547.38	80.59	255.960	
27,157.78	7,138.12	20,952.96	7,074.90	244.46	233.58	88.89	-1,607.04	-531.72	20,685.75	20,605.08	80.67	256.426	
27,200.00	7,138.09	20,952.96	7,074.90	245.00	233.58	88.89	-1,607.04	-531.72	20,727.97	20,647.24	80.73	256.766	
27,300.00	7,138.03	20,952.96	7,074.90	246.28	233.58	88.89	-1,607.04	-531.72	20,827.96	20,747.10	80.86	257.570	
27,357.78	7,138.00	20,952.96	7,074.90	247.02	233.58	88.89	-1,607.04	-531.72	20,885.74	20,804.79	80.94	258.033	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY							Rule Assigned:						Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
0.00	0.00	367.79	367.79	0.00	0.64	96.08	-921.07	8,642.34	8,691.28				
125.00	125.00	494.87	494.87	0.05	1.03	92.51	-921.50	8,642.32	8,691.33	8,690.27	1.06	8,172.898	
225.00	224.99	582.54	582.54	0.19	1.34	93.23	-921.87	8,642.34	8,691.44	8,690.00	1.44	6,035.948	
290.00	289.99	637.23	637.23	0.28	1.53	78.69	-921.89	8,642.44	8,691.54	8,689.87	1.68	5,185.101	
300.00	299.99	645.52	645.52	0.29	1.56	78.69	-921.89	8,642.46	8,691.56	8,689.85	1.71	5,076.260	
400.00	399.99	735.10	735.10	0.42	1.87	78.70	-921.98	8,642.79	8,691.79	8,689.69	2.10	4,145.969	
440.00	439.99	776.06	776.06	0.47	2.02	78.70	-922.01	8,642.95	8,691.90	8,689.63	2.27	3,831.570	
500.00	499.99	832.64	832.64	0.50	2.21	-75.51	-922.05	8,643.17	8,691.99	8,689.48	2.51	3,462.858	
600.00	599.93	948.23	948.22	0.47	2.62	-81.27	-922.20	8,643.67	8,691.88	8,688.90	2.99	2,909.224	
700.00	699.70	1,054.99	1,054.98	0.48	2.99	-82.33	-922.18	8,643.76	8,691.02	8,687.58	3.43	2,531.761	
800.00	799.18	1,139.16	1,139.15	0.52	3.28	-82.81	-922.48	8,643.98	8,690.00	8,686.19	3.80	2,285.800	
900.00	898.24	1,248.59	1,248.58	0.60	3.67	-83.16	-922.93	8,644.28	8,688.64	8,684.38	4.27	2,037.162	
1,000.00	996.77	1,341.36	1,341.35	0.69	3.99	-83.43	-923.72	8,644.37	8,686.81	8,682.13	4.68	1,856.645	
1,074.04	1,069.30	1,400.00	1,399.99	0.77	4.20	-83.61	-924.08	8,644.58	8,685.42	8,680.46	4.96	1,752.020	
1,100.00	1,094.67	1,412.09	1,412.08	0.79	4.24	-83.63	-924.14	8,644.65	8,684.94	8,679.91	5.03	1,727.646	
1,200.00	1,192.37	1,500.00	1,499.98	0.91	4.55	-83.75	-924.82	8,645.23	8,683.28	8,677.83	5.44	1,584.843	
1,300.00	1,290.07	1,629.72	1,629.70	1.02	5.00	-83.92	-925.89	8,645.80	8,681.45	8,675.44	6.01	1,443.468	
1,400.00	1,387.77	1,718.83	1,718.81	1.15	5.32	-84.04	-926.25	8,646.16	8,679.61	8,673.17	6.45	1,346.281	
1,500.00	1,485.47	1,835.03	1,835.01	1.27	5.72	-84.20	-926.57	8,646.46	8,677.66	8,670.69	6.98	1,243.374	
1,600.00	1,583.17	1,927.65	1,927.63	1.40	6.05	-84.33	-926.46	8,646.74	8,675.78	8,668.35	7.43	1,167.254	
1,700.00	1,680.87	2,038.82	2,038.80	1.53	6.43	-84.49	-926.54	8,646.99	8,673.89	8,665.94	7.95	1,090.430	
1,800.00	1,778.57	2,137.66	2,137.63	1.67	6.78	-84.63	-926.36	8,647.08	8,671.90	8,663.47	8.44	1,027.910	
1,900.00	1,876.27	2,233.39	2,233.36	1.81	7.11	-84.77	-926.14	8,647.31	8,670.10	8,661.19	8.91	973.005	
2,000.00	1,973.98	2,341.52	2,341.49	1.95	7.49	-84.92	-925.58	8,647.32	8,668.11	8,658.68	9.43	919.120	
2,100.00	2,071.68	2,415.70	2,415.67	2.09	7.75	-85.03	-924.85	8,647.52	8,666.38	8,656.55	9.84	881.124	
2,200.00	2,169.38	2,510.42	2,510.38	2.24	8.08	-85.17	-923.85	8,647.89	8,664.85	8,654.53	10.32	840.008	
2,300.00	2,267.08	2,608.18	2,608.14	2.39	8.42	-85.31	-922.90	8,648.31	8,663.40	8,652.59	10.81	801.561	
2,400.00	2,364.78	2,730.34	2,730.28	2.55	8.84	-85.50	-921.42	8,648.52	8,661.72	8,650.33	11.39	760.551	
2,500.00	2,462.48	2,801.72	2,801.67	2.70	9.09	-85.60	-920.56	8,648.72	8,660.24	8,648.45	11.79	734.247	
2,600.00	2,560.18	2,923.95	2,923.89	2.86	9.52	-85.78	-919.31	8,649.06	8,658.82	8,646.43	12.38	699.384	
2,700.00	2,657.88	3,022.70	3,022.63	3.02	9.86	-85.93	-918.25	8,649.12	8,657.24	8,644.35	12.89	671.784	
2,800.00	2,755.58	3,100.00	3,099.92	3.19	10.13	-86.04	-917.46	8,649.39	8,655.98	8,642.66	13.32	649.800	
2,900.00	2,853.28	3,181.34	3,181.25	3.35	10.42	-86.16	-916.64	8,649.85	8,654.99	8,641.22	13.77	628.460	
3,000.00	2,950.99	3,275.19	3,275.10	3.52	10.75	-86.30	-915.67	8,650.37	8,654.07	8,639.80	14.27	606.510	
3,100.00	3,048.69	3,383.43	3,383.33	3.69	11.12	-86.46	-914.83	8,650.95	8,653.20	8,638.38	14.82	583.961	
3,200.00	3,146.39	3,483.78	3,483.68	3.87	11.48	-86.60	-914.05	8,651.37	8,652.27	8,636.93	15.34	563.951	
3,300.00	3,244.09	3,572.94	3,572.84	4.04	11.79	-86.73	-913.32	8,651.77	8,651.43	8,635.60	15.83	546.535	
3,400.00	3,341.79	3,631.23	3,631.13	4.22	11.99	-86.82	-912.99	8,652.15	8,650.87	8,634.66	16.21	533.633	
3,439.71	3,380.59	3,649.19	3,649.09	4.29	12.05	-86.85	-912.91	8,652.34	8,650.82	8,634.48	16.35	529.248	
3,500.00	3,439.49	3,700.00	3,699.89	4.40	12.23	-86.92	-912.70	8,653.12	8,651.01	8,634.38	16.63	520.148	
3,600.00	3,537.19	3,744.24	3,744.12	4.58	12.39	-86.98	-912.57	8,653.95	8,651.59	8,634.62	16.97	509.868	
3,700.00	3,634.89	3,832.66	3,832.52	4.77	12.70	-87.11	-912.41	8,655.66	8,652.44	8,634.97	17.46	495.493	
3,800.00	3,732.59	3,921.76	3,921.61	4.95	13.01	-87.23	-912.56	8,657.50	8,653.48	8,635.52	17.96	481.798	
3,900.00	3,830.29	4,032.82	4,032.64	5.14	13.40	-87.39	-912.51	8,659.72	8,654.49	8,635.95	18.54	466.831	
4,000.00	3,928.00	4,142.34	4,142.15	5.33	13.78	-87.54	-912.66	8,661.81	8,655.49	8,636.37	19.11	452.846	
4,100.00	4,025.70	4,261.18	4,260.97	5.53	14.20	-87.71	-913.28	8,663.75	8,656.26	8,636.54	19.72	438.889	
4,200.00	4,123.40	4,353.38	4,353.15	5.72	14.52	-87.84	-913.65	8,665.18	8,657.01	8,636.77	20.24	427.695	
4,300.00	4,221.10	4,432.63	4,432.39	5.92	14.80	-87.94	-914.20	8,666.52	8,657.96	8,637.24	20.72	417.946	
4,400.00	4,318.80	4,500.00	4,499.75	6.12	15.03	-88.04	-914.03	8,667.84	8,659.22	8,638.07	21.15	409.421	
4,500.00	4,416.50	4,562.06	4,561.79	6.32	15.25	-88.13	-913.35	8,669.31	8,660.91	8,639.34	21.57	401.570	
4,600.00	4,514.20	4,631.55	4,631.24	6.52	15.49	-88.24	-912.17	8,671.28	8,663.08	8,641.07	22.01	393.535	
4,700.00	4,611.90	4,983.45	4,982.83	6.73	16.73	-88.82	-899.39	8,677.04	8,664.53	8,641.07	23.46	369.376	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
4,800.00	4,709.60	5,176.84	5,176.17	6.94	17.40	-89.11	-895.97	8,675.69	8,663.28	8,638.95	24.34	355.994		
4,900.00	4,807.30	5,288.87	5,288.19	7.14	17.79	-89.27	-895.25	8,674.17	8,661.57	8,636.64	24.93	347.396		
5,000.00	4,905.00	5,353.32	5,352.64	7.36	18.02	-89.36	-895.53	8,673.46	8,660.19	8,634.82	25.37	341.372		
5,100.00	5,002.71	5,417.27	5,416.59	7.57	18.24	-89.45	-896.00	8,673.02	8,659.25	8,633.45	25.80	335.568		
5,200.00	5,100.41	5,500.00	5,499.31	7.78	18.52	-89.57	-896.26	8,672.77	8,658.73	8,632.42	26.31	329.136		
5,243.91	5,143.30	5,500.00	5,499.31	7.88	18.52	-89.57	-896.26	8,672.77	8,658.62	8,632.22	26.40	327.938		
5,300.00	5,198.11	5,534.80	5,534.11	8.00	18.65	-89.61	-896.25	8,672.82	8,658.64	8,632.00	26.65	324.948		
5,400.00	5,295.81	5,600.00	5,599.31	8.22	18.87	-89.71	-896.36	8,673.38	8,659.29	8,632.19	27.09	319.621		
5,500.00	5,393.51	5,674.19	5,673.50	8.44	19.13	-89.81	-896.53	8,674.25	8,660.32	8,632.75	27.57	314.094		
5,600.00	5,491.21	5,752.54	5,751.84	8.66	19.41	-89.92	-896.75	8,675.09	8,661.38	8,633.31	28.07	308.577		
5,700.00	5,588.91	5,869.31	5,868.60	8.89	19.82	-90.08	-897.61	8,676.50	8,662.61	8,633.90	28.70	301.815		
5,800.00	5,686.61	6,040.65	6,039.93	9.11	20.41	-90.31	-898.51	8,677.16	8,662.90	8,633.37	29.53	293.399		
5,900.00	5,784.31	6,155.03	6,154.31	9.34	20.79	-90.47	-898.96	8,677.35	8,663.22	8,633.09	30.13	287.558		
6,000.00	5,882.01	6,253.13	6,252.41	9.57	21.08	-90.61	-899.34	8,677.53	8,663.59	8,632.94	30.65	282.638		
6,100.00	5,979.72	6,364.87	6,364.14	9.80	21.42	-90.77	-899.12	8,677.42	8,663.77	8,632.54	31.22	277.497		
6,200.00	6,077.42	6,448.14	6,447.42	10.04	21.96	-90.88	-898.96	8,677.35	8,664.00	8,632.00	32.00	270.764		
6,300.00	6,175.12	6,546.09	6,545.35	10.27	22.85	-91.03	-898.07	8,677.35	8,664.39	8,631.26	33.12	261.575		
6,400.00	6,272.82	6,646.71	6,645.96	10.51	23.77	-91.17	-898.64	8,677.35	8,664.79	8,630.51	34.28	252.797		
6,500.00	6,370.52	6,741.28	6,740.52	10.75	24.82	-91.30	-898.96	8,677.35	8,665.24	8,629.68	35.57	243.641		
6,600.00	6,468.22	6,838.98	6,838.22	10.99	25.99	-91.44	-898.96	8,677.35	8,665.76	8,628.79	36.97	234.385		
6,662.10	6,528.89	6,899.68	6,898.92	11.14	26.71	-91.52	-898.72	8,677.35	8,666.12	8,628.28	37.85	228.978		
6,700.00	6,565.90	6,936.82	6,936.06	11.23	27.16	-76.38	-898.73	8,677.35	8,665.22	8,626.84	38.38	225.759		
6,750.00	6,614.48	6,985.59	6,984.83	11.35	27.74	-59.66	-898.77	8,677.35	8,660.60	8,621.51	39.09	221.568		
6,800.00	6,662.53	7,033.83	7,033.07	11.47	28.31	-47.61	-898.82	8,677.35	8,652.10	8,612.31	39.79	217.459		
6,850.00	6,709.74	7,081.25	7,080.48	11.60	28.88	-39.29	-898.90	8,677.35	8,639.78	8,599.30	40.48	213.450		
6,900.00	6,755.82	7,126.61	7,125.82	11.72	29.48	-33.51	-898.96	8,677.35	8,623.71	8,582.51	41.20	209.317		
6,950.00	6,800.49	7,171.29	7,170.49	11.85	30.17	-29.40	-898.96	8,677.35	8,604.00	8,561.99	42.01	204.810		
7,000.00	6,843.48	7,214.27	7,213.48	11.98	30.83	-26.42	-898.96	8,677.35	8,580.77	8,537.97	42.79	200.520		
7,050.00	6,884.52	7,255.31	7,254.52	12.12	31.46	-24.24	-898.96	8,677.35	8,554.15	8,510.61	43.54	196.453		
7,100.00	6,923.35	7,294.14	7,293.35	12.27	32.06	-22.65	-898.96	8,677.35	8,524.31	8,480.05	44.26	192.610		
7,150.00	6,959.74	7,330.53	7,329.74	12.42	32.62	-21.51	-898.96	8,677.35	8,491.43	8,446.50	44.93	188.995		
7,200.00	6,993.46	7,364.54	7,363.74	12.60	33.15	-20.77	-897.93	8,677.35	8,455.78	8,410.22	45.56	185.590		
7,250.00	7,024.30	7,395.92	7,395.12	12.79	33.63	-20.35	-897.97	8,677.35	8,417.45	8,371.30	46.15	182.397		
7,300.00	7,052.08	7,424.20	7,423.40	12.99	34.07	-20.27	-898.03	8,677.35	8,376.74	8,330.05	46.68	179.438		
7,350.00	7,076.62	7,449.20	7,448.39	13.22	34.45	-20.57	-898.12	8,677.35	8,333.89	8,286.73	47.16	176.710		
7,400.00	7,097.78	7,470.75	7,469.95	13.46	34.78	-21.33	-898.21	8,677.35	8,289.17	8,241.59	47.58	174.214		
7,450.00	7,115.41	7,488.73	7,487.92	13.71	35.06	-22.76	-898.29	8,677.35	8,242.86	8,194.92	47.94	171.951		
7,500.00	7,129.42	7,503.01	7,502.20	13.99	35.28	-25.34	-898.37	8,677.35	8,195.23	8,147.00	48.23	169.920		
7,550.00	7,139.71	7,513.50	7,512.69	14.28	35.44	-30.26	-898.43	8,677.35	8,146.59	8,098.13	48.46	168.122		
7,600.00	7,146.22	7,520.15	7,519.34	14.58	35.55	-41.53	-898.47	8,677.35	8,097.22	8,048.60	48.62	166.557		
7,650.00	7,148.92	7,522.90	7,522.09	14.90	35.59	-76.80	-898.49	8,677.35	8,047.44	7,998.73	48.70	165.228		
7,660.51	7,149.00	7,522.98	7,522.17	14.97	35.59	-90.85	-898.49	8,677.35	8,036.94	7,988.23	48.72	164.979		
7,700.00	7,148.98	7,522.96	7,522.15	15.23	35.59	-90.85	-898.49	8,677.35	7,997.53	7,948.79	48.75	164.061		
7,800.00	7,148.93	7,522.91	7,522.10	15.92	35.59	-90.84	-898.49	8,677.35	7,897.73	7,848.89	48.83	161.736		
7,900.00	7,148.88	7,522.86	7,522.04	16.66	35.59	-90.84	-898.49	8,677.35	7,797.92	7,749.00	48.92	159.407		
8,000.00	7,148.82	7,522.80	7,521.99	17.44	35.59	-90.83	-898.49	8,677.35	7,698.13	7,649.12	49.01	157.075		
8,100.00	7,148.77	7,522.75	7,521.94	18.25	35.59	-90.82	-898.49	8,677.35	7,598.33	7,549.23	49.10	154.740		
8,200.00	7,148.72	7,522.70	7,521.89	19.10	35.58	-90.82	-898.49	8,677.35	7,498.55	7,449.34	49.20	152.403		
8,300.00	7,148.67	7,522.65	7,521.84	19.97	35.58	-90.81	-898.49	8,677.35	7,398.77	7,349.46	49.30	150.065		
8,400.00	7,148.62	7,522.59	7,521.78	20.86	35.58	-90.81	-898.49	8,677.35	7,298.99	7,249.58	49.41	147.725		
8,500.00	7,148.57	7,522.54	7,521.73	21.78	35.58	-90.80	-898.49	8,677.35	7,199.22	7,149.70	49.52	145.385		
8,600.00	7,148.51	7,522.49	7,521.68	22.71	35.58	-90.79	-898.49	8,677.35	7,099.46	7,049.83	49.63	143.043		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Reference	Offset	Offset		Reference	Offset	Highside	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)			
8,700.00	7,148.46	7,522.44	7,521.63	23.67	35.58	-90.79	-898.49	8,677.35	6,999.70	6,949.96	49.75	140.702		
8,800.00	7,148.41	7,522.38	7,521.57	24.63	35.58	-90.78	-898.49	8,677.35	6,899.96	6,850.09	49.87	138.361		
8,900.00	7,148.36	7,522.33	7,521.52	25.62	35.58	-90.78	-898.49	8,677.35	6,800.22	6,750.22	49.99	136.020		
9,000.00	7,148.31	7,522.28	7,521.47	26.61	35.58	-90.77	-898.49	8,677.35	6,700.48	6,650.36	50.12	133.680		
9,100.00	7,148.26	7,522.23	7,521.42	27.62	35.58	-90.76	-898.49	8,677.35	6,600.76	6,550.50	50.26	131.342		
9,200.00	7,148.20	7,522.17	7,521.36	28.64	35.58	-90.76	-898.49	8,677.35	6,501.04	6,450.65	50.39	129.005		
9,300.00	7,148.15	7,522.12	7,521.31	29.66	35.58	-90.75	-898.49	8,677.35	6,401.33	6,350.80	50.54	126.670		
9,400.00	7,148.10	7,522.07	7,521.26	30.70	35.57	-90.75	-898.49	8,677.35	6,301.64	6,250.95	50.68	124.338		
9,500.00	7,148.05	7,522.02	7,521.21	31.74	35.57	-90.74	-898.49	8,677.35	6,201.95	6,151.11	50.83	122.008		
9,600.00	7,148.00	7,521.97	7,521.15	32.79	35.57	-90.73	-898.49	8,677.35	6,102.27	6,051.28	50.99	119.681		
9,700.00	7,147.94	7,521.91	7,521.10	33.85	35.57	-90.73	-898.48	8,677.35	6,002.60	5,951.45	51.15	117.357		
9,800.00	7,147.89	7,521.86	7,521.05	34.92	35.57	-90.72	-898.48	8,677.35	5,902.94	5,851.63	51.31	115.037		
9,900.00	7,147.84	7,521.81	7,521.00	35.99	35.57	-90.71	-898.48	8,677.35	5,803.30	5,751.81	51.48	112.720		
10,000.00	7,147.79	7,521.76	7,520.95	37.07	35.57	-90.71	-898.48	8,677.35	5,703.67	5,652.01	51.66	110.408		
10,100.00	7,147.74	7,521.70	7,520.89	38.15	35.57	-90.70	-898.48	8,677.35	5,604.05	5,552.21	51.84	108.100		
10,200.00	7,147.69	7,521.65	7,520.84	39.24	35.57	-90.70	-898.48	8,677.35	5,504.44	5,452.41	52.03	105.797		
10,300.00	7,147.63	7,521.60	7,520.79	40.33	35.57	-90.69	-898.48	8,677.35	5,404.85	5,352.63	52.22	103.499		
10,400.00	7,147.58	7,521.55	7,520.74	41.42	35.57	-90.68	-898.48	8,677.35	5,305.27	5,252.85	52.42	101.206		
10,500.00	7,147.53	7,521.49	7,520.68	42.52	35.57	-90.68	-898.48	8,677.35	5,205.72	5,153.09	52.63	98.918		
10,600.00	7,147.48	7,521.44	7,520.63	43.63	35.57	-90.67	-898.48	8,677.35	5,106.17	5,053.33	52.84	96.636		
10,700.00	7,147.43	7,521.39	7,520.58	44.73	35.56	-90.67	-898.48	8,677.35	5,006.65	4,953.59	53.06	94.361		
10,800.00	7,147.38	7,521.34	7,520.53	45.85	35.56	-90.66	-898.48	8,677.35	4,907.15	4,853.86	53.29	92.091		
10,900.00	7,147.32	7,521.28	7,520.47	46.96	35.56	-90.65	-898.48	8,677.35	4,807.66	4,754.14	53.52	89.828		
11,000.00	7,147.27	7,521.23	7,520.42	48.08	35.56	-90.65	-898.48	8,677.35	4,708.20	4,654.44	53.76	87.571		
11,100.00	7,147.22	7,521.18	7,520.37	49.20	35.56	-90.64	-898.48	8,677.35	4,608.76	4,554.74	54.02	85.322		
11,200.00	7,147.17	7,521.13	7,520.32	50.32	35.56	-90.64	-898.48	8,677.35	4,509.35	4,455.07	54.28	83.080		
11,300.00	7,147.12	7,521.07	7,520.26	51.44	35.56	-90.63	-898.48	8,677.35	4,409.96	4,355.41	54.55	80.845		
11,400.00	7,147.07	7,521.02	7,520.21	52.57	35.56	-90.62	-898.48	8,677.35	4,310.60	4,255.77	54.83	78.618		
11,500.00	7,147.01	7,520.97	7,520.16	53.70	35.56	-90.62	-898.48	8,677.35	4,211.27	4,156.15	55.12	76.398		
11,600.00	7,146.96	7,520.92	7,520.11	54.84	35.56	-90.61	-898.48	8,677.35	4,111.98	4,056.55	55.43	74.187		
11,700.00	7,146.91	7,520.87	7,520.05	55.97	35.56	-90.61	-898.48	8,677.35	4,012.71	3,956.97	55.74	71.984		
11,800.00	7,146.86	7,520.81	7,520.00	57.11	35.56	-90.60	-898.48	8,677.35	3,913.49	3,857.42	56.08	69.790		
11,815.51	7,146.85	7,520.81	7,519.99	57.28	35.56	-90.60	-898.48	8,677.35	3,898.10	3,841.98	56.13	69.451		
11,826.17	7,146.84	7,520.80	7,519.99	57.40	35.56	-90.63	-898.48	8,677.35	3,887.53	3,831.36	56.16	69.218		
11,900.00	7,146.80	7,520.76	7,519.95	58.25	35.55	-90.62	-898.48	8,677.35	3,814.29	3,757.87	56.42	67.609		
12,000.00	7,146.75	7,520.70	7,519.89	59.39	35.55	-90.62	-898.48	8,677.35	3,715.12	3,658.35	56.77	65.438		
12,100.00	7,146.69	7,520.64	7,519.83	60.53	35.55	-90.61	-898.48	8,677.35	3,616.01	3,558.86	57.15	63.276		
12,200.00	7,146.63	7,520.58	7,519.77	61.67	35.55	-90.60	-898.48	8,677.35	3,516.94	3,459.40	57.54	61.123		
12,300.00	7,146.58	7,520.52	7,519.71	62.82	35.55	-90.60	-898.48	8,677.35	3,417.92	3,359.97	57.95	58.981		
12,400.00	7,146.52	7,520.46	7,519.65	63.97	35.55	-90.59	-898.48	8,677.35	3,318.97	3,260.59	58.38	56.849		
12,500.00	7,146.46	7,520.41	7,519.60	65.12	35.55	-90.58	-898.48	8,677.35	3,220.08	3,161.24	58.84	54.728		
12,600.00	7,146.41	7,520.35	7,519.54	66.27	35.55	-90.57	-898.47	8,677.35	3,121.26	3,061.94	59.32	52.617		
12,700.00	7,146.35	7,520.29	7,519.48	67.42	35.55	-90.57	-898.47	8,677.35	3,022.52	2,962.69	59.83	50.519		
12,800.00	7,146.29	7,520.23	7,519.42	68.58	35.55	-90.56	-898.47	8,677.35	2,923.86	2,863.49	60.37	48.432		
12,900.00	7,146.24	7,520.17	7,519.36	69.73	35.55	-90.55	-898.47	8,677.35	2,825.30	2,764.35	60.95	46.358		
13,000.00	7,146.18	7,520.11	7,519.30	70.89	35.54	-90.55	-898.47	8,677.35	2,726.84	2,665.28	61.56	44.297		
13,100.00	7,146.13	7,520.06	7,519.24	72.05	35.54	-90.54	-898.47	8,677.35	2,628.50	2,566.29	62.21	42.251		
13,200.00	7,146.07	7,520.00	7,519.19	73.21	35.54	-90.53	-898.47	8,677.35	2,530.29	2,467.38	62.91	40.218		
13,300.00	7,146.01	7,519.94	7,519.13	74.37	35.54	-90.53	-898.47	8,677.35	2,432.23	2,368.56	63.67	38.202		
13,400.00	7,145.96	7,519.88	7,519.07	75.53	35.54	-90.52	-898.47	8,677.35	2,334.33	2,269.84	64.48	36.202		
13,500.00	7,145.90	7,519.82	7,519.01	76.70	35.54	-90.51	-898.47	8,677.35	2,236.61	2,171.25	65.36	34.220		
13,600.00	7,145.84	7,519.76	7,518.95	77.86	35.54	-90.51	-898.47	8,677.35	2,139.11	2,072.79	66.32	32.257		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)		Separation Factor	
13,700.00	7,145.79	7,519.71	7,518.89	79.03	35.54	-90.50	-898.47	8,677.35	2,041.84	1,974.49	67.36	30.314		
13,800.00	7,145.73	7,519.65	7,518.84	80.20	35.54	-90.49	-898.47	8,677.35	1,944.86	1,876.36	68.50	28.394		
13,900.00	7,145.67	7,519.59	7,518.78	81.37	35.54	-90.49	-898.47	8,677.35	1,848.20	1,778.45	69.75	26.498		
14,000.00	7,145.62	7,519.53	7,518.72	82.54	35.54	-90.48	-898.47	8,677.35	1,751.91	1,680.78	71.13	24.629		
14,100.00	7,145.56	7,519.47	7,518.66	83.71	35.53	-90.47	-898.47	8,677.35	1,656.06	1,583.39	72.67	22.790		
14,200.00	7,145.50	7,519.41	7,518.60	84.88	35.53	-90.46	-898.47	8,677.35	1,560.73	1,486.36	74.38	20.984		
14,300.00	7,145.45	7,519.35	7,518.54	86.06	35.53	-90.46	-898.47	8,677.35	1,466.03	1,389.73	76.30	19.215		
14,400.00	7,145.39	7,519.30	7,518.49	87.23	35.53	-90.45	-898.47	8,677.35	1,372.08	1,293.61	78.46	17.487		
14,500.00	7,145.33	7,519.24	7,518.43	88.41	35.53	-90.44	-898.47	8,677.35	1,279.04	1,198.12	80.92	15.806		
14,600.00	7,145.28	7,519.18	7,518.37	89.59	35.53	-90.44	-898.47	8,677.35	1,187.14	1,103.41	83.73	14.178		
14,700.00	7,145.22	7,519.12	7,518.31	90.77	35.53	-90.43	-898.47	8,677.35	1,096.65	1,009.70	86.95	12.613		
14,800.00	7,145.17	7,519.06	7,518.25	91.95	35.53	-90.42	-898.47	8,677.35	1,007.97	917.30	90.66	11.117		
14,900.00	7,145.11	7,519.00	7,518.19	93.13	35.53	-90.42	-898.47	8,677.35	921.60	826.64	94.97	9.705		
15,000.00	7,145.05	7,518.95	7,518.14	94.31	35.53	-90.41	-898.47	8,677.35	838.27	738.33	99.94	8.387		
15,100.00	7,145.00	7,518.89	7,518.08	95.49	35.53	-90.40	-898.47	8,677.35	758.98	653.31	105.67	7.182		
15,200.00	7,144.94	7,518.83	7,518.02	96.68	35.53	-90.40	-898.47	8,677.35	685.13	572.96	112.17	6.108		
15,300.00	7,144.88	7,518.77	7,517.96	97.86	35.52	-90.39	-898.46	8,677.35	618.67	499.41	119.26	5.188		
15,400.00	7,144.83	7,518.71	7,517.90	99.05	35.52	-90.38	-898.46	8,677.35	562.23	435.77	126.47	4.446		
15,500.00	7,144.77	7,518.65	7,517.84	100.24	35.52	-90.37	-898.46	8,677.35	519.09	386.30	132.79	3.909		
15,600.00	7,144.71	7,518.60	7,517.79	101.42	35.52	-90.37	-898.46	8,677.35	492.75	355.98	136.78	3.603		
15,683.25	7,144.67	7,518.55	7,517.74	102.41	35.52	-90.36	-898.46	8,677.35	485.67	348.38	137.29	3.537	CC, ES, SF	
15,700.00	7,144.66	7,518.54	7,517.73	102.61	35.52	-90.36	-898.46	8,677.35	485.96	348.91	137.05	3.546		
15,800.00	7,144.60	7,518.48	7,517.67	103.80	35.52	-90.35	-898.46	8,677.35	499.51	366.24	133.27	3.748		
15,900.00	7,144.54	7,518.42	7,517.61	104.99	35.52	-90.35	-898.46	8,677.35	531.85	405.38	126.47	4.205		
16,000.00	7,144.49	7,518.36	7,517.55	106.19	35.52	-90.34	-898.46	8,677.35	579.84	461.59	118.25	4.904		
16,100.00	7,144.43	7,518.30	7,517.49	107.38	35.52	-90.33	-898.46	8,677.35	639.97	530.03	109.94	5.821		
16,200.00	7,144.37	7,518.25	7,517.44	108.57	35.52	-90.33	-898.46	8,677.35	709.17	606.88	102.28	6.933		
16,300.00	7,144.32	7,518.19	7,517.38	109.77	35.52	-90.32	-898.46	8,677.35	785.03	689.46	95.56	8.215		
16,400.00	7,144.26	7,518.13	7,517.32	110.96	35.51	-90.31	-898.46	8,677.35	865.80	776.01	89.80	9.642		
16,500.00	7,144.21	7,518.07	7,517.26	112.16	35.51	-90.31	-898.46	8,677.35	950.25	865.34	84.91	11.192		
16,600.00	7,144.15	7,518.01	7,517.20	113.36	35.51	-90.30	-898.46	8,677.35	1,037.46	956.69	80.77	12.845		
16,700.00	7,144.09	7,517.95	7,517.14	114.56	35.51	-90.29	-898.46	8,677.35	1,126.80	1,049.53	77.27	14.583		
16,800.00	7,144.04	7,517.90	7,517.09	115.76	35.51	-90.29	-898.46	8,677.35	1,217.79	1,143.50	74.30	16.390		
16,862.86	7,144.00	7,517.86	7,517.05	116.51	35.51	-90.28	-898.46	8,677.35	1,275.68	1,203.02	72.66	17.556		
16,866.76	7,144.00	7,517.86	7,517.05	116.56	35.51	-90.28	-898.46	8,677.35	1,279.29	1,206.72	72.57	17.629		
16,900.00	7,143.98	7,517.84	7,517.03	116.96	35.51	-90.28	-898.46	8,677.35	1,310.11	1,238.34	71.77	18.253		
17,000.00	7,143.92	7,517.78	7,516.97	118.16	35.51	-90.27	-898.46	8,677.35	1,403.50	1,333.88	69.62	20.159		
17,100.00	7,143.87	7,517.72	7,516.91	119.36	35.51	-90.26	-898.46	8,677.35	1,497.74	1,429.96	67.78	22.097		
17,200.00	7,143.81	7,517.66	7,516.85	120.56	35.51	-90.26	-898.46	8,677.35	1,592.69	1,526.48	66.20	24.058		
17,300.00	7,143.75	7,517.60	7,516.79	121.77	35.51	-90.25	-898.46	8,677.35	1,688.21	1,623.37	64.84	26.035		
17,400.00	7,143.69	7,517.55	7,516.73	122.97	35.51	-90.24	-898.46	8,677.35	1,784.23	1,720.56	63.68	28.020		
17,500.00	7,143.64	7,517.49	7,516.68	124.18	35.50	-90.24	-898.46	8,677.35	1,880.67	1,818.00	62.67	30.009		
17,600.00	7,143.58	7,517.43	7,516.62	125.39	35.50	-90.23	-898.46	8,677.35	1,977.45	1,915.65	61.80	31.996		
17,700.00	7,143.52	7,517.37	7,516.56	126.59	35.50	-90.22	-898.46	8,677.35	2,074.54	2,013.49	61.06	33.978		
17,800.00	7,143.47	7,517.31	7,516.50	127.80	35.50	-90.22	-898.46	8,677.35	2,171.90	2,111.49	60.41	35.951		
17,900.00	7,143.41	7,517.25	7,516.44	129.01	35.50	-90.21	-898.46	8,677.35	2,269.49	2,209.63	59.86	37.913		
18,000.00	7,143.35	7,517.20	7,516.38	130.22	35.50	-90.20	-898.46	8,677.35	2,367.27	2,307.89	59.39	39.862		
18,100.00	7,143.30	7,517.14	7,516.33	131.43	35.50	-90.20	-898.45	8,677.35	2,465.24	2,406.26	58.98	41.796		
18,200.00	7,143.24	7,517.08	7,516.27	132.64	35.50	-90.19	-898.45	8,677.35	2,563.36	2,504.72	58.64	43.715		
18,300.00	7,143.18	7,517.02	7,516.21	133.86	35.50	-90.18	-898.45	8,677.35	2,661.62	2,603.28	58.35	45.617		
18,400.00	7,143.13	7,516.96	7,516.15	135.07	35.50	-90.17	-898.45	8,677.35	2,760.01	2,701.91	58.10	47.502		
18,500.00	7,143.07	7,516.90	7,516.09	136.28	35.50	-90.17	-898.45	8,677.35	2,858.51	2,800.61	57.90	49.369		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
18,600.00	7,143.01	7,516.85	7,516.03	137.50	35.49	-90.16	-898.45	8,677.35	2,957.11	2,899.37	57.73	51.219		
18,700.00	7,142.96	7,516.79	7,515.98	138.72	35.49	-90.15	-898.45	8,677.35	3,055.80	2,998.20	57.60	53.051		
18,800.00	7,142.90	7,516.73	7,515.92	139.93	35.49	-90.15	-898.45	8,677.35	3,154.57	3,097.08	57.50	54.866		
18,900.00	7,142.84	7,516.67	7,515.86	141.15	35.49	-90.14	-898.45	8,677.35	3,253.42	3,196.00	57.42	56.664		
19,000.00	7,142.78	7,516.61	7,515.80	142.37	35.49	-90.13	-898.45	8,677.35	3,352.34	3,294.98	57.36	58.445		
19,100.00	7,142.73	7,516.55	7,515.74	143.59	35.49	-90.13	-898.45	8,677.35	3,451.32	3,393.99	57.32	60.209		
19,200.00	7,142.67	7,516.50	7,515.68	144.81	35.49	-90.12	-898.45	8,677.35	3,550.35	3,493.05	57.30	61.957		
19,300.00	7,142.61	7,516.44	7,515.63	146.03	35.49	-90.11	-898.45	8,677.35	3,649.44	3,592.14	57.30	63.689		
19,400.00	7,142.56	7,516.38	7,515.57	147.25	35.49	-90.11	-898.45	8,677.35	3,748.58	3,691.26	57.31	65.405		
19,500.00	7,142.50	7,516.32	7,515.51	148.47	35.49	-90.10	-898.45	8,677.35	3,847.76	3,790.42	57.34	67.107		
19,600.00	7,142.44	7,516.26	7,515.45	149.70	35.49	-90.09	-898.45	8,677.35	3,946.98	3,889.61	57.37	68.794		
19,700.00	7,142.39	7,516.20	7,515.39	150.92	35.48	-90.09	-898.45	8,677.35	4,046.24	3,988.82	57.42	70.466		
19,800.00	7,142.33	7,516.14	7,515.33	152.15	35.48	-90.08	-898.45	8,677.35	4,145.54	4,088.06	57.48	72.125		
19,900.00	7,142.27	7,516.09	7,515.28	153.37	35.48	-90.07	-898.45	8,677.35	4,244.87	4,187.33	57.54	73.770		
20,000.00	7,142.22	7,516.03	7,515.22	154.60	35.48	-90.06	-898.45	8,677.35	4,344.23	4,286.62	57.61	75.401		
20,100.00	7,142.16	7,515.97	7,515.16	155.83	35.48	-90.06	-898.45	8,677.35	4,443.62	4,385.92	57.69	77.020		
20,200.00	7,142.10	7,515.91	7,515.10	157.06	35.48	-90.05	-898.45	8,677.35	4,543.04	4,485.26	57.78	78.627		
20,300.00	7,142.04	7,515.85	7,515.04	158.28	35.48	-90.04	-898.45	8,677.35	4,642.48	4,584.60	57.87	80.221		
20,400.00	7,141.99	7,515.79	7,514.98	159.51	35.48	-90.04	-898.45	8,677.35	4,741.94	4,683.97	57.97	81.803		
20,500.00	7,141.93	7,515.74	7,514.93	160.74	35.48	-90.03	-898.45	8,677.35	4,841.43	4,783.36	58.07	83.374		
20,600.00	7,141.87	7,515.68	7,514.87	161.98	35.48	-90.02	-898.45	8,677.35	4,940.93	4,882.76	58.17	84.933		
20,700.00	7,141.82	7,515.62	7,514.81	163.21	35.48	-90.02	-898.45	8,677.35	5,040.46	4,982.18	58.28	86.481		
20,800.00	7,141.76	7,515.56	7,514.75	164.44	35.47	-90.01	-898.44	8,677.35	5,140.01	5,081.61	58.40	88.019		
20,900.00	7,141.70	7,515.50	7,514.69	165.68	35.47	-90.00	-898.44	8,677.35	5,239.57	5,181.06	58.51	89.545		
21,000.00	7,141.65	7,515.44	7,514.63	166.91	35.47	-90.00	-898.44	8,677.35	5,339.15	5,280.52	58.63	91.062		
21,100.00	7,141.59	7,515.39	7,514.58	168.15	35.47	-89.99	-898.44	8,677.35	5,438.74	5,379.99	58.75	92.568		
21,200.00	7,141.53	7,515.33	7,514.52	169.38	35.47	-89.98	-898.44	8,677.35	5,538.35	5,479.47	58.88	94.065		
21,300.00	7,141.48	7,515.27	7,514.46	170.62	35.47	-89.97	-898.44	8,677.35	5,637.97	5,578.97	59.00	95.551		
21,400.00	7,141.42	7,515.21	7,514.40	171.86	35.47	-89.97	-898.44	8,677.35	5,737.61	5,678.48	59.13	97.029		
21,500.00	7,141.36	7,515.15	7,514.34	173.10	35.47	-89.96	-898.44	8,677.35	5,837.26	5,778.00	59.26	98.496		
21,600.00	7,141.31	7,515.09	7,514.28	174.34	35.47	-89.95	-898.44	8,677.35	5,936.92	5,877.52	59.40	99.955		
21,700.00	7,141.25	7,515.04	7,514.23	175.58	35.47	-89.95	-898.44	8,677.35	6,036.59	5,977.06	59.53	101.405		
21,800.00	7,141.19	7,514.98	7,514.17	176.82	35.47	-89.94	-898.44	8,677.35	6,136.27	6,076.61	59.67	102.845		
21,900.00	7,141.13	7,514.92	7,514.11	178.06	35.46	-89.93	-898.44	8,677.35	6,235.96	6,176.16	59.80	104.277		
22,000.00	7,141.08	7,514.86	7,514.05	179.30	35.46	-89.93	-898.44	8,677.35	6,335.67	6,275.73	59.94	105.701		
22,100.00	7,141.02	7,514.80	7,513.99	180.55	35.46	-89.92	-898.44	8,677.35	6,435.38	6,375.30	60.08	107.116		
22,136.53	7,141.00	7,514.78	7,513.97	181.00	35.46	-89.92	-898.44	8,677.35	6,471.81	6,411.68	60.13	107.631		
22,137.77	7,141.00	7,514.78	7,513.97	181.02	35.46	-89.91	-898.44	8,677.35	6,473.04	6,412.91	60.13	107.648		
22,200.00	7,140.96	7,514.74	7,513.93	181.79	35.46	-89.91	-898.44	8,677.35	6,535.10	6,474.88	60.22	108.523		
22,300.00	7,140.91	7,514.69	7,513.88	183.04	35.46	-89.90	-898.44	8,677.35	6,634.82	6,574.46	60.36	109.921		
22,400.00	7,140.85	7,514.63	7,513.82	184.28	35.46	-89.89	-898.44	8,677.35	6,734.56	6,674.06	60.50	111.312		
22,500.00	7,140.79	7,514.57	7,513.76	185.53	35.46	-89.89	-898.44	8,677.35	6,834.30	6,773.66	60.64	112.694		
22,600.00	7,140.73	7,514.51	7,513.70	186.78	35.46	-89.88	-898.44	8,677.35	6,934.05	6,873.26	60.79	114.069		
22,700.00	7,140.68	7,514.45	7,513.64	188.02	35.46	-89.87	-898.44	8,677.35	7,033.81	6,972.88	60.93	115.436		
22,800.00	7,140.62	7,514.39	7,513.58	189.27	35.46	-89.87	-898.44	8,677.35	7,133.57	7,072.50	61.08	116.795		
22,900.00	7,140.56	7,514.33	7,513.52	190.52	35.46	-89.86	-898.44	8,677.35	7,233.34	7,172.12	61.22	118.147		
23,000.00	7,140.50	7,514.27	7,513.46	191.77	35.45	-89.85	-898.44	8,677.35	7,333.12	7,271.75	61.37	119.492		
23,100.00	7,140.45	7,514.21	7,513.40	193.02	35.45	-89.85	-898.44	8,677.35	7,432.90	7,371.39	61.52	120.829		
23,200.00	7,140.39	7,514.15	7,513.34	194.28	35.45	-89.84	-898.44	8,677.35	7,532.69	7,471.03	61.66	122.159		
23,300.00	7,140.33	7,514.09	7,513.28	195.53	35.45	-89.83	-898.44	8,677.35	7,632.49	7,570.68	61.81	123.481		
23,400.00	7,140.27	7,514.04	7,513.23	196.78	35.45	-89.83	-898.44	8,677.35	7,732.29	7,670.33	61.96	124.797		
23,500.00	7,140.22	7,513.98	7,513.17	198.04	35.45	-89.82	-898.44	8,677.35	7,832.09	7,769.98	62.11	126.105		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Rosa Unit #601 - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program: 400-A020Ga_GYRO-NS, 6400-A027Ua_INC-ONLY							Rule Assigned:							Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
23,600.00	7,140.16	7,513.92	7,513.11	199.29	35.45	-89.81	-898.43	8,677.35	7,931.90	7,869.64	62.26	127.407			
23,700.00	7,140.10	7,513.86	7,513.05	200.55	35.45	-89.80	-898.43	8,677.35	8,031.71	7,969.31	62.41	128.702			
23,800.00	7,140.04	7,513.80	7,512.99	201.81	35.45	-89.80	-898.43	8,677.35	8,131.53	8,068.98	62.56	129.990			
23,900.00	7,139.99	7,513.74	7,512.93	203.06	35.45	-89.79	-898.43	8,677.35	8,231.36	8,168.65	62.70	131.271			
24,000.00	7,139.93	7,513.68	7,512.87	204.32	35.45	-89.78	-898.43	8,677.35	8,331.18	8,268.33	62.86	132.546			
24,100.00	7,139.87	7,513.62	7,512.81	205.58	35.44	-89.78	-898.43	8,677.35	8,431.02	8,368.01	63.01	133.814			
24,200.00	7,139.81	7,513.56	7,512.75	206.84	35.44	-89.77	-898.43	8,677.35	8,530.85	8,467.70	63.16	135.076			
24,300.00	7,139.76	7,513.50	7,512.69	208.10	35.44	-89.76	-898.43	8,677.35	8,630.69	8,567.38	63.31	136.331			
24,400.00	7,139.70	7,513.45	7,512.64	209.36	35.44	-89.76	-898.43	8,677.35	8,730.53	8,667.08	63.46	137.580			
24,500.00	7,139.64	7,513.39	7,512.58	210.62	35.44	-89.75	-898.43	8,677.35	8,830.38	8,766.77	63.61	138.823			
24,600.00	7,139.58	7,513.33	7,512.52	211.89	35.44	-89.74	-898.43	8,677.35	8,930.23	8,866.47	63.76	140.059			
24,700.00	7,139.53	7,513.27	7,512.46	213.15	35.44	-89.73	-898.43	8,677.35	9,030.08	8,966.17	63.91	141.289			
24,800.00	7,139.47	7,513.21	7,512.40	214.42	35.44	-89.73	-898.43	8,677.35	9,129.94	9,065.88	64.06	142.513			
24,900.00	7,139.41	7,513.15	7,512.34	215.68	35.44	-89.72	-898.43	8,677.35	9,229.80	9,165.58	64.22	143.731			
25,000.00	7,139.35	7,513.09	7,512.28	216.95	35.44	-89.71	-898.43	8,677.35	9,329.66	9,265.29	64.37	144.943			
25,100.00	7,139.30	7,513.03	7,512.22	218.21	35.44	-89.71	-898.43	8,677.35	9,429.53	9,365.01	64.52	146.149			
25,200.00	7,139.24	7,512.97	7,512.16	219.48	35.43	-89.70	-898.43	8,677.35	9,529.40	9,464.72	64.67	147.349			
25,300.00	7,139.18	7,512.91	7,512.10	220.75	35.43	-89.69	-898.43	8,677.35	9,629.27	9,564.44	64.82	148.544			
25,400.00	7,139.13	7,512.85	7,512.04	222.02	35.43	-89.69	-898.43	8,677.35	9,729.14	9,664.16	64.98	149.732			
25,500.00	7,139.07	7,512.80	7,511.99	223.29	35.43	-89.68	-898.43	8,677.35	9,829.02	9,763.89	65.13	150.915			
25,600.00	7,139.01	7,512.74	7,511.93	224.56	35.43	-89.67	-898.43	8,677.35	9,928.90	9,863.61	65.28	152.092			
25,700.00	7,138.95	7,512.68	7,511.87	225.83	35.43	-89.67	-898.43	8,677.35	10,028.78	9,963.34	65.44	153.263			
25,800.00	7,138.90	7,512.62	7,511.81	227.10	35.43	-89.66	-898.43	8,677.35	10,128.66	10,063.07	65.59	154.429			
25,900.00	7,138.84	7,512.56	7,511.75	228.38	35.43	-89.65	-898.43	8,677.35	10,228.55	10,162.81	65.74	155.589			
26,000.00	7,138.78	7,512.50	7,511.69	229.65	35.43	-89.64	-898.43	8,677.35	10,328.43	10,262.54	65.89	156.743			
26,100.00	7,138.72	7,512.44	7,511.63	230.93	35.43	-89.64	-898.43	8,677.35	10,428.32	10,362.28	66.05	157.893			
26,200.00	7,138.67	7,512.38	7,511.57	232.20	35.43	-89.63	-898.43	8,677.35	10,528.22	10,462.02	66.20	159.036			
26,300.00	7,138.61	7,512.32	7,511.51	233.48	35.42	-89.62	-898.43	8,677.35	10,628.11	10,561.76	66.35	160.175			
26,400.00	7,138.55	7,512.26	7,511.45	234.75	35.42	-89.62	-898.42	8,677.35	10,728.01	10,661.50	66.51	161.308			
26,500.00	7,138.49	7,512.21	7,511.40	236.03	35.42	-89.61	-898.42	8,677.35	10,827.90	10,761.25	66.66	162.435			
26,600.00	7,138.44	7,512.15	7,511.34	237.31	35.42	-89.60	-898.42	8,677.35	10,927.80	10,860.99	66.81	163.558			
26,700.00	7,138.38	7,512.09	7,511.28	238.59	35.42	-89.60	-898.42	8,677.35	11,027.71	10,960.74	66.97	164.675			
26,800.00	7,138.32	7,512.03	7,511.22	239.87	35.42	-89.59	-898.42	8,677.35	11,127.61	11,060.49	67.12	165.787			
26,900.00	7,138.26	7,511.97	7,511.16	241.15	35.42	-89.58	-898.42	8,677.35	11,227.52	11,160.24	67.27	166.894			
27,000.00	7,138.21	7,511.91	7,511.10	242.43	35.42	-89.57	-898.42	8,677.35	11,327.42	11,260.00	67.43	167.996			
27,100.00	7,138.15	7,511.85	7,511.04	243.71	35.42	-89.57	-898.42	8,677.35	11,427.33	11,359.75	67.58	169.092			
27,157.78	7,138.12	7,511.82	7,511.01	244.46	35.42	-89.56	-898.42	8,677.35	11,485.06	11,417.39	67.67	169.724			
27,200.00	7,138.09	7,511.79	7,510.98	245.00	35.42	-89.56	-898.42	8,677.35	11,527.24	11,459.51	67.73	170.184			
27,300.00	7,138.03	7,511.73	7,510.92	246.28	35.42	-89.55	-898.42	8,677.35	11,627.15	11,559.27	67.89	171.271			
27,357.78	7,138.00	7,511.70	7,510.89	247.02	35.42	-89.55	-898.42	8,677.35	11,684.88	11,616.90	67.98	171.896			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
0.00	0.00	293.38	293.36	0.00	0.55	97.57	-1,399.55	10,524.87	10,617.92				
125.00	125.00	394.06	394.03	0.05	0.90	94.00	-1,401.33	10,525.74	10,619.29	10,618.37	0.92	N/A	
225.00	224.99	503.03	502.97	0.19	1.28	94.73	-1,403.48	10,526.63	10,620.44	10,619.06	1.37	7,727.617	
290.00	289.99	568.41	568.34	0.28	1.51	80.20	-1,404.80	10,527.11	10,621.07	10,619.42	1.65	6,442.680	
300.00	299.99	576.31	576.23	0.29	1.54	80.20	-1,404.95	10,527.17	10,621.16	10,619.48	1.68	6,310.868	
400.00	399.99	655.32	655.23	0.42	1.81	80.21	-1,406.33	10,527.89	10,622.17	10,620.15	2.03	5,235.726	
440.00	439.99	694.75	694.65	0.47	1.95	80.21	-1,406.92	10,528.31	10,622.63	10,620.44	2.19	4,840.739	
500.00	499.99	772.84	772.73	0.50	2.22	-73.98	-1,408.05	10,529.07	10,623.17	10,620.66	2.51	4,234.527	
600.00	599.93	878.41	878.29	0.47	2.59	-79.72	-1,409.50	10,529.99	10,623.57	10,620.62	2.95	3,598.497	
700.00	699.70	985.75	985.62	0.48	2.97	-80.74	-1,410.85	10,530.87	10,623.43	10,620.03	3.40	3,123.558	
800.00	799.18	1,086.77	1,086.63	0.52	3.32	-81.22	-1,412.03	10,531.65	10,622.76	10,618.93	3.83	2,773.792	
900.00	898.24	1,179.22	1,179.07	0.60	3.64	-81.52	-1,413.05	10,532.41	10,621.67	10,617.44	4.23	2,509.126	
1,000.00	996.77	1,271.94	1,271.77	0.69	3.96	-81.78	-1,414.04	10,533.23	10,620.19	10,615.54	4.65	2,285.631	
1,074.04	1,069.30	1,341.01	1,340.84	0.77	4.20	-81.95	-1,414.79	10,533.87	10,618.85	10,613.89	4.96	2,140.225	
1,100.00	1,094.67	1,365.17	1,365.00	0.79	4.29	-81.97	-1,415.07	10,534.10	10,618.34	10,613.27	5.07	2,092.962	
1,200.00	1,192.37	1,459.64	1,459.45	0.91	4.62	-82.08	-1,416.20	10,535.01	10,616.45	10,610.94	5.51	1,925.485	
1,300.00	1,290.07	1,556.75	1,556.55	1.02	4.96	-82.18	-1,417.67	10,535.93	10,614.61	10,608.64	5.97	1,777.999	
1,400.00	1,387.77	1,657.91	1,657.69	1.15	5.31	-82.29	-1,419.54	10,536.84	10,612.81	10,606.37	6.45	1,646.534	
1,500.00	1,485.47	1,765.82	1,765.57	1.27	5.69	-82.40	-1,421.30	10,537.77	10,610.97	10,604.03	6.95	1,526.946	
1,600.00	1,583.17	1,879.06	1,878.80	1.40	6.08	-82.52	-1,422.74	10,538.66	10,609.07	10,601.59	7.47	1,419.332	
1,700.00	1,680.87	1,995.88	1,995.62	1.53	6.49	-82.65	-1,423.80	10,539.43	10,607.03	10,599.02	8.02	1,323.259	
1,800.00	1,778.57	2,124.06	2,123.79	1.67	6.94	-82.79	-1,424.67	10,540.01	10,604.81	10,596.21	8.60	1,233.204	
1,900.00	1,876.27	2,237.06	2,236.79	1.81	7.33	-82.92	-1,425.33	10,540.25	10,602.38	10,593.25	9.13	1,160.870	
2,000.00	1,973.98	2,331.99	2,331.72	1.95	7.66	-83.03	-1,425.69	10,540.46	10,599.97	10,590.36	9.61	1,103.344	
2,100.00	2,071.68	2,450.33	2,450.06	2.09	8.08	-83.16	-1,425.89	10,540.69	10,597.58	10,587.41	10.16	1,042.584	
2,200.00	2,169.38	2,594.84	2,594.57	2.24	8.58	-83.33	-1,425.84	10,540.48	10,594.86	10,584.04	10.82	979.626	
2,300.00	2,267.08	2,688.89	2,688.62	2.39	8.90	-83.43	-1,425.66	10,540.20	10,592.02	10,580.73	11.29	938.010	
2,400.00	2,364.78	2,798.28	2,798.00	2.55	9.28	-83.56	-1,425.35	10,539.84	10,589.18	10,577.35	11.83	895.475	
2,500.00	2,462.48	2,935.95	2,935.67	2.70	9.76	-83.72	-1,424.87	10,539.01	10,586.11	10,573.65	12.46	849.678	
2,600.00	2,560.18	3,046.54	3,046.26	2.86	10.15	-83.85	-1,424.45	10,538.05	10,582.83	10,569.83	13.00	813.948	
2,700.00	2,657.88	3,153.42	3,153.13	3.02	10.52	-83.97	-1,423.98	10,537.03	10,579.51	10,565.97	13.53	781.673	
2,800.00	2,755.58	3,290.17	3,289.87	3.19	11.00	-84.13	-1,423.49	10,535.41	10,576.00	10,561.83	14.17	746.200	
2,900.00	2,853.28	3,398.60	3,398.29	3.35	11.37	-84.26	-1,423.35	10,533.79	10,572.26	10,557.55	14.72	718.403	
3,000.00	2,950.99	3,435.00	3,434.69	3.52	11.50	-84.30	-1,423.30	10,533.23	10,568.72	10,553.71	15.01	703.990	
3,100.00	3,048.69	3,450.30	3,449.98	3.69	11.56	-84.32	-1,423.03	10,533.11	10,565.95	10,550.72	15.24	693.407	
3,200.00	3,146.39	3,467.00	3,466.67	3.87	11.61	-84.34	-1,422.33	10,533.29	10,564.12	10,548.65	15.47	682.903	
3,300.00	3,244.09	3,467.00	3,466.67	4.04	11.61	-84.34	-1,422.33	10,533.29	10,563.07	10,547.43	15.64	675.197	
3,359.99	3,302.70	3,467.00	3,466.67	4.15	11.61	-84.34	-1,422.33	10,533.29	10,562.90	10,547.15	15.75	670.646	
3,400.00	3,341.79	3,467.00	3,466.67	4.22	11.61	-84.34	-1,422.33	10,533.29	10,562.98	10,547.16	15.82	667.663	
3,500.00	3,439.49	3,467.00	3,466.67	4.40	11.61	-84.34	-1,422.33	10,533.29	10,563.83	10,547.83	16.00	660.299	
3,600.00	3,537.19	3,467.00	3,466.67	4.58	11.61	-84.34	-1,422.33	10,533.29	10,565.63	10,549.45	16.18	653.102	
3,700.00	3,634.89	3,467.00	3,466.67	4.77	11.61	-84.34	-1,422.33	10,533.29	10,568.37	10,552.02	16.36	646.070	
3,800.00	3,732.59	3,467.00	3,466.67	4.95	11.61	-84.34	-1,422.33	10,533.29	10,572.06	10,555.52	16.54	639.201	
3,900.00	3,830.29	3,467.00	3,466.67	5.14	11.61	-84.34	-1,422.33	10,533.29	10,576.70	10,559.98	16.72	632.492	
4,000.00	3,928.00	3,467.00	3,466.67	5.33	11.61	-84.34	-1,422.33	10,533.29	10,582.28	10,565.37	16.91	625.942	
4,100.00	4,025.70	3,467.00	3,466.67	5.53	11.61	-84.34	-1,422.33	10,533.29	10,588.79	10,571.70	17.09	619.546	
4,200.00	4,123.40	3,467.00	3,466.67	5.72	11.61	-84.34	-1,422.33	10,533.29	10,596.25	10,578.97	17.28	613.302	
4,300.00	4,221.10	3,467.00	3,466.67	5.92	11.61	-84.34	-1,422.33	10,533.29	10,604.65	10,587.18	17.46	607.208	
4,400.00	4,318.80	3,467.00	3,466.67	6.12	11.61	-84.34	-1,422.33	10,533.29	10,613.98	10,596.33	17.65	601.260	
4,500.00	4,416.50	3,467.00	3,466.67	6.32	11.61	-84.34	-1,422.33	10,533.29	10,624.24	10,606.40	17.84	595.456	
4,600.00	4,514.20	3,467.00	3,466.67	6.52	11.61	-84.34	-1,422.33	10,533.29	10,635.44	10,617.41	18.03	589.793	
4,700.00	4,611.90	3,469.00	3,468.64	6.73	11.65	-84.34	-1,422.23	10,533.57	10,647.55	10,629.32	18.23	584.195	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		No-Go Distance (usft)	Separation Factor	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,709.60	3,469.00	3,468.64	6.94	11.65	-84.34	-1,422.23	10,533.57	10,660.58	10,642.16	18.42	578.870	
4,900.00	4,807.30	3,469.00	3,468.64	7.14	11.65	-84.34	-1,422.23	10,533.57	10,674.53	10,655.92	18.61	573.675	
5,000.00	4,905.00	3,469.00	3,468.64	7.36	11.65	-84.34	-1,422.23	10,533.57	10,689.39	10,670.60	18.80	568.606	
5,100.00	5,002.71	3,469.00	3,468.64	7.57	11.65	-84.34	-1,422.23	10,533.57	10,705.18	10,686.18	18.99	563.661	
5,200.00	5,100.41	3,469.00	3,468.64	7.78	11.65	-84.34	-1,422.23	10,533.57	10,721.87	10,702.68	19.19	558.836	
5,300.00	5,198.11	3,469.00	3,468.64	8.00	11.65	-84.34	-1,422.23	10,533.57	10,739.46	10,720.08	19.38	554.128	
5,400.00	5,295.81	3,469.00	3,468.64	8.22	11.65	-84.34	-1,422.23	10,533.57	10,757.96	10,738.38	19.58	549.535	
5,500.00	5,393.51	3,469.00	3,468.64	8.44	11.65	-84.34	-1,422.23	10,533.57	10,777.35	10,757.58	19.77	545.054	
5,600.00	5,491.21	3,469.00	3,468.64	8.66	11.65	-84.34	-1,422.23	10,533.57	10,797.63	10,777.66	19.97	540.682	
5,700.00	5,588.91	3,469.00	3,468.64	8.89	11.65	-84.34	-1,422.23	10,533.57	10,818.80	10,798.63	20.17	536.415	
5,800.00	5,686.61	3,469.00	3,468.64	9.11	11.65	-84.34	-1,422.23	10,533.57	10,840.85	10,820.49	20.37	532.252	
5,900.00	5,784.31	3,469.00	3,468.64	9.34	11.65	-84.34	-1,422.23	10,533.57	10,863.78	10,843.21	20.57	528.190	
6,000.00	5,882.01	3,469.00	3,468.64	9.57	11.65	-84.34	-1,422.23	10,533.57	10,887.58	10,866.81	20.77	524.225	
6,100.00	5,979.72	3,469.00	3,468.64	9.80	11.65	-84.34	-1,422.23	10,533.57	10,912.24	10,891.27	20.97	520.355	
6,200.00	6,077.42	3,469.00	3,468.64	10.04	11.65	-84.34	-1,422.23	10,533.57	10,937.76	10,916.59	21.17	516.577	
6,300.00	6,175.12	3,469.00	3,468.64	10.27	11.65	-84.34	-1,422.23	10,533.57	10,964.13	10,942.76	21.38	512.889	
6,400.00	6,272.82	3,469.00	3,468.64	10.51	11.65	-84.34	-1,422.23	10,533.57	10,991.35	10,969.77	21.58	509.288	
6,500.00	6,370.52	3,502.00	3,500.18	10.75	11.67	-84.39	-1,420.94	10,543.18	11,019.20	10,997.40	21.80	505.492	
6,600.00	6,468.22	3,502.00	3,500.18	10.99	11.67	-84.39	-1,420.94	10,543.18	11,047.82	11,025.81	22.01	502.056	
6,662.10	6,528.89	3,502.00	3,500.18	11.14	11.67	-84.39	-1,420.94	10,543.18	11,066.01	11,043.87	22.13	499.962	
6,700.00	6,565.90	3,502.00	3,500.18	11.23	11.67	-69.28	-1,420.94	10,543.18	11,076.19	11,053.98	22.21	498.663	
6,750.00	6,614.48	3,502.00	3,500.18	11.35	11.67	-52.54	-1,420.94	10,543.18	11,086.46	11,064.15	22.31	496.865	
6,800.00	6,662.53	3,502.00	3,500.18	11.47	11.67	-40.43	-1,420.94	10,543.18	11,093.10	11,070.68	22.41	494.989	
6,850.00	6,709.74	3,502.00	3,500.18	11.60	11.67	-32.01	-1,420.94	10,543.18	11,096.06	11,073.56	22.50	493.054	
6,900.00	6,755.82	3,502.00	3,500.18	11.72	11.67	-26.08	-1,420.94	10,543.18	11,095.34	11,072.74	22.59	491.074	
6,950.00	6,800.49	3,502.00	3,500.18	11.85	11.67	-21.77	-1,420.94	10,543.18	11,090.93	11,068.25	22.68	489.063	
7,000.00	6,843.48	3,502.00	3,500.18	11.98	11.67	-18.52	-1,420.94	10,543.18	11,082.87	11,060.11	22.76	487.030	
7,050.00	6,884.52	3,502.00	3,500.18	12.12	11.67	-16.01	-1,420.94	10,543.18	11,071.18	11,048.36	22.83	484.985	
7,100.00	6,923.35	3,502.00	3,500.18	12.27	11.67	-14.00	-1,420.94	10,543.18	11,055.94	11,033.05	22.89	482.935	
7,150.00	6,959.74	3,502.00	3,500.18	12.42	11.67	-12.36	-1,420.94	10,543.18	11,037.22	11,014.27	22.95	480.887	
7,200.00	6,993.46	3,502.00	3,500.18	12.60	11.67	-10.97	-1,420.94	10,543.18	11,015.12	10,992.12	23.00	478.848	
7,250.00	7,024.30	3,502.00	3,500.18	12.79	11.67	-9.76	-1,420.94	10,543.18	10,989.76	10,966.71	23.05	476.823	
7,300.00	7,052.08	3,502.00	3,500.18	12.99	11.67	-8.68	-1,420.94	10,543.18	10,961.27	10,938.18	23.09	474.819	
7,350.00	7,076.62	3,502.00	3,500.18	13.22	11.67	-7.68	-1,420.94	10,543.18	10,929.80	10,906.68	23.12	472.841	
7,400.00	7,097.78	3,517.22	3,514.45	13.46	11.68	-6.73	-1,420.44	10,548.41	10,895.18	10,872.03	23.15	470.707	
7,450.00	7,115.41	3,533.00	3,529.01	13.71	11.68	-5.76	-1,419.92	10,554.49	10,858.55	10,835.38	23.17	468.631	
7,500.00	7,129.42	3,533.00	3,529.01	13.99	11.68	-4.70	-1,419.92	10,554.49	10,819.14	10,795.96	23.18	466.763	
7,550.00	7,139.71	3,533.00	3,529.01	14.28	11.68	-3.50	-1,419.92	10,554.49	10,777.53	10,754.35	23.18	464.945	
7,600.00	7,146.22	3,533.00	3,529.01	14.58	11.68	-2.03	-1,419.92	10,554.49	10,733.96	10,710.79	23.17	463.184	
7,650.00	7,148.92	3,533.00	3,529.01	14.90	11.68	-0.09	-1,419.92	10,554.49	10,688.68	10,665.52	23.16	461.487	
7,660.51	7,149.00	3,533.00	3,529.01	14.97	11.68	0.40	-1,419.92	10,554.49	10,678.96	10,655.81	23.16	461.162	
7,700.00	7,148.98	3,533.00	3,529.01	15.23	11.68	0.40	-1,419.92	10,554.49	10,642.36	10,619.23	23.13	460.028	
7,800.00	7,148.93	3,533.00	3,529.01	15.92	11.68	0.40	-1,419.92	10,554.49	10,549.77	10,526.69	23.08	457.115	
7,900.00	7,148.88	3,533.00	3,529.01	16.66	11.68	0.40	-1,419.92	10,554.49	10,457.31	10,434.28	23.03	454.142	
8,000.00	7,148.82	3,533.00	3,529.01	17.44	11.68	0.40	-1,419.92	10,554.49	10,364.99	10,342.01	22.98	451.106	
8,100.00	7,148.77	3,533.00	3,529.01	18.25	11.68	0.40	-1,419.92	10,554.49	10,272.81	10,249.88	22.93	448.007	
8,200.00	7,148.72	3,533.00	3,529.01	19.10	11.68	0.40	-1,419.92	10,554.49	10,180.78	10,157.89	22.89	444.844	
8,300.00	7,148.67	3,533.00	3,529.01	19.97	11.68	0.40	-1,419.92	10,554.49	10,088.90	10,066.06	22.85	441.613	
8,400.00	7,148.62	3,533.00	3,529.01	20.86	11.68	0.40	-1,419.92	10,554.49	9,997.18	9,974.37	22.81	438.316	
8,500.00	7,148.57	3,533.00	3,529.01	21.78	11.68	0.40	-1,419.92	10,554.49	9,905.62	9,882.84	22.77	434.949	
8,600.00	7,148.51	3,533.00	3,529.01	22.71	11.68	0.40	-1,419.92	10,554.49	9,814.22	9,791.48	22.74	431.513	
8,700.00	7,148.46	3,533.00	3,529.01	23.67	11.68	0.40	-1,419.92	10,554.49	9,722.99	9,700.28	22.72	428.005	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Offset												Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,800.00	7,148.41	3,533.00	3,529.01	24.63	11.68	0.40	-1,419.92	10,554.49	9,631.94	9,609.25	22.69	424.425	
8,900.00	7,148.36	3,533.00	3,529.01	25.62	11.68	0.40	-1,419.92	10,554.49	9,541.07	9,518.39	22.68	420.772	
9,000.00	7,148.31	3,533.00	3,529.01	26.61	11.68	0.40	-1,419.92	10,554.49	9,450.38	9,427.72	22.66	417.045	
9,100.00	7,148.26	3,533.00	3,529.01	27.62	11.68	0.40	-1,419.92	10,554.49	9,359.88	9,337.23	22.65	413.242	
9,200.00	7,148.20	3,561.00	3,554.30	28.64	11.70	0.40	-1,419.18	10,566.48	9,269.50	9,246.83	22.67	408.918	
9,300.00	7,148.15	3,561.00	3,554.30	29.66	11.70	0.40	-1,419.18	10,566.48	9,179.26	9,156.59	22.67	404.964	
9,400.00	7,148.10	3,561.00	3,554.30	30.70	11.70	0.40	-1,419.18	10,566.48	9,089.23	9,066.56	22.67	400.935	
9,500.00	7,148.05	3,561.00	3,554.30	31.74	11.70	0.40	-1,419.18	10,566.48	8,999.41	8,976.73	22.68	396.830	
9,600.00	7,148.00	3,561.00	3,554.30	32.79	11.70	0.40	-1,419.18	10,566.48	8,909.81	8,887.12	22.69	392.651	
9,700.00	7,147.94	3,561.00	3,554.30	33.85	11.70	0.40	-1,419.18	10,566.48	8,820.43	8,797.72	22.71	388.396	
9,800.00	7,147.89	3,561.00	3,554.30	34.92	11.70	0.40	-1,419.18	10,566.48	8,731.28	8,708.54	22.73	384.067	
9,900.00	7,147.84	3,561.00	3,554.30	35.99	11.70	0.40	-1,419.18	10,566.48	8,642.37	8,619.60	22.76	379.663	
10,000.00	7,147.79	3,574.98	3,566.73	37.07	11.70	0.40	-1,419.15	10,572.87	8,553.58	8,530.77	22.81	374.988	
10,100.00	7,147.74	3,592.00	3,581.73	38.15	11.71	0.41	-1,419.81	10,580.89	8,465.17	8,442.31	22.86	370.256	
10,200.00	7,147.69	3,592.00	3,581.73	39.24	11.71	0.41	-1,419.81	10,580.89	8,376.84	8,353.93	22.91	365.647	
10,300.00	7,147.63	3,592.00	3,581.73	40.33	11.71	0.41	-1,419.81	10,580.89	8,288.78	8,265.82	22.96	360.970	
10,400.00	7,147.58	3,592.00	3,581.73	41.42	11.71	0.41	-1,419.81	10,580.89	8,200.99	8,177.97	23.02	356.227	
10,500.00	7,147.53	3,592.00	3,581.73	42.52	11.71	0.41	-1,419.81	10,580.89	8,113.49	8,090.40	23.09	351.420	
10,600.00	7,147.48	3,592.00	3,581.73	43.63	11.71	0.41	-1,419.81	10,580.89	8,026.27	8,003.11	23.16	346.550	
10,700.00	7,147.43	3,592.00	3,581.73	44.73	11.71	0.41	-1,419.81	10,580.89	7,939.36	7,916.12	23.24	341.622	
10,800.00	7,147.38	3,592.00	3,581.73	45.85	11.71	0.41	-1,419.81	10,580.89	7,852.76	7,829.43	23.33	336.637	
10,900.00	7,147.32	3,592.00	3,581.73	46.96	11.71	0.41	-1,419.81	10,580.89	7,766.48	7,743.06	23.42	331.598	
11,000.00	7,147.27	3,592.00	3,581.73	48.08	11.71	0.41	-1,419.81	10,580.89	7,680.54	7,657.01	23.52	326.509	
11,100.00	7,147.22	3,592.00	3,581.73	49.20	11.71	0.41	-1,419.81	10,580.89	7,594.93	7,571.30	23.63	321.374	
11,200.00	7,147.17	3,592.00	3,581.73	50.32	11.71	0.41	-1,419.81	10,580.89	7,509.69	7,485.94	23.75	316.196	
11,300.00	7,147.12	3,623.00	3,607.94	51.44	11.73	0.45	-1,422.42	10,597.20	7,424.75	7,400.86	23.88	310.908	
11,400.00	7,147.07	3,623.00	3,607.94	52.57	11.73	0.45	-1,422.42	10,597.20	7,340.03	7,316.01	24.01	305.671	
11,500.00	7,147.01	3,623.00	3,607.94	53.70	11.73	0.45	-1,422.42	10,597.20	7,255.70	7,231.54	24.15	300.404	
11,600.00	7,146.96	3,623.00	3,607.94	54.84	11.73	0.45	-1,422.42	10,597.20	7,171.77	7,147.47	24.30	295.110	
11,700.00	7,146.91	3,623.00	3,607.94	55.97	11.73	0.45	-1,422.42	10,597.20	7,088.26	7,063.80	24.46	289.793	
11,800.00	7,146.86	3,623.00	3,607.94	57.11	11.73	0.45	-1,422.42	10,597.20	7,005.18	6,980.55	24.63	284.460	
11,815.51	7,146.85	3,623.00	3,607.94	57.28	11.73	0.45	-1,422.42	10,597.20	6,992.33	6,967.68	24.65	283.631	
11,826.17	7,146.84	3,623.00	3,607.94	57.40	11.73	0.61	-1,422.42	10,597.20	6,983.51	6,958.84	24.67	283.063	
11,900.00	7,146.80	3,623.00	3,607.94	58.25	11.73	0.61	-1,422.42	10,597.20	6,922.55	6,897.75	24.80	279.131	
12,000.00	7,146.75	3,623.00	3,607.94	59.39	11.73	0.61	-1,422.42	10,597.20	6,840.38	6,815.39	24.98	273.798	
12,100.00	7,146.69	3,623.00	3,607.94	60.53	11.73	0.61	-1,422.42	10,597.20	6,758.69	6,733.51	25.18	268.461	
12,200.00	7,146.63	3,623.00	3,607.94	61.67	11.73	0.61	-1,422.42	10,597.20	6,677.50	6,652.12	25.38	263.124	
12,300.00	7,146.58	3,623.00	3,607.94	62.82	11.73	0.61	-1,422.42	10,597.20	6,596.82	6,571.23	25.59	257.793	
12,400.00	7,146.52	3,623.00	3,607.94	63.97	11.73	0.61	-1,422.42	10,597.20	6,516.69	6,490.87	25.81	252.472	
12,500.00	7,146.46	3,623.00	3,607.94	65.12	11.73	0.61	-1,422.42	10,597.20	6,437.10	6,411.06	26.04	247.167	
12,600.00	7,146.41	3,623.00	3,607.94	66.27	11.73	0.61	-1,422.42	10,597.20	6,358.10	6,331.81	26.29	241.883	
12,700.00	7,146.35	3,623.00	3,607.94	67.42	11.73	0.61	-1,422.42	10,597.20	6,279.69	6,253.15	26.54	236.624	
12,800.00	7,146.29	3,654.00	3,631.96	68.58	11.77	0.66	-1,425.70	10,616.49	6,201.74	6,174.96	26.78	231.592	
12,900.00	7,146.24	3,654.00	3,631.96	69.73	11.77	0.66	-1,425.70	10,616.49	6,124.28	6,097.23	27.05	226.404	
13,000.00	7,146.18	3,654.00	3,631.96	70.89	11.77	0.66	-1,425.70	10,616.49	6,047.49	6,020.16	27.33	221.256	
13,100.00	7,146.13	3,654.00	3,631.96	72.05	11.77	0.66	-1,425.70	10,616.49	5,971.38	5,943.75	27.63	216.152	
13,200.00	7,146.07	3,654.00	3,631.96	73.21	11.77	0.66	-1,425.70	10,616.49	5,895.98	5,868.05	27.93	211.096	
13,300.00	7,146.01	3,654.00	3,631.96	74.37	11.77	0.66	-1,425.70	10,616.49	5,821.33	5,793.09	28.25	206.094	
13,400.00	7,145.96	3,654.00	3,631.96	75.53	11.77	0.66	-1,425.70	10,616.49	5,747.45	5,718.87	28.57	201.149	
13,500.00	7,145.90	3,654.00	3,631.96	76.70	11.77	0.66	-1,425.70	10,616.49	5,674.36	5,645.45	28.91	196.267	
13,600.00	7,145.84	3,654.00	3,631.96	77.86	11.77	0.66	-1,425.70	10,616.49	5,602.11	5,572.85	29.26	191.450	
13,700.00	7,145.79	3,654.00	3,631.96	79.03	11.77	0.66	-1,425.70	10,616.49	5,530.73	5,501.10	29.62	186.703	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning				
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
13,800.00	7,145.73	3,669.67	3,643.19	80.20	11.79	0.68	-1,427.32	10,627.29	5,459.81	5,429.83	29.98	182.133		
13,900.00	7,145.67	3,686.00	3,654.28	81.37	11.81	0.71	-1,428.94	10,639.16	5,390.30	5,359.96	30.34	177.665		
14,000.00	7,145.62	3,686.00	3,654.28	82.54	11.81	0.71	-1,428.94	10,639.16	5,321.28	5,290.55	30.73	173.142		
14,100.00	7,145.56	3,686.00	3,654.28	83.71	11.81	0.71	-1,428.94	10,639.16	5,253.26	5,222.12	31.14	168.701		
14,200.00	7,145.50	3,686.00	3,654.28	84.88	11.81	0.71	-1,428.94	10,639.16	5,186.28	5,154.72	31.56	164.347		
14,300.00	7,145.45	3,686.00	3,654.28	86.06	11.81	0.71	-1,428.94	10,639.16	5,120.37	5,088.39	31.99	160.083		
14,400.00	7,145.39	3,686.00	3,654.28	87.23	11.81	0.71	-1,428.94	10,639.16	5,055.59	5,023.16	32.43	155.910		
14,500.00	7,145.33	3,686.00	3,654.28	88.41	11.81	0.71	-1,428.94	10,639.16	4,991.96	4,959.08	32.88	151.831		
14,600.00	7,145.28	3,702.75	3,664.99	89.59	11.86	0.74	-1,430.50	10,651.94	4,929.06	4,895.74	33.32	147.938		
14,700.00	7,145.22	3,718.00	3,674.12	90.77	11.91	0.76	-1,431.79	10,664.09	4,867.79	4,834.02	33.77	144.145		
14,800.00	7,145.17	3,718.00	3,674.12	91.95	11.91	0.76	-1,431.79	10,664.09	4,807.40	4,773.15	34.25	140.347		
14,900.00	7,145.11	3,718.00	3,674.12	93.13	11.91	0.76	-1,431.79	10,664.09	4,748.35	4,713.60	34.75	136.652		
15,000.00	7,145.05	3,718.00	3,674.12	94.31	11.91	0.76	-1,431.79	10,664.09	4,690.69	4,655.44	35.25	133.061		
15,100.00	7,145.00	3,718.00	3,674.12	95.49	11.91	0.76	-1,431.79	10,664.09	4,634.47	4,598.70	35.77	129.575		
15,200.00	7,144.94	3,750.00	3,691.79	96.68	12.05	0.79	-1,433.45	10,690.71	4,579.35	4,543.10	36.25	126.316		
15,300.00	7,144.88	3,750.00	3,691.79	97.86	12.05	0.79	-1,433.45	10,690.71	4,525.58	4,488.79	36.79	123.025		
15,400.00	7,144.83	3,750.00	3,691.79	99.05	12.05	0.79	-1,433.45	10,690.71	4,473.40	4,436.07	37.33	119.843		
15,500.00	7,144.77	3,782.00	3,707.89	100.24	12.22	0.82	-1,435.22	10,718.29	4,422.72	4,384.87	37.85	116.860		
15,600.00	7,144.71	3,782.00	3,707.89	101.42	12.22	0.82	-1,435.22	10,718.29	4,373.25	4,334.85	38.40	113.874		
15,700.00	7,144.66	3,798.30	3,715.65	102.61	12.33	0.84	-1,436.44	10,732.57	4,325.40	4,286.44	38.96	111.029		
15,800.00	7,144.60	3,814.00	3,722.96	103.80	12.43	0.85	-1,437.25	10,746.44	4,278.95	4,239.43	39.52	108.276		
15,900.00	7,144.54	3,829.39	3,729.89	104.99	12.55	0.86	-1,438.04	10,760.16	4,234.04	4,193.95	40.09	105.607		
16,000.00	7,144.49	3,845.00	3,736.61	106.19	12.67	0.88	-1,439.20	10,774.21	4,190.76	4,150.09	40.67	103.041		
16,100.00	7,144.43	3,845.00	3,736.61	107.38	12.67	0.88	-1,439.20	10,774.21	4,149.25	4,107.98	41.26	100.556		
16,200.00	7,144.37	3,845.00	3,736.61	108.57	12.67	0.88	-1,439.20	10,774.21	4,109.74	4,067.88	41.86	98.180		
16,300.00	7,144.32	3,877.00	3,748.86	109.77	12.96	0.93	-1,441.73	10,803.65	4,071.76	4,029.30	42.46	95.901		
16,400.00	7,144.26	3,877.00	3,748.86	110.96	12.96	0.93	-1,441.73	10,803.65	4,035.72	3,992.66	43.06	93.717		
16,500.00	7,144.21	3,877.00	3,748.86	112.16	12.96	0.93	-1,441.73	10,803.65	4,001.86	3,958.19	43.67	91.638		
16,600.00	7,144.15	3,909.00	3,758.90	113.36	13.29	0.95	-1,443.16	10,833.99	3,970.05	3,925.76	44.29	89.628		
16,700.00	7,144.09	3,909.00	3,758.90	114.56	13.29	0.95	-1,443.16	10,833.99	3,939.93	3,895.03	44.91	87.737		
16,800.00	7,144.04	3,922.76	3,762.69	115.76	13.44	0.95	-1,443.13	10,847.22	3,912.02	3,866.49	45.53	85.920		
16,862.86	7,144.00	3,941.00	3,767.42	116.51	13.65	0.94	-1,442.31	10,864.81	3,895.48	3,849.55	45.93	84.806		
16,866.76	7,144.00	3,941.00	3,767.42	116.56	13.65	0.93	-1,442.31	10,864.81	3,894.47	3,848.51	45.96	84.740		
16,900.00	7,143.98	3,941.00	3,767.42	116.96	13.65	0.93	-1,442.31	10,864.81	3,886.02	3,839.86	46.16	84.183		
17,000.00	7,143.92	3,958.10	3,771.49	118.16	13.86	0.91	-1,440.69	10,881.34	3,861.99	3,815.20	46.80	82.525		
17,100.00	7,143.87	3,973.00	3,774.71	119.36	14.05	0.88	-1,438.62	10,895.74	3,840.02	3,792.59	47.43	80.961		
17,200.00	7,143.81	3,973.00	3,774.71	120.56	14.05	0.88	-1,438.62	10,895.74	3,820.36	3,772.33	48.04	79.527		
17,300.00	7,143.75	4,006.00	3,780.13	121.77	14.47	0.79	-1,432.76	10,927.75	3,803.00	3,754.29	48.71	78.082		
17,400.00	7,143.69	4,006.00	3,780.13	122.97	14.47	0.79	-1,432.76	10,927.75	3,787.58	3,738.28	49.31	76.819		
17,500.00	7,143.64	4,012.00	3,780.84	124.18	14.55	0.77	-1,431.61	10,933.59	3,774.71	3,724.80	49.91	75.627		
17,600.00	7,143.58	4,038.00	3,783.27	125.39	14.91	0.70	-1,426.62	10,958.99	3,764.24	3,713.68	50.56	74.451		
17,700.00	7,143.52	4,038.00	3,783.27	126.59	14.91	0.70	-1,426.62	10,958.99	3,755.83	3,704.69	51.14	73.442		
17,800.00	7,143.47	4,054.20	3,784.22	127.80	15.15	0.65	-1,423.48	10,974.86	3,749.81	3,698.05	51.75	72.455		
17,900.00	7,143.41	4,070.00	3,784.71	129.01	15.37	0.60	-1,420.45	10,990.35	3,746.12	3,693.76	52.36	71.549		
18,000.00	7,143.35	4,141.95	3,785.73	130.22	16.51	0.43	-1,409.19	11,061.40	3,744.32	3,691.18	53.14	70.464		
18,100.00	7,143.30	4,199.00	3,786.32	131.43	17.48	0.33	-1,402.29	11,118.02	3,743.11	3,689.21	53.89	69.454		
18,125.22	7,143.28	4,199.00	3,786.32	131.74	17.48	0.33	-1,402.29	11,118.02	3,743.02	3,688.99	54.03	69.278		
18,200.00	7,143.24	4,234.99	3,786.13	132.64	18.14	0.27	-1,398.68	11,153.83	3,743.38	3,688.80	54.58	68.590		
18,300.00	7,143.18	4,319.47	3,784.66	133.86	19.72	0.16	-1,391.45	11,237.98	3,744.97	3,689.49	55.48	67.506		
18,400.00	7,143.13	4,544.20	3,787.08	135.07	24.28	-0.13	-1,372.23	11,461.85	3,742.66	3,685.51	57.15	65.488		
18,500.00	7,143.07	4,608.15	3,787.90	136.28	25.64	-0.20	-1,367.58	11,525.63	3,741.32	3,683.29	58.04	64.466		
18,590.36	7,143.02	4,665.77	3,788.17	137.38	26.89	-0.26	-1,363.75	11,583.12	3,740.89	3,682.05	58.84	63.578		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
18,600.00	7,143.01	4,671.05	3,788.16	137.50	27.00	-0.26	-1,363.39	11,588.39	3,740.89	3,681.97	58.92	63.491		
18,700.00	7,142.96	4,744.91	3,787.62	138.72	28.62	-0.34	-1,358.12	11,662.05	3,741.54	3,681.67	59.87	62.489		
18,800.00	7,142.90	4,967.00	3,790.02	139.93	33.58	-0.58	-1,342.57	11,883.55	3,740.12	3,678.37	61.75	60.566		
18,900.00	7,142.84	5,031.00	3,791.30	141.15	35.03	-0.66	-1,337.28	11,947.32	3,738.16	3,675.47	62.69	59.632		
19,000.00	7,142.78	5,094.00	3,792.12	142.37	36.47	-0.72	-1,332.99	12,010.17	3,736.99	3,673.38	63.61	58.745		
19,058.15	7,142.75	5,134.73	3,792.20	143.08	37.40	-0.75	-1,331.07	12,050.85	3,736.87	3,672.69	64.18	58.227	CC	
19,100.00	7,142.73	5,168.50	3,792.15	143.59	38.18	-0.77	-1,329.82	12,084.60	3,736.93	3,672.32	64.61	57.837		
19,200.00	7,142.67	5,256.06	3,791.89	144.81	40.21	-0.82	-1,326.27	12,172.08	3,737.23	3,671.53	65.70	56.884		
19,300.00	7,142.61	5,336.42	3,791.19	146.03	42.07	-0.86	-1,324.00	12,252.41	3,738.08	3,671.34	66.74	56.009		
19,400.00	7,142.56	5,414.00	3,790.06	147.25	43.88	-0.90	-1,320.94	12,329.92	3,739.53	3,671.76	67.77	55.182		
19,500.00	7,142.50	5,545.88	3,788.21	148.47	46.97	-0.99	-1,314.71	12,461.64	3,741.00	3,671.83	69.17	54.081		
19,600.00	7,142.44	5,627.03	3,787.28	149.70	48.87	-1.07	-1,309.45	12,542.61	3,742.18	3,671.94	70.24	53.277		
19,700.00	7,142.39	5,858.00	3,790.28	150.92	54.29	-1.37	-1,289.86	12,772.62	3,739.99	3,667.63	72.37	51.681		
19,800.00	7,142.33	5,922.00	3,791.70	152.15	55.80	-1.46	-1,284.13	12,836.35	3,738.07	3,664.73	73.34	50.968		
19,877.81	7,142.29	5,956.27	3,791.79	153.10	56.61	-1.50	-1,281.24	12,870.50	3,737.78	3,663.79	73.99	50.519		
19,900.00	7,142.27	5,968.00	3,791.80	153.37	56.88	-1.52	-1,280.33	12,882.19	3,737.80	3,663.62	74.18	50.386		
20,000.00	7,142.22	6,050.00	3,791.42	154.60	58.82	-1.61	-1,274.21	12,963.96	3,738.39	3,663.11	75.28	49.661	ES	
20,100.00	7,142.16	6,114.00	3,790.74	155.83	60.34	-1.68	-1,269.56	13,027.79	3,739.63	3,663.39	76.24	49.051		
20,200.00	7,142.10	6,196.41	3,789.32	157.06	62.29	-1.76	-1,264.15	13,110.01	3,741.51	3,664.17	77.34	48.380		
20,300.00	7,142.04	6,260.00	3,788.00	158.28	63.80	-1.82	-1,260.23	13,173.46	3,743.90	3,665.61	78.29	47.823		
20,400.00	7,141.99	6,260.00	3,788.00	159.51	63.80	-1.82	-1,260.23	13,173.46	3,748.42	3,669.69	78.72	47.616		
20,500.00	7,141.93	6,260.00	3,788.00	160.74	63.80	-1.82	-1,260.23	13,173.46	3,755.59	3,676.48	79.11	47.471		
20,600.00	7,141.87	6,260.00	3,788.00	161.98	63.80	-1.82	-1,260.23	13,173.46	3,765.41	3,685.95	79.46	47.388		
20,700.00	7,141.82	6,260.00	3,788.00	163.21	63.80	-1.82	-1,260.23	13,173.46	3,777.85	3,698.09	79.76	47.363	SF	
20,800.00	7,141.76	6,260.00	3,788.00	164.44	63.80	-1.82	-1,260.23	13,173.46	3,792.89	3,712.86	80.02	47.397		
20,900.00	7,141.70	6,260.00	3,788.00	165.68	63.80	-1.82	-1,260.23	13,173.46	3,810.49	3,730.25	80.24	47.488		
21,000.00	7,141.65	6,260.00	3,788.00	166.91	63.80	-1.82	-1,260.23	13,173.46	3,830.62	3,750.21	80.42	47.635		
21,100.00	7,141.59	6,260.00	3,788.00	168.15	63.80	-1.82	-1,260.23	13,173.46	3,853.25	3,772.70	80.55	47.836		
21,200.00	7,141.53	6,260.00	3,788.00	169.38	63.80	-1.82	-1,260.23	13,173.46	3,878.32	3,797.67	80.65	48.091		
21,300.00	7,141.48	6,260.00	3,788.00	170.62	63.80	-1.82	-1,260.23	13,173.46	3,905.79	3,825.09	80.70	48.397		
21,400.00	7,141.42	6,260.00	3,788.00	171.86	63.80	-1.82	-1,260.23	13,173.46	3,935.61	3,854.89	80.73	48.753		
21,500.00	7,141.36	6,260.00	3,788.00	173.10	63.80	-1.82	-1,260.23	13,173.46	3,967.73	3,887.02	80.71	49.159		
21,600.00	7,141.31	6,260.00	3,788.00	174.34	63.80	-1.82	-1,260.23	13,173.46	4,002.09	3,921.42	80.67	49.612		
21,700.00	7,141.25	6,260.00	3,788.00	175.58	63.80	-1.82	-1,260.23	13,173.46	4,038.63	3,958.04	80.59	50.112		
21,800.00	7,141.19	6,260.00	3,788.00	176.82	63.80	-1.82	-1,260.23	13,173.46	4,077.30	3,996.81	80.49	50.657		
21,900.00	7,141.13	6,260.00	3,788.00	178.06	63.80	-1.82	-1,260.23	13,173.46	4,118.04	4,037.68	80.36	51.246		
22,000.00	7,141.08	6,260.00	3,788.00	179.30	63.80	-1.82	-1,260.23	13,173.46	4,160.78	4,080.57	80.21	51.877		
22,100.00	7,141.02	6,260.00	3,788.00	180.55	63.80	-1.82	-1,260.23	13,173.46	4,205.46	4,125.43	80.03	52.549		
22,136.53	7,141.00	6,260.00	3,788.00	181.00	63.80	-1.82	-1,260.23	13,173.46	4,222.26	4,142.30	79.96	52.805		
22,137.77	7,141.00	6,260.00	3,788.00	181.02	63.80	-1.82	-1,260.23	13,173.46	4,222.83	4,142.87	79.96	52.813		
22,200.00	7,140.96	6,260.00	3,788.00	181.79	63.80	-1.82	-1,260.23	13,173.46	4,252.03	4,172.19	79.83	53.261		
22,300.00	7,140.91	6,260.00	3,788.00	183.04	63.80	-1.82	-1,260.23	13,173.46	4,300.42	4,220.80	79.62	54.012		
22,400.00	7,140.85	6,260.00	3,788.00	184.28	63.80	-1.82	-1,260.23	13,173.46	4,350.56	4,271.17	79.39	54.799		
22,500.00	7,140.79	6,260.00	3,788.00	185.53	63.80	-1.82	-1,260.23	13,173.46	4,402.41	4,323.27	79.15	55.623		
22,600.00	7,140.73	6,260.00	3,788.00	186.78	63.80	-1.82	-1,260.23	13,173.46	4,455.90	4,377.01	78.89	56.482		
22,700.00	7,140.68	6,260.00	3,788.00	188.02	63.80	-1.82	-1,260.23	13,173.46	4,510.98	4,432.35	78.62	57.374		
22,800.00	7,140.62	6,260.00	3,788.00	189.27	63.80	-1.82	-1,260.23	13,173.46	4,567.57	4,489.23	78.35	58.298		
22,900.00	7,140.56	6,260.00	3,788.00	190.52	63.80	-1.82	-1,260.23	13,173.46	4,625.64	4,547.58	78.06	59.254		
23,000.00	7,140.50	6,260.00	3,788.00	191.77	63.80	-1.82	-1,260.23	13,173.46	4,685.12	4,607.35	77.78	60.239		
23,100.00	7,140.45	6,260.00	3,788.00	193.02	63.80	-1.82	-1,260.23	13,173.46	4,745.97	4,668.49	77.48	61.253		
23,200.00	7,140.39	6,260.00	3,788.00	194.28	63.80	-1.82	-1,260.23	13,173.46	4,808.12	4,730.94	77.18	62.295		
23,300.00	7,140.33	6,260.00	3,788.00	195.53	63.80	-1.82	-1,260.23	13,173.46	4,871.54	4,794.66	76.88	63.364		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #001A - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM						Rule Assigned:		Offset Well Error:		0.00 usft		
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Warning						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
23,400.00	7,140.27	6,260.00	3,788.00	196.78	63.80	-1.82	-1,260.23	13,173.46	4,936.16	4,859.58	76.58	64.457		
23,500.00	7,140.22	6,260.00	3,788.00	198.04	63.80	-1.82	-1,260.23	13,173.46	5,001.95	4,925.68	76.28	65.576		
23,600.00	7,140.16	6,260.00	3,788.00	199.29	63.80	-1.82	-1,260.23	13,173.46	5,068.86	4,992.89	75.98	66.717		
23,700.00	7,140.10	6,260.00	3,788.00	200.55	63.80	-1.82	-1,260.23	13,173.46	5,136.85	5,061.17	75.67	67.881		
23,800.00	7,140.04	6,260.00	3,788.00	201.81	63.80	-1.82	-1,260.23	13,173.46	5,205.87	5,130.49	75.37	69.067		
23,900.00	7,139.99	6,260.00	3,788.00	203.06	63.80	-1.82	-1,260.23	13,173.46	5,275.88	5,200.80	75.08	70.273		
24,000.00	7,139.93	6,260.00	3,788.00	204.32	63.80	-1.82	-1,260.23	13,173.46	5,346.84	5,272.06	74.78	71.498		
24,100.00	7,139.87	6,260.00	3,788.00	205.58	63.80	-1.82	-1,260.23	13,173.46	5,418.72	5,344.23	74.49	72.742		
24,200.00	7,139.81	6,260.00	3,788.00	206.84	63.80	-1.82	-1,260.23	13,173.46	5,491.48	5,417.28	74.21	74.004		
24,300.00	7,139.76	6,260.00	3,788.00	208.10	63.80	-1.82	-1,260.23	13,173.46	5,565.09	5,491.16	73.92	75.282		
24,400.00	7,139.70	6,260.00	3,788.00	209.36	63.80	-1.82	-1,260.23	13,173.46	5,639.51	5,565.86	73.65	76.577		
24,500.00	7,139.64	6,260.00	3,788.00	210.62	63.80	-1.82	-1,260.23	13,173.46	5,714.71	5,641.33	73.37	77.886		
24,600.00	7,139.58	6,260.00	3,788.00	211.89	63.80	-1.82	-1,260.23	13,173.46	5,790.66	5,717.55	73.10	79.210		
24,700.00	7,139.53	6,260.00	3,788.00	213.15	63.80	-1.82	-1,260.23	13,173.46	5,867.33	5,794.48	72.84	80.548		
24,800.00	7,139.47	6,260.00	3,788.00	214.42	63.80	-1.82	-1,260.23	13,173.46	5,944.69	5,872.11	72.59	81.899		
24,900.00	7,139.41	6,260.00	3,788.00	215.68	63.80	-1.82	-1,260.23	13,173.46	6,022.72	5,950.39	72.34	83.261		
25,000.00	7,139.35	6,260.00	3,788.00	216.95	63.80	-1.82	-1,260.23	13,173.46	6,101.39	6,029.30	72.09	84.636		
25,100.00	7,139.30	6,260.00	3,788.00	218.21	63.80	-1.82	-1,260.23	13,173.46	6,180.68	6,108.83	71.85	86.021		
25,200.00	7,139.24	6,260.00	3,788.00	219.48	63.80	-1.82	-1,260.23	13,173.46	6,260.57	6,188.95	71.62	87.416		
25,300.00	7,139.18	6,260.00	3,788.00	220.75	63.80	-1.82	-1,260.23	13,173.46	6,341.02	6,269.63	71.39	88.820		
25,400.00	7,139.13	6,260.00	3,788.00	222.02	63.80	-1.82	-1,260.23	13,173.46	6,422.02	6,350.85	71.17	90.234		
25,500.00	7,139.07	6,260.00	3,788.00	223.29	63.80	-1.82	-1,260.23	13,173.46	6,503.55	6,432.59	70.96	91.656		
25,600.00	7,139.01	6,260.00	3,788.00	224.56	63.80	-1.82	-1,260.23	13,173.46	6,585.59	6,514.84	70.75	93.085		
25,700.00	7,138.95	6,260.00	3,788.00	225.83	63.80	-1.82	-1,260.23	13,173.46	6,668.12	6,597.58	70.55	94.522		
25,800.00	7,138.90	6,260.00	3,788.00	227.10	63.80	-1.82	-1,260.23	13,173.46	6,751.12	6,680.77	70.35	95.965		
25,900.00	7,138.84	6,260.00	3,788.00	228.38	63.80	-1.82	-1,260.23	13,173.46	6,834.58	6,764.42	70.16	97.414		
26,000.00	7,138.78	6,260.00	3,788.00	229.65	63.80	-1.82	-1,260.23	13,173.46	6,918.48	6,848.50	69.98	98.869		
26,100.00	7,138.72	6,260.00	3,788.00	230.93	63.80	-1.82	-1,260.23	13,173.46	7,002.80	6,933.00	69.80	100.329		
26,200.00	7,138.67	6,260.00	3,788.00	232.20	63.80	-1.82	-1,260.23	13,173.46	7,087.52	7,017.90	69.63	101.794		
26,300.00	7,138.61	6,260.00	3,788.00	233.48	63.80	-1.82	-1,260.23	13,173.46	7,172.64	7,103.18	69.46	103.263		
26,400.00	7,138.55	6,260.00	3,788.00	234.75	63.80	-1.82	-1,260.23	13,173.46	7,258.14	7,188.84	69.30	104.736		
26,500.00	7,138.49	6,260.00	3,788.00	236.03	63.80	-1.82	-1,260.23	13,173.46	7,344.01	7,274.87	69.14	106.212		
26,600.00	7,138.44	6,260.00	3,788.00	237.31	63.80	-1.82	-1,260.23	13,173.46	7,430.23	7,361.23	69.00	107.691		
26,700.00	7,138.38	6,260.00	3,788.00	238.59	63.80	-1.82	-1,260.23	13,173.46	7,516.79	7,447.94	68.85	109.173		
26,800.00	7,138.32	6,260.00	3,788.00	239.87	63.80	-1.82	-1,260.23	13,173.46	7,603.68	7,534.97	68.71	110.657		
26,900.00	7,138.26	6,260.00	3,788.00	241.15	63.80	-1.82	-1,260.23	13,173.46	7,690.89	7,622.31	68.58	112.142		
27,000.00	7,138.21	6,260.00	3,788.00	242.43	63.80	-1.82	-1,260.23	13,173.46	7,778.41	7,709.95	68.45	113.630		
27,100.00	7,138.15	6,260.00	3,788.00	243.71	63.80	-1.82	-1,260.23	13,173.46	7,866.22	7,797.89	68.33	115.118		
27,157.78	7,138.12	6,260.00	3,788.00	244.46	63.80	-1.82	-1,260.23	13,173.46	7,917.10	7,848.83	68.26	115.978		
27,200.00	7,138.09	6,260.00	3,788.00	245.00	63.80	-1.82	-1,260.23	13,173.46	7,954.33	7,886.11	68.21	116.607		
27,300.00	7,138.03	6,260.00	3,788.00	246.28	63.80	-1.82	-1,260.23	13,173.46	8,042.71	7,974.60	68.10	118.097		
27,357.78	7,138.00	6,260.00	3,788.00	247.02	63.80	-1.82	-1,260.23	13,173.46	8,093.89	8,025.85	68.04	118.958		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	364.00	364.00	0.00	1.30	103.80	-2,628.73	10,701.38	11,019.51				
125.00	125.00	489.00	489.00	0.05	1.75	100.22	-2,628.73	10,701.38	11,019.61	11,017.83	1.79	6,164.586	
225.00	224.99	588.99	588.99	0.19	2.11	100.94	-2,628.73	10,701.38	11,019.78	11,017.56	2.22	4,966.280	
290.00	289.99	653.99	653.99	0.28	2.34	86.40	-2,628.73	10,701.38	11,019.82	11,017.32	2.50	4,413.243	
300.00	299.99	663.99	663.99	0.29	2.38	86.40	-2,628.73	10,701.38	11,019.81	11,017.27	2.54	4,339.388	
400.00	399.99	763.99	763.99	0.42	2.74	86.41	-2,628.73	10,701.38	11,019.77	11,016.81	2.97	3,715.694	
440.00	439.99	803.99	803.99	0.47	2.88	86.41	-2,628.73	10,701.38	11,019.75	11,016.62	3.14	3,513.296	
500.00	499.99	863.99	863.99	0.50	3.10	-67.81	-2,628.73	10,701.38	11,019.58	11,016.18	3.39	3,248.203	
600.00	599.93	963.93	963.93	0.47	3.46	-73.58	-2,628.73	10,701.38	11,018.60	11,014.78	3.82	2,882.759	
700.00	699.70	1,063.70	1,063.70	0.48	3.81	-74.64	-2,628.73	10,701.38	11,016.78	11,012.53	4.25	2,590.130	
800.00	799.18	1,163.18	1,163.18	0.52	4.17	-75.15	-2,628.73	10,701.38	11,014.13	11,009.44	4.69	2,350.092	
900.00	898.24	1,262.24	1,262.24	0.60	4.52	-75.51	-2,628.73	10,701.38	11,010.65	11,005.53	5.12	2,148.657	
1,000.00	996.77	1,360.77	1,360.77	0.69	4.88	-75.82	-2,628.73	10,701.38	11,006.37	11,000.80	5.57	1,976.440	
1,074.04	1,069.30	1,433.30	1,433.30	0.77	5.14	-76.04	-2,628.73	10,701.38	11,002.69	10,996.78	5.90	1,863.792	
1,100.00	1,094.67	1,458.67	1,458.67	0.79	5.23	-76.07	-2,628.73	10,701.38	11,001.32	10,995.30	6.02	1,826.871	
1,200.00	1,192.37	1,556.37	1,556.37	0.91	5.58	-76.17	-2,628.73	10,701.38	10,996.09	10,989.61	6.48	1,696.163	
1,300.00	1,290.07	1,654.07	1,654.07	1.02	5.93	-76.28	-2,628.73	10,701.38	10,990.90	10,983.95	6.95	1,581.475	
1,400.00	1,387.77	1,751.77	1,751.77	1.15	6.28	-76.38	-2,628.73	10,701.38	10,985.75	10,978.33	7.42	1,480.247	
1,500.00	1,485.47	1,849.47	1,849.47	1.27	6.63	-76.49	-2,628.73	10,701.38	10,980.64	10,972.74	7.90	1,390.369	
1,600.00	1,583.17	1,947.17	1,947.17	1.40	6.98	-76.59	-2,628.73	10,701.38	10,975.57	10,967.19	8.38	1,310.118	
1,700.00	1,680.87	2,044.87	2,044.87	1.53	7.33	-76.70	-2,628.73	10,701.38	10,970.54	10,961.68	8.86	1,238.078	
1,800.00	1,778.57	2,142.57	2,142.57	1.67	7.68	-76.81	-2,628.73	10,701.38	10,965.54	10,956.19	9.35	1,173.088	
1,900.00	1,876.27	2,240.27	2,240.27	1.81	8.03	-76.91	-2,628.73	10,701.38	10,960.59	10,950.75	9.84	1,114.186	
2,000.00	1,973.98	2,337.98	2,337.98	1.95	8.38	-77.02	-2,628.73	10,701.38	10,955.67	10,945.34	10.33	1,060.575	
2,100.00	2,071.68	2,435.68	2,435.68	2.09	8.73	-77.12	-2,628.73	10,701.38	10,950.79	10,939.97	10.83	1,011.585	
2,200.00	2,169.38	2,533.38	2,533.38	2.24	9.08	-77.23	-2,628.73	10,701.38	10,945.96	10,934.63	11.32	966.656	
2,300.00	2,267.08	2,631.08	2,631.08	2.39	9.43	-77.34	-2,628.73	10,701.38	10,941.16	10,929.34	11.82	925.311	
2,400.00	2,364.78	2,728.78	2,728.78	2.55	9.78	-77.44	-2,628.73	10,701.38	10,936.40	10,924.07	12.33	887.144	
2,500.00	2,462.48	2,826.48	2,826.48	2.70	10.13	-77.55	-2,628.73	10,701.38	10,931.68	10,918.85	12.83	851.808	
2,600.00	2,560.18	2,924.18	2,924.18	2.86	10.48	-77.66	-2,628.73	10,701.38	10,927.00	10,913.66	13.34	819.003	
2,700.00	2,657.88	3,021.88	3,021.88	3.02	10.83	-77.76	-2,628.73	10,701.38	10,922.36	10,908.51	13.85	788.472	
2,800.00	2,755.58	3,119.58	3,119.58	3.19	11.18	-77.87	-2,628.73	10,701.38	10,917.76	10,903.40	14.37	759.989	
2,900.00	2,853.28	3,217.28	3,217.28	3.35	11.53	-77.98	-2,628.73	10,701.38	10,913.20	10,898.32	14.88	733.357	
3,000.00	2,950.99	3,314.99	3,314.99	3.52	11.88	-78.09	-2,628.73	10,701.38	10,908.68	10,893.28	15.40	708.404	
3,100.00	3,048.69	3,412.69	3,412.69	3.69	12.23	-78.19	-2,628.73	10,701.38	10,904.20	10,888.28	15.92	684.979	
3,200.00	3,146.39	3,459.00	3,459.00	3.87	12.40	-78.24	-2,628.73	10,701.38	10,899.88	10,883.63	16.26	670.472	
3,300.00	3,244.09	3,459.00	3,459.00	4.04	12.40	-78.24	-2,628.73	10,701.38	10,896.38	10,879.95	16.43	663.180	
3,400.00	3,341.79	3,459.00	3,459.00	4.22	12.40	-78.24	-2,628.73	10,701.38	10,893.79	10,877.19	16.61	656.043	
3,500.00	3,439.49	3,459.00	3,459.00	4.40	12.40	-78.24	-2,628.73	10,701.38	10,892.13	10,875.35	16.78	649.060	
3,600.00	3,537.19	3,459.00	3,459.00	4.58	12.40	-78.24	-2,628.73	10,701.38	10,891.38	10,874.42	16.96	642.228	
3,631.66	3,568.12	3,459.00	3,459.00	4.64	12.40	-78.24	-2,628.73	10,701.38	10,891.33	10,874.32	17.02	640.088	
3,700.00	3,634.89	3,459.00	3,459.00	4.77	12.40	-78.24	-2,628.73	10,701.38	10,891.55	10,874.41	17.14	635.545	
3,800.00	3,732.59	3,459.00	3,459.00	4.95	12.40	-78.24	-2,628.73	10,701.38	10,892.63	10,875.32	17.32	629.010	
3,900.00	3,830.29	3,479.02	3,479.00	5.14	12.47	-78.27	-2,628.73	10,702.05	10,893.96	10,876.39	17.57	619.999	
4,000.00	3,928.00	3,500.00	3,499.87	5.33	12.55	-78.29	-2,628.75	10,704.17	10,897.26	10,879.43	17.83	611.217	
4,100.00	4,025.70	3,500.00	3,499.87	5.53	12.55	-78.29	-2,628.75	10,704.17	10,900.73	10,882.72	18.01	605.191	
4,200.00	4,123.40	3,500.00	3,499.87	5.72	12.55	-78.29	-2,628.75	10,704.17	10,905.12	10,886.92	18.20	599.301	
4,300.00	4,221.10	3,500.00	3,499.87	5.92	12.55	-78.29	-2,628.75	10,704.17	10,910.42	10,892.04	18.38	593.547	
4,400.00	4,318.80	3,500.00	3,499.87	6.12	12.55	-78.29	-2,628.75	10,704.17	10,916.64	10,898.07	18.57	587.925	
4,500.00	4,416.50	3,500.00	3,499.87	6.32	12.55	-78.29	-2,628.75	10,704.17	10,923.76	10,905.01	18.76	582.432	
4,600.00	4,514.20	3,500.00	3,499.87	6.52	12.55	-78.29	-2,628.75	10,704.17	10,931.80	10,912.86	18.94	577.067	
4,700.00	4,611.90	3,500.00	3,499.87	6.73	12.55	-78.29	-2,628.75	10,704.17	10,940.75	10,921.62	19.13	571.828	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY													Offset Site Error: 0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,709.60	3,500.00	3,499.87	6.94	12.55	-78.29	-2,628.75	10,704.17	10,950.60	10,931.28	19.32	566.711	
4,900.00	4,807.30	3,500.00	3,499.87	7.14	12.55	-78.29	-2,628.75	10,704.17	10,961.36	10,941.84	19.51	561.714	
5,000.00	4,905.00	3,500.00	3,499.87	7.36	12.55	-78.29	-2,628.75	10,704.17	10,973.01	10,953.31	19.71	556.834	
5,100.00	5,002.71	3,500.00	3,499.87	7.57	12.55	-78.29	-2,628.75	10,704.17	10,985.57	10,965.67	19.90	552.070	
5,200.00	5,100.41	3,500.00	3,499.87	7.78	12.55	-78.29	-2,628.75	10,704.17	10,999.02	10,978.92	20.09	547.418	
5,300.00	5,198.11	3,500.00	3,499.87	8.00	12.55	-78.29	-2,628.75	10,704.17	11,013.36	10,993.07	20.29	542.876	
5,400.00	5,295.81	3,500.00	3,499.87	8.22	12.55	-78.29	-2,628.75	10,704.17	11,028.59	11,008.10	20.48	538.441	
5,500.00	5,393.51	3,500.00	3,499.87	8.44	12.55	-78.29	-2,628.75	10,704.17	11,044.70	11,024.02	20.68	534.112	
5,600.00	5,491.21	3,500.00	3,499.87	8.66	12.55	-78.29	-2,628.75	10,704.17	11,061.69	11,040.82	20.88	529.885	
5,700.00	5,588.91	3,500.00	3,499.87	8.89	12.55	-78.29	-2,628.75	10,704.17	11,079.57	11,058.49	21.07	525.758	
5,800.00	5,686.61	3,500.00	3,499.87	9.11	12.55	-78.29	-2,628.75	10,704.17	11,098.31	11,077.04	21.27	521.729	
5,900.00	5,784.31	3,500.00	3,499.87	9.34	12.55	-78.29	-2,628.75	10,704.17	11,117.92	11,096.45	21.47	517.794	
6,000.00	5,882.01	3,500.00	3,499.87	9.57	12.55	-78.29	-2,628.75	10,704.17	11,138.39	11,116.72	21.67	513.952	
6,100.00	5,979.72	3,500.00	3,499.87	9.80	12.55	-78.29	-2,628.75	10,704.17	11,159.73	11,137.85	21.87	510.201	
6,200.00	6,077.42	3,500.00	3,499.87	10.04	12.55	-78.29	-2,628.75	10,704.17	11,181.91	11,159.84	22.08	506.537	
6,300.00	6,175.12	3,500.00	3,499.87	10.27	12.55	-78.29	-2,628.75	10,704.17	11,204.95	11,182.67	22.28	502.958	
6,400.00	6,272.82	3,500.00	3,499.87	10.51	12.55	-78.29	-2,628.75	10,704.17	11,228.83	11,206.34	22.48	499.463	
6,500.00	6,370.52	3,500.00	3,499.87	10.75	12.55	-78.29	-2,628.75	10,704.17	11,253.54	11,230.86	22.69	496.048	
6,600.00	6,468.22	3,500.00	3,499.87	10.99	12.55	-78.29	-2,628.75	10,704.17	11,279.09	11,256.20	22.89	492.712	
6,662.10	6,528.89	3,549.84	3,548.46	11.14	12.72	-78.35	-2,628.82	10,715.03	11,291.16	11,267.96	23.20	486.631	
6,700.00	6,565.90	3,550.77	3,549.34	11.23	12.73	-63.31	-2,628.82	10,715.30	11,300.02	11,276.74	23.28	485.332	
6,750.00	6,614.48	3,600.00	3,594.87	11.35	12.90	-46.70	-2,628.95	10,733.91	11,312.48	11,288.92	23.56	480.142	
6,800.00	6,662.53	3,600.00	3,594.87	11.47	12.90	-34.62	-2,628.95	10,733.91	11,317.22	11,293.57	23.65	478.500	
6,850.00	6,709.74	3,600.00	3,594.87	11.60	12.90	-26.20	-2,628.95	10,733.91	11,318.32	11,294.59	23.73	476.865	
6,900.00	6,755.82	3,600.00	3,594.87	11.72	12.90	-20.23	-2,628.95	10,733.91	11,315.79	11,291.98	23.81	475.253	
6,950.00	6,800.49	3,600.00	3,594.87	11.85	12.90	-15.85	-2,628.95	10,733.91	11,309.62	11,285.75	23.88	473.674	
7,000.00	6,843.48	3,600.00	3,594.87	11.98	12.90	-12.50	-2,628.95	10,733.91	11,299.87	11,275.93	23.93	472.135	
7,050.00	6,884.52	3,600.00	3,594.87	12.12	12.90	-9.85	-2,628.95	10,733.91	11,286.57	11,262.58	23.98	470.643	
7,100.00	6,923.35	3,600.00	3,594.87	12.27	12.90	-7.65	-2,628.95	10,733.91	11,269.79	11,245.77	24.02	469.203	
7,150.00	6,959.74	3,600.00	3,594.87	12.42	12.90	-5.77	-2,628.95	10,733.91	11,249.63	11,225.58	24.05	467.819	
7,200.00	6,993.46	3,600.00	3,594.87	12.60	12.90	-4.09	-2,628.95	10,733.91	11,226.19	11,202.13	24.07	466.494	
7,250.00	7,024.30	3,600.00	3,594.87	12.79	12.90	-2.52	-2,628.95	10,733.91	11,199.60	11,175.53	24.07	465.232	
7,300.00	7,052.08	3,600.00	3,594.87	12.99	12.90	-1.00	-2,628.95	10,733.91	11,169.99	11,145.92	24.07	464.035	
7,350.00	7,076.62	3,600.00	3,594.87	13.22	12.90	0.55	-2,628.95	10,733.91	11,137.53	11,113.47	24.06	462.906	
7,400.00	7,097.78	3,600.00	3,594.87	13.46	12.90	2.20	-2,628.95	10,733.91	11,102.39	11,078.36	24.04	461.848	
7,450.00	7,115.41	3,600.00	3,594.87	13.71	12.90	4.03	-2,628.95	10,733.91	11,064.77	11,040.76	24.01	460.864	
7,500.00	7,129.42	3,600.00	3,594.87	13.99	12.90	6.16	-2,628.95	10,733.91	11,024.87	11,000.90	23.97	459.956	
7,550.00	7,139.71	3,600.00	3,594.87	14.28	12.90	8.75	-2,628.95	10,733.91	10,982.92	10,958.99	23.92	459.126	
7,600.00	7,146.22	3,600.00	3,594.87	14.58	12.90	12.04	-2,628.95	10,733.91	10,939.14	10,915.28	23.86	458.378	
7,650.00	7,148.92	3,600.00	3,594.87	14.90	12.90	16.43	-2,628.95	10,733.91	10,893.80	10,870.00	23.80	457.711	
7,660.51	7,149.00	3,600.00	3,594.87	14.97	12.90	17.55	-2,628.95	10,733.91	10,884.09	10,860.31	23.78	457.608	
7,700.00	7,148.98	3,600.00	3,594.87	15.23	12.90	17.55	-2,628.95	10,733.91	10,847.53	10,823.81	23.72	457.326	
7,800.00	7,148.93	3,600.00	3,594.87	15.92	12.90	17.55	-2,628.95	10,733.91	10,755.03	10,731.47	23.55	456.596	
7,900.00	7,148.88	3,600.00	3,594.87	16.66	12.90	17.55	-2,628.95	10,733.91	10,662.66	10,639.27	23.39	455.840	
8,000.00	7,148.82	3,600.00	3,594.87	17.44	12.90	17.55	-2,628.95	10,733.91	10,570.44	10,547.21	23.23	455.055	
8,100.00	7,148.77	3,600.00	3,594.87	18.25	12.90	17.55	-2,628.95	10,733.91	10,478.35	10,455.28	23.07	454.235	
8,200.00	7,148.72	3,600.00	3,594.87	19.10	12.90	17.55	-2,628.95	10,733.91	10,386.41	10,363.51	22.91	453.375	
8,300.00	7,148.67	3,600.00	3,594.87	19.97	12.90	17.55	-2,628.95	10,733.91	10,294.63	10,271.87	22.75	452.469	
8,400.00	7,148.62	3,600.00	3,594.87	20.86	12.90	17.55	-2,628.95	10,733.91	10,202.99	10,180.40	22.60	451.509	
8,500.00	7,148.57	3,600.00	3,594.87	21.78	12.90	17.55	-2,628.95	10,733.91	10,111.52	10,089.07	22.45	450.489	
8,600.00	7,148.51	3,600.00	3,594.87	22.71	12.90	17.55	-2,628.95	10,733.91	10,020.21	9,997.91	22.30	449.401	
8,700.00	7,148.46	3,600.00	3,594.87	23.67	12.90	17.55	-2,628.95	10,733.91	9,929.06	9,906.91	22.15	448.235	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,800.00	7,148.41	3,600.00	3,594.87	24.63	12.90	17.55	-2,628.95	10,733.91	9,838.09	9,816.08	22.01	446.982	
8,900.00	7,148.36	3,600.00	3,594.87	25.62	12.90	17.55	-2,628.95	10,733.91	9,747.30	9,725.42	21.87	445.632	
9,000.00	7,148.31	3,600.00	3,594.87	26.61	12.90	17.55	-2,628.95	10,733.91	9,656.68	9,634.94	21.74	444.173	
9,100.00	7,148.26	3,600.00	3,594.87	27.62	12.90	17.55	-2,628.95	10,733.91	9,566.26	9,544.64	21.61	442.593	
9,200.00	7,148.20	3,600.00	3,594.87	28.64	12.90	17.55	-2,628.95	10,733.91	9,476.02	9,454.53	21.49	440.881	
9,300.00	7,148.15	3,600.00	3,594.87	29.66	12.90	17.55	-2,628.95	10,733.91	9,385.99	9,364.61	21.38	439.022	
9,400.00	7,148.10	3,600.00	3,594.87	30.70	12.90	17.55	-2,628.95	10,733.91	9,296.16	9,274.88	21.27	437.003	
9,500.00	7,148.05	3,600.00	3,594.87	31.74	12.90	17.55	-2,628.95	10,733.91	9,206.53	9,185.36	21.17	434.810	
9,600.00	7,148.00	3,600.00	3,594.87	32.79	12.90	17.55	-2,628.95	10,733.91	9,117.13	9,096.04	21.08	432.429	
9,700.00	7,147.94	3,600.00	3,594.87	33.85	12.90	17.55	-2,628.95	10,733.91	9,027.94	9,006.94	21.00	429.844	
9,800.00	7,147.89	3,600.00	3,594.87	34.92	12.90	17.55	-2,628.95	10,733.91	8,938.99	8,918.06	20.93	427.042	
9,900.00	7,147.84	3,600.00	3,594.87	35.99	12.90	17.55	-2,628.95	10,733.91	8,850.27	8,829.40	20.87	424.010	
10,000.00	7,147.79	3,600.00	3,594.87	37.07	12.90	17.55	-2,628.95	10,733.91	8,761.79	8,740.97	20.82	420.735	
10,100.00	7,147.74	3,600.00	3,594.87	38.15	12.90	17.55	-2,628.95	10,733.91	8,673.57	8,652.78	20.79	417.204	
10,200.00	7,147.69	3,600.00	3,594.87	39.24	12.90	17.55	-2,628.95	10,733.91	8,585.60	8,564.83	20.77	413.409	
10,300.00	7,147.63	3,600.00	3,594.87	40.33	12.90	17.55	-2,628.95	10,733.91	8,497.90	8,477.14	20.76	409.341	
10,400.00	7,147.58	3,600.00	3,594.87	41.42	12.90	17.55	-2,628.95	10,733.91	8,410.47	8,389.70	20.77	404.995	
10,500.00	7,147.53	3,600.00	3,594.87	42.52	12.90	17.55	-2,628.95	10,733.91	8,323.32	8,302.53	20.79	400.368	
10,600.00	7,147.48	3,600.00	3,594.87	43.63	12.90	17.55	-2,628.95	10,733.91	8,236.47	8,215.64	20.83	395.458	
10,700.00	7,147.43	3,600.00	3,594.87	44.73	12.90	17.55	-2,628.95	10,733.91	8,149.92	8,129.04	20.88	390.269	
10,800.00	7,147.38	3,600.00	3,594.87	45.85	12.90	17.55	-2,628.95	10,733.91	8,063.68	8,042.73	20.96	384.806	
10,900.00	7,147.32	3,614.33	3,607.48	46.96	12.96	17.60	-2,628.99	10,740.70	7,977.41	7,956.32	21.09	378.292	
11,000.00	7,147.27	3,627.76	3,619.00	48.08	13.01	17.65	-2,629.04	10,747.60	7,891.96	7,870.73	21.23	371.681	
11,100.00	7,147.22	3,627.76	3,619.00	49.20	13.01	17.65	-2,629.04	10,747.60	7,806.54	7,785.18	21.36	365.529	
11,200.00	7,147.17	3,627.76	3,619.00	50.32	13.01	17.65	-2,629.04	10,747.60	7,721.47	7,699.97	21.50	359.154	
11,300.00	7,147.12	3,627.76	3,619.00	51.44	13.01	17.65	-2,629.04	10,747.60	7,636.76	7,615.10	21.66	352.575	
11,400.00	7,147.07	3,627.76	3,619.00	52.57	13.01	17.65	-2,629.04	10,747.60	7,552.42	7,530.58	21.84	345.812	
11,500.00	7,147.01	3,627.76	3,619.00	53.70	13.01	17.65	-2,629.04	10,747.60	7,468.47	7,446.43	22.04	338.886	
11,600.00	7,146.96	3,627.76	3,619.00	54.84	13.01	17.65	-2,629.04	10,747.60	7,384.92	7,362.67	22.26	331.819	
11,700.00	7,146.91	3,627.76	3,619.00	55.97	13.01	17.65	-2,629.04	10,747.60	7,301.79	7,279.29	22.49	324.634	
11,800.00	7,146.86	3,627.76	3,619.00	57.11	13.01	17.65	-2,629.04	10,747.60	7,219.08	7,196.33	22.75	317.355	
11,815.51	7,146.85	3,627.76	3,619.00	57.28	13.01	17.65	-2,629.04	10,747.60	7,206.29	7,183.50	22.79	316.218	
11,826.17	7,146.84	3,627.76	3,619.00	57.40	13.01	17.80	-2,629.04	10,747.60	7,197.51	7,174.69	22.82	315.437	
11,900.00	7,146.80	3,627.76	3,619.00	58.25	13.01	17.80	-2,629.04	10,747.60	7,136.84	7,113.81	23.02	310.003	
12,000.00	7,146.75	3,627.76	3,619.00	59.39	13.01	17.80	-2,629.04	10,747.60	7,055.06	7,031.74	23.31	302.599	
12,100.00	7,146.69	3,627.76	3,619.00	60.53	13.01	17.80	-2,629.04	10,747.60	6,973.76	6,950.13	23.63	295.164	
12,200.00	7,146.63	3,627.76	3,619.00	61.67	13.01	17.80	-2,629.04	10,747.60	6,892.95	6,868.99	23.96	287.720	
12,300.00	7,146.58	3,627.76	3,619.00	62.82	13.01	17.80	-2,629.04	10,747.60	6,812.65	6,788.34	24.31	280.285	
12,400.00	7,146.52	3,627.76	3,619.00	63.97	13.01	17.80	-2,629.04	10,747.60	6,732.87	6,708.20	24.67	272.880	
12,500.00	7,146.46	3,627.76	3,619.00	65.12	13.01	17.80	-2,629.04	10,747.60	6,653.65	6,628.59	25.06	265.520	
12,600.00	7,146.41	3,627.76	3,619.00	66.27	13.01	17.80	-2,629.04	10,747.60	6,574.99	6,549.52	25.46	258.221	
12,700.00	7,146.35	3,627.76	3,619.00	67.42	13.01	17.80	-2,629.04	10,747.60	6,496.91	6,471.03	25.88	250.998	
12,800.00	7,146.29	3,627.76	3,619.00	68.58	13.01	17.80	-2,629.04	10,747.60	6,419.45	6,393.12	26.32	243.864	
12,900.00	7,146.24	3,627.76	3,619.00	69.73	13.01	17.80	-2,629.04	10,747.60	6,342.61	6,315.83	26.78	236.829	
13,000.00	7,146.18	3,662.86	3,647.53	70.89	13.13	17.92	-2,629.17	10,768.01	6,264.32	6,237.03	27.29	229.523	
13,100.00	7,146.13	3,700.00	3,674.90	72.05	13.27	18.05	-2,629.34	10,793.08	6,190.45	6,162.62	27.83	222.429	
13,200.00	7,146.07	3,700.00	3,674.90	73.21	13.27	18.05	-2,629.34	10,793.08	6,114.90	6,086.57	28.34	215.793	
13,300.00	7,146.01	3,700.00	3,674.90	74.37	13.27	18.05	-2,629.34	10,793.08	6,040.07	6,011.20	28.86	209.285	
13,400.00	7,145.96	3,700.00	3,674.90	75.53	13.27	18.05	-2,629.34	10,793.08	5,965.96	5,936.56	29.40	202.912	
13,500.00	7,145.90	3,700.00	3,674.90	76.70	13.27	18.05	-2,629.34	10,793.08	5,892.63	5,862.67	29.96	196.679	
13,600.00	7,145.84	3,700.00	3,674.90	77.86	13.27	18.05	-2,629.34	10,793.08	5,820.09	5,789.55	30.54	190.591	
13,700.00	7,145.79	3,700.00	3,674.90	79.03	13.27	18.05	-2,629.34	10,793.08	5,748.37	5,717.24	31.13	184.651	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY													Offset Site Error:	0.00 usft	
Survey Program:		100-B001Mb_MWD+HRGM		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning		
13,800.00	7,145.73	3,700.00	3,674.90	80.20	13.27	18.05	-2,629.34	10,793.08	5,677.51	5,645.77	31.74	178.861			
13,900.00	7,145.67	3,700.00	3,674.90	81.37	13.27	18.05	-2,629.34	10,793.08	5,607.54	5,575.16	32.37	173.224			
14,000.00	7,145.62	3,700.00	3,674.90	82.54	13.27	18.05	-2,629.34	10,793.08	5,538.48	5,505.46	33.02	167.742			
14,100.00	7,145.56	3,700.00	3,674.90	83.71	13.27	18.05	-2,629.34	10,793.08	5,470.39	5,436.71	33.68	162.415			
14,200.00	7,145.50	3,700.00	3,674.90	84.88	13.27	18.05	-2,629.34	10,793.08	5,403.28	5,368.92	34.36	157.244			
14,300.00	7,145.45	3,700.00	3,674.90	86.06	13.27	18.05	-2,629.34	10,793.08	5,337.21	5,302.15	35.06	152.230			
14,400.00	7,145.39	3,700.00	3,674.90	87.23	13.27	18.05	-2,629.34	10,793.08	5,272.21	5,236.43	35.77	147.371			
14,500.00	7,145.33	3,700.00	3,674.90	88.41	13.27	18.05	-2,629.34	10,793.08	5,208.31	5,171.81	36.51	142.669			
14,600.00	7,145.28	3,700.00	3,674.90	89.59	13.27	18.05	-2,629.34	10,793.08	5,145.57	5,108.31	37.25	138.120			
14,700.00	7,145.22	3,700.00	3,674.90	90.77	13.27	18.05	-2,629.34	10,793.08	5,084.01	5,046.00	38.02	133.726			
14,800.00	7,145.17	3,700.00	3,674.90	91.95	13.27	18.05	-2,629.34	10,793.08	5,023.70	4,984.90	38.80	129.483			
14,900.00	7,145.11	3,700.00	3,674.90	93.13	13.27	18.05	-2,629.34	10,793.08	4,964.66	4,925.07	39.59	125.392			
15,000.00	7,145.05	3,700.00	3,674.90	94.31	13.27	18.05	-2,629.34	10,793.08	4,906.96	4,866.55	40.40	121.449			
15,100.00	7,145.00	3,700.00	3,674.90	95.49	13.27	18.05	-2,629.34	10,793.08	4,850.63	4,809.40	41.23	117.652			
15,200.00	7,144.94	3,748.02	3,705.34	96.68	13.53	18.19	-2,629.58	10,830.16	4,791.77	4,749.71	42.07	113.907			
15,300.00	7,144.88	3,800.00	3,731.17	97.86	13.80	18.31	-2,629.88	10,875.19	4,741.24	4,698.32	42.92	110.477			
15,400.00	7,144.83	3,800.00	3,731.17	99.05	13.80	18.31	-2,629.88	10,875.19	4,687.56	4,643.78	43.78	107.063			
15,500.00	7,144.77	3,800.00	3,731.17	100.24	13.80	18.31	-2,629.88	10,875.19	4,635.43	4,590.76	44.66	103.786			
15,600.00	7,144.71	3,800.00	3,731.17	101.42	13.80	18.31	-2,629.88	10,875.19	4,584.88	4,539.32	45.56	100.644			
15,700.00	7,144.66	3,800.00	3,731.17	102.61	13.80	18.31	-2,629.88	10,875.19	4,535.97	4,489.51	46.46	97.634			
15,800.00	7,144.60	3,800.00	3,731.17	103.80	13.80	18.31	-2,629.88	10,875.19	4,488.76	4,441.39	47.37	94.755			
15,900.00	7,144.54	3,800.00	3,731.17	104.99	13.80	18.31	-2,629.88	10,875.19	4,443.30	4,395.00	48.29	92.004			
16,000.00	7,144.49	3,800.00	3,731.17	106.19	13.80	18.31	-2,629.88	10,875.19	4,399.64	4,350.41	49.23	89.378			
16,100.00	7,144.43	3,800.00	3,731.17	107.38	13.80	18.31	-2,629.88	10,875.19	4,357.84	4,307.68	50.16	86.875			
16,200.00	7,144.37	3,800.00	3,731.17	108.57	13.80	18.31	-2,629.88	10,875.19	4,317.95	4,266.84	51.11	84.491			
16,300.00	7,144.32	3,800.00	3,731.17	109.77	13.80	18.31	-2,629.88	10,875.19	4,280.02	4,227.97	52.05	82.225			
16,400.00	7,144.26	3,800.00	3,731.17	110.96	13.80	18.31	-2,629.88	10,875.19	4,244.12	4,191.12	53.00	80.074			
16,500.00	7,144.21	3,800.00	3,731.17	112.16	13.80	18.31	-2,629.88	10,875.19	4,210.28	4,156.33	53.95	78.034			
16,600.00	7,144.15	3,800.00	3,731.17	113.36	13.80	18.31	-2,629.88	10,875.19	4,178.56	4,123.66	54.91	76.104			
16,700.00	7,144.09	3,800.00	3,731.17	114.56	13.80	18.31	-2,629.88	10,875.19	4,149.01	4,093.16	55.86	74.280			
16,800.00	7,144.04	3,800.00	3,731.17	115.76	13.80	18.31	-2,629.88	10,875.19	4,121.68	4,064.88	56.80	72.560			
16,862.86	7,144.00	3,847.10	3,747.55	116.51	14.18	18.39	-2,630.17	10,919.29	4,101.87	4,044.43	57.44	71.411			
16,866.76	7,144.00	3,847.36	3,747.62	116.56	14.18	18.38	-2,630.17	10,919.55	4,100.86	4,043.39	57.48	71.348			
16,900.00	7,143.98	3,849.65	3,748.23	116.96	14.20	18.38	-2,630.18	10,921.75	4,092.40	4,034.60	57.79	70.811			
17,000.00	7,143.92	3,900.00	3,757.47	118.16	14.60	18.43	-2,630.51	10,971.19	4,071.57	4,012.82	58.75	69.303			
17,100.00	7,143.87	3,900.00	3,757.47	119.36	14.60	18.43	-2,630.51	10,971.19	4,048.73	3,989.04	59.69	67.826			
17,200.00	7,143.81	3,900.00	3,757.47	120.56	14.60	18.43	-2,630.51	10,971.19	4,028.25	3,967.62	60.63	66.442			
17,300.00	7,143.75	3,900.00	3,757.47	121.77	14.60	18.43	-2,630.51	10,971.19	4,010.15	3,948.60	61.55	65.151			
17,400.00	7,143.69	3,900.00	3,757.47	122.97	14.60	18.43	-2,630.51	10,971.19	3,994.48	3,932.02	62.46	63.948			
17,500.00	7,143.64	3,900.00	3,757.47	124.18	14.60	18.43	-2,630.51	10,971.19	3,981.26	3,917.90	63.36	62.831			
17,600.00	7,143.58	3,900.00	3,757.47	125.39	14.60	18.43	-2,630.51	10,971.19	3,970.52	3,906.27	64.25	61.799			
17,700.00	7,143.52	3,900.00	3,757.47	126.59	14.60	18.43	-2,630.51	10,971.19	3,962.27	3,897.15	65.12	60.848			
17,800.00	7,143.47	3,914.36	3,758.58	127.80	14.74	18.43	-2,630.61	10,985.50	3,956.18	3,890.18	65.99	59.949			
17,900.00	7,143.41	3,930.24	3,759.00	129.01	14.90	18.44	-2,630.71	11,001.38	3,952.63	3,885.78	66.85	59.127			
18,000.00	7,143.35	3,930.24	3,759.00	130.22	14.90	18.44	-2,630.71	11,001.38	3,951.18	3,883.51	67.66	58.394			
18,007.39	7,143.35	3,930.24	3,759.00	130.31	14.90	18.44	-2,630.71	11,001.38	3,951.17	3,883.45	67.72	58.343 CC			
18,100.00	7,143.30	4,015.52	3,759.00	131.43	15.89	18.45	-2,631.27	11,086.66	3,951.33	3,882.65	68.68	57.531			
18,200.00	7,143.24	4,115.52	3,759.00	132.64	17.29	18.46	-2,631.93	11,186.65	3,951.52	3,881.68	69.84	56.582			
18,300.00	7,143.18	4,215.52	3,759.00	133.86	18.90	18.47	-2,632.59	11,286.65	3,951.71	3,880.62	71.09	55.587			
18,400.00	7,143.13	4,315.51	3,759.00	135.07	20.67	18.48	-2,633.25	11,386.64	3,951.89	3,879.47	72.42	54.570			
18,500.00	7,143.07	4,415.51	3,759.00	136.28	22.57	18.49	-2,633.91	11,486.64	3,952.08	3,878.27	73.81	53.546			
18,600.00	7,143.01	4,515.51	3,759.00	137.50	24.56	18.50	-2,634.57	11,586.63	3,952.26	3,877.02	75.24	52.528			

