

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 36 / NWNW / 36.861891 / -107.320923	County or Parish/State: RIO ARRIBA / NM
Well Number: 836H	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: 3003931422	Operator: LOGOS OPERATING LLC	

Notice of Intent

Sundry ID: 2877960

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 10/09/2025

Time Sundry Submitted: 02:22

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

Logos__Rosa_Unit_836H_AC_Report_p5_Prelim_3_20251009142119.pdf

Rosa_Unit_836H_Extended_C102_Plat_20250924_signed_20251009142119.pdf

Rosa_Unit_836H_Operations_Plan_3_string_P5_Prelim3_9.3.2025_20251009142119.pdf

Logos__Rosa_Unit_836H_Plan_Data_p5_Prelim_3_20251009142119.pdf

Logos__Rosa_Unit_836H_Wall_p5_Prelim_3_20251009142119.pdf

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 36 /
NWNW / 36.861891 / -107.320923County or Parish/State: RIO
ARRIBA / NM

Well Number: 836H

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: 3003931422

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 10:06 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 30-039-31422	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 836H
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 550' NORTH	Feet from E/W Line 475' WEST	Latitude 36.861857 °N	Longitude -107.320952 °W	County RIO ARRIBA
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Bottom Hole Location

UL A	Section 33	Township 31N	Range 4W	Lot	Feet from N/S Line 685' NORTH	Feet from E/W Line 50' EAST	Latitude 36.861494 °N	Longitude -107.251417 °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 D	Section 36	Township 31N	Range 5W	Lot	Feet from N/S Line 672' NORTH	Feet from E/W Line 530' WEST	Latitude 36.861521 °N	Longitude -107.320762 °W	County RIO ARRIBA
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First Take Point (FTP)

UL D	Section 36	Township 31N	Range 5W	Lot	Feet from N/S Line 685' NORTH	Feet from E/W Line 1167' WEST	Latitude 36.861486 °N	Longitude -107.318586 °W	County RIO ARRIBA
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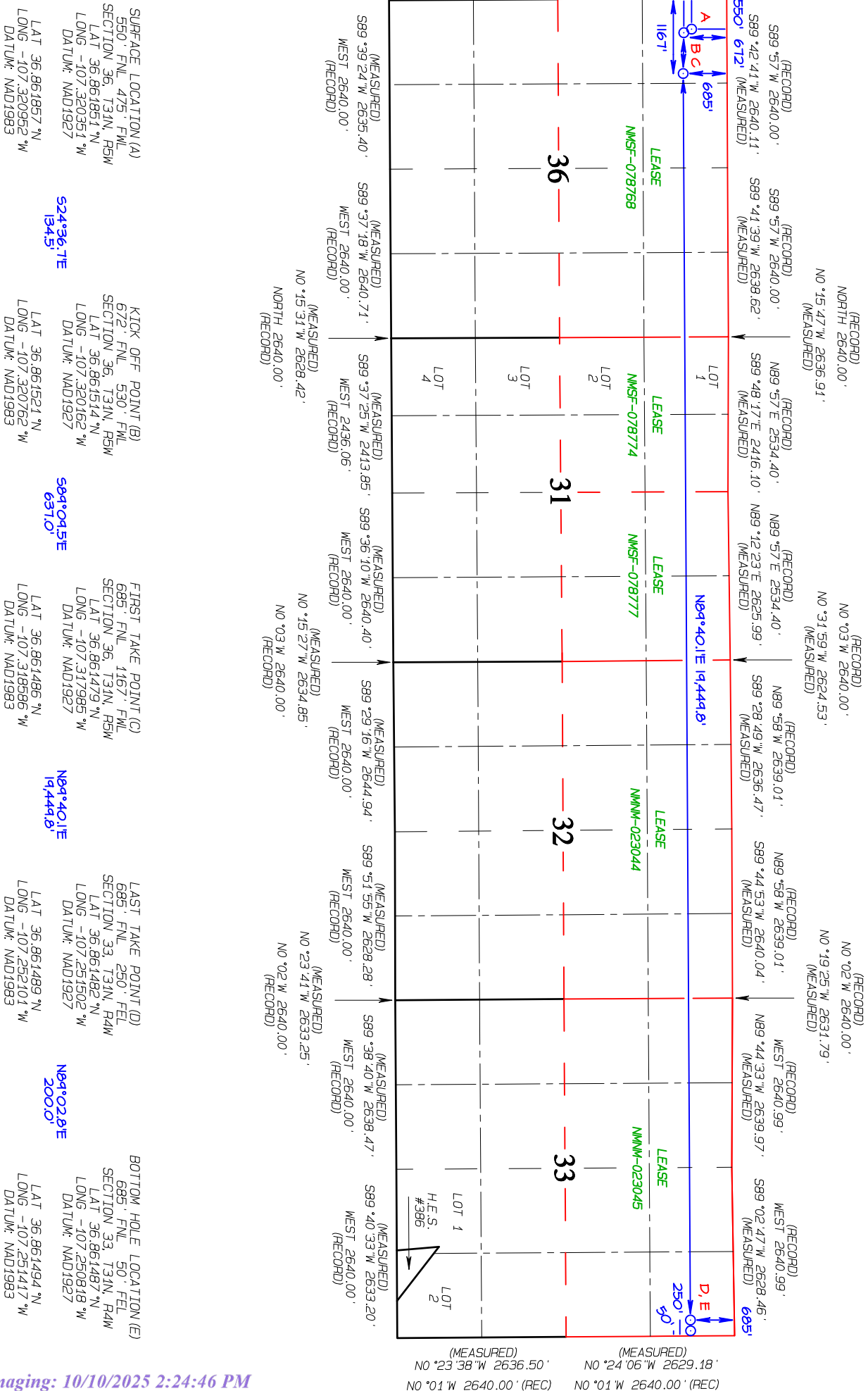
Last Take Point (LTP)

UL A	Section 33	Township 31N	Range 4W	Lot	Feet from N/S Line 685' NORTH	Feet from E/W Line 250' EAST	Latitude 36.861489 °N	Longitude -107.252101 °W	County RIO ARRIBA
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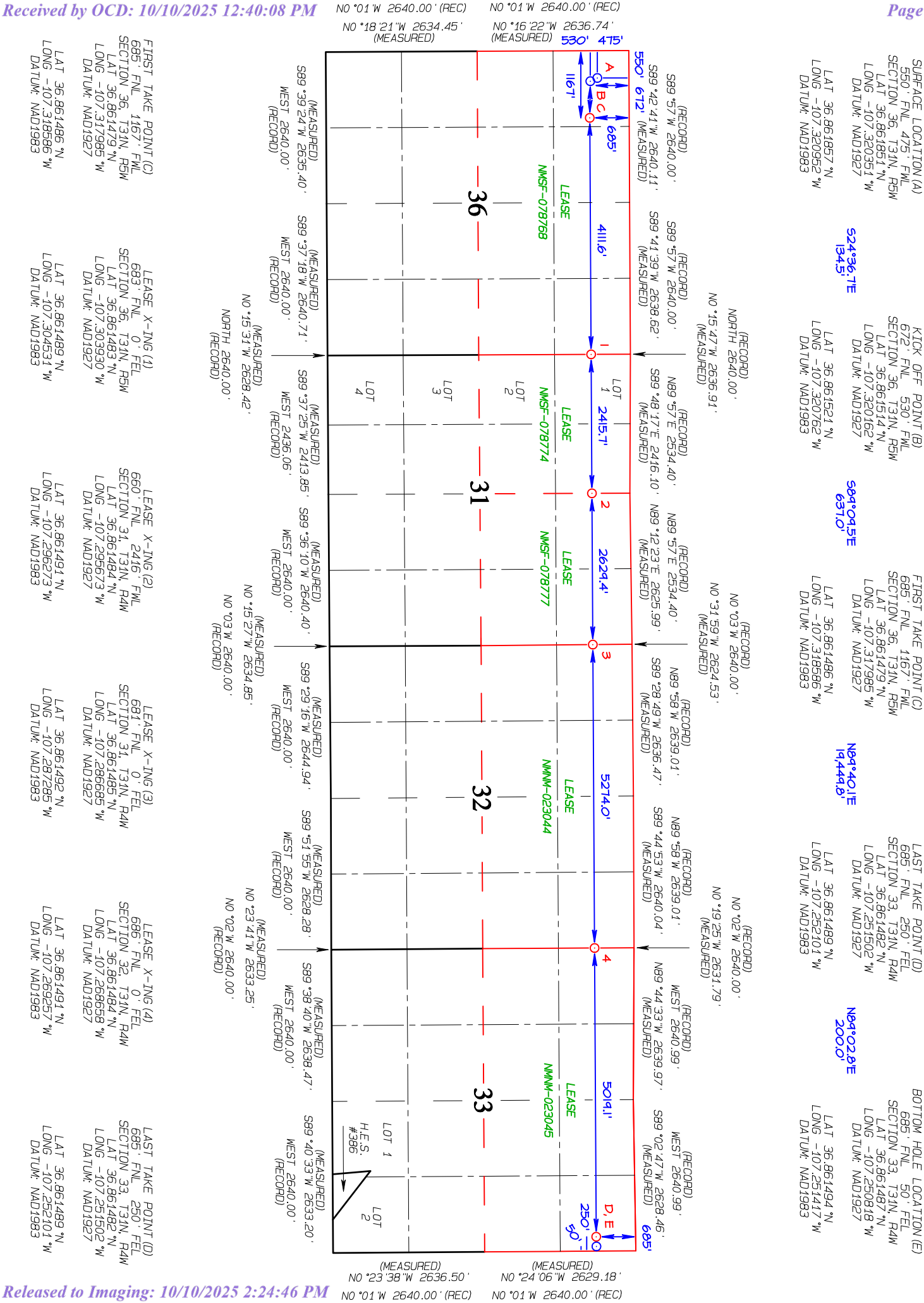
Unitized Area or Area of Uniform Interest ROSA UNIT	Spacing Unit Type ☒ Horizontal ☐ Vertical ☐ Directional	Ground Floor Elevation
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OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my 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. Etta Trujillo 9/25/25 Signature Date 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 #836H



Rosa Unit #836H



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 42

Rosa Unit 836H

OH

p5-Prelim 3

Anticollision Report

11 August, 2025

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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	312.00	Survey #1 (OH)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4	
312.00	27,176.36	p5-Prelim 3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 30						
Rosa Unit #664H - OH - OH	6,554.40	19,340.96	12,767.80	12,700.17	188.791	CC, ES
Rosa Unit #664H - OH - OH	6,800.00	19,340.96	12,816.47	12,748.17	187.630	SF
Rosa Unit 31						
Rosa Unit #744H - OH - OH	6,819.25	20,806.96	881.43	673.67	4.243	CC, ES, SF
Rosa Unit #745H - OH - OH	6,933.38	21,289.96	1,039.56	832.90	5.030	CC, ES, SF
Rosa Unit #746H - OH - OH	6,835.57	20,952.96	1,666.27	1,426.11	6.938	CC, ES
Rosa Unit #746H - OH - OH	6,850.00	20,952.96	1,666.41	1,426.22	6.938	SF
Rosa Unit 42						
(O) Pre-Ongard Well #112 - OH - OH-TD	0.00	187.00	10,244.61			
(O) Pre-Ongard Well #112 - OH - OH-TD	6,550.00	6,737.79	10,317.02	10,132.67	55.964	ES
(O) Pre-Ongard Well #112 - OH - OH-TD	7,200.00	7,268.63	10,639.48	10,437.71	52.731	SF
(O) Rosa Unit #006C - OH - OH-SVY	3,871.08	4,656.35	9,026.34	8,943.29	108.688	CC
(O) Rosa Unit #006C - OH - OH-SVY	3,900.00	4,677.22	9,026.35	8,943.18	108.527	ES
(O) Rosa Unit #006C - OH - OH-SVY	6,750.00	7,411.83	9,122.84	9,026.99	95.172	SF
(O) Rosa Unit #112Y - OH - OH-INC	0.00	187.00	10,273.09			
(O) Rosa Unit #112Y - OH - OH-INC	6,550.00	6,753.74	10,345.87	10,121.20	46.049	ES
(O) Rosa Unit #112Y - OH - OH-INC	7,050.00	7,212.46	10,548.22	10,308.31	43.966	SF
(O) Rosa Unit #184C - OH - OH-INC	0.00	183.00	8,286.68			
(O) Rosa Unit #184C - OH - OH-INC	6,550.00	6,737.79	8,339.07	8,092.98	33.886	ES
(O) Rosa Unit #184C - OH - OH-INC	7,050.00	7,180.50	8,542.17	8,281.31	32.747	SF
(O) Rosa Unit #601 - OH - OH-SVY	15,504.45	7,523.56	775.76	600.18	4.418	CC, ES, SF
(O) Schalk 32 #001A - OH - OH-SVY	19,916.04	6,177.00	3,923.70	3,782.53	27.793	CC
(O) Schalk 32 #001A - OH - OH-SVY	20,000.00	6,253.48	3,923.86	3,781.33	27.531	ES
(O) Schalk 32 #001A - OH - OH-SVY	20,400.00	6,260.00	3,944.31	3,799.23	27.186	SF
(O) Schalk 32 #003H - OH - OH-SVY	17,824.00	3,930.24	4,522.18	4,391.93	34.718	CC
(O) Schalk 32 #003H - OH - OH-SVY	21,500.00	7,542.33	4,537.44	4,316.92	20.577	ES
(O) Schalk 32 #003H - OH - OH-SVY	21,953.88	7,542.33	4,566.36	4,342.12	20.363	SF
Rosa Unit 830H - OH - OH	0.00	0.00	30.01			
Rosa Unit 830H - OH - Plan #5	0.00	0.00	30.01			
Rosa Unit 832H - OH - OH	0.00	0.00	15.20			
Rosa Unit 832H - OH - OH	321.94	321.95	14.49	14.13	40.429	CC, ES
Rosa Unit 832H - OH - p4-Prelim 2	391.99	392.00	14.48	14.00	29.690	CC
Rosa Unit 832H - OH - p4-Prelim 2	462.00	462.01	14.49	13.63	17.012	ES
Rosa Unit 832H - OH - p4-Prelim 2	27,176.36	27,335.53	1,395.45	743.68	2.141	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 836H
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 836H	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

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 42						
Rosa Unit 834H - OH - OH	0.00	0.00	15.01			
Rosa Unit 834H - OH - OH	289.42	289.51	14.00	13.60	34.555	CC, ES
Rosa Unit 834H - OH - p5-Prelim 3	460.89	460.91	13.19	12.34	15.492	CC
Rosa Unit 834H - OH - p5-Prelim 3	509.18	509.05	13.28	12.25	12.926	ES
Rosa Unit 834H - OH - p5-Prelim 3	27,176.36	27,357.19	1,258.84	686.37	2.199	SF
Rosa Unit 836H - OH - OH	312.44	312.00	0.44			
Rosa Unit 836H - OH - OH	27,176.36	312.00	21,460.54	21,301.14	134.634	SF

Offset Design:	Rosa Unit 30 - Rosa Unit #664H - OH - OH											Offset Site Error:	0.00 usft
Survey Program:	396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM											Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		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	19,340.96	6,975.69	0.00	373.60	-83.40	1,457.09	-12,599.52	14,560.09				
125.00	125.00	19,340.96	6,975.69	0.06	373.60	141.09	1,457.09	-12,599.52	14,499.41	14,438.98	60.43	239.947	
225.00	225.00	19,340.96	6,975.69	0.17	373.60	-152.72	1,457.09	-12,599.52	14,451.80	14,391.59	60.21	240.033	
312.00	311.99	19,340.96	6,975.69	0.28	373.60	146.02	1,457.09	-12,599.52	14,410.82	14,350.80	60.02	240.101	
400.00	399.99	19,340.96	6,975.69	0.37	373.60	146.02	1,457.09	-12,599.52	14,369.67	14,309.10	60.57	237.223	
462.00	461.99	19,340.96	6,975.69	0.50	373.60	146.02	1,457.09	-12,599.52	14,340.94	14,280.53	60.41	237.390	
509.18	509.16	19,340.96	6,975.69	0.64	373.60	120.80	1,457.09	-12,599.52	14,319.34	14,259.03	60.31	237.445	
600.00	599.96	19,340.96	6,975.69	0.94	373.60	120.80	1,457.09	-12,599.52	14,278.34	14,218.18	60.16	237.335	
700.00	699.94	19,340.96	6,975.69	1.28	373.60	120.80	1,457.09	-12,599.52	14,233.74	14,173.68	60.06	236.998	
800.00	799.92	19,340.96	6,975.69	1.63	373.60	120.80	1,457.09	-12,599.52	14,189.70	14,129.71	59.99	236.526	
900.00	899.89	19,340.96	6,975.69	1.98	373.60	120.80	1,457.09	-12,599.52	14,146.23	14,086.28	59.95	235.966	
1,000.00	999.87	19,340.96	6,975.69	2.34	373.60	120.80	1,457.09	-12,599.52	14,103.34	14,043.41	59.92	235.350	
1,100.00	1,099.84	19,340.96	6,975.69	2.69	373.60	120.80	1,457.09	-12,599.52	14,061.02	14,001.11	59.91	234.696	
1,200.00	1,199.82	19,340.96	6,975.69	3.05	373.60	120.80	1,457.09	-12,599.52	14,019.30	13,959.39	59.91	234.015	
1,300.00	1,299.80	19,340.96	6,975.69	3.41	373.60	120.80	1,457.09	-12,599.52	13,978.16	13,918.25	59.91	233.317	
1,400.00	1,399.77	19,340.96	6,975.69	3.77	373.60	120.80	1,457.09	-12,599.52	13,937.62	13,877.70	59.92	232.605	
1,500.00	1,499.75	19,340.96	6,975.69	4.13	373.60	120.80	1,457.09	-12,599.52	13,897.68	13,837.75	59.93	231.883	
1,600.00	1,599.72	19,340.96	6,975.69	4.49	373.60	120.80	1,457.09	-12,599.52	13,858.35	13,798.39	59.95	231.154	
1,700.00	1,699.70	19,340.96	6,975.69	4.85	373.60	120.80	1,457.09	-12,599.52	13,819.62	13,759.65	59.98	230.419	
1,800.00	1,799.68	19,340.96	6,975.69	5.21	373.60	120.80	1,457.09	-12,599.52	13,781.52	13,721.52	60.00	229.679	
1,900.00	1,899.65	19,340.96	6,975.69	5.57	373.60	120.80	1,457.09	-12,599.52	13,744.04	13,684.00	60.03	228.935	
2,000.00	1,999.63	19,340.96	6,975.69	5.93	373.60	120.80	1,457.09	-12,599.52	13,707.18	13,647.11	60.07	228.188	
2,100.00	2,099.60	19,340.96	6,975.69	6.29	373.60	120.80	1,457.09	-12,599.52	13,670.96	13,610.85	60.11	227.438	
2,200.00	2,199.58	19,340.96	6,975.69	6.65	373.60	120.80	1,457.09	-12,599.52	13,635.37	13,575.22	60.15	226.686	
2,300.00	2,299.56	19,340.96	6,975.69	7.01	373.60	120.80	1,457.09	-12,599.52	13,600.43	13,540.23	60.20	225.930	
2,400.00	2,399.53	19,340.96	6,975.69	7.37	373.60	120.80	1,457.09	-12,599.52	13,566.13	13,505.88	60.25	225.172	
2,500.00	2,499.51	19,340.96	6,975.69	7.73	373.60	120.80	1,457.09	-12,599.52	13,532.49	13,472.18	60.30	224.411	
2,600.00	2,599.48	19,340.96	6,975.69	8.09	373.60	120.80	1,457.09	-12,599.52	13,499.50	13,439.14	60.36	223.647	
2,700.00	2,699.46	19,340.96	6,975.69	8.45	373.60	120.80	1,457.09	-12,599.52	13,467.17	13,406.75	60.42	222.880	
2,800.00	2,799.44	19,340.96	6,975.69	8.81	373.60	120.80	1,457.09	-12,599.52	13,435.51	13,375.02	60.49	222.110	
2,900.00	2,899.41	19,340.96	6,975.69	9.17	373.60	120.80	1,457.09	-12,599.52	13,404.52	13,343.96	60.56	221.336	
3,000.00	2,999.39	19,340.96	6,975.69	9.53	373.60	120.80	1,457.09	-12,599.52	13,374.21	13,313.57	60.64	220.558	
3,100.00	3,099.36	19,340.96	6,975.69	9.89	373.60	120.80	1,457.09	-12,599.52	13,344.58	13,283.86	60.72	219.777	
3,200.00	3,199.34	19,340.96	6,975.69	10.25	373.60	120.80	1,457.09	-12,599.52	13,315.63	13,254.83	60.80	218.991	
3,300.00	3,299.32	19,340.96	6,975.69	10.61	373.60	120.80	1,457.09	-12,599.52	13,287.37	13,226.48	60.90	218.200	
3,400.00	3,399.29	19,340.96	6,975.69	10.97	373.60	120.80	1,457.09	-12,599.52	13,259.81	13,198.82	60.99	217.405	

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

SDT

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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 30 - Rosa Unit #664H - OH - OH											Offset Site Error: 0.00 usft		
Survey Program: 396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM							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
3,500.00	3,499.27	19,340.96	6,975.69	11.33	373.60	120.80	1,457.09	-12,599.52	13,232.94	13,171.85	61.09	216.605	
3,600.00	3,599.25	19,340.96	6,975.69	11.69	373.60	120.80	1,457.09	-12,599.52	13,206.78	13,145.58	61.20	215.799	
3,700.00	3,699.22	19,340.96	6,975.69	12.05	373.60	120.80	1,457.09	-12,599.52	13,181.33	13,120.01	61.31	214.988	
3,800.00	3,799.20	19,340.96	6,975.69	12.41	373.60	120.80	1,457.09	-12,599.52	13,156.58	13,095.15	61.43	214.170	
3,900.00	3,899.17	19,340.96	6,975.69	12.77	373.60	120.80	1,457.09	-12,599.52	13,132.55	13,071.00	61.56	213.346	
4,000.00	3,999.15	19,340.96	6,975.69	13.13	373.60	120.80	1,457.09	-12,599.52	13,109.24	13,047.55	61.69	212.516	
4,100.00	4,099.13	19,340.96	6,975.69	13.49	373.60	120.80	1,457.09	-12,599.52	13,086.65	13,024.83	61.82	211.679	
4,200.00	4,199.10	19,340.96	6,975.69	13.85	373.60	120.80	1,457.09	-12,599.52	13,064.79	13,002.82	61.97	210.836	
4,300.00	4,299.08	19,340.96	6,975.69	14.21	373.60	120.80	1,457.09	-12,599.52	13,043.66	12,981.54	62.12	209.985	
4,400.00	4,399.05	19,340.96	6,975.69	14.57	373.60	120.80	1,457.09	-12,599.52	13,023.26	12,960.98	62.27	209.126	
4,500.00	4,499.03	19,340.96	6,975.69	14.93	373.60	120.80	1,457.09	-12,599.52	13,003.60	12,941.16	62.44	208.260	
4,600.00	4,599.01	19,340.96	6,975.69	15.29	373.60	120.80	1,457.09	-12,599.52	12,984.67	12,922.06	62.61	207.386	
4,700.00	4,698.98	19,340.96	6,975.69	15.65	373.60	120.80	1,457.09	-12,599.52	12,966.50	12,903.71	62.79	206.505	
4,800.00	4,798.96	19,340.96	6,975.69	16.01	373.60	120.80	1,457.09	-12,599.52	12,949.07	12,886.09	62.98	205.615	
4,900.00	4,898.93	19,340.96	6,975.69	16.37	373.60	120.80	1,457.09	-12,599.52	12,932.38	12,869.21	63.17	204.718	
5,000.00	4,998.91	19,340.96	6,975.69	16.73	373.60	120.80	1,457.09	-12,599.52	12,916.46	12,853.08	63.37	203.812	
5,100.00	5,098.89	19,340.96	6,975.69	17.09	373.60	120.80	1,457.09	-12,599.52	12,901.28	12,837.70	63.58	202.899	
5,200.00	5,198.86	19,340.96	6,975.69	17.45	373.60	120.80	1,457.09	-12,599.52	12,886.87	12,823.06	63.80	201.977	
5,300.00	5,298.84	19,340.96	6,975.69	17.81	373.60	120.80	1,457.09	-12,599.52	12,873.21	12,809.18	64.03	201.047	
5,400.00	5,398.81	19,340.96	6,975.69	18.17	373.60	120.80	1,457.09	-12,599.52	12,860.32	12,796.06	64.27	200.109	
5,500.00	5,498.79	19,340.96	6,975.69	18.53	373.60	120.80	1,457.09	-12,599.52	12,848.20	12,783.69	64.51	199.164	
5,600.00	5,598.77	19,340.96	6,975.69	18.89	373.60	120.80	1,457.09	-12,599.52	12,836.84	12,772.08	64.76	198.211	
5,700.00	5,698.74	19,340.96	6,975.69	19.25	373.60	120.80	1,457.09	-12,599.52	12,826.25	12,761.22	65.03	197.250	
5,800.00	5,798.72	19,340.96	6,975.69	19.61	373.60	120.80	1,457.09	-12,599.52	12,816.43	12,751.14	65.30	196.282	
5,900.00	5,898.69	19,340.96	6,975.69	19.97	373.60	120.80	1,457.09	-12,599.52	12,807.39	12,741.81	65.58	195.307	
6,000.00	5,998.67	19,340.96	6,975.69	20.33	373.60	120.80	1,457.09	-12,599.52	12,799.12	12,733.26	65.86	194.326	
6,100.00	6,098.65	19,340.96	6,975.69	20.69	373.60	120.80	1,457.09	-12,599.52	12,791.63	12,725.47	66.16	193.338	
6,200.00	6,198.62	19,340.96	6,975.69	21.05	373.60	120.80	1,457.09	-12,599.52	12,784.91	12,718.45	66.47	192.344	
6,300.00	6,298.60	19,340.96	6,975.69	21.41	373.60	120.80	1,457.09	-12,599.52	12,778.98	12,712.19	66.79	191.344	
6,400.00	6,398.57	19,340.96	6,975.69	21.77	373.60	120.80	1,457.09	-12,599.52	12,773.82	12,706.71	67.11	190.340	
6,500.00	6,498.55	19,340.96	6,975.69	22.13	373.60	120.80	1,457.09	-12,599.52	12,769.45	12,702.00	67.45	189.330	
6,531.56	6,530.10	19,340.96	6,975.69	22.25	373.60	120.80	1,457.09	-12,599.52	12,768.23	12,700.68	67.55	189.011	
6,550.00	6,548.53	19,340.96	6,975.69	22.31	373.60	159.15	1,457.09	-12,599.52	12,767.82	12,700.20	67.61	188.831	
6,554.40	6,552.93	19,340.96	6,975.69	22.33	373.60	162.95	1,457.09	-12,599.52	12,767.80	12,700.17	67.63	188.791 CC, ES	
6,600.00	6,598.36	19,340.96	6,975.69	22.49	373.60	177.36	1,457.09	-12,599.52	12,769.51	12,701.73	67.78	188.408	
6,650.00	6,647.74	19,340.96	6,975.69	22.67	373.60	-178.68	1,457.09	-12,599.52	12,775.27	12,707.34	67.93	188.075	
6,700.00	6,696.35	19,340.96	6,975.69	22.84	373.60	-176.90	1,457.09	-12,599.52	12,785.07	12,717.00	68.07	187.832	
6,750.00	6,743.90	19,340.96	6,975.69	23.01	373.60	-175.82	1,457.09	-12,599.52	12,798.84	12,730.64	68.19	187.684	
6,800.00	6,790.11	19,340.96	6,975.69	23.18	373.60	-175.01	1,457.09	-12,599.52	12,816.47	12,748.17	68.31	187.630 SF	
6,850.00	6,834.67	19,340.96	6,975.69	23.35	373.60	-174.32	1,457.09	-12,599.52	12,837.86	12,769.45	68.41	187.674	
6,900.00	6,877.32	19,340.96	6,975.69	23.51	373.60	-173.67	1,457.09	-12,599.52	12,862.83	12,794.35	68.49	187.815	
6,950.00	6,917.80	19,340.96	6,975.69	23.68	373.60	-172.99	1,457.09	-12,599.52	12,891.23	12,822.68	68.55	188.052	
7,000.00	6,955.85	19,340.96	6,975.69	23.85	373.60	-172.24	1,457.09	-12,599.52	12,922.85	12,854.25	68.60	188.384	
7,050.00	6,991.24	19,340.96	6,975.69	24.03	373.60	-171.37	1,457.09	-12,599.52	12,957.48	12,888.85	68.63	188.809	
7,100.00	7,023.76	19,340.96	6,975.69	24.22	373.60	-170.33	1,457.09	-12,599.52	12,994.87	12,926.24	68.64	189.324	
7,150.00	7,053.20	19,340.96	6,975.69	24.42	373.60	-169.03	1,457.09	-12,599.52	13,034.79	12,966.16	68.63	189.926	
7,200.00	7,079.37	19,340.96	6,975.69	24.63	373.60	-167.36	1,457.09	-12,599.52	13,076.95	13,008.34	68.61	190.609	
7,250.00	7,102.13	19,340.96	6,975.69	24.86	373.60	-165.11	1,457.09	-12,599.52	13,121.07	13,052.51	68.56	191.369	
7,300.00	7,121.32	19,340.96	6,975.69	25.10	373.60	-161.93	1,457.09	-12,599.52	13,166.88	13,098.37	68.51	192.199	
7,350.00	7,136.84	19,340.96	6,975.69	25.35	373.60	-157.15	1,457.09	-12,599.52	13,214.06	13,145.63	68.43	193.092	
7,400.00	7,148.58	19,340.96	6,975.69	25.62	373.60	-149.33	1,457.09	-12,599.52	13,262.32	13,193.97	68.35	194.039	
7,450.00	7,156.47	19,340.96	6,975.69	25.90	373.60	-135.17	1,457.09	-12,599.52	13,311.35	13,243.09	68.25	195.032	