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-B001Mb_MWD+HRGM												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,700.00	7,142.96	4,615.50	3,759.00	138.72	26.63	18.51	-2,635.23	11,686.63	3,952.45	3,875.74	76.71	51.523	
18,800.00	7,142.90	4,715.50	3,759.00	139.93	28.75	18.52	-2,635.89	11,786.62	3,952.64	3,874.42	78.21	50.537	
18,900.00	7,142.84	4,815.50	3,759.00	141.15	30.92	18.53	-2,636.55	11,886.61	3,952.82	3,873.09	79.74	49.574	
19,000.00	7,142.78	4,915.50	3,759.00	142.37	33.13	18.54	-2,637.21	11,986.61	3,953.01	3,871.73	81.28	48.636	
19,100.00	7,142.73	5,015.49	3,759.00	143.59	35.37	18.55	-2,637.87	12,086.60	3,953.20	3,870.36	82.84	47.723	
19,200.00	7,142.67	5,115.49	3,759.00	144.81	37.64	18.56	-2,638.53	12,186.60	3,953.38	3,868.98	84.41	46.837	
19,300.00	7,142.61	5,215.49	3,759.00	146.03	39.92	18.57	-2,639.19	12,286.59	3,953.57	3,867.58	85.99	45.977	
19,400.00	7,142.56	5,315.48	3,759.00	147.25	42.22	18.59	-2,639.85	12,386.59	3,953.76	3,866.18	87.58	45.144	
19,500.00	7,142.50	5,415.48	3,759.00	148.47	44.54	18.60	-2,640.51	12,486.58	3,953.95	3,864.76	89.18	44.336	
19,600.00	7,142.44	5,515.48	3,759.00	149.70	46.87	18.61	-2,641.17	12,586.58	3,954.13	3,863.34	90.79	43.553	
19,700.00	7,142.39	5,615.48	3,759.00	150.92	49.21	18.62	-2,641.83	12,686.57	3,954.32	3,861.92	92.40	42.794	
19,800.00	7,142.33	5,715.47	3,759.00	152.15	51.56	18.63	-2,642.49	12,786.57	3,954.51	3,860.49	94.02	42.059	
19,900.00	7,142.27	5,815.47	3,759.00	153.37	53.91	18.64	-2,643.15	12,886.56	3,954.70	3,859.05	95.65	41.347	
20,000.00	7,142.22	5,915.47	3,759.00	154.60	56.28	18.65	-2,643.81	12,986.56	3,954.88	3,857.61	97.28	40.657	
20,100.00	7,142.16	6,015.46	3,759.00	155.83	58.65	18.66	-2,644.47	13,086.55	3,955.07	3,856.16	98.91	39.987	
20,200.00	7,142.10	6,115.46	3,759.00	157.06	61.02	18.67	-2,645.13	13,186.55	3,955.26	3,854.72	100.54	39.338	
20,300.00	7,142.04	6,215.46	3,759.00	158.28	63.40	18.68	-2,645.79	13,286.54	3,955.45	3,853.26	102.18	38.709	
20,400.00	7,141.99	6,315.45	3,759.00	159.51	65.79	18.69	-2,646.45	13,386.54	3,955.64	3,851.81	103.83	38.098	
20,500.00	7,141.93	6,415.45	3,759.00	160.74	68.18	18.70	-2,647.11	13,486.53	3,955.83	3,850.35	105.47	37.505	
20,600.00	7,141.87	6,515.45	3,759.00	161.98	70.57	18.71	-2,647.77	13,586.53	3,956.01	3,848.89	107.12	36.930	
20,700.00	7,141.82	6,615.45	3,759.00	163.21	72.96	18.72	-2,648.43	13,686.52	3,956.20	3,847.43	108.77	36.371	
20,800.00	7,141.76	6,715.44	3,759.00	164.44	75.36	18.73	-2,649.09	13,786.52	3,956.39	3,845.96	110.43	35.827	
20,900.00	7,141.70	6,815.44	3,759.00	165.68	77.76	18.74	-2,649.75	13,886.51	3,956.58	3,844.50	112.09	35.300	
21,000.00	7,141.65	6,915.44	3,759.00	166.91	80.16	18.76	-2,650.41	13,986.51	3,956.77	3,843.03	113.74	34.787	
21,100.00	7,141.59	7,015.43	3,759.00	168.15	82.57	18.77	-2,651.07	14,086.50	3,956.96	3,841.56	115.40	34.288	
21,200.00	7,141.53	7,115.43	3,759.00	169.38	84.97	18.78	-2,651.73	14,186.50	3,957.15	3,840.08	117.07	33.802	
21,300.00	7,141.48	7,215.43	3,759.00	170.62	87.38	18.79	-2,652.39	14,286.49	3,957.34	3,838.61	118.73	33.330	
21,400.00	7,141.42	7,315.43	3,759.00	171.86	89.79	18.80	-2,653.05	14,386.49	3,957.53	3,837.13	120.40	32.870	
21,500.00	7,141.36	7,415.42	3,759.00	173.10	92.20	18.81	-2,653.71	14,486.48	3,957.72	3,835.65	122.07	32.422	
21,600.00	7,141.31	7,515.42	3,759.00	174.34	94.61	18.82	-2,654.37	14,586.48	3,957.91	3,834.17	123.74	31.986	
21,700.00	7,141.25	7,542.33	3,759.00	175.58	95.26	18.82	-2,654.55	14,613.39	3,958.78	3,833.99	124.78	31.726 ES	
21,800.00	7,141.19	7,542.33	3,759.00	176.82	95.26	18.82	-2,654.55	14,613.39	3,962.07	3,836.54	125.53	31.562	
21,900.00	7,141.13	7,542.33	3,759.00	178.06	95.26	18.82	-2,654.55	14,613.39	3,967.89	3,841.68	126.21	31.439	
22,000.00	7,141.08	7,542.33	3,759.00	179.30	95.26	18.82	-2,654.55	14,613.39	3,976.21	3,849.40	126.81	31.355	
22,100.00	7,141.02	7,542.33	3,759.00	180.55	95.26	18.82	-2,654.55	14,613.39	3,987.03	3,859.69	127.34	31.309	
22,136.53	7,141.00	7,542.33	3,759.00	181.00	95.26	18.82	-2,654.55	14,613.39	3,991.60	3,864.08	127.52	31.302	
22,137.77	7,141.00	7,542.33	3,759.00	181.02	95.26	18.82	-2,654.55	14,613.39	3,991.76	3,864.23	127.53	31.302	
22,200.00	7,140.96	7,542.33	3,759.00	181.79	95.26	18.82	-2,654.55	14,613.39	4,000.32	3,872.52	127.80	31.301 SF	
22,300.00	7,140.91	7,542.33	3,759.00	183.04	95.26	18.82	-2,654.55	14,613.39	4,016.06	3,887.88	128.18	31.330	
22,400.00	7,140.85	7,542.33	3,759.00	184.28	95.26	18.82	-2,654.55	14,613.39	4,034.22	3,905.72	128.50	31.396	
22,500.00	7,140.79	7,542.33	3,759.00	185.53	95.26	18.82	-2,654.55	14,613.39	4,054.76	3,926.03	128.74	31.497	
22,600.00	7,140.73	7,542.33	3,759.00	186.78	95.26	18.82	-2,654.55	14,613.39	4,077.65	3,948.75	128.91	31.632	
22,700.00	7,140.68	7,542.33	3,759.00	188.02	95.26	18.82	-2,654.55	14,613.39	4,102.86	3,973.84	129.01	31.802	
22,800.00	7,140.62	7,542.33	3,759.00	189.27	95.26	18.82	-2,654.55	14,613.39	4,130.33	4,001.28	129.05	32.005	
22,900.00	7,140.56	7,542.33	3,759.00	190.52	95.26	18.82	-2,654.55	14,613.39	4,160.02	4,030.99	129.03	32.240	
23,000.00	7,140.50	7,542.33	3,759.00	191.77	95.26	18.82	-2,654.55	14,613.39	4,191.89	4,062.94	128.95	32.507	
23,100.00	7,140.45	7,542.33	3,759.00	193.02	95.26	18.82	-2,654.55	14,613.39	4,225.89	4,097.07	128.82	32.806	
23,200.00	7,140.39	7,542.33	3,759.00	194.28	95.26	18.82	-2,654.55	14,613.39	4,261.96	4,133.33	128.63	33.134	
23,300.00	7,140.33	7,542.33	3,759.00	195.53	95.26	18.82	-2,654.55	14,613.39	4,300.06	4,171.67	128.39	33.492	
23,400.00	7,140.27	7,542.33	3,759.00	196.78	95.26	18.82	-2,654.55	14,613.39	4,340.12	4,212.02	128.10	33.880	
23,500.00	7,140.22	7,542.33	3,759.00	198.04	95.26	18.82	-2,654.55	14,613.39	4,382.10	4,254.33	127.78	34.295	
23,600.00	7,140.16	7,542.33	3,759.00	199.29	95.26	18.82	-2,654.55	14,613.39	4,425.95	4,298.54	127.41	34.738	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - (O) Schalk 32 #003H - OH - OH-SVY													Offset Site Error:	0.00 usft
Survey Program:		100-B001Mb_MWD+HRGM								Rule Assigned:			Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		Rule Assigned:				Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor		
23,700.00	7,140.10	7,542.33	3,759.00	200.55	95.26	18.82	-2,654.55	14,613.39	4,471.60	4,344.59	127.00	35.208		
23,800.00	7,140.04	7,542.33	3,759.00	201.81	95.26	18.82	-2,654.55	14,613.39	4,519.00	4,392.43	126.57	35.705		
23,900.00	7,139.99	7,542.33	3,759.00	203.06	95.26	18.82	-2,654.55	14,613.39	4,568.10	4,442.00	126.10	36.227		
24,000.00	7,139.93	7,542.33	3,759.00	204.32	95.26	18.82	-2,654.55	14,613.39	4,618.84	4,493.24	125.60	36.774		
24,100.00	7,139.87	7,542.33	3,759.00	205.58	95.26	18.82	-2,654.55	14,613.39	4,671.18	4,546.10	125.08	37.346		
24,200.00	7,139.81	7,542.33	3,759.00	206.84	95.26	18.82	-2,654.55	14,613.39	4,725.05	4,600.51	124.54	37.941		
24,300.00	7,139.76	7,542.33	3,759.00	208.10	95.26	18.82	-2,654.55	14,613.39	4,780.40	4,656.43	123.97	38.559		
24,400.00	7,139.70	7,542.33	3,759.00	209.36	95.26	18.82	-2,654.55	14,613.39	4,837.19	4,713.79	123.40	39.201		
24,500.00	7,139.64	7,542.33	3,759.00	210.62	95.26	18.82	-2,654.55	14,613.39	4,895.36	4,772.56	122.80	39.864		
24,600.00	7,139.58	7,542.33	3,759.00	211.89	95.26	18.82	-2,654.55	14,613.39	4,954.87	4,832.68	122.20	40.548		
24,700.00	7,139.53	7,542.33	3,759.00	213.15	95.26	18.82	-2,654.55	14,613.39	5,015.67	4,894.09	121.58	41.254		
24,800.00	7,139.47	7,542.33	3,759.00	214.42	95.26	18.82	-2,654.55	14,613.39	5,077.71	4,956.75	120.96	41.980		
24,900.00	7,139.41	7,542.33	3,759.00	215.68	95.26	18.82	-2,654.55	14,613.39	5,140.94	5,020.62	120.33	42.725		
25,000.00	7,139.35	7,542.33	3,759.00	216.95	95.26	18.82	-2,654.55	14,613.39	5,205.33	5,085.64	119.69	43.490		
25,100.00	7,139.30	7,542.33	3,759.00	218.21	95.26	18.82	-2,654.55	14,613.39	5,270.83	5,151.78	119.05	44.273		
25,200.00	7,139.24	7,542.33	3,759.00	219.48	95.26	18.82	-2,654.55	14,613.39	5,337.40	5,218.99	118.41	45.075		
25,300.00	7,139.18	7,542.33	3,759.00	220.75	95.26	18.82	-2,654.55	14,613.39	5,405.00	5,287.23	117.77	45.894		
25,400.00	7,139.13	7,542.33	3,759.00	222.02	95.26	18.82	-2,654.55	14,613.39	5,473.59	5,356.46	117.13	46.730		
25,500.00	7,139.07	7,542.33	3,759.00	223.29	95.26	18.82	-2,654.55	14,613.39	5,543.13	5,426.64	116.49	47.583		
25,600.00	7,139.01	7,542.33	3,759.00	224.56	95.26	18.82	-2,654.55	14,613.39	5,613.60	5,497.74	115.86	48.452		
25,700.00	7,138.95	7,542.33	3,759.00	225.83	95.26	18.82	-2,654.55	14,613.39	5,684.95	5,569.73	115.23	49.337		
25,800.00	7,138.90	7,542.33	3,759.00	227.10	95.26	18.82	-2,654.55	14,613.39	5,757.16	5,642.56	114.60	50.237		
25,900.00	7,138.84	7,542.33	3,759.00	228.38	95.26	18.82	-2,654.55	14,613.39	5,830.18	5,716.21	113.98	51.152		
26,000.00	7,138.78	7,542.33	3,759.00	229.65	95.26	18.82	-2,654.55	14,613.39	5,904.00	5,790.64	113.36	52.081		
26,100.00	7,138.72	7,542.33	3,759.00	230.93	95.26	18.82	-2,654.55	14,613.39	5,978.58	5,865.83	112.75	53.024		
26,200.00	7,138.67	7,542.33	3,759.00	232.20	95.26	18.82	-2,654.55	14,613.39	6,053.89	5,941.74	112.15	53.980		
26,300.00	7,138.61	7,542.33	3,759.00	233.48	95.26	18.82	-2,654.55	14,613.39	6,129.91	6,018.35	111.56	54.950		
26,400.00	7,138.55	7,542.33	3,759.00	234.75	95.26	18.82	-2,654.55	14,613.39	6,206.60	6,095.63	110.97	55.931		
26,500.00	7,138.49	7,542.33	3,759.00	236.03	95.26	18.82	-2,654.55	14,613.39	6,283.96	6,173.57	110.39	56.925		
26,600.00	7,138.44	7,542.33	3,759.00	237.31	95.26	18.82	-2,654.55	14,613.39	6,361.94	6,252.12	109.82	57.931		
26,700.00	7,138.38	7,542.33	3,759.00	238.59	95.26	18.82	-2,654.55	14,613.39	6,440.53	6,331.27	109.26	58.948		
26,800.00	7,138.32	7,542.33	3,759.00	239.87	95.26	18.82	-2,654.55	14,613.39	6,519.71	6,411.01	108.70	59.976		
26,900.00	7,138.26	7,542.33	3,759.00	241.15	95.26	18.82	-2,654.55	14,613.39	6,599.45	6,491.29	108.16	61.015		
27,000.00	7,138.21	7,542.33	3,759.00	242.43	95.26	18.82	-2,654.55	14,613.39	6,679.74	6,572.12	107.63	62.064		
27,100.00	7,138.15	7,542.33	3,759.00	243.71	95.26	18.82	-2,654.55	14,613.39	6,760.56	6,653.46	107.10	63.123		
27,157.78	7,138.12	7,542.33	3,759.00	244.46	95.26	18.82	-2,654.55	14,613.39	6,807.49	6,700.68	106.80	63.739		
27,200.00	7,138.09	7,542.33	3,759.00	245.00	95.26	18.82	-2,654.55	14,613.39	6,841.88	6,735.29	106.59	64.191		
27,300.00	7,138.03	7,542.33	3,759.00	246.28	95.26	18.82	-2,654.55	14,613.39	6,923.69	6,817.61	106.08	65.268		
27,357.78	7,138.00	7,542.33	3,759.00	247.02	95.26	18.82	-2,654.55	14,613.39	6,971.17	6,865.38	105.79	65.895		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	34.43	37.14	25.45	45.02				
125.00	125.00	124.57	124.57	0.05	0.06	31.34	37.56	25.87	45.13	45.01	0.12	383.888	
225.00	224.99	224.63	224.61	0.19	0.17	34.51	37.41	27.56	45.26	44.92	0.33	136.446	
290.00	289.99	289.71	289.65	0.28	0.24	22.90	36.51	29.49	45.33	44.88	0.45	100.523	
300.00	299.99	299.72	299.65	0.29	0.26	23.39	36.33	29.81	45.34	44.87	0.47	96.341 ES	
400.00	399.99	319.00	318.92	0.42	0.28	24.40	35.95	30.46	92.65	91.89	0.77	121.109	
440.00	439.99	319.00	318.92	0.47	0.28	24.40	35.95	30.46	129.02	128.19	0.83	155.283	
500.00	499.99	319.00	318.92	0.50	0.28	-126.99	35.95	30.46	186.50	185.59	0.91	205.505	
600.00	599.93	319.00	318.92	0.47	0.28	-124.02	35.95	30.46	284.91	283.88	1.02	278.124	
700.00	699.70	319.00	318.92	0.48	0.28	-108.17	35.95	30.46	384.34	383.20	1.14	337.354	
800.00	799.18	319.00	318.92	0.52	0.28	-80.93	35.95	30.46	484.08	482.83	1.25	386.204	
900.00	898.24	319.00	318.92	0.60	0.28	-52.21	35.95	30.46	583.89	582.52	1.37	427.016	
1,000.00	996.77	319.00	318.92	0.69	0.28	-33.41	35.95	30.46	683.63	682.15	1.48	461.518	
1,074.04	1,069.30	319.00	318.92	0.77	0.28	-25.01	35.95	30.46	757.39	755.82	1.57	483.759	
1,100.00	1,094.67	319.00	318.92	0.79	0.28	-25.01	35.95	30.46	783.24	781.65	1.60	490.981	
1,200.00	1,192.37	319.00	318.92	0.91	0.28	-25.01	35.95	30.46	882.88	881.17	1.71	516.320	
1,300.00	1,290.07	319.00	318.92	1.02	0.28	-25.01	35.95	30.46	982.60	980.77	1.83	538.249	
1,400.00	1,387.77	319.00	318.92	1.15	0.28	-25.01	35.95	30.46	1,082.36	1,080.42	1.94	557.331	
1,500.00	1,485.47	319.00	318.92	1.27	0.28	-25.01	35.95	30.46	1,182.17	1,180.11	2.06	574.011	
1,600.00	1,583.17	319.00	318.92	1.40	0.28	-25.01	35.95	30.46	1,282.01	1,279.83	2.18	588.641	
1,700.00	1,680.87	319.00	318.92	1.53	0.28	-25.01	35.95	30.46	1,381.87	1,379.57	2.30	601.509	
1,800.00	1,778.57	319.00	318.92	1.67	0.28	-25.01	35.95	30.46	1,481.75	1,479.33	2.42	612.847	
1,900.00	1,876.27	319.00	318.92	1.81	0.28	-25.01	35.95	30.46	1,581.64	1,579.10	2.54	622.848	
2,000.00	1,973.98	319.00	318.92	1.95	0.28	-25.01	35.95	30.46	1,681.55	1,678.88	2.66	631.672	
2,100.00	2,071.68	319.00	318.92	2.09	0.28	-25.01	35.95	30.46	1,781.46	1,778.68	2.79	639.451	
2,200.00	2,169.38	319.00	318.92	2.24	0.28	-25.01	35.95	30.46	1,881.39	1,878.48	2.91	646.301	
2,300.00	2,267.08	319.00	318.92	2.39	0.28	-25.01	35.95	30.46	1,981.32	1,978.29	3.04	652.318	
2,400.00	2,364.78	319.00	318.92	2.55	0.28	-25.01	35.95	30.46	2,081.26	2,078.10	3.17	657.584	
2,500.00	2,462.48	319.00	318.92	2.70	0.28	-25.01	35.95	30.46	2,181.21	2,177.91	3.29	662.173	
2,600.00	2,560.18	319.00	318.92	2.86	0.28	-25.01	35.95	30.46	2,281.16	2,277.73	3.42	666.145	
2,700.00	2,657.88	319.00	318.92	3.02	0.28	-25.01	35.95	30.46	2,381.11	2,377.56	3.56	669.558	
2,800.00	2,755.58	319.00	318.92	3.19	0.28	-25.01	35.95	30.46	2,481.07	2,477.38	3.69	672.458	
2,900.00	2,853.28	319.00	318.92	3.35	0.28	-25.01	35.95	30.46	2,581.03	2,577.21	3.82	674.888	
3,000.00	2,950.99	319.00	318.92	3.52	0.28	-25.01	35.95	30.46	2,681.00	2,677.03	3.96	676.887	
3,100.00	3,048.69	319.00	318.92	3.69	0.28	-25.01	35.95	30.46	2,780.96	2,776.86	4.10	678.489	
3,200.00	3,146.39	319.00	318.92	3.87	0.28	-25.01	35.95	30.46	2,880.93	2,876.69	4.24	679.724	
3,300.00	3,244.09	319.00	318.92	4.04	0.28	-25.01	35.95	30.46	2,980.90	2,976.52	4.38	680.620	
3,400.00	3,341.79	319.00	318.92	4.22	0.28	-25.01	35.95	30.46	3,080.88	3,076.35	4.52	681.202	
3,500.00	3,439.49	319.00	318.92	4.40	0.28	-25.01	35.95	30.46	3,180.85	3,176.18	4.67	681.494	
3,600.00	3,537.19	319.00	318.92	4.58	0.28	-25.01	35.95	30.46	3,280.83	3,276.01	4.81	681.514	
3,700.00	3,634.89	319.00	318.92	4.77	0.28	-25.01	35.95	30.46	3,380.80	3,375.84	4.96	681.284	
3,800.00	3,732.59	319.00	318.92	4.95	0.28	-25.01	35.95	30.46	3,480.78	3,475.67	5.11	680.820	
3,900.00	3,830.29	319.00	318.92	5.14	0.28	-25.01	35.95	30.46	3,580.76	3,575.50	5.26	680.139	
4,000.00	3,928.00	319.00	318.92	5.33	0.28	-25.01	35.95	30.46	3,680.74	3,675.33	5.42	679.255	
4,100.00	4,025.70	319.00	318.92	5.53	0.28	-25.01	35.95	30.46	3,780.73	3,775.15	5.57	678.182	
4,200.00	4,123.40	319.00	318.92	5.72	0.28	-25.01	35.95	30.46	3,880.71	3,874.98	5.73	676.933	
4,300.00	4,221.10	319.00	318.92	5.92	0.28	-25.01	35.95	30.46	3,980.69	3,974.80	5.89	675.521	
4,400.00	4,318.80	319.00	318.92	6.12	0.28	-25.01	35.95	30.46	4,080.68	4,074.62	6.05	673.956	
4,500.00	4,416.50	319.00	318.92	6.32	0.28	-25.01	35.95	30.46	4,180.66	4,174.44	6.22	672.248	
4,600.00	4,514.20	319.00	318.92	6.52	0.28	-25.01	35.95	30.46	4,280.65	4,274.26	6.39	670.408	
4,700.00	4,611.90	319.00	318.92	6.73	0.28	-25.01	35.95	30.46	4,380.64	4,374.08	6.55	668.445	
4,800.00	4,709.60	319.00	318.92	6.94	0.28	-25.01	35.95	30.46	4,480.62	4,473.90	6.72	666.366	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,900.00	4,807.30	319.00	318.92	7.14	0.28	-25.01	35.95	30.46	4,580.61	4,573.72	6.90	664.180	
5,000.00	4,905.00	319.00	318.92	7.36	0.28	-25.01	35.95	30.46	4,680.60	4,673.53	7.07	661.896	
5,100.00	5,002.71	319.00	318.92	7.57	0.28	-25.01	35.95	30.46	4,780.59	4,773.34	7.25	659.518	
5,200.00	5,100.41	319.00	318.92	7.78	0.28	-25.01	35.95	30.46	4,880.58	4,873.15	7.43	657.056	
5,300.00	5,198.11	319.00	318.92	8.00	0.28	-25.01	35.95	30.46	4,980.57	4,972.96	7.61	654.514	
5,400.00	5,295.81	319.00	318.92	8.22	0.28	-25.01	35.95	30.46	5,080.56	5,072.77	7.79	651.898	
5,500.00	5,393.51	319.00	318.92	8.44	0.28	-25.01	35.95	30.46	5,180.55	5,172.57	7.98	649.215	
5,600.00	5,491.21	319.00	318.92	8.66	0.28	-25.01	35.95	30.46	5,280.54	5,272.37	8.17	646.470	
5,700.00	5,588.91	319.00	318.92	8.89	0.28	-25.01	35.95	30.46	5,380.53	5,372.17	8.36	643.667	
5,800.00	5,686.61	319.00	318.92	9.11	0.28	-25.01	35.95	30.46	5,480.52	5,471.97	8.55	640.811	
5,900.00	5,784.31	319.00	318.92	9.34	0.28	-25.01	35.95	30.46	5,580.52	5,571.77	8.75	637.907	
6,000.00	5,882.01	319.00	318.92	9.57	0.28	-25.01	35.95	30.46	5,680.51	5,671.56	8.95	634.960	
6,100.00	5,979.72	319.00	318.92	9.80	0.28	-25.01	35.95	30.46	5,780.50	5,771.35	9.15	631.972	
6,200.00	6,077.42	319.00	318.92	10.04	0.28	-25.01	35.95	30.46	5,880.49	5,871.14	9.35	628.948	
6,300.00	6,175.12	319.00	318.92	10.27	0.28	-25.01	35.95	30.46	5,980.49	5,970.93	9.56	625.891	
6,400.00	6,272.82	319.00	318.92	10.51	0.28	-25.01	35.95	30.46	6,080.48	6,070.72	9.76	622.804	
6,500.00	6,370.52	319.00	318.92	10.75	0.28	-25.01	35.95	30.46	6,180.47	6,170.50	9.97	619.692	
6,600.00	6,468.22	319.00	318.92	10.99	0.28	-25.01	35.95	30.46	6,280.47	6,270.28	10.19	616.556	
6,662.10	6,528.89	319.00	318.92	11.14	0.28	-25.01	35.95	30.46	6,342.56	6,332.24	10.32	614.599	
6,700.00	6,565.90	319.00	318.92	11.23	0.28	-65.20	35.95	30.46	6,380.43	6,370.03	10.40	613.403	
6,750.00	6,614.48	319.00	318.92	11.35	0.28	-53.21	35.95	30.46	6,430.15	6,419.64	10.51	611.837	
6,800.00	6,662.53	319.00	318.92	11.47	0.28	-42.46	35.95	30.46	6,479.32	6,468.71	10.62	610.300	
6,850.00	6,709.74	319.00	318.92	11.60	0.28	-34.69	35.95	30.46	6,527.66	6,516.94	10.72	608.810	
6,900.00	6,755.82	319.00	318.92	11.72	0.28	-29.15	35.95	30.46	6,574.89	6,564.07	10.82	607.386	
6,950.00	6,800.49	319.00	318.92	11.85	0.28	-25.12	35.95	30.46	6,620.74	6,609.82	10.92	606.038	
7,000.00	6,843.48	319.00	318.92	11.98	0.28	-22.12	35.95	30.46	6,664.97	6,653.95	11.02	604.779	
7,050.00	6,884.52	319.00	318.92	12.12	0.28	-19.82	35.95	30.46	6,707.33	6,696.22	11.11	603.613	
7,100.00	6,923.35	319.00	318.92	12.27	0.28	-18.04	35.95	30.46	6,747.61	6,736.41	11.20	602.545	
7,150.00	6,959.74	319.00	318.92	12.42	0.28	-16.62	35.95	30.46	6,785.59	6,774.31	11.28	601.572	
7,200.00	6,993.46	319.00	318.92	12.60	0.28	-15.49	35.95	30.46	6,821.07	6,809.72	11.36	600.688	
7,250.00	7,024.30	319.00	318.92	12.79	0.28	-14.58	35.95	30.46	6,853.89	6,842.47	11.43	599.885	
7,300.00	7,052.08	319.00	318.92	12.99	0.28	-13.85	35.95	30.46	6,883.88	6,872.39	11.49	599.147	
7,350.00	7,076.62	319.00	318.92	13.22	0.28	-13.26	35.95	30.46	6,910.89	6,899.34	11.55	598.457	
7,400.00	7,097.78	319.00	318.92	13.46	0.28	-12.79	35.95	30.46	6,934.78	6,923.18	11.60	597.791	
7,450.00	7,115.41	319.00	318.92	13.71	0.28	-12.42	35.95	30.46	6,955.45	6,943.81	11.65	597.121	
7,500.00	7,129.42	319.00	318.92	13.99	0.28	-12.15	35.95	30.46	6,972.80	6,961.11	11.69	596.412	
7,550.00	7,139.71	319.00	318.92	14.28	0.28	-11.95	35.95	30.46	6,986.75	6,975.02	11.73	595.620	
7,600.00	7,146.22	319.00	318.92	14.58	0.28	-11.83	35.95	30.46	6,997.23	6,985.46	11.77	594.687	
7,650.00	7,148.92	319.00	318.92	14.90	0.28	-11.79	35.95	30.46	7,004.18	6,992.38	11.80	593.528	
7,660.51	7,149.00	319.00	318.92	14.97	0.28	-11.79	35.95	30.46	7,005.19	6,993.39	11.81	593.404	
7,700.00	7,148.98	319.00	318.92	15.23	0.28	-11.79	35.95	30.46	7,008.81	6,997.00	11.81	593.438	
7,800.00	7,148.93	319.00	318.92	15.92	0.28	-11.79	35.95	30.46	7,018.95	7,007.11	11.84	592.931	
7,900.00	7,148.88	319.00	318.92	16.66	0.28	-11.79	35.95	30.46	7,030.50	7,018.61	11.88	591.597	
8,000.00	7,148.82	319.00	318.92	17.44	0.28	-11.79	35.95	30.46	7,043.45	7,031.50	11.95	589.471	
8,100.00	7,148.77	319.00	318.92	18.25	0.28	-11.79	35.95	30.46	7,057.79	7,045.76	12.03	586.601	
8,200.00	7,148.72	319.00	318.92	19.10	0.28	-11.79	35.95	30.46	7,073.52	7,061.38	12.13	583.046	
8,300.00	7,148.67	319.00	318.92	19.97	0.28	-11.79	35.95	30.46	7,090.62	7,078.37	12.25	578.872	
8,400.00	7,148.62	319.00	318.92	20.86	0.28	-11.79	35.95	30.46	7,109.09	7,096.70	12.38	574.150	
8,500.00	7,148.57	319.00	318.92	21.78	0.28	-11.79	35.95	30.46	7,128.91	7,116.38	12.53	568.955	
8,600.00	7,148.51	319.00	318.92	22.71	0.28	-11.79	35.95	30.46	7,150.08	7,137.39	12.69	563.359	
8,700.00	7,148.46	319.00	318.92	23.67	0.28	-11.79	35.95	30.46	7,172.58	7,159.71	12.87	557.437	
8,800.00	7,148.41	319.00	318.92	24.63	0.28	-11.79	35.95	30.46	7,196.39	7,183.34	13.05	551.259	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104							Rule Assigned:						Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
8,900.00	7,148.36	319.00	318.92	25.62	0.28	-11.79	35.95	30.46	7,221.52	7,208.27	13.25	544.890	
9,000.00	7,148.31	319.00	318.92	26.61	0.28	-11.79	35.95	30.46	7,247.94	7,234.47	13.46	538.392	
9,100.00	7,148.26	319.00	318.92	27.62	0.28	-11.79	35.95	30.46	7,275.63	7,261.95	13.68	531.820	
9,200.00	7,148.20	319.00	318.92	28.64	0.28	-11.79	35.95	30.46	7,304.59	7,290.68	13.91	525.223	
9,300.00	7,148.15	319.00	318.92	29.66	0.28	-11.79	35.95	30.46	7,334.80	7,320.66	14.14	518.644	
9,400.00	7,148.10	319.00	318.92	30.70	0.28	-11.79	35.95	30.46	7,366.24	7,351.86	14.38	512.123	
9,500.00	7,148.05	319.00	318.92	31.74	0.28	-11.79	35.95	30.46	7,398.90	7,384.27	14.63	505.690	
9,600.00	7,148.00	319.00	318.92	32.79	0.28	-11.79	35.95	30.46	7,432.77	7,417.88	14.88	499.374	
9,700.00	7,147.94	319.00	318.92	33.85	0.28	-11.79	35.95	30.46	7,467.82	7,452.67	15.14	493.197	
9,800.00	7,147.89	319.00	318.92	34.92	0.28	-11.79	35.95	30.46	7,504.03	7,488.63	15.40	487.176	
9,900.00	7,147.84	319.00	318.92	35.99	0.28	-11.79	35.95	30.46	7,541.40	7,525.74	15.67	481.327	
10,000.00	7,147.79	319.00	318.92	37.07	0.28	-11.79	35.95	30.46	7,579.91	7,563.97	15.94	475.660	
10,100.00	7,147.74	319.00	318.92	38.15	0.28	-11.79	35.95	30.46	7,619.53	7,603.33	16.21	470.184	
10,200.00	7,147.69	319.00	318.92	39.24	0.28	-11.79	35.95	30.46	7,660.25	7,643.78	16.48	464.905	
10,300.00	7,147.63	319.00	318.92	40.33	0.28	-11.79	35.95	30.46	7,702.06	7,685.31	16.75	459.825	
10,400.00	7,147.58	319.00	318.92	41.42	0.28	-11.79	35.95	30.46	7,744.93	7,727.91	17.02	454.947	
10,500.00	7,147.53	319.00	318.92	42.52	0.28	-11.79	35.95	30.46	7,788.85	7,771.55	17.30	450.270	
10,600.00	7,147.48	319.00	318.92	43.63	0.28	-11.79	35.95	30.46	7,833.80	7,816.23	17.57	445.794	
10,700.00	7,147.43	319.00	318.92	44.73	0.28	-11.79	35.95	30.46	7,879.77	7,861.92	17.85	441.517	
10,800.00	7,147.38	319.00	318.92	45.85	0.28	-11.79	35.95	30.46	7,926.72	7,908.60	18.12	437.434	
10,900.00	7,147.32	319.00	318.92	46.96	0.28	-11.79	35.95	30.46	7,974.66	7,956.27	18.39	433.544	
11,000.00	7,147.27	319.00	318.92	48.08	0.28	-11.79	35.95	30.46	8,023.56	8,004.89	18.67	429.840	
11,100.00	7,147.22	319.00	318.92	49.20	0.28	-11.79	35.95	30.46	8,073.39	8,054.46	18.94	426.319	
11,200.00	7,147.17	319.00	318.92	50.32	0.28	-11.79	35.95	30.46	8,124.16	8,104.95	19.21	422.976	
11,300.00	7,147.12	319.00	318.92	51.44	0.28	-11.79	35.95	30.46	8,175.83	8,156.35	19.48	419.805	
11,400.00	7,147.07	319.00	318.92	52.57	0.28	-11.79	35.95	30.46	8,228.39	8,208.65	19.74	416.801	
11,500.00	7,147.01	319.00	318.92	53.70	0.28	-11.79	35.95	30.46	8,281.83	8,261.82	20.01	413.959	
11,600.00	7,146.96	319.00	318.92	54.84	0.28	-11.79	35.95	30.46	8,336.12	8,315.85	20.27	411.273	
11,700.00	7,146.91	319.00	318.92	55.97	0.28	-11.79	35.95	30.46	8,391.25	8,370.73	20.53	408.737	
11,800.00	7,146.86	319.00	318.92	57.11	0.28	-11.79	35.95	30.46	8,447.21	8,426.42	20.79	406.347	
11,815.51	7,146.85	319.00	318.92	57.28	0.28	-11.79	35.95	30.46	8,455.97	8,435.14	20.83	405.989	
11,826.17	7,146.84	319.00	318.92	57.40	0.28	-11.86	35.95	30.46	8,461.99	8,441.13	20.86	405.745	
11,900.00	7,146.80	319.00	318.92	58.25	0.28	-11.86	35.95	30.46	8,503.95	8,482.91	21.04	404.095	
12,000.00	7,146.75	319.00	318.92	59.39	0.28	-11.86	35.95	30.46	8,561.47	8,540.17	21.30	401.978	
12,100.00	7,146.69	319.00	318.92	60.53	0.28	-11.86	35.95	30.46	8,619.77	8,598.22	21.55	399.991	
12,200.00	7,146.63	319.00	318.92	61.67	0.28	-11.86	35.95	30.46	8,678.83	8,657.03	21.80	398.128	
12,300.00	7,146.58	319.00	318.92	62.82	0.28	-11.86	35.95	30.46	8,738.64	8,716.59	22.05	396.385	
12,400.00	7,146.52	319.00	318.92	63.97	0.28	-11.86	35.95	30.46	8,799.17	8,776.88	22.29	394.758	
12,500.00	7,146.46	319.00	318.92	65.12	0.28	-11.86	35.95	30.46	8,860.42	8,837.89	22.53	393.240	
12,600.00	7,146.41	319.00	318.92	66.27	0.28	-11.86	35.95	30.46	8,922.37	8,899.60	22.77	391.829	
12,700.00	7,146.35	319.00	318.92	67.42	0.28	-11.86	35.95	30.46	8,985.01	8,962.00	23.01	390.520	
12,800.00	7,146.29	319.00	318.92	68.58	0.28	-11.86	35.95	30.46	9,048.31	9,025.07	23.24	389.309	
12,900.00	7,146.24	319.00	318.92	69.73	0.28	-11.86	35.95	30.46	9,112.28	9,088.81	23.47	388.192	
13,000.00	7,146.18	319.00	318.92	70.89	0.28	-11.86	35.95	30.46	9,176.89	9,153.19	23.70	387.165	
13,100.00	7,146.13	319.00	318.92	72.05	0.28	-11.86	35.95	30.46	9,242.13	9,218.20	23.93	386.224	
13,200.00	7,146.07	319.00	318.92	73.21	0.28	-11.86	35.95	30.46	9,307.99	9,283.83	24.15	385.366	
13,300.00	7,146.01	319.00	318.92	74.37	0.28	-11.86	35.95	30.46	9,374.45	9,350.07	24.38	384.587	
13,400.00	7,145.96	319.00	318.92	75.53	0.28	-11.86	35.95	30.46	9,441.50	9,416.90	24.59	383.885	
13,500.00	7,145.90	319.00	318.92	76.70	0.28	-11.86	35.95	30.46	9,509.13	9,484.32	24.81	383.256	
13,600.00	7,145.84	319.00	318.92	77.86	0.28	-11.86	35.95	30.46	9,577.33	9,552.30	25.03	382.697	
13,700.00	7,145.79	319.00	318.92	79.03	0.28	-11.86	35.95	30.46	9,646.08	9,620.84	25.24	382.205	
13,800.00	7,145.73	319.00	318.92	80.20	0.28	-11.86	35.95	30.46	9,715.37	9,689.93	25.45	381.778	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,900.00	7,145.67	319.00	318.92	81.37	0.28	-11.86	35.95	30.46	9,785.20	9,759.54	25.66	381.413	
14,000.00	7,145.62	319.00	318.92	82.54	0.28	-11.86	35.95	30.46	9,855.54	9,829.68	25.86	381.107	
14,100.00	7,145.56	319.00	318.92	83.71	0.28	-11.86	35.95	30.46	9,926.40	9,900.34	26.06	380.858	
14,200.00	7,145.50	319.00	318.92	84.88	0.28	-11.86	35.95	30.46	9,997.75	9,971.49	26.26	380.663	
14,300.00	7,145.45	319.00	318.92	86.06	0.28	-11.86	35.95	30.46	10,069.59	10,043.13	26.46	380.521	
14,400.00	7,145.39	319.00	318.92	87.23	0.28	-11.86	35.95	30.46	10,141.91	10,115.25	26.66	380.429	
14,500.00	7,145.33	319.00	318.92	88.41	0.28	-11.86	35.95	30.46	10,214.70	10,187.84	26.85	380.385	
14,600.00	7,145.28	319.00	318.92	89.59	0.28	-11.86	35.95	30.46	10,287.94	10,260.89	27.05	380.387	
14,700.00	7,145.22	319.00	318.92	90.77	0.28	-11.86	35.95	30.46	10,361.63	10,334.39	27.24	380.433	
14,800.00	7,145.17	319.00	318.92	91.95	0.28	-11.86	35.95	30.46	10,435.75	10,408.33	27.42	380.522	
14,900.00	7,145.11	319.00	318.92	93.13	0.28	-11.86	35.95	30.46	10,510.31	10,482.70	27.61	380.651	
15,000.00	7,145.05	319.00	318.92	94.31	0.28	-11.86	35.95	30.46	10,585.28	10,557.49	27.80	380.819	
15,100.00	7,145.00	319.00	318.92	95.49	0.28	-11.86	35.95	30.46	10,660.67	10,632.69	27.98	381.025	
15,200.00	7,144.94	319.00	318.92	96.68	0.28	-11.86	35.95	30.46	10,736.46	10,708.30	28.16	381.266	
15,300.00	7,144.88	319.00	318.92	97.86	0.28	-11.86	35.95	30.46	10,812.64	10,784.30	28.34	381.542	
15,400.00	7,144.83	319.00	318.92	99.05	0.28	-11.86	35.95	30.46	10,889.21	10,860.69	28.52	381.851	
15,500.00	7,144.77	319.00	318.92	100.24	0.28	-11.86	35.95	30.46	10,966.15	10,937.46	28.69	382.191	
15,600.00	7,144.71	319.00	318.92	101.42	0.28	-11.86	35.95	30.46	11,043.47	11,014.60	28.87	382.562	
15,700.00	7,144.66	319.00	318.92	102.61	0.28	-11.86	35.95	30.46	11,121.14	11,092.10	29.04	382.961	
15,800.00	7,144.60	319.00	318.92	103.80	0.28	-11.86	35.95	30.46	11,199.17	11,169.96	29.21	383.388	
15,900.00	7,144.54	319.00	318.92	104.99	0.28	-11.86	35.95	30.46	11,277.55	11,248.17	29.38	383.841	
16,000.00	7,144.49	319.00	318.92	106.19	0.28	-11.86	35.95	30.46	11,356.26	11,326.71	29.55	384.320	
16,100.00	7,144.43	319.00	318.92	107.38	0.28	-11.86	35.95	30.46	11,435.31	11,405.60	29.72	384.824	
16,200.00	7,144.37	319.00	318.92	108.57	0.28	-11.86	35.95	30.46	11,514.69	11,484.81	29.88	385.350	
16,300.00	7,144.32	319.00	318.92	109.77	0.28	-11.86	35.95	30.46	11,594.38	11,564.34	30.05	385.899	
16,400.00	7,144.26	319.00	318.92	110.96	0.28	-11.86	35.95	30.46	11,674.39	11,644.18	30.21	386.470	
16,500.00	7,144.21	319.00	318.92	112.16	0.28	-11.86	35.95	30.46	11,754.70	11,724.33	30.37	387.060	
16,600.00	7,144.15	319.00	318.92	113.36	0.28	-11.86	35.95	30.46	11,835.31	11,804.78	30.53	387.671	
16,700.00	7,144.09	319.00	318.92	114.56	0.28	-11.86	35.95	30.46	11,916.22	11,885.53	30.69	388.299	
16,800.00	7,144.04	319.00	318.92	115.76	0.28	-11.86	35.95	30.46	11,997.41	11,966.57	30.85	388.946	
16,862.86	7,144.00	319.00	318.92	116.51	0.28	-11.86	35.95	30.46	12,048.59	12,017.65	30.94	389.361	
16,866.76	7,144.00	319.00	318.92	116.56	0.28	-11.81	35.95	30.46	12,051.77	12,020.82	30.95	389.387	
16,900.00	7,143.98	319.00	318.92	116.96	0.28	-11.81	35.95	30.46	12,078.89	12,047.89	31.00	389.610	
17,000.00	7,143.92	319.00	318.92	118.16	0.28	-11.81	35.95	30.46	12,160.65	12,129.49	31.16	390.290	
17,100.00	7,143.87	319.00	318.92	119.36	0.28	-11.81	35.95	30.46	12,242.68	12,211.37	31.31	390.986	
17,200.00	7,143.81	319.00	318.92	120.56	0.28	-11.81	35.95	30.46	12,324.98	12,293.51	31.47	391.697	
17,300.00	7,143.75	319.00	318.92	121.77	0.28	-11.81	35.95	30.46	12,407.54	12,375.92	31.62	392.422	
17,400.00	7,143.69	319.00	318.92	122.97	0.28	-11.81	35.95	30.46	12,490.35	12,458.58	31.77	393.160	
17,500.00	7,143.64	319.00	318.92	124.18	0.28	-11.81	35.95	30.46	12,573.41	12,541.49	31.92	393.911	
17,600.00	7,143.58	319.00	318.92	125.39	0.28	-11.81	35.95	30.46	12,656.72	12,624.65	32.07	394.674	
17,700.00	7,143.52	319.00	318.92	126.59	0.28	-11.81	35.95	30.46	12,740.26	12,708.05	32.22	395.449	
17,800.00	7,143.47	319.00	318.92	127.80	0.28	-11.81	35.95	30.46	12,824.05	12,791.68	32.36	396.235	
17,900.00	7,143.41	319.00	318.92	129.01	0.28	-11.81	35.95	30.46	12,908.06	12,875.55	32.51	397.031	
18,000.00	7,143.35	319.00	318.92	130.22	0.28	-11.81	35.95	30.46	12,992.30	12,959.64	32.66	397.838	
18,100.00	7,143.30	319.00	318.92	131.43	0.28	-11.81	35.95	30.46	13,076.76	13,043.96	32.80	398.654	
18,200.00	7,143.24	319.00	318.92	132.64	0.28	-11.81	35.95	30.46	13,161.44	13,128.49	32.95	399.479	
18,300.00	7,143.18	319.00	318.92	133.86	0.28	-11.81	35.95	30.46	13,246.33	13,213.24	33.09	400.312	
18,400.00	7,143.13	319.00	318.92	135.07	0.28	-11.81	35.95	30.46	13,331.43	13,298.20	33.23	401.153	
18,500.00	7,143.07	319.00	318.92	136.28	0.28	-11.81	35.95	30.46	13,416.74	13,383.37	33.37	402.002	
18,600.00	7,143.01	319.00	318.92	137.50	0.28	-11.81	35.95	30.46	13,502.25	13,468.74	33.52	402.858	
18,700.00	7,142.96	319.00	318.92	138.72	0.28	-11.81	35.95	30.46	13,587.96	13,554.30	33.66	403.721	
18,800.00	7,142.90	319.00	318.92	139.93	0.28	-11.81	35.95	30.46	13,673.86	13,640.06	33.80	404.590	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,900.00	7,142.84	319.00	318.92	141.15	0.28	-11.81	35.95	30.46	13,759.95	13,726.02	33.94	405.465	
19,000.00	7,142.78	319.00	318.92	142.37	0.28	-11.81	35.95	30.46	13,846.23	13,812.16	34.07	406.346	
19,100.00	7,142.73	319.00	318.92	143.59	0.28	-11.81	35.95	30.46	13,932.70	13,898.48	34.21	407.232	
19,200.00	7,142.67	319.00	318.92	144.81	0.28	-11.81	35.95	30.46	14,019.34	13,984.99	34.35	408.123	
19,300.00	7,142.61	319.00	318.92	146.03	0.28	-11.81	35.95	30.46	14,106.16	14,071.67	34.49	409.019	
19,400.00	7,142.56	319.00	318.92	147.25	0.28	-11.81	35.95	30.46	14,193.15	14,158.53	34.62	409.918	
19,500.00	7,142.50	319.00	318.92	148.47	0.28	-11.81	35.95	30.46	14,280.31	14,245.55	34.76	410.822	
19,600.00	7,142.44	319.00	318.92	149.70	0.28	-11.81	35.95	30.46	14,367.64	14,332.75	34.90	411.729	
19,700.00	7,142.39	319.00	318.92	150.92	0.28	-11.81	35.95	30.46	14,455.14	14,420.11	35.03	412.640	
19,800.00	7,142.33	319.00	318.92	152.15	0.28	-11.81	35.95	30.46	14,542.79	14,507.63	35.17	413.553	
19,900.00	7,142.27	319.00	318.92	153.37	0.28	-11.81	35.95	30.46	14,630.61	14,595.31	35.30	414.470	
20,000.00	7,142.22	319.00	318.92	154.60	0.28	-11.81	35.95	30.46	14,718.58	14,683.14	35.43	415.389	
20,100.00	7,142.16	319.00	318.92	155.83	0.28	-11.81	35.95	30.46	14,806.70	14,771.13	35.57	416.310	
20,200.00	7,142.10	319.00	318.92	157.06	0.28	-11.81	35.95	30.46	14,894.97	14,859.27	35.70	417.233	
20,300.00	7,142.04	319.00	318.92	158.28	0.28	-11.81	35.95	30.46	14,983.39	14,947.56	35.83	418.158	
20,400.00	7,141.99	319.00	318.92	159.51	0.28	-11.81	35.95	30.46	15,071.96	15,035.99	35.96	419.085	
20,500.00	7,141.93	319.00	318.92	160.74	0.28	-11.81	35.95	30.46	15,160.66	15,124.57	36.10	420.013	
20,600.00	7,141.87	319.00	318.92	161.98	0.28	-11.81	35.95	30.46	15,249.51	15,213.28	36.23	420.942	
20,700.00	7,141.82	319.00	318.92	163.21	0.28	-11.81	35.95	30.46	15,338.49	15,302.14	36.36	421.872	
20,800.00	7,141.76	319.00	318.92	164.44	0.28	-11.81	35.95	30.46	15,427.61	15,391.12	36.49	422.803	
20,900.00	7,141.70	319.00	318.92	165.68	0.28	-11.81	35.95	30.46	15,516.86	15,480.24	36.62	423.734	
21,000.00	7,141.65	319.00	318.92	166.91	0.28	-11.81	35.95	30.46	15,606.25	15,569.50	36.75	424.666	
21,100.00	7,141.59	319.00	318.92	168.15	0.28	-11.81	35.95	30.46	15,695.76	15,658.88	36.88	425.598	
21,200.00	7,141.53	319.00	318.92	169.38	0.28	-11.81	35.95	30.46	15,785.39	15,748.38	37.01	426.530	
21,300.00	7,141.48	319.00	318.92	170.62	0.28	-11.81	35.95	30.46	15,875.15	15,838.01	37.14	427.462	
21,400.00	7,141.42	319.00	318.92	171.86	0.28	-11.81	35.95	30.46	15,965.03	15,927.76	37.27	428.394	
21,500.00	7,141.36	319.00	318.92	173.10	0.28	-11.81	35.95	30.46	16,055.03	16,017.64	37.40	429.325	
21,600.00	7,141.31	319.00	318.92	174.34	0.28	-11.81	35.95	30.46	16,145.15	16,107.63	37.52	430.256	
21,700.00	7,141.25	319.00	318.92	175.58	0.28	-11.81	35.95	30.46	16,235.39	16,197.73	37.65	431.186	
21,800.00	7,141.19	319.00	318.92	176.82	0.28	-11.81	35.95	30.46	16,325.73	16,287.95	37.78	432.115	
21,900.00	7,141.13	319.00	318.92	178.06	0.28	-11.81	35.95	30.46	16,416.19	16,378.29	37.91	433.043	
22,000.00	7,141.08	319.00	318.92	179.30	0.28	-11.81	35.95	30.46	16,506.76	16,468.73	38.04	433.970	
22,100.00	7,141.02	319.00	318.92	180.55	0.28	-11.81	35.95	30.46	16,597.44	16,559.28	38.16	434.895	
22,136.53	7,141.00	319.00	318.92	181.00	0.28	-11.81	35.95	30.46	16,630.60	16,592.39	38.21	435.233	
22,137.77	7,141.00	319.00	318.92	181.02	0.28	-11.83	35.95	30.46	16,631.72	16,593.50	38.21	435.244	
22,200.00	7,140.96	319.00	318.92	181.79	0.28	-11.83	35.95	30.46	16,688.23	16,649.93	38.29	435.819	
22,300.00	7,140.91	319.00	318.92	183.04	0.28	-11.83	35.95	30.46	16,779.11	16,740.69	38.42	436.742	
22,400.00	7,140.85	319.00	318.92	184.28	0.28	-11.83	35.95	30.46	16,870.10	16,831.56	38.55	437.663	
22,500.00	7,140.79	319.00	318.92	185.53	0.28	-11.83	35.95	30.46	16,961.20	16,922.52	38.67	438.583	
22,600.00	7,140.73	319.00	318.92	186.78	0.28	-11.83	35.95	30.46	17,052.39	17,013.59	38.80	439.501	
22,700.00	7,140.68	319.00	318.92	188.02	0.28	-11.83	35.95	30.46	17,143.68	17,104.75	38.93	440.416	
22,800.00	7,140.62	319.00	318.92	189.27	0.28	-11.83	35.95	30.46	17,235.07	17,196.01	39.05	441.330	
22,900.00	7,140.56	319.00	318.92	190.52	0.28	-11.83	35.95	30.46	17,326.55	17,287.37	39.18	442.242	
23,000.00	7,140.50	319.00	318.92	191.77	0.28	-11.83	35.95	30.46	17,418.12	17,378.82	39.31	443.152	
23,100.00	7,140.45	319.00	318.92	193.02	0.28	-11.83	35.95	30.46	17,509.79	17,470.36	39.43	444.059	
23,200.00	7,140.39	319.00	318.92	194.28	0.28	-11.83	35.95	30.46	17,601.55	17,561.99	39.56	444.964	
23,300.00	7,140.33	319.00	318.92	195.53	0.28	-11.83	35.95	30.46	17,693.40	17,653.71	39.68	445.867	
23,400.00	7,140.27	319.00	318.92	196.78	0.28	-11.83	35.95	30.46	17,785.33	17,745.52	39.81	446.767	
23,500.00	7,140.22	319.00	318.92	198.04	0.28	-11.83	35.95	30.46	17,877.36	17,837.42	39.93	447.665	
23,600.00	7,140.16	319.00	318.92	199.29	0.28	-11.83	35.95	30.46	17,969.46	17,929.40	40.06	448.560	
23,700.00	7,140.10	319.00	318.92	200.55	0.28	-11.83	35.95	30.46	18,061.66	18,021.47	40.19	449.452	
23,800.00	7,140.04	319.00	318.92	201.81	0.28	-11.83	35.95	30.46	18,153.93	18,113.62	40.31	450.342	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
23,900.00	7,139.99	319.00	318.92	203.06	0.28	-11.83	35.95	30.46	18,246.29	18,205.85	40.44	451.228	
24,000.00	7,139.93	319.00	318.92	204.32	0.28	-11.83	35.95	30.46	18,338.72	18,298.16	40.56	452.112	
24,100.00	7,139.87	319.00	318.92	205.58	0.28	-11.83	35.95	30.46	18,431.24	18,390.55	40.69	452.993	
24,200.00	7,139.81	319.00	318.92	206.84	0.28	-11.83	35.95	30.46	18,523.83	18,483.02	40.81	453.871	
24,300.00	7,139.76	319.00	318.92	208.10	0.28	-11.83	35.95	30.46	18,616.50	18,575.56	40.94	454.747	
24,400.00	7,139.70	319.00	318.92	209.36	0.28	-11.83	35.95	30.46	18,709.24	18,668.18	41.06	455.619	
24,500.00	7,139.64	319.00	318.92	210.62	0.28	-11.83	35.95	30.46	18,802.06	18,760.87	41.19	456.488	
24,600.00	7,139.58	319.00	318.92	211.89	0.28	-11.83	35.95	30.46	18,894.95	18,853.64	41.31	457.353	
24,700.00	7,139.53	319.00	318.92	213.15	0.28	-11.83	35.95	30.46	18,987.92	18,946.48	41.44	458.216	
24,800.00	7,139.47	319.00	318.92	214.42	0.28	-11.83	35.95	30.46	19,080.95	19,039.39	41.56	459.075	
24,900.00	7,139.41	319.00	318.92	215.68	0.28	-11.83	35.95	30.46	19,174.06	19,132.37	41.69	459.931	
25,000.00	7,139.35	319.00	318.92	216.95	0.28	-11.83	35.95	30.46	19,267.24	19,225.42	41.81	460.784	
25,100.00	7,139.30	319.00	318.92	218.21	0.28	-11.83	35.95	30.46	19,360.48	19,318.54	41.94	461.634	
25,200.00	7,139.24	319.00	318.92	219.48	0.28	-11.83	35.95	30.46	19,453.79	19,411.72	42.06	462.480	
25,300.00	7,139.18	319.00	318.92	220.75	0.28	-11.83	35.95	30.46	19,547.17	19,504.98	42.19	463.322	
25,400.00	7,139.13	319.00	318.92	222.02	0.28	-11.83	35.95	30.46	19,640.61	19,598.29	42.31	464.162	
25,500.00	7,139.07	319.00	318.92	223.29	0.28	-11.83	35.95	30.46	19,734.11	19,691.67	42.44	464.997	
25,600.00	7,139.01	319.00	318.92	224.56	0.28	-11.83	35.95	30.46	19,827.68	19,785.12	42.56	465.830	
25,700.00	7,138.95	319.00	318.92	225.83	0.28	-11.83	35.95	30.46	19,921.31	19,878.62	42.69	466.658	
25,800.00	7,138.90	319.00	318.92	227.10	0.28	-11.83	35.95	30.46	20,015.01	19,972.19	42.81	467.484	
25,900.00	7,138.84	319.00	318.92	228.38	0.28	-11.83	35.95	30.46	20,108.76	20,065.82	42.94	468.305	
26,000.00	7,138.78	319.00	318.92	229.65	0.28	-11.83	35.95	30.46	20,202.58	20,159.51	43.06	469.124	
26,100.00	7,138.72	319.00	318.92	230.93	0.28	-11.83	35.95	30.46	20,296.45	20,253.26	43.19	469.938	
26,200.00	7,138.67	319.00	318.92	232.20	0.28	-11.83	35.95	30.46	20,390.38	20,347.06	43.31	470.749	
26,300.00	7,138.61	319.00	318.92	233.48	0.28	-11.83	35.95	30.46	20,484.37	20,440.93	43.44	471.556	
26,400.00	7,138.55	319.00	318.92	234.75	0.28	-11.83	35.95	30.46	20,578.41	20,534.85	43.57	472.360	
26,500.00	7,138.49	319.00	318.92	236.03	0.28	-11.83	35.95	30.46	20,672.52	20,628.82	43.69	473.160	
26,600.00	7,138.44	319.00	318.92	237.31	0.28	-11.83	35.95	30.46	20,766.67	20,722.86	43.82	473.957	
26,700.00	7,138.38	319.00	318.92	238.59	0.28	-11.83	35.95	30.46	20,860.88	20,816.94	43.94	474.749	
26,800.00	7,138.32	319.00	318.92	239.87	0.28	-11.83	35.95	30.46	20,955.15	20,911.08	44.07	475.538	
26,900.00	7,138.26	319.00	318.92	241.15	0.28	-11.83	35.95	30.46	21,049.46	21,005.27	44.19	476.324	
27,000.00	7,138.21	319.00	318.92	242.43	0.28	-11.83	35.95	30.46	21,143.83	21,099.52	44.32	477.105	
27,100.00	7,138.15	319.00	318.92	243.71	0.28	-11.83	35.95	30.46	21,238.26	21,193.81	44.44	477.883	
27,157.78	7,138.12	319.00	318.92	244.46	0.28	-11.83	35.95	30.46	21,292.84	21,248.32	44.51	478.331	
27,200.00	7,138.09	319.00	318.92	245.00	0.28	-11.83	35.95	30.46	21,332.73	21,288.16	44.57	478.657	
27,300.00	7,138.03	319.00	318.92	246.28	0.28	-11.83	35.95	30.46	21,427.25	21,382.56	44.69	479.428	
27,357.78	7,138.00	319.00	318.92	247.02	0.28	-11.83	35.95	30.46	21,481.88	21,437.12	44.77	479.871	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104, 319-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	0.00	0.00	0.00	0.00	34.43	37.14	25.45	45.02				
125.00	125.00	124.57	124.57	0.05	0.06	31.34	37.56	25.87	45.13	45.01	0.12	383.888	
225.00	224.99	224.63	224.61	0.19	0.17	34.51	37.41	27.56	45.26	44.92	0.33	136.446	
290.00	289.99	289.71	289.65	0.28	0.24	22.90	36.51	29.49	45.33	44.88	0.45	100.523	
300.00	299.99	299.72	299.65	0.29	0.26	23.39	36.33	29.81	45.34	44.87	0.47	96.341 ES	
400.00	399.99	399.66	399.52	0.42	0.37	28.70	34.26	33.24	45.59	44.92	0.67	68.031	
440.00	439.99	439.62	439.45	0.47	0.45	30.81	33.43	34.62	45.80	44.99	0.81	56.244	
500.00	499.99	499.26	499.04	0.50	0.61	-121.03	32.34	36.68	46.72	45.71	1.01	46.196	
600.00	599.93	598.02	597.73	0.47	0.92	-127.69	33.03	40.14	51.73	50.38	1.35	38.289	
700.00	699.70	696.03	695.59	0.48	1.25	-134.13	37.07	43.62	61.54	59.83	1.71	35.888	
800.00	799.18	792.59	791.81	0.52	1.58	-141.56	44.33	47.10	77.16	75.07	2.09	36.850	
900.00	898.24	887.07	885.67	0.60	1.92	-148.29	54.56	50.54	99.35	96.86	2.49	39.869	
1,000.00	996.77	978.89	976.51	0.69	2.26	-153.68	67.47	53.93	128.31	125.41	2.90	44.171	
1,074.04	1,069.30	1,044.83	1,041.47	0.77	2.52	-156.83	78.54	56.39	154.02	150.81	3.22	47.873	
1,100.00	1,094.67	1,067.56	1,063.79	0.79	2.61	-157.82	82.70	57.24	163.77	160.45	3.33	49.228	
1,200.00	1,192.37	1,153.63	1,148.04	0.91	2.96	-160.90	100.06	60.47	203.35	199.60	3.75	54.183	
1,300.00	1,290.07	1,240.44	1,232.50	1.02	3.32	-163.18	119.85	63.76	245.66	241.47	4.19	58.609	
1,400.00	1,387.77	1,330.46	1,319.98	1.15	3.71	-164.89	140.76	67.17	288.63	283.98	4.64	62.150	
1,500.00	1,485.47	1,420.47	1,407.46	1.27	4.10	-166.15	161.68	70.57	331.75	326.64	5.11	64.960	
1,600.00	1,583.17	1,510.49	1,494.95	1.40	4.50	-167.13	182.59	73.98	374.97	369.40	5.57	67.277	
1,700.00	1,680.87	1,600.50	1,582.43	1.53	4.90	-167.90	203.50	77.39	418.26	412.22	6.04	69.213	
1,800.00	1,778.57	1,690.51	1,669.92	1.67	5.31	-168.53	224.42	80.80	461.61	455.09	6.52	70.851	
1,900.00	1,876.27	1,780.53	1,757.40	1.81	5.71	-169.05	245.33	84.21	504.99	498.00	6.99	72.251	
2,000.00	1,973.98	1,870.54	1,844.88	1.95	6.12	-169.49	266.24	87.62	548.39	540.93	7.47	73.460	
2,100.00	2,071.68	1,960.55	1,932.37	2.09	6.52	-169.87	287.16	91.03	591.83	583.88	7.94	74.512	
2,200.00	2,169.38	2,050.57	2,019.85	2.24	6.93	-170.19	308.07	94.44	635.27	626.85	8.42	75.436	
2,300.00	2,267.08	2,140.58	2,107.34	2.39	7.34	-170.47	328.98	97.84	678.74	669.84	8.90	76.253	
2,400.00	2,364.78	2,230.59	2,194.82	2.55	7.75	-170.72	349.90	101.25	722.21	712.83	9.38	76.979	
2,500.00	2,462.48	2,320.61	2,282.30	2.70	8.16	-170.94	370.81	104.66	765.70	755.83	9.86	77.628	
2,600.00	2,560.18	2,410.62	2,369.79	2.86	8.57	-171.14	391.72	108.07	809.19	798.84	10.35	78.212	
2,700.00	2,657.88	2,500.64	2,457.27	3.02	8.98	-171.31	412.64	111.48	852.69	841.86	10.83	78.739	
2,800.00	2,755.58	2,590.65	2,544.76	3.19	9.40	-171.47	433.55	114.89	896.20	884.88	11.31	79.216	
2,900.00	2,853.28	2,680.66	2,632.24	3.35	9.81	-171.62	454.47	118.30	939.71	927.91	11.80	79.650	
3,000.00	2,950.99	2,770.68	2,719.72	3.52	10.22	-171.75	475.38	121.71	983.22	970.94	12.28	80.046	
3,100.00	3,048.69	2,860.69	2,807.21	3.69	10.63	-171.87	496.29	125.11	1,026.74	1,013.97	12.77	80.408	
3,200.00	3,146.39	2,950.70	2,894.69	3.87	11.05	-171.98	517.21	128.52	1,070.26	1,057.01	13.26	80.741	
3,300.00	3,244.09	3,040.72	2,982.18	4.04	11.46	-172.08	538.12	131.93	1,113.79	1,100.05	13.74	81.047	
3,400.00	3,341.79	3,130.73	3,069.66	4.22	11.87	-172.17	559.03	135.34	1,157.32	1,143.09	14.23	81.329	
3,500.00	3,439.49	3,220.75	3,157.15	4.40	12.29	-172.26	579.95	138.75	1,200.85	1,186.13	14.72	81.589	
3,600.00	3,537.19	3,310.76	3,244.63	4.58	12.70	-172.34	600.86	142.16	1,244.38	1,229.17	15.21	81.830	
3,700.00	3,634.89	3,400.77	3,332.11	4.77	13.11	-172.42	621.77	145.57	1,287.92	1,272.22	15.70	82.053	
3,800.00	3,732.59	3,490.79	3,419.60	4.95	13.53	-172.49	642.69	148.98	1,331.45	1,315.27	16.19	82.261	
3,900.00	3,830.29	3,580.80	3,507.08	5.14	13.94	-172.56	663.60	152.39	1,374.99	1,358.31	16.68	82.453	
4,000.00	3,928.00	3,670.81	3,594.57	5.33	14.36	-172.62	684.51	155.79	1,418.53	1,401.36	17.17	82.632	
4,100.00	4,025.70	3,760.83	3,682.05	5.53	14.77	-172.68	705.43	159.20	1,462.07	1,444.41	17.66	82.799	
4,200.00	4,123.40	3,850.84	3,769.53	5.72	15.19	-172.73	726.34	162.61	1,505.61	1,487.46	18.15	82.955	
4,300.00	4,221.10	3,940.85	3,857.02	5.92	15.60	-172.79	747.25	166.02	1,549.15	1,530.51	18.64	83.100	
4,400.00	4,318.80	4,030.87	3,944.50	6.12	16.01	-172.83	768.17	169.43	1,592.70	1,573.56	19.13	83.235	
4,500.00	4,416.50	4,120.88	4,031.99	6.32	16.43	-172.88	789.08	172.84	1,636.24	1,616.61	19.63	83.361	
4,600.00	4,514.20	4,210.90	4,119.47	6.52	16.84	-172.93	809.99	176.25	1,679.79	1,659.67	20.12	83.479	
4,700.00	4,611.90	4,300.91	4,206.95	6.73	17.26	-172.97	830.91	179.66	1,723.33	1,702.72	20.62	83.590	
4,800.00	4,709.60	4,390.92	4,294.44	6.94	17.67	-173.01	851.82	183.06	1,766.88	1,745.77	21.11	83.693	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104, 319-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
4,900.00	4,807.30	4,480.94	4,381.92	7.14	18.09	-173.05	872.74	186.47	1,810.43	1,788.82	21.61	83.789	
5,000.00	4,905.00	4,570.95	4,469.41	7.36	18.50	-173.08	893.65	189.88	1,853.98	1,831.87	22.10	83.879	
5,100.00	5,002.71	4,660.96	4,556.89	7.57	18.92	-173.12	914.56	193.29	1,897.53	1,874.93	22.60	83.962	
5,200.00	5,100.41	4,750.98	4,644.37	7.78	19.33	-173.15	935.48	196.70	1,941.08	1,917.98	23.10	84.041	
5,300.00	5,198.11	4,840.99	4,731.86	8.00	19.75	-173.18	956.39	200.11	1,984.63	1,961.03	23.59	84.114	
5,400.00	5,295.81	4,931.00	4,819.34	8.22	20.16	-173.21	977.30	203.52	2,028.18	2,004.08	24.09	84.181	
5,500.00	5,393.51	5,021.02	4,906.83	8.44	20.58	-173.24	998.22	206.93	2,071.73	2,047.14	24.59	84.245	
5,600.00	5,491.21	5,111.03	4,994.31	8.66	20.99	-173.27	1,019.13	210.33	2,115.28	2,090.19	25.09	84.304	
5,700.00	5,588.91	5,201.05	5,081.79	8.89	21.41	-173.29	1,040.04	213.74	2,158.83	2,133.24	25.59	84.358	
5,800.00	5,686.61	5,291.06	5,169.28	9.11	21.82	-173.32	1,060.96	217.15	2,202.38	2,176.29	26.09	84.409	
5,900.00	5,784.31	5,381.07	5,256.76	9.34	22.24	-173.34	1,081.87	220.56	2,245.93	2,219.34	26.59	84.456	
6,000.00	5,882.01	5,471.09	5,344.25	9.57	22.65	-173.37	1,102.78	223.97	2,289.49	2,262.39	27.09	84.499	
6,100.00	5,979.72	5,561.10	5,431.73	9.80	23.07	-173.39	1,123.70	227.38	2,333.04	2,305.44	27.60	84.539	
6,200.00	6,077.42	5,651.11	5,519.22	10.04	23.48	-173.41	1,144.61	230.79	2,376.59	2,348.49	28.10	84.575	
6,300.00	6,175.12	5,741.13	5,606.70	10.27	23.90	-173.43	1,165.52	234.20	2,420.15	2,391.54	28.60	84.609	
6,400.00	6,272.82	5,831.14	5,694.18	10.51	24.31	-173.45	1,186.44	237.61	2,463.70	2,434.59	29.11	84.639	
6,500.00	6,370.52	5,921.16	5,781.67	10.75	24.73	-173.47	1,207.35	241.01	2,507.25	2,477.64	29.61	84.667	
6,600.00	6,468.22	6,011.17	5,869.15	10.99	25.14	-173.49	1,228.27	244.42	2,550.81	2,520.69	30.12	84.692	
6,662.10	6,528.89	6,067.06	5,923.48	11.14	25.40	-173.51	1,241.25	246.54	2,577.85	2,547.42	30.43	84.706	
6,700.00	6,565.90	6,101.20	5,956.65	11.23	25.56	-156.72	1,249.18	247.83	2,594.25	2,563.63	30.63	84.709	
6,750.00	6,614.48	6,146.15	6,000.34	11.35	25.77	-137.94	1,259.63	249.53	2,615.48	2,584.61	30.88	84.700	
6,800.00	6,662.53	6,190.75	6,043.69	11.47	25.97	-123.98	1,269.99	251.22	2,636.17	2,605.03	31.13	84.680	
6,850.00	6,709.74	6,234.72	6,086.42	11.60	26.17	-113.91	1,280.21	252.89	2,656.20	2,624.82	31.38	84.646	
6,900.00	6,755.82	6,277.80	6,128.29	11.72	26.37	-106.50	1,290.21	254.52	2,675.53	2,643.91	31.63	84.596	
6,950.00	6,800.49	6,319.72	6,169.03	11.85	26.57	-100.90	1,299.95	256.11	2,694.10	2,662.22	31.87	84.527	
7,000.00	6,843.48	6,360.21	6,208.39	11.98	26.75	-96.53	1,309.36	257.64	2,711.86	2,679.74	32.12	84.436	
7,050.00	6,884.52	6,399.04	6,246.12	12.12	26.93	-93.05	1,318.38	259.11	2,728.79	2,696.43	32.36	84.322	
7,100.00	6,923.35	6,435.96	6,282.00	12.27	27.10	-90.22	1,326.96	260.51	2,744.89	2,712.28	32.61	84.184	
7,150.00	6,959.74	6,470.74	6,315.81	12.42	27.26	-87.89	1,335.04	261.83	2,760.14	2,727.29	32.85	84.020	
7,200.00	6,993.46	6,503.17	6,347.33	12.60	27.41	-85.94	1,342.58	263.05	2,774.56	2,741.46	33.10	83.832	
7,250.00	7,024.30	6,533.05	6,376.37	12.79	27.55	-84.29	1,349.52	264.19	2,788.15	2,754.80	33.34	83.620	
7,300.00	7,052.08	6,560.19	6,402.75	12.99	27.68	-82.89	1,355.82	265.21	2,800.92	2,767.33	33.59	83.384	
7,350.00	7,076.62	6,584.43	6,426.31	13.22	27.79	-81.68	1,361.46	266.13	2,812.90	2,779.06	33.84	83.127	
7,400.00	7,097.78	6,605.62	6,446.90	13.46	27.88	-80.62	1,366.38	266.93	2,824.09	2,790.00	34.09	82.850	
7,450.00	7,115.41	6,623.63	6,464.40	13.71	27.97	-79.70	1,370.56	267.62	2,834.50	2,800.17	34.33	82.558	
7,500.00	7,129.42	6,638.34	6,478.70	13.99	28.04	-78.89	1,373.98	268.17	2,844.15	2,809.57	34.58	82.252	
7,550.00	7,139.71	6,649.67	6,489.71	14.28	28.09	-78.16	1,376.61	268.60	2,853.03	2,818.21	34.82	81.937	
7,600.00	7,146.22	6,657.54	6,497.36	14.58	28.12	-77.52	1,378.44	268.90	2,861.13	2,826.07	35.06	81.617	
7,650.00	7,148.92	6,661.91	6,501.61	14.90	28.14	-76.96	1,379.46	269.07	2,868.44	2,833.15	35.28	81.296	
7,660.51	7,149.00	6,662.38	6,502.07	14.97	28.15	-76.85	1,379.57	269.08	2,869.87	2,834.54	35.33	81.226	
7,700.00	7,148.98	6,663.86	6,503.50	15.23	28.15	-76.88	1,379.91	269.14	2,875.46	2,839.94	35.52	80.956	
7,800.00	7,148.93	6,667.59	6,507.13	15.92	28.17	-76.95	1,380.78	269.28	2,891.96	2,855.95	36.01	80.311	
7,900.00	7,148.88	6,671.32	6,510.75	16.66	28.19	-77.03	1,381.64	269.42	2,911.80	2,875.28	36.52	79.726	
8,000.00	7,148.82	6,675.05	6,514.38	17.44	28.21	-77.10	1,382.51	269.56	2,934.92	2,897.86	37.05	79.212	
8,100.00	7,148.77	6,678.79	6,518.01	18.25	28.22	-77.18	1,383.38	269.71	2,961.22	2,923.63	37.59	78.775	
8,200.00	7,148.72	6,682.52	6,521.63	19.10	28.24	-77.25	1,384.24	269.85	2,990.64	2,952.50	38.14	78.421	
8,300.00	7,148.67	6,686.25	6,525.26	19.97	28.26	-77.33	1,385.11	269.99	3,023.07	2,984.39	38.68	78.152	
8,400.00	7,148.62	6,689.98	6,528.89	20.86	28.27	-77.40	1,385.98	270.13	3,058.43	3,019.20	39.23	77.970	
8,500.00	7,148.57	6,693.71	6,532.51	21.78	28.29	-77.48	1,386.85	270.27	3,096.61	3,056.85	39.76	77.876	
8,600.00	7,148.51	6,696.21	6,534.94	22.71	28.30	-77.53	1,387.42	270.36	3,137.51	3,097.22	40.29	77.879	
8,700.00	7,148.46	6,697.68	6,536.37	23.67	28.31	-77.56	1,387.77	270.42	3,181.03	3,140.23	40.79	77.976	
8,800.00	7,148.41	6,700.00	6,538.63	24.63	28.32	-77.60	1,388.31	270.50	3,227.05	3,185.76	41.29	78.147	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5													Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104, 319-MWD+HRGM+MS							Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)			
8,900.00	7,148.36	6,700.00	6,538.63	25.62	28.32	-77.60	1,388.31	270.50	3,275.49	3,233.72	41.77	78.420		
9,000.00	7,148.31	6,700.00	6,538.63	26.61	28.32	-77.60	1,388.31	270.50	3,326.22	3,283.99	42.23	78.768		
9,100.00	7,148.26	6,700.00	6,538.63	27.62	28.32	-77.60	1,388.31	270.50	3,379.16	3,336.48	42.67	79.190		
9,200.00	7,148.20	6,700.00	6,538.63	28.64	28.32	-77.60	1,388.31	270.50	3,434.19	3,391.09	43.10	79.681		
9,300.00	7,148.15	6,700.00	6,538.63	29.66	28.32	-77.60	1,388.31	270.50	3,491.21	3,447.70	43.51	80.237		
9,400.00	7,148.10	6,700.00	6,538.63	30.70	28.32	-77.60	1,388.31	270.50	3,550.14	3,506.23	43.91	80.856		
9,500.00	7,148.05	6,700.00	6,538.63	31.74	28.32	-77.60	1,388.31	270.50	3,610.88	3,566.59	44.29	81.534		
9,600.00	7,148.00	6,700.00	6,538.63	32.79	28.32	-77.60	1,388.31	270.50	3,673.33	3,628.68	44.65	82.268		
9,700.00	7,147.94	6,700.00	6,538.63	33.85	28.32	-77.60	1,388.31	270.50	3,737.42	3,692.42	45.00	83.053		
9,800.00	7,147.89	6,700.00	6,538.63	34.92	28.32	-77.60	1,388.31	270.50	3,803.06	3,757.72	45.33	83.888		
9,900.00	7,147.84	6,700.00	6,538.63	35.99	28.32	-77.60	1,388.31	270.50	3,870.17	3,824.51	45.66	84.769		
10,000.00	7,147.79	6,700.00	6,538.63	37.07	28.32	-77.60	1,388.31	270.50	3,938.67	3,892.71	45.96	85.693		
10,100.00	7,147.74	6,700.00	6,538.63	38.15	28.32	-77.60	1,388.31	270.50	4,008.50	3,962.24	46.26	86.658		
10,200.00	7,147.69	6,700.00	6,538.63	39.24	28.32	-77.60	1,388.31	270.50	4,079.58	4,033.05	46.54	87.661		
10,300.00	7,147.63	6,700.00	6,538.63	40.33	28.32	-77.60	1,388.31	270.50	4,151.86	4,105.05	46.81	88.699		
10,400.00	7,147.58	6,700.00	6,538.63	41.42	28.32	-77.60	1,388.31	270.50	4,225.27	4,178.20	47.07	89.771		
10,500.00	7,147.53	6,700.00	6,538.63	42.52	28.32	-77.60	1,388.31	270.50	4,299.75	4,252.43	47.32	90.873		
10,600.00	7,147.48	6,700.00	6,538.63	43.63	28.32	-77.60	1,388.31	270.50	4,375.24	4,327.69	47.55	92.005		
10,700.00	7,147.43	6,700.00	6,538.63	44.73	28.32	-77.60	1,388.31	270.50	4,451.71	4,403.92	47.78	93.164		
10,800.00	7,147.38	6,700.00	6,538.63	45.85	28.32	-77.60	1,388.31	270.50	4,529.09	4,481.08	48.00	94.348		
10,900.00	7,147.32	6,700.00	6,538.63	46.96	28.32	-77.60	1,388.31	270.50	4,607.34	4,559.12	48.22	95.556		
11,000.00	7,147.27	6,700.00	6,538.63	48.08	28.32	-77.60	1,388.31	270.50	4,686.42	4,638.00	48.42	96.786		
11,100.00	7,147.22	6,700.00	6,538.63	49.20	28.32	-77.60	1,388.31	270.50	4,766.28	4,717.67	48.62	98.037		
11,200.00	7,147.17	6,700.00	6,538.63	50.32	28.32	-77.60	1,388.31	270.50	4,846.89	4,798.09	48.81	99.307		
11,300.00	7,147.12	6,700.00	6,538.63	51.44	28.32	-77.60	1,388.31	270.50	4,928.22	4,879.23	48.99	100.594		
11,400.00	7,147.07	6,700.00	6,538.63	52.57	28.32	-77.60	1,388.31	270.50	5,010.22	4,961.05	49.17	101.898		
11,500.00	7,147.01	6,700.00	6,538.63	53.70	28.32	-77.60	1,388.31	270.50	5,092.86	5,043.52	49.34	103.217		
11,600.00	7,146.96	6,700.00	6,538.63	54.84	28.32	-77.60	1,388.31	270.50	5,176.11	5,126.60	49.51	104.551		
11,700.00	7,146.91	6,700.00	6,538.63	55.97	28.32	-77.60	1,388.31	270.50	5,259.95	5,210.28	49.67	105.897		
11,800.00	7,146.86	6,700.00	6,538.63	57.11	28.32	-77.60	1,388.31	270.50	5,344.34	5,294.52	49.83	107.256		
11,815.51	7,146.85	6,700.00	6,538.63	57.28	28.32	-77.60	1,388.31	270.50	5,357.48	5,307.63	49.85	107.468		
11,826.17	7,146.84	6,700.00	6,538.63	57.40	28.32	-77.64	1,388.31	270.50	5,366.51	5,316.65	49.87	107.613		
11,900.00	7,146.80	6,700.00	6,538.63	58.25	28.32	-77.64	1,388.31	270.50	5,429.19	5,379.21	49.98	108.624		
12,000.00	7,146.75	6,700.00	6,538.63	59.39	28.32	-77.64	1,388.31	270.50	5,514.53	5,464.40	50.13	110.002		
12,100.00	7,146.69	6,700.00	6,538.63	60.53	28.32	-77.64	1,388.31	270.50	5,600.35	5,550.07	50.28	111.390		
12,200.00	7,146.63	6,700.00	6,538.63	61.67	28.32	-77.64	1,388.31	270.50	5,686.63	5,636.22	50.42	112.787		
12,300.00	7,146.58	6,700.00	6,538.63	62.82	28.32	-77.64	1,388.31	270.50	5,773.36	5,722.80	50.56	114.191		
12,400.00	7,146.52	6,700.00	6,538.63	63.97	28.32	-77.64	1,388.31	270.50	5,860.51	5,809.82	50.69	115.603		
12,500.00	7,146.46	6,700.00	6,538.63	65.12	28.32	-77.64	1,388.31	270.50	5,948.07	5,897.24	50.83	117.022		
12,600.00	7,146.41	6,700.00	6,538.63	66.27	28.32	-77.64	1,388.31	270.50	6,036.01	5,985.05	50.96	118.447		
12,700.00	7,146.35	6,700.00	6,538.63	67.42	28.32	-77.64	1,388.31	270.50	6,124.32	6,073.23	51.09	119.878		
12,800.00	7,146.29	6,700.00	6,538.63	68.58	28.32	-77.64	1,388.31	270.50	6,212.99	6,161.77	51.21	121.313		
12,900.00	7,146.24	6,700.00	6,538.63	69.73	28.32	-77.64	1,388.31	270.50	6,301.99	6,250.65	51.34	122.753		
13,000.00	7,146.18	6,700.00	6,538.63	70.89	28.32	-77.64	1,388.31	270.50	6,391.32	6,339.86	51.46	124.197		
13,100.00	7,146.13	6,700.00	6,538.63	72.05	28.32	-77.64	1,388.31	270.50	6,480.96	6,429.38	51.58	125.644		
13,200.00	7,146.07	6,700.00	6,538.63	73.21	28.32	-77.64	1,388.31	270.50	6,570.90	6,519.20	51.70	127.094		
13,300.00	7,146.01	6,700.00	6,538.63	74.37	28.32	-77.64	1,388.31	270.50	6,661.13	6,609.31	51.82	128.547		
13,400.00	7,145.96	6,700.00	6,538.63	75.53	28.32	-77.64	1,388.31	270.50	6,751.64	6,699.70	51.93	130.002		
13,500.00	7,145.90	6,700.00	6,538.63	76.70	28.32	-77.64	1,388.31	270.50	6,842.40	6,790.35	52.05	131.459		
13,600.00	7,145.84	6,700.00	6,538.63	77.86	28.32	-77.64	1,388.31	270.50	6,933.42	6,881.26	52.16	132.917		
13,700.00	7,145.79	6,700.00	6,538.63	79.03	28.32	-77.64	1,388.31	270.50	7,024.69	6,972.41	52.28	134.377		
13,800.00	7,145.73	6,700.00	6,538.63	80.20	28.32	-77.64	1,388.31	270.50	7,116.19	7,063.80	52.39	135.837		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5												Offset Site Error:	0.00 usft		
Survey Program: 125-Standard Keeper 104, 319-MWD+HRGM+MS				Offset				Semi Major Axis		Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning		
13,900.00	7,145.67	6,700.00	6,538.63	81.37	28.32	-77.64	1,388.31	270.50	7,207.92	7,155.42	52.50	137.297			
14,000.00	7,145.62	6,700.00	6,538.63	82.54	28.32	-77.64	1,388.31	270.50	7,299.86	7,247.25	52.61	138.758			
14,100.00	7,145.56	6,700.00	6,538.63	83.71	28.32	-77.64	1,388.31	270.50	7,392.01	7,339.30	52.72	140.218			
14,200.00	7,145.50	6,700.00	6,538.63	84.88	28.32	-77.64	1,388.31	270.50	7,484.37	7,431.54	52.83	141.678			
14,300.00	7,145.45	6,700.00	6,538.63	86.06	28.32	-77.64	1,388.31	270.50	7,576.92	7,523.98	52.93	143.137			
14,400.00	7,145.39	6,700.00	6,538.63	87.23	28.32	-77.64	1,388.31	270.50	7,669.65	7,616.61	53.04	144.596			
14,500.00	7,145.33	6,700.00	6,538.63	88.41	28.32	-77.64	1,388.31	270.50	7,762.57	7,709.42	53.15	146.053			
14,600.00	7,145.28	6,700.00	6,538.63	89.59	28.32	-77.64	1,388.31	270.50	7,855.66	7,802.40	53.26	147.509			
14,700.00	7,145.22	6,700.00	6,538.63	90.77	28.32	-77.64	1,388.31	270.50	7,948.91	7,895.55	53.36	148.963			
14,800.00	7,145.17	6,700.00	6,538.63	91.95	28.32	-77.64	1,388.31	270.50	8,042.33	7,988.87	53.47	150.415			
14,900.00	7,145.11	6,700.00	6,538.63	93.13	28.32	-77.64	1,388.31	270.50	8,135.91	8,082.34	53.57	151.866			
15,000.00	7,145.05	6,700.00	6,538.63	94.31	28.32	-77.64	1,388.31	270.50	8,229.64	8,175.96	53.68	153.314			
15,100.00	7,145.00	6,700.00	6,538.63	95.49	28.32	-77.64	1,388.31	270.50	8,323.51	8,269.73	53.78	154.760			
15,200.00	7,144.94	6,700.00	6,538.63	96.68	28.32	-77.64	1,388.31	270.50	8,417.53	8,363.64	53.89	156.204			
15,300.00	7,144.88	6,700.00	6,538.63	97.86	28.32	-77.64	1,388.31	270.50	8,511.68	8,457.68	53.99	157.645			
15,400.00	7,144.83	6,700.00	6,538.63	99.05	28.32	-77.64	1,388.31	270.50	8,605.96	8,551.86	54.10	159.083			
15,500.00	7,144.77	6,700.00	6,538.63	100.24	28.32	-77.64	1,388.31	270.50	8,700.37	8,646.17	54.20	160.518			
15,600.00	7,144.71	6,700.00	6,538.63	101.42	28.32	-77.64	1,388.31	270.50	8,794.90	8,740.60	54.31	161.950			
15,700.00	7,144.66	6,700.00	6,538.63	102.61	28.32	-77.64	1,388.31	270.50	8,889.56	8,835.15	54.41	163.378			
15,800.00	7,144.60	6,700.00	6,538.63	103.80	28.32	-77.64	1,388.31	270.50	8,984.33	8,929.81	54.52	164.804			
15,900.00	7,144.54	6,700.00	6,538.63	104.99	28.32	-77.64	1,388.31	270.50	9,079.21	9,024.59	54.62	166.226			
16,000.00	7,144.49	6,700.00	6,538.63	106.19	28.32	-77.64	1,388.31	270.50	9,174.20	9,119.47	54.72	167.644			
16,100.00	7,144.43	6,700.00	6,538.63	107.38	28.32	-77.64	1,388.31	270.50	9,269.29	9,214.46	54.83	169.059			
16,200.00	7,144.37	6,700.00	6,538.63	108.57	28.32	-77.64	1,388.31	270.50	9,364.49	9,309.56	54.93	170.470			
16,300.00	7,144.32	6,700.00	6,538.63	109.77	28.32	-77.64	1,388.31	270.50	9,459.79	9,404.75	55.04	171.877			
16,400.00	7,144.26	6,700.00	6,538.63	110.96	28.32	-77.64	1,388.31	270.50	9,555.18	9,500.04	55.14	173.281			
16,500.00	7,144.21	6,700.00	6,538.63	112.16	28.32	-77.64	1,388.31	270.50	9,650.67	9,595.42	55.25	174.680			
16,600.00	7,144.15	6,700.00	6,538.63	113.36	28.32	-77.64	1,388.31	270.50	9,746.24	9,690.89	55.35	176.075			
16,700.00	7,144.09	6,700.00	6,538.63	114.56	28.32	-77.64	1,388.31	270.50	9,841.91	9,786.45	55.46	177.466			
16,800.00	7,144.04	6,700.00	6,538.63	115.76	28.32	-77.64	1,388.31	270.50	9,937.66	9,882.10	55.56	178.853			
16,862.86	7,144.00	6,700.00	6,538.63	116.51	28.32	-77.64	1,388.31	270.50	9,997.89	9,942.26	55.63	179.722			
16,866.76	7,144.00	6,700.00	6,538.63	116.56	28.32	-77.61	1,388.31	270.50	10,001.62	9,945.99	55.63	179.776			
16,900.00	7,143.98	6,700.00	6,538.63	116.96	28.32	-77.61	1,388.31	270.50	10,033.50	9,977.83	55.67	180.235			
17,000.00	7,143.92	6,700.00	6,538.63	118.16	28.32	-77.61	1,388.31	270.50	10,129.43	10,073.66	55.77	181.613			
17,100.00	7,143.87	6,700.00	6,538.63	119.36	28.32	-77.61	1,388.31	270.50	10,225.44	10,169.56	55.88	182.987			
17,200.00	7,143.81	6,700.00	6,538.63	120.56	28.32	-77.61	1,388.31	270.50	10,321.53	10,265.54	55.99	184.357			
17,300.00	7,143.75	6,700.00	6,538.63	121.77	28.32	-77.61	1,388.31	270.50	10,417.69	10,361.59	56.09	185.721			
17,400.00	7,143.69	6,700.00	6,538.63	122.97	28.32	-77.61	1,388.31	270.50	10,513.92	10,457.72	56.20	187.081			
17,500.00	7,143.64	6,700.00	6,538.63	124.18	28.32	-77.61	1,388.31	270.50	10,610.22	10,553.91	56.31	188.437			
17,600.00	7,143.58	6,700.00	6,538.63	125.39	28.32	-77.61	1,388.31	270.50	10,706.59	10,650.18	56.41	189.788			
17,700.00	7,143.52	6,700.00	6,538.63	126.59	28.32	-77.61	1,388.31	270.50	10,803.02	10,746.50	56.52	191.134			
17,800.00	7,143.47	6,700.00	6,538.63	127.80	28.32	-77.61	1,388.31	270.50	10,899.52	10,842.89	56.63	192.475			
17,900.00	7,143.41	6,700.00	6,538.63	129.01	28.32	-77.61	1,388.31	270.50	10,996.08	10,939.35	56.74	193.811			
18,000.00	7,143.35	6,700.00	6,538.63	130.22	28.32	-77.61	1,388.31	270.50	11,092.71	11,035.86	56.84	195.142			
18,100.00	7,143.30	6,700.00	6,538.63	131.43	28.32	-77.61	1,388.31	270.50	11,189.39	11,132.44	56.95	196.469			
18,200.00	7,143.24	6,700.00	6,538.63	132.64	28.32	-77.61	1,388.31	270.50	11,286.13	11,229.07	57.06	197.791			
18,300.00	7,143.18	6,700.00	6,538.63	133.86	28.32	-77.61	1,388.31	270.50	11,382.92	11,325.75	57.17	199.107			
18,400.00	7,143.13	6,700.00	6,538.63	135.07	28.32	-77.61	1,388.31	270.50	11,479.78	11,422.50	57.28	200.419			
18,500.00	7,143.07	6,700.00	6,538.63	136.28	28.32	-77.61	1,388.31	270.50	11,576.68	11,519.29	57.39	201.725			
18,600.00	7,143.01	6,700.00	6,538.63	137.50	28.32	-77.61	1,388.31	270.50	11,673.64	11,616.14	57.50	203.027			
18,700.00	7,142.96	6,700.00	6,538.63	138.72	28.32	-77.61	1,388.31	270.50	11,770.64	11,713.04	57.61	204.323			
18,800.00	7,142.90	6,700.00	6,538.63	139.93	28.32	-77.61	1,388.31	270.50	11,867.70	11,809.98	57.72	205.614			