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 836H
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 836H	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 30 - Rosa Unit #664H - OH - OH												Offset Site Error:	0.00 usft
Survey Program: 396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM												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)			
7,500.00	7,160.47	19,340.96	6,975.69	26.20	373.60	-108.57	1,457.09	-12,599.52	13,360.83	13,292.68	68.15	196.058	
7,526.22	7,161.00	19,340.96	6,975.69	26.36	373.60	-89.42	1,457.09	-12,599.52	13,386.86	13,318.77	68.09	196.607	
7,600.00	7,160.97	19,340.96	6,975.69	26.83	373.60	-89.42	1,457.09	-12,599.52	13,460.12	13,392.19	67.93	198.159	
7,700.00	7,160.93	19,340.96	6,975.69	27.53	373.60	-89.42	1,457.09	-12,599.52	13,559.42	13,491.71	67.71	200.258	
7,800.00	7,160.89	19,340.96	6,975.69	28.32	373.60	-89.42	1,457.09	-12,599.52	13,658.74	13,591.24	67.50	202.350	
7,900.00	7,160.85	19,340.96	6,975.69	29.16	373.60	-89.42	1,457.09	-12,599.52	13,758.06	13,690.77	67.30	204.435	
8,000.00	7,160.81	19,340.96	6,975.69	30.07	373.60	-89.42	1,457.09	-12,599.52	13,857.40	13,790.30	67.10	206.513	
8,100.00	7,160.77	19,340.96	6,975.69	31.04	373.60	-89.42	1,457.09	-12,599.52	13,956.74	13,889.83	66.91	208.584	
8,200.00	7,160.73	19,340.96	6,975.69	32.06	373.60	-89.42	1,457.09	-12,599.52	14,056.10	13,989.37	66.73	210.648	
8,300.00	7,160.69	19,340.96	6,975.69	33.12	373.60	-89.42	1,457.09	-12,599.52	14,155.46	14,088.91	66.55	212.704	
8,400.00	7,160.65	19,340.96	6,975.69	34.23	373.60	-89.42	1,457.09	-12,599.52	14,254.83	14,188.45	66.38	214.752	
8,500.00	7,160.60	19,340.96	6,975.69	35.37	373.60	-89.42	1,457.09	-12,599.52	14,354.21	14,288.00	66.21	216.792	
8,600.00	7,160.56	19,340.96	6,975.69	36.55	373.60	-89.42	1,457.09	-12,599.52	14,453.60	14,387.55	66.05	218.824	
8,700.00	7,160.52	19,340.96	6,975.69	37.76	373.60	-89.42	1,457.09	-12,599.52	14,553.00	14,487.10	65.90	220.849	
8,800.00	7,160.48	19,340.96	6,975.69	38.99	373.60	-89.42	1,457.09	-12,599.52	14,652.40	14,586.66	65.75	222.864	
8,900.00	7,160.44	19,340.96	6,975.69	40.26	373.60	-89.42	1,457.09	-12,599.52	14,751.82	14,686.22	65.60	224.872	
9,000.00	7,160.40	19,340.96	6,975.69	41.54	373.60	-89.42	1,457.09	-12,599.52	14,851.24	14,785.78	65.46	226.870	
9,100.00	7,160.36	19,340.96	6,975.69	42.85	373.60	-89.42	1,457.09	-12,599.52	14,950.67	14,885.34	65.33	228.860	
9,200.00	7,160.32	19,340.96	6,975.69	44.18	373.60	-89.42	1,457.09	-12,599.52	15,050.10	14,984.91	65.20	230.841	
9,300.00	7,160.28	19,340.96	6,975.69	45.53	373.60	-89.42	1,457.09	-12,599.52	15,149.55	15,084.48	65.07	232.813	
9,400.00	7,160.24	19,340.96	6,975.69	46.89	373.60	-89.42	1,457.09	-12,599.52	15,249.00	15,184.05	64.95	234.776	
9,500.00	7,160.20	19,340.96	6,975.69	48.26	373.60	-89.42	1,457.09	-12,599.52	15,348.46	15,283.62	64.84	236.730	
9,600.00	7,160.16	19,340.96	6,975.69	49.65	373.60	-89.42	1,457.09	-12,599.52	15,447.92	15,383.20	64.72	238.675	
9,700.00	7,160.12	19,340.96	6,975.69	51.05	373.60	-89.42	1,457.09	-12,599.52	15,547.39	15,482.78	64.62	240.610	
9,800.00	7,160.08	19,340.96	6,975.69	52.47	373.60	-89.42	1,457.09	-12,599.52	15,646.87	15,582.36	64.51	242.536	
9,900.00	7,160.04	19,340.96	6,975.69	53.89	373.60	-89.42	1,457.09	-12,599.52	15,746.36	15,681.94	64.41	244.452	
10,000.00	7,160.00	19,340.96	6,975.69	55.33	373.60	-89.42	1,457.09	-12,599.52	15,845.85	15,781.53	64.32	246.358	
10,100.00	7,159.95	19,340.96	6,975.69	56.77	373.60	-89.42	1,457.09	-12,599.52	15,945.35	15,881.12	64.23	248.255	
10,200.00	7,159.91	19,340.96	6,975.69	58.22	373.60	-89.42	1,457.09	-12,599.52	16,044.85	15,980.71	64.14	250.143	
10,300.00	7,159.87	19,340.96	6,975.69	59.68	373.60	-89.42	1,457.09	-12,599.52	16,144.37	16,080.31	64.06	252.020	
10,400.00	7,159.83	19,340.96	6,975.69	61.15	373.60	-89.42	1,457.09	-12,599.52	16,243.88	16,179.90	63.98	253.888	
10,500.00	7,159.79	19,340.96	6,975.69	62.62	373.60	-89.42	1,457.09	-12,599.52	16,343.40	16,279.50	63.91	255.745	
10,600.00	7,159.75	19,340.96	6,975.69	64.10	373.60	-89.42	1,457.09	-12,599.52	16,442.93	16,379.10	63.83	257.593	
10,700.00	7,159.71	19,340.96	6,975.69	65.58	373.60	-89.42	1,457.09	-12,599.52	16,542.47	16,478.70	63.76	259.430	
10,800.00	7,159.67	19,340.96	6,975.69	67.07	373.60	-89.42	1,457.09	-12,599.52	16,642.01	16,578.31	63.70	261.258	
10,900.00	7,159.63	19,340.96	6,975.69	68.57	373.60	-89.42	1,457.09	-12,599.52	16,741.55	16,677.91	63.64	263.076	
11,000.00	7,159.59	19,340.96	6,975.69	70.07	373.60	-89.42	1,457.09	-12,599.52	16,841.10	16,777.52	63.58	264.883	
11,100.00	7,159.55	19,340.96	6,975.69	71.57	373.60	-89.42	1,457.09	-12,599.52	16,940.66	16,877.13	63.52	266.680	
11,200.00	7,159.51	19,340.96	6,975.69	73.08	373.60	-89.42	1,457.09	-12,599.52	17,040.22	16,976.75	63.47	268.467	
11,300.00	7,159.47	19,340.96	6,975.69	74.59	373.60	-89.42	1,457.09	-12,599.52	17,139.79	17,076.36	63.42	270.244	
11,400.00	7,159.43	19,340.96	6,975.69	76.11	373.60	-89.42	1,457.09	-12,599.52	17,239.36	17,175.98	63.38	272.011	
11,500.00	7,159.39	19,340.96	6,975.69	77.63	373.60	-89.42	1,457.09	-12,599.52	17,338.93	17,275.60	63.33	273.767	
11,600.00	7,159.35	19,340.96	6,975.69	79.15	373.60	-89.42	1,457.09	-12,599.52	17,438.52	17,375.22	63.29	275.513	
11,638.27	7,159.33	19,340.96	6,975.69	79.73	373.60	-89.42	1,457.09	-12,599.52	17,476.63	17,413.35	63.28	276.179	
11,640.51	7,159.33	19,340.96	6,975.69	79.77	373.60	-89.42	1,457.09	-12,599.52	17,478.86	17,415.58	63.28	276.218	
11,700.00	7,159.30	19,340.96	6,975.69	80.68	373.60	-89.42	1,457.09	-12,599.52	17,538.10	17,474.84	63.26	277.250	
11,800.00	7,159.26	19,340.96	6,975.69	82.20	373.60	-89.42	1,457.09	-12,599.52	17,637.69	17,574.46	63.22	278.977	
11,900.00	7,159.22	19,340.96	6,975.69	83.74	373.60	-89.42	1,457.09	-12,599.52	17,737.28	17,674.09	63.19	280.694	
12,000.00	7,159.18	19,340.96	6,975.69	85.27	373.60	-89.42	1,457.09	-12,599.52	17,836.87	17,773.71	63.16	282.400	
12,100.00	7,159.14	19,340.96	6,975.69	86.81	373.60	-89.42	1,457.09	-12,599.52	17,936.47	17,873.34	63.14	284.096	
12,200.00	7,159.10	19,340.96	6,975.69	88.35	373.60	-89.42	1,457.09	-12,599.52	18,036.08	17,972.97	63.11	285.782	
12,300.00	7,159.06	19,340.96	6,975.69	89.89	373.60	-89.42	1,457.09	-12,599.52	18,135.69	18,072.60	63.09	287.458	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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 30 - Rosa Unit #664H - OH - OH											Offset Site Error:	0.00 usft	
Survey Program: 396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM							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
12,400.00	7,159.02	19,340.96	6,975.69	91.43	373.60	-89.42	1,457.09	-12,599.52	18,235.30	18,172.23	63.07	289.123	
12,500.00	7,158.98	19,340.96	6,975.69	92.98	373.60	-89.42	1,457.09	-12,599.52	18,334.92	18,271.87	63.05	290.778	
12,600.00	7,158.94	19,340.96	6,975.69	94.52	373.60	-89.42	1,457.09	-12,599.52	18,434.54	18,371.50	63.04	292.422	
12,700.00	7,158.90	19,340.96	6,975.69	96.07	373.60	-89.42	1,457.09	-12,599.52	18,534.17	18,471.14	63.03	294.057	
12,800.00	7,158.86	19,340.96	6,975.69	97.62	373.60	-89.42	1,457.09	-12,599.52	18,633.80	18,570.78	63.02	295.681	
12,900.00	7,158.81	19,340.96	6,975.69	99.17	373.60	-89.42	1,457.09	-12,599.52	18,733.43	18,670.42	63.01	297.295	
13,000.00	7,158.77	19,340.96	6,975.69	100.73	373.60	-89.42	1,457.09	-12,599.52	18,833.07	18,770.06	63.01	298.898	
13,100.00	7,158.73	19,340.96	6,975.69	102.28	373.60	-89.42	1,457.09	-12,599.52	18,932.71	18,869.71	63.01	300.492	
13,200.00	7,158.69	19,340.96	6,975.69	103.84	373.60	-89.42	1,457.09	-12,599.52	19,032.36	18,969.35	63.01	302.075	
13,300.00	7,158.65	19,340.96	6,975.69	105.40	373.60	-89.42	1,457.09	-12,599.52	19,132.01	19,069.00	63.01	303.648	
13,400.00	7,158.61	19,340.96	6,975.69	106.96	373.60	-89.42	1,457.09	-12,599.52	19,231.66	19,168.65	63.01	305.212	
13,500.00	7,158.57	19,340.96	6,975.69	108.52	373.60	-89.42	1,457.09	-12,599.52	19,331.32	19,268.30	63.02	306.765	
13,600.00	7,158.53	19,340.96	6,975.69	110.08	373.60	-89.42	1,457.09	-12,599.52	19,430.98	19,367.95	63.02	308.308	
13,700.00	7,158.49	19,340.96	6,975.69	111.64	373.60	-89.42	1,457.09	-12,599.52	19,530.64	19,467.61	63.03	309.841	
13,800.00	7,158.45	19,340.96	6,975.69	113.21	373.60	-89.42	1,457.09	-12,599.52	19,630.31	19,567.26	63.05	311.364	
13,900.00	7,158.41	19,340.96	6,975.69	114.77	373.60	-89.42	1,457.09	-12,599.52	19,729.98	19,666.92	63.06	312.877	
14,000.00	7,158.37	19,340.96	6,975.69	116.34	373.60	-89.42	1,457.09	-12,599.52	19,829.65	19,766.58	63.08	314.380	
14,100.00	7,158.32	19,340.96	6,975.69	117.91	373.60	-89.42	1,457.09	-12,599.52	19,929.33	19,866.24	63.09	315.873	
14,200.00	7,158.28	19,340.96	6,975.69	119.47	373.60	-89.42	1,457.09	-12,599.52	20,029.01	19,965.90	63.11	317.357	
14,300.00	7,158.24	19,340.96	6,975.69	121.04	373.60	-89.42	1,457.09	-12,599.52	20,128.69	20,065.56	63.13	318.830	
14,400.00	7,158.20	19,340.96	6,975.69	122.61	373.60	-89.42	1,457.09	-12,599.52	20,228.38	20,165.22	63.16	320.294	
14,500.00	7,158.16	19,340.96	6,975.69	124.18	373.60	-89.42	1,457.09	-12,599.52	20,328.07	20,264.89	63.18	321.749	
14,600.00	7,158.12	19,340.96	6,975.69	125.76	373.60	-89.42	1,457.09	-12,599.52	20,427.76	20,364.55	63.21	323.193	
14,700.00	7,158.08	19,340.96	6,975.69	127.33	373.60	-89.42	1,457.09	-12,599.52	20,527.46	20,464.22	63.23	324.628	
14,800.00	7,158.04	19,340.96	6,975.69	128.90	373.60	-89.42	1,457.09	-12,599.52	20,627.15	20,563.89	63.26	326.054	
14,900.00	7,158.00	19,340.96	6,975.69	130.47	373.60	-89.42	1,457.09	-12,599.52	20,726.85	20,663.56	63.29	327.470	
15,000.00	7,157.96	19,340.96	6,975.69	132.05	373.60	-89.42	1,457.09	-12,599.52	20,826.56	20,763.23	63.33	328.876	
15,100.00	7,157.92	19,340.96	6,975.69	133.62	373.60	-89.42	1,457.09	-12,599.52	20,926.27	20,862.91	63.36	330.273	
15,200.00	7,157.88	19,340.96	6,975.69	135.20	373.60	-89.42	1,457.09	-12,599.52	21,025.98	20,962.58	63.40	331.661	
15,300.00	7,157.83	19,340.96	6,975.69	136.78	373.60	-89.42	1,457.09	-12,599.52	21,125.69	21,062.26	63.43	333.039	
15,400.00	7,157.79	19,340.96	6,975.69	138.35	373.60	-89.42	1,457.09	-12,599.52	21,225.40	21,161.93	63.47	334.408	
15,500.00	7,157.75	19,340.96	6,975.69	139.93	373.60	-89.42	1,457.09	-12,599.52	21,325.12	21,261.61	63.51	335.768	
15,600.00	7,157.71	19,340.96	6,975.69	141.51	373.60	-89.42	1,457.09	-12,599.52	21,424.84	21,361.29	63.55	337.118	
15,700.00	7,157.67	19,340.96	6,975.69	143.09	373.60	-89.42	1,457.09	-12,599.52	21,524.57	21,460.97	63.60	338.460	
15,800.00	7,157.63	19,340.96	6,975.69	144.67	373.60	-89.42	1,457.09	-12,599.52	21,624.29	21,560.65	63.64	339.792	
15,900.00	7,157.59	19,340.96	6,975.69	146.24	373.60	-89.42	1,457.09	-12,599.52	21,724.02	21,660.33	63.69	341.116	
16,000.00	7,157.55	19,340.96	6,975.69	147.82	373.60	-89.42	1,457.09	-12,599.52	21,823.75	21,760.02	63.73	342.430	
16,100.00	7,157.51	19,340.96	6,975.69	149.41	373.60	-89.42	1,457.09	-12,599.52	21,923.48	21,859.70	63.78	343.735	
16,200.00	7,157.47	19,340.96	6,975.69	150.99	373.60	-89.42	1,457.09	-12,599.52	22,023.22	21,959.39	63.83	345.032	
16,300.00	7,157.43	19,340.96	6,975.69	152.57	373.60	-89.42	1,457.09	-12,599.52	22,122.96	22,059.08	63.88	346.320	
16,400.00	7,157.38	19,340.96	6,975.69	154.15	373.60	-89.42	1,457.09	-12,599.52	22,222.70	22,158.77	63.93	347.599	
16,500.00	7,157.34	19,340.96	6,975.69	155.73	373.60	-89.42	1,457.09	-12,599.52	22,322.44	22,258.45	63.99	348.869	
16,600.00	7,157.30	19,340.96	6,975.69	157.31	373.60	-89.42	1,457.09	-12,599.52	22,422.18	22,358.15	64.04	350.131	
16,680.84	7,157.27	19,340.96	6,975.69	158.59	373.60	-89.42	1,457.09	-12,599.52	22,502.82	22,438.74	64.08	351.145	
16,687.46	7,157.27	19,340.96	6,975.69	158.70	373.60	-89.43	1,457.09	-12,599.52	22,509.42	22,445.33	64.09	351.227	
16,700.00	7,157.26	19,340.96	6,975.69	158.90	373.60	-89.43	1,457.09	-12,599.52	22,521.93	22,457.84	64.09	351.384	
16,800.00	7,157.22	19,340.96	6,975.69	160.48	373.60	-89.43	1,457.09	-12,599.52	22,621.67	22,557.52	64.15	352.631	
16,900.00	7,157.18	19,340.96	6,975.69	162.06	373.60	-89.43	1,457.09	-12,599.52	22,721.42	22,657.21	64.21	353.869	
17,000.00	7,157.14	19,340.96	6,975.69	163.65	373.60	-89.43	1,457.09	-12,599.52	22,821.16	22,756.89	64.27	355.098	
17,100.00	7,157.10	19,340.96	6,975.69	165.23	373.60	-89.43	1,457.09	-12,599.52	22,920.91	22,856.58	64.33	356.319	
17,200.00	7,157.06	19,340.96	6,975.69	166.82	373.60	-89.43	1,457.09	-12,599.52	23,020.66	22,956.27	64.39	357.532	
17,300.00	7,157.02	19,340.96	6,975.69	168.40	373.60	-89.43	1,457.09	-12,599.52	23,120.41	23,055.96	64.45	358.736	

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 836H
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 836H	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 30 - Rosa Unit #664H - OH - OH											Offset Site Error:	0.00 usft
Survey Program: 396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM											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)		
17,400.00	7,156.98	19,340.96	6,975.69	169.99	373.60	-89.43	1,457.09	-12,599.52	23,220.17	23,155.65	64.51	359.932
17,500.00	7,156.94	19,340.96	6,975.69	171.57	373.60	-89.43	1,457.09	-12,599.52	23,319.92	23,255.35	64.58	361.120
17,600.00	7,156.90	19,340.96	6,975.69	173.16	373.60	-89.43	1,457.09	-12,599.52	23,419.68	23,355.04	64.64	362.300
17,700.00	7,156.85	19,340.96	6,975.69	174.75	373.60	-89.43	1,457.09	-12,599.52	23,519.44	23,454.73	64.71	363.471
17,800.00	7,156.81	19,340.96	6,975.69	176.33	373.60	-89.43	1,457.09	-12,599.52	23,619.20	23,554.43	64.78	364.634
17,900.00	7,156.77	19,340.96	6,975.69	177.92	373.60	-89.43	1,457.09	-12,599.52	23,718.97	23,654.13	64.84	365.790
18,000.00	7,156.73	19,340.96	6,975.69	179.51	373.60	-89.43	1,457.09	-12,599.52	23,818.74	23,753.82	64.91	366.937
18,100.00	7,156.69	19,340.96	6,975.69	181.09	373.60	-89.43	1,457.09	-12,599.52	23,918.50	23,853.52	64.98	368.077
18,200.00	7,156.65	19,340.96	6,975.69	182.68	373.60	-89.43	1,457.09	-12,599.52	24,018.28	23,953.22	65.05	369.209
18,300.00	7,156.61	19,340.96	6,975.69	184.27	373.60	-89.43	1,457.09	-12,599.52	24,118.05	24,052.92	65.13	370.333
18,400.00	7,156.57	19,340.96	6,975.69	185.86	373.60	-89.43	1,457.09	-12,599.52	24,217.82	24,152.62	65.20	371.449
18,500.00	7,156.53	19,340.96	6,975.69	187.45	373.60	-89.43	1,457.09	-12,599.52	24,317.60	24,252.33	65.27	372.558
18,600.00	7,156.49	19,340.96	6,975.69	189.03	373.60	-89.43	1,457.09	-12,599.52	24,417.38	24,352.03	65.35	373.659
18,700.00	7,156.45	19,340.96	6,975.69	190.62	373.60	-89.43	1,457.09	-12,599.52	24,517.16	24,451.73	65.42	374.752
18,800.00	7,156.41	19,340.96	6,975.69	192.21	373.60	-89.43	1,457.09	-12,599.52	24,616.94	24,551.44	65.50	375.838
18,900.00	7,156.37	19,340.96	6,975.69	193.80	373.60	-89.43	1,457.09	-12,599.52	24,716.72	24,651.14	65.58	376.917
19,000.00	7,156.32	19,340.96	6,975.69	195.39	373.60	-89.43	1,457.09	-12,599.52	24,816.51	24,750.85	65.65	377.988
19,100.00	7,156.28	19,340.96	6,975.69	196.98	373.60	-89.43	1,457.09	-12,599.52	24,916.29	24,850.56	65.73	379.052
19,200.00	7,156.24	19,340.96	6,975.69	198.57	373.60	-89.43	1,457.09	-12,599.52	25,016.08	24,950.27	65.81	380.109
19,300.00	7,156.20	19,340.96	6,975.69	200.16	373.60	-89.43	1,457.09	-12,599.52	25,115.87	25,049.98	65.89	381.158
19,400.00	7,156.16	19,340.96	6,975.69	201.75	373.60	-89.43	1,457.09	-12,599.52	25,215.66	25,149.69	65.97	382.201
19,500.00	7,156.12	19,340.96	6,975.69	203.34	373.60	-89.43	1,457.09	-12,599.52	25,315.46	25,249.40	66.06	383.236
19,600.00	7,156.08	19,340.96	6,975.69	204.93	373.60	-89.43	1,457.09	-12,599.52	25,415.25	25,349.11	66.14	384.264
19,700.00	7,156.04	19,340.96	6,975.69	206.52	373.60	-89.43	1,457.09	-12,599.52	25,515.05	25,448.82	66.22	385.285
19,800.00	7,156.00	19,340.96	6,975.69	208.11	373.60	-89.43	1,457.09	-12,599.52	25,614.85	25,548.54	66.31	386.299
19,900.00	7,155.96	19,340.96	6,975.69	209.71	373.60	-89.43	1,457.09	-12,599.52	25,714.65	25,648.25	66.39	387.307
20,000.00	7,155.92	19,340.96	6,975.69	211.30	373.60	-89.43	1,457.09	-12,599.52	25,814.45	25,747.97	66.48	388.307
20,100.00	7,155.88	19,340.96	6,975.69	212.89	373.60	-89.43	1,457.09	-12,599.52	25,914.25	25,847.69	66.57	389.301
20,200.00	7,155.84	19,340.96	6,975.69	214.48	373.60	-89.43	1,457.09	-12,599.52	26,014.06	25,947.40	66.65	390.288
20,300.00	7,155.79	19,340.96	6,975.69	216.07	373.60	-89.43	1,457.09	-12,599.52	26,113.86	26,047.12	66.74	391.268
20,400.00	7,155.75	19,340.96	6,975.69	217.66	373.60	-89.43	1,457.09	-12,599.52	26,213.67	26,146.84	66.83	392.242
20,500.00	7,155.71	19,340.96	6,975.69	219.26	373.60	-89.43	1,457.09	-12,599.52	26,313.48	26,246.56	66.92	393.209
20,600.00	7,155.67	19,340.96	6,975.69	220.85	373.60	-89.43	1,457.09	-12,599.52	26,413.29	26,346.28	67.01	394.170
20,700.00	7,155.63	19,340.96	6,975.69	222.44	373.60	-89.43	1,457.09	-12,599.52	26,513.10	26,446.00	67.10	395.124
20,800.00	7,155.59	19,340.96	6,975.69	224.03	373.60	-89.43	1,457.09	-12,599.52	26,612.91	26,545.72	67.19	396.071
20,900.00	7,155.55	19,340.96	6,975.69	225.63	373.60	-89.43	1,457.09	-12,599.52	26,712.73	26,645.44	67.28	397.013
21,000.00	7,155.51	19,340.96	6,975.69	227.22	373.60	-89.43	1,457.09	-12,599.52	26,812.54	26,745.17	67.38	397.948
21,100.00	7,155.47	19,340.96	6,975.69	228.81	373.60	-89.43	1,457.09	-12,599.52	26,912.36	26,844.89	67.47	398.877
21,200.00	7,155.43	19,340.96	6,975.69	230.40	373.60	-89.43	1,457.09	-12,599.52	27,012.18	26,944.62	67.56	399.799
21,300.00	7,155.39	19,340.96	6,975.69	232.00	373.60	-89.43	1,457.09	-12,599.52	27,112.00	27,044.34	67.66	400.716
21,400.00	7,155.35	19,340.96	6,975.69	233.59	373.60	-89.43	1,457.09	-12,599.52	27,211.82	27,144.07	67.75	401.626
21,500.00	7,155.31	19,340.96	6,975.69	235.18	373.60	-89.43	1,457.09	-12,599.52	27,311.64	27,243.79	67.85	402.530
21,600.00	7,155.26	19,340.96	6,975.69	236.78	373.60	-89.43	1,457.09	-12,599.52	27,411.47	27,343.52	67.95	403.429
21,700.00	7,155.22	19,340.96	6,975.69	238.37	373.60	-89.43	1,457.09	-12,599.52	27,511.29	27,443.25	68.04	404.321
21,800.00	7,155.18	19,340.96	6,975.69	239.96	373.60	-89.43	1,457.09	-12,599.52	27,611.12	27,542.98	68.14	405.207
21,900.00	7,155.14	19,340.96	6,975.69	241.56	373.60	-89.43	1,457.09	-12,599.52	27,710.95	27,642.71	68.24	406.088
21,953.88	7,155.12	19,340.96	6,975.69	242.42	373.60	-89.43	1,457.09	-12,599.52	27,764.74	27,696.44	68.29	406.560
22,000.00	7,155.10	19,340.96	6,975.69	243.15	373.60	-89.32	1,457.09	-12,599.52	27,810.79	27,742.45	68.34	406.962
22,019.01	7,155.09	19,340.96	6,975.69	243.46	373.60	-89.27	1,457.09	-12,599.52	27,829.78	27,761.42	68.36	407.126
22,100.00	7,155.06	19,340.96	6,975.69	244.75	373.60	-89.27	1,457.09	-12,599.52	27,910.68	27,842.24	68.44	407.827
22,200.00	7,155.02	19,340.96	6,975.69	246.34	373.60	-89.27	1,457.09	-12,599.52	28,010.57	27,942.03	68.54	408.687
22,300.00	7,154.97	19,340.96	6,975.69	247.94	373.60	-89.27	1,457.09	-12,599.52	28,110.46	28,041.82	68.64	409.541

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 836H
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 836H	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 30 - Rosa Unit #664H - OH - OH											Offset Site Error: 0.00 usft		
Survey Program: 396-MWD+HDGM, 5794-Standard Keeper 104, 6450-MWD+HDGM							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
22,400.00	7,154.93	19,340.96	6,975.69	249.53	373.60	-89.27	1,457.09	-12,599.52	28,210.35	28,141.61	68.74	410.390	
22,500.00	7,154.89	19,340.96	6,975.69	251.13	373.60	-89.27	1,457.09	-12,599.52	28,310.24	28,241.40	68.84	411.235	
22,600.00	7,154.85	19,340.96	6,975.69	252.72	373.60	-89.27	1,457.09	-12,599.52	28,410.14	28,341.19	68.94	412.073	
22,700.00	7,154.80	19,340.96	6,975.69	254.32	373.60	-89.27	1,457.09	-12,599.52	28,510.03	28,440.98	69.05	412.907	
22,800.00	7,154.76	19,340.96	6,975.69	255.91	373.60	-89.27	1,457.09	-12,599.52	28,609.93	28,540.78	69.15	413.736	
22,900.00	7,154.72	19,340.96	6,975.69	257.51	373.60	-89.27	1,457.09	-12,599.52	28,709.82	28,640.57	69.25	414.559	
23,000.00	7,154.68	19,340.96	6,975.69	259.11	373.60	-89.27	1,457.09	-12,599.52	28,809.72	28,740.36	69.36	415.378	
23,100.00	7,154.63	19,340.96	6,975.69	260.70	373.60	-89.27	1,457.09	-12,599.52	28,909.62	28,840.15	69.46	416.191	
23,200.00	7,154.59	19,340.96	6,975.69	262.30	373.60	-89.27	1,457.09	-12,599.52	29,009.51	28,939.95	69.57	417.000	
23,300.00	7,154.55	19,340.96	6,975.69	263.89	373.60	-89.27	1,457.09	-12,599.52	29,109.41	29,039.74	69.67	417.803	
23,400.00	7,154.51	19,340.96	6,975.69	265.49	373.60	-89.27	1,457.09	-12,599.52	29,209.31	29,139.53	69.78	418.602	
23,500.00	7,154.47	19,340.96	6,975.69	267.08	373.60	-89.27	1,457.09	-12,599.52	29,309.21	29,239.33	69.88	419.396	
23,600.00	7,154.42	19,340.96	6,975.69	268.68	373.60	-89.27	1,457.09	-12,599.52	29,409.11	29,339.12	69.99	420.185	
23,700.00	7,154.38	19,340.96	6,975.69	270.28	373.60	-89.27	1,457.09	-12,599.52	29,509.02	29,438.92	70.10	420.969	
23,800.00	7,154.34	19,340.96	6,975.69	271.87	373.60	-89.27	1,457.09	-12,599.52	29,608.92	29,538.71	70.21	421.748	
23,900.00	7,154.30	19,340.96	6,975.69	273.47	373.60	-89.27	1,457.09	-12,599.52	29,708.82	29,638.51	70.31	422.523	
24,000.00	7,154.25	19,340.96	6,975.69	275.07	373.60	-89.27	1,457.09	-12,599.52	29,808.72	29,738.30	70.42	423.293	
24,100.00	7,154.21	19,340.96	6,975.69	276.66	373.60	-89.27	1,457.09	-12,599.52	29,908.63	29,838.10	70.53	424.059	
24,200.00	7,154.17	19,340.96	6,975.69	278.26	373.60	-89.27	1,457.09	-12,599.52	30,008.53	29,937.89	70.64	424.819	
24,300.00	7,154.13	19,340.96	6,975.69	279.86	373.60	-89.27	1,457.09	-12,599.52	30,108.44	30,037.69	70.75	425.576	
24,400.00	7,154.08	19,340.96	6,975.69	281.45	373.60	-89.27	1,457.09	-12,599.52	30,208.34	30,137.49	70.86	426.327	
24,500.00	7,154.04	19,340.96	6,975.69	283.05	373.60	-89.27	1,457.09	-12,599.52	30,308.25	30,237.28	70.97	427.074	
24,597.25	7,154.00	19,340.96	6,975.69	284.60	373.60	-89.27	1,457.09	-12,599.52	30,405.41	30,334.33	71.07	427.797	
24,600.00	7,154.00	19,340.96	6,975.69	284.65	373.60	-89.28	1,457.09	-12,599.52	30,408.16	30,337.08	71.08	427.817	
24,700.00	7,153.96	19,340.96	6,975.69	286.24	373.60	-89.51	1,457.09	-12,599.52	30,508.02	30,436.83	71.19	428.556	
24,722.47	7,153.95	19,340.96	6,975.69	286.60	373.60	-89.55	1,457.09	-12,599.52	30,530.45	30,459.23	71.21	428.722	
24,800.00	7,153.92	19,340.96	6,975.69	287.84	373.60	-89.55	1,457.09	-12,599.52	30,607.81	30,536.52	71.30	429.290	
24,900.00	7,153.88	19,340.96	6,975.69	289.43	373.60	-89.55	1,457.09	-12,599.52	30,707.61	30,636.20	71.41	430.018	
25,000.00	7,153.84	19,340.96	6,975.69	291.03	373.60	-89.55	1,457.09	-12,599.52	30,807.40	30,735.88	71.52	430.742	
25,100.00	7,153.80	19,340.96	6,975.69	292.63	373.60	-89.55	1,457.09	-12,599.52	30,907.20	30,835.56	71.63	431.461	
25,200.00	7,153.77	19,340.96	6,975.69	294.22	373.60	-89.55	1,457.09	-12,599.52	31,006.99	30,935.25	71.75	432.175	
25,300.00	7,153.73	19,340.96	6,975.69	295.82	373.60	-89.55	1,457.09	-12,599.52	31,106.79	31,034.93	71.86	432.884	
25,400.00	7,153.69	19,340.96	6,975.69	297.41	373.60	-89.55	1,457.09	-12,599.52	31,206.59	31,134.62	71.97	433.588	
25,500.00	7,153.65	19,340.96	6,975.69	299.01	373.60	-89.55	1,457.09	-12,599.52	31,306.39	31,234.31	72.09	434.288	
25,600.00	7,153.61	19,340.96	6,975.69	300.60	373.60	-89.55	1,457.09	-12,599.52	31,406.19	31,333.99	72.20	434.983	
25,700.00	7,153.57	19,340.96	6,975.69	302.20	373.60	-89.55	1,457.09	-12,599.52	31,506.00	31,433.68	72.32	435.673	
25,800.00	7,153.53	19,340.96	6,975.69	303.80	373.60	-89.55	1,457.09	-12,599.52	31,605.80	31,533.37	72.43	436.359	
25,900.00	7,153.50	19,340.96	6,975.69	305.39	373.60	-89.55	1,457.09	-12,599.52	31,705.61	31,633.06	72.55	437.040	
26,000.00	7,153.46	19,340.96	6,975.69	306.99	373.60	-89.55	1,457.09	-12,599.52	31,805.42	31,732.75	72.66	437.717	
26,100.00	7,153.42	19,340.96	6,975.69	308.58	373.60	-89.55	1,457.09	-12,599.52	31,905.22	31,832.45	72.78	438.389	
26,200.00	7,153.38	19,340.96	6,975.69	310.18	373.60	-89.55	1,457.09	-12,599.52	32,005.03	31,932.14	72.89	439.057	
26,300.00	7,153.34	19,340.96	6,975.69	311.78	373.60	-89.55	1,457.09	-12,599.52	32,104.84	32,031.83	73.01	439.720	
26,400.00	7,153.30	19,340.96	6,975.69	313.37	373.60	-89.55	1,457.09	-12,599.52	32,204.66	32,131.53	73.13	440.379	
26,500.00	7,153.26	19,340.96	6,975.69	314.97	373.60	-89.55	1,457.09	-12,599.52	32,304.47	32,231.22	73.25	441.034	
26,600.00	7,153.23	19,340.96	6,975.69	316.57	373.60	-89.55	1,457.09	-12,599.52	32,404.28	32,330.92	73.37	441.684	
26,700.00	7,153.19	19,340.96	6,975.69	318.16	373.60	-89.55	1,457.09	-12,599.52	32,504.10	32,430.61	73.48	442.331	
26,800.00	7,153.15	19,340.96	6,975.69	319.76	373.60	-89.55	1,457.09	-12,599.52	32,603.91	32,530.31	73.60	442.973	
26,900.00	7,153.11	19,340.96	6,975.69	321.35	373.60	-89.55	1,457.09	-12,599.52	32,703.73	32,630.01	73.72	443.611	
26,976.35	7,153.08	19,340.96	6,975.69	322.57	373.60	-89.55	1,457.09	-12,599.52	32,779.94	32,706.13	73.81	444.095	
27,000.00	7,153.07	19,340.96	6,975.69	322.95	373.60	-89.55	1,457.09	-12,599.52	32,803.55	32,729.71	73.84	444.245	
27,100.00	7,153.03	19,340.96	6,975.69	324.55	373.60	-89.55	1,457.09	-12,599.52	32,903.37	32,829.41	73.96	444.874	
27,176.36	7,153.00	19,340.96	6,975.69	325.77	373.60	-89.55	1,457.09	-12,599.52	32,979.59	32,905.54	74.05	445.353	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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	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)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
0.00	0.00	20,806.96	7,074.42	0.00	336.82	-57.29	346.52	-539.64	7,174.16					
125.00	125.00	20,806.96	7,074.42	0.06	336.82	167.96	346.52	-539.64	7,049.70	6,939.90	109.80	64.203		
225.00	225.00	20,806.96	7,074.42	0.17	336.82	-130.67	346.52	-539.64	6,950.18	6,840.24	109.94	63.218		
312.00	311.99	20,806.96	7,074.42	0.28	336.82	172.48	346.52	-539.64	6,863.61	6,753.55	110.06	62.362		
400.00	399.99	20,806.96	7,074.42	0.37	336.82	172.48	346.52	-539.64	6,776.05	6,663.99	112.07	60.464		
462.00	461.99	20,806.96	7,074.42	0.50	336.82	172.48	346.52	-539.64	6,714.38	6,602.27	112.10	59.896		
509.18	509.16	20,806.96	7,074.42	0.64	336.82	152.35	346.52	-539.64	6,667.48	6,555.35	112.13	59.462		
600.00	599.96	20,806.96	7,074.42	0.94	336.82	152.35	346.52	-539.64	6,577.27	6,465.08	112.19	58.624		
700.00	699.94	20,806.96	7,074.42	1.28	336.82	152.35	346.52	-539.64	6,477.97	6,365.69	112.28	57.697		
800.00	799.92	20,806.96	7,074.42	1.63	336.82	152.35	346.52	-539.64	6,378.69	6,266.32	112.37	56.767		
900.00	899.89	20,806.96	7,074.42	1.98	336.82	152.35	346.52	-539.64	6,279.43	6,166.96	112.46	55.835		
1,000.00	999.87	20,806.96	7,074.42	2.34	336.82	152.35	346.52	-539.64	6,180.19	6,067.62	112.57	54.901		
1,100.00	1,099.84	20,806.96	7,074.42	2.69	336.82	152.35	346.52	-539.64	6,080.98	5,968.30	112.68	53.965		
1,200.00	1,199.82	20,806.96	7,074.42	3.05	336.82	152.35	346.52	-539.64	5,981.80	5,869.00	112.81	53.027		
1,300.00	1,299.80	20,806.96	7,074.42	3.41	336.82	152.35	346.52	-539.64	5,882.65	5,769.71	112.94	52.088		
1,400.00	1,399.77	20,806.96	7,074.42	3.77	336.82	152.35	346.52	-539.64	5,783.52	5,670.45	113.07	51.148		
1,500.00	1,499.75	20,806.96	7,074.42	4.13	336.82	152.35	346.52	-539.64	5,684.43	5,571.20	113.22	50.206		
1,600.00	1,599.72	20,806.96	7,074.42	4.49	336.82	152.35	346.52	-539.64	5,585.36	5,471.98	113.38	49.263		
1,700.00	1,699.70	20,806.96	7,074.42	4.85	336.82	152.35	346.52	-539.64	5,486.33	5,372.79	113.54	48.319		
1,800.00	1,799.68	20,806.96	7,074.42	5.21	336.82	152.35	346.52	-539.64	5,387.34	5,273.62	113.72	47.375		
1,900.00	1,899.65	20,806.96	7,074.42	5.57	336.82	152.35	346.52	-539.64	5,288.38	5,174.48	113.90	46.430		
2,000.00	1,999.63	20,806.96	7,074.42	5.93	336.82	152.35	346.52	-539.64	5,189.47	5,075.38	114.09	45.485		
2,100.00	2,099.60	20,806.96	7,074.42	6.29	336.82	152.35	346.52	-539.64	5,090.60	4,976.30	114.30	44.539		
2,200.00	2,199.58	20,806.96	7,074.42	6.65	336.82	152.35	346.52	-539.64	4,991.77	4,877.26	114.51	43.592		
2,300.00	2,299.56	20,806.96	7,074.42	7.01	336.82	152.35	346.52	-539.64	4,892.99	4,778.25	114.73	42.646		
2,400.00	2,399.53	20,806.96	7,074.42	7.37	336.82	152.35	346.52	-539.64	4,794.26	4,679.29	114.97	41.700		
2,500.00	2,499.51	20,806.96	7,074.42	7.73	336.82	152.35	346.52	-539.64	4,695.58	4,580.36	115.22	40.753		
2,600.00	2,599.48	20,806.96	7,074.42	8.09	336.82	152.35	346.52	-539.64	4,596.96	4,481.48	115.48	39.807		
2,700.00	2,699.46	20,806.96	7,074.42	8.45	336.82	152.35	346.52	-539.64	4,498.40	4,382.65	115.76	38.861		
2,800.00	2,799.44	20,806.96	7,074.42	8.81	336.82	152.35	346.52	-539.64	4,399.91	4,283.86	116.05	37.915		
2,900.00	2,899.41	20,806.96	7,074.42	9.17	336.82	152.35	346.52	-539.64	4,301.49	4,185.13	116.35	36.969		
3,000.00	2,999.39	20,806.96	7,074.42	9.53	336.82	152.35	346.52	-539.64	4,203.14	4,086.46	116.68	36.024		
3,100.00	3,099.36	20,806.96	7,074.42	9.89	336.82	152.35	346.52	-539.64	4,104.87	3,987.85	117.02	35.079		
3,200.00	3,199.34	20,806.96	7,074.42	10.25	336.82	152.35	346.52	-539.64	4,006.68	3,889.31	117.38	34.135		
3,300.00	3,299.32	20,806.96	7,074.42	10.61	336.82	152.35	346.52	-539.64	3,908.59	3,790.83	117.76	33.191		
3,400.00	3,399.29	20,806.96	7,074.42	10.97	336.82	152.35	346.52	-539.64	3,810.60	3,692.43	118.17	32.248		
3,500.00	3,499.27	20,806.96	7,074.42	11.33	336.82	152.35	346.52	-539.64	3,712.72	3,594.12	118.60	31.305		
3,600.00	3,599.25	20,806.96	7,074.42	11.69	336.82	152.35	346.52	-539.64	3,614.95	3,495.89	119.06	30.363		
3,700.00	3,699.22	20,806.96	7,074.42	12.05	336.82	152.35	346.52	-539.64	3,517.30	3,397.75	119.55	29.422		
3,800.00	3,799.20	20,806.96	7,074.42	12.41	336.82	152.35	346.52	-539.64	3,419.79	3,299.72	120.07	28.481		
3,900.00	3,899.17	20,806.96	7,074.42	12.77	336.82	152.35	346.52	-539.64	3,322.43	3,201.80	120.63	27.542		
4,000.00	3,999.15	20,806.96	7,074.42	13.13	336.82	152.35	346.52	-539.64	3,225.24	3,104.00	121.23	26.604		
4,100.00	4,099.13	20,806.96	7,074.42	13.49	336.82	152.35	346.52	-539.64	3,128.21	3,006.33	121.88	25.666		
4,200.00	4,199.10	20,806.96	7,074.42	13.85	336.82	152.35	346.52	-539.64	3,031.39	2,908.81	122.58	24.730		
4,300.00	4,299.08	20,806.96	7,074.42	14.21	336.82	152.35	346.52	-539.64	2,934.77	2,811.44	123.33	23.796		
4,400.00	4,399.05	20,806.96	7,074.42	14.57	336.82	152.35	346.52	-539.64	2,838.39	2,714.24	124.15	22.863		
4,500.00	4,499.03	20,806.96	7,074.42	14.93	336.82	152.35	346.52	-539.64	2,742.27	2,617.23	125.04	21.931		
4,600.00	4,599.01	20,806.96	7,074.42	15.29	336.82	152.35	346.52	-539.64	2,646.44	2,520.43	126.01	21.002		
4,700.00	4,698.98	20,806.96	7,074.42	15.65	336.82	152.35	346.52	-539.64	2,550.92	2,423.85	127.07	20.075		
4,800.00	4,798.96	20,806.96	7,074.42	16.01	336.82	152.35	346.52	-539.64	2,455.76	2,327.53	128.23	19.151		
4,900.00	4,898.93	20,806.96	7,074.42	16.37	336.82	152.35	346.52	-539.64	2,361.01	2,231.49	129.52	18.230		
5,000.00	4,998.91	20,806.96	7,074.42	16.73	336.82	152.35	346.52	-539.64	2,266.70	2,135.77	130.93	17.312		

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)	
5,100.00	5,098.89	20,806.96	7,074.42	17.09	336.82	152.35	346.52	-539.64	2,172.90	2,040.40	132.50	16.399		
5,200.00	5,198.86	20,806.96	7,074.42	17.45	336.82	152.35	346.52	-539.64	2,079.68	1,945.44	134.24	15.492		
5,300.00	5,298.84	20,806.96	7,074.42	17.81	336.82	152.35	346.52	-539.64	1,987.13	1,850.93	136.19	14.591		
5,400.00	5,398.81	20,806.96	7,074.42	18.17	336.82	152.35	346.52	-539.64	1,895.32	1,756.95	138.37	13.697		
5,500.00	5,498.79	20,806.96	7,074.42	18.53	336.82	152.35	346.52	-539.64	1,804.39	1,663.57	140.82	12.813		
5,600.00	5,598.77	20,806.96	7,074.42	18.89	336.82	152.35	346.52	-539.64	1,714.47	1,570.88	143.58	11.940		
5,700.00	5,698.74	20,806.96	7,074.42	19.25	336.82	152.35	346.52	-539.64	1,625.72	1,479.02	146.71	11.082		
5,800.00	5,798.72	20,806.96	7,074.42	19.61	336.82	152.35	346.52	-539.64	1,538.36	1,388.12	150.24	10.239		
5,900.00	5,898.69	20,806.96	7,074.42	19.97	336.82	152.35	346.52	-539.64	1,452.63	1,298.38	154.25	9.417		
6,000.00	5,998.67	20,806.96	7,074.42	20.33	336.82	152.35	346.52	-539.64	1,368.84	1,210.03	158.81	8.619		
6,100.00	6,098.65	20,806.96	7,074.42	20.69	336.82	152.35	346.52	-539.64	1,287.36	1,123.39	163.97	7.851		
6,200.00	6,198.62	20,806.96	7,074.42	21.05	336.82	152.35	346.52	-539.64	1,208.67	1,038.85	169.81	7.118		
6,300.00	6,298.60	20,806.96	7,074.42	21.41	336.82	152.35	346.52	-539.64	1,133.34	956.96	176.37	6.426		
6,400.00	6,398.57	20,806.96	7,074.42	21.77	336.82	152.35	346.52	-539.64	1,062.09	878.42	183.67	5.783		
6,500.00	6,498.55	20,806.96	7,074.42	22.13	336.82	152.35	346.52	-539.64	995.80	804.16	191.64	5.196		
6,531.56	6,530.10	20,806.96	7,074.42	22.25	336.82	152.35	346.52	-539.64	976.07	781.80	194.27	5.024		
6,550.00	6,548.53	20,806.96	7,074.42	22.31	336.82	-170.07	346.52	-539.64	965.00	769.20	195.80	4.928		
6,600.00	6,598.36	20,806.96	7,074.42	22.49	336.82	-153.63	346.52	-539.64	937.95	738.27	199.68	4.697		
6,650.00	6,647.74	20,806.96	7,074.42	22.67	336.82	-151.04	346.52	-539.64	915.67	712.66	203.01	4.511		
6,700.00	6,696.35	20,806.96	7,074.42	22.84	336.82	-150.30	346.52	-539.64	898.64	693.06	205.59	4.371		
6,750.00	6,743.90	20,806.96	7,074.42	23.01	336.82	-149.96	346.52	-539.64	887.28	680.04	207.24	4.281		
6,800.00	6,790.11	20,806.96	7,074.42	23.18	336.82	-149.65	346.52	-539.64	881.88	674.05	207.84	4.243		
6,819.25	6,807.47	20,806.96	7,074.42	23.24	336.82	-149.50	346.52	-539.64	881.43	673.67	207.76	4.243	CC, ES, SF	
6,850.00	6,834.67	20,806.96	7,074.42	23.35	336.82	-149.22	346.52	-539.64	882.59	675.29	207.29	4.258		
6,900.00	6,877.32	20,806.96	7,074.42	23.51	336.82	-148.60	346.52	-539.64	889.37	683.75	205.62	4.325		
6,950.00	6,917.80	20,806.96	7,074.42	23.68	336.82	-147.72	346.52	-539.64	902.06	699.16	202.89	4.446		
7,000.00	6,955.85	20,806.96	7,074.42	23.85	336.82	-146.55	346.52	-539.64	920.33	721.06	199.27	4.619		
7,050.00	6,991.24	20,806.96	7,074.42	24.03	336.82	-145.03	346.52	-539.64	943.75	748.83	194.92	4.842		
7,100.00	7,023.76	20,806.96	7,074.42	24.22	336.82	-143.06	346.52	-539.64	971.81	781.77	190.04	5.114		
7,150.00	7,053.20	20,806.96	7,074.42	24.42	336.82	-140.57	346.52	-539.64	1,003.95	819.13	184.82	5.432		
7,200.00	7,079.37	20,806.96	7,074.42	24.63	336.82	-137.41	346.52	-539.64	1,039.62	860.19	179.43	5.794		
7,250.00	7,102.13	20,806.96	7,074.42	24.86	336.82	-133.43	346.52	-539.64	1,078.25	904.24	174.00	6.197		
7,300.00	7,121.32	20,806.96	7,074.42	25.10	336.82	-128.39	346.52	-539.64	1,119.30	950.65	168.65	6.637		
7,350.00	7,136.84	20,806.96	7,074.42	25.35	336.82	-122.08	346.52	-539.64	1,162.29	998.85	163.44	7.111		
7,400.00	7,148.58	20,806.96	7,074.42	25.62	336.82	-114.25	346.52	-539.64	1,206.76	1,048.32	158.43	7.617		
7,450.00	7,156.47	20,806.96	7,074.42	25.90	336.82	-104.83	346.52	-539.64	1,252.28	1,098.62	153.67	8.149		
7,500.00	7,160.47	20,806.96	7,074.42	26.20	336.82	-94.06	346.52	-539.64	1,298.49	1,149.34	149.15	8.706		
7,526.22	7,161.00	20,806.96	7,074.42	26.36	336.82	-88.09	346.52	-539.64	1,322.88	1,175.99	146.90	9.006		
7,600.00	7,160.97	20,806.96	7,074.42	26.83	336.82	-88.09	346.52	-539.64	1,391.85	1,250.91	140.94	9.876		
7,700.00	7,160.93	20,806.96	7,074.42	27.53	336.82	-88.09	346.52	-539.64	1,486.07	1,352.36	133.71	11.114		
7,800.00	7,160.89	20,806.96	7,074.42	28.32	336.82	-88.09	346.52	-539.64	1,581.00	1,453.68	127.32	12.417		
7,900.00	7,160.85	20,806.96	7,074.42	29.16	336.82	-88.09	346.52	-539.64	1,676.52	1,554.88	121.64	13.782		
8,000.00	7,160.81	20,806.96	7,074.42	30.07	336.82	-88.09	346.52	-539.64	1,772.54	1,655.97	116.57	15.206		
8,100.00	7,160.77	20,806.96	7,074.42	31.04	336.82	-88.09	346.52	-539.64	1,868.97	1,756.96	112.01	16.686		
8,200.00	7,160.73	20,806.96	7,074.42	32.06	336.82	-88.09	346.52	-539.64	1,965.76	1,857.86	107.90	18.218		
8,300.00	7,160.69	20,806.96	7,074.42	33.12	336.82	-88.09	346.52	-539.64	2,062.85	1,958.67	104.18	19.800		
8,400.00	7,160.65	20,806.96	7,074.42	34.23	336.82	-88.09	346.52	-539.64	2,160.21	2,059.41	100.80	21.430		
8,500.00	7,160.60	20,806.96	7,074.42	35.37	336.82	-88.09	346.52	-539.64	2,257.81	2,160.09	97.72	23.105		
8,600.00	7,160.56	20,806.96	7,074.42	36.55	336.82	-88.09	346.52	-539.64	2,355.60	2,260.70	94.90	24.822		
8,700.00	7,160.52	20,806.96	7,074.42	37.76	336.82	-88.09	346.52	-539.64	2,453.57	2,361.26	92.31	26.578		
8,800.00	7,160.48	20,806.96	7,074.42	38.99	336.82	-88.09	346.52	-539.64	2,551.70	2,461.76	89.93	28.373		
8,900.00	7,160.44	20,806.96	7,074.42	40.26	336.82	-88.09	346.52	-539.64	2,649.97	2,562.23	87.74	30.203		

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 836H
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 836H	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										
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	
9,000.00	7,160.40	20,806.96	7,074.42	41.54	336.82	-88.09	346.52	-539.64	2,748.36	2,662.65	85.71	32.066
9,100.00	7,160.36	20,806.96	7,074.42	42.85	336.82	-88.09	346.52	-539.64	2,846.87	2,763.04	83.83	33.960
9,200.00	7,160.32	20,806.96	7,074.42	44.18	336.82	-88.09	346.52	-539.64	2,945.47	2,863.39	82.08	35.884
9,300.00	7,160.28	20,806.96	7,074.42	45.53	336.82	-88.09	346.52	-539.64	3,044.17	2,963.71	80.46	37.835
9,400.00	7,160.24	20,806.96	7,074.42	46.89	336.82	-88.09	346.52	-539.64	3,142.95	3,064.00	78.95	39.811
9,500.00	7,160.20	20,806.96	7,074.42	48.26	336.82	-88.09	346.52	-539.64	3,241.80	3,164.27	77.53	41.812
9,600.00	7,160.16	20,806.96	7,074.42	49.65	336.82	-88.09	346.52	-539.64	3,340.73	3,264.51	76.21	43.835
9,700.00	7,160.12	20,806.96	7,074.42	51.05	336.82	-88.09	346.52	-539.64	3,439.71	3,364.74	74.97	45.878
9,800.00	7,160.08	20,806.96	7,074.42	52.47	336.82	-88.09	346.52	-539.64	3,538.75	3,464.94	73.82	47.941
9,900.00	7,160.04	20,806.96	7,074.42	53.89	336.82	-88.09	346.52	-539.64	3,637.85	3,565.12	72.73	50.021
10,000.00	7,160.00	20,806.96	7,074.42	55.33	336.82	-88.09	346.52	-539.64	3,736.99	3,665.29	71.70	52.117
10,100.00	7,159.95	20,806.96	7,074.42	56.77	336.82	-88.09	346.52	-539.64	3,836.18	3,765.44	70.74	54.229
10,200.00	7,159.91	20,806.96	7,074.42	58.22	336.82	-88.09	346.52	-539.64	3,935.40	3,865.57	69.83	56.354
10,300.00	7,159.87	20,806.96	7,074.42	59.68	336.82	-88.09	346.52	-539.64	4,034.67	3,965.69	68.98	58.491
10,400.00	7,159.83	20,806.96	7,074.42	61.15	336.82	-88.09	346.52	-539.64	4,133.97	4,065.80	68.17	60.639
10,500.00	7,159.79	20,806.96	7,074.42	62.62	336.82	-88.09	346.52	-539.64	4,233.31	4,165.90	67.41	62.798
10,600.00	7,159.75	20,806.96	7,074.42	64.10	336.82	-88.09	346.52	-539.64	4,332.67	4,265.98	66.69	64.966
10,700.00	7,159.71	20,806.96	7,074.42	65.58	336.82	-88.09	346.52	-539.64	4,432.07	4,366.06	66.01	67.142
10,800.00	7,159.67	20,806.96	7,074.42	67.07	336.82	-88.09	346.52	-539.64	4,531.49	4,466.12	65.37	69.325
10,900.00	7,159.63	20,806.96	7,074.42	68.57	336.82	-88.09	346.52	-539.64	4,630.93	4,566.18	64.76	71.514
11,000.00	7,159.59	20,806.96	7,074.42	70.07	336.82	-88.09	346.52	-539.64	4,730.40	4,666.22	64.18	73.708
11,100.00	7,159.55	20,806.96	7,074.42	71.57	336.82	-88.09	346.52	-539.64	4,829.89	4,766.26	63.63	75.907
11,200.00	7,159.51	20,806.96	7,074.42	73.08	336.82	-88.09	346.52	-539.64	4,929.40	4,866.29	63.11	78.109
11,300.00	7,159.47	20,806.96	7,074.42	74.59	336.82	-88.09	346.52	-539.64	5,028.93	4,966.32	62.62	80.315
11,400.00	7,159.43	20,806.96	7,074.42	76.11	336.82	-88.09	346.52	-539.64	5,128.48	5,066.34	62.15	82.522
11,500.00	7,159.39	20,806.96	7,074.42	77.63	336.82	-88.09	346.52	-539.64	5,228.05	5,166.35	61.70	84.731
11,600.00	7,159.35	20,806.96	7,074.42	79.15	336.82	-88.09	346.52	-539.64	5,327.63	5,266.35	61.28	86.940
11,638.27	7,159.33	20,806.96	7,074.42	79.73	336.82	-88.09	346.52	-539.64	5,365.75	5,304.62	61.12	87.786
11,640.51	7,159.33	20,806.96	7,074.42	79.77	336.82	-88.10	346.52	-539.64	5,367.98	5,306.86	61.11	87.835
11,700.00	7,159.30	20,806.96	7,074.42	80.68	336.82	-88.10	346.52	-539.64	5,427.23	5,366.35	60.88	89.152
11,800.00	7,159.26	20,806.96	7,074.42	82.20	336.82	-88.10	346.52	-539.64	5,526.84	5,466.34	60.49	91.364
11,900.00	7,159.22	20,806.96	7,074.42	83.74	336.82	-88.10	346.52	-539.64	5,626.46	5,566.33	60.13	93.575
12,000.00	7,159.18	20,806.96	7,074.42	85.27	336.82	-88.10	346.52	-539.64	5,726.09	5,666.31	59.78	95.784
12,100.00	7,159.14	20,806.96	7,074.42	86.81	336.82	-88.10	346.52	-539.64	5,825.74	5,766.29	59.45	97.992
12,200.00	7,159.10	20,806.96	7,074.42	88.35	336.82	-88.10	346.52	-539.64	5,925.40	5,866.27	59.14	100.196
12,300.00	7,159.06	20,806.96	7,074.42	89.89	336.82	-88.10	346.52	-539.64	6,025.07	5,966.24	58.84	102.398
12,400.00	7,159.02	20,806.96	7,074.42	91.43	336.82	-88.10	346.52	-539.64	6,124.76	6,066.20	58.56	104.597
12,500.00	7,158.98	20,806.96	7,074.42	92.98	336.82	-88.10	346.52	-539.64	6,224.45	6,166.16	58.29	106.791
12,600.00	7,158.94	20,806.96	7,074.42	94.52	336.82	-88.10	346.52	-539.64	6,324.15	6,266.12	58.03	108.982
12,700.00	7,158.90	20,806.96	7,074.42	96.07	336.82	-88.10	346.52	-539.64	6,423.86	6,366.08	57.79	111.167
12,800.00	7,158.86	20,806.96	7,074.42	97.62	336.82	-88.10	346.52	-539.64	6,523.58	6,466.03	57.55	113.348
12,900.00	7,158.81	20,806.96	7,074.42	99.17	336.82	-88.10	346.52	-539.64	6,623.31	6,565.98	57.33	115.523
13,000.00	7,158.77	20,806.96	7,074.42	100.73	336.82	-88.10	346.52	-539.64	6,723.05	6,665.93	57.12	117.693
13,100.00	7,158.73	20,806.96	7,074.42	102.28	336.82	-88.10	346.52	-539.64	6,822.79	6,765.87	56.92	119.857
13,200.00	7,158.69	20,806.96	7,074.42	103.84	336.82	-88.10	346.52	-539.64	6,922.55	6,865.81	56.74	122.014
13,300.00	7,158.65	20,806.96	7,074.42	105.40	336.82	-88.10	346.52	-539.64	7,022.30	6,965.75	56.56	124.165
13,400.00	7,158.61	20,806.96	7,074.42	106.96	336.82	-88.10	346.52	-539.64	7,122.07	7,065.68	56.39	126.309
13,500.00	7,158.57	20,806.96	7,074.42	108.52	336.82	-88.10	346.52	-539.64	7,221.84	7,165.62	56.22	128.446
13,600.00	7,158.53	20,806.96	7,074.42	110.08	336.82	-88.10	346.52	-539.64	7,321.62	7,265.55	56.07	130.576
13,700.00	7,158.49	20,806.96	7,074.42	111.64	336.82	-88.10	346.52	-539.64	7,421.40	7,365.48	55.93	132.699
13,800.00	7,158.45	20,806.96	7,074.42	113.21	336.82	-88.10	346.52	-539.64	7,521.19	7,465.40	55.79	134.814
13,900.00	7,158.41	20,806.96	7,074.42	114.77	336.82	-88.10	346.52	-539.64	7,620.99	7,565.33	55.66	136.921