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104, 319-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
18,900.00	7,142.84	6,700.00	6,538.63	141.15	28.32	-77.61	1,388.31	270.50	11,964.81	11,906.98	57.83	206.901	
19,000.00	7,142.78	6,700.00	6,538.63	142.37	28.32	-77.61	1,388.31	270.50	12,061.96	12,004.02	57.94	208.182	
19,100.00	7,142.73	6,700.00	6,538.63	143.59	28.32	-77.61	1,388.31	270.50	12,159.16	12,101.11	58.05	209.458	
19,200.00	7,142.67	6,700.00	6,538.63	144.81	28.32	-77.61	1,388.31	270.50	12,256.40	12,198.24	58.16	210.729	
19,300.00	7,142.61	6,700.00	6,538.63	146.03	28.32	-77.61	1,388.31	270.50	12,353.69	12,295.42	58.27	211.994	
19,400.00	7,142.56	6,700.00	6,538.63	147.25	28.32	-77.61	1,388.31	270.50	12,451.02	12,392.64	58.39	213.255	
19,500.00	7,142.50	6,700.00	6,538.63	148.47	28.32	-77.61	1,388.31	270.50	12,548.40	12,489.90	58.50	214.510	
19,600.00	7,142.44	6,700.00	6,538.63	149.70	28.32	-77.61	1,388.31	270.50	12,645.81	12,587.20	58.61	215.760	
19,700.00	7,142.39	6,700.00	6,538.63	150.92	28.32	-77.61	1,388.31	270.50	12,743.27	12,684.54	58.72	217.005	
19,800.00	7,142.33	6,700.00	6,538.63	152.15	28.32	-77.61	1,388.31	270.50	12,840.76	12,781.92	58.84	218.245	
19,900.00	7,142.27	6,700.00	6,538.63	153.37	28.32	-77.61	1,388.31	270.50	12,938.29	12,879.34	58.95	219.479	
20,000.00	7,142.22	6,700.00	6,538.63	154.60	28.32	-77.61	1,388.31	270.50	13,035.86	12,976.80	59.06	220.709	
20,100.00	7,142.16	6,700.00	6,538.63	155.83	28.32	-77.61	1,388.31	270.50	13,133.47	13,074.29	59.18	221.933	
20,200.00	7,142.10	6,700.00	6,538.63	157.06	28.32	-77.61	1,388.31	270.50	13,231.11	13,171.82	59.29	223.152	
20,300.00	7,142.04	6,700.00	6,538.63	158.28	28.32	-77.61	1,388.31	270.50	13,328.78	13,269.38	59.41	224.365	
20,400.00	7,141.99	6,700.00	6,538.63	159.51	28.32	-77.61	1,388.31	270.50	13,426.49	13,366.97	59.52	225.574	
20,500.00	7,141.93	6,700.00	6,538.63	160.74	28.32	-77.61	1,388.31	270.50	13,524.24	13,464.60	59.64	226.777	
20,600.00	7,141.87	6,700.00	6,538.63	161.98	28.32	-77.61	1,388.31	270.50	13,622.02	13,562.26	59.75	227.976	
20,700.00	7,141.82	6,700.00	6,538.63	163.21	28.32	-77.61	1,388.31	270.50	13,719.82	13,659.96	59.87	229.168	
20,800.00	7,141.76	6,700.00	6,538.63	164.44	28.32	-77.61	1,388.31	270.50	13,817.66	13,757.68	59.98	230.356	
20,900.00	7,141.70	6,700.00	6,538.63	165.68	28.32	-77.61	1,388.31	270.50	13,915.54	13,855.44	60.10	231.539	
21,000.00	7,141.65	6,700.00	6,538.63	166.91	28.32	-77.61	1,388.31	270.50	14,013.44	13,953.22	60.22	232.716	
21,100.00	7,141.59	6,700.00	6,538.63	168.15	28.32	-77.61	1,388.31	270.50	14,111.37	14,051.03	60.33	233.889	
21,200.00	7,141.53	6,700.00	6,538.63	169.38	28.32	-77.61	1,388.31	270.50	14,209.33	14,148.88	60.45	235.056	
21,300.00	7,141.48	6,700.00	6,538.63	170.62	28.32	-77.61	1,388.31	270.50	14,307.31	14,246.75	60.57	236.218	
21,400.00	7,141.42	6,700.00	6,538.63	171.86	28.32	-77.61	1,388.31	270.50	14,405.33	14,344.64	60.69	237.374	
21,500.00	7,141.36	6,700.00	6,538.63	173.10	28.32	-77.61	1,388.31	270.50	14,503.37	14,442.57	60.80	238.526	
21,600.00	7,141.31	6,700.00	6,538.63	174.34	28.32	-77.61	1,388.31	270.50	14,601.44	14,540.52	60.92	239.673	
21,700.00	7,141.25	6,700.00	6,538.63	175.58	28.32	-77.61	1,388.31	270.50	14,699.54	14,638.49	61.04	240.814	
21,800.00	7,141.19	6,700.00	6,538.63	176.82	28.32	-77.61	1,388.31	270.50	14,797.66	14,736.50	61.16	241.951	
21,900.00	7,141.13	6,700.00	6,538.63	178.06	28.32	-77.61	1,388.31	270.50	14,895.80	14,834.52	61.28	243.082	
22,000.00	7,141.08	6,700.00	6,538.63	179.30	28.32	-77.61	1,388.31	270.50	14,993.97	14,932.57	61.40	244.208	
22,100.00	7,141.02	6,700.00	6,538.63	180.55	28.32	-77.61	1,388.31	270.50	15,092.16	15,030.65	61.52	245.329	
22,136.53	7,141.00	6,700.00	6,538.63	181.00	28.32	-77.61	1,388.31	270.50	15,128.04	15,066.48	61.56	245.738	
22,137.77	7,141.00	6,700.00	6,538.63	181.02	28.32	-77.62	1,388.31	270.50	15,129.25	15,067.69	61.56	245.752	
22,200.00	7,140.96	6,700.00	6,538.63	181.79	28.32	-77.62	1,388.31	270.50	15,190.38	15,128.74	61.64	246.446	
22,300.00	7,140.91	6,700.00	6,538.63	183.04	28.32	-77.62	1,388.31	270.50	15,288.62	15,226.86	61.76	247.557	
22,400.00	7,140.85	6,700.00	6,538.63	184.28	28.32	-77.62	1,388.31	270.50	15,386.88	15,325.00	61.88	248.663	
22,500.00	7,140.79	6,700.00	6,538.63	185.53	28.32	-77.62	1,388.31	270.50	15,485.16	15,423.16	62.00	249.764	
22,600.00	7,140.73	6,700.00	6,538.63	186.78	28.32	-77.62	1,388.31	270.50	15,583.46	15,521.34	62.12	250.860	
22,700.00	7,140.68	6,700.00	6,538.63	188.02	28.32	-77.62	1,388.31	270.50	15,681.79	15,619.54	62.24	251.951	
22,800.00	7,140.62	6,700.00	6,538.63	189.27	28.32	-77.62	1,388.31	270.50	15,780.13	15,717.77	62.36	253.037	
22,900.00	7,140.56	6,700.00	6,538.63	190.52	28.32	-77.62	1,388.31	270.50	15,878.50	15,816.01	62.48	254.118	
23,000.00	7,140.50	6,700.00	6,538.63	191.77	28.32	-77.62	1,388.31	270.50	15,976.89	15,914.28	62.61	255.195	
23,100.00	7,140.45	6,700.00	6,538.63	193.02	28.32	-77.62	1,388.31	270.50	16,075.29	16,012.56	62.73	256.266	
23,200.00	7,140.39	6,700.00	6,538.63	194.28	28.32	-77.62	1,388.31	270.50	16,173.72	16,110.87	62.85	257.333	
23,300.00	7,140.33	6,700.00	6,538.63	195.53	28.32	-77.62	1,388.31	270.50	16,272.16	16,209.19	62.97	258.394	
23,400.00	7,140.27	6,700.00	6,538.63	196.78	28.32	-77.62	1,388.31	270.50	16,370.63	16,307.53	63.10	259.451	
23,500.00	7,140.22	6,700.00	6,538.63	198.04	28.32	-77.62	1,388.31	270.50	16,469.11	16,405.89	63.22	260.503	
23,600.00	7,140.16	6,700.00	6,538.63	199.29	28.32	-77.62	1,388.31	270.50	16,567.61	16,504.27	63.34	261.551	
23,700.00	7,140.10	6,700.00	6,538.63	200.55	28.32	-77.62	1,388.31	270.50	16,666.13	16,602.66	63.47	262.593	
23,800.00	7,140.04	6,700.00	6,538.63	201.81	28.32	-77.62	1,388.31	270.50	16,764.67	16,701.08	63.59	263.631	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 830H - OH - Plan #5													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 319-MWD+HRGM+MS <th colspan="2">Rule Assigned:</th> <th colspan="4"></th> <th>Offset Well Error:</th> <td>0.00 usft</td>					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor		
23,900.00	7,139.99	6,700.00	6,538.63	203.06	28.32	-77.62	1,388.31	270.50	16,863.22	16,799.51	63.72	264.664		
24,000.00	7,139.93	6,700.00	6,538.63	204.32	28.32	-77.62	1,388.31	270.50	16,961.79	16,897.95	63.84	265.692		
24,100.00	7,139.87	6,700.00	6,538.63	205.58	28.32	-77.62	1,388.31	270.50	17,060.38	16,996.42	63.96	266.715		
24,200.00	7,139.81	6,700.00	6,538.63	206.84	28.32	-77.62	1,388.31	270.50	17,158.98	17,094.89	64.09	267.734		
24,300.00	7,139.76	6,700.00	6,538.63	208.10	28.32	-77.62	1,388.31	270.50	17,257.60	17,193.39	64.21	268.748		
24,400.00	7,139.70	6,700.00	6,538.63	209.36	28.32	-77.62	1,388.31	270.50	17,356.24	17,291.90	64.34	269.758		
24,500.00	7,139.64	6,700.00	6,538.63	210.62	28.32	-77.62	1,388.31	270.50	17,454.89	17,390.42	64.47	270.763		
24,600.00	7,139.58	6,700.00	6,538.63	211.89	28.32	-77.62	1,388.31	270.50	17,553.56	17,488.97	64.59	271.763		
24,700.00	7,139.53	6,700.00	6,538.63	213.15	28.32	-77.62	1,388.31	270.50	17,652.24	17,587.52	64.72	272.759		
24,800.00	7,139.47	6,700.00	6,538.63	214.42	28.32	-77.62	1,388.31	270.50	17,750.93	17,686.09	64.84	273.750		
24,900.00	7,139.41	6,700.00	6,538.63	215.68	28.32	-77.62	1,388.31	270.50	17,849.64	17,784.67	64.97	274.736		
25,000.00	7,139.35	6,700.00	6,538.63	216.95	28.32	-77.62	1,388.31	270.50	17,948.37	17,883.27	65.10	275.718		
25,100.00	7,139.30	6,700.00	6,538.63	218.21	28.32	-77.62	1,388.31	270.50	18,047.11	17,981.89	65.22	276.696		
25,200.00	7,139.24	6,700.00	6,538.63	219.48	28.32	-77.62	1,388.31	270.50	18,145.86	18,080.51	65.35	277.669		
25,300.00	7,139.18	6,700.00	6,538.63	220.75	28.32	-77.62	1,388.31	270.50	18,244.63	18,179.15	65.48	278.638		
25,400.00	7,139.13	6,700.00	6,538.63	222.02	28.32	-77.62	1,388.31	270.50	18,343.41	18,277.80	65.61	279.602		
25,500.00	7,139.07	6,700.00	6,538.63	223.29	28.32	-77.62	1,388.31	270.50	18,442.20	18,376.47	65.73	280.561		
25,600.00	7,139.01	6,700.00	6,538.63	224.56	28.32	-77.62	1,388.31	270.50	18,541.01	18,475.15	65.86	281.517		
25,700.00	7,138.95	6,700.00	6,538.63	225.83	28.32	-77.62	1,388.31	270.50	18,639.82	18,573.84	65.99	282.468		
25,800.00	7,138.90	6,700.00	6,538.63	227.10	28.32	-77.62	1,388.31	270.50	18,738.66	18,672.54	66.12	283.414		
25,900.00	7,138.84	6,700.00	6,538.63	228.38	28.32	-77.62	1,388.31	270.50	18,837.50	18,771.25	66.25	284.357		
26,000.00	7,138.78	6,700.00	6,538.63	229.65	28.32	-77.62	1,388.31	270.50	18,936.35	18,869.98	66.37	285.294		
26,100.00	7,138.72	6,700.00	6,538.63	230.93	28.32	-77.62	1,388.31	270.50	19,035.22	18,968.72	66.50	286.228		
26,200.00	7,138.67	6,700.00	6,538.63	232.20	28.32	-77.62	1,388.31	270.50	19,134.10	19,067.47	66.63	287.157		
26,300.00	7,138.61	6,700.00	6,538.63	233.48	28.32	-77.62	1,388.31	270.50	19,232.99	19,166.23	66.76	288.082		
26,400.00	7,138.55	6,700.00	6,538.63	234.75	28.32	-77.62	1,388.31	270.50	19,331.89	19,265.00	66.89	289.003		
26,500.00	7,138.49	6,700.00	6,538.63	236.03	28.32	-77.62	1,388.31	270.50	19,430.81	19,363.79	67.02	289.920		
26,600.00	7,138.44	6,700.00	6,538.63	237.31	28.32	-77.62	1,388.31	270.50	19,529.73	19,462.58	67.15	290.832		
26,700.00	7,138.38	6,700.00	6,538.63	238.59	28.32	-77.62	1,388.31	270.50	19,628.67	19,561.39	67.28	291.741		
26,800.00	7,138.32	6,700.00	6,538.63	239.87	28.32	-77.62	1,388.31	270.50	19,727.61	19,660.20	67.41	292.645		
26,900.00	7,138.26	6,700.00	6,538.63	241.15	28.32	-77.62	1,388.31	270.50	19,826.57	19,759.03	67.54	293.545		
27,000.00	7,138.21	6,700.00	6,538.63	242.43	28.32	-77.62	1,388.31	270.50	19,925.54	19,857.87	67.67	294.441		
27,100.00	7,138.15	6,700.00	6,538.63	243.71	28.32	-77.62	1,388.31	270.50	20,024.52	19,956.71	67.80	295.333		
27,157.78	7,138.12	6,700.00	6,538.63	244.46	28.32	-77.62	1,388.31	270.50	20,081.71	20,013.83	67.88	295.846		
27,200.00	7,138.09	6,700.00	6,538.63	245.00	28.32	-77.62	1,388.31	270.50	20,123.50	20,055.57	67.93	296.221		
27,300.00	7,138.03	6,700.00	6,538.63	246.28	28.32	-77.62	1,388.31	270.50	20,222.50	20,154.44	68.07	297.104		
27,357.78	7,138.00	6,700.00	6,538.63	247.02	28.32	-77.62	1,388.31	270.50	20,279.70	20,211.56	68.14	297.613		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	34.84	24.79	17.26	30.21				
125.00	125.00	125.01	125.01	0.05	0.06	32.20	24.67	17.41	29.72	29.63	0.09	333.300	
225.00	224.99	225.02	225.02	0.19	0.19	35.01	24.26	17.83	28.91	28.64	0.27	105.631	
290.00	289.99	290.00	290.00	0.28	0.28	22.10	23.88	18.25	28.43	28.04	0.39	72.172	
300.00	299.99	300.00	300.00	0.29	0.29	22.34	23.82	18.32	28.37	27.95	0.41	68.705	
322.18	322.17	322.00	321.99	0.32	0.32	22.86	23.69	18.48	28.23	27.77	0.45	62.107 CC, ES	
400.00	399.99	322.00	321.99	0.42	0.32	22.86	23.69	18.48	82.78	82.00	0.79	105.296	
440.00	439.99	322.00	321.99	0.47	0.32	22.86	23.69	18.48	121.15	120.31	0.84	143.521	
500.00	499.99	322.00	321.99	0.50	0.32	-126.90	23.69	18.48	180.12	179.20	0.92	196.450	
600.00	599.93	322.00	321.99	0.47	0.32	-117.11	23.69	18.48	279.55	278.52	1.03	270.930	
700.00	699.70	322.00	321.99	0.48	0.32	-85.17	23.69	18.48	379.37	378.22	1.15	331.131	
800.00	799.18	322.00	321.99	0.52	0.32	-47.79	23.69	18.48	479.25	478.00	1.26	380.568	
900.00	898.24	322.00	321.99	0.60	0.32	-27.22	23.69	18.48	579.08	577.71	1.37	421.773	
1,000.00	996.77	322.00	321.99	0.69	0.32	-17.39	23.69	18.48	678.78	677.29	1.49	456.552	
1,074.04	1,069.30	322.00	321.99	0.77	0.32	-13.22	23.69	18.48	752.48	750.91	1.57	478.950	
1,100.00	1,094.67	322.00	321.99	0.79	0.32	-13.22	23.69	18.48	778.31	776.71	1.60	486.221	
1,200.00	1,192.37	322.00	321.99	0.91	0.32	-13.22	23.69	18.48	877.88	876.16	1.72	511.753	
1,300.00	1,290.07	322.00	321.99	1.02	0.32	-13.22	23.69	18.48	977.53	975.70	1.83	533.871	
1,400.00	1,387.77	322.00	321.99	1.15	0.32	-13.22	23.69	18.48	1,077.25	1,075.30	1.95	553.136	
1,500.00	1,485.47	322.00	321.99	1.27	0.32	-13.22	23.69	18.48	1,177.02	1,174.95	2.06	569.990	
1,600.00	1,583.17	322.00	321.99	1.40	0.32	-13.22	23.69	18.48	1,276.82	1,274.64	2.18	584.787	
1,700.00	1,680.87	322.00	321.99	1.53	0.32	-13.22	23.69	18.48	1,376.65	1,374.35	2.30	597.812	
1,800.00	1,778.57	322.00	321.99	1.67	0.32	-13.22	23.69	18.48	1,476.50	1,474.08	2.42	609.300	
1,900.00	1,876.27	322.00	321.99	1.81	0.32	-13.22	23.69	18.48	1,576.38	1,573.83	2.54	619.441	
2,000.00	1,973.98	322.00	321.99	1.95	0.32	-13.22	23.69	18.48	1,676.26	1,673.60	2.67	628.397	
2,100.00	2,071.68	322.00	321.99	2.09	0.32	-13.22	23.69	18.48	1,776.16	1,773.37	2.79	636.303	
2,200.00	2,169.38	322.00	321.99	2.24	0.32	-13.22	23.69	18.48	1,876.08	1,873.16	2.92	643.271	
2,300.00	2,267.08	322.00	321.99	2.39	0.32	-13.22	23.69	18.48	1,976.00	1,972.95	3.04	649.399	
2,400.00	2,364.78	322.00	321.99	2.55	0.32	-13.22	23.69	18.48	2,075.92	2,072.75	3.17	654.772	
2,500.00	2,462.48	322.00	321.99	2.70	0.32	-13.22	23.69	18.48	2,175.86	2,172.56	3.30	659.460	
2,600.00	2,560.18	322.00	321.99	2.86	0.32	-13.22	23.69	18.48	2,275.80	2,272.37	3.43	663.528	
2,700.00	2,657.88	322.00	321.99	3.02	0.32	-13.22	23.69	18.48	2,375.74	2,372.18	3.56	667.031	
2,800.00	2,755.58	322.00	321.99	3.19	0.32	-13.22	23.69	18.48	2,475.69	2,472.00	3.69	670.017	
2,900.00	2,853.28	322.00	321.99	3.35	0.32	-13.22	23.69	18.48	2,575.65	2,571.82	3.83	672.529	
3,000.00	2,950.99	322.00	321.99	3.52	0.32	-13.22	23.69	18.48	2,675.60	2,671.64	3.97	674.605	
3,100.00	3,048.69	322.00	321.99	3.69	0.32	-13.22	23.69	18.48	2,775.56	2,771.46	4.10	676.281	
3,200.00	3,146.39	322.00	321.99	3.87	0.32	-13.22	23.69	18.48	2,875.53	2,871.28	4.24	677.587	
3,300.00	3,244.09	322.00	321.99	4.04	0.32	-13.22	23.69	18.48	2,975.49	2,971.11	4.39	678.550	
3,400.00	3,341.79	322.00	321.99	4.22	0.32	-13.22	23.69	18.48	3,075.46	3,070.93	4.53	679.197	
3,500.00	3,439.49	322.00	321.99	4.40	0.32	-13.22	23.69	18.48	3,175.43	3,170.76	4.67	679.549	
3,600.00	3,537.19	322.00	321.99	4.58	0.32	-13.22	23.69	18.48	3,275.40	3,270.58	4.82	679.629	
3,700.00	3,634.89	322.00	321.99	4.77	0.32	-13.22	23.69	18.48	3,375.37	3,370.40	4.97	679.455	
3,800.00	3,732.59	322.00	321.99	4.95	0.32	-13.22	23.69	18.48	3,475.35	3,470.23	5.12	679.045	
3,900.00	3,830.29	322.00	321.99	5.14	0.32	-13.22	23.69	18.48	3,575.32	3,570.05	5.27	678.415	
4,000.00	3,928.00	322.00	321.99	5.33	0.32	-13.22	23.69	18.48	3,675.30	3,669.88	5.42	677.581	
4,100.00	4,025.70	322.00	321.99	5.53	0.32	-13.22	23.69	18.48	3,775.28	3,769.70	5.58	676.556	
4,200.00	4,123.40	322.00	321.99	5.72	0.32	-13.22	23.69	18.48	3,875.26	3,869.52	5.74	675.353	
4,300.00	4,221.10	322.00	321.99	5.92	0.32	-13.22	23.69	18.48	3,975.24	3,969.34	5.90	673.985	
4,400.00	4,318.80	322.00	321.99	6.12	0.32	-13.22	23.69	18.48	4,075.22	4,069.16	6.06	672.462	
4,500.00	4,416.50	322.00	321.99	6.32	0.32	-13.22	23.69	18.48	4,175.20	4,168.98	6.22	670.795	
4,600.00	4,514.20	322.00	321.99	6.52	0.32	-13.22	23.69	18.48	4,275.19	4,268.80	6.39	668.995	
4,700.00	4,611.90	322.00	321.99	6.73	0.32	-13.22	23.69	18.48	4,375.17	4,368.61	6.56	667.069	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,709.60	322.00	321.99	6.94	0.32	-13.22	23.69	18.48	4,475.16	4,468.43	6.73	665.027	
4,900.00	4,807.30	322.00	321.99	7.14	0.32	-13.22	23.69	18.48	4,575.14	4,568.24	6.90	662.876	
5,000.00	4,905.00	322.00	321.99	7.36	0.32	-13.22	23.69	18.48	4,675.13	4,668.05	7.08	660.625	
5,100.00	5,002.71	322.00	321.99	7.57	0.32	-13.22	23.69	18.48	4,775.11	4,767.86	7.25	658.281	
5,200.00	5,100.41	322.00	321.99	7.78	0.32	-13.22	23.69	18.48	4,875.10	4,867.67	7.43	655.850	
5,300.00	5,198.11	322.00	321.99	8.00	0.32	-13.22	23.69	18.48	4,975.09	4,967.48	7.61	653.338	
5,400.00	5,295.81	322.00	321.99	8.22	0.32	-13.22	23.69	18.48	5,075.08	5,067.28	7.80	650.752	
5,500.00	5,393.51	322.00	321.99	8.44	0.32	-13.22	23.69	18.48	5,175.07	5,167.08	7.99	648.098	
5,600.00	5,491.21	322.00	321.99	8.66	0.32	-13.22	23.69	18.48	5,275.06	5,266.88	8.17	645.380	
5,700.00	5,588.91	322.00	321.99	8.89	0.32	-13.22	23.69	18.48	5,375.05	5,366.68	8.36	642.604	
5,800.00	5,686.61	322.00	321.99	9.11	0.32	-13.22	23.69	18.48	5,475.04	5,466.48	8.56	639.774	
5,900.00	5,784.31	322.00	321.99	9.34	0.32	-13.22	23.69	18.48	5,575.03	5,566.27	8.75	636.895	
6,000.00	5,882.01	322.00	321.99	9.57	0.32	-13.22	23.69	18.48	5,675.02	5,666.06	8.95	633.971	
6,100.00	5,979.72	322.00	321.99	9.80	0.32	-13.22	23.69	18.48	5,775.01	5,765.86	9.15	631.007	
6,200.00	6,077.42	322.00	321.99	10.04	0.32	-13.22	23.69	18.48	5,875.00	5,865.64	9.36	628.005	
6,300.00	6,175.12	322.00	321.99	10.27	0.32	-13.22	23.69	18.48	5,974.99	5,965.43	9.56	624.970	
6,400.00	6,272.82	322.00	321.99	10.51	0.32	-13.22	23.69	18.48	6,074.98	6,065.21	9.77	621.905	
6,500.00	6,370.52	322.00	321.99	10.75	0.32	-13.22	23.69	18.48	6,174.97	6,165.00	9.98	618.814	
6,600.00	6,468.22	322.00	321.99	10.99	0.32	-13.22	23.69	18.48	6,274.97	6,264.77	10.19	615.698	
6,662.10	6,528.89	322.00	321.99	11.14	0.32	-13.22	23.69	18.48	6,337.06	6,326.73	10.33	613.753	
6,700.00	6,565.90	322.00	321.99	11.23	0.32	-63.35	23.69	18.48	6,374.93	6,364.53	10.41	612.564	
6,750.00	6,614.48	322.00	321.99	11.35	0.32	-52.43	23.69	18.48	6,424.66	6,414.15	10.51	611.007	
6,800.00	6,662.53	322.00	321.99	11.47	0.32	-41.98	23.69	18.48	6,473.85	6,463.23	10.62	609.478	
6,850.00	6,709.74	322.00	321.99	11.60	0.32	-34.34	23.69	18.48	6,522.21	6,511.48	10.73	607.997	
6,900.00	6,755.82	322.00	321.99	11.72	0.32	-28.87	23.69	18.48	6,569.47	6,558.64	10.83	606.580	
6,950.00	6,800.49	322.00	321.99	11.85	0.32	-24.89	23.69	18.48	6,615.36	6,604.43	10.93	605.240	
7,000.00	6,843.48	322.00	321.99	11.98	0.32	-21.92	23.69	18.48	6,659.63	6,648.60	11.03	603.987	
7,050.00	6,884.52	322.00	321.99	12.12	0.32	-19.65	23.69	18.48	6,702.04	6,690.92	11.12	602.827	
7,100.00	6,923.35	322.00	321.99	12.27	0.32	-17.88	23.69	18.48	6,742.36	6,731.16	11.20	601.764	
7,150.00	6,959.74	322.00	321.99	12.42	0.32	-16.48	23.69	18.48	6,780.40	6,769.11	11.29	600.796	
7,200.00	6,993.46	322.00	321.99	12.60	0.32	-15.36	23.69	18.48	6,815.95	6,804.59	11.36	599.917	
7,250.00	7,024.30	322.00	321.99	12.79	0.32	-14.46	23.69	18.48	6,848.83	6,837.40	11.43	599.118	
7,300.00	7,052.08	322.00	321.99	12.99	0.32	-13.73	23.69	18.48	6,878.89	6,867.39	11.50	598.384	
7,350.00	7,076.62	322.00	321.99	13.22	0.32	-13.15	23.69	18.48	6,905.97	6,894.42	11.55	597.698	
7,400.00	7,097.78	322.00	321.99	13.46	0.32	-12.68	23.69	18.48	6,929.94	6,918.34	11.61	597.036	
7,450.00	7,115.41	322.00	321.99	13.71	0.32	-12.32	23.69	18.48	6,950.70	6,939.04	11.65	596.370	
7,500.00	7,129.42	322.00	321.99	13.99	0.32	-12.05	23.69	18.48	6,968.13	6,956.43	11.70	595.666	
7,550.00	7,139.71	322.00	321.99	14.28	0.32	-11.86	23.69	18.48	6,982.16	6,970.42	11.74	594.878	
7,600.00	7,146.22	322.00	321.99	14.58	0.32	-11.74	23.69	18.48	6,992.72	6,980.95	11.77	593.950	
7,650.00	7,148.92	322.00	321.99	14.90	0.32	-11.69	23.69	18.48	6,999.77	6,987.96	11.81	592.796	
7,660.51	7,149.00	322.00	321.99	14.97	0.32	-11.69	23.69	18.48	7,000.80	6,988.98	11.81	592.673	
7,700.00	7,148.98	322.00	321.99	15.23	0.32	-11.69	23.69	18.48	7,004.48	6,992.66	11.82	592.711	
7,800.00	7,148.93	322.00	321.99	15.92	0.32	-11.69	23.69	18.48	7,014.80	7,002.95	11.84	592.219	
7,900.00	7,148.88	322.00	321.99	16.66	0.32	-11.69	23.69	18.48	7,026.52	7,014.63	11.89	590.901	
8,000.00	7,148.82	322.00	321.99	17.44	0.32	-11.69	23.69	18.48	7,039.65	7,027.69	11.96	588.795	
8,100.00	7,148.77	322.00	321.99	18.25	0.32	-11.69	23.69	18.48	7,054.17	7,042.13	12.04	585.947	
8,200.00	7,148.72	322.00	321.99	19.10	0.32	-11.69	23.69	18.48	7,070.07	7,057.94	12.14	582.417	
8,300.00	7,148.67	322.00	321.99	19.97	0.32	-11.69	23.69	18.48	7,087.35	7,075.10	12.26	578.270	
8,400.00	7,148.62	322.00	321.99	20.86	0.32	-11.69	23.69	18.48	7,106.00	7,093.61	12.39	573.576	
8,500.00	7,148.57	322.00	321.99	21.78	0.32	-11.69	23.69	18.48	7,126.00	7,113.46	12.54	568.410	
8,600.00	7,148.51	322.00	321.99	22.71	0.32	-11.69	23.69	18.48	7,147.34	7,134.65	12.70	562.845	
8,700.00	7,148.46	322.00	321.99	23.67	0.32	-11.69	23.69	18.48	7,170.02	7,157.14	12.87	556.955	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - OH												Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)
8,800.00	7,148.41	322.00	321.99	24.63	0.32	-11.69	23.69	18.48	7,194.01	7,180.95	13.06	550.809	
8,900.00	7,148.36	322.00	321.99	25.62	0.32	-11.69	23.69	18.48	7,219.31	7,206.05	13.26	544.473	
9,000.00	7,148.31	322.00	321.99	26.61	0.32	-11.69	23.69	18.48	7,245.90	7,232.43	13.47	538.008	
9,100.00	7,148.26	322.00	321.99	27.62	0.32	-11.69	23.69	18.48	7,273.77	7,260.08	13.69	531.469	
9,200.00	7,148.20	322.00	321.99	28.64	0.32	-11.69	23.69	18.48	7,302.90	7,288.99	13.91	524.904	
9,300.00	7,148.15	322.00	321.99	29.66	0.32	-11.69	23.69	18.48	7,333.28	7,319.13	14.15	518.358	
9,400.00	7,148.10	322.00	321.99	30.70	0.32	-11.69	23.69	18.48	7,364.89	7,350.50	14.39	511.868	
9,500.00	7,148.05	322.00	321.99	31.74	0.32	-11.69	23.69	18.48	7,397.72	7,383.09	14.64	505.466	
9,600.00	7,148.00	322.00	321.99	32.79	0.32	-11.69	23.69	18.48	7,431.75	7,416.86	14.89	499.180	
9,700.00	7,147.94	322.00	321.99	33.85	0.32	-11.69	23.69	18.48	7,466.97	7,451.82	15.14	493.032	
9,800.00	7,147.89	322.00	321.99	34.92	0.32	-11.69	23.69	18.48	7,503.35	7,487.94	15.41	487.039	
9,900.00	7,147.84	322.00	321.99	35.99	0.32	-11.69	23.69	18.48	7,540.88	7,525.21	15.67	481.218	
10,000.00	7,147.79	322.00	321.99	37.07	0.32	-11.69	23.69	18.48	7,579.54	7,563.61	15.94	475.578	
10,100.00	7,147.74	322.00	321.99	38.15	0.32	-11.69	23.69	18.48	7,619.33	7,603.12	16.21	470.127	
10,200.00	7,147.69	322.00	321.99	39.24	0.32	-11.69	23.69	18.48	7,660.21	7,643.73	16.48	464.872	
10,300.00	7,147.63	322.00	321.99	40.33	0.32	-11.69	23.69	18.48	7,702.17	7,685.42	16.75	459.817	
10,400.00	7,147.58	322.00	321.99	41.42	0.32	-11.69	23.69	18.48	7,745.20	7,728.17	17.02	454.961	
10,500.00	7,147.53	322.00	321.99	42.52	0.32	-11.69	23.69	18.48	7,789.27	7,771.97	17.30	450.307	
10,600.00	7,147.48	322.00	321.99	43.63	0.32	-11.69	23.69	18.48	7,834.37	7,816.80	17.57	445.852	
10,700.00	7,147.43	322.00	321.99	44.73	0.32	-11.69	23.69	18.48	7,880.48	7,862.64	17.85	441.595	
10,800.00	7,147.38	322.00	321.99	45.85	0.32	-11.69	23.69	18.48	7,927.59	7,909.47	18.12	437.532	
10,900.00	7,147.32	322.00	321.99	46.96	0.32	-11.69	23.69	18.48	7,975.67	7,957.28	18.39	433.660	
11,000.00	7,147.27	322.00	321.99	48.08	0.32	-11.69	23.69	18.48	8,024.71	8,006.04	18.66	429.975	
11,100.00	7,147.22	322.00	321.99	49.20	0.32	-11.69	23.69	18.48	8,074.69	8,055.75	18.93	426.471	
11,200.00	7,147.17	322.00	321.99	50.32	0.32	-11.69	23.69	18.48	8,125.59	8,106.39	19.20	423.145	
11,300.00	7,147.12	322.00	321.99	51.44	0.32	-11.69	23.69	18.48	8,177.40	8,157.93	19.47	419.990	
11,400.00	7,147.07	322.00	321.99	52.57	0.32	-11.69	23.69	18.48	8,230.09	8,210.36	19.74	417.001	
11,500.00	7,147.01	322.00	321.99	53.70	0.32	-11.69	23.69	18.48	8,283.66	8,263.66	20.00	414.174	
11,600.00	7,146.96	322.00	321.99	54.84	0.32	-11.69	23.69	18.48	8,338.09	8,317.83	20.26	411.502	
11,700.00	7,146.91	322.00	321.99	55.97	0.32	-11.69	23.69	18.48	8,393.35	8,372.83	20.52	408.980	
11,800.00	7,146.86	322.00	321.99	57.11	0.32	-11.69	23.69	18.48	8,449.44	8,428.66	20.78	406.603	
11,815.51	7,146.85	322.00	321.99	57.28	0.32	-11.69	23.69	18.48	8,458.21	8,437.39	20.82	406.247	
11,826.17	7,146.84	322.00	321.99	57.40	0.32	-11.77	23.69	18.48	8,464.25	8,443.40	20.85	406.004	
11,900.00	7,146.80	322.00	321.99	58.25	0.32	-11.77	23.69	18.48	8,506.30	8,485.27	21.04	404.364	
12,000.00	7,146.75	322.00	321.99	59.39	0.32	-11.77	23.69	18.48	8,563.95	8,542.66	21.29	402.259	
12,100.00	7,146.69	322.00	321.99	60.53	0.32	-11.77	23.69	18.48	8,622.37	8,600.83	21.54	400.283	
12,200.00	7,146.63	322.00	321.99	61.67	0.32	-11.77	23.69	18.48	8,681.55	8,659.76	21.79	398.432	
12,300.00	7,146.58	322.00	321.99	62.82	0.32	-11.77	23.69	18.48	8,741.48	8,719.44	22.04	396.700	
12,400.00	7,146.52	322.00	321.99	63.97	0.32	-11.77	23.69	18.48	8,802.13	8,779.85	22.28	395.083	
12,500.00	7,146.46	322.00	321.99	65.12	0.32	-11.77	23.69	18.48	8,863.49	8,840.97	22.52	393.576	
12,600.00	7,146.41	322.00	321.99	66.27	0.32	-11.77	23.69	18.48	8,925.56	8,902.80	22.76	392.175	
12,700.00	7,146.35	322.00	321.99	67.42	0.32	-11.77	23.69	18.48	8,988.30	8,965.31	23.00	390.875	
12,800.00	7,146.29	322.00	321.99	68.58	0.32	-11.77	23.69	18.48	9,051.72	9,028.49	23.23	389.673	
12,900.00	7,146.24	322.00	321.99	69.73	0.32	-11.77	23.69	18.48	9,115.79	9,092.33	23.46	388.564	
13,000.00	7,146.18	322.00	321.99	70.89	0.32	-11.77	23.69	18.48	9,180.51	9,156.82	23.69	387.546	
13,100.00	7,146.13	322.00	321.99	72.05	0.32	-11.77	23.69	18.48	9,245.85	9,221.94	23.92	386.613	
13,200.00	7,146.07	322.00	321.99	73.21	0.32	-11.77	23.69	18.48	9,311.81	9,287.67	24.14	385.763	
13,300.00	7,146.01	322.00	321.99	74.37	0.32	-11.77	23.69	18.48	9,378.37	9,354.01	24.36	384.992	
13,400.00	7,145.96	322.00	321.99	75.53	0.32	-11.77	23.69	18.48	9,445.52	9,420.95	24.58	384.297	
13,500.00	7,145.90	322.00	321.99	76.70	0.32	-11.77	23.69	18.48	9,513.25	9,488.46	24.80	383.675	
13,600.00	7,145.84	322.00	321.99	77.86	0.32	-11.77	23.69	18.48	9,581.55	9,556.54	25.01	383.123	
13,700.00	7,145.79	322.00	321.99	79.03	0.32	-11.77	23.69	18.48	9,650.39	9,625.17	25.22	382.638	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,800.00	7,145.73	322.00	321.99	80.20	0.32	-11.77	23.69	18.48	9,719.78	9,694.35	25.43	382.217	
13,900.00	7,145.67	322.00	321.99	81.37	0.32	-11.77	23.69	18.48	9,789.70	9,764.06	25.64	381.858	
14,000.00	7,145.62	322.00	321.99	82.54	0.32	-11.77	23.69	18.48	9,860.13	9,834.29	25.84	381.558	
14,100.00	7,145.56	322.00	321.99	83.71	0.32	-11.77	23.69	18.48	9,931.08	9,905.03	26.04	381.315	
14,200.00	7,145.50	322.00	321.99	84.88	0.32	-11.77	23.69	18.48	10,002.52	9,976.27	26.24	381.126	
14,300.00	7,145.45	322.00	321.99	86.06	0.32	-11.77	23.69	18.48	10,074.44	10,048.00	26.44	380.989	
14,400.00	7,145.39	322.00	321.99	87.23	0.32	-11.77	23.69	18.48	10,146.84	10,120.20	26.64	380.903	
14,500.00	7,145.33	322.00	321.99	88.41	0.32	-11.77	23.69	18.48	10,219.71	10,192.88	26.83	380.864	
14,600.00	7,145.28	322.00	321.99	89.59	0.32	-11.77	23.69	18.48	10,293.03	10,266.01	27.02	380.871	
14,700.00	7,145.22	322.00	321.99	90.77	0.32	-11.77	23.69	18.48	10,366.80	10,339.59	27.22	380.922	
14,800.00	7,145.17	322.00	321.99	91.95	0.32	-11.77	23.69	18.48	10,441.01	10,413.60	27.40	381.015	
14,900.00	7,145.11	322.00	321.99	93.13	0.32	-11.77	23.69	18.48	10,515.64	10,488.05	27.59	381.149	
15,000.00	7,145.05	322.00	321.99	94.31	0.32	-11.77	23.69	18.48	10,590.69	10,562.92	27.77	381.322	
15,100.00	7,145.00	322.00	321.99	95.49	0.32	-11.77	23.69	18.48	10,666.15	10,638.19	27.96	381.532	
15,200.00	7,144.94	322.00	321.99	96.68	0.32	-11.77	23.69	18.48	10,742.01	10,713.87	28.14	381.777	
15,300.00	7,144.88	322.00	321.99	97.86	0.32	-11.77	23.69	18.48	10,818.26	10,789.95	28.32	382.057	
15,400.00	7,144.83	322.00	321.99	99.05	0.32	-11.77	23.69	18.48	10,894.90	10,866.41	28.49	382.370	
15,500.00	7,144.77	322.00	321.99	100.24	0.32	-11.77	23.69	18.48	10,971.92	10,943.25	28.67	382.714	
15,600.00	7,144.71	322.00	321.99	101.42	0.32	-11.77	23.69	18.48	11,049.30	11,020.46	28.84	383.088	
15,700.00	7,144.66	322.00	321.99	102.61	0.32	-11.77	23.69	18.48	11,127.04	11,098.03	29.02	383.491	
15,800.00	7,144.60	322.00	321.99	103.80	0.32	-11.77	23.69	18.48	11,205.14	11,175.95	29.19	383.921	
15,900.00	7,144.54	322.00	321.99	104.99	0.32	-11.77	23.69	18.48	11,283.58	11,254.22	29.36	384.378	
16,000.00	7,144.49	322.00	321.99	106.19	0.32	-11.77	23.69	18.48	11,362.36	11,332.84	29.52	384.860	
16,100.00	7,144.43	322.00	321.99	107.38	0.32	-11.77	23.69	18.48	11,441.47	11,411.78	29.69	385.367	
16,200.00	7,144.37	322.00	321.99	108.57	0.32	-11.77	23.69	18.48	11,520.91	11,491.05	29.85	385.896	
16,300.00	7,144.32	322.00	321.99	109.77	0.32	-11.77	23.69	18.48	11,600.66	11,570.64	30.02	386.448	
16,400.00	7,144.26	322.00	321.99	110.96	0.32	-11.77	23.69	18.48	11,680.73	11,650.55	30.18	387.021	
16,500.00	7,144.21	322.00	321.99	112.16	0.32	-11.77	23.69	18.48	11,761.10	11,730.76	30.34	387.615	
16,600.00	7,144.15	322.00	321.99	113.36	0.32	-11.77	23.69	18.48	11,841.77	11,811.27	30.50	388.228	
16,700.00	7,144.09	322.00	321.99	114.56	0.32	-11.77	23.69	18.48	11,922.73	11,892.07	30.66	388.859	
16,800.00	7,144.04	322.00	321.99	115.76	0.32	-11.77	23.69	18.48	12,003.98	11,973.16	30.82	389.508	
16,862.86	7,144.00	322.00	321.99	116.51	0.32	-11.77	23.69	18.48	12,055.20	12,024.28	30.92	389.925	
16,866.76	7,144.00	322.00	321.99	116.56	0.32	-11.71	23.69	18.48	12,058.38	12,027.45	30.92	389.951	
16,900.00	7,143.98	322.00	321.99	116.96	0.32	-11.71	23.69	18.48	12,085.52	12,054.54	30.97	390.175	
17,000.00	7,143.92	322.00	321.99	118.16	0.32	-11.71	23.69	18.48	12,167.33	12,136.20	31.13	390.857	
17,100.00	7,143.87	322.00	321.99	119.36	0.32	-11.71	23.69	18.48	12,249.42	12,218.13	31.28	391.555	
17,200.00	7,143.81	322.00	321.99	120.56	0.32	-11.71	23.69	18.48	12,331.76	12,300.33	31.44	392.268	
17,300.00	7,143.75	322.00	321.99	121.77	0.32	-11.71	23.69	18.48	12,414.37	12,382.78	31.59	392.995	
17,400.00	7,143.69	322.00	321.99	122.97	0.32	-11.71	23.69	18.48	12,497.23	12,465.49	31.74	393.735	
17,500.00	7,143.64	322.00	321.99	124.18	0.32	-11.71	23.69	18.48	12,580.35	12,548.46	31.89	394.488	
17,600.00	7,143.58	322.00	321.99	125.39	0.32	-11.71	23.69	18.48	12,663.70	12,631.66	32.04	395.254	
17,700.00	7,143.52	322.00	321.99	126.59	0.32	-11.71	23.69	18.48	12,747.30	12,715.11	32.19	396.030	
17,800.00	7,143.47	322.00	321.99	127.80	0.32	-11.71	23.69	18.48	12,831.13	12,798.79	32.34	396.818	
17,900.00	7,143.41	322.00	321.99	129.01	0.32	-11.71	23.69	18.48	12,915.19	12,882.71	32.48	397.616	
18,000.00	7,143.35	322.00	321.99	130.22	0.32	-11.71	23.69	18.48	12,999.47	12,966.85	32.63	398.424	
18,100.00	7,143.30	322.00	321.99	131.43	0.32	-11.71	23.69	18.48	13,083.98	13,051.21	32.77	399.242	
18,200.00	7,143.24	322.00	321.99	132.64	0.32	-11.71	23.69	18.48	13,168.70	13,135.79	32.92	400.068	
18,300.00	7,143.18	322.00	321.99	133.86	0.32	-11.71	23.69	18.48	13,253.64	13,220.58	33.06	400.903	
18,400.00	7,143.13	322.00	321.99	135.07	0.32	-11.71	23.69	18.48	13,338.79	13,305.59	33.20	401.746	
18,500.00	7,143.07	322.00	321.99	136.28	0.32	-11.71	23.69	18.48	13,424.14	13,390.79	33.34	402.596	
18,600.00	7,143.01	322.00	321.99	137.50	0.32	-11.71	23.69	18.48	13,509.69	13,476.20	33.49	403.453	
18,700.00	7,142.96	322.00	321.99	138.72	0.32	-11.71	23.69	18.48	13,595.44	13,561.81	33.63	404.318	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 42 - Rosa Unit 832H - OH - OH											Offset Site Error:		0.00 usft	
Survey Program:		125-Standard Keeper 104						Rule Assigned:						Offset Well Error:		0.00 usft
Measured Depth	Reference	Measured Depth	Offset	Semi Major Axis			Offset Wellbore Centre		Distance							
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning			
18,800.00	7,142.90	322.00	321.99	139.93	0.32	-11.71	23.69	18.48	13,681.38	13,647.62	33.77	405.188				
18,900.00	7,142.84	322.00	321.99	141.15	0.32	-11.71	23.69	18.48	13,767.51	13,733.61	33.90	406.064				
19,000.00	7,142.78	322.00	321.99	142.37	0.32	-11.71	23.69	18.48	13,853.83	13,819.79	34.04	406.946				
19,100.00	7,142.73	322.00	321.99	143.59	0.32	-11.71	23.69	18.48	13,940.33	13,906.15	34.18	407.833				
19,200.00	7,142.67	322.00	321.99	144.81	0.32	-11.71	23.69	18.48	14,027.01	13,992.70	34.32	408.725				
19,300.00	7,142.61	322.00	321.99	146.03	0.32	-11.71	23.69	18.48	14,113.87	14,079.42	34.46	409.621				
19,400.00	7,142.56	322.00	321.99	147.25	0.32	-11.71	23.69	18.48	14,200.90	14,166.31	34.59	410.522				
19,500.00	7,142.50	322.00	321.99	148.47	0.32	-11.71	23.69	18.48	14,288.10	14,253.37	34.73	411.427				
19,600.00	7,142.44	322.00	321.99	149.70	0.32	-11.71	23.69	18.48	14,375.47	14,340.60	34.86	412.335				
19,700.00	7,142.39	322.00	321.99	150.92	0.32	-11.71	23.69	18.48	14,463.00	14,428.00	35.00	413.246				
19,800.00	7,142.33	322.00	321.99	152.15	0.32	-11.71	23.69	18.48	14,550.69	14,515.56	35.13	414.160				
19,900.00	7,142.27	322.00	321.99	153.37	0.32	-11.71	23.69	18.48	14,638.54	14,603.27	35.27	415.078				
20,000.00	7,142.22	322.00	321.99	154.60	0.32	-11.71	23.69	18.48	14,726.54	14,691.14	35.40	415.997				
20,100.00	7,142.16	322.00	321.99	155.83	0.32	-11.71	23.69	18.48	14,814.70	14,779.16	35.53	416.919				
20,200.00	7,142.10	322.00	321.99	157.06	0.32	-11.71	23.69	18.48	14,903.00	14,867.34	35.67	417.843				
20,300.00	7,142.04	322.00	321.99	158.28	0.32	-11.71	23.69	18.48	14,991.46	14,955.66	35.80	418.769				
20,400.00	7,141.99	322.00	321.99	159.51	0.32	-11.71	23.69	18.48	15,080.05	15,044.12	35.93	419.696				
20,500.00	7,141.93	322.00	321.99	160.74	0.32	-11.71	23.69	18.48	15,168.79	15,132.73	36.06	420.624				
20,600.00	7,141.87	322.00	321.99	161.98	0.32	-11.71	23.69	18.48	15,257.67	15,221.47	36.19	421.554				
20,700.00	7,141.82	322.00	321.99	163.21	0.32	-11.71	23.69	18.48	15,346.68	15,310.36	36.32	422.484				
20,800.00	7,141.76	322.00	321.99	164.44	0.32	-11.71	23.69	18.48	15,435.83	15,399.38	36.46	423.416				
20,900.00	7,141.70	322.00	321.99	165.68	0.32	-11.71	23.69	18.48	15,525.11	15,488.53	36.59	424.347				
21,000.00	7,141.65	322.00	321.99	166.91	0.32	-11.71	23.69	18.48	15,614.52	15,577.81	36.72	425.280				
21,100.00	7,141.59	322.00	321.99	168.15	0.32	-11.71	23.69	18.48	15,704.06	15,667.22	36.85	426.212				
21,200.00	7,141.53	322.00	321.99	169.38	0.32	-11.71	23.69	18.48	15,793.73	15,756.75	36.98	427.144				
21,300.00	7,141.48	322.00	321.99	170.62	0.32	-11.71	23.69	18.48	15,883.52	15,846.41	37.10	428.076				
21,400.00	7,141.42	322.00	321.99	171.86	0.32	-11.71	23.69	18.48	15,973.43	15,936.19	37.23	429.008				
21,500.00	7,141.36	322.00	321.99	173.10	0.32	-11.71	23.69	18.48	16,063.45	16,026.09	37.36	429.940				
21,600.00	7,141.31	322.00	321.99	174.34	0.32	-11.71	23.69	18.48	16,153.60	16,116.11	37.49	430.870				
21,700.00	7,141.25	322.00	321.99	175.58	0.32	-11.71	23.69	18.48	16,243.86	16,206.24	37.62	431.800				
21,800.00	7,141.19	322.00	321.99	176.82	0.32	-11.71	23.69	18.48	16,334.24	16,296.49	37.75	432.729				
21,900.00	7,141.13	322.00	321.99	178.06	0.32	-11.71	23.69	18.48	16,424.72	16,386.85	37.87	433.657				
22,000.00	7,141.08	322.00	321.99	179.30	0.32	-11.71	23.69	18.48	16,515.32	16,477.32	38.00	434.584				
22,100.00	7,141.02	322.00	321.99	180.55	0.32	-11.71	23.69	18.48	16,606.02	16,567.89	38.13	435.510				
22,136.53	7,141.00	322.00	321.99	181.00	0.32	-11.71	23.69	18.48	16,639.19	16,601.01	38.18	435.848				
22,137.77	7,141.00	322.00	321.99	181.02	0.32	-11.74	23.69	18.48	16,640.30	16,602.13	38.18	435.859				
22,200.00	7,140.96	322.00	321.99	181.79	0.32	-11.74	23.69	18.48	16,696.83	16,658.57	38.26	436.434				
22,300.00	7,140.91	322.00	321.99	183.04	0.32	-11.74	23.69	18.48	16,787.74	16,749.36	38.38	437.357				
22,400.00	7,140.85	322.00	321.99	184.28	0.32	-11.74	23.69	18.48	16,878.76	16,840.25	38.51	438.278				
22,500.00	7,140.79	322.00	321.99	185.53	0.32	-11.74	23.69	18.48	16,969.88	16,931.24	38.64	439.197				
22,600.00	7,140.73	322.00	321.99	186.78	0.32	-11.74	23.69	18.48	17,061.09	17,022.33	38.77	440.115				
22,700.00	7,140.68	322.00	321.99	188.02	0.32	-11.74	23.69	18.48	17,152.41	17,113.51	38.89	441.031				
22,800.00	7,140.62	322.00	321.99	189.27	0.32	-11.74	23.69	18.48	17,243.82	17,204.80	39.02	441.944				
22,900.00	7,140.56	322.00	321.99	190.52	0.32	-11.74	23.69	18.48	17,335.32	17,296.18	39.14	442.856				
23,000.00	7,140.50	322.00	321.99	191.77	0.32	-11.74	23.69	18.48	17,426.92	17,387.65	39.27	443.765				
23,100.00	7,140.45	322.00	321.99	193.02	0.32	-11.74	23.69	18.48	17,518.61	17,479.21	39.40	444.673				
23,200.00	7,140.39	322.00	321.99	194.28	0.32	-11.74	23.69	18.48	17,610.39	17,570.87	39.52	445.577				
23,300.00	7,140.33	322.00	321.99	195.53	0.32	-11.74	23.69	18.48	17,702.26	17,662.61	39.65	446.480				
23,400.00	7,140.27	322.00	321.99	196.78	0.32	-11.74	23.69	18.48	17,794.22	17,754.44	39.77	447.380				
23,500.00	7,140.22	322.00	321.99	198.04	0.32	-11.74	23.69	18.48	17,886.26	17,846.36	39.90	448.277				
23,600.00	7,140.16	322.00	321.99	199.29	0.32	-11.74	23.69	18.48	17,978.39	17,938.36	40.03	449.172				
23,700.00	7,140.10	322.00	321.99	200.55	0.32	-11.74	23.69	18.48	18,070.60	18,030.45	40.15	450.064				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
23,800.00	7,140.04	322.00	321.99	201.81	0.32	-11.74	23.69	18.48	18,162.90	18,122.62	40.28	450.953	
23,900.00	7,139.99	322.00	321.99	203.06	0.32	-11.74	23.69	18.48	18,255.27	18,214.87	40.40	451.839	
24,000.00	7,139.93	322.00	321.99	204.32	0.32	-11.74	23.69	18.48	18,347.73	18,307.20	40.53	452.723	
24,100.00	7,139.87	322.00	321.99	205.58	0.32	-11.74	23.69	18.48	18,440.26	18,399.61	40.65	453.604	
24,200.00	7,139.81	322.00	321.99	206.84	0.32	-11.74	23.69	18.48	18,532.88	18,492.10	40.78	454.481	
24,300.00	7,139.76	322.00	321.99	208.10	0.32	-11.74	23.69	18.48	18,625.57	18,584.66	40.90	455.356	
24,400.00	7,139.70	322.00	321.99	209.36	0.32	-11.74	23.69	18.48	18,718.33	18,677.30	41.03	456.227	
24,500.00	7,139.64	322.00	321.99	210.62	0.32	-11.74	23.69	18.48	18,811.17	18,770.01	41.15	457.096	
24,600.00	7,139.58	322.00	321.99	211.89	0.32	-11.74	23.69	18.48	18,904.08	18,862.80	41.28	457.961	
24,700.00	7,139.53	322.00	321.99	213.15	0.32	-11.74	23.69	18.48	18,997.06	18,955.66	41.40	458.823	
24,800.00	7,139.47	322.00	321.99	214.42	0.32	-11.74	23.69	18.48	19,090.12	19,048.59	41.53	459.682	
24,900.00	7,139.41	322.00	321.99	215.68	0.32	-11.74	23.69	18.48	19,183.24	19,141.59	41.65	460.538	
25,000.00	7,139.35	322.00	321.99	216.95	0.32	-11.74	23.69	18.48	19,276.43	19,234.65	41.78	461.390	
25,100.00	7,139.30	322.00	321.99	218.21	0.32	-11.74	23.69	18.48	19,369.69	19,327.79	41.90	462.239	
25,200.00	7,139.24	322.00	321.99	219.48	0.32	-11.74	23.69	18.48	19,463.02	19,420.99	42.03	463.084	
25,300.00	7,139.18	322.00	321.99	220.75	0.32	-11.74	23.69	18.48	19,556.41	19,514.26	42.15	463.926	
25,400.00	7,139.13	322.00	321.99	222.02	0.32	-11.74	23.69	18.48	19,649.87	19,607.59	42.28	464.765	
25,500.00	7,139.07	322.00	321.99	223.29	0.32	-11.74	23.69	18.48	19,743.40	19,700.99	42.40	465.600	
25,600.00	7,139.01	322.00	321.99	224.56	0.32	-11.74	23.69	18.48	19,836.98	19,794.45	42.53	466.432	
25,700.00	7,138.95	322.00	321.99	225.83	0.32	-11.74	23.69	18.48	19,930.63	19,887.98	42.65	467.260	
25,800.00	7,138.90	322.00	321.99	227.10	0.32	-11.74	23.69	18.48	20,024.34	19,981.56	42.78	468.085	
25,900.00	7,138.84	322.00	321.99	228.38	0.32	-11.74	23.69	18.48	20,118.11	20,075.21	42.90	468.906	
26,000.00	7,138.78	322.00	321.99	229.65	0.32	-11.74	23.69	18.48	20,211.94	20,168.91	43.03	469.723	
26,100.00	7,138.72	322.00	321.99	230.93	0.32	-11.74	23.69	18.48	20,305.83	20,262.67	43.15	470.537	
26,200.00	7,138.67	322.00	321.99	232.20	0.32	-11.74	23.69	18.48	20,399.78	20,356.50	43.28	471.347	
26,300.00	7,138.61	322.00	321.99	233.48	0.32	-11.74	23.69	18.48	20,493.78	20,450.38	43.40	472.154	
26,400.00	7,138.55	322.00	321.99	234.75	0.32	-11.74	23.69	18.48	20,587.84	20,544.31	43.53	472.957	
26,500.00	7,138.49	322.00	321.99	236.03	0.32	-11.74	23.69	18.48	20,681.96	20,638.30	43.66	473.756	
26,600.00	7,138.44	322.00	321.99	237.31	0.32	-11.74	23.69	18.48	20,776.13	20,732.35	43.78	474.552	
26,700.00	7,138.38	322.00	321.99	238.59	0.32	-11.74	23.69	18.48	20,870.35	20,826.45	43.91	475.344	
26,800.00	7,138.32	322.00	321.99	239.87	0.32	-11.74	23.69	18.48	20,964.63	20,920.60	44.03	476.132	
26,900.00	7,138.26	322.00	321.99	241.15	0.32	-11.74	23.69	18.48	21,058.97	21,014.81	44.16	476.916	
27,000.00	7,138.21	322.00	321.99	242.43	0.32	-11.74	23.69	18.48	21,153.35	21,109.07	44.28	477.697	
27,100.00	7,138.15	322.00	321.99	243.71	0.32	-11.74	23.69	18.48	21,247.79	21,203.38	44.41	478.474	
27,157.78	7,138.12	322.00	321.99	244.46	0.32	-11.74	23.69	18.48	21,302.37	21,257.89	44.48	478.922	
27,200.00	7,138.09	322.00	321.99	245.00	0.32	-11.74	23.69	18.48	21,342.27	21,297.74	44.53	479.248	
27,300.00	7,138.03	322.00	321.99	246.28	0.32	-11.74	23.69	18.48	21,436.81	21,392.15	44.66	480.017	
27,357.78	7,138.00	322.00	321.99	247.02	0.32	-11.74	23.69	18.48	21,491.45	21,446.72	44.73	480.460	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104, 322-MWD+HRGM+MS								Rule Assigned:					Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	34.84	24.79	17.26	30.21				
125.00	125.00	125.01	125.01	0.05	0.06	32.20	24.67	17.41	29.72	29.63	0.09	333.301	
225.00	224.99	225.02	225.02	0.19	0.19	35.01	24.26	17.83	28.91	28.64	0.27	105.631	
290.00	289.99	290.00	290.00	0.28	0.28	22.10	23.88	18.25	28.43	28.04	0.39	72.172	
300.00	299.99	300.00	300.00	0.29	0.29	22.34	23.82	18.32	28.37	27.95	0.41	68.705	
400.00	399.99	399.99	399.98	0.42	0.40	24.78	23.23	19.04	27.77	27.15	0.62	44.955	
440.00	439.99	439.98	439.97	0.47	0.48	25.78	23.00	19.32	27.54	26.76	0.78	35.284	
461.48	461.47	461.46	461.45	0.48	0.52	-72.24	22.87	19.48	27.48	26.64	0.85	32.365 CC, ES	
500.00	499.99	499.79	499.78	0.50	0.62	-128.01	22.78	19.75	27.77	26.78	0.99	28.091	
600.00	599.93	598.88	598.84	0.47	0.92	-139.64	24.88	20.38	32.07	30.74	1.33	24.128	
700.00	699.70	697.07	696.87	0.48	1.25	-150.19	30.33	20.92	42.54	40.85	1.69	25.172	
800.00	799.18	793.68	793.09	0.52	1.58	-158.76	38.96	21.36	60.08	58.01	2.07	28.976	
900.00	898.24	888.06	886.75	0.60	1.93	-164.62	50.53	21.70	84.72	82.24	2.48	34.157	
1,000.00	996.77	979.64	977.23	0.69	2.27	-168.45	64.69	21.95	116.16	113.25	2.90	40.021	
1,074.04	1,069.30	1,045.56	1,042.05	0.77	2.53	-170.44	76.67	22.08	143.58	140.36	3.22	44.612	
1,100.00	1,094.67	1,069.40	1,065.44	0.79	2.62	-171.03	81.24	22.12	153.77	150.44	3.33	46.130	
1,200.00	1,192.37	1,161.21	1,155.56	0.91	2.99	-172.74	98.81	22.27	193.12	189.34	3.78	51.051	
1,300.00	1,290.07	1,253.03	1,245.67	1.02	3.37	-173.86	116.39	22.42	232.56	228.32	4.24	54.866	
1,400.00	1,387.77	1,344.84	1,335.79	1.15	3.75	-174.67	133.97	22.57	272.06	267.36	4.70	57.930	
1,500.00	1,485.47	1,436.65	1,425.90	1.27	4.13	-175.26	151.55	22.73	311.59	306.42	5.16	60.366	
1,600.00	1,583.17	1,528.46	1,516.02	1.40	4.52	-175.73	169.12	22.88	351.14	345.51	5.63	62.377	
1,700.00	1,680.87	1,620.28	1,606.13	1.53	4.91	-176.10	186.70	23.03	390.71	384.61	6.10	64.059	
1,800.00	1,778.57	1,712.09	1,696.25	1.67	5.29	-176.40	204.28	23.18	430.28	423.71	6.57	65.485	
1,900.00	1,876.27	1,803.90	1,786.36	1.81	5.68	-176.65	221.86	23.34	469.87	462.83	7.04	66.707	
2,000.00	1,973.98	1,895.72	1,876.47	1.95	6.07	-176.86	239.43	23.49	509.46	501.95	7.52	67.764	
2,100.00	2,071.68	1,987.53	1,966.59	2.09	6.46	-177.04	257.01	23.64	549.06	541.07	7.99	68.688	
2,200.00	2,169.38	2,079.34	2,056.70	2.24	6.85	-177.20	274.59	23.79	588.66	580.19	8.47	69.501	
2,300.00	2,267.08	2,171.15	2,146.82	2.39	7.24	-177.34	292.17	23.95	628.27	619.32	8.95	70.222	
2,400.00	2,364.78	2,262.97	2,236.93	2.55	7.63	-177.46	309.74	24.10	667.88	658.45	9.42	70.865	
2,500.00	2,462.48	2,354.78	2,327.05	2.70	8.02	-177.57	327.32	24.25	707.49	697.59	9.90	71.441	
2,600.00	2,560.18	2,446.59	2,417.16	2.86	8.41	-177.66	344.90	24.40	747.10	736.72	10.38	71.960	
2,700.00	2,657.88	2,538.41	2,507.28	3.02	8.81	-177.75	362.47	24.56	786.72	775.85	10.86	72.430	
2,800.00	2,755.58	2,630.22	2,597.39	3.19	9.20	-177.83	380.05	24.71	826.33	814.99	11.34	72.857	
2,900.00	2,853.28	2,722.03	2,687.51	3.35	9.59	-177.90	397.63	24.86	865.95	854.12	11.82	73.246	
3,000.00	2,950.99	2,813.84	2,777.62	3.52	9.98	-177.96	415.21	25.01	905.56	893.26	12.30	73.602	
3,100.00	3,048.69	2,905.66	2,867.73	3.69	10.37	-178.02	432.78	25.17	945.18	932.40	12.79	73.929	
3,200.00	3,146.39	2,997.47	2,957.85	3.87	10.77	-178.08	450.36	25.32	984.80	971.54	13.27	74.230	
3,300.00	3,244.09	3,089.28	3,047.96	4.04	11.16	-178.13	467.94	25.47	1,024.42	1,010.67	13.75	74.507	
3,400.00	3,341.79	3,181.10	3,138.08	4.22	11.55	-178.17	485.52	25.62	1,064.04	1,049.81	14.23	74.763	
3,500.00	3,439.49	3,272.91	3,228.19	4.40	11.94	-178.22	503.09	25.78	1,103.66	1,088.95	14.72	75.001	
3,600.00	3,537.19	3,364.72	3,318.31	4.58	12.34	-178.26	520.67	25.93	1,143.29	1,128.09	15.20	75.221	
3,700.00	3,634.89	3,456.53	3,408.42	4.77	12.73	-178.29	538.25	26.08	1,182.91	1,167.22	15.68	75.426	
3,800.00	3,732.59	3,548.35	3,498.54	4.95	13.12	-178.33	555.83	26.23	1,222.53	1,206.36	16.17	75.617	
3,900.00	3,830.29	3,640.16	3,588.65	5.14	13.51	-178.36	573.40	26.39	1,262.15	1,245.50	16.65	75.795	
4,000.00	3,928.00	3,731.97	3,678.76	5.33	13.91	-178.39	590.98	26.54	1,301.78	1,284.64	17.14	75.961	
4,100.00	4,025.70	3,823.79	3,768.88	5.53	14.30	-178.42	608.56	26.69	1,341.40	1,323.78	17.62	76.116	
4,200.00	4,123.40	3,915.60	3,858.99	5.72	14.69	-178.45	626.14	26.84	1,381.02	1,362.91	18.11	76.261	
4,300.00	4,221.10	4,007.41	3,949.11	5.92	15.08	-178.48	643.71	27.00	1,420.65	1,402.05	18.60	76.397	
4,400.00	4,318.80	4,099.22	4,039.22	6.12	15.48	-178.50	661.29	27.15	1,460.27	1,441.19	19.08	76.525	
4,500.00	4,416.50	4,191.04	4,129.34	6.32	15.87	-178.52	678.87	27.30	1,499.89	1,480.33	19.57	76.644	
4,600.00	4,514.20	4,282.85	4,219.45	6.52	16.26	-178.55	696.45	27.45	1,539.52	1,519.46	20.06	76.756	
4,700.00	4,611.90	4,374.66	4,309.57	6.73	16.66	-178.57	714.02	27.61	1,579.14	1,558.60	20.55	76.861	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104, 322-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,800.00	4,709.60	4,466.48	4,399.68	6.94	17.05	-178.59	731.60	27.76	1,618.77	1,597.74	21.03	76.960	
4,900.00	4,807.30	4,558.29	4,489.79	7.14	17.44	-178.60	749.18	27.91	1,658.39	1,636.87	21.52	77.053	
5,000.00	4,905.00	4,650.10	4,579.91	7.36	17.84	-178.62	766.76	28.06	1,698.02	1,676.01	22.01	77.140	
5,100.00	5,002.71	4,741.92	4,670.02	7.57	18.23	-178.64	784.33	28.22	1,737.64	1,715.14	22.50	77.221	
5,200.00	5,100.41	4,833.73	4,760.14	7.78	18.62	-178.66	801.91	28.37	1,777.27	1,754.28	22.99	77.298	
5,300.00	5,198.11	4,925.54	4,850.25	8.00	19.02	-178.67	819.49	28.52	1,816.90	1,793.41	23.48	77.370	
5,400.00	5,295.81	5,017.35	4,940.37	8.22	19.41	-178.69	837.07	28.67	1,856.52	1,832.55	23.97	77.438	
5,500.00	5,393.51	5,109.17	5,030.48	8.44	19.80	-178.70	854.64	28.83	1,896.15	1,871.68	24.47	77.502	
5,600.00	5,491.21	5,200.98	5,120.60	8.66	20.19	-178.72	872.22	28.98	1,935.77	1,910.82	24.96	77.561	
5,700.00	5,588.91	5,292.79	5,210.71	8.89	20.59	-178.73	889.80	29.13	1,975.40	1,949.95	25.45	77.617	
5,800.00	5,686.61	5,384.61	5,300.82	9.11	20.98	-178.74	907.38	29.28	2,015.03	1,989.08	25.94	77.669	
5,900.00	5,784.31	5,476.42	5,390.94	9.34	21.37	-178.75	924.95	29.44	2,054.65	2,028.21	26.44	77.718	
6,000.00	5,882.01	5,568.23	5,481.05	9.57	21.77	-178.77	942.53	29.59	2,094.28	2,067.35	26.93	77.764	
6,100.00	5,979.72	5,660.04	5,571.17	9.80	22.16	-178.78	960.11	29.74	2,133.90	2,106.48	27.43	77.807	
6,200.00	6,077.42	5,751.86	5,661.28	10.04	22.55	-178.79	977.69	29.89	2,173.53	2,145.61	27.92	77.847	
6,300.00	6,175.12	5,843.67	5,751.40	10.27	22.95	-178.80	995.26	30.05	2,213.16	2,184.74	28.42	77.884	
6,400.00	6,272.82	5,935.48	5,841.51	10.51	23.34	-178.81	1,012.84	30.20	2,252.78	2,223.87	28.91	77.918	
6,500.00	6,370.52	6,027.30	5,931.63	10.75	23.73	-178.82	1,030.42	30.35	2,292.41	2,263.00	29.41	77.950	
6,600.00	6,468.22	6,119.11	6,021.74	10.99	24.13	-178.83	1,048.00	30.50	2,332.04	2,302.13	29.91	77.979	
6,662.10	6,528.89	6,176.12	6,077.70	11.14	24.37	-178.83	1,058.91	30.60	2,356.64	2,326.43	30.21	77.997	
6,700.00	6,565.90	6,210.90	6,111.83	11.23	24.52	-162.20	1,065.57	30.66	2,371.65	2,341.24	30.40	78.007	
6,750.00	6,614.48	6,256.56	6,156.65	11.35	24.72	-143.59	1,074.31	30.73	2,391.34	2,360.69	30.65	78.026	
6,800.00	6,662.53	6,301.73	6,200.98	11.47	24.91	-129.76	1,082.96	30.81	2,410.82	2,379.94	30.89	78.054	
6,850.00	6,709.74	6,346.11	6,244.55	11.60	25.10	-119.77	1,091.46	30.88	2,430.02	2,398.91	31.12	78.088	
6,900.00	6,755.82	6,389.45	6,287.08	11.72	25.29	-112.42	1,099.75	30.95	2,448.88	2,417.54	31.34	78.127	
6,950.00	6,800.49	6,431.46	6,328.31	11.85	25.47	-106.82	1,107.79	31.02	2,467.35	2,435.79	31.57	78.167	
7,000.00	6,843.48	6,471.89	6,368.00	11.98	25.64	-102.42	1,115.54	31.09	2,485.40	2,453.62	31.78	78.206	
7,050.00	6,884.52	6,510.50	6,405.89	12.12	25.80	-98.87	1,122.93	31.15	2,503.01	2,471.02	31.99	78.241	
7,100.00	6,923.35	6,547.04	6,441.76	12.27	25.96	-95.94	1,129.92	31.21	2,520.18	2,487.98	32.20	78.272	
7,150.00	6,959.74	6,581.29	6,475.37	12.42	26.11	-93.46	1,136.48	31.27	2,536.90	2,504.49	32.40	78.296	
7,200.00	6,993.46	6,613.03	6,506.53	12.60	26.24	-91.33	1,142.56	31.32	2,553.17	2,520.56	32.60	78.313	
7,250.00	7,024.30	6,642.08	6,535.04	12.79	26.37	-89.46	1,148.12	31.37	2,569.00	2,536.20	32.80	78.323	
7,300.00	7,052.08	6,677.46	6,569.76	12.99	26.52	-87.98	1,154.89	31.77	2,584.37	2,551.35	33.03	78.253	
7,350.00	7,076.62	6,727.17	6,618.40	13.22	26.73	-86.99	1,164.38	35.42	2,599.12	2,565.81	33.31	78.028	
7,400.00	7,097.78	6,785.07	6,674.51	13.46	26.97	-86.34	1,175.33	44.53	2,613.11	2,579.47	33.64	77.684	
7,450.00	7,115.41	6,855.51	6,741.31	13.71	27.26	-86.09	1,188.37	62.55	2,626.22	2,592.19	34.03	77.174	
7,500.00	7,129.42	6,946.03	6,823.57	13.99	27.62	-86.32	1,204.44	96.54	2,638.24	2,603.71	34.53	76.410	
7,550.00	7,139.71	7,036.04	6,899.64	14.28	27.95	-86.63	1,219.30	142.10	2,648.78	2,613.71	35.07	75.533	
7,600.00	7,146.22	7,249.64	7,050.29	14.58	28.69	-88.64	1,248.78	289.07	2,657.19	2,620.93	36.25	73.295	
7,650.00	7,148.92	7,506.05	7,155.88	14.90	29.63	-90.20	1,269.52	519.92	2,662.06	2,624.10	37.96	70.134	
7,660.51	7,149.00	7,532.15	7,160.89	14.97	29.74	-90.25	1,270.51	545.51	2,662.43	2,624.24	38.18	69.724	
7,700.00	7,148.98	7,681.04	7,172.99	15.23	30.46	-90.52	1,272.97	693.53	2,662.70	2,623.28	39.42	67.552	
7,800.00	7,148.93	7,781.04	7,172.94	15.92	31.03	-90.52	1,273.02	793.53	2,662.77	2,621.93	40.84	65.194	
7,900.00	7,148.88	7,881.04	7,172.89	16.66	31.67	-90.52	1,273.07	893.53	2,662.85	2,620.45	42.39	62.813	
8,000.00	7,148.82	7,981.04	7,172.83	17.44	32.38	-90.52	1,273.12	993.53	2,662.92	2,618.87	44.05	60.447	
8,100.00	7,148.77	8,081.04	7,172.78	18.25	33.16	-90.52	1,273.18	1,093.53	2,662.99	2,617.18	45.81	58.127	
8,200.00	7,148.72	8,181.04	7,172.73	19.10	34.00	-90.52	1,273.23	1,193.53	2,663.07	2,615.41	47.66	55.875	
8,300.00	7,148.67	8,281.04	7,172.68	19.97	34.88	-90.52	1,273.28	1,293.53	2,663.14	2,613.55	49.59	53.706	
8,400.00	7,148.62	8,381.04	7,172.63	20.86	35.82	-90.52	1,273.33	1,393.53	2,663.21	2,611.63	51.58	51.629	
8,500.00	7,148.57	8,481.04	7,172.58	21.78	36.81	-90.52	1,273.39	1,493.53	2,663.29	2,609.64	53.64	49.649	
8,600.00	7,148.51	8,581.04	7,172.53	22.71	37.83	-90.52	1,273.44	1,593.53	2,663.36	2,607.60	55.76	47.766	
8,700.00	7,148.46	8,681.04	7,172.48	23.67	38.90	-90.52	1,273.49	1,693.53	2,663.43	2,605.51	57.92	45.982	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2												Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 322-MWD+HRGM+MS							Rule Assigned:			Offset Well Error:	0.00 usft
Measured Depth	Reference	Offset	Semi Major Axis						Distance				
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
8,800.00	7,148.41	8,781.04	7,172.43	24.63	40.00	-90.52	1,273.54	1,793.53	2,663.51	2,603.37	60.14	44.292	
8,900.00	7,148.36	8,881.04	7,172.38	25.62	41.13	-90.52	1,273.60	1,893.53	2,663.58	2,601.19	62.39	42.694	
9,000.00	7,148.31	8,981.04	7,172.33	26.61	42.29	-90.52	1,273.65	1,993.53	2,663.66	2,598.98	64.68	41.183	
9,100.00	7,148.26	9,081.04	7,172.28	27.62	43.48	-90.52	1,273.70	2,093.53	2,663.73	2,596.73	67.00	39.756	
9,200.00	7,148.20	9,181.04	7,172.22	28.64	44.70	-90.52	1,273.75	2,193.53	2,663.80	2,594.45	69.36	38.408	
9,300.00	7,148.15	9,281.04	7,172.17	29.66	45.94	-90.52	1,273.81	2,293.53	2,663.88	2,592.14	71.74	37.134	
9,400.00	7,148.10	9,381.04	7,172.12	30.70	47.20	-90.52	1,273.86	2,393.53	2,663.95	2,589.80	74.14	35.929	