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 836H
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 836H	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)	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
14,000.00	7,158.37	20,806.96	7,074.42	116.34	336.82	-88.10	346.52	-539.64	7,720.79	7,665.25	55.54	139.020	
14,100.00	7,158.32	20,806.96	7,074.42	117.91	336.82	-88.10	346.52	-539.64	7,820.60	7,765.17	55.42	141.111	
14,200.00	7,158.28	20,806.96	7,074.42	119.47	336.82	-88.10	346.52	-539.64	7,920.41	7,865.09	55.31	143.193	
14,300.00	7,158.24	20,806.96	7,074.42	121.04	336.82	-88.10	346.52	-539.64	8,020.22	7,965.01	55.21	145.267	
14,400.00	7,158.20	20,806.96	7,074.42	122.61	336.82	-88.10	346.52	-539.64	8,120.04	8,064.93	55.11	147.333	
14,500.00	7,158.16	20,806.96	7,074.42	124.18	336.82	-88.10	346.52	-539.64	8,219.87	8,164.84	55.02	149.389	
14,600.00	7,158.12	20,806.96	7,074.42	125.76	336.82	-88.10	346.52	-539.64	8,319.70	8,264.76	54.94	151.437	
14,700.00	7,158.08	20,806.96	7,074.42	127.33	336.82	-88.10	346.52	-539.64	8,419.53	8,364.67	54.86	153.476	
14,800.00	7,158.04	20,806.96	7,074.42	128.90	336.82	-88.10	346.52	-539.64	8,519.37	8,464.58	54.78	155.506	
14,900.00	7,158.00	20,806.96	7,074.42	130.47	336.82	-88.10	346.52	-539.64	8,619.21	8,564.49	54.72	157.526	
15,000.00	7,157.96	20,806.96	7,074.42	132.05	336.82	-88.10	346.52	-539.64	8,719.05	8,664.40	54.65	159.538	
15,100.00	7,157.92	20,806.96	7,074.42	133.62	336.82	-88.10	346.52	-539.64	8,818.90	8,764.31	54.59	161.540	
15,200.00	7,157.88	20,806.96	7,074.42	135.20	336.82	-88.10	346.52	-539.64	8,918.75	8,864.21	54.54	163.533	
15,300.00	7,157.83	20,806.96	7,074.42	136.78	336.82	-88.10	346.52	-539.64	9,018.60	8,964.12	54.49	165.516	
15,400.00	7,157.79	20,806.96	7,074.42	138.35	336.82	-88.10	346.52	-539.64	9,118.46	9,064.02	54.44	167.489	
15,500.00	7,157.75	20,806.96	7,074.42	139.93	336.82	-88.10	346.52	-539.64	9,218.32	9,163.92	54.40	169.453	
15,600.00	7,157.71	20,806.96	7,074.42	141.51	336.82	-88.10	346.52	-539.64	9,318.18	9,263.82	54.36	171.408	
15,700.00	7,157.67	20,806.96	7,074.42	143.09	336.82	-88.10	346.52	-539.64	9,418.05	9,363.72	54.33	173.353	
15,800.00	7,157.63	20,806.96	7,074.42	144.67	336.82	-88.10	346.52	-539.64	9,517.92	9,463.62	54.30	175.287	
15,900.00	7,157.59	20,806.96	7,074.42	146.24	336.82	-88.10	346.52	-539.64	9,617.79	9,563.52	54.27	177.213	
16,000.00	7,157.55	20,806.96	7,074.42	147.82	336.82	-88.10	346.52	-539.64	9,717.67	9,663.42	54.25	179.128	
16,100.00	7,157.51	20,806.96	7,074.42	149.41	336.82	-88.10	346.52	-539.64	9,817.54	9,763.31	54.23	181.034	
16,200.00	7,157.47	20,806.96	7,074.42	150.99	336.82	-88.10	346.52	-539.64	9,917.42	9,863.21	54.21	182.929	
16,300.00	7,157.43	20,806.96	7,074.42	152.57	336.82	-88.10	346.52	-539.64	10,017.31	9,963.10	54.20	184.815	
16,400.00	7,157.38	20,806.96	7,074.42	154.15	336.82	-88.10	346.52	-539.64	10,117.19	10,063.00	54.19	186.691	
16,500.00	7,157.34	20,806.96	7,074.42	155.73	336.82	-88.10	346.52	-539.64	10,217.08	10,162.89	54.19	188.557	
16,600.00	7,157.30	20,806.96	7,074.42	157.31	336.82	-88.10	346.52	-539.64	10,316.97	10,262.78	54.18	190.413	
16,680.84	7,157.27	20,806.96	7,074.42	158.59	336.82	-88.10	346.52	-539.64	10,397.72	10,343.54	54.18	191.907	
16,687.46	7,157.27	20,806.96	7,074.42	158.70	336.82	-88.14	346.52	-539.64	10,404.33	10,350.14	54.18	192.029	
16,700.00	7,157.26	20,806.96	7,074.42	158.90	336.82	-88.14	346.52	-539.64	10,416.86	10,362.68	54.18	192.261	
16,800.00	7,157.22	20,806.96	7,074.42	160.48	336.82	-88.14	346.52	-539.64	10,516.74	10,462.56	54.18	194.104	
16,900.00	7,157.18	20,806.96	7,074.42	162.06	336.82	-88.14	346.52	-539.64	10,616.63	10,562.45	54.18	195.938	
17,000.00	7,157.14	20,806.96	7,074.42	163.65	336.82	-88.14	346.52	-539.64	10,716.53	10,662.34	54.19	197.761	
17,100.00	7,157.10	20,806.96	7,074.42	165.23	336.82	-88.14	346.52	-539.64	10,816.42	10,762.22	54.20	199.574	
17,200.00	7,157.06	20,806.96	7,074.42	166.82	336.82	-88.14	346.52	-539.64	10,916.32	10,862.11	54.21	201.378	
17,300.00	7,157.02	20,806.96	7,074.42	168.40	336.82	-88.14	346.52	-539.64	11,016.21	10,961.99	54.22	203.171	
17,400.00	7,156.98	20,806.96	7,074.42	169.99	336.82	-88.14	346.52	-539.64	11,116.11	11,061.88	54.24	204.954	
17,500.00	7,156.94	20,806.96	7,074.42	171.57	336.82	-88.14	346.52	-539.64	11,216.01	11,161.76	54.25	206.728	
17,600.00	7,156.90	20,806.96	7,074.42	173.16	336.82	-88.14	346.52	-539.64	11,315.92	11,261.64	54.28	208.491	
17,700.00	7,156.85	20,806.96	7,074.42	174.75	336.82	-88.14	346.52	-539.64	11,415.82	11,361.52	54.30	210.245	
17,800.00	7,156.81	20,806.96	7,074.42	176.33	336.82	-88.14	346.52	-539.64	11,515.73	11,461.41	54.32	211.988	
17,900.00	7,156.77	20,806.96	7,074.42	177.92	336.82	-88.14	346.52	-539.64	11,615.64	11,561.29	54.35	213.722	
18,000.00	7,156.73	20,806.96	7,074.42	179.51	336.82	-88.14	346.52	-539.64	11,715.55	11,661.17	54.38	215.445	
18,100.00	7,156.69	20,806.96	7,074.42	181.09	336.82	-88.14	346.52	-539.64	11,815.46	11,761.05	54.41	217.159	
18,200.00	7,156.65	20,806.96	7,074.42	182.68	336.82	-88.14	346.52	-539.64	11,915.37	11,860.93	54.44	218.863	
18,300.00	7,156.61	20,806.96	7,074.42	184.27	336.82	-88.14	346.52	-539.64	12,015.28	11,960.81	54.48	220.557	
18,400.00	7,156.57	20,806.96	7,074.42	185.86	336.82	-88.14	346.52	-539.64	12,115.20	12,060.69	54.51	222.242	
18,500.00	7,156.53	20,806.96	7,074.42	187.45	336.82	-88.14	346.52	-539.64	12,215.12	12,160.56	54.55	223.916	
18,600.00	7,156.49	20,806.96	7,074.42	189.03	336.82	-88.14	346.52	-539.64	12,315.03	12,260.44	54.59	225.581	
18,700.00	7,156.45	20,806.96	7,074.42	190.62	336.82	-88.14	346.52	-539.64	12,414.95	12,360.32	54.63	227.237	
18,800.00	7,156.41	20,806.96	7,074.42	192.21	336.82	-88.14	346.52	-539.64	12,514.88	12,460.20	54.68	228.882	
18,900.00	7,156.37	20,806.96	7,074.42	193.80	336.82	-88.14	346.52	-539.64	12,614.80	12,560.07	54.72	230.518	

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 836H
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 836H	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											
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
19,000.00	7,156.32	20,806.96	7,074.42	195.39	336.82	-88.14	346.52	-539.64	12,714.72	12,659.95	54.77	232.145	
19,100.00	7,156.28	20,806.96	7,074.42	196.98	336.82	-88.14	346.52	-539.64	12,814.65	12,759.83	54.82	233.762	
19,200.00	7,156.24	20,806.96	7,074.42	198.57	336.82	-88.14	346.52	-539.64	12,914.57	12,859.70	54.87	235.369	
19,300.00	7,156.20	20,806.96	7,074.42	200.16	336.82	-88.14	346.52	-539.64	13,014.50	12,959.58	54.92	236.967	
19,400.00	7,156.16	20,806.96	7,074.42	201.75	336.82	-88.14	346.52	-539.64	13,114.43	13,059.45	54.97	238.556	
19,500.00	7,156.12	20,806.96	7,074.42	203.34	336.82	-88.14	346.52	-539.64	13,214.35	13,159.33	55.03	240.135	
19,600.00	7,156.08	20,806.96	7,074.42	204.93	336.82	-88.14	346.52	-539.64	13,314.28	13,259.20	55.08	241.705	
19,700.00	7,156.04	20,806.96	7,074.42	206.52	336.82	-88.14	346.52	-539.64	13,414.22	13,359.07	55.14	243.266	
19,800.00	7,156.00	20,806.96	7,074.42	208.11	336.82	-88.14	346.52	-539.64	13,514.15	13,458.95	55.20	244.817	
19,900.00	7,155.96	20,806.96	7,074.42	209.71	336.82	-88.14	346.52	-539.64	13,614.08	13,558.82	55.26	246.359	
20,000.00	7,155.92	20,806.96	7,074.42	211.30	336.82	-88.14	346.52	-539.64	13,714.02	13,658.69	55.32	247.892	
20,100.00	7,155.88	20,806.96	7,074.42	212.89	336.82	-88.14	346.52	-539.64	13,813.95	13,758.57	55.39	249.416	
20,200.00	7,155.84	20,806.96	7,074.42	214.48	336.82	-88.14	346.52	-539.64	13,913.89	13,858.44	55.45	250.931	
20,300.00	7,155.79	20,806.96	7,074.42	216.07	336.82	-88.14	346.52	-539.64	14,013.82	13,958.31	55.51	252.436	
20,400.00	7,155.75	20,806.96	7,074.42	217.66	336.82	-88.14	346.52	-539.64	14,113.76	14,058.18	55.58	253.933	
20,500.00	7,155.71	20,806.96	7,074.42	219.26	336.82	-88.14	346.52	-539.64	14,213.70	14,158.05	55.65	255.421	
20,600.00	7,155.67	20,806.96	7,074.42	220.85	336.82	-88.14	346.52	-539.64	14,313.64	14,257.92	55.72	256.900	
20,700.00	7,155.63	20,806.96	7,074.42	222.44	336.82	-88.14	346.52	-539.64	14,413.58	14,357.79	55.79	258.370	
20,800.00	7,155.59	20,806.96	7,074.42	224.03	336.82	-88.14	346.52	-539.64	14,513.52	14,457.66	55.86	259.832	
20,900.00	7,155.55	20,806.96	7,074.42	225.63	336.82	-88.14	346.52	-539.64	14,613.46	14,557.53	55.93	261.285	
21,000.00	7,155.51	20,806.96	7,074.42	227.22	336.82	-88.14	346.52	-539.64	14,713.41	14,657.40	56.00	262.729	
21,100.00	7,155.47	20,806.96	7,074.42	228.81	336.82	-88.14	346.52	-539.64	14,813.35	14,757.27	56.08	264.164	
21,200.00	7,155.43	20,806.96	7,074.42	230.40	336.82	-88.14	346.52	-539.64	14,913.29	14,857.14	56.15	265.591	
21,300.00	7,155.39	20,806.96	7,074.42	232.00	336.82	-88.14	346.52	-539.64	15,013.24	14,957.01	56.23	267.009	
21,400.00	7,155.35	20,806.96	7,074.42	233.59	336.82	-88.14	346.52	-539.64	15,113.18	15,056.88	56.30	268.419	
21,500.00	7,155.31	20,806.96	7,074.42	235.18	336.82	-88.14	346.52	-539.64	15,213.13	15,156.75	56.38	269.820	
21,600.00	7,155.26	20,806.96	7,074.42	236.78	336.82	-88.14	346.52	-539.64	15,313.08	15,256.62	56.46	271.213	
21,700.00	7,155.22	20,806.96	7,074.42	238.37	336.82	-88.14	346.52	-539.64	15,413.03	15,356.48	56.54	272.597	
21,800.00	7,155.18	20,806.96	7,074.42	239.96	336.82	-88.14	346.52	-539.64	15,512.97	15,456.35	56.62	273.974	
21,900.00	7,155.14	20,806.96	7,074.42	241.56	336.82	-88.14	346.52	-539.64	15,612.92	15,556.22	56.70	275.342	
21,953.88	7,155.12	20,806.96	7,074.42	242.42	336.82	-88.14	346.52	-539.64	15,666.78	15,610.03	56.75	276.075	
22,000.00	7,155.10	20,806.96	7,074.42	243.15	336.82	-87.48	346.52	-539.64	15,712.88	15,656.09	56.79	276.694	
22,019.01	7,155.09	20,806.96	7,074.42	243.46	336.82	-87.05	346.52	-539.64	15,731.89	15,675.08	56.81	276.945	
22,100.00	7,155.06	20,806.96	7,074.42	244.75	336.82	-87.05	346.52	-539.64	15,812.86	15,755.98	56.88	278.004	
22,200.00	7,155.02	20,806.96	7,074.42	246.34	336.82	-87.05	346.52	-539.64	15,912.84	15,855.87	56.97	279.305	
22,300.00	7,154.97	20,806.96	7,074.42	247.94	336.82	-87.05	346.52	-539.64	16,012.82	15,955.75	57.07	280.598	
22,400.00	7,154.93	20,806.96	7,074.42	249.53	336.82	-87.05	346.52	-539.64	16,112.80	16,055.64	57.16	281.885	
22,500.00	7,154.89	20,806.96	7,074.42	251.13	336.82	-87.05	346.52	-539.64	16,212.78	16,155.52	57.26	283.164	
22,600.00	7,154.85	20,806.96	7,074.42	252.72	336.82	-87.05	346.52	-539.64	16,312.76	16,255.41	57.35	284.436	
22,700.00	7,154.80	20,806.96	7,074.42	254.32	336.82	-87.05	346.52	-539.64	16,412.74	16,355.29	57.45	285.701	
22,800.00	7,154.76	20,806.96	7,074.42	255.91	336.82	-87.05	346.52	-539.64	16,512.72	16,455.18	57.54	286.959	
22,900.00	7,154.72	20,806.96	7,074.42	257.51	336.82	-87.05	346.52	-539.64	16,612.70	16,555.06	57.64	288.209	
23,000.00	7,154.68	20,806.96	7,074.42	259.11	336.82	-87.05	346.52	-539.64	16,712.69	16,654.95	57.74	289.453	
23,100.00	7,154.63	20,806.96	7,074.42	260.70	336.82	-87.05	346.52	-539.64	16,812.67	16,754.83	57.84	290.690	
23,200.00	7,154.59	20,806.96	7,074.42	262.30	336.82	-87.05	346.52	-539.64	16,912.65	16,854.71	57.94	291.920	
23,300.00	7,154.55	20,806.96	7,074.42	263.89	336.82	-87.05	346.52	-539.64	17,012.63	16,954.60	58.04	293.142	
23,400.00	7,154.51	20,806.96	7,074.42	265.49	336.82	-87.05	346.52	-539.64	17,112.62	17,054.48	58.14	294.358	
23,500.00	7,154.47	20,806.96	7,074.42	267.08	336.82	-87.05	346.52	-539.64	17,212.60	17,154.36	58.24	295.568	
23,600.00	7,154.42	20,806.96	7,074.42	268.68	336.82	-87.05	346.52	-539.64	17,312.58	17,254.25	58.34	296.770	
23,700.00	7,154.38	20,806.96	7,074.42	270.28	336.82	-87.05	346.52	-539.64	17,412.57	17,354.13	58.44	297.966	
23,800.00	7,154.34	20,806.96	7,074.42	271.87	336.82	-87.05	346.52	-539.64	17,512.55	17,454.01	58.54	299.155	
23,900.00	7,154.30	20,806.96	7,074.42	273.47	336.82	-87.05	346.52	-539.64	17,612.53	17,553.89	58.64	300.337	

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 836H
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 836H	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						
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		
24,000.00	7,154.25	20,806.96	7,074.42	275.07	336.82	-87.05	346.52	-539.64	17,712.52	17,653.77	58.75	301.513			
24,100.00	7,154.21	20,806.96	7,074.42	276.66	336.82	-87.05	346.52	-539.64	17,812.50	17,753.65	58.85	302.682			
24,200.00	7,154.17	20,806.96	7,074.42	278.26	336.82	-87.05	346.52	-539.64	17,912.48	17,853.53	58.95	303.845			
24,300.00	7,154.13	20,806.96	7,074.42	279.86	336.82	-87.05	346.52	-539.64	18,012.47	17,953.41	59.06	305.001			
24,400.00	7,154.08	20,806.96	7,074.42	281.45	336.82	-87.05	346.52	-539.64	18,112.45	18,053.29	59.16	306.150			
24,500.00	7,154.04	20,806.96	7,074.42	283.05	336.82	-87.05	346.52	-539.64	18,212.44	18,153.17	59.27	307.293			
24,597.25	7,154.00	20,806.96	7,074.42	284.60	336.82	-87.05	346.52	-539.64	18,309.67	18,250.30	59.37	308.399			
24,600.00	7,154.00	20,806.96	7,074.42	284.65	336.82	-87.14	346.52	-539.64	18,312.42	18,253.05	59.37	308.430			
24,700.00	7,153.96	20,806.96	7,074.42	286.24	336.82	-88.60	346.52	-539.64	18,412.39	18,352.91	59.47	309.590			
24,722.47	7,153.95	20,806.96	7,074.42	286.60	336.82	-88.75	346.52	-539.64	18,434.84	18,375.35	59.49	309.857			
24,800.00	7,153.92	20,806.96	7,074.42	287.84	336.82	-88.75	346.52	-539.64	18,512.31	18,452.75	59.57	310.781			
24,900.00	7,153.88	20,806.96	7,074.42	289.43	336.82	-88.75	346.52	-539.64	18,612.24	18,552.58	59.66	311.965			
25,000.00	7,153.84	20,806.96	7,074.42	291.03	336.82	-88.75	346.52	-539.64	18,712.16	18,652.41	59.76	313.142			
25,100.00	7,153.80	20,806.96	7,074.42	292.63	336.82	-88.75	346.52	-539.64	18,812.09	18,752.24	59.85	314.311			
25,200.00	7,153.77	20,806.96	7,074.42	294.22	336.82	-88.75	346.52	-539.64	18,912.02	18,852.07	59.95	315.473			
25,300.00	7,153.73	20,806.96	7,074.42	295.82	336.82	-88.75	346.52	-539.64	19,011.95	18,951.90	60.05	316.628			
25,400.00	7,153.69	20,806.96	7,074.42	297.41	336.82	-88.75	346.52	-539.64	19,111.87	19,051.73	60.14	317.775			
25,500.00	7,153.65	20,806.96	7,074.42	299.01	336.82	-88.75	346.52	-539.64	19,211.80	19,151.56	60.24	318.915			
25,600.00	7,153.61	20,806.96	7,074.42	300.60	336.82	-88.75	346.52	-539.64	19,311.73	19,251.39	60.34	320.048			
25,700.00	7,153.57	20,806.96	7,074.42	302.20	336.82	-88.75	346.52	-539.64	19,411.67	19,351.23	60.44	321.174			
25,800.00	7,153.53	20,806.96	7,074.42	303.80	336.82	-88.75	346.52	-539.64	19,511.60	19,451.06	60.54	322.293			
25,900.00	7,153.50	20,806.96	7,074.42	305.39	336.82	-88.75	346.52	-539.64	19,611.53	19,550.89	60.64	323.404			
26,000.00	7,153.46	20,806.96	7,074.42	306.99	336.82	-88.75	346.52	-539.64	19,711.46	19,650.72	60.74	324.509			
26,100.00	7,153.42	20,806.96	7,074.42	308.58	336.82	-88.75	346.52	-539.64	19,811.40	19,750.55	60.84	325.607			
26,200.00	7,153.38	20,806.96	7,074.42	310.18	336.82	-88.75	346.52	-539.64	19,911.33	19,850.38	60.95	326.698			
26,300.00	7,153.34	20,806.96	7,074.42	311.78	336.82	-88.75	346.52	-539.64	20,011.27	19,950.22	61.05	327.783			
26,400.00	7,153.30	20,806.96	7,074.42	313.37	336.82	-88.75	346.52	-539.64	20,111.20	20,050.05	61.15	328.860			
26,500.00	7,153.26	20,806.96	7,074.42	314.97	336.82	-88.75	346.52	-539.64	20,211.14	20,149.88	61.26	329.931			
26,600.00	7,153.23	20,806.96	7,074.42	316.57	336.82	-88.75	346.52	-539.64	20,311.08	20,249.71	61.36	330.995			
26,700.00	7,153.19	20,806.96	7,074.42	318.16	336.82	-88.75	346.52	-539.64	20,411.01	20,349.54	61.47	332.053			
26,800.00	7,153.15	20,806.96	7,074.42	319.76	336.82	-88.75	346.52	-539.64	20,510.95	20,449.38	61.58	333.104			
26,900.00	7,153.11	20,806.96	7,074.42	321.35	336.82	-88.75	346.52	-539.64	20,610.89	20,549.21	61.68	334.149			
26,976.35	7,153.08	20,806.96	7,074.42	322.57	336.82	-88.75	346.52	-539.64	20,687.19	20,625.43	61.76	334.942			
27,000.00	7,153.07	20,806.96	7,074.42	322.95	336.82	-88.75	346.52	-539.64	20,710.83	20,649.04	61.79	335.187			
27,100.00	7,153.03	20,806.96	7,074.42	324.55	336.82	-88.75	346.52	-539.64	20,810.77	20,748.87	61.90	336.219			
27,176.36	7,153.00	20,806.96	7,074.42	325.77	336.82	-88.75	346.52	-539.64	20,887.08	20,825.10	61.98	337.003			

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 836H
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 836H	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													
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		No-Go Distance (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
0.00	0.00	21,289.96	7,363.81	0.00	339.92	-140.10	-651.69	-544.81	7,483.19				
125.00	125.00	21,289.96	7,363.81	0.06	339.92	87.64	-651.69	-544.81	7,359.01	7,244.82	114.19	64.448	
225.00	225.00	21,289.96	7,363.81	0.17	339.92	152.75	-651.69	-544.81	7,259.73	7,145.34	114.39	63.466	
312.00	311.99	21,289.96	7,363.81	0.28	339.92	92.32	-651.69	-544.81	7,173.38	7,058.81	114.57	62.612	
400.00	399.99	21,289.96	7,363.81	0.37	339.92	92.32	-651.69	-544.81	7,086.01	6,969.38	116.63	60.758	
462.00	461.99	21,289.96	7,363.81	0.50	339.92	92.32	-651.69	-544.81	7,024.46	6,907.76	116.70	60.192	
509.18	509.16	21,289.96	7,363.81	0.64	339.92	73.60	-651.69	-544.81	6,977.61	6,860.85	116.76	59.762	
600.00	599.96	21,289.96	7,363.81	0.94	339.92	73.60	-651.69	-544.81	6,887.38	6,770.52	116.86	58.936	
700.00	699.94	21,289.96	7,363.81	1.28	339.92	73.60	-651.69	-544.81	6,788.06	6,671.08	116.98	58.026	
800.00	799.92	21,289.96	7,363.81	1.63	339.92	73.60	-651.69	-544.81	6,688.76	6,571.64	117.11	57.113	
900.00	899.89	21,289.96	7,363.81	1.98	339.92	73.60	-651.69	-544.81	6,589.48	6,472.22	117.25	56.198	
1,000.00	999.87	21,289.96	7,363.81	2.34	339.92	73.60	-651.69	-544.81	6,490.22	6,372.81	117.40	55.281	
1,100.00	1,099.84	21,289.96	7,363.81	2.69	339.92	73.60	-651.69	-544.81	6,390.98	6,273.42	117.56	54.362	
1,200.00	1,199.82	21,289.96	7,363.81	3.05	339.92	73.60	-651.69	-544.81	6,291.77	6,174.04	117.73	53.442	
1,300.00	1,299.80	21,289.96	7,363.81	3.41	339.92	73.60	-651.69	-544.81	6,192.58	6,074.67	117.91	52.520	
1,400.00	1,399.77	21,289.96	7,363.81	3.77	339.92	73.60	-651.69	-544.81	6,093.42	5,975.32	118.10	51.597	
1,500.00	1,499.75	21,289.96	7,363.81	4.13	339.92	73.60	-651.69	-544.81	5,994.29	5,876.00	118.29	50.674	
1,600.00	1,599.72	21,289.96	7,363.81	4.49	339.92	73.60	-651.69	-544.81	5,895.18	5,776.69	118.50	49.749	
1,700.00	1,699.70	21,289.96	7,363.81	4.85	339.92	73.60	-651.69	-544.81	5,796.11	5,677.40	118.72	48.823	
1,800.00	1,799.68	21,289.96	7,363.81	5.21	339.92	73.60	-651.69	-544.81	5,697.07	5,578.13	118.94	47.897	
1,900.00	1,899.65	21,289.96	7,363.81	5.57	339.92	73.60	-651.69	-544.81	5,598.07	5,478.88	119.18	46.971	
2,000.00	1,999.63	21,289.96	7,363.81	5.93	339.92	73.60	-651.69	-544.81	5,499.10	5,379.67	119.43	46.044	
2,100.00	2,099.60	21,289.96	7,363.81	6.29	339.92	73.60	-651.69	-544.81	5,400.17	5,280.47	119.69	45.117	
2,200.00	2,199.58	21,289.96	7,363.81	6.65	339.92	73.60	-651.69	-544.81	5,301.27	5,181.31	119.97	44.190	
2,300.00	2,299.56	21,289.96	7,363.81	7.01	339.92	73.60	-651.69	-544.81	5,202.42	5,082.17	120.25	43.263	
2,400.00	2,399.53	21,289.96	7,363.81	7.37	339.92	73.60	-651.69	-544.81	5,103.62	4,983.07	120.55	42.336	
2,500.00	2,499.51	21,289.96	7,363.81	7.73	339.92	73.60	-651.69	-544.81	5,004.86	4,884.00	120.86	41.409	
2,600.00	2,599.48	21,289.96	7,363.81	8.09	339.92	73.60	-651.69	-544.81	4,906.16	4,784.97	121.19	40.483	
2,700.00	2,699.46	21,289.96	7,363.81	8.45	339.92	73.60	-651.69	-544.81	4,807.50	4,685.97	121.53	39.557	
2,800.00	2,799.44	21,289.96	7,363.81	8.81	339.92	73.60	-651.69	-544.81	4,708.91	4,587.01	121.89	38.631	
2,900.00	2,899.41	21,289.96	7,363.81	9.17	339.92	73.60	-651.69	-544.81	4,610.37	4,488.10	122.27	37.706	
3,000.00	2,999.39	21,289.96	7,363.81	9.53	339.92	73.60	-651.69	-544.81	4,511.90	4,389.24	122.67	36.782	
3,100.00	3,099.36	21,289.96	7,363.81	9.89	339.92	73.60	-651.69	-544.81	4,413.50	4,290.42	123.08	35.859	
3,200.00	3,199.34	21,289.96	7,363.81	10.25	339.92	73.60	-651.69	-544.81	4,315.17	4,191.65	123.52	34.936	
3,300.00	3,299.32	21,289.96	7,363.81	10.61	339.92	73.60	-651.69	-544.81	4,216.92	4,092.94	123.97	34.014	
3,400.00	3,399.29	21,289.96	7,363.81	10.97	339.92	73.60	-651.69	-544.81	4,118.75	3,994.29	124.46	33.094	
3,500.00	3,499.27	21,289.96	7,363.81	11.33	339.92	73.60	-651.69	-544.81	4,020.68	3,895.71	124.97	32.174	
3,600.00	3,599.25	21,289.96	7,363.81	11.69	339.92	73.60	-651.69	-544.81	3,922.70	3,797.19	125.50	31.255	
3,700.00	3,699.22	21,289.96	7,363.81	12.05	339.92	73.60	-651.69	-544.81	3,824.82	3,698.75	126.07	30.338	
3,800.00	3,799.20	21,289.96	7,363.81	12.41	339.92	73.60	-651.69	-544.81	3,727.06	3,600.39	126.68	29.422	
3,900.00	3,899.17	21,289.96	7,363.81	12.77	339.92	73.60	-651.69	-544.81	3,629.42	3,502.11	127.31	28.508	
4,000.00	3,999.15	21,289.96	7,363.81	13.13	339.92	73.60	-651.69	-544.81	3,531.91	3,403.92	127.99	27.595	
4,100.00	4,099.13	21,289.96	7,363.81	13.49	339.92	73.60	-651.69	-544.81	3,434.55	3,305.84	128.71	26.684	
4,200.00	4,199.10	21,289.96	7,363.81	13.85	339.92	73.60	-651.69	-544.81	3,337.34	3,207.86	129.48	25.774	
4,300.00	4,299.08	21,289.96	7,363.81	14.21	339.92	73.60	-651.69	-544.81	3,240.30	3,110.00	130.31	24.867	
4,400.00	4,399.05	21,289.96	7,363.81	14.57	339.92	73.60	-651.69	-544.81	3,143.45	3,012.27	131.19	23.962	
4,500.00	4,499.03	21,289.96	7,363.81	14.93	339.92	73.60	-651.69	-544.81	3,046.80	2,914.67	132.13	23.059	
4,600.00	4,599.01	21,289.96	7,363.81	15.29	339.92	73.60	-651.69	-544.81	2,950.38	2,817.23	133.14	22.159	
4,700.00	4,698.98	21,289.96	7,363.81	15.65	339.92	73.60	-651.69	-544.81	2,854.20	2,719.96	134.24	21.262	
4,800.00	4,798.96	21,289.96	7,363.81	16.01	339.92	73.60	-651.69	-544.81	2,758.29	2,622.87	135.42	20.369	
4,900.00	4,898.93	21,289.96	7,363.81	16.37	339.92	73.60	-651.69	-544.81	2,662.68	2,525.98	136.70	19.479	
5,000.00	4,998.91	21,289.96	7,363.81	16.73	339.92	73.60	-651.69	-544.81	2,567.41	2,429.32	138.09	18.593	

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 836H
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 836H	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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
5,100.00	5,098.89	21,289.96	7,363.81	17.09	339.92	73.60	-651.69	-544.81	2,472.51	2,332.91	139.60	17.712	
5,200.00	5,198.86	21,289.96	7,363.81	17.45	339.92	73.60	-651.69	-544.81	2,378.03	2,236.78	141.25	16.836	
5,300.00	5,298.84	21,289.96	7,363.81	17.81	339.92	73.60	-651.69	-544.81	2,284.02	2,140.96	143.06	15.966	
5,400.00	5,398.81	21,289.96	7,363.81	18.17	339.92	73.60	-651.69	-544.81	2,190.54	2,045.50	145.04	15.103	
5,500.00	5,498.79	21,289.96	7,363.81	18.53	339.92	73.60	-651.69	-544.81	2,097.66	1,950.43	147.23	14.247	
5,600.00	5,598.77	21,289.96	7,363.81	18.89	339.92	73.60	-651.69	-544.81	2,005.47	1,855.82	149.65	13.401	
5,700.00	5,698.74	21,289.96	7,363.81	19.25	339.92	73.60	-651.69	-544.81	1,914.06	1,761.73	152.32	12.566	
5,800.00	5,798.72	21,289.96	7,363.81	19.61	339.92	73.60	-651.69	-544.81	1,823.55	1,668.25	155.30	11.742	
5,900.00	5,898.69	21,289.96	7,363.81	19.97	339.92	73.60	-651.69	-544.81	1,734.08	1,575.48	158.60	10.933	
6,000.00	5,998.67	21,289.96	7,363.81	20.33	339.92	73.60	-651.69	-544.81	1,645.83	1,483.54	162.30	10.141	
6,100.00	6,098.65	21,289.96	7,363.81	20.69	339.92	73.60	-651.69	-544.81	1,559.00	1,392.58	166.42	9.368	
6,200.00	6,198.62	21,289.96	7,363.81	21.05	339.92	73.60	-651.69	-544.81	1,473.84	1,302.80	171.04	8.617	
6,300.00	6,298.60	21,289.96	7,363.81	21.41	339.92	73.60	-651.69	-544.81	1,390.65	1,214.45	176.20	7.892	
6,400.00	6,398.57	21,289.96	7,363.81	21.77	339.92	73.60	-651.69	-544.81	1,309.82	1,127.86	181.96	7.198	
6,500.00	6,498.55	21,289.96	7,363.81	22.13	339.92	73.60	-651.69	-544.81	1,231.81	1,043.44	188.37	6.539	
6,531.56	6,530.10	21,289.96	7,363.81	22.25	339.92	73.60	-651.69	-544.81	1,207.86	1,017.33	190.53	6.340	
6,550.00	6,548.53	21,289.96	7,363.81	22.31	339.92	113.13	-651.69	-544.81	1,194.17	1,002.37	191.80	6.226	
6,600.00	6,598.36	21,289.96	7,363.81	22.49	339.92	134.00	-651.69	-544.81	1,159.21	964.04	195.18	5.939	
6,650.00	6,647.74	21,289.96	7,363.81	22.67	339.92	139.99	-651.69	-544.81	1,127.83	929.47	198.36	5.686	
6,700.00	6,696.35	21,289.96	7,363.81	22.84	339.92	143.27	-651.69	-544.81	1,100.52	899.30	201.22	5.469	
6,750.00	6,743.90	21,289.96	7,363.81	23.01	339.92	145.40	-651.69	-544.81	1,077.76	874.14	203.63	5.293	
6,800.00	6,790.11	21,289.96	7,363.81	23.18	339.92	146.86	-651.69	-544.81	1,060.01	854.56	205.45	5.159	
6,850.00	6,834.67	21,289.96	7,363.81	23.35	339.92	147.83	-651.69	-544.81	1,047.62	841.04	206.58	5.071	
6,900.00	6,877.32	21,289.96	7,363.81	23.51	339.92	148.42	-651.69	-544.81	1,040.86	833.95	206.91	5.030	
6,933.38	6,904.60	21,289.96	7,363.81	23.62	339.92	148.63	-651.69	-544.81	1,039.56	832.90	206.66	5.030	CC, ES, SF
6,950.00	6,917.80	21,289.96	7,363.81	23.68	339.92	148.68	-651.69	-544.81	1,039.88	833.49	206.40	5.038	
7,000.00	6,955.85	21,289.96	7,363.81	23.85	339.92	148.63	-651.69	-544.81	1,044.71	839.68	205.03	5.095	
7,050.00	6,991.24	21,289.96	7,363.81	24.03	339.92	148.27	-651.69	-544.81	1,055.24	852.38	202.86	5.202	
7,100.00	7,023.76	21,289.96	7,363.81	24.22	339.92	147.60	-651.69	-544.81	1,071.24	871.26	199.97	5.357	
7,150.00	7,053.20	21,289.96	7,363.81	24.42	339.92	146.58	-651.69	-544.81	1,092.36	895.87	196.48	5.560	
7,200.00	7,079.37	21,289.96	7,363.81	24.63	339.92	145.18	-651.69	-544.81	1,118.19	925.66	192.54	5.808	
7,250.00	7,102.13	21,289.96	7,363.81	24.86	339.92	143.31	-651.69	-544.81	1,148.27	960.00	188.27	6.099	
7,300.00	7,121.32	21,289.96	7,363.81	25.10	339.92	140.88	-651.69	-544.81	1,182.09	998.28	183.81	6.431	
7,350.00	7,136.84	21,289.96	7,363.81	25.35	339.92	137.74	-651.69	-544.81	1,219.13	1,039.86	179.27	6.800	
7,400.00	7,148.58	21,289.96	7,363.81	25.62	339.92	133.73	-651.69	-544.81	1,258.90	1,084.15	174.76	7.204	
7,450.00	7,156.47	21,289.96	7,363.81	25.90	339.92	128.58	-651.69	-544.81	1,300.92	1,130.58	170.34	7.637	
7,500.00	7,160.47	21,289.96	7,363.81	26.20	339.92	122.00	-651.69	-544.81	1,344.72	1,178.64	166.08	8.097	
7,526.22	7,161.00	21,289.96	7,363.81	26.36	339.92	117.88	-651.69	-544.81	1,368.27	1,204.35	163.92	8.347	
7,600.00	7,160.97	21,289.96	7,363.81	26.83	339.92	117.88	-651.69	-544.81	1,435.32	1,277.14	158.18	9.074	
7,700.00	7,160.93	21,289.96	7,363.81	27.53	339.92	117.88	-651.69	-544.81	1,527.19	1,376.05	151.14	10.105	
7,800.00	7,160.89	21,289.96	7,363.81	28.32	339.92	117.88	-651.69	-544.81	1,620.03	1,475.18	144.85	11.184	
7,900.00	7,160.85	21,289.96	7,363.81	29.16	339.92	117.88	-651.69	-544.81	1,713.67	1,574.46	139.22	12.309	
8,000.00	7,160.81	21,289.96	7,363.81	30.07	339.92	117.88	-651.69	-544.81	1,808.00	1,673.85	134.15	13.478	
8,100.00	7,160.77	21,289.96	7,363.81	31.04	339.92	117.88	-651.69	-544.81	1,902.90	1,773.33	129.57	14.686	
8,200.00	7,160.73	21,289.96	7,363.81	32.06	339.92	117.88	-651.69	-544.81	1,998.30	1,872.89	125.42	15.933	
8,300.00	7,160.69	21,289.96	7,363.81	33.12	339.92	117.88	-651.69	-544.81	2,094.14	1,972.49	121.65	17.215	
8,400.00	7,160.65	21,289.96	7,363.81	34.23	339.92	117.88	-651.69	-544.81	2,190.34	2,072.13	118.20	18.530	
8,500.00	7,160.60	21,289.96	7,363.81	35.37	339.92	117.88	-651.69	-544.81	2,286.87	2,171.81	115.05	19.876	
8,600.00	7,160.56	21,289.96	7,363.81	36.55	339.92	117.88	-651.69	-544.81	2,383.68	2,271.52	112.16	21.252	
8,700.00	7,160.52	21,289.96	7,363.81	37.76	339.92	117.88	-651.69	-544.81	2,480.75	2,371.24	109.51	22.654	
8,800.00	7,160.48	21,289.96	7,363.81	38.99	339.92	117.88	-651.69	-544.81	2,578.04	2,470.99	107.05	24.082	
8,900.00	7,160.44	21,289.96	7,363.81	40.26	339.92	117.88	-651.69	-544.81	2,675.54	2,570.75	104.79	25.533	

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

SDT
Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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		Distance		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)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
9,000.00	7,160.40	21,289.96	7,363.81	41.54	339.92	117.88	-651.69	-544.81	2,773.21	2,670.52	102.69	27.006	
9,100.00	7,160.36	21,289.96	7,363.81	42.85	339.92	117.88	-651.69	-544.81	2,871.04	2,770.30	100.74	28.499	
9,200.00	7,160.32	21,289.96	7,363.81	44.18	339.92	117.88	-651.69	-544.81	2,969.01	2,870.09	98.93	30.012	
9,300.00	7,160.28	21,289.96	7,363.81	45.53	339.92	117.88	-651.69	-544.81	3,067.12	2,969.88	97.24	31.543	
9,400.00	7,160.24	21,289.96	7,363.81	46.89	339.92	117.88	-651.69	-544.81	3,165.34	3,069.68	95.66	33.089	
9,500.00	7,160.20	21,289.96	7,363.81	48.26	339.92	117.88	-651.69	-544.81	3,263.68	3,169.49	94.19	34.651	
9,600.00	7,160.16	21,289.96	7,363.81	49.65	339.92	117.88	-651.69	-544.81	3,362.11	3,269.30	92.81	36.227	
9,700.00	7,160.12	21,289.96	7,363.81	51.05	339.92	117.88	-651.69	-544.81	3,460.63	3,369.12	91.51	37.817	
9,800.00	7,160.08	21,289.96	7,363.81	52.47	339.92	117.88	-651.69	-544.81	3,559.23	3,468.93	90.30	39.418	
9,900.00	7,160.04	21,289.96	7,363.81	53.89	339.92	117.88	-651.69	-544.81	3,657.91	3,568.76	89.15	41.030	
10,000.00	7,160.00	21,289.96	7,363.81	55.33	339.92	117.88	-651.69	-544.81	3,756.66	3,668.58	88.08	42.652	
10,100.00	7,159.95	21,289.96	7,363.81	56.77	339.92	117.88	-651.69	-544.81	3,855.47	3,768.41	87.06	44.284	
10,200.00	7,159.91	21,289.96	7,363.81	58.22	339.92	117.88	-651.69	-544.81	3,954.34	3,868.24	86.11	45.924	
10,300.00	7,159.87	21,289.96	7,363.81	59.68	339.92	117.88	-651.69	-544.81	4,053.27	3,968.07	85.20	47.572	
10,400.00	7,159.83	21,289.96	7,363.81	61.15	339.92	117.88	-651.69	-544.81	4,152.25	4,067.90	84.35	49.227	
10,500.00	7,159.79	21,289.96	7,363.81	62.62	339.92	117.88	-651.69	-544.81	4,251.28	4,167.74	83.54	50.889	
10,600.00	7,159.75	21,289.96	7,363.81	64.10	339.92	117.88	-651.69	-544.81	4,350.35	4,267.58	82.78	52.556	
10,700.00	7,159.71	21,289.96	7,363.81	65.58	339.92	117.88	-651.69	-544.81	4,449.47	4,367.42	82.05	54.228	
10,800.00	7,159.67	21,289.96	7,363.81	67.07	339.92	117.88	-651.69	-544.81	4,548.62	4,467.26	81.36	55.905	
10,900.00	7,159.63	21,289.96	7,363.81	68.57	339.92	117.88	-651.69	-544.81	4,647.81	4,567.10	80.71	57.586	
11,000.00	7,159.59	21,289.96	7,363.81	70.07	339.92	117.88	-651.69	-544.81	4,747.03	4,666.94	80.09	59.270	
11,100.00	7,159.55	21,289.96	7,363.81	71.57	339.92	117.88	-651.69	-544.81	4,846.28	4,766.78	79.50	60.958	
11,200.00	7,159.51	21,289.96	7,363.81	73.08	339.92	117.88	-651.69	-544.81	4,945.57	4,866.63	78.94	62.648	
11,300.00	7,159.47	21,289.96	7,363.81	74.59	339.92	117.88	-651.69	-544.81	5,044.88	4,966.47	78.41	64.340	
11,400.00	7,159.43	21,289.96	7,363.81	76.11	339.92	117.88	-651.69	-544.81	5,144.22	5,066.32	77.90	66.034	
11,500.00	7,159.39	21,289.96	7,363.81	77.63	339.92	117.88	-651.69	-544.81	5,243.59	5,166.17	77.42	67.729	
11,600.00	7,159.35	21,289.96	7,363.81	79.15	339.92	117.88	-651.69	-544.81	5,342.97	5,266.01	76.96	69.426	
11,638.27	7,159.33	21,289.96	7,363.81	79.73	339.92	117.88	-651.69	-544.81	5,381.02	5,304.23	76.79	70.075	
11,640.51	7,159.33	21,289.96	7,363.81	79.77	339.92	117.97	-651.69	-544.81	5,383.25	5,306.47	76.78	70.113	
11,700.00	7,159.30	21,289.96	7,363.81	80.68	339.92	117.97	-651.69	-544.81	5,442.39	5,365.87	76.52	71.122	
11,800.00	7,159.26	21,289.96	7,363.81	82.20	339.92	117.97	-651.69	-544.81	5,541.82	5,465.72	76.11	72.817	
11,900.00	7,159.22	21,289.96	7,363.81	83.74	339.92	117.97	-651.69	-544.81	5,641.28	5,565.57	75.71	74.513	
12,000.00	7,159.18	21,289.96	7,363.81	85.27	339.92	117.97	-651.69	-544.81	5,740.75	5,665.42	75.33	76.208	
12,100.00	7,159.14	21,289.96	7,363.81	86.81	339.92	117.97	-651.69	-544.81	5,840.25	5,765.28	74.97	77.902	
12,200.00	7,159.10	21,289.96	7,363.81	88.35	339.92	117.97	-651.69	-544.81	5,939.76	5,865.13	74.62	79.596	
12,300.00	7,159.06	21,289.96	7,363.81	89.89	339.92	117.97	-651.69	-544.81	6,039.28	5,964.99	74.29	81.289	
12,400.00	7,159.02	21,289.96	7,363.81	91.43	339.92	117.97	-651.69	-544.81	6,138.82	6,064.84	73.98	82.980	
12,500.00	7,158.98	21,289.96	7,363.81	92.98	339.92	117.97	-651.69	-544.81	6,238.38	6,164.70	73.68	84.669	
12,600.00	7,158.94	21,289.96	7,363.81	94.52	339.92	117.97	-651.69	-544.81	6,337.95	6,264.56	73.39	86.357	
12,700.00	7,158.90	21,289.96	7,363.81	96.07	339.92	117.97	-651.69	-544.81	6,437.53	6,364.41	73.12	88.043	
12,800.00	7,158.86	21,289.96	7,363.81	97.62	339.92	117.97	-651.69	-544.81	6,537.13	6,464.27	72.86	89.726	
12,900.00	7,158.81	21,289.96	7,363.81	99.17	339.92	117.97	-651.69	-544.81	6,636.73	6,564.13	72.61	91.408	
13,000.00	7,158.77	21,289.96	7,363.81	100.73	339.92	117.97	-651.69	-544.81	6,736.35	6,663.99	72.37	93.086	
13,100.00	7,158.73	21,289.96	7,363.81	102.28	339.92	117.97	-651.69	-544.81	6,835.98	6,763.85	72.14	94.762	
13,200.00	7,158.69	21,289.96	7,363.81	103.84	339.92	117.97	-651.69	-544.81	6,935.63	6,863.71	71.92	96.435	
13,300.00	7,158.65	21,289.96	7,363.81	105.40	339.92	117.97	-651.69	-544.81	7,035.28	6,963.57	71.71	98.105	
13,400.00	7,158.61	21,289.96	7,363.81	106.96	339.92	117.97	-651.69	-544.81	7,134.94	7,063.43	71.51	99.772	
13,500.00	7,158.57	21,289.96	7,363.81	108.52	339.92	117.97	-651.69	-544.81	7,234.61	7,163.29	71.32	101.435	
13,600.00	7,158.53	21,289.96	7,363.81	110.08	339.92	117.97	-651.69	-544.81	7,334.29	7,263.15	71.14	103.095	
13,700.00	7,158.49	21,289.96	7,363.81	111.64	339.92	117.97	-651.69	-544.81	7,433.98	7,363.01	70.97	104.751	
13,800.00	7,158.45	21,289.96	7,363.81	113.21	339.92	117.97	-651.69	-544.81	7,533.67	7,462.87	70.80	106.404	
13,900.00	7,158.41	21,289.96	7,363.81	114.77	339.92	117.97	-651.69	-544.81	7,633.38	7,562.73	70.65	108.052	

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 836H
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 836H	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)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
14,000.00	7,158.37	21,289.96	7,363.81	116.34	339.92	117.97	-651.69	-544.81	7,733.09	7,662.59	70.49	109.697	
14,100.00	7,158.32	21,289.96	7,363.81	117.91	339.92	117.97	-651.69	-544.81	7,832.81	7,762.46	70.35	111.338	
14,200.00	7,158.28	21,289.96	7,363.81	119.47	339.92	117.97	-651.69	-544.81	7,932.54	7,862.32	70.22	112.975	
14,300.00	7,158.24	21,289.96	7,363.81	121.04	339.92	117.97	-651.69	-544.81	8,032.27	7,962.18	70.09	114.607	
14,400.00	7,158.20	21,289.96	7,363.81	122.61	339.92	117.97	-651.69	-544.81	8,132.01	8,062.05	69.96	116.235	
14,500.00	7,158.16	21,289.96	7,363.81	124.18	339.92	117.97	-651.69	-544.81	8,231.75	8,161.91	69.84	117.859	
14,600.00	7,158.12	21,289.96	7,363.81	125.76	339.92	117.97	-651.69	-544.81	8,331.51	8,261.77	69.73	119.478	
14,700.00	7,158.08	21,289.96	7,363.81	127.33	339.92	117.97	-651.69	-544.81	8,431.26	8,361.64	69.63	121.092	
14,800.00	7,158.04	21,289.96	7,363.81	128.90	339.92	117.97	-651.69	-544.81	8,531.03	8,461.50	69.53	122.702	
14,900.00	7,158.00	21,289.96	7,363.81	130.47	339.92	117.97	-651.69	-544.81	8,630.80	8,561.37	69.43	124.307	
15,000.00	7,157.96	21,289.96	7,363.81	132.05	339.92	117.97	-651.69	-544.81	8,730.57	8,661.23	69.34	125.908	
15,100.00	7,157.92	21,289.96	7,363.81	133.62	339.92	117.97	-651.69	-544.81	8,830.35	8,761.10	69.26	127.503	
15,200.00	7,157.88	21,289.96	7,363.81	135.20	339.92	117.97	-651.69	-544.81	8,930.14	8,860.96	69.18	129.094	
15,300.00	7,157.83	21,289.96	7,363.81	136.78	339.92	117.97	-651.69	-544.81	9,029.93	8,960.83	69.10	130.680	
15,400.00	7,157.79	21,289.96	7,363.81	138.35	339.92	117.97	-651.69	-544.81	9,129.72	9,060.69	69.03	132.261	
15,500.00	7,157.75	21,289.96	7,363.81	139.93	339.92	117.97	-651.69	-544.81	9,229.52	9,160.56	68.96	133.836	
15,600.00	7,157.71	21,289.96	7,363.81	141.51	339.92	117.97	-651.69	-544.81	9,329.32	9,260.42	68.90	135.407	
15,700.00	7,157.67	21,289.96	7,363.81	143.09	339.92	117.97	-651.69	-544.81	9,429.13	9,360.29	68.84	136.972	
15,800.00	7,157.63	21,289.96	7,363.81	144.67	339.92	117.97	-651.69	-544.81	9,528.94	9,460.15	68.78	138.532	
15,900.00	7,157.59	21,289.96	7,363.81	146.24	339.92	117.97	-651.69	-544.81	9,628.75	9,560.02	68.73	140.087	
16,000.00	7,157.55	21,289.96	7,363.81	147.82	339.92	117.97	-651.69	-544.81	9,728.57	9,659.89	68.69	141.637	
16,100.00	7,157.51	21,289.96	7,363.81	149.41	339.92	117.97	-651.69	-544.81	9,828.39	9,759.75	68.64	143.181	
16,200.00	7,157.47	21,289.96	7,363.81	150.99	339.92	117.97	-651.69	-544.81	9,928.22	9,859.62	68.60	144.720	
16,300.00	7,157.43	21,289.96	7,363.81	152.57	339.92	117.97	-651.69	-544.81	10,028.05	9,959.48	68.57	146.254	
16,400.00	7,157.38	21,289.96	7,363.81	154.15	339.92	117.97	-651.69	-544.81	10,127.88	10,059.35	68.53	147.782	
16,500.00	7,157.34	21,289.96	7,363.81	155.73	339.92	117.97	-651.69	-544.81	10,227.72	10,159.22	68.50	149.305	
16,600.00	7,157.30	21,289.96	7,363.81	157.31	339.92	117.97	-651.69	-544.81	10,327.56	10,259.08	68.48	150.822	
16,680.84	7,157.27	21,289.96	7,363.81	158.59	339.92	117.97	-651.69	-544.81	10,408.27	10,339.81	68.46	152.045	
16,687.46	7,157.27	21,289.96	7,363.81	158.70	339.92	118.54	-651.69	-544.81	10,414.87	10,346.42	68.45	152.144	
16,700.00	7,157.26	21,289.96	7,363.81	158.90	339.92	118.54	-651.69	-544.81	10,427.40	10,358.95	68.45	152.333	
16,800.00	7,157.22	21,289.96	7,363.81	160.48	339.92	118.54	-651.69	-544.81	10,527.25	10,458.82	68.43	153.834	
16,900.00	7,157.18	21,289.96	7,363.81	162.06	339.92	118.54	-651.69	-544.81	10,627.10	10,558.69	68.42	155.330	
17,000.00	7,157.14	21,289.96	7,363.81	163.65	339.92	118.54	-651.69	-544.81	10,726.96	10,658.56	68.40	156.820	
17,100.00	7,157.10	21,289.96	7,363.81	165.23	339.92	118.54	-651.69	-544.81	10,826.82	10,758.43	68.39	158.305	
17,200.00	7,157.06	21,289.96	7,363.81	166.82	339.92	118.54	-651.69	-544.81	10,926.68	10,858.30	68.38	159.784	
17,300.00	7,157.02	21,289.96	7,363.81	168.40	339.92	118.54	-651.69	-544.81	11,026.55	10,958.17	68.38	161.257	
17,400.00	7,156.98	21,289.96	7,363.81	169.99	339.92	118.54	-651.69	-544.81	11,126.41	11,058.04	68.38	162.725	
17,500.00	7,156.94	21,289.96	7,363.81	171.57	339.92	118.54	-651.69	-544.81	11,226.28	11,157.91	68.37	164.187	
17,600.00	7,156.90	21,289.96	7,363.81	173.16	339.92	118.54	-651.69	-544.81	11,326.15	11,257.78	68.38	165.644	
17,700.00	7,156.85	21,289.96	7,363.81	174.75	339.92	118.54	-651.69	-544.81	11,426.03	11,357.65	68.38	167.095	
17,800.00	7,156.81	21,289.96	7,363.81	176.33	339.92	118.54	-651.69	-544.81	11,525.90	11,457.51	68.39	168.540	
17,900.00	7,156.77	21,289.96	7,363.81	177.92	339.92	118.54	-651.69	-544.81	11,625.78	11,557.38	68.40	169.980	
18,000.00	7,156.73	21,289.96	7,363.81	179.51	339.92	118.54	-651.69	-544.81	11,725.66	11,657.25	68.41	171.414	
18,100.00	7,156.69	21,289.96	7,363.81	181.09	339.92	118.54	-651.69	-544.81	11,825.54	11,757.12	68.42	172.842	
18,200.00	7,156.65	21,289.96	7,363.81	182.68	339.92	118.54	-651.69	-544.81	11,925.43	11,856.99	68.43	174.265	
18,300.00	7,156.61	21,289.96	7,363.81	184.27	339.92	118.54	-651.69	-544.81	12,025.31	11,956.86	68.45	175.682	
18,400.00	7,156.57	21,289.96	7,363.81	185.86	339.92	118.54	-651.69	-544.81	12,125.20	12,056.73	68.47	177.093	
18,500.00	7,156.53	21,289.96	7,363.81	187.45	339.92	118.54	-651.69	-544.81	12,225.09	12,156.60	68.49	178.499	
18,600.00	7,156.49	21,289.96	7,363.81	189.03	339.92	118.54	-651.69	-544.81	12,324.98	12,256.47	68.51	179.899	
18,700.00	7,156.45	21,289.96	7,363.81	190.62	339.92	118.54	-651.69	-544.81	12,424.87	12,356.34	68.53	181.293	
18,800.00	7,156.41	21,289.96	7,363.81	192.21	339.92	118.54	-651.69	-544.81	12,524.77	12,456.21	68.56	182.681	
18,900.00	7,156.37	21,289.96	7,363.81	193.80	339.92	118.54	-651.69	-544.81	12,624.66	12,556.08	68.59	184.064	