9,500.00	7,148.05	9,481.04	7,172.07	31.74	48.48	-90.52	1,273.91	2,493.53	2,664.02	2,587.45	76.58	34.790	
9,600.00	7,148.00	9,581.04	7,172.02	32.79	49.78	-90.52	1,273.96	2,593.53	2,664.10	2,585.07	79.03	33.711	
9,700.00	7,147.94	9,681.04	7,171.97	33.85	51.10	-90.52	1,274.02	2,693.53	2,664.17	2,582.67	81.50	32.690	
9,800.00	7,147.89	9,781.04	7,171.92	34.92	52.43	-90.52	1,274.07	2,793.53	2,664.24	2,580.26	83.99	31.722	
9,900.00	7,147.84	9,881.04	7,171.87	35.99	53.78	-90.52	1,274.12	2,893.53	2,664.32	2,577.82	86.49	30.804	
10,000.00	7,147.79	9,981.04	7,171.82	37.07	55.14	-90.52	1,274.17	2,993.53	2,664.39	2,575.38	89.01	29.932	
10,100.00	7,147.74	10,081.04	7,171.77	38.15	56.51	-90.52	1,274.23	3,093.53	2,664.46	2,572.92	91.55	29.104	
10,200.00	7,147.69	10,181.04	7,171.72	39.24	57.89	-90.52	1,274.28	3,193.53	2,664.54	2,570.44	94.10	28.317	
10,300.00	7,147.63	10,281.04	7,171.67	40.33	59.29	-90.52	1,274.33	3,293.53	2,664.61	2,567.95	96.66	27.568	
10,400.00	7,147.58	10,381.04	7,171.62	41.42	60.69	-90.52	1,274.38	3,393.53	2,664.69	2,565.46	99.23	26.854	
10,500.00	7,147.53	10,481.04	7,171.56	42.52	62.11	-90.52	1,274.43	3,493.53	2,664.76	2,562.95	101.81	26.174	
10,600.00	7,147.48	10,581.04	7,171.51	43.63	63.53	-90.52	1,274.49	3,593.53	2,664.83	2,560.43	104.40	25.524	
10,700.00	7,147.43	10,681.04	7,171.46	44.73	64.97	-90.52	1,274.54	3,693.53	2,664.91	2,557.90	107.00	24.905	
10,800.00	7,147.38	10,781.04	7,171.41	45.85	66.41	-90.52	1,274.59	3,793.53	2,664.98	2,555.37	109.61	24.312	
10,900.00	7,147.32	10,881.04	7,171.36	46.96	67.85	-90.52	1,274.64	3,893.53	2,665.05	2,552.82	112.23	23.746	
11,000.00	7,147.27	10,981.04	7,171.31	48.08	69.31	-90.52	1,274.70	3,993.53	2,665.13	2,550.27	114.86	23.204	
11,100.00	7,147.22	11,081.04	7,171.26	49.20	70.77	-90.52	1,274.75	4,093.53	2,665.20	2,547.71	117.49	22.685	
11,200.00	7,147.17	11,181.04	7,171.21	50.32	72.23	-90.52	1,274.80	4,193.53	2,665.27	2,545.15	120.13	22.187	
11,300.00	7,147.12	11,281.04	7,171.16	51.44	73.71	-90.52	1,274.85	4,293.53	2,665.35	2,542.57	122.77	21.709	
11,400.00	7,147.07	11,381.04	7,171.11	52.57	75.18	-90.52	1,274.91	4,393.53	2,665.42	2,540.00	125.43	21.251	
11,500.00	7,147.01	11,481.04	7,171.06	53.70	76.67	-90.52	1,274.96	4,493.53	2,665.49	2,537.41	128.08	20.811	
11,600.00	7,146.96	11,581.04	7,171.01	54.84	78.15	-90.52	1,275.01	4,593.53	2,665.57	2,534.82	130.75	20.387	
11,700.00	7,146.91	11,681.04	7,170.95	55.97	79.64	-90.52	1,275.06	4,693.53	2,665.64	2,532.23	133.41	19.980	
11,800.00	7,146.86	11,781.04	7,170.90	57.11	81.14	-90.52	1,275.12	4,793.53	2,665.72	2,529.63	136.09	19.588	
11,815.51	7,146.85	11,796.55	7,170.90	57.28	81.37	-90.52	1,275.12	4,809.04	2,665.73	2,529.23	136.50	19.529	
11,826.17	7,146.84	11,807.21	7,170.89	57.40	81.53	-90.52	1,275.13	4,819.70	2,665.72	2,528.94	136.79	19.488	
11,900.00	7,146.80	11,881.04	7,170.85	58.25	82.64	-90.52	1,275.17	4,893.53	2,665.64	2,526.88	138.76	19.210	
12,000.00	7,146.75	11,981.04	7,170.80	59.39	84.14	-90.52	1,275.22	4,993.53	2,665.53	2,524.08	141.45	18.845	
12,100.00	7,146.69	12,081.04	7,170.75	60.53	85.65	-90.52	1,275.27	5,093.53	2,665.42	2,521.29	144.13	18.493	
12,200.00	7,146.63	12,181.04	7,170.70	61.67	87.16	-90.52	1,275.33	5,193.53	2,665.30	2,518.48	146.82	18.153	
12,300.00	7,146.58	12,281.04	7,170.65	62.82	88.67	-90.52	1,275.38	5,293.53	2,665.19	2,515.68	149.52	17.826	
12,400.00	7,146.52	12,381.04	7,170.60	63.97	90.19	-90.52	1,275.43	5,393.53	2,665.08	2,512.87	152.21	17.509	
12,500.00	7,146.46	12,481.04	7,170.55	65.12	91.71	-90.52	1,275.48	5,493.53	2,664.97	2,510.05	154.91	17.203	
12,600.00	7,146.41	12,581.04	7,170.50	66.27	93.23	-90.52	1,275.54	5,593.53	2,664.85	2,507.24	157.62	16.907	
12,700.00	7,146.35	12,681.04	7,170.45	67.42	94.76	-90.52	1,275.59	5,693.53	2,664.74	2,504.42	160.33	16.621	
12,800.00	7,146.29	12,781.04	7,170.40	68.58	96.28	-90.52	1,275.64	5,793.53	2,664.63	2,501.59	163.04	16.344	
12,900.00	7,146.24	12,881.04	7,170.34	69.73	97.81	-90.52	1,275.69	5,893.53	2,664.52	2,498.77	165.75	16.075	
13,000.00	7,146.18	12,981.04	7,170.29	70.89	99.34	-90.52	1,275.75	5,993.53	2,664.41	2,495.94	168.47	15.816	
13,100.00	7,146.13	13,081.04	7,170.24	72.05	100.88	-90.52	1,275.80	6,093.53	2,664.29	2,493.11	171.19	15.564	
13,200.00	7,146.07	13,181.04	7,170.19	73.21	102.41	-90.52	1,275.85	6,193.53	2,664.18	2,490.27	173.91	15.319	
13,300.00	7,146.01	13,281.04	7,170.14	74.37	103.95	-90.52	1,275.90	6,293.53	2,664.07	2,487.43	176.63	15.082	
13,400.00	7,145.96	13,381.04	7,170.09	75.53	105.49	-90.52	1,275.96	6,393.53	2,663.96	2,484.59	179.36	14.852	
13,500.00	7,145.90	13,481.04	7,170.04	76.70	107.04	-90.52	1,276.01	6,493.53	2,663.84	2,481.75	182.09	14.629	
13,600.00	7,145.84	13,581.04	7,169.99	77.86	108.58	-90.52	1,276.06	6,593.53	2,663.73	2,478.91	184.82	14.412	
13,700.00	7,145.79	13,681.04	7,169.94	79.03	110.12	-90.52	1,276.11	6,693.53	2,663.62	2,476.06	187.56	14.201	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2												Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 322-MWD+HRGM+MS						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)
13,800.00	7,145.73	13,781.04	7,169.89	80.20	111.67	-90.52	1,276.17	6,793.53	2,663.51	2,473.21	190.30	13.997	
13,900.00	7,145.67	13,881.04	7,169.84	81.37	113.22	-90.52	1,276.22	6,893.53	2,663.39	2,470.36	193.04	13.797	
14,000.00	7,145.62	13,981.04	7,169.79	82.54	114.77	-90.52	1,276.27	6,993.53	2,663.28	2,467.51	195.78	13.604	
14,100.00	7,145.56	14,081.04	7,169.73	83.71	116.32	-90.52	1,276.32	7,093.53	2,663.17	2,464.65	198.52	13.415	
14,200.00	7,145.50	14,181.04	7,169.68	84.88	117.87	-90.52	1,276.38	7,193.53	2,663.06	2,461.79	201.27	13.232	
14,300.00	7,145.45	14,281.04	7,169.63	86.06	119.43	-90.52	1,276.43	7,293.53	2,662.94	2,458.93	204.01	13.053	
14,400.00	7,145.39	14,381.04	7,169.58	87.23	120.98	-90.52	1,276.48	7,393.53	2,662.83	2,456.07	206.76	12.879	
14,500.00	7,145.33	14,481.04	7,169.53	88.41	122.54	-90.52	1,276.53	7,493.53	2,662.72	2,453.21	209.51	12.709	
14,600.00	7,145.28	14,581.04	7,169.48	89.59	124.10	-90.52	1,276.59	7,593.53	2,662.61	2,450.34	212.27	12.544	
14,700.00	7,145.22	14,681.04	7,169.43	90.77	125.66	-90.52	1,276.64	7,693.53	2,662.49	2,447.47	215.02	12.383	
14,800.00	7,145.17	14,781.04	7,169.38	91.95	127.21	-90.52	1,276.69	7,793.53	2,662.38	2,444.61	217.78	12.225	
14,900.00	7,145.11	14,881.04	7,169.33	93.13	128.78	-90.52	1,276.74	7,893.53	2,662.27	2,441.74	220.53	12.072	
15,000.00	7,145.05	14,981.04	7,169.28	94.31	130.34	-90.52	1,276.79	7,993.53	2,662.16	2,438.86	223.29	11.922	
15,100.00	7,145.00	15,081.04	7,169.23	95.49	131.90	-90.52	1,276.85	8,093.53	2,662.05	2,435.99	226.06	11.776	
15,200.00	7,144.94	15,181.03	7,169.18	96.68	133.46	-90.52	1,276.90	8,193.53	2,661.93	2,433.11	228.82	11.633	
15,300.00	7,144.88	15,281.03	7,169.12	97.86	135.03	-90.52	1,276.95	8,293.53	2,661.82	2,430.24	231.58	11.494	
15,400.00	7,144.83	15,381.03	7,169.07	99.05	136.59	-90.52	1,277.00	8,393.53	2,661.71	2,427.36	234.35	11.358	
15,500.00	7,144.77	15,481.03	7,169.02	100.24	138.16	-90.52	1,277.06	8,493.53	2,661.60	2,424.48	237.12	11.225	
15,600.00	7,144.71	15,581.03	7,168.97	101.42	139.73	-90.52	1,277.11	8,593.53	2,661.48	2,421.60	239.89	11.095	
15,700.00	7,144.66	15,681.03	7,168.92	102.61	141.30	-90.52	1,277.16	8,693.53	2,661.37	2,418.71	242.66	10.968	
15,800.00	7,144.60	15,781.03	7,168.87	103.80	142.86	-90.52	1,277.21	8,793.53	2,661.26	2,415.83	245.43	10.843	
15,900.00	7,144.54	15,881.03	7,168.82	104.99	144.43	-90.52	1,277.27	8,893.53	2,661.15	2,412.94	248.20	10.722	
16,000.00	7,144.49	15,981.03	7,168.77	106.19	146.00	-90.52	1,277.32	8,993.53	2,661.03	2,410.06	250.98	10.603	
16,100.00	7,144.43	16,081.03	7,168.72	107.38	147.57	-90.52	1,277.37	9,093.53	2,660.92	2,407.17	253.75	10.486	
16,200.00	7,144.37	16,181.03	7,168.67	108.57	149.15	-90.52	1,277.42	9,193.53	2,660.81	2,404.28	256.53	10.372	
16,300.00	7,144.32	16,281.03	7,168.62	109.77	150.72	-90.52	1,277.48	9,293.53	2,660.70	2,401.39	259.31	10.261	
16,400.00	7,144.26	16,381.03	7,168.57	110.96	152.29	-90.52	1,277.53	9,393.53	2,660.58	2,398.49	262.09	10.151	
16,500.00	7,144.21	16,481.03	7,168.51	112.16	153.86	-90.52	1,277.58	9,493.53	2,660.47	2,395.60	264.87	10.044	
16,600.00	7,144.15	16,581.03	7,168.46	113.36	155.44	-90.52	1,277.63	9,593.52	2,660.36	2,392.70	267.65	9.940	
16,700.00	7,144.09	16,681.03	7,168.41	114.56	157.01	-90.52	1,277.69	9,693.52	2,660.25	2,389.81	270.44	9.837	
16,800.00	7,144.04	16,781.03	7,168.36	115.76	158.59	-90.52	1,277.74	9,793.52	2,660.13	2,386.91	273.22	9.736	
16,862.86	7,144.00	16,843.89	7,168.33	116.51	159.58	-90.52	1,277.77	9,856.38	2,660.06	2,385.09	274.98	9.674	
16,866.76	7,144.00	16,847.79	7,168.33	116.56	159.64	-90.52	1,277.77	9,860.28	2,660.06	2,384.98	275.08	9.670	
16,900.00	7,143.98	16,881.03	7,168.31	116.96	160.16	-90.52	1,277.79	9,893.52	2,660.05	2,384.04	276.01	9.637	
17,000.00	7,143.92	16,981.03	7,168.26	118.16	161.74	-90.52	1,277.84	9,993.52	2,660.00	2,381.20	278.80	9.541	
17,100.00	7,143.87	17,081.03	7,168.21	119.36	163.32	-90.52	1,277.90	10,093.52	2,659.96	2,378.37	281.59	9.446	
17,200.00	7,143.81	17,181.03	7,168.16	120.56	164.89	-90.52	1,277.95	10,193.52	2,659.91	2,375.54	284.38	9.353	
17,300.00	7,143.75	17,281.03	7,168.11	121.77	166.47	-90.52	1,278.00	10,293.52	2,659.87	2,372.70	287.17	9.262	
17,400.00	7,143.69	17,381.03	7,168.06	122.97	168.05	-90.52	1,278.05	10,393.52	2,659.82	2,369.86	289.96	9.173	
17,500.00	7,143.64	17,481.03	7,168.01	124.18	169.63	-90.52	1,278.11	10,493.52	2,659.78	2,367.03	292.76	9.085	
17,600.00	7,143.58	17,581.03	7,167.96	125.39	171.21	-90.53	1,278.16	10,593.52	2,659.74	2,364.19	295.55	8.999	
17,700.00	7,143.52	17,681.03	7,167.91	126.59	172.79	-90.53	1,278.21	10,693.52	2,659.69	2,361.35	298.35	8.915	
17,800.00	7,143.47	17,781.03	7,167.85	127.80	174.37	-90.53	1,278.26	10,793.52	2,659.65	2,358.50	301.14	8.832	
17,900.00	7,143.41	17,881.03	7,167.80	129.01	175.95	-90.53	1,278.32	10,893.52	2,659.60	2,355.66	303.94	8.750	
18,000.00	7,143.35	17,981.03	7,167.75	130.22	177.53	-90.53	1,278.37	10,993.52	2,659.56	2,352.82	306.74	8.670	
18,100.00	7,143.30	18,081.03	7,167.70	131.43	179.11	-90.53	1,278.42	11,093.52	2,659.51	2,349.97	309.54	8.592	
18,200.00	7,143.24	18,181.03	7,167.65	132.64	180.69	-90.53	1,278.47	11,193.52	2,659.47	2,347.13	312.34	8.515	
18,300.00	7,143.18	18,281.03	7,167.60	133.86	182.27	-90.53	1,278.53	11,293.52	2,659.43	2,344.28	315.14	8.439	
18,400.00	7,143.13	18,381.03	7,167.55	135.07	183.85	-90.53	1,278.58	11,393.52	2,659.38	2,341.43	317.95	8.364	
18,500.00	7,143.07	18,481.03	7,167.50	136.28	185.43	-90.53	1,278.63	11,493.52	2,659.34	2,338.58	320.75	8.291	
18,600.00	7,143.01	18,581.03	7,167.45	137.50	187.02	-90.53	1,278.68	11,593.52	2,659.29	2,335.73	323.56	8.219	
18,700.00	7,142.96	18,681.03	7,167.40	138.72	188.60	-90.53	1,278.74	11,693.52	2,659.25	2,332.88	326.36	8.148	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2												Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 322-MWD+HRGM+MS						Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)
18,800.00	7,142.90	18,781.03	7,167.35	139.93	190.18	-90.53	1,278.79	11,793.52	2,659.20	2,330.03	329.17	8.078	
18,900.00	7,142.84	18,881.03	7,167.30	141.15	191.77	-90.53	1,278.84	11,893.52	2,659.16	2,327.18	331.98	8.010	
19,000.00	7,142.78	18,981.03	7,167.24	142.37	193.35	-90.53	1,278.89	11,993.52	2,659.12	2,324.32	334.79	7.943	
19,100.00	7,142.73	19,081.03	7,167.19	143.59	194.94	-90.53	1,278.94	12,093.52	2,659.07	2,321.47	337.60	7.876	
19,200.00	7,142.67	19,181.03	7,167.14	144.81	196.52	-90.53	1,279.00	12,193.52	2,659.03	2,318.61	340.41	7.811	
19,300.00	7,142.61	19,281.03	7,167.09	146.03	198.10	-90.53	1,279.05	12,293.52	2,658.98	2,315.76	343.23	7.747	
19,400.00	7,142.56	19,381.03	7,167.04	147.25	199.69	-90.53	1,279.10	12,393.52	2,658.94	2,312.90	346.04	7.684	
19,500.00	7,142.50	19,481.03	7,166.99	148.47	201.28	-90.53	1,279.15	12,493.52	2,658.89	2,310.04	348.85	7.622	
19,600.00	7,142.44	19,581.03	7,166.94	149.70	202.86	-90.53	1,279.21	12,593.52	2,658.85	2,307.18	351.67	7.561	
19,700.00	7,142.39	19,681.03	7,166.89	150.92	204.45	-90.53	1,279.26	12,693.52	2,658.80	2,304.32	354.49	7.500	
19,800.00	7,142.33	19,781.03	7,166.84	152.15	206.03	-90.53	1,279.31	12,793.52	2,658.76	2,301.46	357.30	7.441	
19,900.00	7,142.27	19,881.03	7,166.79	153.37	207.62	-90.53	1,279.36	12,893.52	2,658.72	2,298.59	360.12	7.383	
20,000.00	7,142.22	19,981.03	7,166.74	154.60	209.21	-90.53	1,279.42	12,993.52	2,658.67	2,295.73	362.94	7.325	
20,100.00	7,142.16	20,081.03	7,166.69	155.83	210.79	-90.53	1,279.47	13,093.52	2,658.63	2,292.87	365.76	7.269	
20,200.00	7,142.10	20,181.03	7,166.63	157.06	212.38	-90.53	1,279.52	13,193.52	2,658.58	2,290.00	368.58	7.213	
20,300.00	7,142.04	20,281.03	7,166.58	158.28	213.97	-90.53	1,279.57	13,293.52	2,658.54	2,287.13	371.41	7.158	
20,400.00	7,141.99	20,381.03	7,166.53	159.51	215.55	-90.53	1,279.63	13,393.52	2,658.49	2,284.27	374.23	7.104	
20,500.00	7,141.93	20,481.03	7,166.48	160.74	217.14	-90.53	1,279.68	13,493.52	2,658.45	2,281.40	377.05	7.051	
20,600.00	7,141.87	20,581.03	7,166.43	161.98	218.73	-90.53	1,279.73	13,593.52	2,658.41	2,278.53	379.88	6.998	
20,700.00	7,141.82	20,681.03	7,166.38	163.21	220.32	-90.53	1,279.78	13,693.52	2,658.36	2,275.66	382.70	6.946	
20,800.00	7,141.76	20,781.03	7,166.33	164.44	221.91	-90.53	1,279.84	13,793.52	2,658.32	2,272.79	385.53	6.895	
20,900.00	7,141.70	20,881.03	7,166.28	165.68	223.50	-90.53	1,279.89	13,893.52	2,658.27	2,269.91	388.36	6.845	
21,000.00	7,141.65	20,981.03	7,166.23	166.91	225.08	-90.53	1,279.94	13,993.52	2,658.23	2,267.04	391.19	6.795	
21,100.00	7,141.59	21,081.03	7,166.18	168.15	226.67	-90.53	1,279.99	14,093.52	2,658.18	2,264.17	394.02	6.746	
21,200.00	7,141.53	21,181.03	7,166.13	169.38	228.26	-90.53	1,280.05	14,193.52	2,658.14	2,261.29	396.85	6.698	
21,300.00	7,141.48	21,281.03	7,166.08	170.62	229.85	-90.53	1,280.10	14,293.52	2,658.10	2,258.42	399.68	6.651	
21,400.00	7,141.42	21,381.03	7,166.02	171.86	231.44	-90.53	1,280.15	14,393.52	2,658.05	2,255.54	402.51	6.604	
21,500.00	7,141.36	21,481.03	7,165.97	173.10	233.03	-90.53	1,280.20	14,493.52	2,658.01	2,252.66	405.35	6.557	
21,600.00	7,141.31	21,581.03	7,165.92	174.34	234.62	-90.53	1,280.26	14,593.52	2,657.96	2,249.78	408.18	6.512	
21,700.00	7,141.25	21,681.03	7,165.87	175.58	236.21	-90.53	1,280.31	14,693.52	2,657.92	2,246.90	411.02	6.467	
21,800.00	7,141.19	21,781.03	7,165.82	176.82	237.80	-90.53	1,280.36	14,793.52	2,657.87	2,244.02	413.85	6.422	
21,900.00	7,141.13	21,881.03	7,165.77	178.06	239.39	-90.53	1,280.41	14,893.52	2,657.83	2,241.14	416.69	6.378	
22,000.00	7,141.08	21,981.03	7,165.72	179.30	240.98	-90.53	1,280.47	14,993.52	2,657.79	2,238.26	419.53	6.335	
22,100.00	7,141.02	22,081.03	7,165.67	180.55	242.57	-90.53	1,280.52	15,093.52	2,657.74	2,235.38	422.36	6.293	
22,136.53	7,141.00	22,117.57	7,165.65	181.00	243.15	-90.53	1,280.54	15,130.06	2,657.72	2,234.32	423.40	6.277	
22,137.77	7,141.00	22,118.80	7,165.65	181.02	243.17	-90.53	1,280.54	15,131.29	2,657.72	2,234.29	423.44	6.277	
22,200.00	7,140.96	22,181.03	7,165.62	181.79	244.16	-90.53	1,280.57	15,193.52	2,657.68	2,232.48	425.20	6.250	
22,300.00	7,140.91	22,281.03	7,165.57	183.04	245.75	-90.53	1,280.62	15,293.52	2,657.62	2,229.57	428.04	6.209	
22,400.00	7,140.85	22,381.03	7,165.52	184.28	247.35	-90.53	1,280.68	15,393.52	2,657.55	2,226.67	430.89	6.168	
22,500.00	7,140.79	22,481.03	7,165.47	185.53	248.94	-90.53	1,280.73	15,493.52	2,657.49	2,223.76	433.73	6.127	
22,600.00	7,140.73	22,581.03	7,165.41	186.78	250.53	-90.53	1,280.78	15,593.52	2,657.42	2,220.85	436.57	6.087	
22,700.00	7,140.68	22,681.03	7,165.36	188.02	252.12	-90.53	1,280.83	15,693.52	2,657.35	2,217.94	439.41	6.047	
22,800.00	7,140.62	22,781.03	7,165.31	189.27	253.71	-90.53	1,280.89	15,793.52	2,657.29	2,215.03	442.26	6.008	
22,900.00	7,140.56	22,881.03	7,165.26	190.52	255.30	-90.53	1,280.94	15,893.52	2,657.22	2,212.12	445.11	5.970	
23,000.00	7,140.50	22,981.03	7,165.21	191.77	256.89	-90.53	1,280.99	15,993.52	2,657.16	2,209.20	447.95	5.932	
23,100.00	7,140.45	23,081.03	7,165.16	193.02	258.49	-90.53	1,281.04	16,093.52	2,657.09	2,206.29	450.80	5.894	
23,200.00	7,140.39	23,181.03	7,165.11	194.28	260.08	-90.53	1,281.10	16,193.52	2,657.02	2,203.38	453.65	5.857	
23,300.00	7,140.33	23,281.03	7,165.06	195.53	261.67	-90.53	1,281.15	16,293.52	2,656.96	2,200.46	456.50	5.820	
23,400.00	7,140.27	23,381.03	7,165.01	196.78	263.26	-90.53	1,281.20	16,393.52	2,656.89	2,197.55	459.35	5.784	
23,500.00	7,140.22	23,481.03	7,164.96	198.04	264.86	-90.53	1,281.25	16,493.52	2,656.83	2,194.63	462.20	5.748	
23,600.00	7,140.16	23,581.03	7,164.91	199.29	266.45	-90.53	1,281.30	16,593.52	2,656.76	2,191.71	465.05	5.713	
23,700.00	7,140.10	23,681.03	7,164.86	200.55	268.04	-90.53	1,281.36	16,693.52	2,656.70	2,188.79	467.90	5.678	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 832H - OH - p4-Prelim 2													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 322-MWD+HRGM+MS					Rule Assigned:						Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor		
23,800.00	7,140.04	23,781.03	7,164.80	201.81	269.63	-90.53	1,281.41	16,793.52	2,656.63	2,185.88	470.75	5.643		
23,900.00	7,139.99	23,881.03	7,164.75	203.06	271.23	-90.53	1,281.46	16,893.52	2,656.56	2,182.96	473.61	5.609		
24,000.00	7,139.93	23,981.03	7,164.70	204.32	272.82	-90.53	1,281.51	16,993.52	2,656.50	2,180.04	476.46	5.575		
24,100.00	7,139.87	24,081.03	7,164.65	205.58	274.41	-90.53	1,281.57	17,093.52	2,656.43	2,177.11	479.32	5.542		
24,200.00	7,139.81	24,181.03	7,164.60	206.84	276.01	-90.53	1,281.62	17,193.52	2,656.37	2,174.19	482.18	5.509		
24,300.00	7,139.76	24,281.03	7,164.55	208.10	277.60	-90.53	1,281.67	17,293.52	2,656.30	2,171.27	485.03	5.477		
24,400.00	7,139.70	24,381.03	7,164.50	209.36	279.19	-90.53	1,281.72	17,393.52	2,656.23	2,168.34	487.89	5.444		
24,500.00	7,139.64	24,481.03	7,164.45	210.62	280.79	-90.54	1,281.78	17,493.52	2,656.17	2,165.42	490.75	5.412		
24,600.00	7,139.58	24,581.03	7,164.40	211.89	282.38	-90.54	1,281.83	17,593.52	2,656.10	2,162.49	493.61	5.381		
24,700.00	7,139.53	24,681.03	7,164.35	213.15	283.97	-90.54	1,281.88	17,693.52	2,656.04	2,159.57	496.47	5.350		
24,800.00	7,139.47	24,781.03	7,164.30	214.42	285.57	-90.54	1,281.93	17,793.52	2,655.97	2,156.64	499.33	5.319		
24,900.00	7,139.41	24,881.03	7,164.25	215.68	287.16	-90.54	1,281.99	17,893.52	2,655.91	2,153.71	502.19	5.289		
25,000.00	7,139.35	24,981.03	7,164.20	216.95	288.76	-90.54	1,282.04	17,993.52	2,655.84	2,150.78	505.06	5.258		
25,100.00	7,139.30	25,081.03	7,164.14	218.21	290.35	-90.54	1,282.09	18,093.52	2,655.77	2,147.85	507.92	5.229		
25,200.00	7,139.24	25,181.03	7,164.09	219.48	291.94	-90.54	1,282.14	18,193.52	2,655.71	2,144.92	510.79	5.199		
25,300.00	7,139.18	25,281.03	7,164.04	220.75	293.54	-90.54	1,282.20	18,293.52	2,655.64	2,141.99	513.65	5.170		
25,400.00	7,139.13	25,381.03	7,163.99	222.02	295.13	-90.54	1,282.25	18,393.52	2,655.58	2,139.06	516.52	5.141		
25,500.00	7,139.07	25,481.03	7,163.94	223.29	296.73	-90.54	1,282.30	18,493.52	2,655.51	2,136.12	519.39	5.113		
25,600.00	7,139.01	25,581.03	7,163.89	224.56	298.32	-90.54	1,282.35	18,593.52	2,655.44	2,133.19	522.26	5.085		
25,700.00	7,138.95	25,681.03	7,163.84	225.83	299.92	-90.54	1,282.41	18,693.52	2,655.38	2,130.25	525.12	5.057		
25,800.00	7,138.90	25,781.03	7,163.79	227.10	301.51	-90.54	1,282.46	18,793.52	2,655.31	2,127.32	527.99	5.029		
25,900.00	7,138.84	25,881.03	7,163.74	228.38	303.11	-90.54	1,282.51	18,893.52	2,655.25	2,124.38	530.86	5.002		
26,000.00	7,138.78	25,981.03	7,163.69	229.65	304.70	-90.54	1,282.56	18,993.52	2,655.18	2,121.45	533.74	4.975		
26,100.00	7,138.72	26,081.03	7,163.64	230.93	306.30	-90.54	1,282.62	19,093.52	2,655.12	2,118.51	536.61	4.948		
26,200.00	7,138.67	26,181.03	7,163.59	232.20	307.89	-90.54	1,282.67	19,193.52	2,655.05	2,115.57	539.48	4.921		
26,300.00	7,138.61	26,281.03	7,163.53	233.48	309.49	-90.54	1,282.72	19,293.52	2,654.98	2,112.63	542.36	4.895		
26,400.00	7,138.55	26,381.03	7,163.48	234.75	311.08	-90.54	1,282.77	19,393.52	2,654.92	2,109.69	545.23	4.869		
26,500.00	7,138.49	26,481.03	7,163.43	236.03	312.68	-90.54	1,282.83	19,493.52	2,654.85	2,106.75	548.11	4.844		
26,600.00	7,138.44	26,581.03	7,163.38	237.31	314.27	-90.54	1,282.88	19,593.52	2,654.79	2,103.80	550.98	4.818		
26,700.00	7,138.38	26,681.03	7,163.33	238.59	315.87	-90.54	1,282.93	19,693.52	2,654.72	2,100.86	553.86	4.793		
26,800.00	7,138.32	26,781.03	7,163.28	239.87	317.46	-90.54	1,282.98	19,793.52	2,654.65	2,097.92	556.74	4.768		
26,900.00	7,138.26	26,881.03	7,163.23	241.15	319.06	-90.54	1,283.04	19,893.52	2,654.59	2,094.97	559.62	4.744		
27,000.00	7,138.21	26,981.03	7,163.18	242.43	320.65	-90.54	1,283.09	19,993.52	2,654.52	2,092.03	562.50	4.719		
27,100.00	7,138.15	27,081.03	7,163.13	243.71	322.25	-90.54	1,283.14	20,093.52	2,654.46	2,089.08	565.38	4.695		
27,157.78	7,138.12	27,138.81	7,163.10	244.46	323.17	-90.54	1,283.17	20,151.30	2,654.42	2,087.38	567.04	4.681		
27,200.00	7,138.09	27,181.03	7,163.08	245.00	323.85	-90.54	1,283.19	20,193.52	2,654.39	2,086.13	568.26	4.671		
27,300.00	7,138.03	27,281.03	7,163.03	246.28	325.44	-90.54	1,283.25	20,293.52	2,654.33	2,083.19	571.14	4.647		
27,355.71	7,138.00	27,335.53	7,163.00	247.00	326.31	-90.54	1,283.27	20,348.01	2,654.29	2,081.56	572.73	4.634		
27,357.78	7,138.00	27,335.53	7,163.00	247.02	326.31	-90.54	1,283.27	20,348.01	2,654.29	2,081.54	572.75	4.634 SF		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
290.97	290.96	290.00	289.99	0.00	0.00	0.00	1.94	0.17	0.97				
300.00	299.99	290.00	289.99	0.01	0.00	0.00	1.94	0.17	10.00				
400.00	399.99	290.00	289.99	0.14	0.00	0.00	1.94	0.17	110.00				
440.00	439.99	290.00	289.99	0.19	0.00	0.00	1.94	0.17	150.00				
500.00	499.99	290.00	289.99	0.22	0.00	8.13	1.94	0.17	210.00	209.79	0.21	1,000.902	
600.00	599.93	290.00	289.99	0.23	0.00	2.40	1.94	0.17	309.95	309.73	0.22	1,410.175	
700.00	699.70	290.00	289.99	0.30	0.00	1.41	1.94	0.17	409.81	409.52	0.30	1,385.284	
800.00	799.18	290.00	289.99	0.40	0.00	0.99	1.94	0.17	509.55	509.15	0.40	1,268.103	
900.00	898.24	290.00	289.99	0.51	0.00	0.77	1.94	0.17	609.14	608.62	0.52	1,171.859	
1,000.00	996.77	290.00	289.99	0.63	0.00	0.63	1.94	0.17	708.54	707.90	0.64	1,100.988	
1,074.04	1,069.30	290.00	289.99	0.72	0.00	0.55	1.94	0.17	782.00	781.26	0.74	1,060.353	
1,100.00	1,094.67	290.00	289.99	0.75	0.00	0.55	1.94	0.17	807.75	806.98	0.77	1,050.788	
1,200.00	1,192.37	290.00	289.99	0.88	0.00	0.55	1.94	0.17	907.02	906.13	0.89	1,018.314	
1,300.00	1,290.07	290.00	289.99	1.00	0.00	0.55	1.94	0.17	1,006.44	1,005.43	1.01	991.791	
1,400.00	1,387.77	290.00	289.99	1.13	0.00	0.55	1.94	0.17	1,105.97	1,104.83	1.14	969.958	
1,500.00	1,485.47	290.00	289.99	1.26	0.00	0.55	1.94	0.17	1,205.57	1,204.30	1.27	951.782	
1,600.00	1,583.17	290.00	289.99	1.39	0.00	0.55	1.94	0.17	1,305.23	1,303.84	1.39	936.472	
1,700.00	1,680.87	290.00	289.99	1.52	0.00	0.55	1.94	0.17	1,404.94	1,403.42	1.52	923.430	
1,800.00	1,778.57	290.00	289.99	1.64	0.00	0.55	1.94	0.17	1,504.69	1,503.04	1.65	912.205	
1,900.00	1,876.27	290.00	289.99	1.77	0.00	0.55	1.94	0.17	1,604.47	1,602.70	1.78	902.453	
2,000.00	1,973.98	290.00	289.99	1.91	0.00	0.55	1.94	0.17	1,704.28	1,702.37	1.91	893.908	
2,100.00	2,071.68	290.00	289.99	2.04	0.00	0.55	1.94	0.17	1,804.11	1,802.07	2.04	886.363	
2,200.00	2,169.38	290.00	289.99	2.17	0.00	0.55	1.94	0.17	1,903.96	1,901.79	2.16	879.656	
2,300.00	2,267.08	290.00	289.99	2.32	0.00	0.55	1.94	0.17	2,003.82	2,001.52	2.29	873.657	
2,400.00	2,364.78	290.00	289.99	2.46	0.00	0.55	1.94	0.17	2,103.69	2,101.27	2.42	868.260	
2,500.00	2,462.48	290.00	289.99	2.62	0.00	0.55	1.94	0.17	2,203.58	2,201.02	2.55	863.380	
2,600.00	2,560.18	290.00	289.99	2.78	0.00	0.55	1.94	0.17	2,303.47	2,300.79	2.68	858.947	
2,700.00	2,657.88	290.00	289.99	2.94	0.00	0.55	1.94	0.17	2,403.38	2,400.57	2.81	854.903	
2,800.00	2,755.58	290.00	289.99	3.10	0.00	0.55	1.94	0.17	2,503.29	2,500.35	2.94	851.200	
2,900.00	2,853.28	290.00	289.99	3.27	0.00	0.55	1.94	0.17	2,603.21	2,600.14	3.07	847.795	
3,000.00	2,950.99	290.00	289.99	3.44	0.00	0.55	1.94	0.17	2,703.13	2,699.93	3.20	844.655	
3,100.00	3,048.69	290.00	289.99	3.61	0.00	0.55	1.94	0.17	2,803.06	2,799.73	3.33	841.750	
3,200.00	3,146.39	290.00	289.99	3.79	0.00	0.55	1.94	0.17	2,903.00	2,899.54	3.46	839.055	
3,300.00	3,244.09	290.00	289.99	3.96	0.00	0.55	1.94	0.17	3,002.94	2,999.35	3.59	836.549	
3,400.00	3,341.79	290.00	289.99	4.14	0.00	0.55	1.94	0.17	3,102.88	3,099.16	3.72	834.211	
3,500.00	3,439.49	290.00	289.99	4.32	0.00	0.55	1.94	0.17	3,202.83	3,198.98	3.85	832.026	
3,600.00	3,537.19	290.00	289.99	4.51	0.00	0.55	1.94	0.17	3,302.78	3,298.80	3.98	829.979	
3,700.00	3,634.89	290.00	289.99	4.69	0.00	0.55	1.94	0.17	3,402.73	3,398.62	4.11	828.057	
3,800.00	3,732.59	290.00	289.99	4.88	0.00	0.55	1.94	0.17	3,502.69	3,498.45	4.24	826.250	
3,900.00	3,830.29	290.00	289.99	5.07	0.00	0.55	1.94	0.17	3,602.64	3,598.28	4.37	824.547	
4,000.00	3,928.00	290.00	289.99	5.26	0.00	0.55	1.94	0.17	3,702.61	3,698.11	4.50	822.940	
4,100.00	4,025.70	290.00	289.99	5.45	0.00	0.55	1.94	0.17	3,802.57	3,797.94	4.63	821.421	
4,200.00	4,123.40	290.00	289.99	5.65	0.00	0.55	1.94	0.17	3,902.53	3,897.77	4.76	819.983	
4,300.00	4,221.10	290.00	289.99	5.85	0.00	0.55	1.94	0.17	4,002.50	3,997.61	4.89	818.620	
4,400.00	4,318.80	290.00	289.99	6.05	0.00	0.55	1.94	0.17	4,102.47	4,097.45	5.02	817.325	
4,500.00	4,416.50	290.00	289.99	6.25	0.00	0.55	1.94	0.17	4,202.44	4,197.29	5.15	816.094	
4,600.00	4,514.20	290.00	289.99	6.45	0.00	0.55	1.94	0.17	4,302.41	4,297.13	5.28	814.923	
4,700.00	4,611.90	290.00	289.99	6.66	0.00	0.55	1.94	0.17	4,402.38	4,396.97	5.41	813.806	
4,800.00	4,709.60	290.00	289.99	6.87	0.00	0.55	1.94	0.17	4,502.35	4,496.81	5.54	812.741	
4,900.00	4,807.30	290.00	289.99	7.08	0.00	0.55	1.94	0.17	4,602.33	4,596.66	5.67	811.724	
5,000.00	4,905.00	290.00	289.99	7.29	0.00	0.55	1.94	0.17	4,702.30	4,696.50	5.80	810.751	
5,100.00	5,002.71	290.00	289.99	7.50	0.00	0.55	1.94	0.17	4,802.28	4,796.35	5.93	809.821	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104								Rule Assigned:					Offset Well Error: 0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,200.00	5,100.41	290.00	289.99	7.72	0.00	0.55	1.94	0.17	4,902.26	4,896.20	6.06	808.929	
5,300.00	5,198.11	290.00	289.99	7.93	0.00	0.55	1.94	0.17	5,002.23	4,996.04	6.19	808.074	
5,400.00	5,295.81	290.00	289.99	8.15	0.00	0.55	1.94	0.17	5,102.21	5,095.89	6.32	807.254	
5,500.00	5,393.51	290.00	289.99	8.37	0.00	0.55	1.94	0.17	5,202.19	5,195.74	6.45	806.466	
5,600.00	5,491.21	290.00	289.99	8.60	0.00	0.55	1.94	0.17	5,302.17	5,295.59	6.58	805.709	
5,700.00	5,588.91	290.00	289.99	8.82	0.00	0.55	1.94	0.17	5,402.16	5,395.45	6.71	804.980	
5,800.00	5,686.61	290.00	289.99	9.05	0.00	0.55	1.94	0.17	5,502.14	5,495.30	6.84	804.279	
5,900.00	5,784.31	290.00	289.99	9.28	0.00	0.55	1.94	0.17	5,602.12	5,595.15	6.97	803.604	
6,000.00	5,882.01	290.00	289.99	9.51	0.00	0.55	1.94	0.17	5,702.10	5,695.00	7.10	802.953	
6,100.00	5,979.72	290.00	289.99	9.74	0.00	0.55	1.94	0.17	5,802.09	5,794.86	7.23	802.325	
6,200.00	6,077.42	290.00	289.99	9.97	0.00	0.55	1.94	0.17	5,902.07	5,894.71	7.36	801.719	
6,300.00	6,175.12	290.00	289.99	10.21	0.00	0.55	1.94	0.17	6,002.06	5,994.57	7.49	801.133	
6,400.00	6,272.82	290.00	289.99	10.45	0.00	0.55	1.94	0.17	6,102.04	6,094.42	7.62	800.567	
6,500.00	6,370.52	290.00	289.99	10.69	0.00	0.55	1.94	0.17	6,202.03	6,194.28	7.75	800.020	
6,600.00	6,468.22	290.00	289.99	10.93	0.00	0.55	1.94	0.17	6,302.02	6,294.13	7.88	799.491	
6,662.10	6,528.89	290.00	289.99	11.08	0.00	0.55	1.94	0.17	6,364.11	6,356.14	7.96	799.171	
6,700.00	6,565.90	290.00	289.99	11.17	0.00	-58.88	1.94	0.17	6,401.98	6,391.01	10.97	583.485	
6,750.00	6,614.48	290.00	289.99	11.29	0.00	-50.55	1.94	0.17	6,451.72	6,440.49	11.23	574.595	
6,800.00	6,662.53	290.00	289.99	11.42	0.00	-40.79	1.94	0.17	6,500.93	6,489.59	11.34	573.268	
6,850.00	6,709.74	290.00	289.99	11.54	0.00	-33.47	1.94	0.17	6,549.32	6,537.90	11.42	573.354	
6,900.00	6,755.82	290.00	289.99	11.66	0.00	-28.19	1.94	0.17	6,596.62	6,585.14	11.49	574.230	
6,950.00	6,800.49	290.00	289.99	11.79	0.00	-24.32	1.94	0.17	6,642.56	6,631.03	11.54	575.717	
7,000.00	6,843.48	290.00	289.99	11.92	0.00	-21.43	1.94	0.17	6,686.89	6,675.32	11.57	577.717	
7,050.00	6,884.52	290.00	289.99	12.06	0.00	-19.22	1.94	0.17	6,729.37	6,717.77	11.60	580.151	
7,100.00	6,923.35	290.00	289.99	12.21	0.00	-17.49	1.94	0.17	6,769.77	6,758.16	11.61	582.939	
7,150.00	6,959.74	290.00	289.99	12.37	0.00	-16.13	1.94	0.17	6,807.89	6,796.27	11.62	586.004	
7,200.00	6,993.46	290.00	289.99	12.55	0.00	-15.04	1.94	0.17	6,843.53	6,831.91	11.61	589.261	
7,250.00	7,024.30	290.00	289.99	12.74	0.00	-14.16	1.94	0.17	6,876.51	6,864.90	11.60	592.621	
7,300.00	7,052.08	290.00	289.99	12.95	0.00	-13.45	1.94	0.17	6,906.66	6,895.07	11.59	595.994	
7,350.00	7,076.62	290.00	289.99	13.18	0.00	-12.88	1.94	0.17	6,933.84	6,922.27	11.57	599.284	
7,400.00	7,097.78	290.00	289.99	13.42	0.00	-12.43	1.94	0.17	6,957.92	6,946.37	11.55	602.393	
7,450.00	7,115.41	290.00	289.99	13.69	0.00	-12.07	1.94	0.17	6,978.78	6,967.25	11.53	605.226	
7,500.00	7,129.42	290.00	289.99	13.97	0.00	-11.81	1.94	0.17	6,996.33	6,984.81	11.51	607.684	
7,550.00	7,139.71	290.00	289.99	14.26	0.00	-11.62	1.94	0.17	7,010.47	6,998.97	11.50	609.668	
7,600.00	7,146.22	290.00	289.99	14.57	0.00	-11.51	1.94	0.17	7,021.14	7,009.65	11.49	611.080	
7,650.00	7,148.92	290.00	289.99	14.89	0.00	-11.47	1.94	0.17	7,028.30	7,016.81	11.49	611.805	
7,660.51	7,149.00	290.00	289.99	14.96	0.00	-11.47	1.94	0.17	7,029.35	7,017.87	11.49	612.037	
7,700.00	7,148.98	290.00	289.99	15.22	0.00	-11.47	1.94	0.17	7,033.12	7,021.63	11.49	611.869	
7,800.00	7,148.93	290.00	289.99	15.92	0.00	-11.47	1.94	0.17	7,043.66	7,032.13	11.53	610.755	
7,900.00	7,148.88	290.00	289.99	16.66	0.00	-11.47	1.94	0.17	7,055.60	7,044.00	11.59	608.677	
8,000.00	7,148.82	290.00	289.99	17.44	0.00	-11.47	1.94	0.17	7,068.93	7,057.26	11.67	605.677	
8,100.00	7,148.77	290.00	289.99	18.26	0.00	-11.47	1.94	0.17	7,083.65	7,071.88	11.77	601.808	
8,200.00	7,148.72	290.00	289.99	19.11	0.00	-11.47	1.94	0.17	7,099.74	7,087.85	11.89	597.137	
8,300.00	7,148.67	290.00	289.99	19.98	0.00	-11.47	1.94	0.17	7,117.21	7,105.18	12.03	591.737	
8,400.00	7,148.62	290.00	289.99	20.88	0.00	-11.47	1.94	0.17	7,136.03	7,123.85	12.18	585.689	
8,500.00	7,148.57	290.00	289.99	21.79	0.00	-11.47	1.94	0.17	7,156.20	7,143.84	12.36	579.074	
8,600.00	7,148.51	290.00	289.99	22.73	0.00	-11.47	1.94	0.17	7,177.71	7,165.16	12.55	571.977	
8,700.00	7,148.46	290.00	289.99	23.68	0.00	-11.47	1.94	0.17	7,200.54	7,187.79	12.76	564.480	
8,800.00	7,148.41	290.00	289.99	24.65	0.00	-11.47	1.94	0.17	7,224.69	7,211.71	12.98	556.662	
8,900.00	7,148.36	290.00	289.99	25.63	0.00	-11.47	1.94	0.17	7,250.13	7,236.92	13.22	548.597	
9,000.00	7,148.31	290.00	289.99	26.63	0.00	-11.47	1.94	0.17	7,276.86	7,263.40	13.47	540.356	
9,100.00	7,148.26	290.00	289.99	27.64	0.00	-11.47	1.94	0.17	7,304.86	7,291.13	13.73	532.000	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
9,200.00	7,148.20	290.00	289.99	28.65	0.00	-11.47	1.94	0.17	7,334.12	7,320.11	14.01	523.586	
9,300.00	7,148.15	290.00	289.99	29.68	0.00	-11.47	1.94	0.17	7,364.62	7,350.32	14.30	515.164	
9,400.00	7,148.10	290.00	289.99	30.72	0.00	-11.47	1.94	0.17	7,396.35	7,381.75	14.59	506.777	
9,500.00	7,148.05	290.00	289.99	31.76	0.00	-11.47	1.94	0.17	7,429.28	7,414.38	14.90	498.462	
9,600.00	7,148.00	290.00	289.99	32.81	0.00	-11.47	1.94	0.17	7,463.41	7,448.19	15.22	490.252	
9,700.00	7,147.94	290.00	289.99	33.87	0.00	-11.47	1.94	0.17	7,498.72	7,483.17	15.55	482.171	
9,800.00	7,147.89	290.00	289.99	34.94	0.00	-11.47	1.94	0.17	7,535.19	7,519.30	15.89	474.243	
9,900.00	7,147.84	290.00	289.99	36.01	0.00	-11.47	1.94	0.17	7,572.81	7,556.57	16.23	466.483	
10,000.00	7,147.79	290.00	289.99	37.08	0.00	-11.47	1.94	0.17	7,611.55	7,594.97	16.59	458.906	
10,100.00	7,147.74	290.00	289.99	38.16	0.00	-11.47	1.94	0.17	7,651.41	7,634.46	16.95	451.522	
10,200.00	7,147.69	290.00	289.99	39.25	0.00	-11.47	1.94	0.17	7,692.35	7,675.04	17.31	444.337	
10,300.00	7,147.63	290.00	289.99	40.34	0.00	-11.47	1.94	0.17	7,734.38	7,716.69	17.68	437.356	
10,400.00	7,147.58	290.00	289.99	41.44	0.00	-11.47	1.94	0.17	7,777.46	7,759.40	18.06	430.583	
10,500.00	7,147.53	290.00	289.99	42.54	0.00	-11.47	1.94	0.17	7,821.59	7,803.14	18.45	424.017	
10,600.00	7,147.48	290.00	289.99	43.64	0.00	-11.47	1.94	0.17	7,866.73	7,847.90	18.84	417.659	
10,700.00	7,147.43	290.00	289.99	44.75	0.00	-11.47	1.94	0.17	7,912.89	7,893.66	19.23	411.506	
10,800.00	7,147.38	290.00	289.99	45.86	0.00	-11.47	1.94	0.17	7,960.03	7,940.40	19.63	405.557	
10,900.00	7,147.32	290.00	289.99	46.97	0.00	-11.47	1.94	0.17	8,008.15	7,988.12	20.03	399.807	
11,000.00	7,147.27	290.00	289.99	48.09	0.00	-11.47	1.94	0.17	8,057.21	8,036.78	20.44	394.252	
11,100.00	7,147.22	290.00	289.99	49.21	0.00	-11.47	1.94	0.17	8,107.22	8,086.37	20.85	388.887	
11,200.00	7,147.17	290.00	289.99	50.33	0.00	-11.47	1.94	0.17	8,158.14	8,136.88	21.26	383.708	
11,300.00	7,147.12	290.00	289.99	51.46	0.00	-11.47	1.94	0.17	8,209.97	8,188.29	21.68	378.709	
11,400.00	7,147.07	290.00	289.99	52.58	0.00	-11.47	1.94	0.17	8,262.68	8,240.58	22.10	373.884	
11,500.00	7,147.01	290.00	289.99	53.71	0.00	-11.47	1.94	0.17	8,316.26	8,293.74	22.52	369.229	
11,600.00	7,146.96	290.00	289.99	54.85	0.00	-11.47	1.94	0.17	8,370.69	8,347.74	22.95	364.737	
11,700.00	7,146.91	290.00	289.99	55.98	0.00	-11.47	1.94	0.17	8,425.96	8,402.58	23.38	360.402	
11,800.00	7,146.86	290.00	289.99	57.12	0.00	-11.47	1.94	0.17	8,482.05	8,458.23	23.81	356.220	
11,815.51	7,146.85	290.00	289.99	57.29	0.00	-11.47	1.94	0.17	8,490.82	8,466.94	23.88	355.585	
11,826.17	7,146.84	290.00	289.99	57.42	0.00	-11.54	1.94	0.17	8,496.86	8,472.90	23.95	354.759	
11,900.00	7,146.80	290.00	289.99	58.26	0.00	-11.54	1.94	0.17	8,538.91	8,514.63	24.27	351.795	
12,000.00	7,146.75	290.00	289.99	59.40	0.00	-11.54	1.94	0.17	8,596.55	8,571.84	24.71	347.902	
12,100.00	7,146.69	290.00	289.99	60.54	0.00	-11.54	1.94	0.17	8,654.96	8,629.81	25.15	344.145	
12,200.00	7,146.63	290.00	289.99	61.68	0.00	-11.54	1.94	0.17	8,714.13	8,688.54	25.59	340.519	
12,300.00	7,146.58	290.00	289.99	62.83	0.00	-11.54	1.94	0.17	8,774.04	8,748.01	26.03	337.018	
12,400.00	7,146.52	290.00	289.99	63.98	0.00	-11.54	1.94	0.17	8,834.68	8,808.20	26.48	333.639	
12,500.00	7,146.46	290.00	289.99	65.13	0.00	-11.54	1.94	0.17	8,896.02	8,869.10	26.93	330.375	
12,600.00	7,146.41	290.00	289.99	66.28	0.00	-11.54	1.94	0.17	8,958.07	8,930.69	27.38	327.223	
12,700.00	7,146.35	290.00	289.99	67.43	0.00	-11.54	1.94	0.17	9,020.79	8,992.96	27.83	324.179	
12,800.00	7,146.29	290.00	289.99	68.59	0.00	-11.54	1.94	0.17	9,084.18	9,055.90	28.28	321.237	
12,900.00	7,146.24	290.00	289.99	69.74	0.00	-11.54	1.94	0.17	9,148.23	9,119.50	28.73	318.394	
13,000.00	7,146.18	290.00	289.99	70.90	0.00	-11.54	1.94	0.17	9,212.91	9,183.73	29.19	315.645	
13,100.00	7,146.13	290.00	289.99	72.06	0.00	-11.54	1.94	0.17	9,278.23	9,248.58	29.64	312.988	
13,200.00	7,146.07	290.00	289.99	73.22	0.00	-11.54	1.94	0.17	9,344.15	9,314.05	30.10	310.419	
13,300.00	7,146.01	290.00	289.99	74.38	0.00	-11.54	1.94	0.17	9,410.68	9,380.12	30.56	307.933	
13,400.00	7,145.96	290.00	289.99	75.54	0.00	-11.54	1.94	0.17	9,477.80	9,446.78	31.02	305.528	
13,500.00	7,145.90	290.00	289.99	76.71	0.00	-11.54	1.94	0.17	9,545.49	9,514.01	31.48	303.201	
13,600.00	7,145.84	290.00	289.99	77.87	0.00	-11.54	1.94	0.17	9,613.74	9,581.80	31.94	300.948	
13,700.00	7,145.79	290.00	289.99	79.04	0.00	-11.54	1.94	0.17	9,682.55	9,650.14	32.41	298.767	
13,800.00	7,145.73	290.00	289.99	80.21	0.00	-11.54	1.94	0.17	9,751.90	9,719.03	32.87	296.655	
13,900.00	7,145.67	290.00	289.99	81.38	0.00	-11.54	1.94	0.17	9,821.77	9,788.44	33.34	294.608	
14,000.00	7,145.62	290.00	289.99	82.55	0.00	-11.54	1.94	0.17	9,892.17	9,858.36	33.80	292.625	
14,100.00	7,145.56	290.00	289.99	83.72	0.00	-11.54	1.94	0.17	9,963.07	9,928.79	34.27	290.704	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
14,200.00	7,145.50	290.00	289.99	84.89	0.00	-11.54	1.94	0.17	10,034.46	9,999.72	34.74	288.841	
14,300.00	7,145.45	290.00	289.99	86.07	0.00	-11.54	1.94	0.17	10,106.34	10,071.13	35.21	287.034	
14,400.00	7,145.39	290.00	289.99	87.24	0.00	-11.54	1.94	0.17	10,178.69	10,143.01	35.68	285.282	
14,500.00	7,145.33	290.00	289.99	88.42	0.00	-11.54	1.94	0.17	10,251.51	10,215.36	36.15	283.582	
14,600.00	7,145.28	290.00	289.99	89.60	0.00	-11.54	1.94	0.17	10,324.79	10,288.17	36.62	281.932	
14,700.00	7,145.22	290.00	289.99	90.78	0.00	-11.54	1.94	0.17	10,398.51	10,361.41	37.09	280.331	
14,800.00	7,145.17	290.00	289.99	91.96	0.00	-11.54	1.94	0.17	10,472.66	10,435.10	37.57	278.777	
14,900.00	7,145.11	290.00	289.99	93.14	0.00	-11.54	1.94	0.17	10,547.25	10,509.21	38.04	277.267	
15,000.00	7,145.05	290.00	289.99	94.32	0.00	-11.54	1.94	0.17	10,622.25	10,583.73	38.51	275.801	
15,100.00	7,145.00	290.00	289.99	95.50	0.00	-11.54	1.94	0.17	10,697.65	10,658.67	38.99	274.376	
15,200.00	7,144.94	290.00	289.99	96.68	0.00	-11.54	1.94	0.17	10,773.46	10,734.00	39.46	272.991	
15,300.00	7,144.88	290.00	289.99	97.87	0.00	-11.54	1.94	0.17	10,849.67	10,809.73	39.94	271.646	
15,400.00	7,144.83	290.00	289.99	99.06	0.00	-11.54	1.94	0.17	10,926.25	10,885.83	40.42	270.337	
15,500.00	7,144.77	290.00	289.99	100.24	0.00	-11.54	1.94	0.17	11,003.21	10,962.32	40.89	269.065	
15,600.00	7,144.71	290.00	289.99	101.43	0.00	-11.54	1.94	0.17	11,080.54	11,039.17	41.37	267.827	
15,700.00	7,144.66	290.00	289.99	102.62	0.00	-11.54	1.94	0.17	11,158.23	11,116.38	41.85	266.623	
15,800.00	7,144.60	290.00	289.99	103.81	0.00	-11.54	1.94	0.17	11,236.27	11,193.94	42.33	265.451	
15,900.00	7,144.54	290.00	289.99	105.00	0.00	-11.54	1.94	0.17	11,314.66	11,271.85	42.81	264.310	
16,000.00	7,144.49	290.00	289.99	106.19	0.00	-11.54	1.94	0.17	11,393.39	11,350.10	43.29	263.200	
16,100.00	7,144.43	290.00	289.99	107.39	0.00	-11.54	1.94	0.17	11,472.44	11,428.68	43.77	262.118	
16,200.00	7,144.37	290.00	289.99	108.58	0.00	-11.54	1.94	0.17	11,551.83	11,507.58	44.25	261.065	
16,300.00	7,144.32	290.00	289.99	109.77	0.00	-11.54	1.94	0.17	11,631.53	11,586.80	44.73	260.039	
16,400.00	7,144.26	290.00	289.99	110.97	0.00	-11.54	1.94	0.17	11,711.54	11,666.33	45.21	259.039	
16,500.00	7,144.21	290.00	289.99	112.17	0.00	-11.54	1.94	0.17	11,791.85	11,746.16	45.69	258.065	
16,600.00	7,144.15	290.00	289.99	113.36	0.00	-11.54	1.94	0.17	11,872.47	11,826.29	46.18	257.115	
16,700.00	7,144.09	290.00	289.99	114.56	0.00	-11.54	1.94	0.17	11,953.38	11,906.72	46.66	256.188	
16,800.00	7,144.04	290.00	289.99	115.76	0.00	-11.54	1.94	0.17	12,034.57	11,987.43	47.14	255.285	
16,862.86	7,144.00	290.00	289.99	116.52	0.00	-11.54	1.94	0.17	12,085.75	12,038.31	47.45	254.729	
16,866.76	7,144.00	290.00	289.99	116.56	0.00	-11.48	1.94	0.17	12,088.93	12,041.51	47.42	254.934	
16,900.00	7,143.98	290.00	289.99	116.96	0.00	-11.48	1.94	0.17	12,116.05	12,068.47	47.58	254.643	
17,000.00	7,143.92	290.00	289.99	118.16	0.00	-11.48	1.94	0.17	12,197.81	12,149.75	48.06	253.783	
17,100.00	7,143.87	290.00	289.99	119.37	0.00	-11.48	1.94	0.17	12,279.84	12,231.30	48.55	252.944	
17,200.00	7,143.81	290.00	289.99	120.57	0.00	-11.48	1.94	0.17	12,362.14	12,313.11	49.03	252.125	
17,300.00	7,143.75	290.00	289.99	121.77	0.00	-11.48	1.94	0.17	12,444.69	12,395.18	49.52	251.325	
17,400.00	7,143.69	290.00	289.99	122.98	0.00	-11.48	1.94	0.17	12,527.50	12,477.50	50.00	250.544	
17,500.00	7,143.64	290.00	289.99	124.18	0.00	-11.48	1.94	0.17	12,610.56	12,560.07	50.49	249.782	
17,600.00	7,143.58	290.00	289.99	125.39	0.00	-11.48	1.94	0.17	12,693.86	12,642.89	50.97	249.037	
17,700.00	7,143.52	290.00	289.99	126.60	0.00	-11.48	1.94	0.17	12,777.40	12,725.94	51.46	248.309	
17,800.00	7,143.47	290.00	289.99	127.81	0.00	-11.48	1.94	0.17	12,861.18	12,809.23	51.94	247.599	
17,900.00	7,143.41	290.00	289.99	129.02	0.00	-11.48	1.94	0.17	12,945.18	12,892.75	52.43	246.904	
18,000.00	7,143.35	290.00	289.99	130.23	0.00	-11.48	1.94	0.17	13,029.41	12,976.50	52.92	246.225	
18,100.00	7,143.30	290.00	289.99	131.44	0.00	-11.48	1.94	0.17	13,113.87	13,060.46	53.40	245.561	
18,200.00	7,143.24	290.00	289.99	132.65	0.00	-11.48	1.94	0.17	13,198.54	13,144.65	53.89	244.912	
18,300.00	7,143.18	290.00	289.99	133.86	0.00	-11.48	1.94	0.17	13,283.42	13,229.04	54.38	244.277	
18,400.00	7,143.13	290.00	289.99	135.07	0.00	-11.48	1.94	0.17	13,368.52	13,313.65	54.87	243.656	
18,500.00	7,143.07	290.00	289.99	136.29	0.00	-11.48	1.94	0.17	13,453.81	13,398.46	55.35	243.049	
18,600.00	7,143.01	290.00	289.99	137.50	0.00	-11.48	1.94	0.17	13,539.31	13,483.47	55.84	242.454	
18,700.00	7,142.96	290.00	289.99	138.72	0.00	-11.48	1.94	0.17	13,625.01	13,568.68	56.33	241.873	
18,800.00	7,142.90	290.00	289.99	139.94	0.00	-11.48	1.94	0.17	13,710.90	13,654.08	56.82	241.303	
18,900.00	7,142.84	290.00	289.99	141.15	0.00	-11.48	1.94	0.17	13,796.98	13,739.67	57.31	240.746	
19,000.00	7,142.78	290.00	289.99	142.37	0.00	-11.48	1.94	0.17	13,883.25	13,825.45	57.80	240.201	
19,100.00	7,142.73	290.00	289.99	143.59	0.00	-11.48	1.94	0.17	13,969.70	13,911.41	58.29	239.666	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH												Offset Site Error: 0.00 usft		
Survey Program: Reference		125-Standard Keeper 104 Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance				Offset Well Error: 0.00 usft	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
19,200.00	7,142.67	290.00	289.99	144.81	0.00	-11.48	1.94	0.17	14,056.33	13,997.55	58.78	239.143		
19,300.00	7,142.61	290.00	289.99	146.03	0.00	-11.48	1.94	0.17	14,143.14	14,083.87	59.27	238.630		
19,400.00	7,142.56	290.00	289.99	147.26	0.00	-11.48	1.94	0.17	14,230.12	14,170.36	59.76	238.128		
19,500.00	7,142.50	290.00	289.99	148.48	0.00	-11.48	1.94	0.17	14,317.27	14,257.02	60.25	237.636		
19,600.00	7,142.44	290.00	289.99	149.70	0.00	-11.48	1.94	0.17	14,404.58	14,343.84	60.74	237.154		
19,700.00	7,142.39	290.00	289.99	150.93	0.00	-11.48	1.94	0.17	14,492.06	14,430.83	61.23	236.681		
19,800.00	7,142.33	290.00	289.99	152.15	0.00	-11.48	1.94	0.17	14,579.71	14,517.98	61.72	236.217		
19,900.00	7,142.27	290.00	289.99	153.38	0.00	-11.48	1.94	0.17	14,667.51	14,605.29	62.21	235.763		
20,000.00	7,142.22	290.00	289.99	154.60	0.00	-11.48	1.94	0.17	14,755.46	14,692.76	62.70	235.318		
20,100.00	7,142.16	290.00	289.99	155.83	0.00	-11.48	1.94	0.17	14,843.57	14,780.37	63.20	234.881		
20,200.00	7,142.10	290.00	289.99	157.06	0.00	-11.48	1.94	0.17	14,931.83	14,868.14	63.69	234.452		
20,300.00	7,142.04	290.00	289.99	158.29	0.00	-11.48	1.94	0.17	15,020.23	14,956.05	64.18	234.032		
20,400.00	7,141.99	290.00	289.99	159.52	0.00	-11.48	1.94	0.17	15,108.78	15,044.11	64.67	233.619		
20,500.00	7,141.93	290.00	289.99	160.75	0.00	-11.48	1.94	0.17	15,197.47	15,132.31	65.17	233.215		
20,600.00	7,141.87	290.00	289.99	161.98	0.00	-11.48	1.94	0.17	15,286.30	15,220.64	65.66	232.817		
20,700.00	7,141.82	290.00	289.99	163.21	0.00	-11.48	1.94	0.17	15,375.27	15,309.12	66.15	232.427		
20,800.00	7,141.76	290.00	289.99	164.45	0.00	-11.48	1.94	0.17	15,464.37	15,397.73	66.64	232.045		
20,900.00	7,141.70	290.00	289.99	165.68	0.00	-11.48	1.94	0.17	15,553.61	15,486.47	67.14	231.669		
21,000.00	7,141.65	290.00	289.99	166.92	0.00	-11.48	1.94	0.17	15,642.97	15,575.34	67.63	231.300		
21,100.00	7,141.59	290.00	289.99	168.15	0.00	-11.48	1.94	0.17	15,732.47	15,664.34	68.12	230.938		
21,200.00	7,141.53	290.00	289.99	169.39	0.00	-11.48	1.94	0.17	15,822.09	15,753.47	68.62	230.582		
21,300.00	7,141.48	290.00	289.99	170.62	0.00	-11.48	1.94	0.17	15,911.83	15,842.72	69.11	230.232		
21,400.00	7,141.42	290.00	289.99	171.86	0.00	-11.48	1.94	0.17	16,001.69	15,932.09	69.61	229.889		
21,500.00	7,141.36	290.00	289.99	173.10	0.00	-11.48	1.94	0.17	16,091.68	16,021.58	70.10	229.551		
21,600.00	7,141.31	290.00	289.99	174.34	0.00	-11.48	1.94	0.17	16,181.78	16,111.19	70.60	229.220		
21,700.00	7,141.25	290.00	289.99	175.58	0.00	-11.48	1.94	0.17	16,272.00	16,200.91	71.09	228.894		
21,800.00	7,141.19	290.00	289.99	176.82	0.00	-11.48	1.94	0.17	16,362.33	16,290.74	71.58	228.574		
21,900.00	7,141.13	290.00	289.99	178.06	0.00	-11.48	1.94	0.17	16,452.77	16,380.69	72.08	228.259		
22,000.00	7,141.08	290.00	289.99	179.31	0.00	-11.48	1.94	0.17	16,543.33	16,470.75	72.57	227.949		
22,100.00	7,141.02	290.00	289.99	180.55	0.00	-11.48	1.94	0.17	16,633.99	16,560.92	73.07	227.645		
22,136.53	7,141.00	290.00	289.99	181.00	0.00	-11.48	1.94	0.17	16,667.13	16,593.88	73.25	227.535		
22,137.77	7,141.00	290.00	289.99	181.02	0.00	-11.51	1.94	0.17	16,668.25	16,594.96	73.29	227.426		
22,200.00	7,140.96	290.00	289.99	181.79	0.00	-11.51	1.94	0.17	16,724.75	16,651.15	73.60	227.240		
22,300.00	7,140.91	290.00	289.99	183.04	0.00	-11.51	1.94	0.17	16,815.62	16,741.53	74.10	226.946		
22,400.00	7,140.85	290.00	289.99	184.29	0.00	-11.51	1.94	0.17	16,906.60	16,832.01	74.59	226.656		
22,500.00	7,140.79	290.00	289.99	185.53	0.00	-11.51	1.94	0.17	16,997.67	16,922.58	75.09	226.372		
22,600.00	7,140.73	290.00	289.99	186.78	0.00	-11.51	1.94	0.17	17,088.85	17,013.26	75.58	226.091		
22,700.00	7,140.68	290.00	289.99	188.03	0.00	-11.51	1.94	0.17	17,180.12	17,104.04	76.08	225.816		
22,800.00	7,140.62	290.00	289.99	189.28	0.00	-11.51	1.94	0.17	17,271.49	17,194.91	76.58	225.545		
22,900.00	7,140.56	290.00	289.99	190.53	0.00	-11.51	1.94	0.17	17,362.95	17,285.88	77.07	225.278		
23,000.00	7,140.50	290.00	289.99	191.78	0.00	-11.51	1.94	0.17	17,454.51	17,376.94	77.57	225.015		
23,100.00	7,140.45	290.00	289.99	193.03	0.00	-11.51	1.94	0.17	17,546.16	17,468.10	78.07	224.757		
23,200.00	7,140.39	290.00	289.99	194.28	0.00	-11.51	1.94	0.17	17,637.90	17,559.34	78.56	224.502		
23,300.00	7,140.33	290.00	289.99	195.53	0.00	-11.51	1.94	0.17	17,729.74	17,650.67	79.06	224.251		
23,400.00	7,140.27	290.00	289.99	196.79	0.00	-11.51	1.94	0.17	17,821.65	17,742.09	79.56	224.005		
23,500.00	7,140.22	290.00	289.99	198.04	0.00	-11.51	1.94	0.17	17,913.66	17,833.60	80.06	223.762		
23,600.00	7,140.16	290.00	289.99	199.30	0.00	-11.51	1.94	0.17	18,005.75	17,925.19	80.55	223.522		
23,700.00	7,140.10	290.00	289.99	200.55	0.00	-11.51	1.94	0.17	18,097.92	18,016.87	81.05	223.287		
23,800.00	7,140.04	290.00	289.99	201.81	0.00	-11.51	1.94	0.17	18,190.18	18,108.63	81.55	223.054		
23,900.00	7,139.99	290.00	289.99	203.07	0.00	-11.51	1.94	0.17	18,282.52	18,200.47	82.05	222.826		
24,000.00	7,139.93	290.00	289.99	204.32	0.00	-11.51	1.94	0.17	18,374.94	18,292.39	82.55	222.600		
24,100.00	7,139.87	290.00	289.99	205.58	0.00	-11.51	1.94	0.17	18,467.44	18,384.39	83.05	222.378		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 834H - OH - OH													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104						Rule Assigned:					Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
24,200.00	7,139.81	290.00	289.99	206.84	0.00	-11.51	1.94	0.17	18,560.01	18,476.47	83.54	222.159		
24,300.00	7,139.76	290.00	289.99	208.10	0.00	-11.51	1.94	0.17	18,652.66	18,568.62	84.04	221.944		
24,400.00	7,139.70	290.00	289.99	209.37	0.00	-11.51	1.94	0.17	18,745.39	18,660.85	84.54	221.731		
24,500.00	7,139.64	290.00	289.99	210.63	0.00	-11.51	1.94	0.17	18,838.19	18,753.15	85.04	221.522		
24,600.00	7,139.58	290.00	289.99	211.89	0.00	-11.51	1.94	0.17	18,931.07	18,845.53	85.54	221.315		
24,700.00	7,139.53	290.00	289.99	213.15	0.00	-11.51	1.94	0.17	19,024.02	18,937.98	86.04	221.111		
24,800.00	7,139.47	290.00	289.99	214.42	0.00	-11.51	1.94	0.17	19,117.03	19,030.50	86.54	220.911		
24,900.00	7,139.41	290.00	289.99	215.68	0.00	-11.51	1.94	0.17	19,210.12	19,123.09	87.04	220.713		
25,000.00	7,139.35	290.00	289.99	216.95	0.00	-11.51	1.94	0.17	19,303.28	19,215.74	87.54	220.517		
25,100.00	7,139.30	290.00	289.99	218.22	0.00	-11.51	1.94	0.17	19,396.51	19,308.47	88.04	220.325		
25,200.00	7,139.24	290.00	289.99	219.49	0.00	-11.51	1.94	0.17	19,489.80	19,401.26	88.54	220.135		
25,300.00	7,139.18	290.00	289.99	220.75	0.00	-11.51	1.94	0.17	19,583.16	19,494.12	89.04	219.947		
25,400.00	7,139.13	290.00	289.99	222.02	0.00	-11.51	1.94	0.17	19,676.58	19,587.05	89.54	219.763		
25,500.00	7,139.07	290.00	289.99	223.29	0.00	-11.51	1.94	0.17	19,770.07	19,680.04	90.04	219.580		
25,600.00	7,139.01	290.00	289.99	224.56	0.00	-11.51	1.94	0.17	19,863.63	19,773.09	90.54	219.400		
25,700.00	7,138.95	290.00	289.99	225.83	0.00	-11.51	1.94	0.17	19,957.24	19,866.20	91.04	219.223		
25,800.00	7,138.90	290.00	289.99	227.11	0.00	-11.51	1.94	0.17	20,050.92	19,959.38	91.54	219.047		
25,900.00	7,138.84	290.00	289.99	228.38	0.00	-11.51	1.94	0.17	20,144.66	20,052.62	92.04	218.874		
26,000.00	7,138.78	290.00	289.99	229.65	0.00	-11.51	1.94	0.17	20,238.45	20,145.91	92.54	218.704		
26,100.00	7,138.72	290.00	289.99	230.93	0.00	-11.51	1.94	0.17	20,332.31	20,239.27	93.04	218.535		
26,200.00	7,138.67	290.00	289.99	232.20	0.00	-11.51	1.94	0.17	20,426.22	20,332.68	93.54	218.369		
26,300.00	7,138.61	290.00	289.99	233.48	0.00	-11.51	1.94	0.17	20,520.20	20,426.16	94.04	218.205		
26,400.00	7,138.55	290.00	289.99	234.76	0.00	-11.51	1.94	0.17	20,614.23	20,519.68	94.54	218.043		
26,500.00	7,138.49	290.00	289.99	236.03	0.00	-11.51	1.94	0.17	20,708.31	20,613.27	95.04	217.883		
26,600.00	7,138.44	290.00	289.99	237.31	0.00	-11.51	1.94	0.17	20,802.45	20,706.91	95.54	217.724		
26,700.00	7,138.38	290.00	289.99	238.59	0.00	-11.51	1.94	0.17	20,896.65	20,800.60	96.05	217.568		
26,800.00	7,138.32	290.00	289.99	239.87	0.00	-11.51	1.94	0.17	20,990.89	20,894.35	96.55	217.414		
26,900.00	7,138.26	290.00	289.99	241.15	0.00	-11.51	1.94	0.17	21,085.20	20,988.15	97.05	217.262		
27,000.00	7,138.21	290.00	289.99	242.43	0.00	-11.51	1.94	0.17	21,179.55	21,082.00	97.55	217.111		
27,100.00	7,138.15	290.00	289.99	243.72	0.00	-11.51	1.94	0.17	21,273.95	21,175.90	98.05	216.963		
27,157.78	7,138.12	290.00	289.99	244.46	0.00	-11.51	1.94	0.17	21,328.53	21,230.18	98.34	216.878		
27,200.00	7,138.09	290.00	289.99	245.00	0.00	-11.51	1.94	0.17	21,368.41	21,269.85	98.56	216.816		
27,300.00	7,138.03	290.00	289.99	246.28	0.00	-11.51	1.94	0.17	21,462.92	21,363.86	99.06	216.671		
27,357.78	7,138.00	290.00	289.99	247.03	0.00	-11.51	1.94	0.17	21,517.54	21,418.19	99.35	216.588 SF		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
0.00	0.00	0.00	0.00	0.00	0.00	34.43	12.38	8.48	15.01				
125.00	125.00	125.00	125.00	0.05	0.06	33.63	12.07	8.78	14.46	14.37	0.09	161.956	
214.79	214.78	214.69	214.68	0.18	0.16	38.21	11.96	9.35	14.09	13.83	0.26	54.808	
225.00	224.99	224.89	224.88	0.19	0.17	38.69	11.99	9.43	14.09	13.82	0.28	51.030	
290.00	289.99	289.97	289.96	0.28	0.25	26.58	12.02	9.89	14.00	13.60	0.41	34.464	
300.00	299.99	299.98	299.97	0.29	0.26	26.94	11.99	9.94	13.96	13.53	0.43	32.700	
312.06	312.05	312.05	312.05	0.31	0.28	27.40	11.95	10.00	13.90	13.45	0.45	30.770 CC, ES	
400.00	399.99	312.00	311.99	0.42	0.28	27.39	11.95	10.00	89.01	88.21	0.79	112.116	
440.00	439.99	312.00	311.99	0.47	0.28	27.39	11.95	10.00	128.67	127.82	0.84	152.929	
500.00	499.99	312.00	311.99	0.50	0.28	-115.36	11.95	10.00	188.46	187.55	0.91	207.107	
600.00	599.93	312.00	311.99	0.47	0.28	-77.21	11.95	10.00	288.35	287.33	1.02	281.818	
700.00	699.70	312.00	311.99	0.48	0.28	-34.46	11.95	10.00	388.28	387.15	1.14	341.685	
800.00	799.18	312.00	311.99	0.52	0.28	-17.81	11.95	10.00	488.14	486.89	1.25	390.613	
900.00	898.24	312.00	311.99	0.60	0.28	-10.90	11.95	10.00	587.88	586.51	1.36	431.262	