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 836H
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 836H	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		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)	
19,000.00	7,156.32	21,289.96	7,363.81	195.39	339.92	118.54	-651.69	-544.81	12,724.56	12,655.94	68.62	185.442		
19,100.00	7,156.28	21,289.96	7,363.81	196.98	339.92	118.54	-651.69	-544.81	12,824.46	12,755.81	68.65	186.813		
19,200.00	7,156.24	21,289.96	7,363.81	198.57	339.92	118.54	-651.69	-544.81	12,924.36	12,855.68	68.68	188.179		
19,300.00	7,156.20	21,289.96	7,363.81	200.16	339.92	118.54	-651.69	-544.81	13,024.27	12,955.55	68.72	189.539		
19,400.00	7,156.16	21,289.96	7,363.81	201.75	339.92	118.54	-651.69	-544.81	13,124.17	13,055.42	68.75	190.894		
19,500.00	7,156.12	21,289.96	7,363.81	203.34	339.92	118.54	-651.69	-544.81	13,224.08	13,155.29	68.79	192.243		
19,600.00	7,156.08	21,289.96	7,363.81	204.93	339.92	118.54	-651.69	-544.81	13,323.98	13,255.16	68.83	193.586		
19,700.00	7,156.04	21,289.96	7,363.81	206.52	339.92	118.54	-651.69	-544.81	13,423.89	13,355.02	68.87	194.923		
19,800.00	7,156.00	21,289.96	7,363.81	208.11	339.92	118.54	-651.69	-544.81	13,523.80	13,454.89	68.91	196.255		
19,900.00	7,155.96	21,289.96	7,363.81	209.71	339.92	118.54	-651.69	-544.81	13,623.71	13,554.76	68.95	197.581		
20,000.00	7,155.92	21,289.96	7,363.81	211.30	339.92	118.54	-651.69	-544.81	13,723.62	13,654.63	69.00	198.902		
20,100.00	7,155.88	21,289.96	7,363.81	212.89	339.92	118.54	-651.69	-544.81	13,823.54	13,754.50	69.04	200.217		
20,200.00	7,155.84	21,289.96	7,363.81	214.48	339.92	118.54	-651.69	-544.81	13,923.45	13,854.36	69.09	201.527		
20,300.00	7,155.79	21,289.96	7,363.81	216.07	339.92	118.54	-651.69	-544.81	14,023.37	13,954.23	69.14	202.830		
20,400.00	7,155.75	21,289.96	7,363.81	217.66	339.92	118.54	-651.69	-544.81	14,123.29	14,054.10	69.19	204.129		
20,500.00	7,155.71	21,289.96	7,363.81	219.26	339.92	118.54	-651.69	-544.81	14,223.20	14,153.97	69.24	205.421		
20,600.00	7,155.67	21,289.96	7,363.81	220.85	339.92	118.54	-651.69	-544.81	14,323.12	14,253.83	69.29	206.708		
20,700.00	7,155.63	21,289.96	7,363.81	222.44	339.92	118.54	-651.69	-544.81	14,423.05	14,353.70	69.34	207.990		
20,800.00	7,155.59	21,289.96	7,363.81	224.03	339.92	118.54	-651.69	-544.81	14,522.97	14,453.57	69.40	209.266		
20,900.00	7,155.55	21,289.96	7,363.81	225.63	339.92	118.54	-651.69	-544.81	14,622.89	14,553.43	69.46	210.536		
21,000.00	7,155.51	21,289.96	7,363.81	227.22	339.92	118.54	-651.69	-544.81	14,722.81	14,653.30	69.51	211.801		
21,100.00	7,155.47	21,289.96	7,363.81	228.81	339.92	118.54	-651.69	-544.81	14,822.74	14,753.17	69.57	213.061		
21,200.00	7,155.43	21,289.96	7,363.81	230.40	339.92	118.54	-651.69	-544.81	14,922.67	14,853.04	69.63	214.315		
21,300.00	7,155.39	21,289.96	7,363.81	232.00	339.92	118.54	-651.69	-544.81	15,022.59	14,952.90	69.69	215.563		
21,400.00	7,155.35	21,289.96	7,363.81	233.59	339.92	118.54	-651.69	-544.81	15,122.52	15,052.77	69.75	216.806		
21,500.00	7,155.31	21,289.96	7,363.81	235.18	339.92	118.54	-651.69	-544.81	15,222.45	15,152.64	69.81	218.044		
21,600.00	7,155.26	21,289.96	7,363.81	236.78	339.92	118.54	-651.69	-544.81	15,322.38	15,252.50	69.88	219.276		
21,700.00	7,155.22	21,289.96	7,363.81	238.37	339.92	118.54	-651.69	-544.81	15,422.31	15,352.37	69.94	220.502		
21,800.00	7,155.18	21,289.96	7,363.81	239.96	339.92	118.54	-651.69	-544.81	15,522.24	15,452.23	70.01	221.724		
21,900.00	7,155.14	21,289.96	7,363.81	241.56	339.92	118.54	-651.69	-544.81	15,622.17	15,552.10	70.07	222.940		
21,953.88	7,155.12	21,289.96	7,363.81	242.42	339.92	118.54	-651.69	-544.81	15,676.02	15,605.91	70.11	223.593		
22,000.00	7,155.10	21,289.96	7,363.81	243.15	339.92	113.48	-651.69	-544.81	15,722.10	15,651.96	70.14	224.157		
22,019.01	7,155.09	21,289.96	7,363.81	243.46	339.92	111.85	-651.69	-544.81	15,741.09	15,670.94	70.15	224.393		
22,100.00	7,155.06	21,289.96	7,363.81	244.75	339.92	111.85	-651.69	-544.81	15,821.99	15,751.80	70.19	225.401		
22,200.00	7,155.02	21,289.96	7,363.81	246.34	339.92	111.85	-651.69	-544.81	15,921.89	15,851.63	70.25	226.641		
22,300.00	7,154.97	21,289.96	7,363.81	247.94	339.92	111.85	-651.69	-544.81	16,021.78	15,951.47	70.31	227.874		
22,400.00	7,154.93	21,289.96	7,363.81	249.53	339.92	111.85	-651.69	-544.81	16,121.68	16,051.31	70.37	229.103		
22,500.00	7,154.89	21,289.96	7,363.81	251.13	339.92	111.85	-651.69	-544.81	16,221.57	16,151.14	70.43	230.325		
22,600.00	7,154.85	21,289.96	7,363.81	252.72	339.92	111.85	-651.69	-544.81	16,321.47	16,250.98	70.49	231.542		
22,700.00	7,154.80	21,289.96	7,363.81	254.32	339.92	111.85	-651.69	-544.81	16,421.37	16,350.82	70.55	232.753		
22,800.00	7,154.76	21,289.96	7,363.81	255.91	339.92	111.85	-651.69	-544.81	16,521.27	16,450.66	70.62	233.959		
22,900.00	7,154.72	21,289.96	7,363.81	257.51	339.92	111.85	-651.69	-544.81	16,621.17	16,550.49	70.68	235.159		
23,000.00	7,154.68	21,289.96	7,363.81	259.11	339.92	111.85	-651.69	-544.81	16,721.08	16,650.33	70.75	236.353		
23,100.00	7,154.63	21,289.96	7,363.81	260.70	339.92	111.85	-651.69	-544.81	16,820.98	16,750.17	70.81	237.542		
23,200.00	7,154.59	21,289.96	7,363.81	262.30	339.92	111.85	-651.69	-544.81	16,920.89	16,850.01	70.88	238.725		
23,300.00	7,154.55	21,289.96	7,363.81	263.89	339.92	111.85	-651.69	-544.81	17,020.79	16,949.84	70.95	239.903		
23,400.00	7,154.51	21,289.96	7,363.81	265.49	339.92	111.85	-651.69	-544.81	17,120.70	17,049.68	71.02	241.076		
23,500.00	7,154.47	21,289.96	7,363.81	267.08	339.92	111.85	-651.69	-544.81	17,220.61	17,149.52	71.09	242.243		
23,600.00	7,154.42	21,289.96	7,363.81	268.68	339.92	111.85	-651.69	-544.81	17,320.52	17,249.36	71.16	243.404		
23,700.00	7,154.38	21,289.96	7,363.81	270.28	339.92	111.85	-651.69	-544.81	17,420.43	17,349.20	71.23	244.560		
23,800.00	7,154.34	21,289.96	7,363.81	271.87	339.92	111.85	-651.69	-544.81	17,520.34	17,449.04	71.30	245.711		
23,900.00	7,154.30	21,289.96	7,363.81	273.47	339.92	111.85	-651.69	-544.81	17,620.25	17,548.88	71.38	246.856		

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 836H
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 836H	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		Distance		No-Go Distance (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
24,000.00	7,154.25	21,289.96	7,363.81	275.07	339.92	111.85	-651.69	-544.81	17,720.17	17,648.72	71.45	247.996	
24,100.00	7,154.21	21,289.96	7,363.81	276.66	339.92	111.85	-651.69	-544.81	17,820.08	17,748.55	71.53	249.131	
24,200.00	7,154.17	21,289.96	7,363.81	278.26	339.92	111.85	-651.69	-544.81	17,920.00	17,848.39	71.61	250.261	
24,300.00	7,154.13	21,289.96	7,363.81	279.86	339.92	111.85	-651.69	-544.81	18,019.92	17,948.23	71.68	251.385	
24,400.00	7,154.08	21,289.96	7,363.81	281.45	339.92	111.85	-651.69	-544.81	18,119.83	18,048.07	71.76	252.504	
24,500.00	7,154.04	21,289.96	7,363.81	283.05	339.92	111.85	-651.69	-544.81	18,219.75	18,147.91	71.84	253.617	
24,597.25	7,154.00	21,289.96	7,363.81	284.60	339.92	111.85	-651.69	-544.81	18,316.92	18,245.00	71.92	254.695	
24,600.00	7,154.00	21,289.96	7,363.81	284.65	339.92	112.11	-651.69	-544.81	18,319.67	18,247.75	71.92	254.726	
24,700.00	7,153.96	21,289.96	7,363.81	286.24	339.92	127.88	-651.69	-544.81	18,419.62	18,347.61	72.01	255.801	
24,722.47	7,153.95	21,289.96	7,363.81	286.60	339.92	134.41	-651.69	-544.81	18,442.08	18,370.05	72.03	256.034	
24,800.00	7,153.92	21,289.96	7,363.81	287.84	339.92	134.41	-651.69	-544.81	18,519.60	18,447.49	72.11	256.833	
24,900.00	7,153.88	21,289.96	7,363.81	289.43	339.92	134.41	-651.69	-544.81	18,619.57	18,547.37	72.21	257.860	
25,000.00	7,153.84	21,289.96	7,363.81	291.03	339.92	134.41	-651.69	-544.81	18,719.55	18,647.24	72.31	258.882	
25,100.00	7,153.80	21,289.96	7,363.81	292.63	339.92	134.41	-651.69	-544.81	18,819.53	18,747.12	72.41	259.900	
25,200.00	7,153.77	21,289.96	7,363.81	294.22	339.92	134.41	-651.69	-544.81	18,919.51	18,847.00	72.51	260.913	
25,300.00	7,153.73	21,289.96	7,363.81	295.82	339.92	134.41	-651.69	-544.81	19,019.49	18,946.87	72.62	261.922	
25,400.00	7,153.69	21,289.96	7,363.81	297.41	339.92	134.41	-651.69	-544.81	19,119.47	19,046.75	72.72	262.927	
25,500.00	7,153.65	21,289.96	7,363.81	299.01	339.92	134.41	-651.69	-544.81	19,219.45	19,146.62	72.82	263.927	
25,600.00	7,153.61	21,289.96	7,363.81	300.60	339.92	134.41	-651.69	-544.81	19,319.43	19,246.50	72.92	264.923	
25,700.00	7,153.57	21,289.96	7,363.81	302.20	339.92	134.41	-651.69	-544.81	19,419.40	19,346.38	73.03	265.914	
25,800.00	7,153.53	21,289.96	7,363.81	303.80	339.92	134.41	-651.69	-544.81	19,519.38	19,446.25	73.13	266.901	
25,900.00	7,153.50	21,289.96	7,363.81	305.39	339.92	134.41	-651.69	-544.81	19,619.36	19,546.13	73.24	267.884	
26,000.00	7,153.46	21,289.96	7,363.81	306.99	339.92	134.41	-651.69	-544.81	19,719.35	19,646.00	73.34	268.862	
26,100.00	7,153.42	21,289.96	7,363.81	308.58	339.92	134.41	-651.69	-544.81	19,819.33	19,745.88	73.45	269.836	
26,200.00	7,153.38	21,289.96	7,363.81	310.18	339.92	134.41	-651.69	-544.81	19,919.31	19,845.75	73.56	270.806	
26,300.00	7,153.34	21,289.96	7,363.81	311.78	339.92	134.41	-651.69	-544.81	20,019.29	19,945.62	73.66	271.772	
26,400.00	7,153.30	21,289.96	7,363.81	313.37	339.92	134.41	-651.69	-544.81	20,119.27	20,045.50	73.77	272.733	
26,500.00	7,153.26	21,289.96	7,363.81	314.97	339.92	134.41	-651.69	-544.81	20,219.25	20,145.37	73.88	273.690	
26,600.00	7,153.23	21,289.96	7,363.81	316.57	339.92	134.41	-651.69	-544.81	20,319.23	20,245.25	73.98	274.643	
26,700.00	7,153.19	21,289.96	7,363.81	318.16	339.92	134.41	-651.69	-544.81	20,419.21	20,345.12	74.09	275.592	
26,800.00	7,153.15	21,289.96	7,363.81	319.76	339.92	134.41	-651.69	-544.81	20,519.19	20,444.99	74.20	276.537	
26,900.00	7,153.11	21,289.96	7,363.81	321.35	339.92	134.41	-651.69	-544.81	20,619.18	20,544.87	74.31	277.478	
26,976.35	7,153.08	21,289.96	7,363.81	322.57	339.92	134.41	-651.69	-544.81	20,695.51	20,621.12	74.39	278.193	
27,000.00	7,153.07	21,289.96	7,363.81	322.95	339.92	134.41	-651.69	-544.81	20,719.16	20,644.74	74.42	278.414	
27,100.00	7,153.03	21,289.96	7,363.81	324.55	339.92	134.41	-651.69	-544.81	20,819.14	20,744.61	74.53	279.346	
27,176.36	7,153.00	21,289.96	7,363.81	325.77	339.92	134.41	-651.69	-544.81	20,895.48	20,820.87	74.61	280.056	

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 836H
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 836H	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:						
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	20,952.96	7,074.90	0.00	233.58	-161.55	-1,619.42	-540.21	7,347.00					
125.00	125.00	20,952.96	7,074.90	0.06	233.58	64.27	-1,619.42	-540.21	7,225.44	7,103.99	121.44	59.496		
225.00	225.00	20,952.96	7,074.90	0.17	233.58	130.86	-1,619.42	-540.21	7,128.34	7,006.54	121.80	58.525		
312.00	311.99	20,952.96	7,074.90	0.28	233.58	69.16	-1,619.42	-540.21	7,043.94	6,921.82	122.12	57.681		
400.00	399.99	20,952.96	7,074.90	0.37	233.58	69.16	-1,619.42	-540.21	6,958.55	6,834.27	124.28	55.992		
462.00	461.99	20,952.96	7,074.90	0.50	233.58	69.16	-1,619.42	-540.21	6,898.42	6,773.96	124.46	55.428		
509.18	509.16	20,952.96	7,074.90	0.64	233.58	45.69	-1,619.42	-540.21	6,852.62	6,728.02	124.60	54.997		
600.00	599.96	20,952.96	7,074.90	0.94	233.58	45.69	-1,619.42	-540.21	6,764.34	6,639.47	124.87	54.170		
700.00	699.94	20,952.96	7,074.90	1.28	233.58	45.69	-1,619.42	-540.21	6,667.23	6,542.04	125.19	53.259		
800.00	799.92	20,952.96	7,074.90	1.63	233.58	45.69	-1,619.42	-540.21	6,570.20	6,444.68	125.52	52.345		
900.00	899.89	20,952.96	7,074.90	1.98	233.58	45.69	-1,619.42	-540.21	6,473.26	6,347.39	125.87	51.429		
1,000.00	999.87	20,952.96	7,074.90	2.34	233.58	45.69	-1,619.42	-540.21	6,376.42	6,250.18	126.24	50.510		
1,100.00	1,099.84	20,952.96	7,074.90	2.69	233.58	45.69	-1,619.42	-540.21	6,279.67	6,153.04	126.63	49.590		
1,200.00	1,199.82	20,952.96	7,074.90	3.05	233.58	45.69	-1,619.42	-540.21	6,183.03	6,055.99	127.04	48.668		
1,300.00	1,299.80	20,952.96	7,074.90	3.41	233.58	45.69	-1,619.42	-540.21	6,086.50	5,959.02	127.48	47.746		
1,400.00	1,399.77	20,952.96	7,074.90	3.77	233.58	45.69	-1,619.42	-540.21	5,990.08	5,862.15	127.93	46.822		
1,500.00	1,499.75	20,952.96	7,074.90	4.13	233.58	45.69	-1,619.42	-540.21	5,893.78	5,765.37	128.41	45.898		
1,600.00	1,599.72	20,952.96	7,074.90	4.49	233.58	45.69	-1,619.42	-540.21	5,797.61	5,668.70	128.91	44.973		
1,700.00	1,699.70	20,952.96	7,074.90	4.85	233.58	45.69	-1,619.42	-540.21	5,701.57	5,572.13	129.44	44.049		
1,800.00	1,799.68	20,952.96	7,074.90	5.21	233.58	45.69	-1,619.42	-540.21	5,605.66	5,475.67	129.99	43.124		
1,900.00	1,899.65	20,952.96	7,074.90	5.57	233.58	45.69	-1,619.42	-540.21	5,509.91	5,379.34	130.57	42.200		
2,000.00	1,999.63	20,952.96	7,074.90	5.93	233.58	45.69	-1,619.42	-540.21	5,414.30	5,283.13	131.17	41.277		
2,100.00	2,099.60	20,952.96	7,074.90	6.29	233.58	45.69	-1,619.42	-540.21	5,318.86	5,187.06	131.80	40.355		
2,200.00	2,199.58	20,952.96	7,074.90	6.65	233.58	45.69	-1,619.42	-540.21	5,223.59	5,091.12	132.46	39.434		
2,300.00	2,299.56	20,952.96	7,074.90	7.01	233.58	45.69	-1,619.42	-540.21	5,128.49	4,995.33	133.16	38.514		
2,400.00	2,399.53	20,952.96	7,074.90	7.37	233.58	45.69	-1,619.42	-540.21	5,033.59	4,899.71	133.88	37.597		
2,500.00	2,499.51	20,952.96	7,074.90	7.73	233.58	45.69	-1,619.42	-540.21	4,938.89	4,804.24	134.65	36.681		
2,600.00	2,599.48	20,952.96	7,074.90	8.09	233.58	45.69	-1,619.42	-540.21	4,844.40	4,708.96	135.44	35.767		
2,700.00	2,699.46	20,952.96	7,074.90	8.45	233.58	45.69	-1,619.42	-540.21	4,750.14	4,613.86	136.28	34.856		
2,800.00	2,799.44	20,952.96	7,074.90	8.81	233.58	45.69	-1,619.42	-540.21	4,656.11	4,518.96	137.16	33.948		
2,900.00	2,899.41	20,952.96	7,074.90	9.17	233.58	45.69	-1,619.42	-540.21	4,562.35	4,424.27	138.08	33.042		
3,000.00	2,999.39	20,952.96	7,074.90	9.53	233.58	45.69	-1,619.42	-540.21	4,468.85	4,329.81	139.04	32.140		
3,100.00	3,099.36	20,952.96	7,074.90	9.89	233.58	45.69	-1,619.42	-540.21	4,375.64	4,235.58	140.06	31.242		
3,200.00	3,199.34	20,952.96	7,074.90	10.25	233.58	45.69	-1,619.42	-540.21	4,282.73	4,141.61	141.12	30.348		
3,300.00	3,299.32	20,952.96	7,074.90	10.61	233.58	45.69	-1,619.42	-540.21	4,190.15	4,047.91	142.24	29.458		
3,400.00	3,399.29	20,952.96	7,074.90	10.97	233.58	45.69	-1,619.42	-540.21	4,097.92	3,954.50	143.42	28.573		
3,500.00	3,499.27	20,952.96	7,074.90	11.33	233.58	45.69	-1,619.42	-540.21	4,006.07	3,861.40	144.66	27.692		
3,600.00	3,599.25	20,952.96	7,074.90	11.69	233.58	45.69	-1,619.42	-540.21	3,914.61	3,768.64	145.97	26.818		
3,700.00	3,699.22	20,952.96	7,074.90	12.05	233.58	45.69	-1,619.42	-540.21	3,823.58	3,676.23	147.35	25.949		
3,800.00	3,799.20	20,952.96	7,074.90	12.41	233.58	45.69	-1,619.42	-540.21	3,733.01	3,584.21	148.80	25.087		
3,900.00	3,899.17	20,952.96	7,074.90	12.77	233.58	45.69	-1,619.42	-540.21	3,642.93	3,492.60	150.33	24.233		
4,000.00	3,999.15	20,952.96	7,074.90	13.13	233.58	45.69	-1,619.42	-540.21	3,553.38	3,401.43	151.95	23.385		
4,100.00	4,099.13	20,952.96	7,074.90	13.49	233.58	45.69	-1,619.42	-540.21	3,464.41	3,310.75	153.66	22.546		
4,200.00	4,199.10	20,952.96	7,074.90	13.85	233.58	45.69	-1,619.42	-540.21	3,376.05	3,220.59	155.46	21.716		
4,300.00	4,299.08	20,952.96	7,074.90	14.21	233.58	45.69	-1,619.42	-540.21	3,288.36	3,130.99	157.37	20.895		
4,400.00	4,399.05	20,952.96	7,074.90	14.57	233.58	45.69	-1,619.42	-540.21	3,201.39	3,042.00	159.39	20.085		
4,500.00	4,499.03	20,952.96	7,074.90	14.93	233.58	45.69	-1,619.42	-540.21	3,115.21	2,953.68	161.52	19.286		
4,600.00	4,599.01	20,952.96	7,074.90	15.29	233.58	45.69	-1,619.42	-540.21	3,029.87	2,866.09	163.78	18.500		
4,700.00	4,698.98	20,952.96	7,074.90	15.65	233.58	45.69	-1,619.42	-540.21	2,945.45	2,779.28	166.17	17.726		
4,800.00	4,798.96	20,952.96	7,074.90	16.01	233.58	45.69	-1,619.42	-540.21	2,862.04	2,693.35	168.69	16.966		
4,900.00	4,898.93	20,952.96	7,074.90	16.37	233.58	45.69	-1,619.42	-540.21	2,779.73	2,608.36	171.36	16.221		
5,000.00	4,998.91	20,952.96	7,074.90	16.73	233.58	45.69	-1,619.42	-540.21	2,698.61	2,524.42	174.18	15.493		

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 836H
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 836H	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:						
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	
5,100.00	5,098.89	20,952.96	7,074.90	17.09	233.58	45.69	-1,619.42	-540.21	2,618.79	2,441.63	177.16	14.782		
5,200.00	5,198.86	20,952.96	7,074.90	17.45	233.58	45.69	-1,619.42	-540.21	2,540.41	2,360.10	180.30	14.090		
5,300.00	5,298.84	20,952.96	7,074.90	17.81	233.58	45.69	-1,619.42	-540.21	2,463.59	2,279.98	183.61	13.417		
5,400.00	5,398.81	20,952.96	7,074.90	18.17	233.58	45.69	-1,619.42	-540.21	2,388.48	2,201.40	187.08	12.767		
5,500.00	5,498.79	20,952.96	7,074.90	18.53	233.58	45.69	-1,619.42	-540.21	2,315.26	2,124.54	190.73	12.139		
5,600.00	5,598.77	20,952.96	7,074.90	18.89	233.58	45.69	-1,619.42	-540.21	2,244.11	2,049.58	194.53	11.536		
5,700.00	5,698.74	20,952.96	7,074.90	19.25	233.58	45.69	-1,619.42	-540.21	2,175.23	1,976.74	198.49	10.959		
5,800.00	5,798.72	20,952.96	7,074.90	19.61	233.58	45.69	-1,619.42	-540.21	2,108.84	1,906.25	202.59	10.409		
5,900.00	5,898.69	20,952.96	7,074.90	19.97	233.58	45.69	-1,619.42	-540.21	2,045.19	1,838.39	206.81	9.889		
6,000.00	5,998.67	20,952.96	7,074.90	20.33	233.58	45.69	-1,619.42	-540.21	1,984.54	1,773.42	211.12	9.400		
6,100.00	6,098.65	20,952.96	7,074.90	20.69	233.58	45.69	-1,619.42	-540.21	1,927.18	1,711.69	215.48	8.943		
6,200.00	6,198.62	20,952.96	7,074.90	21.05	233.58	45.69	-1,619.42	-540.21	1,873.39	1,653.54	219.85	8.521		
6,300.00	6,298.60	20,952.96	7,074.90	21.41	233.58	45.69	-1,619.42	-540.21	1,823.51	1,599.34	224.17	8.134		
6,400.00	6,398.57	20,952.96	7,074.90	21.77	233.58	45.69	-1,619.42	-540.21	1,777.86	1,549.49	228.37	7.785		
6,500.00	6,498.55	20,952.96	7,074.90	22.13	233.58	45.69	-1,619.42	-540.21	1,736.77	1,504.41	232.36	7.474		
6,531.56	6,530.10	20,952.96	7,074.90	22.25	233.58	45.69	-1,619.42	-540.21	1,724.81	1,491.24	233.57	7.385		
6,550.00	6,548.53	20,952.96	7,074.90	22.31	233.58	84.64	-1,619.42	-540.21	1,718.14	1,483.89	234.25	7.335		
6,600.00	6,598.36	20,952.96	7,074.90	22.49	233.58	104.24	-1,619.42	-540.21	1,701.93	1,465.99	235.94	7.213		
6,650.00	6,647.74	20,952.96	7,074.90	22.67	233.58	109.27	-1,619.42	-540.21	1,688.58	1,451.19	237.39	7.113		
6,700.00	6,696.35	20,952.96	7,074.90	22.84	233.58	111.79	-1,619.42	-540.21	1,678.26	1,439.69	238.56	7.035		
6,750.00	6,743.90	20,952.96	7,074.90	23.01	233.58	113.30	-1,619.42	-540.21	1,671.07	1,431.64	239.43	6.979		
6,800.00	6,790.11	20,952.96	7,074.90	23.18	233.58	114.20	-1,619.42	-540.21	1,667.10	1,427.13	239.97	6.947		
6,835.57	6,821.99	20,952.96	7,074.90	23.30	233.58	114.56	-1,619.42	-540.21	1,666.27	1,426.11	240.16	6.938 CC, ES		
6,850.00	6,834.67	20,952.96	7,074.90	23.35	233.58	114.65	-1,619.42	-540.21	1,666.41	1,426.22	240.18	6.938 SF		
6,900.00	6,877.32	20,952.96	7,074.90	23.51	233.58	114.73	-1,619.42	-540.21	1,668.99	1,428.94	240.05	6.953		
6,950.00	6,917.80	20,952.96	7,074.90	23.68	233.58	114.47	-1,619.42	-540.21	1,674.83	1,435.24	239.59	6.990		
7,000.00	6,955.85	20,952.96	7,074.90	23.85	233.58	113.89	-1,619.42	-540.21	1,683.84	1,445.04	238.80	7.051		
7,050.00	6,991.24	20,952.96	7,074.90	24.03	233.58	113.00	-1,619.42	-540.21	1,695.93	1,458.22	237.70	7.135		
7,100.00	7,023.76	20,952.96	7,074.90	24.22	233.58	111.81	-1,619.42	-540.21	1,710.95	1,474.61	236.33	7.240		
7,150.00	7,053.20	20,952.96	7,074.90	24.42	233.58	110.30	-1,619.42	-540.21	1,728.73	1,494.02	234.71	7.365		
7,200.00	7,079.37	20,952.96	7,074.90	24.63	233.58	108.49	-1,619.42	-540.21	1,749.09	1,516.21	232.88	7.511		
7,250.00	7,102.13	20,952.96	7,074.90	24.86	233.58	106.37	-1,619.42	-540.21	1,771.82	1,540.95	230.86	7.675		
7,300.00	7,121.32	20,952.96	7,074.90	25.10	233.58	103.94	-1,619.42	-540.21	1,796.68	1,567.97	228.71	7.856		
7,350.00	7,136.84	20,952.96	7,074.90	25.35	233.58	101.20	-1,619.42	-540.21	1,823.43	1,597.00	226.43	8.053		
7,400.00	7,148.58	20,952.96	7,074.90	25.62	233.58	98.17	-1,619.42	-540.21	1,851.84	1,627.76	224.09	8.264		
7,450.00	7,156.47	20,952.96	7,074.90	25.90	233.58	94.87	-1,619.42	-540.21	1,881.67	1,659.98	221.69	8.488		
7,500.00	7,160.47	20,952.96	7,074.90	26.20	233.58	91.33	-1,619.42	-540.21	1,912.65	1,693.38	219.27	8.723		
7,526.22	7,161.00	20,952.96	7,074.90	26.36	233.58	89.40	-1,619.42	-540.21	1,929.28	1,711.28	218.00	8.850		
7,600.00	7,160.97	20,952.96	7,074.90	26.83	233.58	89.40	-1,619.42	-540.21	1,977.22	1,762.76	214.46	9.220		
7,700.00	7,160.93	20,952.96	7,074.90	27.53	233.58	89.40	-1,619.42	-540.21	2,044.65	1,834.92	209.73	9.749		
7,800.00	7,160.89	20,952.96	7,074.90	28.32	233.58	89.40	-1,619.42	-540.21	2,114.66	1,909.53	205.14	10.309		
7,900.00	7,160.85	20,952.96	7,074.90	29.16	233.58	89.40	-1,619.42	-540.21	2,187.01	1,986.33	200.68	10.898		
8,000.00	7,160.81	20,952.96	7,074.90	30.07	233.58	89.40	-1,619.42	-540.21	2,261.46	2,065.08	196.38	11.516		
8,100.00	7,160.77	20,952.96	7,074.90	31.04	233.58	89.40	-1,619.42	-540.21	2,337.82	2,145.58	192.24	12.161		
8,200.00	7,160.73	20,952.96	7,074.90	32.06	233.58	89.40	-1,619.42	-540.21	2,415.91	2,227.63	188.28	12.832		
8,300.00	7,160.69	20,952.96	7,074.90	33.12	233.58	89.40	-1,619.42	-540.21	2,495.56	2,311.08	184.48	13.527		
8,400.00	7,160.65	20,952.96	7,074.90	34.23	233.58	89.40	-1,619.42	-540.21	2,576.63	2,395.78	180.86	14.247		
8,500.00	7,160.60	20,952.96	7,074.90	35.37	233.58	89.40	-1,619.42	-540.21	2,658.99	2,481.60	177.39	14.989		
8,600.00	7,160.56	20,952.96	7,074.90	36.55	233.58	89.40	-1,619.42	-540.21	2,742.52	2,568.43	174.09	15.753		
8,700.00	7,160.52	20,952.96	7,074.90	37.76	233.58	89.40	-1,619.42	-540.21	2,827.12	2,656.18	170.95	16.538		
8,800.00	7,160.48	20,952.96	7,074.90	38.99	233.58	89.40	-1,619.42	-540.21	2,912.70	2,744.75	167.95	17.343		
8,900.00	7,160.44	20,952.96	7,074.90	40.26	233.58	89.40	-1,619.42	-540.21	2,999.17	2,834.08	165.10	18.166		