1,000.00	996.77	312.00	311.99	0.69	0.28	-7.40	11.95	10.00	687.45	685.97	1.48	465.494	
1,074.04	1,069.30	312.00	311.99	0.77	0.28	-5.80	11.95	10.00	761.04	759.47	1.56	487.505	
1,100.00	1,094.67	312.00	311.99	0.79	0.28	-5.80	11.95	10.00	786.83	785.24	1.59	494.646	
1,200.00	1,192.37	312.00	311.99	0.91	0.28	-5.80	11.95	10.00	886.26	884.55	1.71	519.718	
1,300.00	1,290.07	312.00	311.99	1.02	0.28	-5.80	11.95	10.00	985.80	983.98	1.82	541.430	
1,400.00	1,387.77	312.00	311.99	1.15	0.28	-5.80	11.95	10.00	1,085.43	1,083.50	1.94	560.331	
1,500.00	1,485.47	312.00	311.99	1.27	0.28	-5.80	11.95	10.00	1,185.13	1,183.07	2.05	576.855	
1,600.00	1,583.17	312.00	311.99	1.40	0.28	-5.80	11.95	10.00	1,284.87	1,282.69	2.17	591.349	
1,700.00	1,680.87	312.00	311.99	1.53	0.28	-5.80	11.95	10.00	1,384.64	1,382.35	2.29	604.096	
1,800.00	1,778.57	312.00	311.99	1.67	0.28	-5.80	11.95	10.00	1,484.45	1,482.04	2.41	615.325	
1,900.00	1,876.27	312.00	311.99	1.81	0.28	-5.80	11.95	10.00	1,584.28	1,581.75	2.53	625.227	
2,000.00	1,973.98	312.00	311.99	1.95	0.28	-5.80	11.95	10.00	1,684.13	1,681.48	2.66	633.958	
2,100.00	2,071.68	312.00	311.99	2.09	0.28	-5.80	11.95	10.00	1,784.00	1,781.22	2.78	641.653	
2,200.00	2,169.38	312.00	311.99	2.24	0.28	-5.80	11.95	10.00	1,883.89	1,880.98	2.91	648.423	
2,300.00	2,267.08	312.00	311.99	2.39	0.28	-5.80	11.95	10.00	1,983.78	1,980.75	3.03	654.366	
2,400.00	2,364.78	312.00	311.99	2.55	0.28	-5.80	11.95	10.00	2,083.68	2,080.52	3.16	659.562	
2,500.00	2,462.48	312.00	311.99	2.70	0.28	-5.80	11.95	10.00	2,183.60	2,180.31	3.29	664.085	
2,600.00	2,560.18	312.00	311.99	2.86	0.28	-5.80	11.95	10.00	2,283.52	2,280.10	3.42	667.995	
2,700.00	2,657.88	312.00	311.99	3.02	0.28	-5.80	11.95	10.00	2,383.44	2,379.89	3.55	671.348	
2,800.00	2,755.58	312.00	311.99	3.19	0.28	-5.80	11.95	10.00	2,483.38	2,479.69	3.68	674.191	
2,900.00	2,853.28	312.00	311.99	3.35	0.28	-5.80	11.95	10.00	2,583.32	2,579.50	3.82	676.568	
3,000.00	2,950.99	312.00	311.99	3.52	0.28	-5.80	11.95	10.00	2,683.26	2,679.30	3.95	678.515	
3,100.00	3,048.69	312.00	311.99	3.69	0.28	-5.80	11.95	10.00	2,783.21	2,779.11	4.09	680.067	
3,200.00	3,146.39	312.00	311.99	3.87	0.28	-5.80	11.95	10.00	2,883.16	2,878.92	4.23	681.255	
3,300.00	3,244.09	312.00	311.99	4.04	0.28	-5.80	11.95	10.00	2,983.11	2,978.74	4.37	682.106	
3,400.00	3,341.79	312.00	311.99	4.22	0.28	-5.80	11.95	10.00	3,083.07	3,078.55	4.52	682.645	
3,500.00	3,439.49	312.00	311.99	4.40	0.28	-5.80	11.95	10.00	3,183.03	3,178.37	4.66	682.894	
3,600.00	3,537.19	312.00	311.99	4.58	0.28	-5.80	11.95	10.00	3,282.99	3,278.18	4.81	682.875	
3,700.00	3,634.89	312.00	311.99	4.77	0.28	-5.80	11.95	10.00	3,382.95	3,378.00	4.96	682.606	
3,800.00	3,732.59	312.00	311.99	4.95	0.28	-5.80	11.95	10.00	3,482.92	3,477.81	5.11	682.104	
3,900.00	3,830.29	312.00	311.99	5.14	0.28	-5.80	11.95	10.00	3,582.89	3,577.63	5.26	681.387	
4,000.00	3,928.00	312.00	311.99	5.33	0.28	-5.80	11.95	10.00	3,682.86	3,677.45	5.41	680.468	
4,100.00	4,025.70	312.00	311.99	5.53	0.28	-5.80	11.95	10.00	3,782.83	3,777.26	5.57	679.362	
4,200.00	4,123.40	312.00	311.99	5.72	0.28	-5.80	11.95	10.00	3,882.80	3,877.08	5.73	678.081	
4,300.00	4,221.10	312.00	311.99	5.92	0.28	-5.80	11.95	10.00	3,982.78	3,976.89	5.89	676.638	
4,400.00	4,318.80	312.00	311.99	6.12	0.28	-5.80	11.95	10.00	4,082.75	4,076.71	6.05	675.042	
4,500.00	4,416.50	312.00	311.99	6.32	0.28	-5.80	11.95	10.00	4,182.73	4,176.52	6.21	673.306	
4,600.00	4,514.20	312.00	311.99	6.52	0.28	-5.80	11.95	10.00	4,282.71	4,276.33	6.38	671.438	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,700.00	4,611.90	312.00	311.99	6.73	0.28	-5.80	11.95	10.00	4,382.69	4,376.14	6.55	669.447	
4,800.00	4,709.60	312.00	311.99	6.94	0.28	-5.80	11.95	10.00	4,482.67	4,475.95	6.72	667.342	
4,900.00	4,807.30	312.00	311.99	7.14	0.28	-5.80	11.95	10.00	4,582.65	4,575.76	6.89	665.131	
5,000.00	4,905.00	312.00	311.99	7.36	0.28	-5.80	11.95	10.00	4,682.63	4,675.57	7.06	662.821	
5,100.00	5,002.71	312.00	311.99	7.57	0.28	-5.80	11.95	10.00	4,782.61	4,775.37	7.24	660.420	
5,200.00	5,100.41	312.00	311.99	7.78	0.28	-5.80	11.95	10.00	4,882.60	4,875.17	7.42	657.934	
5,300.00	5,198.11	312.00	311.99	8.00	0.28	-5.80	11.95	10.00	4,982.58	4,974.98	7.60	655.370	
5,400.00	5,295.81	312.00	311.99	8.22	0.28	-5.80	11.95	10.00	5,082.56	5,074.78	7.79	652.733	
5,500.00	5,393.51	312.00	311.99	8.44	0.28	-5.80	11.95	10.00	5,182.55	5,174.58	7.97	650.029	
5,600.00	5,491.21	312.00	311.99	8.66	0.28	-5.80	11.95	10.00	5,282.53	5,274.37	8.16	647.263	
5,700.00	5,588.91	312.00	311.99	8.89	0.28	-5.80	11.95	10.00	5,382.52	5,374.17	8.35	644.440	
5,800.00	5,686.61	312.00	311.99	9.11	0.28	-5.80	11.95	10.00	5,482.51	5,473.96	8.55	641.566	
5,900.00	5,784.31	312.00	311.99	9.34	0.28	-5.80	11.95	10.00	5,582.49	5,573.75	8.74	638.643	
6,000.00	5,882.01	312.00	311.99	9.57	0.28	-5.80	11.95	10.00	5,682.48	5,673.54	8.94	635.677	
6,100.00	5,979.72	312.00	311.99	9.80	0.28	-5.80	11.95	10.00	5,782.47	5,773.33	9.14	632.672	
6,200.00	6,077.42	312.00	311.99	10.04	0.28	-5.80	11.95	10.00	5,882.46	5,873.11	9.34	629.631	
6,300.00	6,175.12	312.00	311.99	10.27	0.28	-5.80	11.95	10.00	5,982.45	5,972.90	9.55	626.557	
6,400.00	6,272.82	312.00	311.99	10.51	0.28	-5.80	11.95	10.00	6,082.44	6,072.68	9.76	623.455	
6,500.00	6,370.52	312.00	311.99	10.75	0.28	-5.80	11.95	10.00	6,182.42	6,172.46	9.97	620.327	
6,600.00	6,468.22	312.00	311.99	10.99	0.28	-5.80	11.95	10.00	6,282.41	6,272.24	10.18	617.177	
6,662.10	6,528.89	312.00	311.99	11.14	0.28	-5.80	11.95	10.00	6,344.51	6,334.19	10.31	615.210	
6,700.00	6,565.90	312.00	311.99	11.23	0.28	-61.21	11.95	10.00	6,382.38	6,371.99	10.39	614.009	
6,750.00	6,614.48	312.00	311.99	11.35	0.28	-51.53	11.95	10.00	6,432.11	6,421.61	10.50	612.436	
6,800.00	6,662.53	312.00	311.99	11.47	0.28	-41.40	11.95	10.00	6,481.31	6,470.70	10.61	610.894	
6,850.00	6,709.74	312.00	311.99	11.60	0.28	-33.92	11.95	10.00	6,529.69	6,518.97	10.71	609.399	
6,900.00	6,755.82	312.00	311.99	11.72	0.28	-28.54	11.95	10.00	6,576.97	6,566.15	10.82	607.970	
6,950.00	6,800.49	312.00	311.99	11.85	0.28	-24.61	11.95	10.00	6,622.88	6,611.96	10.92	606.619	
7,000.00	6,843.48	312.00	311.99	11.98	0.28	-21.68	11.95	10.00	6,667.18	6,656.16	11.01	605.356	
7,050.00	6,884.52	312.00	311.99	12.12	0.28	-19.44	11.95	10.00	6,709.62	6,698.51	11.11	604.188	
7,100.00	6,923.35	312.00	311.99	12.27	0.28	-17.69	11.95	10.00	6,749.98	6,738.79	11.19	603.118	
7,150.00	6,959.74	312.00	311.99	12.42	0.28	-16.31	11.95	10.00	6,788.05	6,776.78	11.27	602.144	
7,200.00	6,993.46	312.00	311.99	12.60	0.28	-15.20	11.95	10.00	6,823.65	6,812.30	11.35	601.261	
7,250.00	7,024.30	312.00	311.99	12.79	0.28	-14.31	11.95	10.00	6,856.57	6,845.16	11.42	600.459	
7,300.00	7,052.08	312.00	311.99	12.99	0.28	-13.60	11.95	10.00	6,886.68	6,875.19	11.48	599.723	
7,350.00	7,076.62	312.00	311.99	13.22	0.28	-13.02	11.95	10.00	6,913.81	6,902.27	11.54	599.036	
7,400.00	7,097.78	312.00	311.99	13.46	0.28	-12.56	11.95	10.00	6,937.83	6,926.24	11.59	598.375	
7,450.00	7,115.41	312.00	311.99	13.71	0.28	-12.20	11.95	10.00	6,958.64	6,947.00	11.64	597.710	
7,500.00	7,129.42	312.00	311.99	13.99	0.28	-11.93	11.95	10.00	6,976.12	6,964.44	11.69	597.007	
7,550.00	7,139.71	312.00	311.99	14.28	0.28	-11.74	11.95	10.00	6,990.21	6,978.48	11.72	596.222	
7,600.00	7,146.22	312.00	311.99	14.58	0.28	-11.63	11.95	10.00	7,000.82	6,989.06	11.76	595.296	
7,650.00	7,148.92	312.00	311.99	14.90	0.28	-11.58	11.95	10.00	7,007.92	6,996.13	11.79	594.144	
7,660.51	7,149.00	312.00	311.99	14.97	0.28	-11.58	11.95	10.00	7,008.97	6,997.17	11.80	594.023	
7,700.00	7,148.98	312.00	311.99	15.23	0.28	-11.58	11.95	10.00	7,012.69	7,000.89	11.80	594.071	
7,800.00	7,148.93	312.00	311.99	15.92	0.28	-11.58	11.95	10.00	7,023.12	7,011.29	11.83	593.600	
7,900.00	7,148.88	312.00	311.99	16.66	0.28	-11.58	11.95	10.00	7,034.95	7,023.07	11.88	592.302	
8,000.00	7,148.82	312.00	311.99	17.44	0.28	-11.58	11.95	10.00	7,048.18	7,036.24	11.94	590.211	
8,100.00	7,148.77	312.00	311.99	18.25	0.28	-11.58	11.95	10.00	7,062.80	7,050.78	12.02	587.376	
8,200.00	7,148.72	312.00	311.99	19.10	0.28	-11.58	11.95	10.00	7,078.81	7,066.69	12.12	583.854	
8,300.00	7,148.67	312.00	311.99	19.97	0.28	-11.58	11.95	10.00	7,096.19	7,083.95	12.24	579.713	
8,400.00	7,148.62	312.00	311.99	20.86	0.28	-11.58	11.95	10.00	7,114.93	7,102.56	12.37	575.023	
8,500.00	7,148.57	312.00	311.99	21.78	0.28	-11.58	11.95	10.00	7,135.02	7,122.50	12.52	569.858	
8,600.00	7,148.51	312.00	311.99	22.71	0.28	-11.58	11.95	10.00	7,156.46	7,143.78	12.68	564.291	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 42 - Rosa Unit 836H - OH - OH											Offset Site Error:		0.00 usft	
Survey Program:		125-Standard Keeper 104						Rule Assigned:						Offset Well Error:		0.00 usft
Measured Depth	Reference	Measured Depth	Offset	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Distance		No-Go Distance	Separation Factor	Warning			
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	(usft)					
8,700.00	7,148.46	312.00	311.99	23.67	0.28	-11.58	11.95	10.00	7,179.22	7,166.36	12.86	558.397				
8,800.00	7,148.41	312.00	311.99	24.63	0.28	-11.58	11.95	10.00	7,203.30	7,190.26	13.04	552.245				
8,900.00	7,148.36	312.00	311.99	25.62	0.28	-11.58	11.95	10.00	7,228.68	7,215.44	13.24	545.901				
9,000.00	7,148.31	312.00	311.99	26.61	0.28	-11.58	11.95	10.00	7,255.36	7,241.91	13.45	539.426				
9,100.00	7,148.26	312.00	311.99	27.62	0.28	-11.58	11.95	10.00	7,283.31	7,269.64	13.67	532.875				
9,200.00	7,148.20	312.00	311.99	28.64	0.28	-11.58	11.95	10.00	7,312.52	7,298.62	13.89	526.298				
9,300.00	7,148.15	312.00	311.99	29.66	0.28	-11.58	11.95	10.00	7,342.97	7,328.84	14.13	519.739				
9,400.00	7,148.10	312.00	311.99	30.70	0.28	-11.58	11.95	10.00	7,374.66	7,360.29	14.37	513.234				
9,500.00	7,148.05	312.00	311.99	31.74	0.28	-11.58	11.95	10.00	7,407.56	7,392.94	14.62	506.817				
9,600.00	7,148.00	312.00	311.99	32.79	0.28	-11.58	11.95	10.00	7,441.65	7,426.79	14.87	500.516				
9,700.00	7,147.94	312.00	311.99	33.85	0.28	-11.58	11.95	10.00	7,476.93	7,461.81	15.12	494.351				
9,800.00	7,147.89	312.00	311.99	34.92	0.28	-11.58	11.95	10.00	7,513.38	7,498.00	15.39	488.342				
9,900.00	7,147.84	312.00	311.99	35.99	0.28	-11.58	11.95	10.00	7,550.97	7,535.33	15.65	482.504				
10,000.00	7,147.79	312.00	311.99	37.07	0.28	-11.58	11.95	10.00	7,589.70	7,573.78	15.92	476.847				
10,100.00	7,147.74	312.00	311.99	38.15	0.28	-11.58	11.95	10.00	7,629.54	7,613.35	16.19	471.380				
10,200.00	7,147.69	312.00	311.99	39.24	0.28	-11.58	11.95	10.00	7,670.48	7,654.02	16.46	466.108				
10,300.00	7,147.63	312.00	311.99	40.33	0.28	-11.58	11.95	10.00	7,712.49	7,695.76	16.73	461.036				
10,400.00	7,147.58	312.00	311.99	41.42	0.28	-11.58	11.95	10.00	7,755.57	7,738.57	17.00	456.164				
10,500.00	7,147.53	312.00	311.99	42.52	0.28	-11.58	11.95	10.00	7,799.69	7,782.42	17.28	451.493				
10,600.00	7,147.48	312.00	311.99	43.63	0.28	-11.58	11.95	10.00	7,844.84	7,827.29	17.55	447.022				
10,700.00	7,147.43	312.00	311.99	44.73	0.28	-11.58	11.95	10.00	7,891.00	7,873.18	17.82	442.749				
10,800.00	7,147.38	312.00	311.99	45.85	0.28	-11.58	11.95	10.00	7,938.15	7,920.05	18.10	438.670				
10,900.00	7,147.32	312.00	311.99	46.96	0.28	-11.58	11.95	10.00	7,986.27	7,967.90	18.37	434.783				
11,000.00	7,147.27	312.00	311.99	48.08	0.28	-11.58	11.95	10.00	8,035.35	8,016.71	18.64	431.082				
11,100.00	7,147.22	312.00	311.99	49.20	0.28	-11.58	11.95	10.00	8,085.37	8,066.46	18.91	427.564				
11,200.00	7,147.17	312.00	311.99	50.32	0.28	-11.58	11.95	10.00	8,136.31	8,117.13	19.18	424.222				
11,300.00	7,147.12	312.00	311.99	51.44	0.28	-11.58	11.95	10.00	8,188.16	8,168.71	19.45	421.053				
11,400.00	7,147.07	312.00	311.99	52.57	0.28	-11.58	11.95	10.00	8,240.89	8,221.17	19.71	418.050				
11,500.00	7,147.01	312.00	311.99	53.70	0.28	-11.58	11.95	10.00	8,294.49	8,274.51	19.98	415.209				
11,600.00	7,146.96	312.00	311.99	54.84	0.28	-11.58	11.95	10.00	8,348.95	8,328.71	20.24	412.524				
11,700.00	7,146.91	312.00	311.99	55.97	0.28	-11.58	11.95	10.00	8,404.24	8,383.74	20.50	409.989				
11,800.00	7,146.86	312.00	311.99	57.11	0.28	-11.58	11.95	10.00	8,460.35	8,439.60	20.76	407.599				
11,815.51	7,146.85	312.00	311.99	57.28	0.28	-11.58	11.95	10.00	8,469.13	8,448.33	20.80	407.241				
11,826.17	7,146.84	312.00	311.99	57.40	0.28	-11.65	11.95	10.00	8,475.17	8,454.35	20.82	406.996				
11,900.00	7,146.80	312.00	311.99	58.25	0.28	-11.65	11.95	10.00	8,517.24	8,496.23	21.01	405.347				
12,000.00	7,146.75	312.00	311.99	59.39	0.28	-11.65	11.95	10.00	8,574.92	8,553.65	21.27	403.230				
12,100.00	7,146.69	312.00	311.99	60.53	0.28	-11.65	11.95	10.00	8,633.36	8,611.84	21.52	401.242				
12,200.00	7,146.63	312.00	311.99	61.67	0.28	-11.65	11.95	10.00	8,692.56	8,670.80	21.77	399.379				
12,300.00	7,146.58	312.00	311.99	62.82	0.28	-11.65	11.95	10.00	8,752.51	8,730.50	22.01	397.635				
12,400.00	7,146.52	312.00	311.99	63.97	0.28	-11.65	11.95	10.00	8,813.18	8,790.93	22.26	396.007				
12,500.00	7,146.46	312.00	311.99	65.12	0.28	-11.65	11.95	10.00	8,874.57	8,852.07	22.50	394.489				
12,600.00	7,146.41	312.00	311.99	66.27	0.28	-11.65	11.95	10.00	8,936.65	8,913.91	22.74	393.077				
12,700.00	7,146.35	312.00	311.99	67.42	0.28	-11.65	11.95	10.00	8,999.41	8,976.44	22.97	391.766				
12,800.00	7,146.29	312.00	311.99	68.58	0.28	-11.65	11.95	10.00	9,062.84	9,039.64	23.21	390.554				
12,900.00	7,146.24	312.00	311.99	69.73	0.28	-11.65	11.95	10.00	9,126.93	9,103.50	23.44	389.435				
13,000.00	7,146.18	312.00	311.99	70.89	0.28	-11.65	11.95	10.00	9,191.66	9,168.00	23.67	388.406				
13,100.00	7,146.13	312.00	311.99	72.05	0.28	-11.65	11.95	10.00	9,257.02	9,233.13	23.89	387.464				
13,200.00	7,146.07	312.00	311.99	73.21	0.28	-11.65	11.95	10.00	9,322.99	9,298.87	24.12	386.604				
13,300.00	7,146.01	312.00	311.99	74.37	0.28	-11.65	11.95	10.00	9,389.56	9,365.23	24.34	385.824				
13,400.00	7,145.96	312.00	311.99	75.53	0.28	-11.65	11.95	10.00	9,456.72	9,432.17	24.56	385.120				
13,500.00	7,145.90	312.00	311.99	76.70	0.28	-11.65	11.95	10.00	9,524.46	9,499.69	24.77	384.489				
13,600.00	7,145.84	312.00	311.99	77.86	0.28	-11.65	11.95	10.00	9,592.76	9,567.78	24.99	383.928				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
13,700.00	7,145.79	312.00	311.99	79.03	0.28	-11.65	11.95	10.00	9,661.62	9,636.42	25.20	383.435	
13,800.00	7,145.73	312.00	311.99	80.20	0.28	-11.65	11.95	10.00	9,731.01	9,705.61	25.41	383.005	
13,900.00	7,145.67	312.00	311.99	81.37	0.28	-11.65	11.95	10.00	9,800.94	9,775.32	25.61	382.638	
14,000.00	7,145.62	312.00	311.99	82.54	0.28	-11.65	11.95	10.00	9,871.38	9,845.56	25.82	382.330	
14,100.00	7,145.56	312.00	311.99	83.71	0.28	-11.65	11.95	10.00	9,942.33	9,916.30	26.02	382.078	
14,200.00	7,145.50	312.00	311.99	84.88	0.28	-11.65	11.95	10.00	10,013.77	9,987.55	26.22	381.882	
14,300.00	7,145.45	312.00	311.99	86.06	0.28	-11.65	11.95	10.00	10,085.70	10,059.28	26.42	381.737	
14,400.00	7,145.39	312.00	311.99	87.23	0.28	-11.65	11.95	10.00	10,158.10	10,131.49	26.62	381.643	
14,500.00	7,145.33	312.00	311.99	88.41	0.28	-11.65	11.95	10.00	10,230.97	10,204.16	26.81	381.597	
14,600.00	7,145.28	312.00	311.99	89.59	0.28	-11.65	11.95	10.00	10,304.30	10,277.30	27.00	381.596	
14,700.00	7,145.22	312.00	311.99	90.77	0.28	-11.65	11.95	10.00	10,378.07	10,350.88	27.19	381.640	
14,800.00	7,145.17	312.00	311.99	91.95	0.28	-11.65	11.95	10.00	10,452.28	10,424.89	27.38	381.727	
14,900.00	7,145.11	312.00	311.99	93.13	0.28	-11.65	11.95	10.00	10,526.91	10,499.34	27.57	381.854	
15,000.00	7,145.05	312.00	311.99	94.31	0.28	-11.65	11.95	10.00	10,601.96	10,574.21	27.75	382.020	
15,100.00	7,145.00	312.00	311.99	95.49	0.28	-11.65	11.95	10.00	10,677.42	10,649.49	27.94	382.223	
15,200.00	7,144.94	312.00	311.99	96.68	0.28	-11.65	11.95	10.00	10,753.28	10,725.17	28.12	382.462	
15,300.00	7,144.88	312.00	311.99	97.86	0.28	-11.65	11.95	10.00	10,829.53	10,801.24	28.30	382.735	
15,400.00	7,144.83	312.00	311.99	99.05	0.28	-11.65	11.95	10.00	10,906.17	10,877.70	28.47	383.041	
15,500.00	7,144.77	312.00	311.99	100.24	0.28	-11.65	11.95	10.00	10,983.18	10,954.53	28.65	383.379	
15,600.00	7,144.71	312.00	311.99	101.42	0.28	-11.65	11.95	10.00	11,060.56	11,031.74	28.82	383.747	
15,700.00	7,144.66	312.00	311.99	102.61	0.28	-11.65	11.95	10.00	11,138.30	11,109.31	29.00	384.144	
15,800.00	7,144.60	312.00	311.99	103.80	0.28	-11.65	11.95	10.00	11,216.40	11,187.23	29.17	384.568	
15,900.00	7,144.54	312.00	311.99	104.99	0.28	-11.65	11.95	10.00	11,294.83	11,265.50	29.34	385.019	
16,000.00	7,144.49	312.00	311.99	106.19	0.28	-11.65	11.95	10.00	11,373.61	11,344.11	29.50	385.496	
16,100.00	7,144.43	312.00	311.99	107.38	0.28	-11.65	11.95	10.00	11,452.72	11,423.05	29.67	385.996	
16,200.00	7,144.37	312.00	311.99	108.57	0.28	-11.65	11.95	10.00	11,532.15	11,502.32	29.84	386.520	
16,300.00	7,144.32	312.00	311.99	109.77	0.28	-11.65	11.95	10.00	11,611.90	11,581.90	30.00	387.067	
16,400.00	7,144.26	312.00	311.99	110.96	0.28	-11.65	11.95	10.00	11,691.96	11,661.80	30.16	387.634	
16,500.00	7,144.21	312.00	311.99	112.16	0.28	-11.65	11.95	10.00	11,772.33	11,742.01	30.32	388.222	
16,600.00	7,144.15	312.00	311.99	113.36	0.28	-11.65	11.95	10.00	11,853.00	11,822.51	30.48	388.830	
16,700.00	7,144.09	312.00	311.99	114.56	0.28	-11.65	11.95	10.00	11,933.95	11,903.31	30.64	389.456	
16,800.00	7,144.04	312.00	311.99	115.76	0.28	-11.65	11.95	10.00	12,015.20	11,984.40	30.80	390.100	
16,862.86	7,144.00	312.00	311.99	116.51	0.28	-11.65	11.95	10.00	12,066.41	12,035.51	30.90	390.514	
16,866.76	7,144.00	312.00	311.99	116.56	0.28	-11.60	11.95	10.00	12,069.59	12,038.69	30.90	390.540	
16,900.00	7,143.98	312.00	311.99	116.96	0.28	-11.60	11.95	10.00	12,096.73	12,065.77	30.96	390.761	
17,000.00	7,143.92	312.00	311.99	118.16	0.28	-11.60	11.95	10.00	12,178.54	12,147.42	31.11	391.439	
17,100.00	7,143.87	312.00	311.99	119.36	0.28	-11.60	11.95	10.00	12,260.61	12,229.35	31.27	392.132	
17,200.00	7,143.81	312.00	311.99	120.56	0.28	-11.60	11.95	10.00	12,342.96	12,311.54	31.42	392.840	
17,300.00	7,143.75	312.00	311.99	121.77	0.28	-11.60	11.95	10.00	12,425.56	12,393.99	31.57	393.562	
17,400.00	7,143.69	312.00	311.99	122.97	0.28	-11.60	11.95	10.00	12,508.42	12,476.69	31.72	394.298	
17,500.00	7,143.64	312.00	311.99	124.18	0.28	-11.60	11.95	10.00	12,591.52	12,559.65	31.87	395.046	
17,600.00	7,143.58	312.00	311.99	125.39	0.28	-11.60	11.95	10.00	12,674.87	12,642.85	32.02	395.807	
17,700.00	7,143.52	312.00	311.99	126.59	0.28	-11.60	11.95	10.00	12,758.46	12,726.29	32.17	396.579	
17,800.00	7,143.47	312.00	311.99	127.80	0.28	-11.60	11.95	10.00	12,842.28	12,809.96	32.32	397.362	
17,900.00	7,143.41	312.00	311.99	129.01	0.28	-11.60	11.95	10.00	12,926.33	12,893.87	32.47	398.156	
18,000.00	7,143.35	312.00	311.99	130.22	0.28	-11.60	11.95	10.00	13,010.61	12,978.00	32.61	398.960	
18,100.00	7,143.30	312.00	311.99	131.43	0.28	-11.60	11.95	10.00	13,095.11	13,062.36	32.76	399.773	
18,200.00	7,143.24	312.00	311.99	132.64	0.28	-11.60	11.95	10.00	13,179.83	13,146.93	32.90	400.595	
18,300.00	7,143.18	312.00	311.99	133.86	0.28	-11.60	11.95	10.00	13,264.76	13,231.72	33.04	401.426	
18,400.00	7,143.13	312.00	311.99	135.07	0.28	-11.60	11.95	10.00	13,349.90	13,316.71	33.19	402.264	
18,500.00	7,143.07	312.00	311.99	136.28	0.28	-11.60	11.95	10.00	13,435.24	13,401.91	33.33	403.111	
18,600.00	7,143.01	312.00	311.99	137.50	0.28	-11.60	11.95	10.00	13,520.79	13,487.32	33.47	403.964	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 42 - Rosa Unit 836H - OH - OH											Offset Site Error:		0.00 usft	
Survey Program:		125-Standard Keeper 104						Rule Assigned:						Offset Well Error:		0.00 usft
Measured Depth (usft)	Reference Vertical Depth (usft)	Measured Depth (usft)	Offset Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning			
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)						
18,700.00	7,142.96	312.00	311.99	138.72	0.28	-11.60	11.95	10.00	13,606.53	13,572.92	33.61	404.824				
18,800.00	7,142.90	312.00	311.99	139.93	0.28	-11.60	11.95	10.00	13,692.46	13,658.71	33.75	405.691				
18,900.00	7,142.84	312.00	311.99	141.15	0.28	-11.60	11.95	10.00	13,778.59	13,744.70	33.89	406.563				
19,000.00	7,142.78	312.00	311.99	142.37	0.28	-11.60	11.95	10.00	13,864.90	13,830.87	34.03	407.441				
19,100.00	7,142.73	312.00	311.99	143.59	0.28	-11.60	11.95	10.00	13,951.39	13,917.22	34.17	408.324				
19,200.00	7,142.67	312.00	311.99	144.81	0.28	-11.60	11.95	10.00	14,038.06	14,003.76	34.31	409.212				
19,300.00	7,142.61	312.00	311.99	146.03	0.28	-11.60	11.95	10.00	14,124.91	14,090.47	34.44	410.105				
19,400.00	7,142.56	312.00	311.99	147.25	0.28	-11.60	11.95	10.00	14,211.94	14,177.36	34.58	411.002				
19,500.00	7,142.50	312.00	311.99	148.47	0.28	-11.60	11.95	10.00	14,299.13	14,264.41	34.71	411.903				
19,600.00	7,142.44	312.00	311.99	149.70	0.28	-11.60	11.95	10.00	14,386.49	14,351.64	34.85	412.808				
19,700.00	7,142.39	312.00	311.99	150.92	0.28	-11.60	11.95	10.00	14,474.01	14,439.02	34.99	413.715				
19,800.00	7,142.33	312.00	311.99	152.15	0.28	-11.60	11.95	10.00	14,561.69	14,526.57	35.12	414.626				
19,900.00	7,142.27	312.00	311.99	153.37	0.28	-11.60	11.95	10.00	14,649.53	14,614.28	35.25	415.540				
20,000.00	7,142.22	312.00	311.99	154.60	0.28	-11.60	11.95	10.00	14,737.53	14,702.14	35.39	416.456				
20,100.00	7,142.16	312.00	311.99	155.83	0.28	-11.60	11.95	10.00	14,825.67	14,790.15	35.52	417.375				
20,200.00	7,142.10	312.00	311.99	157.06	0.28	-11.60	11.95	10.00	14,913.97	14,878.32	35.65	418.295				
20,300.00	7,142.04	312.00	311.99	158.28	0.28	-11.60	11.95	10.00	15,002.42	14,966.63	35.79	419.218				
20,400.00	7,141.99	312.00	311.99	159.51	0.28	-11.60	11.95	10.00	15,091.01	15,055.09	35.92	420.142				
20,500.00	7,141.93	312.00	311.99	160.74	0.28	-11.60	11.95	10.00	15,179.74	15,143.68	36.05	421.067				
20,600.00	7,141.87	312.00	311.99	161.98	0.28	-11.60	11.95	10.00	15,268.61	15,232.42	36.18	421.993				
20,700.00	7,141.82	312.00	311.99	163.21	0.28	-11.60	11.95	10.00	15,357.61	15,321.30	36.31	422.921				
20,800.00	7,141.76	312.00	311.99	164.44	0.28	-11.60	11.95	10.00	15,446.75	15,410.31	36.44	423.849				
20,900.00	7,141.70	312.00	311.99	165.68	0.28	-11.60	11.95	10.00	15,536.03	15,499.45	36.57	424.778				
21,000.00	7,141.65	312.00	311.99	166.91	0.28	-11.60	11.95	10.00	15,625.43	15,588.72	36.70	425.707				
21,100.00	7,141.59	312.00	311.99	168.15	0.28	-11.60	11.95	10.00	15,714.96	15,678.13	36.83	426.636				
21,200.00	7,141.53	312.00	311.99	169.38	0.28	-11.60	11.95	10.00	15,804.62	15,767.65	36.96	427.566				
21,300.00	7,141.48	312.00	311.99	170.62	0.28	-11.60	11.95	10.00	15,894.40	15,857.30	37.09	428.495				
21,400.00	7,141.42	312.00	311.99	171.86	0.28	-11.60	11.95	10.00	15,984.30	15,947.07	37.22	429.424				
21,500.00	7,141.36	312.00	311.99	173.10	0.28	-11.60	11.95	10.00	16,074.32	16,036.97	37.35	430.352				
21,600.00	7,141.31	312.00	311.99	174.34	0.28	-11.60	11.95	10.00	16,164.46	16,126.98	37.48	431.280				
21,700.00	7,141.25	312.00	311.99	175.58	0.28	-11.60	11.95	10.00	16,254.71	16,217.10	37.61	432.207				
21,800.00	7,141.19	312.00	311.99	176.82	0.28	-11.60	11.95	10.00	16,345.08	16,307.34	37.74	433.134				
21,900.00	7,141.13	312.00	311.99	178.06	0.28	-11.60	11.95	10.00	16,435.55	16,397.69	37.86	434.059				
22,000.00	7,141.08	312.00	311.99	179.30	0.28	-11.60	11.95	10.00	16,526.14	16,488.15	37.99	434.983				
22,100.00	7,141.02	312.00	311.99	180.55	0.28	-11.60	11.95	10.00	16,616.84	16,578.72	38.12	435.906				
22,136.53	7,141.00	312.00	311.99	181.00	0.28	-11.60	11.95	10.00	16,650.00	16,611.83	38.17	436.243				
22,137.77	7,141.00	312.00	311.99	181.02	0.28	-11.63	11.95	10.00	16,651.12	16,612.95	38.17	436.255				
22,200.00	7,140.96	312.00	311.99	181.79	0.28	-11.63	11.95	10.00	16,707.64	16,669.39	38.25	436.828				
22,300.00	7,140.91	312.00	311.99	183.04	0.28	-11.63	11.95	10.00	16,798.54	16,760.17	38.37	437.748				
22,400.00	7,140.85	312.00	311.99	184.28	0.28	-11.63	11.95	10.00	16,889.55	16,851.05	38.50	438.667				
22,500.00	7,140.79	312.00	311.99	185.53	0.28	-11.63	11.95	10.00	16,980.66	16,942.03	38.63	439.583				
22,600.00	7,140.73	312.00	311.99	186.78	0.28	-11.63	11.95	10.00	17,071.87	17,033.11	38.76	440.499				
22,700.00	7,140.68	312.00	311.99	188.02	0.28	-11.63	11.95	10.00	17,163.17	17,124.29	38.88	441.412				
22,800.00	7,140.62	312.00	311.99	189.27	0.28	-11.63	11.95	10.00	17,254.57	17,215.57	39.01	442.323				
22,900.00	7,140.56	312.00	311.99	190.52	0.28	-11.63	11.95	10.00	17,346.07	17,306.94	39.14	443.232				
23,000.00	7,140.50	312.00	311.99	191.77	0.28	-11.63	11.95	10.00	17,437.66	17,398.40	39.26	444.139				
23,100.00	7,140.45	312.00	311.99	193.02	0.28	-11.63	11.95	10.00	17,529.35	17,489.96	39.39	445.044				
23,200.00	7,140.39	312.00	311.99	194.28	0.28	-11.63	11.95	10.00	17,621.12	17,581.60	39.51	445.946				
23,300.00	7,140.33	312.00	311.99	195.53	0.28	-11.63	11.95	10.00	17,712.98	17,673.34	39.64	446.846				
23,400.00	7,140.27	312.00	311.99	196.78	0.28	-11.63	11.95	10.00	17,804.93	17,765.16	39.77	447.744				
23,500.00	7,140.22	312.00	311.99	198.04	0.28	-11.63	11.95	10.00	17,896.97	17,857.07	39.89	448.639				
23,600.00	7,140.16	312.00	311.99	199.29	0.28	-11.63	11.95	10.00	17,989.09	17,949.07	40.02	449.531				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - OH													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis		Distance		Rule Assigned:		Warning					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
23,700.00	7,140.10	312.00	311.99	200.55	0.28	-11.63	11.95	10.00	18,081.29	18,041.15	40.14	450.421	
23,800.00	7,140.04	312.00	311.99	201.81	0.28	-11.63	11.95	10.00	18,173.58	18,133.31	40.27	451.308	
23,900.00	7,139.99	312.00	311.99	203.06	0.28	-11.63	11.95	10.00	18,265.95	18,225.55	40.39	452.193	
24,000.00	7,139.93	312.00	311.99	204.32	0.28	-11.63	11.95	10.00	18,358.40	18,317.88	40.52	453.074	
24,100.00	7,139.87	312.00	311.99	205.58	0.28	-11.63	11.95	10.00	18,450.92	18,410.28	40.65	453.953	
24,200.00	7,139.81	312.00	311.99	206.84	0.28	-11.63	11.95	10.00	18,543.53	18,502.76	40.77	454.828	
24,300.00	7,139.76	312.00	311.99	208.10	0.28	-11.63	11.95	10.00	18,636.21	18,595.31	40.90	455.701	
24,400.00	7,139.70	312.00	311.99	209.36	0.28	-11.63	11.95	10.00	18,728.97	18,687.95	41.02	456.570	
24,500.00	7,139.64	312.00	311.99	210.62	0.28	-11.63	11.95	10.00	18,821.80	18,780.65	41.15	457.436	
24,600.00	7,139.58	312.00	311.99	211.89	0.28	-11.63	11.95	10.00	18,914.70	18,873.43	41.27	458.300	
24,700.00	7,139.53	312.00	311.99	213.15	0.28	-11.63	11.95	10.00	19,007.68	18,966.28	41.40	459.160	
24,800.00	7,139.47	312.00	311.99	214.42	0.28	-11.63	11.95	10.00	19,100.72	19,059.20	41.52	460.017	
24,900.00	7,139.41	312.00	311.99	215.68	0.28	-11.63	11.95	10.00	19,193.84	19,152.19	41.65	460.870	
25,000.00	7,139.35	312.00	311.99	216.95	0.28	-11.63	11.95	10.00	19,287.03	19,245.25	41.77	461.721	
25,100.00	7,139.30	312.00	311.99	218.21	0.28	-11.63	11.95	10.00	19,380.28	19,338.38	41.90	462.567	
25,200.00	7,139.24	312.00	311.99	219.48	0.28	-11.63	11.95	10.00	19,473.60	19,431.58	42.02	463.411	
25,300.00	7,139.18	312.00	311.99	220.75	0.28	-11.63	11.95	10.00	19,566.99	19,524.84	42.15	464.251	
25,400.00	7,139.13	312.00	311.99	222.02	0.28	-11.63	11.95	10.00	19,660.44	19,618.17	42.27	465.088	
25,500.00	7,139.07	312.00	311.99	223.29	0.28	-11.63	11.95	10.00	19,753.95	19,711.56	42.40	465.921	
25,600.00	7,139.01	312.00	311.99	224.56	0.28	-11.63	11.95	10.00	19,847.53	19,805.01	42.52	466.751	
25,700.00	7,138.95	312.00	311.99	225.83	0.28	-11.63	11.95	10.00	19,941.17	19,898.53	42.65	467.578	
25,800.00	7,138.90	312.00	311.99	227.10	0.28	-11.63	11.95	10.00	20,034.88	19,992.10	42.77	468.400	
25,900.00	7,138.84	312.00	311.99	228.38	0.28	-11.63	11.95	10.00	20,128.64	20,085.74	42.90	469.220	
26,000.00	7,138.78	312.00	311.99	229.65	0.28	-11.63	11.95	10.00	20,222.46	20,179.44	43.02	470.035	
26,100.00	7,138.72	312.00	311.99	230.93	0.28	-11.63	11.95	10.00	20,316.34	20,273.20	43.15	470.848	
26,200.00	7,138.67	312.00	311.99	232.20	0.28	-11.63	11.95	10.00	20,410.28	20,367.01	43.27	471.656	
26,300.00	7,138.61	312.00	311.99	233.48	0.28	-11.63	11.95	10.00	20,504.28	20,460.88	43.40	472.461	
26,400.00	7,138.55	312.00	311.99	234.75	0.28	-11.63	11.95	10.00	20,598.34	20,554.81	43.52	473.262	
26,500.00	7,138.49	312.00	311.99	236.03	0.28	-11.63	11.95	10.00	20,692.45	20,648.80	43.65	474.060	
26,600.00	7,138.44	312.00	311.99	237.31	0.28	-11.63	11.95	10.00	20,786.61	20,742.84	43.77	474.854	
26,700.00	7,138.38	312.00	311.99	238.59	0.28	-11.63	11.95	10.00	20,880.83	20,836.93	43.90	475.644	
26,800.00	7,138.32	312.00	311.99	239.87	0.28	-11.63	11.95	10.00	20,975.10	20,931.08	44.03	476.431	
26,900.00	7,138.26	312.00	311.99	241.15	0.28	-11.63	11.95	10.00	21,069.43	21,025.28	44.15	477.214	
27,000.00	7,138.21	312.00	311.99	242.43	0.28	-11.63	11.95	10.00	21,163.80	21,119.53	44.28	477.993	
27,100.00	7,138.15	312.00	311.99	243.71	0.28	-11.63	11.95	10.00	21,258.23	21,213.83	44.40	478.769	
27,157.78	7,138.12	312.00	311.99	244.46	0.28	-11.63	11.95	10.00	21,312.82	21,268.34	44.47	479.215	
27,200.00	7,138.09	312.00	311.99	245.00	0.28	-11.63	11.95	10.00	21,352.71	21,308.19	44.53	479.540	
27,300.00	7,138.03	312.00	311.99	246.28	0.28	-11.63	11.95	10.00	21,447.24	21,402.59	44.65	480.309	
27,357.78	7,138.00	312.00	311.99	247.02	0.28	-11.63	11.95	10.00	21,501.88	21,457.16	44.73	480.751	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104, 312-MWD+HRGM+MS													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis	Rule Assigned:										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.00	0.00	34.43	12.38	8.48	15.01				
125.00	125.00	125.00	125.00	0.05	0.06	33.63	12.07	8.78	14.46	14.37	0.09	161.956	
214.79	214.78	214.69	214.68	0.18	0.16	38.21	11.96	9.35	14.09	13.83	0.26	54.808	
225.00	224.99	224.89	224.88	0.19	0.17	38.69	11.99	9.43	14.09	13.82	0.28	51.030	
290.00	289.99	289.97	289.96	0.28	0.25	26.58	12.02	9.89	14.00	13.60	0.41	34.464	
300.00	299.99	299.98	299.97	0.29	0.26	26.94	11.99	9.94	13.96	13.53	0.43	32.700	
400.00	399.99	399.99	399.98	0.42	0.37	30.92	11.59	10.42	13.43	12.80	0.63	21.212	
440.00	439.99	439.98	439.98	0.47	0.46	32.61	11.42	10.61	13.24	12.45	0.79	16.848	
460.94	460.93	460.92	460.91	0.48	0.50	-60.83	11.34	10.71	13.19	12.34	0.85	15.490 CC	
500.00	499.99	500.06	500.04	0.50	0.62	-120.15	10.93	10.96	13.25	12.25	1.00	13.278 ES	
600.00	599.93	600.06	600.02	0.47	0.94	-127.95	8.94	11.84	14.52	13.17	1.35	10.732	
700.00	699.70	699.94	699.88	0.48	1.28	-138.73	6.94	12.71	18.32	16.58	1.73	10.577	
800.00	799.18	799.60	799.52	0.52	1.63	-149.75	4.94	13.59	25.44	23.32	2.12	11.984	
900.00	898.24	898.92	898.81	0.60	1.98	-157.98	2.94	14.46	36.28	33.74	2.54	14.301	
1,000.00	996.77	997.77	997.63	0.69	2.33	-163.51	0.96	15.33	50.82	47.85	2.97	17.103	
1,074.04	1,069.30	1,070.58	1,070.43	0.77	2.59	-166.38	-0.50	15.97	63.91	60.61	3.30	19.354	
1,100.00	1,094.67	1,096.05	1,095.90	0.79	2.68	-167.19	-1.01	16.19	68.86	65.44	3.42	20.136	
1,200.00	1,192.37	1,194.16	1,193.98	0.91	3.03	-169.44	-2.98	17.05	87.98	84.11	3.88	22.693	
1,300.00	1,290.07	1,292.27	1,292.06	1.02	3.38	-170.89	-4.95	17.92	107.19	102.85	4.34	24.694	
1,400.00	1,387.77	1,390.37	1,390.15	1.15	3.73	-171.90	-6.92	18.78	126.45	121.64	4.81	26.296	
1,500.00	1,485.47	1,488.48	1,488.23	1.27	4.09	-172.64	-8.89	19.64	145.74	140.46	5.28	27.604	
1,600.00	1,583.17	1,586.59	1,586.32	1.40	4.44	-173.20	-10.85	20.50	165.04	159.29	5.75	28.690	
1,700.00	1,680.87	1,684.70	1,684.40	1.53	4.79	-173.65	-12.82	21.36	184.35	178.13	6.23	29.605	
1,800.00	1,778.57	1,782.81	1,782.49	1.67	5.14	-174.02	-14.79	22.23	203.68	196.97	6.70	30.386	
1,900.00	1,876.27	1,880.91	1,880.57	1.81	5.50	-174.32	-16.76	23.09	223.01	215.83	7.18	31.060	
2,000.00	1,973.98	1,979.02	1,978.65	1.95	5.85	-174.57	-18.73	23.95	242.34	234.68	7.66	31.648	
2,100.00	2,071.68	2,077.13	2,076.74	2.09	6.20	-174.79	-20.70	24.81	261.68	253.54	8.14	32.164	
2,200.00	2,169.38	2,175.24	2,174.82	2.24	6.56	-174.97	-22.66	25.67	281.02	272.41	8.61	32.622	
2,300.00	2,267.08	2,273.34	2,272.91	2.39	6.91	-175.13	-24.63	26.53	300.37	291.27	9.09	33.030	
2,400.00	2,364.78	2,371.45	2,370.99	2.55	7.26	-175.28	-26.60	27.40	319.71	310.14	9.57	33.395	
2,500.00	2,462.48	2,469.56	2,469.08	2.70	7.62	-175.40	-28.57	28.26	339.06	329.01	10.05	33.725	
2,600.00	2,560.18	2,567.67	2,567.16	2.86	7.97	-175.51	-30.54	29.12	358.41	347.88	10.53	34.024	
2,700.00	2,657.88	2,665.78	2,665.24	3.02	8.32	-175.61	-32.51	29.98	377.76	366.75	11.01	34.297	
2,800.00	2,755.58	2,763.88	2,763.33	3.19	8.68	-175.71	-34.47	30.84	397.11	385.62	11.50	34.545	
2,900.00	2,853.28	2,861.99	2,861.41	3.35	9.03	-175.79	-36.44	31.70	416.47	404.49	11.98	34.774	
3,000.00	2,950.99	2,960.10	2,959.50	3.52	9.38	-175.86	-38.41	32.57	435.82	423.36	12.46	34.984	
3,100.00	3,048.69	3,058.21	3,057.58	3.69	9.74	-175.93	-40.38	33.43	455.17	442.23	12.94	35.178	
3,200.00	3,146.39	3,156.32	3,155.67	3.87	10.09	-176.00	-42.35	34.29	474.53	461.11	13.42	35.357	
3,300.00	3,244.09	3,254.42	3,253.75	4.04	10.44	-176.05	-44.32	35.15	493.88	479.98	13.90	35.524	
3,400.00	3,341.79	3,352.53	3,351.84	4.22	10.80	-176.11	-46.29	36.01	513.24	498.85	14.38	35.680	
3,500.00	3,439.49	3,450.64	3,449.92	4.40	11.15	-176.16	-48.25	36.87	532.59	517.73	14.87	35.824	
3,600.00	3,537.19	3,548.75	3,548.00	4.58	11.50	-176.20	-50.22	37.74	551.95	536.60	15.35	35.960	
3,700.00	3,634.89	3,646.85	3,646.09	4.77	11.86	-176.25	-52.19	38.60	571.31	555.48	15.83	36.087	
3,800.00	3,732.59	3,744.96	3,744.17	4.95	12.21	-176.29	-54.16	39.46	590.66	574.35	16.31	36.206	
3,900.00	3,830.29	3,843.07	3,842.26	5.14	12.56	-176.33	-56.13	40.32	610.02	593.22	16.80	36.318	
4,000.00	3,928.00	3,941.18	3,940.34	5.33	12.92	-176.36	-58.10	41.18	629.38	612.10	17.28	36.423	
4,100.00	4,025.70	4,039.29	4,038.43	5.53	13.27	-176.39	-60.06	42.04	648.74	630.97	17.76	36.523	
4,200.00	4,123.40	4,137.39	4,136.51	5.72	13.62	-176.43	-62.03	42.91	668.09	649.85	18.25	36.617	
4,300.00	4,221.10	4,235.50	4,234.59	5.92	13.98	-176.46	-64.00	43.77	687.45	668.72	18.73	36.706	
4,400.00	4,318.80	4,333.61	4,332.68	6.12	14.33	-176.48	-65.97	44.63	706.81	687.60	19.21	36.790	
4,500.00	4,416.50	4,431.72	4,430.76	6.32	14.68	-176.51	-67.94	45.49	726.17	706.47	19.70	36.870	
4,600.00	4,514.20	4,529.82	4,528.85	6.52	15.04	-176.54	-69.91	46.35	745.53	725.35	20.18	36.945	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3												Offset Site Error:	0.00 usft
Survey Program: 125-Standard Keeper 104, 312-MWD+HRGM+MS												Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
4,700.00	4,611.90	4,627.93	4,626.93	6.73	15.39	-176.56	-71.88	47.21	764.89	744.22	20.66	37.017	
4,800.00	4,709.60	4,726.04	4,725.02	6.94	15.74	-176.58	-73.84	48.08	784.25	763.10	21.15	37.086	
4,900.00	4,807.30	4,824.15	4,823.10	7.14	16.10	-176.60	-75.81	48.94	803.60	781.97	21.63	37.151	
5,000.00	4,905.00	4,922.26	4,921.18	7.36	16.45	-176.63	-77.78	49.80	822.96	800.85	22.11	37.213	
5,100.00	5,002.71	5,020.36	5,019.27	7.57	16.80	-176.64	-79.75	50.66	842.32	819.72	22.60	37.273	
5,200.00	5,100.41	5,118.47	5,117.35	7.78	17.16	-176.66	-81.72	51.52	861.68	838.60	23.08	37.329	
5,300.00	5,198.11	5,216.58	5,215.44	8.00	17.51	-176.68	-83.69	52.38	881.04	857.47	23.57	37.383	
5,400.00	5,295.81	5,314.69	5,313.52	8.22	17.86	-176.70	-85.65	53.25	900.40	876.35	24.05	37.435	
5,500.00	5,393.51	5,412.80	5,411.61	8.44	18.22	-176.72	-87.62	54.11	919.76	895.22	24.54	37.485	
5,600.00	5,491.21	5,510.90	5,509.69	8.66	18.57	-176.73	-89.59	54.97	939.12	914.10	25.02	37.532	
5,700.00	5,588.91	5,609.01	5,607.77	8.89	18.92	-176.75	-91.56	55.83	958.48	932.97	25.51	37.577	
5,800.00	5,686.61	5,707.12	5,705.86	9.11	19.28	-176.76	-93.53	56.69	977.84	951.85	25.99	37.621	
5,900.00	5,784.31	5,805.23	5,803.94	9.34	19.63	-176.77	-95.50	57.55	997.20	970.72	26.48	37.663	
6,000.00	5,882.01	5,903.33	5,902.03	9.57	19.98	-176.79	-97.47	58.42	1,016.56	989.60	26.96	37.703	
6,100.00	5,979.72	6,001.44	6,000.11	9.80	20.34	-176.80	-99.43	59.28	1,035.92	1,008.47	27.45	37.741	
6,200.00	6,077.42	6,099.55	6,098.20	10.04	20.69	-176.81	-101.40	60.14	1,055.28	1,027.34	27.93	37.778	
6,300.00	6,175.12	6,197.66	6,196.28	10.27	21.04	-176.83	-103.37	61.00	1,074.64	1,046.22	28.42	37.814	
6,400.00	6,272.82	6,295.77	6,294.36	10.51	21.40	-176.84	-105.34	61.86	1,094.00	1,065.09	28.91	37.848	
6,500.00	6,370.52	6,393.87	6,392.45	10.75	21.75	-176.85	-107.31	62.73	1,113.36	1,083.97	29.39	37.881	
6,600.00	6,468.22	6,491.98	6,490.53	10.99	22.10	-176.86	-109.28	63.59	1,132.72	1,102.84	29.88	37.912	
6,662.10	6,528.89	6,550.00	6,548.53	11.14	22.31	-176.85	-110.44	64.36	1,144.75	1,114.58	30.17	37.943	
6,700.00	6,565.90	6,586.12	6,584.56	11.23	22.44	-160.93	-111.16	66.75	1,152.13	1,121.78	30.35	37.961	
6,750.00	6,614.48	6,631.75	6,629.78	11.35	22.60	-143.19	-112.07	72.68	1,161.80	1,131.22	30.58	37.994	
6,800.00	6,662.53	6,677.33	6,674.42	11.47	22.76	-130.14	-112.97	81.82	1,171.35	1,140.54	30.80	38.027	
6,850.00	6,709.74	6,722.91	6,718.29	11.60	22.92	-120.84	-113.85	94.13	1,180.71	1,149.69	31.03	38.056	
6,900.00	6,755.82	6,768.50	6,761.17	11.72	23.08	-114.09	-114.72	109.55	1,189.84	1,158.59	31.25	38.076	
6,950.00	6,800.49	6,814.15	6,802.90	11.85	23.23	-109.04	-115.56	128.03	1,198.67	1,167.19	31.48	38.080	
7,000.00	6,843.48	6,859.89	6,843.26	11.98	23.38	-105.14	-116.37	149.49	1,207.15	1,175.44	31.71	38.064	
7,050.00	6,884.52	6,905.73	6,882.08	12.12	23.53	-102.05	-117.15	173.86	1,215.24	1,183.27	31.96	38.021	
7,100.00	6,923.35	6,951.72	6,919.15	12.27	23.68	-99.55	-117.90	201.05	1,222.87	1,190.65	32.23	37.945	
7,150.00	6,959.74	6,997.87	6,954.28	12.42	23.84	-97.51	-118.61	230.95	1,230.02	1,197.50	32.51	37.831	
7,200.00	6,993.46	7,044.20	6,987.28	12.60	24.01	-95.82	-119.28	263.45	1,236.63	1,203.80	32.82	37.673	
7,250.00	7,024.30	7,090.74	7,017.96	12.79	24.18	-94.44	-119.90	298.42	1,242.66	1,209.50	33.17	37.469	
7,300.00	7,052.08	7,137.50	7,046.14	12.99	24.37	-93.30	-120.48	335.73	1,248.09	1,214.55	33.54	37.214	
7,350.00	7,076.62	7,184.50	7,071.62	13.22	24.56	-92.38	-120.99	375.20	1,252.87	1,218.93	33.95	36.907	
7,400.00	7,097.78	7,231.74	7,094.22	13.46	24.77	-91.65	-121.46	416.67	1,256.99	1,222.60	34.39	36.547	
7,450.00	7,115.41	7,279.24	7,113.79	13.71	25.00	-91.10	-121.86	459.93	1,260.41	1,225.53	34.88	36.136	
7,500.00	7,129.42	7,327.00	7,130.17	13.99	25.24	-90.71	-122.19	504.78	1,263.12	1,227.72	35.40	35.677	
7,550.00	7,139.71	7,375.02	7,143.19	14.28	25.49	-90.48	-122.46	550.99	1,265.11	1,229.14	35.97	35.173	
7,600.00	7,146.22	7,423.31	7,152.74	14.58	25.75	-90.39	-122.66	598.31	1,266.35	1,229.78	36.57	34.629	
7,650.00	7,148.92	7,471.86	7,158.70	14.90	26.03	-90.44	-122.79	646.48	1,266.84	1,229.64	37.20	34.052	
7,660.51	7,149.00	7,482.10	7,159.49	14.97	26.09	-90.47	-122.81	656.69	1,266.85	1,229.51	37.34	33.927	
7,700.00	7,148.98	7,520.70	7,160.98	15.23	26.32	-90.54	-122.85	695.26	1,266.83	1,228.97	37.87	33.455	
7,704.45	7,148.98	7,525.06	7,161.00	15.26	26.35	-90.54	-122.85	699.62	1,266.83	1,228.90	37.93	33.401	
7,800.00	7,148.93	7,620.58	7,160.96	15.92	26.97	-90.54	-122.87	795.14	1,266.84	1,227.51	39.32	32.217	
7,900.00	7,148.88	7,720.58	7,160.92	16.66	27.69	-90.54	-122.88	895.14	1,266.84	1,225.94	40.90	30.972	
8,000.00	7,148.82	7,820.58	7,160.88	17.44	28.49	-90.55	-122.90	995.14	1,266.84	1,224.25	42.60	29.741	
8,100.00	7,148.77	7,920.58	7,160.84	18.25	29.35	-90.55	-122.92	1,095.14	1,266.85	1,222.46	44.39	28.539	
8,200.00	7,148.72	8,020.58	7,160.80	19.10	30.27	-90.55	-122.94	1,195.14	1,266.85	1,220.58	46.27	27.378	
8,300.00	7,148.67	8,120.58	7,160.76	19.97	31.25	-90.55	-122.95	1,295.14	1,266.85	1,218.62	48.23	26.264	
8,400.00	7,148.62	8,220.58	7,160.72	20.86	32.28	-90.55	-122.97	1,395.14	1,266.86	1,216.59	50.27	25.203	
8,500.00	7,148.57	8,320.58	7,160.68	21.78	33.35	-90.55	-122.99	1,495.14	1,266.86	1,214.50	52.36	24.195	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 312-MWD+HRGM+MS							Rule Assigned:				Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance			Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)			
8,600.00	7,148.51	8,420.58	7,160.64	22.71	34.46	-90.55	-123.01	1,595.14	1,266.86	1,212.35	54.51	23.241		
8,700.00	7,148.46	8,520.58	7,160.60	23.67	35.61	-90.55	-123.03	1,695.14	1,266.87	1,210.16	56.71	22.340		
8,800.00	7,148.41	8,620.58	7,160.56	24.63	36.80	-90.55	-123.04	1,795.14	1,266.87	1,207.92	58.95	21.489		
8,900.00	7,148.36	8,720.58	7,160.52	25.62	38.01	-90.55	-123.06	1,895.14	1,266.87	1,205.64	61.24	20.688		
9,000.00	7,148.31	8,820.58	7,160.47	26.61	39.25	-90.55	-123.08	1,995.14	1,266.88	1,203.32	63.56	19.933		
9,100.00	7,148.26	8,920.58	7,160.43	27.62	40.52	-90.55	-123.10	2,095.14	1,266.88	1,200.97	65.91	19.221		
9,200.00	7,148.20	9,020.58	7,160.39	28.64	41.81	-90.55	-123.11	2,195.14	1,266.89	1,198.59	68.29	18.551		
9,300.00	7,148.15	9,120.58	7,160.35	29.66	43.13	-90.55	-123.13	2,295.14	1,266.89	1,196.19	70.70	17.919		
9,400.00	7,148.10	9,220.58	7,160.31	30.70	44.46	-90.55	-123.15	2,395.14	1,266.89	1,193.76	73.14	17.323		
9,500.00	7,148.05	9,320.58	7,160.27	31.74	45.81	-90.55	-123.17	2,495.14	1,266.90	1,191.31	75.59	16.760		
9,600.00	7,148.00	9,420.58	7,160.23	32.79	47.17	-90.55	-123.18	2,595.14	1,266.90	1,188.83	78.07	16.229		
9,700.00	7,147.94	9,520.58	7,160.19	33.85	48.55	-90.55	-123.20	2,695.14	1,266.90	1,186.34	80.56	15.726		
9,800.00	7,147.89	9,620.58	7,160.15	34.92	49.94	-90.55	-123.22	2,795.14	1,266.91	1,183.84	83.07	15.251		
9,900.00	7,147.84	9,720.58	7,160.11	35.99	51.35	-90.55	-123.24	2,895.14	1,266.91	1,181.31	85.60	14.801		
10,000.00	7,147.79	9,820.58	7,160.07	37.07	52.76	-90.56	-123.26	2,995.14	1,266.91	1,178.78	88.14	14.374		
10,100.00	7,147.74	9,920.58	7,160.03	38.15	54.19	-90.56	-123.27	3,095.14	1,266.92	1,176.22	90.69	13.969		
10,200.00	7,147.69	10,020.58	7,159.99	39.24	55.62	-90.56	-123.29	3,195.14	1,266.92	1,173.66	93.26	13.585		
10,300.00	7,147.63	10,120.58	7,159.95	40.33	57.07	-90.56	-123.31	3,295.14	1,266.92	1,171.09	95.84	13.220		
10,400.00	7,147.58	10,220.58	7,159.91	41.42	58.52	-90.56	-123.33	3,395.14	1,266.93	1,168.50	98.43	12.872		
10,500.00	7,147.53	10,320.58	7,159.87	42.52	59.98	-90.56	-123.34	3,495.14	1,266.93	1,165.91	101.02	12.541		
10,600.00	7,147.48	10,420.58	7,159.82	43.63	61.45	-90.56	-123.36	3,595.14	1,266.93	1,163.30	103.63	12.225		
10,700.00	7,147.43	10,520.58	7,159.78	44.73	62.92	-90.56	-123.38	3,695.14	1,266.94	1,160.69	106.25	11.925		
10,800.00	7,147.38	10,620.58	7,159.74	45.85	64.40	-90.56	-123.40	3,795.14	1,266.94	1,158.07	108.87	11.637		
10,900.00	7,147.32	10,720.58	7,159.70	46.96	65.89	-90.56	-123.42	3,895.14	1,266.95	1,155.44	111.50	11.363		
11,000.00	7,147.27	10,820.58	7,159.66	48.08	67.38	-90.56	-123.43	3,995.14	1,266.95	1,152.81	114.14	11.100		
11,100.00	7,147.22	10,920.58	7,159.62	49.20	68.88	-90.56	-123.45	4,095.14	1,266.95	1,150.17	116.79	10.849		
11,200.00	7,147.17	11,020.58	7,159.58	50.32	70.38	-90.56	-123.47	4,195.14	1,266.96	1,147.52	119.44	10.608		
11,300.00	7,147.12	11,120.58	7,159.54	51.44	71.88	-90.56	-123.49	4,295.14	1,266.96	1,144.87	122.09	10.377		
11,400.00	7,147.07	11,220.58	7,159.50	52.57	73.39	-90.56	-123.50	4,395.14	1,266.96	1,142.21	124.76	10.155		
11,500.00	7,147.01	11,320.58	7,159.46	53.70	74.90	-90.56	-123.52	4,495.14	1,266.97	1,139.54	127.42	9.943		
11,600.00	7,146.96	11,420.58	7,159.42	54.84	76.42	-90.56	-123.54	4,595.14	1,266.97	1,136.87	130.10	9.739		
11,700.00	7,146.91	11,520.58	7,159.38	55.97	77.94	-90.56	-123.56	4,695.14	1,266.97	1,134.20	132.78	9.542		
11,800.00	7,146.86	11,620.58	7,159.34	57.11	79.46	-90.56	-123.57	4,795.14	1,266.98	1,131.52	135.46	9.353		
11,815.51	7,146.85	11,636.09	7,159.33	57.28	79.70	-90.56	-123.58	4,810.66	1,266.98	1,131.10	135.87	9.325		
11,826.17	7,146.84	11,646.26	7,159.33	57.40	79.86	-90.56	-123.58	4,820.82	1,266.97	1,130.82	136.15	9.306		
11,900.00	7,146.80	11,720.09	7,159.30	58.25	80.98	-90.57	-123.56	4,894.65	1,266.86	1,128.73	138.13	9.171		
12,000.00	7,146.75	11,820.09	7,159.26	59.39	82.51	-90.57	-123.54	4,994.65	1,266.72	1,125.90	140.82	8.995		
12,100.00	7,146.69	11,920.09	7,159.22	60.53	84.04	-90.57	-123.52	5,094.65	1,266.58	1,123.06	143.52	8.825		
12,200.00	7,146.63	12,020.09	7,159.17	61.67	85.58	-90.57	-123.50	5,194.65	1,266.43	1,120.22	146.21	8.661		
12,300.00	7,146.58	12,120.09	7,159.13	62.82	87.12	-90.57	-123.48	5,294.65	1,266.29	1,117.37	148.92	8.503		
12,400.00	7,146.52	12,220.09	7,159.09	63.97	88.66	-90.57	-123.45	5,394.65	1,266.15	1,114.53	151.62	8.351		
12,500.00	7,146.46	12,320.09	7,159.05	65.12	90.20	-90.57	-123.43	5,494.65	1,266.00	1,111.67	154.33	8.203		
12,600.00	7,146.41	12,420.09	7,159.01	66.27	91.74	-90.57	-123.41	5,594.65	1,265.86	1,108.82	157.04	8.061		
12,700.00	7,146.35	12,520.09	7,158.97	67.42	93.29	-90.57	-123.39	5,694.65	1,265.72	1,105.96	159.76	7.923		
12,800.00	7,146.29	12,620.09	7,158.93	68.58	94.83	-90.57	-123.37	5,794.65	1,265.57	1,103.10	162.48	7.789		
12,900.00	7,146.24	12,720.09	7,158.89	69.73	96.38	-90.57	-123.35	5,894.65	1,265.43	1,100.24	165.20	7.660		
13,000.00	7,146.18	12,820.09	7,158.85	70.89	97.93	-90.57	-123.33	5,994.65	1,265.29	1,097.37	167.92	7.535		
13,100.00	7,146.13	12,920.09	7,158.81	72.05	99.49	-90.57	-123.30	6,094.65	1,265.14	1,094.50	170.65	7.414		
13,200.00	7,146.07	13,020.09	7,158.77	73.21	101.04	-90.58	-123.28	6,194.65	1,265.00	1,091.63	173.37	7.296		
13,300.00	7,146.01	13,120.09	7,158.72	74.37	102.60	-90.58	-123.26	6,294.65	1,264.86	1,088.75	176.10	7.182		
13,400.00	7,145.96	13,220.09	7,158.68	75.53	104.15	-90.58	-123.24	6,394.65	1,264.71	1,085.88	178.84	7.072		
13,500.00	7,145.90	13,320.09	7,158.64	76.70	105.71	-90.58	-123.22	6,494.65	1,264.57	1,083.00	181.57	6.965		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 312-MWD+HRGM+MS					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor		
13,600.00	7,145.84	13,420.09	7,158.60	77.86	107.27	-90.58	-123.20	6,594.65	1,264.43	1,080.12	184.31	6.860		
13,700.00	7,145.79	13,520.09	7,158.56	79.03	108.83	-90.58	-123.18	6,694.65	1,264.28	1,077.23	187.05	6.759		
13,800.00	7,145.73	13,620.09	7,158.52	80.20	110.39	-90.58	-123.15	6,794.65	1,264.14	1,074.35	189.79	6.661		
13,900.00	7,145.67	13,720.09	7,158.48	81.37	111.96	-90.58	-123.13	6,894.65	1,264.00	1,071.46	192.54	6.565		
14,000.00	7,145.62	13,820.09	7,158.44	82.54	113.52	-90.58	-123.11	6,994.65	1,263.85	1,068.57	195.28	6.472		
14,100.00	7,145.56	13,920.09	7,158.40	83.71	115.09	-90.58	-123.09	7,094.65	1,263.71	1,065.68	198.03	6.381		
14,200.00	7,145.50	14,020.09	7,158.36	84.88	116.65	-90.58	-123.07	7,194.65	1,263.57	1,062.79	200.78	6.293		
14,300.00	7,145.45	14,120.09	7,158.32	86.06	118.22	-90.58	-123.05	7,294.65	1,263.42	1,059.89	203.53	6.207		
14,400.00	7,145.39	14,220.09	7,158.28	87.23	119.79	-90.58	-123.03	7,394.65	1,263.28	1,056.99	206.29	6.124		
14,500.00	7,145.33	14,320.09	7,158.23	88.41	121.36	-90.59	-123.00	7,494.65	1,263.14	1,054.10	209.04	6.042		
14,600.00	7,145.28	14,420.09	7,158.19	89.59	122.93	-90.59	-122.98	7,594.65	1,262.99	1,051.20	211.80	5.963		
14,700.00	7,145.22	14,520.08	7,158.15	90.77	124.50	-90.59	-122.96	7,694.65	1,262.85	1,048.29	214.56	5.886		
14,800.00	7,145.17	14,620.08	7,158.11	91.95	126.07	-90.59	-122.94	7,794.65	1,262.71	1,045.39	217.32	5.810		
14,900.00	7,145.11	14,720.08	7,158.07	93.13	127.64	-90.59	-122.92	7,894.65	1,262.56	1,042.48	220.08	5.737		
15,000.00	7,145.05	14,820.08	7,158.03	94.31	129.22	-90.59	-122.90	7,994.65	1,262.42	1,039.58	222.84	5.665		
15,100.00	7,145.00	14,920.08	7,157.99	95.49	130.79	-90.59	-122.88	8,094.65	1,262.28	1,036.67	225.61	5.595		
15,200.00	7,144.94	15,020.08	7,157.95	96.68	132.36	-90.59	-122.86	8,194.65	1,262.13	1,033.76	228.38	5.527		
15,300.00	7,144.88	15,120.08	7,157.91	97.86	133.94	-90.59	-122.83	8,294.65	1,261.99	1,030.85	231.14	5.460		
15,400.00	7,144.83	15,220.08	7,157.87	99.05	135.52	-90.59	-122.81	8,394.64	1,261.85	1,027.93	233.91	5.394		
15,500.00	7,144.77	15,320.08	7,157.83	100.24	137.09	-90.59	-122.79	8,494.64	1,261.70	1,025.02	236.68	5.331		
15,600.00	7,144.71	15,420.08	7,157.79	101.42	138.67	-90.59	-122.77	8,594.64	1,261.56	1,022.10	239.46	5.268		
15,700.00	7,144.66	15,520.08	7,157.74	102.61	140.25	-90.59	-122.75	8,694.64	1,261.42	1,019.19	242.23	5.207		
15,800.00	7,144.60	15,620.08	7,157.70	103.80	141.82	-90.60	-122.73	8,794.64	1,261.27	1,016.27	245.01	5.148		
15,900.00	7,144.54	15,720.08	7,157.66	104.99	143.40	-90.60	-122.71	8,894.64	1,261.13	1,013.35	247.78	5.090		
16,000.00	7,144.49	15,820.08	7,157.62	106.19	144.98	-90.60	-122.68	8,994.64	1,260.99	1,010.43	250.56	5.033		
16,100.00	7,144.43	15,920.08	7,157.58	107.38	146.56	-90.60	-122.66	9,094.64	1,260.84	1,007.50	253.34	4.977		
16,200.00	7,144.37	16,020.08	7,157.54	108.57	148.14	-90.60	-122.64	9,194.64	1,260.70	1,004.58	256.12	4.922		
16,300.00	7,144.32	16,120.08	7,157.50	109.77	149.72	-90.60	-122.62	9,294.64	1,260.56	1,001.66	258.90	4.869		
16,400.00	7,144.26	16,220.08	7,157.46	110.96	151.30	-90.60	-122.60	9,394.64	1,260.41	998.73	261.69	4.817		
16,500.00	7,144.21	16,320.08	7,157.42	112.16	152.89	-90.60	-122.58	9,494.64	1,260.27	995.80	264.47	4.765		
16,600.00	7,144.15	16,420.08	7,157.38	113.36	154.47	-90.60	-122.56	9,594.64	1,260.13	992.87	267.25	4.715		
16,700.00	7,144.09	16,520.08	7,157.34	114.56	156.05	-90.60	-122.53	9,694.64	1,259.98	989.94	270.04	4.666		
16,800.00	7,144.04	16,620.08	7,157.29	115.76	157.63	-90.60	-122.51	9,794.64	1,259.84	987.01	272.83	4.618		
16,862.86	7,144.00	16,682.56	7,157.27	116.51	158.62	-90.60	-122.50	9,857.12	1,259.75	985.18	274.57	4.588		
16,866.42	7,144.00	16,685.49	7,157.27	116.55	158.67	-90.60	-122.50	9,860.05	1,259.75	985.09	274.66	4.587		
16,866.76	7,144.00	16,685.76	7,157.27	116.56	158.67	-90.60	-122.50	9,860.32	1,259.75	985.09	274.66	4.587		
16,900.00	7,143.98	16,718.63	7,157.25	116.96	159.19	-90.60	-122.45	9,893.19	1,259.76	984.18	275.58	4.571		
17,000.00	7,143.92	16,818.63	7,157.21	118.16	160.78	-90.60	-122.32	9,993.19	1,259.80	981.43	278.37	4.526		
17,100.00	7,143.87	16,918.63	7,157.17	119.36	162.36	-90.61	-122.18	10,093.19	1,259.84	978.68	281.16	4.481		
17,200.00	7,143.81	17,018.63	7,157.13	120.56	163.94	-90.61	-122.04	10,193.19	1,259.88	975.93	283.95	4.437		
17,300.00	7,143.75	17,118.63	7,157.09	121.77	165.53	-90.61	-121.90	10,293.19	1,259.92	973.18	286.75	4.394		
17,400.00	7,143.69	17,218.63	7,157.05	122.97	167.11	-90.61	-121.77	10,393.19	1,259.96	970.42	289.54	4.352		
17,500.00	7,143.64	17,318.63	7,157.01	124.18	168.70	-90.61	-121.63	10,493.19	1,260.00	967.67	292.34	4.310		
17,600.00	7,143.58	17,418.63	7,156.97	125.39	170.28	-90.61	-121.49	10,593.19	1,260.04	964.91	295.14	4.269		
17,700.00	7,143.52	17,518.63	7,156.93	126.59	171.87	-90.61	-121.36	10,693.19	1,260.08	962.15	297.93	4.229		
17,800.00	7,143.47	17,618.63	7,156.89	127.80	173.45	-90.61	-121.22	10,793.19	1,260.12	959.39	300.73	4.190		
17,900.00	7,143.41	17,718.63	7,156.85	129.01	175.04	-90.61	-121.08	10,893.19	1,260.16	956.63	303.53	4.152		
18,000.00	7,143.35	17,818.63	7,156.81	130.22	176.63	-90.61	-120.95	10,993.19	1,260.20	953.87	306.33	4.114		
18,100.00	7,143.30	17,918.63	7,156.77	131.43	178.21	-90.61	-120.81	11,093.19	1,260.24	951.11	309.14	4.077		
18,200.00	7,143.24	18,018.63	7,156.72	132.64	179.80	-90.61	-120.67	11,193.19	1,260.28	948.35	311.94	4.040		
18,300.00	7,143.18	18,118.63	7,156.68	133.86	181.39	-90.61	-120.54	11,293.19	1,260.32	945.58	314.74	4.004		
18,400.00	7,143.13	18,218.63	7,156.64	135.07	182.98	-90.61	-120.40	11,393.19	1,260.37	942.82	317.55	3.969		

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design:		Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3										Offset Site Error:		0.00 usft			
Survey Program:		125-Standard Keeper 104, 312-MWD+HRGM+MS										Rule Assigned:		Offset Well Error:		0.00 usft	
Measured Depth (usft)	Reference Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre	Distance	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning				
18,500.00	7,143.07	18,318.63	7,156.60	136.28	184.57	-90.62	-120.26	11,493.19	1,260.41	940.05	320.35	3.934					
18,600.00	7,143.01	18,418.63	7,156.56	137.50	186.15	-90.62	-120.13	11,593.19	1,260.45	937.28	323.16	3.900					
18,700.00	7,142.96	18,518.63	7,156.52	138.72	187.74	-90.62	-119.99	11,693.19	1,260.49	934.52	325.97	3.867					
18,800.00	7,142.90	18,618.63	7,156.48	139.93	189.33	-90.62	-119.85	11,793.19	1,260.53	931.75	328.78	3.834					
18,900.00	7,142.84	18,718.63	7,156.44	141.15	190.92	-90.62	-119.72	11,893.19	1,260.57	928.98	331.59	3.802					
19,000.00	7,142.78	18,818.63	7,156.40	142.37	192.51	-90.62	-119.58	11,993.19	1,260.61	926.20	334.40	3.770					
19,100.00	7,142.73	18,918.63	7,156.36	143.59	194.10	-90.62	-119.44	12,093.19	1,260.65	923.43	337.21	3.738					
19,200.00	7,142.67	19,018.63	7,156.32	144.81	195.69	-90.62	-119.30	12,193.19	1,260.69	920.66	340.03	3.708					
19,300.00	7,142.61	19,118.63	7,156.28	146.03	197.28	-90.62	-119.17	12,293.19	1,260.73	917.89	342.84	3.677					
19,400.00	7,142.56	19,218.63	7,156.24	147.25	198.87	-90.62	-119.03	12,393.19	1,260.77	915.11	345.66	3.647					
19,500.00	7,142.50	19,318.63	7,156.19	148.47	200.46	-90.62	-118.89	12,493.19	1,260.81	912.33	348.47	3.618					
19,600.00	7,142.44	19,418.63	7,156.15	149.70	202.05	-90.62	-118.76	12,593.19	1,260.85	909.56	351.29	3.589					
19,700.00	7,142.39	19,518.63	7,156.11	150.92	203.64	-90.62	-118.62	12,693.19	1,260.89	906.78	354.11	3.561					
19,800.00	7,142.33	19,618.63	7,156.07	152.15	205.23	-90.62	-118.48	12,793.19	1,260.93	904.00	356.93	3.533					
19,900.00	7,142.27	19,718.63	7,156.03	153.37	206.82	-90.63	-118.35	12,893.19	1,260.97	901.22	359.75	3.505					
20,000.00	7,142.22	19,818.63	7,155.99	154.60	208.41	-90.63	-118.21	12,993.19	1,261.01	898.44	362.57	3.478					
20,100.00	7,142.16	19,918.63	7,155.95	155.83	210.00	-90.63	-118.07	13,093.19	1,261.05	895.66	365.39	3.451					
20,200.00	7,142.10	20,018.63	7,155.91	157.06	211.59	-90.63	-117.94	13,193.19	1,261.09	892.88	368.21	3.425					
20,300.00	7,142.04	20,118.63	7,155.87	158.28	213.18	-90.63	-117.80	13,293.19	1,261.13	890.09	371.04	3.399					
20,400.00	7,141.99	20,218.63	7,155.83	159.51	214.78	-90.63	-117.66	13,393.19	1,261.17	887.31	373.86	3.373					
20,500.00	7,141.93	20,318.63	7,155.79	160.74	216.37	-90.63	-117.53	13,493.19	1,261.21	884.52	376.69	3.348					
20,600.00	7,141.87	20,418.63	7,155.75	161.98	217.96	-90.63	-117.39	13,593.18	1,261.25	881.74	379.51	3.323					
20,700.00	7,141.82	20,518.63	7,155.71	163.21	219.55	-90.63	-117.25	13,693.18	1,261.29	878.95	382.34	3.299					
20,800.00	7,141.76	20,618.63	7,155.66	164.44	221.14	-90.63	-117.12	13,793.18	1,261.33	876.16	385.17	3.275					
20,900.00	7,141.70	20,718.63	7,155.62	165.68	222.74	-90.63	-116.98	13,893.18	1,261.37	873.37	388.00	3.251					
21,000.00	7,141.65	20,818.63	7,155.58	166.91	224.33	-90.63	-116.84	13,993.18	1,261.41	870.58	390.83	3.228					
21,100.00	7,141.59	20,918.63	7,155.54	168.15	225.92	-90.63	-116.70	14,093.18	1,261.45	867.79	393.66	3.204					
21,200.00	7,141.53	21,018.63	7,155.50	169.38	227.51	-90.63	-116.57	14,193.18	1,261.49	865.00	396.49	3.182					
21,300.00	7,141.48	21,118.63	7,155.46	170.62	229.11	-90.64	-116.43	14,293.18	1,261.53	862.21	399.32	3.159					
21,400.00	7,141.42	21,218.63	7,155.42	171.86	230.70	-90.64	-116.29	14,393.18	1,261.57	859.42	402.15	3.137					
21,500.00	7,141.36	21,318.63	7,155.38	173.10	232.29	-90.64	-116.16	14,493.18	1,261.61	856.62	404.99	3.115					
21,600.00	7,141.31	21,418.63	7,155.34	174.34	233.89	-90.64	-116.02	14,593.18	1,261.65	853.83	407.82	3.094					
21,700.00	7,141.25	21,518.63	7,155.30	175.58	235.48	-90.64	-115.88	14,693.18	1,261.69	851.03	410.66	3.072					
21,800.00	7,141.19	21,618.63	7,155.26	176.82	237.07	-90.64	-115.75	14,793.18	1,261.73	848.23	413.50	3.051					
21,900.00	7,141.13	21,718.63	7,155.22	178.06	238.67	-90.64	-115.61	14,893.18	1,261.77	845.44	416.34	3.031					
22,000.00	7,141.08	21,818.63	7,155.18	179.30	240.26	-90.64	-115.47	14,993.18	1,261.81	842.64	419.17	3.010					
22,100.00	7,141.02	21,918.63	7,155.13	180.55	241.86	-90.64	-115.34	15,093.18	1,261.85	839.84	422.01	2.990					
22,136.53	7,141.00	21,955.52	7,155.12	181.00	242.44	-90.64	-115.29	15,130.08	1,261.87	838.81	423.06	2.983					
22,137.77	7,141.00	21,957.10	7,155.12	181.02	242.47	-90.64	-115.28	15,131.66	1,261.87	838.76	423.10	2.982					
22,200.00	7,140.96	22,032.97	7,155.09	181.79	243.68	-90.64	-115.71	15,207.52	1,261.43	836.23	425.20	2.967					
22,300.00	7,140.91	22,132.96	7,155.04	183.04	245.27	-90.64	-116.71	15,307.51	1,260.31	832.27	428.04	2.944					
22,400.00	7,140.85	22,232.96	7,155.00	184.28	246.87	-90.64	-117.71	15,407.50	1,259.19	828.31	430.89	2.922					
22,500.00	7,140.79	22,332.95	7,154.96	185.53	248.46	-90.65	-118.71	15,507.49	1,258.08	824.35	433.73	2.901					
22,600.00	7,140.73	22,432.94	7,154.92	186.78	250.06	-90.65	-119.71	15,607.48	1,256.96	820.39	436.57	2.879					
22,700.00	7,140.68	22,532.94	7,154.88	188.02	251.65	-90.65	-120.71	15,707.47	1,255.84	816.42	439.42	2.858					
22,800.00	7,140.62	22,632.93	7,154.83	189.27	253.25	-90.65	-121.71	15,807.45	1,254.72	812.46	442.27	2.837					
22,900.00	7,140.56	22,732.92	7,154.79	190.52	254.84	-90.65	-122.71	15,907.44	1,253.60	808.49	445.11	2.816					
23,000.00	7,140.50	22,832.92	7,154.75	191.77	256.44	-90.65	-123.71	16,007.43	1,252.49	804.53	447.96	2.796					
23,100.00	7,140.45	22,932.91	7,154.71	193.02	258.03	-90.65	-124.71	16,107.42	1,251.37	800.56	450.81	2.776					
23,200.00	7,140.39	23,032.91	7,154.66	194.28	259.63	-90.65	-125.71	16,207.41	1,250.25	796.59	453.66	2.756					
23,300.00	7,140.33	23,132.90	7,154.62	195.53	261.23	-90.66	-126.71	16,307.40	1,249.13	792.62	456.51	2.736					
23,400.00	7,140.27	23,232.89	7,154.58	196.78	262.82	-90.66	-127.71	16,407.39	1,248.01	788.66	459.36	2.717					