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 836H
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 836H	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		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
9,000.00	7,160.40	20,952.96	7,074.90	41.54	233.58	89.40	-1,619.42	-540.21	3,086.46	2,924.08	162.38	19.008	
9,100.00	7,160.36	20,952.96	7,074.90	42.85	233.58	89.40	-1,619.42	-540.21	3,174.50	3,014.71	159.79	19.866	
9,200.00	7,160.32	20,952.96	7,074.90	44.18	233.58	89.40	-1,619.42	-540.21	3,263.23	3,105.90	157.33	20.742	
9,300.00	7,160.28	20,952.96	7,074.90	45.53	233.58	89.40	-1,619.42	-540.21	3,352.59	3,197.61	154.98	21.633	
9,400.00	7,160.24	20,952.96	7,074.90	46.89	233.58	89.40	-1,619.42	-540.21	3,442.54	3,289.80	152.74	22.538	
9,500.00	7,160.20	20,952.96	7,074.90	48.26	233.58	89.40	-1,619.42	-540.21	3,533.02	3,382.42	150.61	23.458	
9,600.00	7,160.16	20,952.96	7,074.90	49.65	233.58	89.40	-1,619.42	-540.21	3,624.01	3,475.44	148.57	24.392	
9,700.00	7,160.12	20,952.96	7,074.90	51.05	233.58	89.40	-1,619.42	-540.21	3,715.46	3,568.83	146.63	25.339	
9,800.00	7,160.08	20,952.96	7,074.90	52.47	233.58	89.40	-1,619.42	-540.21	3,807.34	3,662.57	144.78	26.298	
9,900.00	7,160.04	20,952.96	7,074.90	53.89	233.58	89.40	-1,619.42	-540.21	3,899.62	3,756.62	143.01	27.268	
10,000.00	7,160.00	20,952.96	7,074.90	55.33	233.58	89.40	-1,619.42	-540.21	3,992.28	3,850.96	141.32	28.250	
10,100.00	7,159.95	20,952.96	7,074.90	56.77	233.58	89.40	-1,619.42	-540.21	4,085.28	3,945.57	139.70	29.243	
10,200.00	7,159.91	20,952.96	7,074.90	58.22	233.58	89.40	-1,619.42	-540.21	4,178.60	4,040.44	138.16	30.245	
10,300.00	7,159.87	20,952.96	7,074.90	59.68	233.58	89.40	-1,619.42	-540.21	4,272.22	4,135.54	136.68	31.257	
10,400.00	7,159.83	20,952.96	7,074.90	61.15	233.58	89.40	-1,619.42	-540.21	4,366.13	4,230.87	135.26	32.279	
10,500.00	7,159.79	20,952.96	7,074.90	62.62	233.58	89.40	-1,619.42	-540.21	4,460.30	4,326.39	133.91	33.309	
10,600.00	7,159.75	20,952.96	7,074.90	64.10	233.58	89.40	-1,619.42	-540.21	4,554.72	4,422.11	132.61	34.347	
10,700.00	7,159.71	20,952.96	7,074.90	65.58	233.58	89.40	-1,619.42	-540.21	4,649.38	4,518.01	131.36	35.393	
10,800.00	7,159.67	20,952.96	7,074.90	67.07	233.58	89.40	-1,619.42	-540.21	4,744.25	4,614.08	130.17	36.447	
10,900.00	7,159.63	20,952.96	7,074.90	68.57	233.58	89.40	-1,619.42	-540.21	4,839.33	4,710.31	129.02	37.508	
11,000.00	7,159.59	20,952.96	7,074.90	70.07	233.58	89.40	-1,619.42	-540.21	4,934.60	4,806.68	127.92	38.575	
11,100.00	7,159.55	20,952.96	7,074.90	71.57	233.58	89.40	-1,619.42	-540.21	5,030.06	4,903.20	126.87	39.649	
11,200.00	7,159.51	20,952.96	7,074.90	73.08	233.58	89.40	-1,619.42	-540.21	5,125.69	4,999.84	125.85	40.728	
11,300.00	7,159.47	20,952.96	7,074.90	74.59	233.58	89.40	-1,619.42	-540.21	5,221.49	5,096.61	124.87	41.814	
11,400.00	7,159.43	20,952.96	7,074.90	76.11	233.58	89.40	-1,619.42	-540.21	5,317.44	5,193.50	123.94	42.905	
11,500.00	7,159.39	20,952.96	7,074.90	77.63	233.58	89.40	-1,619.42	-540.21	5,413.53	5,290.50	123.03	44.000	
11,600.00	7,159.35	20,952.96	7,074.90	79.15	233.58	89.40	-1,619.42	-540.21	5,509.77	5,387.60	122.17	45.101	
11,638.27	7,159.33	20,952.96	7,074.90	79.73	233.58	89.40	-1,619.42	-540.21	5,546.63	5,424.79	121.84	45.523	
11,640.51	7,159.33	20,952.96	7,074.90	79.77	233.58	89.40	-1,619.42	-540.21	5,548.79	5,426.97	121.82	45.548	
11,700.00	7,159.30	20,952.96	7,074.90	80.68	233.58	89.40	-1,619.42	-540.21	5,606.14	5,484.81	121.33	46.206	
11,800.00	7,159.26	20,952.96	7,074.90	82.20	233.58	89.40	-1,619.42	-540.21	5,702.64	5,582.12	120.53	47.315	
11,900.00	7,159.22	20,952.96	7,074.90	83.74	233.58	89.40	-1,619.42	-540.21	5,799.26	5,679.51	119.75	48.428	
12,000.00	7,159.18	20,952.96	7,074.90	85.27	233.58	89.40	-1,619.42	-540.21	5,896.00	5,776.99	119.00	49.545	
12,100.00	7,159.14	20,952.96	7,074.90	86.81	233.58	89.40	-1,619.42	-540.21	5,992.84	5,874.55	118.28	50.665	
12,200.00	7,159.10	20,952.96	7,074.90	88.35	233.58	89.40	-1,619.42	-540.21	6,089.78	5,972.19	117.59	51.788	
12,300.00	7,159.06	20,952.96	7,074.90	89.89	233.58	89.40	-1,619.42	-540.21	6,186.82	6,069.90	116.92	52.915	
12,400.00	7,159.02	20,952.96	7,074.90	91.43	233.58	89.40	-1,619.42	-540.21	6,283.95	6,167.68	116.27	54.045	
12,500.00	7,158.98	20,952.96	7,074.90	92.98	233.58	89.40	-1,619.42	-540.21	6,381.17	6,265.52	115.65	55.177	
12,600.00	7,158.94	20,952.96	7,074.90	94.52	233.58	89.40	-1,619.42	-540.21	6,478.48	6,363.43	115.05	56.311	
12,700.00	7,158.90	20,952.96	7,074.90	96.07	233.58	89.40	-1,619.42	-540.21	6,575.86	6,461.40	114.47	57.448	
12,800.00	7,158.86	20,952.96	7,074.90	97.62	233.58	89.40	-1,619.42	-540.21	6,673.33	6,559.42	113.90	58.587	
12,900.00	7,158.81	20,952.96	7,074.90	99.17	233.58	89.40	-1,619.42	-540.21	6,770.87	6,657.51	113.36	59.728	
13,000.00	7,158.77	20,952.96	7,074.90	100.73	233.58	89.40	-1,619.42	-540.21	6,868.48	6,755.64	112.84	60.871	
13,100.00	7,158.73	20,952.96	7,074.90	102.28	233.58	89.40	-1,619.42	-540.21	6,966.15	6,853.82	112.33	62.015	
13,200.00	7,158.69	20,952.96	7,074.90	103.84	233.58	89.40	-1,619.42	-540.21	7,063.89	6,952.05	111.84	63.161	
13,300.00	7,158.65	20,952.96	7,074.90	105.40	233.58	89.40	-1,619.42	-540.21	7,161.70	7,050.33	111.37	64.308	
13,400.00	7,158.61	20,952.96	7,074.90	106.96	233.58	89.40	-1,619.42	-540.21	7,259.56	7,148.65	110.91	65.457	
13,500.00	7,158.57	20,952.96	7,074.90	108.52	233.58	89.40	-1,619.42	-540.21	7,357.48	7,247.02	110.46	66.606	
13,600.00	7,158.53	20,952.96	7,074.90	110.08	233.58	89.40	-1,619.42	-540.21	7,455.46	7,345.43	110.03	67.756	
13,700.00	7,158.49	20,952.96	7,074.90	111.64	233.58	89.40	-1,619.42	-540.21	7,553.49	7,443.87	109.62	68.907	
13,800.00	7,158.45	20,952.96	7,074.90	113.21	233.58	89.40	-1,619.42	-540.21	7,651.57	7,542.35	109.22	70.059	
13,900.00	7,158.41	20,952.96	7,074.90	114.77	233.58	89.40	-1,619.42	-540.21	7,749.70	7,640.87	108.83	71.211	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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	
14,000.00	7,158.37	20,952.96	7,074.90	116.34	233.58	89.40	-1,619.42	-540.21	7,847.88	7,739.43	108.45	72.364	
14,100.00	7,158.32	20,952.96	7,074.90	117.91	233.58	89.40	-1,619.42	-540.21	7,946.10	7,838.01	108.08	73.517	
14,200.00	7,158.28	20,952.96	7,074.90	119.47	233.58	89.40	-1,619.42	-540.21	8,044.36	7,936.63	107.73	74.671	
14,300.00	7,158.24	20,952.96	7,074.90	121.04	233.58	89.40	-1,619.42	-540.21	8,142.67	8,035.28	107.39	75.824	
14,400.00	7,158.20	20,952.96	7,074.90	122.61	233.58	89.40	-1,619.42	-540.21	8,241.02	8,133.96	107.06	76.977	
14,500.00	7,158.16	20,952.96	7,074.90	124.18	233.58	89.40	-1,619.42	-540.21	8,339.41	8,232.67	106.74	78.131	
14,600.00	7,158.12	20,952.96	7,074.90	125.76	233.58	89.40	-1,619.42	-540.21	8,437.84	8,331.41	106.43	79.284	
14,700.00	7,158.08	20,952.96	7,074.90	127.33	233.58	89.40	-1,619.42	-540.21	8,536.30	8,430.17	106.12	80.437	
14,800.00	7,158.04	20,952.96	7,074.90	128.90	233.58	89.40	-1,619.42	-540.21	8,634.80	8,528.96	105.83	81.590	
14,900.00	7,158.00	20,952.96	7,074.90	130.47	233.58	89.40	-1,619.42	-540.21	8,733.33	8,627.78	105.55	82.742	
15,000.00	7,157.96	20,952.96	7,074.90	132.05	233.58	89.40	-1,619.42	-540.21	8,831.89	8,726.62	105.27	83.894	
15,100.00	7,157.92	20,952.96	7,074.90	133.62	233.58	89.40	-1,619.42	-540.21	8,930.49	8,825.48	105.01	85.045	
15,200.00	7,157.88	20,952.96	7,074.90	135.20	233.58	89.40	-1,619.42	-540.21	9,029.12	8,924.37	104.75	86.195	
15,300.00	7,157.83	20,952.96	7,074.90	136.78	233.58	89.40	-1,619.42	-540.21	9,127.78	9,023.27	104.50	87.345	
15,400.00	7,157.79	20,952.96	7,074.90	138.35	233.58	89.40	-1,619.42	-540.21	9,226.46	9,122.20	104.26	88.494	
15,500.00	7,157.75	20,952.96	7,074.90	139.93	233.58	89.40	-1,619.42	-540.21	9,325.18	9,221.15	104.03	89.642	
15,600.00	7,157.71	20,952.96	7,074.90	141.51	233.58	89.40	-1,619.42	-540.21	9,423.92	9,320.12	103.80	90.789	
15,700.00	7,157.67	20,952.96	7,074.90	143.09	233.58	89.40	-1,619.42	-540.21	9,522.69	9,419.11	103.58	91.935	
15,800.00	7,157.63	20,952.96	7,074.90	144.67	233.58	89.40	-1,619.42	-540.21	9,621.48	9,518.11	103.37	93.081	
15,900.00	7,157.59	20,952.96	7,074.90	146.24	233.58	89.40	-1,619.42	-540.21	9,720.30	9,617.14	103.16	94.225	
16,000.00	7,157.55	20,952.96	7,074.90	147.82	233.58	89.40	-1,619.42	-540.21	9,819.14	9,716.18	102.96	95.367	
16,100.00	7,157.51	20,952.96	7,074.90	149.41	233.58	89.40	-1,619.42	-540.21	9,918.01	9,815.24	102.77	96.509	
16,200.00	7,157.47	20,952.96	7,074.90	150.99	233.58	89.40	-1,619.42	-540.21	10,016.89	9,914.31	102.58	97.649	
16,300.00	7,157.43	20,952.96	7,074.90	152.57	233.58	89.40	-1,619.42	-540.21	10,115.80	10,013.41	102.40	98.789	
16,400.00	7,157.38	20,952.96	7,074.90	154.15	233.58	89.40	-1,619.42	-540.21	10,214.74	10,112.51	102.22	99.926	
16,500.00	7,157.34	20,952.96	7,074.90	155.73	233.58	89.40	-1,619.42	-540.21	10,313.69	10,211.63	102.05	101.062	
16,600.00	7,157.30	20,952.96	7,074.90	157.31	233.58	89.40	-1,619.42	-540.21	10,412.66	10,310.77	101.89	102.197	
16,680.84	7,157.27	20,952.96	7,074.90	158.59	233.58	89.40	-1,619.42	-540.21	10,492.68	10,390.92	101.76	103.113	
16,687.46	7,157.27	20,952.96	7,074.90	158.70	233.58	89.39	-1,619.42	-540.21	10,499.23	10,397.48	101.75	103.188	
16,700.00	7,157.26	20,952.96	7,074.90	158.90	233.58	89.39	-1,619.42	-540.21	10,511.65	10,409.92	101.73	103.330	
16,800.00	7,157.22	20,952.96	7,074.90	160.48	233.58	89.39	-1,619.42	-540.21	10,610.68	10,509.10	101.58	104.460	
16,900.00	7,157.18	20,952.96	7,074.90	162.06	233.58	89.39	-1,619.42	-540.21	10,709.72	10,608.29	101.43	105.588	
17,000.00	7,157.14	20,952.96	7,074.90	163.65	233.58	89.39	-1,619.42	-540.21	10,808.78	10,707.50	101.29	106.715	
17,100.00	7,157.10	20,952.96	7,074.90	165.23	233.58	89.39	-1,619.42	-540.21	10,907.86	10,806.71	101.15	107.840	
17,200.00	7,157.06	20,952.96	7,074.90	166.82	233.58	89.39	-1,619.42	-540.21	11,006.96	10,905.94	101.02	108.963	
17,300.00	7,157.02	20,952.96	7,074.90	168.40	233.58	89.39	-1,619.42	-540.21	11,106.07	11,005.18	100.89	110.085	
17,400.00	7,156.98	20,952.96	7,074.90	169.99	233.58	89.39	-1,619.42	-540.21	11,205.20	11,104.44	100.76	111.205	
17,500.00	7,156.94	20,952.96	7,074.90	171.57	233.58	89.39	-1,619.42	-540.21	11,304.34	11,203.70	100.64	112.322	
17,600.00	7,156.90	20,952.96	7,074.90	173.16	233.58	89.39	-1,619.42	-540.21	11,403.50	11,302.97	100.53	113.438	
17,700.00	7,156.85	20,952.96	7,074.90	174.75	233.58	89.39	-1,619.42	-540.21	11,502.67	11,402.26	100.41	114.553	
17,800.00	7,156.81	20,952.96	7,074.90	176.33	233.58	89.39	-1,619.42	-540.21	11,601.86	11,501.55	100.31	115.665	
17,900.00	7,156.77	20,952.96	7,074.90	177.92	233.58	89.39	-1,619.42	-540.21	11,701.06	11,600.86	100.20	116.775	
18,000.00	7,156.73	20,952.96	7,074.90	179.51	233.58	89.39	-1,619.42	-540.21	11,800.27	11,700.17	100.10	117.883	
18,100.00	7,156.69	20,952.96	7,074.90	181.09	233.58	89.39	-1,619.42	-540.21	11,899.50	11,799.49	100.00	118.989	
18,200.00	7,156.65	20,952.96	7,074.90	182.68	233.58	89.39	-1,619.42	-540.21	11,998.74	11,898.83	99.91	120.093	
18,300.00	7,156.61	20,952.96	7,074.90	184.27	233.58	89.39	-1,619.42	-540.21	12,097.99	11,998.17	99.82	121.195	
18,400.00	7,156.57	20,952.96	7,074.90	185.86	233.58	89.39	-1,619.42	-540.21	12,197.26	12,097.52	99.74	122.295	
18,500.00	7,156.53	20,952.96	7,074.90	187.45	233.58	89.39	-1,619.42	-540.21	12,296.53	12,196.88	99.65	123.393	
18,600.00	7,156.49	20,952.96	7,074.90	189.03	233.58	89.39	-1,619.42	-540.21	12,395.82	12,296.25	99.57	124.488	
18,700.00	7,156.45	20,952.96	7,074.90	190.62	233.58	89.39	-1,619.42	-540.21	12,495.12	12,395.62	99.50	125.582	
18,800.00	7,156.41	20,952.96	7,074.90	192.21	233.58	89.39	-1,619.42	-540.21	12,594.43	12,495.01	99.42	126.673	
18,900.00	7,156.37	20,952.96	7,074.90	193.80	233.58	89.39	-1,619.42	-540.21	12,693.75	12,594.40	99.35	127.762	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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	
19,000.00	7,156.32	20,952.96	7,074.90	195.39	233.58	89.39	-1,619.42	-540.21	12,793.08	12,693.80	99.29	128.848	
19,100.00	7,156.28	20,952.96	7,074.90	196.98	233.58	89.39	-1,619.42	-540.21	12,892.43	12,793.20	99.22	129.933	
19,200.00	7,156.24	20,952.96	7,074.90	198.57	233.58	89.39	-1,619.42	-540.21	12,991.78	12,892.62	99.16	131.015	
19,300.00	7,156.20	20,952.96	7,074.90	200.16	233.58	89.39	-1,619.42	-540.21	13,091.14	12,992.04	99.10	132.095	
19,400.00	7,156.16	20,952.96	7,074.90	201.75	233.58	89.39	-1,619.42	-540.21	13,190.51	13,091.47	99.05	133.172	
19,500.00	7,156.12	20,952.96	7,074.90	203.34	233.58	89.39	-1,619.42	-540.21	13,289.90	13,190.90	99.00	134.247	
19,600.00	7,156.08	20,952.96	7,074.90	204.93	233.58	89.39	-1,619.42	-540.21	13,389.29	13,290.34	98.95	135.320	
19,700.00	7,156.04	20,952.96	7,074.90	206.52	233.58	89.39	-1,619.42	-540.21	13,488.69	13,389.79	98.90	136.390	
19,800.00	7,156.00	20,952.96	7,074.90	208.11	233.58	89.39	-1,619.42	-540.21	13,588.09	13,489.24	98.85	137.458	
19,900.00	7,155.96	20,952.96	7,074.90	209.71	233.58	89.39	-1,619.42	-540.21	13,687.51	13,588.70	98.81	138.524	
20,000.00	7,155.92	20,952.96	7,074.90	211.30	233.58	89.39	-1,619.42	-540.21	13,786.94	13,688.17	98.77	139.587	
20,100.00	7,155.88	20,952.96	7,074.90	212.89	233.58	89.39	-1,619.42	-540.21	13,886.37	13,787.64	98.73	140.648	
20,200.00	7,155.84	20,952.96	7,074.90	214.48	233.58	89.39	-1,619.42	-540.21	13,985.81	13,887.12	98.70	141.706	
20,300.00	7,155.79	20,952.96	7,074.90	216.07	233.58	89.39	-1,619.42	-540.21	14,085.26	13,986.60	98.66	142.762	
20,400.00	7,155.75	20,952.96	7,074.90	217.66	233.58	89.39	-1,619.42	-540.21	14,184.72	14,086.09	98.63	143.815	
20,500.00	7,155.71	20,952.96	7,074.90	219.26	233.58	89.39	-1,619.42	-540.21	14,284.18	14,185.58	98.60	144.866	
20,600.00	7,155.67	20,952.96	7,074.90	220.85	233.58	89.39	-1,619.42	-540.21	14,383.66	14,285.08	98.58	145.914	
20,700.00	7,155.63	20,952.96	7,074.90	222.44	233.58	89.39	-1,619.42	-540.21	14,483.14	14,384.58	98.55	146.960	
20,800.00	7,155.59	20,952.96	7,074.90	224.03	233.58	89.39	-1,619.42	-540.21	14,582.62	14,484.09	98.53	148.003	
20,900.00	7,155.55	20,952.96	7,074.90	225.63	233.58	89.39	-1,619.42	-540.21	14,682.12	14,583.61	98.51	149.043	
21,000.00	7,155.51	20,952.96	7,074.90	227.22	233.58	89.39	-1,619.42	-540.21	14,781.62	14,683.13	98.49	150.081	
21,100.00	7,155.47	20,952.96	7,074.90	228.81	233.58	89.39	-1,619.42	-540.21	14,881.12	14,782.65	98.47	151.117	
21,200.00	7,155.43	20,952.96	7,074.90	230.40	233.58	89.39	-1,619.42	-540.21	14,980.64	14,882.18	98.46	152.150	
21,300.00	7,155.39	20,952.96	7,074.90	232.00	233.58	89.39	-1,619.42	-540.21	15,080.16	14,981.71	98.45	153.180	
21,400.00	7,155.35	20,952.96	7,074.90	233.59	233.58	89.39	-1,619.42	-540.21	15,179.69	15,081.25	98.44	154.208	
21,500.00	7,155.31	20,952.96	7,074.90	235.18	233.58	89.39	-1,619.42	-540.21	15,279.22	15,180.79	98.43	155.233	
21,600.00	7,155.26	20,952.96	7,074.90	236.78	233.58	89.39	-1,619.42	-540.21	15,378.76	15,280.34	98.42	156.256	
21,700.00	7,155.22	20,952.96	7,074.90	238.37	233.58	89.39	-1,619.42	-540.21	15,478.30	15,379.89	98.42	157.276	
21,800.00	7,155.18	20,952.96	7,074.90	239.96	233.58	89.39	-1,619.42	-540.21	15,577.85	15,479.44	98.41	158.293	
21,900.00	7,155.14	20,952.96	7,074.90	241.56	233.58	89.39	-1,619.42	-540.21	15,677.41	15,579.00	98.41	159.308	
21,953.88	7,155.12	20,952.96	7,074.90	242.42	233.58	89.39	-1,619.42	-540.21	15,731.05	15,632.64	98.41	159.853	
22,000.00	7,155.10	20,952.96	7,074.90	243.15	233.58	89.43	-1,619.42	-540.21	15,776.95	15,678.55	98.41	160.323	
22,019.01	7,155.09	20,952.96	7,074.90	243.46	233.58	89.45	-1,619.42	-540.21	15,795.86	15,697.46	98.41	160.517	
22,100.00	7,155.06	20,952.96	7,074.90	244.75	233.58	89.45	-1,619.42	-540.21	15,876.41	15,778.01	98.40	161.348	
22,200.00	7,155.02	20,952.96	7,074.90	246.34	233.58	89.45	-1,619.42	-540.21	15,975.88	15,877.48	98.39	162.371	
22,300.00	7,154.97	20,952.96	7,074.90	247.94	233.58	89.45	-1,619.42	-540.21	16,075.34	15,976.96	98.39	163.391	
22,400.00	7,154.93	20,952.96	7,074.90	249.53	233.58	89.45	-1,619.42	-540.21	16,174.82	16,076.44	98.38	164.409	
22,500.00	7,154.89	20,952.96	7,074.90	251.13	233.58	89.45	-1,619.42	-540.21	16,274.30	16,175.92	98.38	165.424	
22,600.00	7,154.85	20,952.96	7,074.90	252.72	233.58	89.45	-1,619.42	-540.21	16,373.79	16,275.41	98.38	166.436	
22,700.00	7,154.80	20,952.96	7,074.90	254.32	233.58	89.45	-1,619.42	-540.21	16,473.29	16,374.91	98.38	167.446	
22,800.00	7,154.76	20,952.96	7,074.90	255.91	233.58	89.45	-1,619.42	-540.21	16,572.79	16,474.40	98.38	168.453	
22,900.00	7,154.72	20,952.96	7,074.90	257.51	233.58	89.45	-1,619.42	-540.21	16,672.29	16,573.91	98.39	169.457	
23,000.00	7,154.68	20,952.96	7,074.90	259.11	233.58	89.45	-1,619.42	-540.21	16,771.81	16,673.41	98.39	170.458	
23,100.00	7,154.63	20,952.96	7,074.90	260.70	233.58	89.45	-1,619.42	-540.21	16,871.33	16,772.93	98.40	171.457	
23,200.00	7,154.59	20,952.96	7,074.90	262.30	233.58	89.45	-1,619.42	-540.21	16,970.85	16,872.44	98.41	172.452	
23,300.00	7,154.55	20,952.96	7,074.90	263.89	233.58	89.45	-1,619.42	-540.21	17,070.38	16,971.96	98.42	173.445	
23,400.00	7,154.51	20,952.96	7,074.90	265.49	233.58	89.45	-1,619.42	-540.21	17,169.91	17,071.48	98.43	174.436	
23,500.00	7,154.47	20,952.96	7,074.90	267.08	233.58	89.45	-1,619.42	-540.21	17,269.46	17,171.01	98.44	175.423	
23,600.00	7,154.42	20,952.96	7,074.90	268.68	233.58	89.45	-1,619.42	-540.21	17,369.00	17,270.54	98.46	176.408	
23,700.00	7,154.38	20,952.96	7,074.90	270.28	233.58	89.45	-1,619.42	-540.21	17,468.55	17,370.08	98.48	177.390	
23,800.00	7,154.34	20,952.96	7,074.90	271.87	233.58	89.45	-1,619.42	-540.21	17,568.11	17,469.62	98.49	178.370	
23,900.00	7,154.30	20,952.96	7,074.90	273.47	233.58	89.45	-1,619.42	-540.21	17,667.67	17,569.16	98.51	179.346	

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 836H
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 836H	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	
24,000.00	7,154.25	20,952.96	7,074.90	275.07	233.58	89.45	-1,619.42	-540.21	17,767.24	17,668.70	98.53	180.320	
24,100.00	7,154.21	20,952.96	7,074.90	276.66	233.58	89.45	-1,619.42	-540.21	17,866.81	17,768.25	98.55	181.291	
24,200.00	7,154.17	20,952.96	7,074.90	278.26	233.58	89.45	-1,619.42	-540.21	17,966.38	17,867.81	98.58	182.259	
24,300.00	7,154.13	20,952.96	7,074.90	279.86	233.58	89.45	-1,619.42	-540.21	18,065.96	17,967.36	98.60	183.225	
24,400.00	7,154.08	20,952.96	7,074.90	281.45	233.58	89.45	-1,619.42	-540.21	18,165.55	18,066.92	98.63	184.188	
24,500.00	7,154.04	20,952.96	7,074.90	283.05	233.58	89.45	-1,619.42	-540.21	18,265.14	18,166.49	98.65	185.148	
24,597.25	7,154.00	20,952.96	7,074.90	284.60	233.58	89.45	-1,619.42	-540.21	18,361.99	18,263.31	98.68	186.079	
24,600.00	7,154.00	20,952.96	7,074.90	284.65	233.58	89.45	-1,619.42	-540.21	18,364.73	18,266.05	98.68	186.105	
24,700.00	7,153.96	20,952.96	7,074.90	286.24	233.58	89.34	-1,619.42	-540.21	18,464.41	18,365.69	98.72	187.047	
24,722.47	7,153.95	20,952.96	7,074.90	286.60	233.58	89.30	-1,619.42	-540.21	18,486.82	18,388.10	98.73	187.254	
24,800.00	7,153.92	20,952.96	7,074.90	287.84	233.58	89.30	-1,619.42	-540.21	18,564.18	18,465.41	98.76	187.968	
24,900.00	7,153.88	20,952.96	7,074.90	289.43	233.58	89.30	-1,619.42	-540.21	18,663.95	18,565.14	98.81	188.887	
25,000.00	7,153.84	20,952.96	7,074.90	291.03	233.58	89.30	-1,619.42	-540.21	18,763.73	18,664.87	98.86	189.803	
25,100.00	7,153.80	20,952.96	7,074.90	292.63	233.58	89.30	-1,619.42	-540.21	18,863.51	18,764.60	98.91	190.717	
25,200.00	7,153.77	20,952.96	7,074.90	294.22	233.58	89.30	-1,619.42	-540.21	18,963.29	18,864.33	98.96	191.628	
25,300.00	7,153.73	20,952.96	7,074.90	295.82	233.58	89.30	-1,619.42	-540.21	19,063.08	18,964.07	99.01	192.536	
25,400.00	7,153.69	20,952.96	7,074.90	297.41	233.58	89.30	-1,619.42	-540.21	19,162.86	19,063.80	99.06	193.442	
25,500.00	7,153.65	20,952.96	7,074.90	299.01	233.58	89.30	-1,619.42	-540.21	19,262.65	19,163.54	99.12	194.345	
25,600.00	7,153.61	20,952.96	7,074.90	300.60	233.58	89.30	-1,619.42	-540.21	19,362.44	19,263.27	99.17	195.245	
25,700.00	7,153.57	20,952.96	7,074.90	302.20	233.58	89.30	-1,619.42	-540.21	19,462.24	19,363.01	99.22	196.143	
25,800.00	7,153.53	20,952.96	7,074.90	303.80	233.58	89.30	-1,619.42	-540.21	19,562.03	19,462.75	99.28	197.038	
25,900.00	7,153.50	20,952.96	7,074.90	305.39	233.58	89.30	-1,619.42	-540.21	19,661.83	19,562.49	99.34	197.930	
26,000.00	7,153.46	20,952.96	7,074.90	306.99	233.58	89.30	-1,619.42	-540.21	19,761.63	19,662.23	99.39	198.820	
26,100.00	7,153.42	20,952.96	7,074.90	308.58	233.58	89.30	-1,619.42	-540.21	19,861.43	19,761.98	99.45	199.707	
26,200.00	7,153.38	20,952.96	7,074.90	310.18	233.58	89.30	-1,619.42	-540.21	19,961.23	19,861.72	99.51	200.592	
26,300.00	7,153.34	20,952.96	7,074.90	311.78	233.58	89.30	-1,619.42	-540.21	20,061.04	19,961.47	99.57	201.474	
26,400.00	7,153.30	20,952.96	7,074.90	313.37	233.58	89.30	-1,619.42	-540.21	20,160.85	20,061.22	99.63	202.353	
26,500.00	7,153.26	20,952.96	7,074.90	314.97	233.58	89.30	-1,619.42	-540.21	20,260.66	20,160.96	99.69	203.230	
26,600.00	7,153.23	20,952.96	7,074.90	316.57	233.58	89.30	-1,619.42	-540.21	20,360.47	20,260.71	99.76	204.104	
26,700.00	7,153.19	20,952.96	7,074.90	318.16	233.58	89.30	-1,619.42	-540.21	20,460.28	20,360.46	99.82	204.976	
26,800.00	7,153.15	20,952.96	7,074.90	319.76	233.58	89.30	-1,619.42	-540.21	20,560.10	20,460.21	99.88	205.845	
26,900.00	7,153.11	20,952.96	7,074.90	321.35	233.58	89.30	-1,619.42	-540.21	20,659.91	20,559.97	99.95	206.711	
26,976.35	7,153.08	20,952.96	7,074.90	322.57	233.58	89.30	-1,619.42	-540.21	20,736.12	20,636.13	100.00	207.371	
27,000.00	7,153.07	20,952.96	7,074.90	322.95	233.58	89.30	-1,619.42	-540.21	20,759.73	20,659.72	100.01	207.575	
27,100.00	7,153.03	20,952.96	7,074.90	324.55	233.58	89.30	-1,619.42	-540.21	20,859.55	20,759.47	100.08	208.436	
27,176.36	7,153.00	20,952.96	7,074.90	325.77	233.58	89.30	-1,619.42	-540.21	20,935.77	20,835.64	100.13	209.092	