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

Offset Design: Rosa Unit 42 - Rosa Unit 836H - OH - p5-Prelim 3													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 312-MWD+HRGM+MS					Rule Assigned:						Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance						Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor		
23,500.00	7,140.22	23,332.89	7,154.54	198.04	264.42	-90.66	-128.71	16,507.38	1,246.90	784.69	462.21	2.698		
23,600.00	7,140.16	23,432.88	7,154.49	199.29	266.01	-90.66	-129.71	16,607.36	1,245.78	780.71	465.06	2.679		
23,700.00	7,140.10	23,532.87	7,154.45	200.55	267.61	-90.66	-130.71	16,707.35	1,244.66	776.74	467.92	2.660		
23,800.00	7,140.04	23,632.87	7,154.41	201.81	269.21	-90.66	-131.71	16,807.34	1,243.54	772.77	470.77	2.641		
23,900.00	7,139.99	23,732.86	7,154.37	203.06	270.80	-90.66	-132.71	16,907.33	1,242.43	768.80	473.63	2.623		
24,000.00	7,139.93	23,832.86	7,154.32	204.32	272.40	-90.66	-133.71	17,007.32	1,241.31	764.82	476.48	2.605		
24,100.00	7,139.87	23,932.85	7,154.28	205.58	273.99	-90.67	-134.71	17,107.31	1,240.19	760.85	479.34	2.587		
24,200.00	7,139.81	24,032.84	7,154.24	206.84	275.59	-90.67	-135.71	17,207.30	1,239.07	756.87	482.20	2.570		
24,300.00	7,139.76	24,132.84	7,154.20	208.10	277.19	-90.67	-136.71	17,307.29	1,237.95	752.90	485.06	2.552		
24,400.00	7,139.70	24,232.83	7,154.15	209.36	278.78	-90.67	-137.71	17,407.27	1,236.84	748.92	487.92	2.535		
24,500.00	7,139.64	24,332.82	7,154.11	210.62	280.38	-90.67	-138.71	17,507.26	1,235.72	744.94	490.78	2.518		
24,600.00	7,139.58	24,432.82	7,154.07	211.89	281.98	-90.67	-139.70	17,607.25	1,234.60	740.96	493.64	2.501		
24,700.00	7,139.53	24,532.81	7,154.03	213.15	283.57	-90.67	-140.70	17,707.24	1,233.48	736.98	496.50	2.484		
24,800.00	7,139.47	24,626.51	7,153.99	214.42	285.07	-90.68	-141.57	17,800.94	1,232.45	733.24	499.22	2.469		
24,842.28	7,139.45	24,661.31	7,153.97	214.95	285.63	-90.68	-141.63	17,835.73	1,232.33	732.09	500.24	2.463		
24,900.00	7,139.41	24,708.81	7,153.95	215.68	286.38	-90.68	-141.38	17,883.23	1,232.56	730.96	501.60	2.457		
25,000.00	7,139.35	24,805.87	7,153.92	216.95	287.93	-90.68	-140.24	17,980.28	1,233.61	729.24	504.37	2.446		
25,100.00	7,139.30	24,905.86	7,153.88	218.21	289.53	-90.68	-139.06	18,080.27	1,234.68	727.44	507.24	2.434		
25,200.00	7,139.24	25,005.85	7,153.84	219.48	291.12	-90.68	-137.87	18,180.26	1,235.75	725.65	510.10	2.423		
25,300.00	7,139.18	25,105.85	7,153.80	220.75	292.72	-90.68	-136.69	18,280.24	1,236.81	723.85	512.97	2.411		
25,400.00	7,139.13	25,205.84	7,153.76	222.02	294.31	-90.68	-135.50	18,380.23	1,237.88	722.05	515.83	2.400		
25,500.00	7,139.07	25,305.84	7,153.72	223.29	295.91	-90.68	-134.32	18,480.22	1,238.95	720.25	518.70	2.389		
25,600.00	7,139.01	25,405.83	7,153.69	224.56	297.51	-90.68	-133.13	18,580.21	1,240.02	718.45	521.57	2.377		
25,700.00	7,138.95	25,505.83	7,153.65	225.83	299.10	-90.68	-131.95	18,680.19	1,241.08	716.65	524.44	2.367		
25,800.00	7,138.90	25,605.82	7,153.61	227.10	300.70	-90.68	-130.76	18,780.18	1,242.15	714.84	527.31	2.356		
25,900.00	7,138.84	25,705.81	7,153.57	228.38	302.29	-90.68	-129.57	18,880.17	1,243.22	713.04	530.18	2.345		
26,000.00	7,138.78	25,805.81	7,153.53	229.65	303.89	-90.68	-128.39	18,980.16	1,244.29	711.24	533.05	2.334		
26,100.00	7,138.72	25,905.80	7,153.49	230.93	305.48	-90.68	-127.20	19,080.14	1,245.35	709.43	535.92	2.324		
26,200.00	7,138.67	26,005.80	7,153.45	232.20	307.08	-90.68	-126.02	19,180.13	1,246.42	707.63	538.79	2.313		
26,300.00	7,138.61	26,105.79	7,153.42	233.48	308.68	-90.68	-124.83	19,280.12	1,247.49	705.82	541.67	2.303		
26,400.00	7,138.55	26,205.79	7,153.38	234.75	310.27	-90.68	-123.65	19,380.10	1,248.56	704.02	544.54	2.293		
26,500.00	7,138.49	26,305.78	7,153.34	236.03	311.87	-90.68	-122.46	19,480.09	1,249.62	702.21	547.42	2.283		
26,600.00	7,138.44	26,405.77	7,153.30	237.31	313.46	-90.68	-121.28	19,580.08	1,250.69	700.40	550.29	2.273		
26,700.00	7,138.38	26,505.77	7,153.26	238.59	315.06	-90.68	-120.09	19,680.07	1,251.76	698.59	553.17	2.263		
26,800.00	7,138.32	26,605.76	7,153.22	239.87	316.66	-90.68	-118.90	19,780.05	1,252.83	696.78	556.05	2.253		
26,900.00	7,138.26	26,705.76	7,153.18	241.15	318.25	-90.68	-117.72	19,880.04	1,253.89	694.97	558.92	2.243		
27,000.00	7,138.21	26,805.75	7,153.15	242.43	319.85	-90.68	-116.53	19,980.03	1,254.96	693.16	561.80	2.234		
27,100.00	7,138.15	26,905.75	7,153.11	243.71	321.45	-90.68	-115.35	20,080.02	1,256.03	691.34	564.68	2.224		
27,157.78	7,138.12	26,963.52	7,153.09	244.46	322.37	-90.68	-114.66	20,137.79	1,256.64	690.30	566.35	2.219		
27,200.00	7,138.09	27,006.46	7,153.07	245.00	323.05	-90.68	-114.17	20,180.73	1,257.08	689.49	567.59	2.215		
27,300.00	7,138.03	27,106.46	7,153.03	246.28	324.65	-90.68	-113.04	20,280.72	1,258.09	687.62	570.47	2.205		
27,357.78	7,138.00	27,164.23	7,153.01	247.02	325.57	-90.68	-112.39	20,338.48	1,258.67	686.54	572.13	2.200 SF		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

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

Offset Depths are relative to Offset Datum

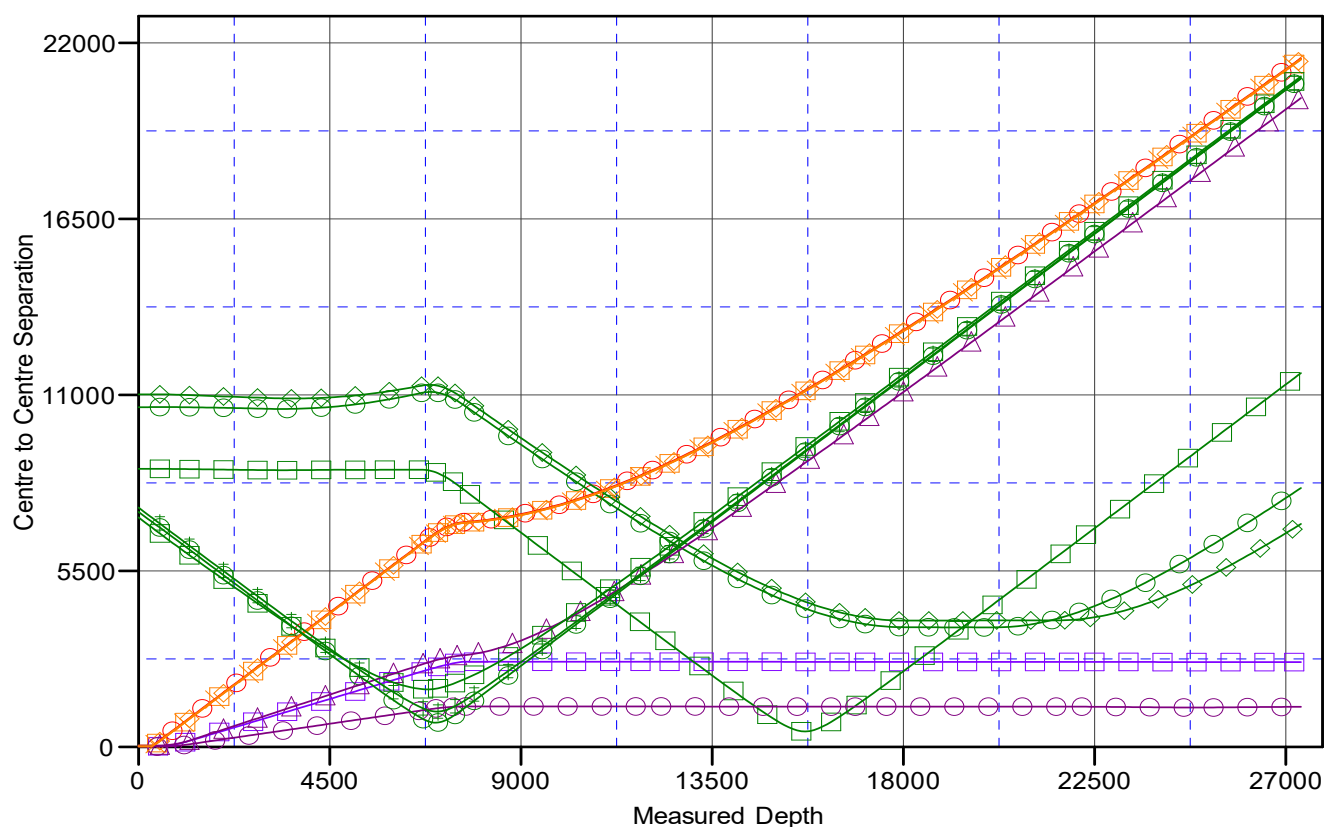
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 834H

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

Grid Convergence at Surface is: 0.31°

Ladder Plot



LEGEND

Rosa Unit 832H, OH, p4-Prelim 2 V0	Rosa Unit 830H, OH, Plan #5 V0	Rosa Unit #748H, OH, OH V0
Rosa Unit 832H, OH, OH V0	Rosa Unit 830H, OH, OH V0	Rosa Unit #749H, OH, OH V0
(C) Schalk 32 #003H, OH, OH-SVY V0	(C) Rosa Unit #601, OH, OH-SVY V0	Rosa Unit #744H, OH, OH V0
(C) Schalk 32 #001A, OH, OH-SVY V0	Rosa Unit 836H, OH, p5-Prelim 3 V0	
Rosa Unit 834H, OH, OH V0	Rosa Unit 836H, OH, OH V0	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 834H
Project:	Rio Arriba, NM (NAD83)	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Reference Site:	Rosa Unit 42	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site Error:	0.00 usft	North Reference:	True
Reference Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000 Multi User Db
Reference Design:	p5-Prelim 3	Offset TVD Reference:	Offset Datum

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

Offset Depths are relative to Offset Datum

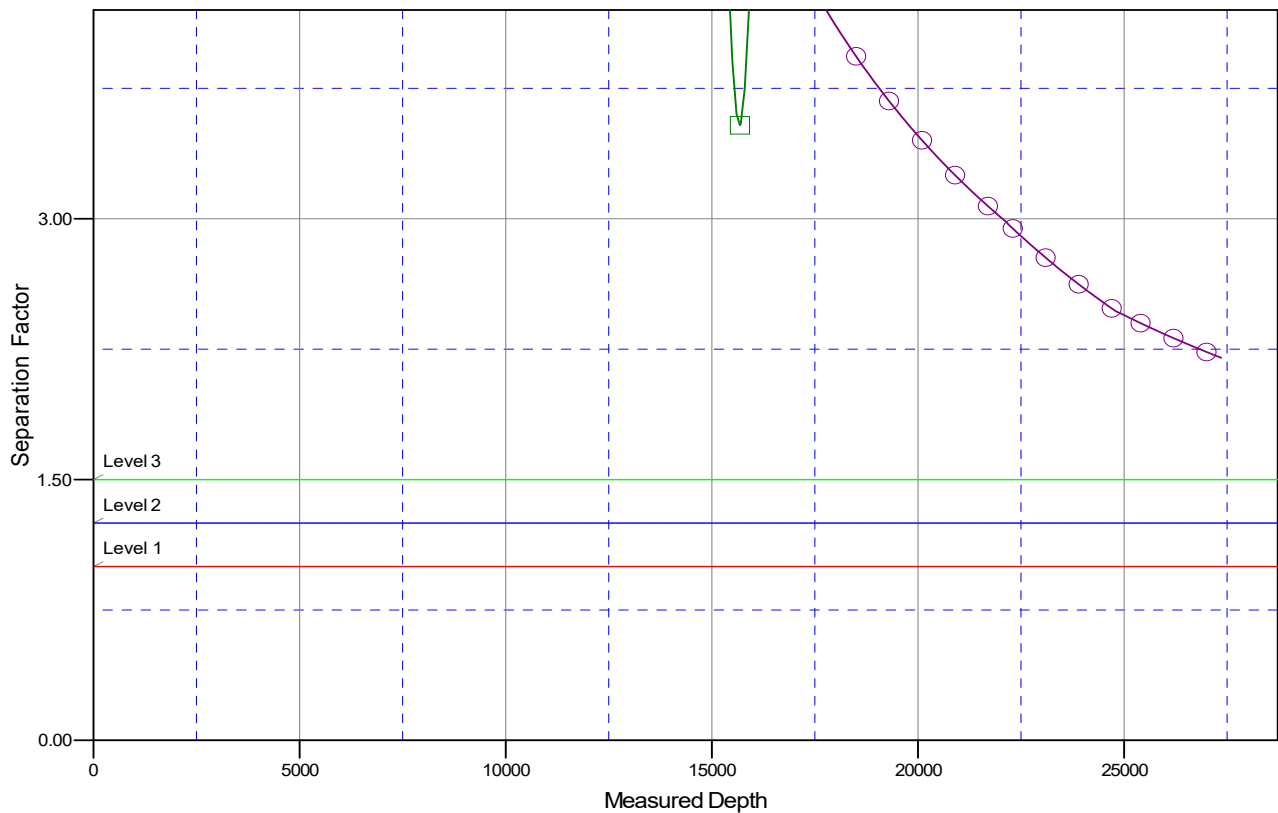
Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 834H

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

Grid Convergence at Surface is: 0.31°

Separation Factor Plot



LEGEND

Rosa Unit 832H, OH, p4-Prelim 2 V0	Rosa Unit 830H, OH, Plan #5 V0	Rosa Unit #746H, OH, OH V0
Rosa Unit 832H, OH, OH V0	Rosa Unit 830H, OH, OH V0	Rosa Unit #748H, OH, OH V0
(C) Schalk 32 #003H, OH, OH-SVY V0	(C) Rosa Unit #601, OH, OH-SVY V0	Rosa Unit #744H, OH, OH V0
(C) Schalk 32 #001A, OH, OH-SVY V0	Rosa Unit 836H, OH, p5-Prelim 3 V0	
Rosa Unit 834H, OH, OH V0	Rosa Unit 836H, OH, OH V0	

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

Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 42

Rosa Unit 834H

OH

Plan: p5-Prelim 3

Standard Planning Report

11 August, 2025

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

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

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

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

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

Design	p5-Prelim 3				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	290.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	89.95	

Plan Survey Tool Program		Date	8/11/2025		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	125.00	290.00	Survey #1 (OH)	Standard Keeper 104	
				Standard Wireline Keeper ver 1	
2	290.00	27,357.78	p5-Prelim 3 (OH)	Standard Keeper 104	
				Standard Wireline Keeper ver 1	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

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
290.00	0.39	17.41	289.99	1.94	0.17	0.00	0.00	0.00	0.00	
440.00	0.39	17.41	439.99	2.92	0.47	0.00	0.00	0.00	0.00	
1,074.04	12.31	179.21	1,069.30	-62.87	2.06	2.00	1.88	25.52	162.34	
6,662.10	12.31	179.21	6,528.89	-1,254.11	18.52	0.00	0.00	0.00	0.00	
7,660.51	90.03	90.01	7,149.00	-1,389.62	655.43	9.00	7.78	-8.93	-89.21	RU 834H POE
11,815.51	90.03	90.01	7,146.85	-1,390.49	4,810.43	0.00	0.00	0.00	0.00	
11,826.17	90.03	89.91	7,146.84	-1,390.49	4,821.09	1.00	0.03	-1.00	-88.54	
16,862.86	90.03	89.91	7,144.00	-1,382.18	9,857.76	0.00	0.00	0.00	0.00	
16,866.76	90.03	89.94	7,144.00	-1,382.18	9,861.66	1.00	0.01	1.00	89.65	
22,136.53	90.03	89.94	7,141.00	-1,377.07	15,131.44	0.00	0.00	0.00	0.00	
22,137.77	90.03	89.93	7,141.00	-1,377.07	15,132.67	1.00	0.03	-1.00	-88.48	
27,157.78	90.03	89.93	7,138.12	-1,371.13	20,152.68	0.00	0.00	0.00	0.00	RU 834H FPP
27,357.78	90.03	89.93	7,138.00	-1,370.89	20,352.68	0.00	0.00	0.00	0.00	RU 834H PBHL

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125.00	0.51	3.58	125.00	0.56	0.03	0.04	0.41	0.41	0.00
225.00	0.51	2.87	224.99	1.44	0.08	0.09	0.01	0.00	-0.71
290.00	0.39	17.41	289.99	1.94	0.17	0.17	0.25	-0.18	22.37
Start 150.00 hold at 290.00 MD									
300.00	0.39	17.41	299.99	2.01	0.19	0.19	0.00	0.00	0.00
400.00	0.39	17.41	399.99	2.66	0.39	0.39	0.00	0.00	0.00
440.00	0.39	17.41	439.99	2.92	0.47	0.47	0.00	0.00	0.00
Start DLS 2.00 TFO 162.34									
500.00	0.84	171.62	499.99	2.68	0.60	0.60	2.00	0.74	257.02
600.00	2.83	177.36	599.93	-0.51	0.82	0.82	2.00	1.99	5.73
700.00	4.83	178.35	699.70	-7.19	1.05	1.05	2.00	2.00	0.99
800.00	6.83	178.76	799.18	-17.34	1.30	1.29	2.00	2.00	0.41
900.00	8.83	178.99	898.24	-30.96	1.56	1.54	2.00	2.00	0.23
1,000.00	10.83	179.13	996.77	-48.03	1.84	1.80	2.00	2.00	0.14
1,074.04	12.31	179.21	1,069.30	-62.87	2.06	2.00	2.00	2.00	0.10
Start 5588.06 hold at 1074.04 MD									
1,100.00	12.31	179.21	1,094.67	-68.41	2.13	2.07	0.00	0.00	0.00
1,200.00	12.31	179.21	1,192.37	-89.72	2.43	2.35	0.00	0.00	0.00
1,300.00	12.31	179.21	1,290.07	-111.04	2.72	2.63	0.00	0.00	0.00
1,400.00	12.31	179.21	1,387.77	-132.36	3.02	2.90	0.00	0.00	0.00
1,500.00	12.31	179.21	1,485.47	-153.68	3.31	3.18	0.00	0.00	0.00
1,600.00	12.31	179.21	1,583.17	-174.99	3.61	3.45	0.00	0.00	0.00
1,700.00	12.31	179.21	1,680.87	-196.31	3.90	3.73	0.00	0.00	0.00
1,800.00	12.31	179.21	1,778.57	-217.63	4.20	4.01	0.00	0.00	0.00
1,900.00	12.31	179.21	1,876.27	-238.95	4.49	4.28	0.00	0.00	0.00
2,000.00	12.31	179.21	1,973.98	-260.26	4.78	4.56	0.00	0.00	0.00
2,100.00	12.31	179.21	2,071.68	-281.58	5.08	4.83	0.00	0.00	0.00
2,200.00	12.31	179.21	2,169.38	-302.90	5.37	5.11	0.00	0.00	0.00
2,300.00	12.31	179.21	2,267.08	-324.22	5.67	5.39	0.00	0.00	0.00
2,400.00	12.31	179.21	2,364.78	-345.53	5.96	5.66	0.00	0.00	0.00
2,500.00	12.31	179.21	2,462.48	-366.85	6.26	5.94	0.00	0.00	0.00
2,600.00	12.31	179.21	2,560.18	-388.17	6.55	6.21	0.00	0.00	0.00
2,700.00	12.31	179.21	2,657.88	-409.49	6.85	6.49	0.00	0.00	0.00
2,794.29	12.31	179.21	2,750.00	-429.59	7.12	6.75	0.00	0.00	0.00
Ojo Alamo									
2,800.00	12.31	179.21	2,755.58	-430.80	7.14	6.77	0.00	0.00	0.00
2,900.00	12.31	179.21	2,853.28	-452.12	7.44	7.04	0.00	0.00	0.00
2,920.18	12.31	179.21	2,873.00	-456.42	7.50	7.10	0.00	0.00	0.00
Kirtland									
3,000.00	12.31	179.21	2,950.99	-473.44	7.73	7.32	0.00	0.00	0.00
3,100.00	12.31	179.21	3,048.69	-494.76	8.03	7.59	0.00	0.00	0.00
3,200.00	12.31	179.21	3,146.39	-516.07	8.32	7.87	0.00	0.00	0.00
3,300.00	12.31	179.21	3,244.09	-537.39	8.61	8.15	0.00	0.00	0.00
3,302.98	12.31	179.21	3,247.00	-538.03	8.62	8.15	0.00	0.00	0.00
Fruitland									
3,344.95	12.31	179.21	3,288.00	-546.97	8.75	8.27	0.00	0.00	0.00
Top of Coals									
3,400.00	12.31	179.21	3,341.79	-558.71	8.91	8.42	0.00	0.00	0.00
3,435.02	12.31	179.21	3,376.00	-566.17	9.01	8.52	0.00	0.00	0.00
Base of Coals									
3,500.00	12.31	179.21	3,439.49	-580.03	9.20	8.70	0.00	0.00	0.00
3,600.00	12.31	179.21	3,537.19	-601.34	9.50	8.97	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,664.29	12.31	179.21	3,600.00	-615.05	9.69	9.15	0.00	0.00	0.00	
Pictured Cliffs										
3,700.00	12.31	179.21	3,634.89	-622.66	9.79	9.25	0.00	0.00	0.00	
3,765.62	12.31	179.21	3,699.00	-636.65	9.99	9.43	0.00	0.00	0.00	
Lewis										
3,800.00	12.31	179.21	3,732.59	-643.98	10.09	9.53	0.00	0.00	0.00	
3,900.00	12.31	179.21	3,830.29	-665.30	10.38	9.80	0.00	0.00	0.00	
4,000.00	12.31	179.21	3,928.00	-686.61	10.68	10.08	0.00	0.00	0.00	
4,100.00	12.31	179.21	4,025.70	-707.93	10.97	10.35	0.00	0.00	0.00	
4,200.00	12.31	179.21	4,123.40	-729.25	11.27	10.63	0.00	0.00	0.00	
4,300.00	12.31	179.21	4,221.10	-750.57	11.56	10.91	0.00	0.00	0.00	
4,400.00	12.31	179.21	4,318.80	-771.88	11.86	11.18	0.00	0.00	0.00	
4,500.00	12.31	179.21	4,416.50	-793.20	12.15	11.46	0.00	0.00	0.00	
4,600.00	12.31	179.21	4,514.20	-814.52	12.44	11.73	0.00	0.00	0.00	
4,700.00	12.31	179.21	4,611.90	-835.84	12.74	12.01	0.00	0.00	0.00	
4,800.00	12.31	179.21	4,709.60	-857.15	13.03	12.29	0.00	0.00	0.00	
4,900.00	12.31	179.21	4,807.30	-878.47	13.33	12.56	0.00	0.00	0.00	
4,904.81	12.31	179.21	4,812.00	-879.50	13.34	12.58	0.00	0.00	0.00	
Chacra										
5,000.00	12.31	179.21	4,905.00	-899.79	13.62	12.84	0.00	0.00	0.00	
5,100.00	12.31	179.21	5,002.71	-921.11	13.92	13.11	0.00	0.00	0.00	
5,200.00	12.31	179.21	5,100.41	-942.42	14.21	13.39	0.00	0.00	0.00	
5,300.00	12.31	179.21	5,198.11	-963.74	14.51	13.67	0.00	0.00	0.00	
5,400.00	12.31	179.21	5,295.81	-985.06	14.80	13.94	0.00	0.00	0.00	
5,440.11	12.31	179.21	5,335.00	-993.61	14.92	14.05	0.00	0.00	0.00	
Upper Cliff House										
5,500.00	12.31	179.21	5,393.51	-1,006.38	15.10	14.22	0.00	0.00	0.00	
5,600.00	12.31	179.21	5,491.21	-1,027.69	15.39	14.49	0.00	0.00	0.00	
5,700.00	12.31	179.21	5,588.91	-1,049.01	15.69	14.77	0.00	0.00	0.00	
5,731.82	12.31	179.21	5,620.00	-1,055.80	15.78	14.86	0.00	0.00	0.00	
Cliff House										
5,766.62	12.31	179.21	5,654.00	-1,063.21	15.88	14.95	0.00	0.00	0.00	
Menefee										
5,800.00	12.31	179.21	5,686.61	-1,070.33	15.98	15.05	0.00	0.00	0.00	
5,900.00	12.31	179.21	5,784.31	-1,091.65	16.27	15.32	0.00	0.00	0.00	
5,952.90	12.31	179.21	5,836.00	-1,102.92	16.43	15.47	0.00	0.00	0.00	
Point Lookout										
6,000.00	12.31	179.21	5,882.01	-1,112.96	16.57	15.60	0.00	0.00	0.00	
6,100.00	12.31	179.21	5,979.72	-1,134.28	16.86	15.87	0.00	0.00	0.00	
6,200.00	12.31	179.21	6,077.42	-1,155.60	17.16	16.15	0.00	0.00	0.00	
6,300.00	12.31	179.21	6,175.12	-1,176.92	17.45	16.43	0.00	0.00	0.00	
6,400.00	12.31	179.21	6,272.82	-1,198.23	17.75	16.70	0.00	0.00	0.00	
6,500.00	12.31	179.21	6,370.52	-1,219.55	18.04	16.98	0.00	0.00	0.00	
6,509.70	12.31	179.21	6,380.00	-1,221.62	18.07	17.00	0.00	0.00	0.00	
Mancos										
6,600.00	12.31	179.21	6,468.22	-1,240.87	18.34	17.25	0.00	0.00	0.00	
6,662.10	12.31	179.21	6,528.89	-1,254.11	18.52	17.43	0.00	0.00	0.00	
Start DLS 9.00 TFO -89.21										
6,700.00	12.81	163.64	6,565.90	-1,262.18	19.76	18.66	9.00	1.33	-41.06	
6,750.00	14.69	146.34	6,614.48	-1,272.78	24.84	23.73	9.00	3.76	-34.60	
6,800.00	17.53	133.70	6,662.53	-1,283.27	33.80	32.68	9.00	5.68	-25.29	
6,850.00	20.95	124.76	6,709.74	-1,293.58	46.59	45.47	9.00	6.83	-17.87	
6,900.00	24.70	118.34	6,755.82	-1,303.64	63.14	62.00	9.00	7.50	-12.86	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,950.00	28.66	113.55	6,800.49	-1,313.39	83.34	82.19	9.00	7.91	-9.58
7,000.00	32.74	109.85	6,843.48	-1,322.78	107.06	105.90	9.00	8.17	-7.39
7,050.00	36.92	106.90	6,884.52	-1,331.74	134.16	133.00	9.00	8.35	-5.90
7,100.00	41.15	104.48	6,923.35	-1,340.22	164.47	163.30	9.00	8.47	-4.85
7,150.00	45.43	102.43	6,959.74	-1,348.17	197.81	196.63	9.00	8.55	-4.09
7,200.00	49.74	100.67	6,993.46	-1,355.54	233.97	232.78	9.00	8.62	-3.53
7,200.84	49.81	100.64	6,994.00	-1,355.66	234.60	233.41	9.00	8.64	-3.29
Top Black									
7,250.00	54.07	99.12	7,024.30	-1,362.28	272.72	271.53	9.00	8.66	-3.10
7,300.00	58.42	97.73	7,052.08	-1,368.36	313.83	312.64	9.00	8.70	-2.78
7,350.00	62.78	96.46	7,076.62	-1,373.73	357.05	355.85	9.00	8.73	-2.53
7,400.00	67.15	95.29	7,097.78	-1,378.36	402.10	400.90	9.00	8.75	-2.34
7,450.00	71.53	94.20	7,115.41	-1,382.22	448.72	447.51	9.00	8.76	-2.19
7,500.00	75.92	93.16	7,129.42	-1,385.29	496.60	495.39	9.00	8.78	-2.08
7,550.00	80.31	92.15	7,139.71	-1,387.55	545.47	544.25	9.00	8.78	-2.00
7,600.00	84.71	91.18	7,146.22	-1,388.99	595.01	593.79	9.00	8.79	-1.95
7,650.00	89.11	90.21	7,148.92	-1,389.59	644.92	643.70	9.00	8.79	-1.93
7,660.51	90.03	90.01	7,149.00	-1,389.62	655.43	654.22	9.00	8.79	-1.92
Start 4155.00 hold at 7660.51 MD									
7,700.00	90.03	90.01	7,148.98	-1,389.62	694.92	693.70	0.00	0.00	0.00
7,800.00	90.03	90.01	7,148.93	-1,389.64	794.92	793.70	0.00	0.00	0.00
7,900.00	90.03	90.01	7,148.88	-1,389.67	894.92	893.70	0.00	0.00	0.00
8,000.00	90.03	90.01	7,148.82	-1,389.69	994.92	993.70	0.00	0.00	0.00
8,100.00	90.03	90.01	7,148.77	-1,389.71	1,094.92	1,093.70	0.00	0.00	0.00
8,200.00	90.03	90.01	7,148.72	-1,389.73	1,194.92	1,193.70	0.00	0.00	0.00
8,300.00	90.03	90.01	7,148.67	-1,389.75	1,294.92	1,293.70	0.00	0.00	0.00
8,400.00	90.03	90.01	7,148.62	-1,389.77	1,394.92	1,393.70	0.00	0.00	0.00
8,500.00	90.03	90.01	7,148.57	-1,389.79	1,494.92	1,493.70	0.00	0.00	0.00
8,600.00	90.03	90.01	7,148.51	-1,389.81	1,594.92	1,593.70	0.00	0.00	0.00
8,700.00	90.03	90.01	7,148.46	-1,389.83	1,694.92	1,693.70	0.00	0.00	0.00
8,800.00	90.03	90.01	7,148.41	-1,389.86	1,794.92	1,793.70	0.00	0.00	0.00
8,900.00	90.03	90.01	7,148.36	-1,389.88	1,894.92	1,893.70	0.00	0.00	0.00
9,000.00	90.03	90.01	7,148.31	-1,389.90	1,994.92	1,993.70	0.00	0.00	0.00
9,100.00	90.03	90.01	7,148.26	-1,389.92	2,094.92	2,093.70	0.00	0.00	0.00
9,200.00	90.03	90.01	7,148.20	-1,389.94	2,194.92	2,193.70	0.00	0.00	0.00
9,300.00	90.03	90.01	7,148.15	-1,389.96	2,294.92	2,293.70	0.00	0.00	0.00
9,400.00	90.03	90.01	7,148.10	-1,389.98	2,394.92	2,393.70	0.00	0.00	0.00
9,500.00	90.03	90.01	7,148.05	-1,390.00	2,494.92	2,493.70	0.00	0.00	0.00
9,600.00	90.03	90.01	7,148.00	-1,390.03	2,594.92	2,593.70	0.00	0.00	0.00
9,700.00	90.03	90.01	7,147.94	-1,390.05	2,694.92	2,693.70	0.00	0.00	0.00
9,800.00	90.03	90.01	7,147.89	-1,390.07	2,794.92	2,793.70	0.00	0.00	0.00
9,900.00	90.03	90.01	7,147.84	-1,390.09	2,894.92	2,893.70	0.00	0.00	0.00
10,000.00	90.03	90.01	7,147.79	-1,390.11	2,994.92	2,993.70	0.00	0.00	0.00
10,100.00	90.03	90.01	7,147.74	-1,390.13	3,094.92	3,093.70	0.00	0.00	0.00
10,200.00	90.03	90.01	7,147.69	-1,390.15	3,194.92	3,193.70	0.00	0.00	0.00
10,300.00	90.03	90.01	7,147.63	-1,390.17	3,294.92	3,293.70	0.00	0.00	0.00
10,400.00	90.03	90.01	7,147.58	-1,390.19	3,394.92	3,393.70	0.00	0.00	0.00
10,500.00	90.03	90.01	7,147.53	-1,390.22	3,494.92	3,493.70	0.00	0.00	0.00
10,600.00	90.03	90.01	7,147.48	-1,390.24	3,594.91	3,593.70	0.00	0.00	0.00
10,700.00	90.03	90.01	7,147.43	-1,390.26	3,694.91	3,693.70	0.00	0.00	0.00
10,800.00	90.03	90.01	7,147.38	-1,390.28	3,794.91	3,793.70	0.00	0.00	0.00
10,900.00	90.03	90.01	7,147.32	-1,390.30	3,894.91	3,893.70	0.00	0.00	0.00
11,000.00	90.03	90.01	7,147.27	-1,390.32	3,994.91	3,993.70	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,100.00	90.03	90.01	7,147.22	-1,390.34	4,094.91	4,093.70	0.00	0.00	0.00
11,200.00	90.03	90.01	7,147.17	-1,390.36	4,194.91	4,193.70	0.00	0.00	0.00
11,300.00	90.03	90.01	7,147.12	-1,390.38	4,294.91	4,293.70	0.00	0.00	0.00
11,400.00	90.03	90.01	7,147.07	-1,390.41	4,394.91	4,393.70	0.00	0.00	0.00
11,500.00	90.03	90.01	7,147.01	-1,390.43	4,494.91	4,493.70	0.00	0.00	0.00
11,600.00	90.03	90.01	7,146.96	-1,390.45	4,594.91	4,593.70	0.00	0.00	0.00
11,700.00	90.03	90.01	7,146.91	-1,390.47	4,694.91	4,693.70	0.00	0.00	0.00
11,800.00	90.03	90.01	7,146.86	-1,390.49	4,794.91	4,793.70	0.00	0.00	0.00
11,815.51	90.03	90.01	7,146.85	-1,390.49	4,810.43	4,809.21	0.00	0.00	0.00
Start DLS 1.00 TFO -88.54									
11,826.17	90.03	89.91	7,146.84	-1,390.49	4,821.09	4,819.87	1.00	0.03	-1.00
Start 5036.68 hold at 11826.17 MD									
11,900.00	90.03	89.91	7,146.80	-1,390.36	4,894.91	4,893.70	0.00	0.00	0.00
12,000.00	90.03	89.91	7,146.75	-1,390.20	4,994.91	4,993.70	0.00	0.00	0.00
12,100.00	90.03	89.91	7,146.69	-1,390.03	5,094.91	5,093.70	0.00	0.00	0.00
12,200.00	90.03	89.91	7,146.63	-1,389.87	5,194.91	5,193.70	0.00	0.00	0.00
12,300.00	90.03	89.91	7,146.58	-1,389.70	5,294.91	5,293.70	0.00	0.00	0.00
12,400.00	90.03	89.91	7,146.52	-1,389.54	5,394.91	5,393.70	0.00	0.00	0.00
12,500.00	90.03	89.91	7,146.46	-1,389.37	5,494.91	5,493.70	0.00	0.00	0.00
12,600.00	90.03	89.91	7,146.41	-1,389.21	5,594.91	5,593.70	0.00	0.00	0.00
12,700.00	90.03	89.91	7,146.35	-1,389.04	5,694.91	5,693.70	0.00	0.00	0.00
12,800.00	90.03	89.91	7,146.29	-1,388.88	5,794.91	5,793.70	0.00	0.00	0.00
12,900.00	90.03	89.91	7,146.24	-1,388.71	5,894.91	5,893.70	0.00	0.00	0.00
13,000.00	90.03	89.91	7,146.18	-1,388.55	5,994.91	5,993.70	0.00	0.00	0.00
13,100.00	90.03	89.91	7,146.13	-1,388.39	6,094.91	6,093.70	0.00	0.00	0.00
13,200.00	90.03	89.91	7,146.07	-1,388.22	6,194.91	6,193.70	0.00	0.00	0.00
13,300.00	90.03	89.91	7,146.01	-1,388.06	6,294.91	6,293.70	0.00	0.00	0.00
13,400.00	90.03	89.91	7,145.96	-1,387.89	6,394.91	6,393.70	0.00	0.00	0.00
13,500.00	90.03	89.91	7,145.90	-1,387.73	6,494.91	6,493.70	0.00	0.00	0.00
13,600.00	90.03	89.91	7,145.84	-1,387.56	6,594.91	6,593.70	0.00	0.00	0.00
13,700.00	90.03	89.91	7,145.79	-1,387.40	6,694.91	6,693.70	0.00	0.00	0.00
13,800.00	90.03	89.91	7,145.73	-1,387.23	6,794.91	6,793.70	0.00	0.00	0.00
13,900.00	90.03	89.91	7,145.67	-1,387.07	6,894.91	6,893.70	0.00	0.00	0.00
14,000.00	90.03	89.91	7,145.62	-1,386.90	6,994.91	6,993.70	0.00	0.00	0.00
14,100.00	90.03	89.91	7,145.56	-1,386.74	7,094.91	7,093.70	0.00	0.00	0.00
14,200.00	90.03	89.91	7,145.50	-1,386.57	7,194.91	7,193.70	0.00	0.00	0.00
14,300.00	90.03	89.91	7,145.45	-1,386.41	7,294.91	7,293.70	0.00	0.00	0.00
14,400.00	90.03	89.91	7,145.39	-1,386.24	7,394.91	7,393.70	0.00	0.00	0.00
14,500.00	90.03	89.91	7,145.33	-1,386.08	7,494.91	7,493.70	0.00	0.00	0.00
14,600.00	90.03	89.91	7,145.28	-1,385.91	7,594.91	7,593.70	0.00	0.00	0.00
14,700.00	90.03	89.91	7,145.22	-1,385.75	7,694.91	7,693.70	0.00	0.00	0.00
14,800.00	90.03	89.91	7,145.17	-1,385.58	7,794.91	7,793.70	0.00	0.00	0.00
14,900.00	90.03	89.91	7,145.11	-1,385.42	7,894.91	7,893.70	0.00	0.00	0.00
15,000.00	90.03	89.91	7,145.05	-1,385.25	7,994.91	7,993.70	0.00	0.00	0.00
15,100.00	90.03	89.91	7,145.00	-1,385.09	8,094.91	8,093.70	0.00	0.00	0.00
15,200.00	90.03	89.91	7,144.94	-1,384.92	8,194.91	8,193.70	0.00	0.00	0.00
15,300.00	90.03	89.91	7,144.88	-1,384.76	8,294.91	8,293.70	0.00	0.00	0.00
15,400.00	90.03	89.91	7,144.83	-1,384.59	8,394.91	8,393.70	0.00	0.00	0.00
15,500.00	90.03	89.91	7,144.77	-1,384.43	8,494.91	8,493.70	0.00	0.00	0.00
15,600.00	90.03	89.91	7,144.71	-1,384.26	8,594.91	8,593.70	0.00	0.00	0.00
15,700.00	90.03	89.91	7,144.66	-1,384.10	8,694.91	8,693.70	0.00	0.00	0.00
15,800.00	90.03	89.91	7,144.60	-1,383.93	8,794.91	8,793.70	0.00	0.00	0.00
15,900.00	90.03	89.91	7,144.54	-1,383.77	8,894.91	8,893.70	0.00	0.00	0.00
16,000.00	90.03	89.91	7,144.49	-1,383.60	8,994.91	8,993.70	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
16,100.00	90.03	89.91	7,144.43	-1,383.44	9,094.91	9,093.70	0.00	0.00	0.00	
16,200.00	90.03	89.91	7,144.37	-1,383.27	9,194.91	9,193.70	0.00	0.00	0.00	
16,300.00	90.03	89.91	7,144.32	-1,383.11	9,294.91	9,293.70	0.00	0.00	0.00	
16,400.00	90.03	89.91	7,144.26	-1,382.94	9,394.91	9,393.70	0.00	0.00	0.00	
16,500.00	90.03	89.91	7,144.21	-1,382.78	9,494.91	9,493.70	0.00	0.00	0.00	
16,600.00	90.03	89.91	7,144.15	-1,382.61	9,594.91	9,593.70	0.00	0.00	0.00	
16,700.00	90.03	89.91	7,144.09	-1,382.45	9,694.91	9,693.70	0.00	0.00	0.00	
16,800.00	90.03	89.91	7,144.04	-1,382.28	9,794.91	9,793.70	0.00	0.00	0.00	
16,862.86	90.03	89.91	7,144.00	-1,382.18	9,857.76	9,856.55	0.00	0.00	0.00	
Start DLS 1.00 TFO 89.65										
16,866.76	90.03	89.94	7,144.00	-1,382.18	9,861.66	9,860.45	1.00	0.01	1.00	
Start 5269.78 hold at 16866.75 MD										
16,900.00	90.03	89.94	7,143.98	-1,382.14	9,894.91	9,893.70	0.00	0.00	0.00	
17,000.00	90.03	89.94	7,143.92	-1,382.05	9,994.91	9,993.70	0.00	0.00	0.00	
17,100.00	90.03	89.94	7,143.87	-1,381.95	10,094.91	10,093.70	0.00	0.00	0.00	
17,200.00	90.03	89.94	7,143.81	-1,381.85	10,194.91	10,193.70	0.00	0.00	0.00	
17,300.00	90.03	89.94	7,143.75	-1,381.76	10,294.91	10,293.70	0.00	0.00	0.00	
17,400.00	90.03	89.94	7,143.69	-1,381.66	10,394.91	10,393.70	0.00	0.00	0.00	
17,500.00	90.03	89.94	7,143.64	-1,381.56	10,494.91	10,493.70	0.00	0.00	0.00	
17,600.00	90.03	89.94	7,143.58	-1,381.47	10,594.91	10,593.70	0.00	0.00	0.00	
17,700.00	90.03	89.94	7,143.52	-1,381.37	10,694.91	10,693.70	0.00	0.00	0.00	
17,800.00	90.03	89.94	7,143.47	-1,381.27	10,794.91	10,793.70	0.00	0.00	0.00	
17,900.00	90.03	89.94	7,143.41	-1,381.18	10,894.91	10,893.70	0.00	0.00	0.00	
18,000.00	90.03	89.94	7,143.35	-1,381.08	10,994.91	10,993.70	0.00	0.00	0.00	
18,100.00	90.03	89.94	7,143.30	-1,380.98	11,094.91	11,093.70	0.00	0.00	0.00	
18,200.00	90.03	89.94	7,143.24	-1,380.88	11,194.91	11,193.70	0.00	0.00	0.00	
18,300.00	90.03	89.94	7,143.18	-1,380.79	11,294.91	11,293.70	0.00	0.00	0.00	
18,400.00	90.03	89.94	7,143.13	-1,380.69	11,394.91	11,393.70	0.00	0.00	0.00	
18,500.00	90.03	89.94	7,143.07	-1,380.59	11,494.91	11,493.70	0.00	0.00	0.00	
18,600.00	90.03	89.94	7,143.01	-1,380.50	11,594.91	11,593.70	0.00	0.00	0.00	
18,700.00	90.03	89.94	7,142.96	-1,380.40	11,694.91	11,693.70	0.00	0.00	0.00	
18,800.00	90.03	89.94	7,142.90	-1,380.30	11,794.91	11,793.70	0.00	0.00	0.00	
18,900.00	90.03	89.94	7,142.84	-1,380.21	11,894.91	11,893.70	0.00	0.00	0.00	
19,000.00	90.03	89.94	7,142.78	-1,380.11	11,994.91	11,993.70	0.00	0.00	0.00	
19,100.00	90.03	89.94	7,142.73	-1,380.01	12,094.91	12,093.70	0.00	0.00	0.00	
19,200.00	90.03	89.94	7,142.67	-1,379.92	12,194.91	12,193.70	0.00	0.00	0.00	
19,300.00	90.03	89.94	7,142.61	-1,379.82	12,294.91	12,293.70	0.00	0.00	0.00	
19,400.00	90.03	89.94	7,142.56	-1,379.72	12,394.91	12,393.70	0.00	0.00	0.00	
19,500.00	90.03	89.94	7,142.50	-1,379.63	12,494.91	12,493.70	0.00	0.00	0.00	
19,600.00	90.03	89.94	7,142.44	-1,379.53	12,594.91	12,593.70	0.00	0.00	0.00	
19,700.00	90.03	89.94	7,142.39	-1,379.43	12,694.91	12,693.70	0.00	0.00	0.00	
19,800.00	90.03	89.94	7,142.33	-1,379.34	12,794.91	12,793.70	0.00	0.00	0.00	
19,900.00	90.03	89.94	7,142.27	-1,379.24	12,894.91	12,893.70	0.00	0.00	0.00	
20,000.00	90.03	89.94	7,142.22	-1,379.14	12,994.91	12,993.70	0.00	0.00	0.00	
20,100.00	90.03	89.94	7,142.16	-1,379.04	13,094.91	13,093.70	0.00	0.00	0.00	
20,200.00	90.03	89.94	7,142.10	-1,378.95	13,194.91	13,193.70	0.00	0.00	0.00	
20,300.00	90.03	89.94	7,142.04	-1,378.85	13,294.91	13,293.70	0.00	0.00	0.00	
20,400.00	90.03	89.94	7,141.99	-1,378.75	13,394.91	13,393.70	0.00	0.00	0.00	
20,500.00	90.03	89.94	7,141.93	-1,378.66	13,494.91	13,493.70	0.00	0.00	0.00	
20,600.00	90.03	89.94	7,141.87	-1,378.56	13,594.91	13,593.70	0.00	0.00	0.00	
20,700.00	90.03	89.94	7,141.82	-1,378.46	13,694.90	13,693.70	0.00	0.00	0.00	
20,800.00	90.03	89.94	7,141.76	-1,378.37	13,794.90	13,793.70	0.00	0.00	0.00	
20,900.00	90.03	89.94	7,141.70	-1,378.27	13,894.90	13,893.70	0.00	0.00	0.00	
21,000.00	90.03	89.94	7,141.65	-1,378.17	13,994.90	13,993.70	0.00	0.00	0.00	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
21,100.00	90.03	89.94	7,141.59	-1,378.08	14,094.90	14,093.70	0.00	0.00	0.00
21,200.00	90.03	89.94	7,141.53	-1,377.98	14,194.90	14,193.70	0.00	0.00	0.00
21,300.00	90.03	89.94	7,141.48	-1,377.88	14,294.90	14,293.70	0.00	0.00	0.00
21,400.00	90.03	89.94	7,141.42	-1,377.79	14,394.90	14,393.70	0.00	0.00	0.00
21,500.00	90.03	89.94	7,141.36	-1,377.69	14,494.90	14,493.70	0.00	0.00	0.00
21,600.00	90.03	89.94	7,141.31	-1,377.59	14,594.90	14,593.70	0.00	0.00	0.00
21,700.00	90.03	89.94	7,141.25	-1,377.50	14,694.90	14,693.70	0.00	0.00	0.00
21,800.00	90.03	89.94	7,141.19	-1,377.40	14,794.90	14,793.70	0.00	0.00	0.00
21,900.00	90.03	89.94	7,141.13	-1,377.30	14,894.90	14,893.70	0.00	0.00	0.00
22,000.00	90.03	89.94	7,141.08	-1,377.20	14,994.90	14,993.70	0.00	0.00	0.00
22,100.00	90.03	89.94	7,141.02	-1,377.11	15,094.90	15,093.70	0.00	0.00	0.00
22,136.53	90.03	89.94	7,141.00	-1,377.07	15,131.44	15,130.23	0.00	0.00	0.00
Start DLS 1.00 TFO -88.48									
22,137.77	90.03	89.93	7,141.00	-1,377.07	15,132.67	15,131.46	1.00	0.03	-1.00
Start 5020.02 hold at 22137.77 MD									
22,200.00	90.03	89.93	7,140.96	-1,377.00	15,194.90	15,193.70	0.00	0.00	0.00
22,300.00	90.03	89.93	7,140.91	-1,376.88	15,294.90	15,293.70	0.00	0.00	0.00
22,400.00	90.03	89.93	7,140.85	-1,376.76	15,394.90	15,393.70	0.00	0.00	0.00
22,500.00	90.03	89.93	7,140.79	-1,376.64	15,494.90	15,493.70	0.00	0.00	0.00
22,600.00	90.03	89.93	7,140.73	-1,376.52	15,594.90	15,593.70	0.00	0.00	0.00
22,700.00	90.03	89.93	7,140.68	-1,376.41	15,694.90	15,693.70	0.00	0.00	0.00
22,800.00	90.03	89.93	7,140.62	-1,376.29	15,794.90	15,793.70	0.00	0.00	0.00
22,900.00	90.03	89.93	7,140.56	-1,376.17	15,894.90	15,893.70	0.00	0.00	0.00
23,000.00	90.03	89.93	7,140.50	-1,376.05	15,994.90	15,993.70	0.00	0.00	0.00
23,100.00	90.03	89.93	7,140.45	-1,375.93	16,094.90	16,093.70	0.00	0.00	0.00
23,200.00	90.03	89.93	7,140.39	-1,375.81	16,194.90	16,193.70	0.00	0.00	0.00
23,300.00	90.03	89.93	7,140.33	-1,375.70	16,294.90	16,293.70	0.00	0.00	0.00
23,400.00	90.03	89.93	7,140.27	-1,375.58	16,394.90	16,393.70	0.00	0.00	0.00
23,500.00	90.03	89.93	7,140.22	-1,375.46	16,494.90	16,493.70	0.00	0.00	0.00
23,600.00	90.03	89.93	7,140.16	-1,375.34	16,594.90	16,593.70	0.00	0.00	0.00
23,700.00	90.03	89.93	7,140.10	-1,375.22	16,694.90	16,693.70	0.00	0.00	0.00
23,800.00	90.03	89.93	7,140.04	-1,375.10	16,794.90	16,793.70	0.00	0.00	0.00
23,900.00	90.03	89.93	7,139.99	-1,374.99	16,894.90	16,893.70	0.00	0.00	0.00
24,000.00	90.03	89.93	7,139.93	-1,374.87	16,994.90	16,993.70	0.00	0.00	0.00
24,100.00	90.03	89.93	7,139.87	-1,374.75	17,094.90	17,093.70	0.00	0.00	0.00
24,200.00	90.03	89.93	7,139.81	-1,374.63	17,194.90	17,193.70	0.00	0.00	0.00
24,300.00	90.03	89.93	7,139.76	-1,374.51	17,294.90	17,293.70	0.00	0.00	0.00
24,400.00	90.03	89.93	7,139.70	-1,374.39	17,394.90	17,393.70	0.00	0.00	0.00
24,500.00	90.03	89.93	7,139.64	-1,374.28	17,494.90	17,493.70	0.00	0.00	0.00
24,600.00	90.03	89.93	7,139.58	-1,374.16	17,594.90	17,593.70	0.00	0.00	0.00
24,700.00	90.03	89.93	7,139.53	-1,374.04	17,694.90	17,693.70	0.00	0.00	0.00
24,800.00	90.03	89.93	7,139.47	-1,373.92	17,794.90	17,793.70	0.00	0.00	0.00
24,900.00	90.03	89.93	7,139.41	-1,373.80	17,894.90	17,893.70	0.00	0.00	0.00
25,000.00	90.03	89.93	7,139.35	-1,373.68	17,994.90	17,993.70	0.00	0.00	0.00
25,100.00	90.03	89.93	7,139.30	-1,373.57	18,094.90	18,093.70	0.00	0.00	0.00
25,200.00	90.03	89.93	7,139.24	-1,373.45	18,194.90	18,193.70	0.00	0.00	0.00
25,300.00	90.03	89.93	7,139.18	-1,373.33	18,294.90	18,293.70	0.00	0.00	0.00
25,400.00	90.03	89.93	7,139.13	-1,373.21	18,394.90	18,393.70	0.00	0.00	0.00
25,500.00	90.03	89.93	7,139.07	-1,373.09	18,494.90	18,493.70	0.00	0.00	0.00
25,600.00	90.03	89.93	7,139.01	-1,372.97	18,594.90	18,593.70	0.00	0.00	0.00
25,700.00	90.03	89.93	7,138.95	-1,372.86	18,694.90	18,693.70	0.00	0.00	0.00
25,800.00	90.03	89.93	7,138.90	-1,372.74	18,794.90	18,793.70	0.00	0.00	0.00
25,900.00	90.03	89.93	7,138.84	-1,372.62	18,894.90	18,893.70	0.00	0.00	0.00

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
26,000.00	90.03	89.93	7,138.78	-1,372.50	18,994.90	18,993.70	0.00	0.00	0.00	
26,100.00	90.03	89.93	7,138.72	-1,372.38	19,094.90	19,093.70	0.00	0.00	0.00	
26,200.00	90.03	89.93	7,138.67	-1,372.26	19,194.90	19,193.70	0.00	0.00	0.00	
26,300.00	90.03	89.93	7,138.61	-1,372.15	19,294.90	19,293.70	0.00	0.00	0.00	
26,400.00	90.03	89.93	7,138.55	-1,372.03	19,394.90	19,393.70	0.00	0.00	0.00	
26,500.00	90.03	89.93	7,138.49	-1,371.91	19,494.90	19,493.70	0.00	0.00	0.00	
26,600.00	90.03	89.93	7,138.44	-1,371.79	19,594.90	19,593.70	0.00	0.00	0.00	
26,700.00	90.03	89.93	7,138.38	-1,371.67	19,694.90	19,693.70	0.00	0.00	0.00	
26,800.00	90.03	89.93	7,138.32	-1,371.55	19,794.90	19,793.70	0.00	0.00	0.00	
26,900.00	90.03	89.93	7,138.26	-1,371.44	19,894.90	19,893.70	0.00	0.00	0.00	
27,000.00	90.03	89.93	7,138.21	-1,371.32	19,994.90	19,993.70	0.00	0.00	0.00	
27,100.00	90.03	89.93	7,138.15	-1,371.20	20,094.90	20,093.70	0.00	0.00	0.00	
27,157.78	90.03	89.93	7,138.12	-1,371.13	20,152.68	20,151.48	0.00	0.00	0.00	
Start 199.99 hold at 27157.78 MD										
27,200.00	90.03	89.93	7,138.09	-1,371.08	20,194.90	20,193.70	0.00	0.00	0.00	
27,300.00	90.03	89.93	7,138.03	-1,370.96	20,294.90	20,293.70	0.00	0.00	0.00	
27,357.78	90.03	89.93	7,138.00	-1,370.89	20,352.68	20,351.47	0.00	0.00	0.00	
TD at 27357.78										

Design Targets										
Target Name										
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- Shape										
RU 834H SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	2,133,429.53	2,872,973.57	36.861823	-107.320981	
RU 834H KOP - plan hits target center - Point	0.00	0.00	6,528.89	-1,254.11	18.52	2,132,175.54	2,872,998.82	36.858378	-107.320918	
RU 834H PBHL - plan hits target center - Point	0.00	0.00	7,138.00	-1,370.89	20,352.68	2,132,167.85	2,893,333.31	36.858037	-107.251413	
RU 834H FPP - plan hits target center - Point	0.00	0.00	7,138.12	-1,371.13	20,152.68	2,132,166.54	2,893,133.31	36.858037	-107.252097	
RU 834H POE - plan hits target center - Point	0.00	0.00	7,149.00	-1,389.62	655.43	2,132,043.45	2,873,636.44	36.858006	-107.318741	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 834H
Company:	Logos Operating LLC	TVD Reference:	6563+30 @ 6593.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 834H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,794.29	2,750.00	Ojo Alamo				
2,920.18	2,873.00	Kirtland				
3,302.98	3,247.00	Fruitland		0.00		
3,344.95	3,288.00	Top of Coals		0.00		
3,435.02	3,376.00	Base of Coals		0.00		
3,664.29	3,600.00	Pictured Cliffs				
3,765.62	3,699.00	Lewis		0.00		
4,904.81	4,812.00	Chacra		0.00		
5,440.11	5,335.00	Upper Cliff House		0.00		
5,731.82	5,620.00	Cliff House				
5,766.62	5,654.00	Menefee				
5,952.90	5,836.00	Point Lookout				
6,509.70	6,380.00	Mancos				
7,200.84	6,994.00	Top Black				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
290.00	289.99	1.94	0.17	Start 150.00 hold at 290.00 MD	
440.00	439.99	2.92	0.47	Start DLS 2.00 TFO 162.34	
1,074.04	1,069.30	-62.87	2.06	Start 5588.06 hold at 1074.04 MD	
6,662.10	6,528.89	-1,254.11	18.52	Start DLS 9.00 TFO -89.21	
7,660.51	7,149.00	-1,389.62	655.43	Start 4155.00 hold at 7660.51 MD	
11,815.51	7,146.85	-1,390.49	4,810.43	Start DLS 1.00 TFO -88.54	
11,826.17	7,146.84	-1,390.49	4,821.09	Start 5036.68 hold at 11826.17 MD	
16,862.86	7,144.00	-1,382.18	9,857.76	Start DLS 1.00 TFO 89.65	
16,866.76	7,144.00	-1,382.18	9,861.66	Start 5269.78 hold at 16866.75 MD	
22,136.53	7,141.00	-1,377.07	15,131.44	Start DLS 1.00 TFO -88.48	
22,137.77	7,141.00	-1,377.07	15,132.67	Start 5020.02 hold at 22137.77 MD	
27,157.78	7,138.12	-1,371.13	20,152.68	Start 199.99 hold at 27157.78 MD	
27,357.78	7,138.00	-1,370.89	20,352.68	TD at 27357.78	



LOGOS Operating, LLC Operations Plan

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

Date:	9/3/2025	Pool:	Basin Mancos
Well Name:	Rosa Unit 834H	GL Elevation:	6,563'
Surface Location:	Sec 36, T31N, R5W 562' FNL, 466' FWL (36.861823° N, -107.320981° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 33, T31N, R4W 1944' FNL, 50' FEL (36.858037° N, -107.251413° W – NAD83)	Measured Depth:	27,358'(KB)
Lease Serial CA Serial	# NMSF078768 # 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	2,794'	2,663'	*POINT LOOKOUT	5,953'	5,749'
KIRTLAND	2,920'	2,786'	*MANCOS	6,510'	6,293'
*FRUITLAND	3,303'	3,062'	KICKOFF POINT	6,662'	6,529'
*PICTURED CLIFFS	3,664'	3,513'	LANDING POINT	7,661'	7,149'
LEWIS	3,766'	3,612'	TD	27,358'	7,138'
CHACRA	4,905'	4,725'			
*CLIFF HOUSE	5,732'	5,533'			
MENEFEE	5,767'	5,567'			

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

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

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

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

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 17-1/2" surface hole 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 **1500 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:** 7,149' TVD x 0.43 = 3,075 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 (Pre-Set)	17.5"	350' (GL)	13-3/8"	54.5 LBS	J-55	BTC
INTERMEDIATE	12.25"	6,620'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	27,358'	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:** 13-3/8" 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 cancellation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.
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:

Surface - 13-3/8", 54.5# csg	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	320	0.6946	1.3	339	60	1.15	295	15.8
or Type III		320	0.6946	1.3	339	60	1.39	244	14.6

Set Depth, ft RKB 320

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", 43.5# 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	6,120	500	0.3132	1.3	221	39	1.15	192	15.8
Stage 1 Lead	4,980	1,140	0.3132	1.3	464	83	2.66	175	11.8
					685	122		367	
Stage 2 Tail	4,380	600	0.3132	1.3	244	44	1.76	139	13.5
Stage 2 Lead	3,714	666	0.3132	1.3	271	48	2.66	102	11.8
					515	92		241	
Stage 3 Tail	3,064	650	0.3132	1.3	265	47	1.76	150	13.5
Stage 3 Lead	380	2,684	0.3132	1.3	1,093	195	2.66	411	11.8
Stage 3 Lead	-	380	0.3627	1	138	25	2.66	52	11.8
					1,495	266		613	
					2,696	480		1,221	

Set Depth, ft RKB 6620

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", 20# csg	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased hole Tail	6,520	100	0.2531	1	25	5	2.03	12	13.2
Open Hole Tail	6,620	20,738	0.2291	1.15	5,474	975	2.03	2,697	13.2
					5,500	980		2,709	

Set Depth, ft RKB 27358



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 * 7,149' TVD = 1573 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

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

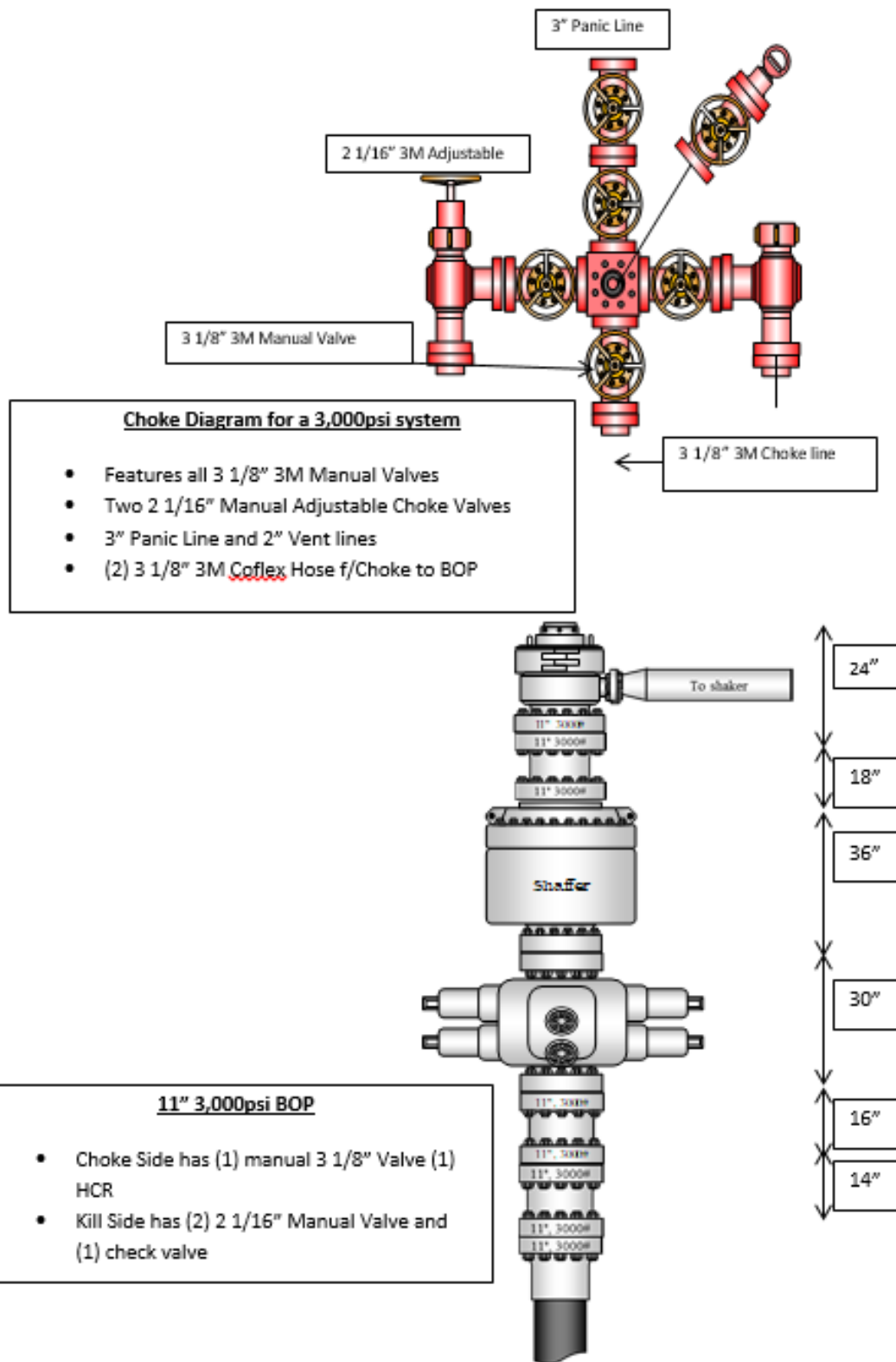
E. PRODUCTION TUBING

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

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



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



Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/ocd/contact-us>

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 514177

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 514177
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	No additives containing PFAS chemicals will be added to the drilling fluids or completion fluids used during drilling, completions, or recompletions operations.	10/10/2025
ward.rikala	Any previous COA's not addressed within the updated COA's still apply.	10/10/2025
ward.rikala	Well can not be produced until com agreement is approved.	10/10/2025