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD													Offset Site Error:	0.00 usft			
Survey Program:		400-A027Ua_INC-ONLY				Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Distance	Warning	Offset Well Error:	0.00 usft
Measured Depth (usft)	Reference 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	187.00	187.00	0.00	3.46	-82.33	1,367.54	-10,152.92	10,244.61								
125.00	125.00	312.00	312.00	0.06	5.77	142.03	1,367.54	-10,152.92	10,244.95	10,239.13	5.82	1,760.062					
225.00	225.00	412.00	412.00	0.17	7.61	-151.52	1,367.54	-10,152.92	10,245.61	10,237.83	7.78	1,316.946					
312.00	311.99	499.00	498.99	0.28	9.18	146.98	1,367.54	-10,152.92	10,246.18	10,236.72	9.45	1,084.201					
400.00	399.99	587.00	586.99	0.37	10.76	146.98	1,367.54	-10,152.92	10,246.64	10,235.51	11.12	921.124					
462.00	461.99	649.00	648.99	0.50	11.88	146.98	1,367.54	-10,152.92	10,246.97	10,234.58	12.38	827.677					
509.18	509.16	696.17	696.16	0.64	12.73	121.31	1,367.54	-10,152.92	10,247.36	10,233.99	13.37	766.516					
600.00	599.96	787.81	787.80	0.94	14.38	121.33	1,368.27	-10,152.92	10,248.49	10,233.17	15.32	669.141					
700.00	699.94	889.58	889.57	1.28	16.22	121.34	1,368.14	-10,152.92	10,249.61	10,232.12	17.49	585.927					
800.00	799.92	991.36	991.35	1.63	18.05	121.35	1,367.88	-10,152.92	10,250.72	10,231.04	19.68	520.936					
900.00	899.89	1,086.91	1,086.89	1.98	19.78	121.35	1,367.54	-10,152.92	10,251.81	10,230.05	21.76	471.209					
1,000.00	999.87	1,186.89	1,186.87	2.34	21.62	121.37	1,367.54	-10,152.92	10,252.95	10,228.99	23.96	427.936					
1,100.00	1,099.84	1,286.86	1,286.84	2.69	23.47	121.38	1,367.54	-10,152.92	10,254.09	10,227.93	26.16	391.932					
1,200.00	1,199.82	1,386.84	1,386.82	3.05	25.32	121.39	1,367.54	-10,152.92	10,255.23	10,226.86	28.37	361.513					
1,300.00	1,299.80	1,486.82	1,486.80	3.41	27.16	121.40	1,367.54	-10,152.92	10,256.37	10,225.80	30.57	335.476					
1,400.00	1,399.77	1,586.79	1,586.77	3.77	29.01	121.41	1,367.54	-10,152.92	10,257.51	10,224.74	32.78	312.939					
1,500.00	1,499.75	1,687.26	1,687.24	4.13	30.87	121.42	1,368.10	-10,152.92	10,258.73	10,223.74	34.99	293.167					
1,600.00	1,599.72	1,787.82	1,787.80	4.49	32.72	121.43	1,368.04	-10,152.92	10,259.87	10,222.66	37.21	275.732					
1,700.00	1,699.70	1,888.38	1,888.36	4.85	34.58	121.44	1,367.94	-10,152.92	10,260.99	10,221.57	39.43	260.257					
1,800.00	1,799.68	1,988.95	1,988.93	5.21	36.44	121.45	1,367.80	-10,152.92	10,262.12	10,220.47	41.64	246.428					
1,900.00	1,899.65	2,089.51	2,089.49	5.57	38.30	121.46	1,367.62	-10,152.92	10,263.24	10,219.38	43.86	233.996					
2,000.00	1,999.63	2,186.69	2,186.63	5.93	40.46	121.47	1,367.54	-10,152.92	10,264.37	10,217.99	46.38	221.304					
2,100.00	2,099.60	2,286.67	2,286.60	6.29	42.90	121.48	1,367.54	-10,152.92	10,265.51	10,216.33	49.18	208.730					
2,200.00	2,199.58	2,386.64	2,386.58	6.65	45.34	121.49	1,367.54	-10,152.92	10,266.66	10,214.68	51.98	197.511					
2,300.00	2,299.56	2,488.35	2,488.28	7.01	47.82	121.51	1,368.51	-10,152.92	10,267.93	10,213.11	54.82	187.295					
2,400.00	2,399.53	2,591.44	2,591.36	7.37	50.34	121.52	1,368.27	-10,152.92	10,269.05	10,211.35	57.70	177.980					
2,500.00	2,499.51	2,694.54	2,694.46	7.73	52.85	121.52	1,367.80	-10,152.92	10,270.13	10,209.56	60.57	169.548					
2,600.00	2,599.48	2,792.84	2,792.44	8.09	55.56	121.54	1,368.09	-10,152.92	10,271.31	10,207.68	63.64	161.406					
2,700.00	2,699.46	2,886.93	2,886.46	8.45	58.33	121.54	1,367.54	-10,152.92	10,272.38	10,205.61	66.77	153.845					
2,800.00	2,799.44	2,986.91	2,986.44	8.81	61.25	121.55	1,367.54	-10,152.92	10,273.53	10,203.48	70.05	146.655					
2,900.00	2,899.41	3,106.44	3,105.91	9.17	64.74	121.57	1,368.35	-10,152.92	10,274.81	10,200.90	73.91	139.027					
3,000.00	2,999.39	3,187.11	3,186.39	9.53	67.04	121.57	1,367.54	-10,152.92	10,275.82	10,199.26	76.56	134.216					
3,100.00	3,099.36	3,289.14	3,288.40	9.89	69.83	121.59	1,368.76	-10,152.92	10,277.14	10,197.43	79.71	128.931					
3,200.00	3,199.34	3,418.02	3,417.23	10.25	73.35	121.60	1,367.27	-10,152.92	10,278.13	10,194.53	83.59	122.955					
3,300.00	3,299.32	3,487.17	3,486.32	10.61	75.05	121.60	1,367.54	-10,152.92	10,279.26	10,193.62	85.65	120.019					
3,400.00	3,399.29	3,587.15	3,586.29	10.97	77.54	121.62	1,367.54	-10,152.92	10,280.41	10,191.91	88.50	116.162					
3,500.00	3,499.27	3,687.12	3,686.27	11.33	80.04	121.63	1,367.54	-10,152.92	10,281.56	10,190.21	91.35	112.545					
3,600.00	3,599.25	3,787.10	3,786.25	11.69	82.53	121.64	1,367.54	-10,152.92	10,282.71	10,188.50	94.21	109.148					
3,700.00	3,699.22	3,887.08	3,886.22	12.05	85.02	121.65	1,367.54	-10,152.92	10,283.86	10,186.80	97.06	105.951					
3,800.00	3,799.20	3,987.05	3,986.20	12.41	87.52	121.66	1,367.54	-10,152.92	10,285.01	10,185.09	99.92	102.936					
3,900.00	3,899.17	4,090.27	4,089.36	12.77	90.09	121.69	1,371.26	-10,152.92	10,286.68	10,183.83	102.85	100.015					
4,000.00	3,999.15	4,193.62	4,192.69	13.13	92.67	121.70	1,370.91	-10,152.92	10,287.78	10,181.99	105.79	97.247					
4,100.00	4,099.13	4,296.98	4,296.04	13.49	95.25	121.70	1,370.32	-10,152.92	10,288.85	10,180.13	108.73	94.629					
4,200.00	4,199.10	4,400.36	4,399.41	13.85	97.83	121.71	1,369.49	-10,152.92	10,289.89	10,178.23	111.67	92.148					
4,300.00	4,299.08	4,503.76	4,502.79	14.21	100.41	121.72	1,368.43	-10,152.92	10,290.90	10,176.29	114.61	89.793					
4,400.00	4,399.05	4,587.31	4,586.05	14.57	102.50	121.72	1,367.54	-10,152.92	10,291.91	10,174.85	117.06	87.918					
4,500.00	4,499.03	4,687.29	4,686.03	14.93	105.11	121.73	1,367.54	-10,152.92	10,293.07	10,173.04	120.03	85.756					
4,600.00	4,599.01	4,787.26	4,786.01	15.29	107.71	121.74	1,367.54	-10,152.92	10,294.22	10,171.23	122.99	83.699					
4,700.00	4,698.98	4,887.26	4,885.98	15.65	110.32	121.76	1,369.58	-10,152.92	10,295.66	10,169.70	125.95	81.741					
4,800.00	4,798.96	4,993.79	4,992.50	16.01	113.09	121.77	1,369.34	-10,152.92	10,296.78	10,167.69	129.09	79.765					
4,900.00	4,898.93	5,100.36	5,099.05	16.37	115.87	121.78	1,368.62	-10,152.92	10,297.84	10,165.61	132.22	77.881					
5,000.00	4,998.91	5,206.96	5,205.63	16.73	118.64	121.78	1,367.42	-10,152.92	10,298.83	10,163.47	135.36	76.084					

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD											Offset Site Error:	0.00 usft
Survey Program: 400-A027Ua_INC-ONLY											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
5,100.00	5,098.89	5,287.39	5,285.89	17.09	120.93	121.79	1,367.54	-10,152.92	10,299.98	10,161.97	138.01	74.632
5,200.00	5,198.86	5,387.37	5,385.86	17.45	123.75	121.80	1,367.54	-10,152.92	10,301.14	10,159.95	141.19	72.959
5,300.00	5,298.84	5,487.34	5,485.84	17.81	126.57	121.81	1,367.54	-10,152.92	10,302.29	10,157.92	144.37	71.359
5,400.00	5,398.81	5,587.32	5,585.81	18.17	129.40	121.82	1,367.54	-10,152.92	10,303.45	10,155.89	147.55	69.828
5,500.00	5,498.79	5,687.30	5,685.79	18.53	132.22	121.83	1,367.54	-10,152.92	10,304.60	10,153.87	150.74	68.362
5,600.00	5,598.77	5,787.27	5,785.77	18.89	135.04	121.84	1,367.54	-10,152.92	10,305.76	10,151.84	153.92	66.957
5,700.00	5,698.74	5,887.25	5,885.74	19.25	137.86	121.85	1,367.54	-10,152.92	10,306.91	10,149.82	157.10	65.608
5,800.00	5,798.72	5,990.38	5,988.78	19.61	140.77	121.89	1,372.76	-10,152.92	10,308.82	10,148.45	160.37	64.282
5,900.00	5,898.69	6,093.77	6,092.15	19.97	143.69	121.90	1,372.42	-10,152.92	10,309.93	10,146.28	163.65	63.001
6,000.00	5,998.67	6,197.17	6,195.54	20.33	146.61	121.91	1,371.85	-10,152.92	10,311.01	10,144.08	166.92	61.771
6,100.00	6,098.65	6,300.59	6,298.94	20.69	149.53	121.92	1,371.05	-10,152.92	10,312.05	10,141.85	170.20	60.587
6,200.00	6,198.62	6,404.03	6,402.36	21.05	152.44	121.92	1,370.01	-10,152.92	10,313.07	10,139.58	173.48	59.447
6,300.00	6,298.60	6,507.49	6,505.79	21.41	155.36	121.92	1,368.73	-10,152.92	10,314.05	10,137.29	176.76	58.350
6,400.00	6,398.57	6,610.96	6,609.23	21.77	158.28	121.93	1,367.23	-10,152.92	10,315.00	10,134.96	180.04	57.292
6,500.00	6,498.55	6,687.80	6,685.55	22.13	160.58	121.94	1,367.54	-10,152.92	10,316.17	10,133.48	182.70	56.467
6,531.56	6,530.10	6,719.36	6,717.10	22.25	161.51	121.94	1,367.54	-10,152.92	10,316.54	10,132.80	183.74	56.148
6,550.00	6,548.53	6,737.79	6,735.53	22.31	162.05	160.30	1,367.54	-10,152.92	10,317.02	10,132.67	184.35	55.964 ES
6,600.00	6,598.36	6,787.62	6,785.36	22.49	163.52	178.54	1,367.54	-10,152.92	10,320.97	10,134.97	186.00	55.490
6,650.00	6,647.74	6,836.99	6,834.74	22.67	164.98	-177.46	1,367.54	-10,152.92	10,328.77	10,141.15	187.63	55.049
6,700.00	6,696.35	6,885.60	6,883.35	22.84	166.41	-175.64	1,367.54	-10,152.92	10,340.39	10,151.16	189.23	54.644
6,750.00	6,743.90	6,933.16	6,930.90	23.01	167.82	-174.51	1,367.54	-10,152.92	10,355.74	10,164.94	190.80	54.275
6,800.00	6,790.11	6,979.36	6,977.11	23.18	169.18	-173.65	1,367.54	-10,152.92	10,374.74	10,182.41	192.32	53.944
6,850.00	6,834.67	7,023.92	7,021.67	23.35	170.50	-172.90	1,367.54	-10,152.92	10,397.26	10,203.46	193.79	53.652
6,900.00	6,877.32	7,066.58	7,064.32	23.51	171.76	-172.18	1,367.54	-10,152.92	10,423.16	10,227.97	195.19	53.400
6,950.00	6,917.80	7,107.05	7,104.80	23.68	172.95	-171.42	1,367.54	-10,152.92	10,452.30	10,255.78	196.52	53.188
7,000.00	6,955.85	7,145.10	7,142.85	23.85	174.07	-170.57	1,367.54	-10,152.92	10,484.48	10,286.72	197.76	53.016
7,050.00	6,991.24	7,180.50	7,178.24	24.03	175.12	-169.59	1,367.54	-10,152.92	10,519.51	10,320.60	198.91	52.885
7,100.00	7,023.76	7,213.01	7,210.76	24.22	176.08	-168.41	1,367.54	-10,152.92	10,557.18	10,357.21	199.97	52.793
7,150.00	7,053.20	7,242.45	7,240.20	24.42	176.95	-166.94	1,367.54	-10,152.92	10,597.25	10,396.33	200.93	52.742
7,200.00	7,079.37	7,268.63	7,266.37	24.63	177.72	-165.05	1,367.54	-10,152.92	10,639.48	10,437.71	201.77	52.731 SF
7,250.00	7,102.13	7,291.73	7,289.37	24.86	178.40	-162.44	1,373.58	-10,152.92	10,684.46	10,481.94	202.51	52.759
7,300.00	7,121.32	7,311.70	7,309.33	25.10	178.99	-158.89	1,373.57	-10,152.92	10,730.20	10,527.05	203.15	52.819
7,350.00	7,136.84	7,327.83	7,325.47	25.35	179.47	-153.63	1,373.55	-10,152.92	10,777.29	10,573.63	203.66	52.917
7,400.00	7,148.58	7,340.05	7,337.68	25.62	179.83	-145.26	1,373.54	-10,152.92	10,825.44	10,621.39	204.05	53.052
7,450.00	7,156.47	7,348.25	7,345.88	25.90	180.07	-130.94	1,373.52	-10,152.92	10,874.34	10,670.03	204.31	53.224
7,500.00	7,160.47	7,352.41	7,350.04	26.20	180.19	-106.50	1,373.52	-10,152.92	10,923.70	10,719.25	204.45	53.431
7,526.22	7,161.00	7,352.96	7,350.59	26.36	180.21	-89.93	1,373.51	-10,152.92	10,949.67	10,745.20	204.47	53.553
7,600.00	7,160.97	7,352.93	7,350.56	26.83	180.21	-89.93	1,373.51	-10,152.92	11,022.75	10,818.27	204.47	53.908
7,700.00	7,160.93	7,352.89	7,350.52	27.53	180.20	-89.93	1,373.51	-10,152.92	11,121.81	10,917.33	204.48	54.390
7,800.00	7,160.89	7,352.85	7,350.48	28.32	180.20	-89.93	1,373.51	-10,152.92	11,220.90	11,016.40	204.50	54.871
7,900.00	7,160.85	7,352.80	7,350.43	29.16	180.20	-89.93	1,373.51	-10,152.92	11,320.00	11,115.49	204.51	55.351
8,000.00	7,160.81	7,352.76	7,350.39	30.07	180.20	-89.92	1,373.51	-10,152.92	11,419.12	11,214.59	204.53	55.831
8,100.00	7,160.77	7,352.72	7,350.35	31.04	180.20	-89.92	1,373.51	-10,152.92	11,518.25	11,313.70	204.55	56.310
8,200.00	7,160.73	7,352.68	7,350.31	32.06	180.20	-89.92	1,373.51	-10,152.92	11,617.40	11,412.83	204.57	56.788
8,300.00	7,160.69	7,352.63	7,350.26	33.12	180.20	-89.92	1,373.51	-10,152.92	11,716.56	11,511.97	204.60	57.266
8,400.00	7,160.65	7,352.59	7,350.22	34.23	180.20	-89.92	1,373.52	-10,152.92	11,815.74	11,611.11	204.63	57.743
8,500.00	7,160.60	7,352.55	7,350.18	35.37	180.19	-89.92	1,373.52	-10,152.92	11,914.93	11,710.28	204.66	58.219
8,600.00	7,160.56	7,352.51	7,350.14	36.55	180.19	-89.91	1,373.52	-10,152.92	12,014.14	11,809.45	204.69	58.695
8,700.00	7,160.52	7,352.47	7,350.10	37.76	180.19	-89.91	1,373.52	-10,152.92	12,113.35	11,908.63	204.72	59.170
8,800.00	7,160.48	7,352.42	7,350.05	38.99	180.19	-89.91	1,373.52	-10,152.92	12,212.58	12,007.83	204.76	59.645
8,900.00	7,160.44	7,352.38	7,350.01	40.26	180.19	-89.91	1,373.52	-10,152.92	12,311.82	12,107.03	204.79	60.119
9,000.00	7,160.40	7,352.34	7,349.97	41.54	180.19	-89.91	1,373.52	-10,152.92	12,411.08	12,206.25	204.83	60.592

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD													Offset Site Error:	0.00 usft
Survey Program:		400-A027Ua_INC-ONLY						Rule Assigned:					Offset Well Error:	0.00 usft
Measured Depth	Reference	Offset	Semi Major Axis		Highside Toolface	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)		Offset (usft)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
9,100.00	7,160.36	7,352.30	7,349.93	42.85	180.19	-89.91	1,373.52	-10,152.92	12,510.34	12,305.47	204.87	61.065		
9,200.00	7,160.32	7,352.25	7,349.88	44.18	180.19	-89.90	1,373.52	-10,152.92	12,609.62	12,404.71	204.91	61.537		
9,300.00	7,160.28	7,352.21	7,349.84	45.53	180.18	-89.90	1,373.52	-10,152.92	12,708.91	12,503.96	204.96	62.008		
9,400.00	7,160.24	7,352.17	7,349.80	46.89	180.18	-89.90	1,373.52	-10,152.92	12,808.21	12,603.21	205.00	62.479		
9,500.00	7,160.20	7,352.13	7,349.76	48.26	180.18	-89.90	1,373.52	-10,152.92	12,907.52	12,702.47	205.05	62.949		
9,600.00	7,160.16	7,352.09	7,349.71	49.65	180.18	-89.90	1,373.52	-10,152.92	13,006.84	12,801.75	205.10	63.418		
9,700.00	7,160.12	7,352.04	7,349.67	51.05	180.18	-89.90	1,373.52	-10,152.92	13,106.18	12,901.03	205.15	63.887		
9,800.00	7,160.08	7,352.00	7,349.63	52.47	180.18	-89.89	1,373.52	-10,152.92	13,205.52	13,000.32	205.20	64.356		
9,900.00	7,160.04	7,351.96	7,349.59	53.89	180.18	-89.89	1,373.52	-10,152.92	13,304.87	13,099.62	205.25	64.823		
10,000.00	7,160.00	7,351.92	7,349.55	55.33	180.18	-89.89	1,373.52	-10,152.92	13,404.23	13,198.93	205.30	65.291		
10,100.00	7,159.95	7,351.87	7,349.50	56.77	180.17	-89.89	1,373.52	-10,152.92	13,503.60	13,298.25	205.36	65.757		
10,200.00	7,159.91	7,351.83	7,349.46	58.22	180.17	-89.89	1,373.52	-10,152.92	13,602.98	13,397.57	205.41	66.223		
10,300.00	7,159.87	7,351.79	7,349.42	59.68	180.17	-89.89	1,373.52	-10,152.92	13,702.37	13,496.90	205.47	66.688		
10,400.00	7,159.83	7,351.75	7,349.38	61.15	180.17	-89.88	1,373.52	-10,152.92	13,801.77	13,596.24	205.53	67.153		
10,500.00	7,159.79	7,351.70	7,349.33	62.62	180.17	-89.88	1,373.52	-10,152.92	13,901.18	13,695.59	205.59	67.617		
10,600.00	7,159.75	7,351.66	7,349.29	64.10	180.17	-89.88	1,373.52	-10,152.92	14,000.59	13,794.94	205.65	68.081		
10,700.00	7,159.71	7,351.62	7,349.25	65.58	180.17	-89.88	1,373.52	-10,152.92	14,100.01	13,894.30	205.71	68.544		
10,800.00	7,159.67	7,351.58	7,349.21	67.07	180.17	-89.88	1,373.52	-10,152.92	14,199.44	13,993.67	205.77	69.006		
10,900.00	7,159.63	7,351.54	7,349.17	68.57	180.16	-89.88	1,373.52	-10,152.92	14,298.88	14,093.05	205.84	69.468		
11,000.00	7,159.59	7,351.49	7,349.12	70.07	180.16	-89.88	1,373.52	-10,152.92	14,398.33	14,192.43	205.90	69.929		
11,100.00	7,159.55	7,351.45	7,349.08	71.57	180.16	-89.87	1,373.52	-10,152.92	14,497.79	14,291.82	205.97	70.389		
11,200.00	7,159.51	7,351.41	7,349.04	73.08	180.16	-89.87	1,373.52	-10,152.92	14,597.25	14,391.22	206.03	70.849		
11,300.00	7,159.47	7,351.37	7,349.00	74.59	180.16	-89.87	1,373.52	-10,152.92	14,696.72	14,490.62	206.10	71.309		
11,400.00	7,159.43	7,351.32	7,348.95	76.11	180.16	-89.87	1,373.52	-10,152.92	14,796.19	14,590.03	206.17	71.768		
11,500.00	7,159.39	7,351.28	7,348.91	77.63	180.16	-89.87	1,373.52	-10,152.92	14,895.68	14,689.44	206.24	72.226		
11,600.00	7,159.35	7,351.24	7,348.87	79.15	180.16	-89.87	1,373.52	-10,152.92	14,995.17	14,788.86	206.31	72.683		
11,638.27	7,159.33	7,351.22	7,348.85	79.73	180.16	-89.86	1,373.52	-10,152.92	15,033.25	14,826.91	206.33	72.858		
11,640.51	7,159.33	7,351.22	7,348.85	79.77	180.16	-89.86	1,373.52	-10,152.92	15,035.48	14,829.14	206.34	72.869		
11,700.00	7,159.30	7,351.20	7,348.83	80.68	180.15	-89.86	1,373.52	-10,152.92	15,094.66	14,888.28	206.38	73.141		
11,800.00	7,159.26	7,351.15	7,348.78	82.20	180.15	-89.86	1,373.52	-10,152.92	15,194.16	14,987.71	206.45	73.597		
11,900.00	7,159.22	7,351.11	7,348.74	83.74	180.15	-89.86	1,373.52	-10,152.92	15,293.67	15,087.15	206.52	74.053		
12,000.00	7,159.18	7,351.07	7,348.70	85.27	180.15	-89.86	1,373.52	-10,152.92	15,393.18	15,186.58	206.60	74.508		
12,100.00	7,159.14	7,351.03	7,348.66	86.81	180.15	-89.86	1,373.52	-10,152.92	15,492.70	15,286.03	206.67	74.963		
12,200.00	7,159.10	7,350.98	7,348.61	88.35	180.15	-89.86	1,373.52	-10,152.92	15,592.23	15,385.48	206.75	75.417		
12,300.00	7,159.06	7,350.94	7,348.57	89.89	180.15	-89.85	1,373.52	-10,152.92	15,691.76	15,484.93	206.82	75.870		
12,400.00	7,159.02	7,350.90	7,348.53	91.43	180.15	-89.85	1,373.52	-10,152.92	15,791.29	15,584.39	206.90	76.323		
12,500.00	7,158.98	7,350.86	7,348.49	92.98	180.14	-89.85	1,373.52	-10,152.92	15,890.84	15,683.86	206.98	76.776		
12,600.00	7,158.94	7,350.81	7,348.44	94.52	180.14	-89.85	1,373.52	-10,152.92	15,990.39	15,783.33	207.06	77.228		
12,700.00	7,158.90	7,350.77	7,348.40	96.07	180.14	-89.85	1,373.52	-10,152.92	16,089.94	15,882.81	207.13	77.679		
12,800.00	7,158.86	7,350.73	7,348.36	97.62	180.14	-89.85	1,373.52	-10,152.92	16,189.50	15,982.29	207.21	78.130		
12,900.00	7,158.81	7,350.69	7,348.32	99.17	180.14	-89.84	1,373.52	-10,152.92	16,289.07	16,081.77	207.29	78.580		
13,000.00	7,158.77	7,350.64	7,348.27	100.73	180.14	-89.84	1,373.52	-10,152.92	16,388.64	16,181.26	207.37	79.029		
13,100.00	7,158.73	7,350.60	7,348.23	102.28	180.14	-89.84	1,373.52	-10,152.92	16,488.21	16,280.76	207.46	79.478		
13,200.00	7,158.69	7,350.56	7,348.19	103.84	180.14	-89.84	1,373.52	-10,152.92	16,587.79	16,380.25	207.54	79.926		
13,300.00	7,158.65	7,350.52	7,348.15	105.40	180.13	-89.84	1,373.52	-10,152.92	16,687.38	16,479.76	207.62	80.374		
13,400.00	7,158.61	7,350.47	7,348.10	106.96	180.13	-89.84	1,373.52	-10,152.92	16,786.97	16,579.27	207.70	80.821		
13,500.00	7,158.57	7,350.43	7,348.06	108.52	180.13	-89.83	1,373.52	-10,152.92	16,886.56	16,678.78	207.79	81.268		
13,600.00	7,158.53	7,350.39	7,348.02	110.08	180.13	-89.83	1,373.52	-10,152.92	16,986.17	16,778.29	207.87	81.714		
13,700.00	7,158.49	7,350.35	7,347.98	111.64	180.13	-89.83	1,373.52	-10,152.92	17,085.77	16,877.81	207.96	82.160		
13,800.00	7,158.45	7,350.30	7,347.93	113.21	180.13	-89.83	1,373.52	-10,152.92	17,185.38	16,977.34	208.04	82.605		
13,900.00	7,158.41	7,350.26	7,347.89	114.77	180.13	-89.83	1,373.52	-10,152.92	17,284.99	17,076.86	208.13	83.049		
14,000.00	7,158.37	7,350.22	7,347.85	116.34	180.13	-89.83	1,373.52	-10,152.92	17,384.61	17,176.40	208.22	83.493		

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD												Offset Site Error:	0.00 usft
Survey Program:		400-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)
14,100.00	7,158.32	7,350.18	7,347.81	117.91	180.12	-89.82	1,373.52	-10,152.92	17,484.24	17,275.93	208.30	83.936	
14,200.00	7,158.28	7,350.13	7,347.76	119.47	180.12	-89.82	1,373.52	-10,152.92	17,583.86	17,375.47	208.39	84.379	
14,300.00	7,158.24	7,350.09	7,347.72	121.04	180.12	-89.82	1,373.52	-10,152.92	17,683.49	17,475.01	208.48	84.821	
14,400.00	7,158.20	7,350.05	7,347.68	122.61	180.12	-89.82	1,373.52	-10,152.92	17,783.13	17,574.56	208.57	85.262	
14,500.00	7,158.16	7,350.00	7,347.63	124.18	180.12	-89.82	1,373.52	-10,152.92	17,882.77	17,674.11	208.66	85.703	
14,600.00	7,158.12	7,349.96	7,347.59	125.76	180.12	-89.82	1,373.52	-10,152.92	17,982.41	17,773.66	208.75	86.144	
14,700.00	7,158.08	7,349.92	7,347.55	127.33	180.12	-89.81	1,373.52	-10,152.92	18,082.06	17,873.22	208.84	86.584	
14,800.00	7,158.04	7,349.88	7,347.51	128.90	180.12	-89.81	1,373.52	-10,152.92	18,181.71	17,972.78	208.93	87.023	
14,900.00	7,158.00	7,349.83	7,347.46	130.47	180.11	-89.81	1,373.52	-10,152.92	18,281.37	18,072.34	209.02	87.461	
15,000.00	7,157.96	7,349.79	7,347.42	132.05	180.11	-89.81	1,373.52	-10,152.92	18,381.03	18,171.91	209.11	87.900	
15,100.00	7,157.92	7,349.75	7,347.38	133.62	180.11	-89.81	1,373.52	-10,152.92	18,480.69	18,271.48	209.21	88.337	
15,200.00	7,157.88	7,349.71	7,347.34	135.20	180.11	-89.81	1,373.52	-10,152.92	18,580.35	18,371.06	209.30	88.774	
15,300.00	7,157.83	7,349.66	7,347.29	136.78	180.11	-89.81	1,373.52	-10,152.92	18,680.02	18,470.63	209.39	89.211	
15,400.00	7,157.79	7,349.62	7,347.25	138.35	180.11	-89.80	1,373.52	-10,152.92	18,779.70	18,570.21	209.49	89.646	
15,500.00	7,157.75	7,349.58	7,347.21	139.93	180.11	-89.80	1,373.52	-10,152.92	18,879.37	18,669.79	209.58	90.082	
15,600.00	7,157.71	7,349.54	7,347.17	141.51	180.11	-89.80	1,373.52	-10,152.92	18,979.05	18,769.38	209.68	90.516	
15,700.00	7,157.67	7,349.49	7,347.12	143.09	180.10	-89.80	1,373.52	-10,152.92	19,078.74	18,868.97	209.77	90.951	
15,800.00	7,157.63	7,349.45	7,347.08	144.67	180.10	-89.80	1,373.52	-10,152.92	19,178.43	18,968.56	209.87	91.384	
15,900.00	7,157.59	7,349.41	7,347.04	146.24	180.10	-89.80	1,373.52	-10,152.92	19,278.12	19,068.15	209.96	91.817	
16,000.00	7,157.55	7,349.37	7,347.00	147.82	180.10	-89.79	1,373.52	-10,152.92	19,377.81	19,167.75	210.06	92.250	
16,100.00	7,157.51	7,349.32	7,346.95	149.41	180.10	-89.79	1,373.52	-10,152.92	19,477.50	19,267.35	210.16	92.682	
16,200.00	7,157.47	7,349.28	7,346.91	150.99	180.10	-89.79	1,373.52	-10,152.92	19,577.20	19,366.95	210.25	93.113	
16,300.00	7,157.43	7,349.24	7,346.87	152.57	180.10	-89.79	1,373.52	-10,152.92	19,676.91	19,466.56	210.35	93.544	
16,400.00	7,157.38	7,349.20	7,346.83	154.15	180.10	-89.79	1,373.52	-10,152.92	19,776.61	19,566.16	210.45	93.974	
16,500.00	7,157.34	7,349.15	7,346.78	155.73	180.09	-89.79	1,373.52	-10,152.92	19,876.32	19,665.77	210.55	94.403	
16,600.00	7,157.30	7,349.11	7,346.74	157.31	180.09	-89.78	1,373.52	-10,152.92	19,976.03	19,765.39	210.65	94.833	
16,680.84	7,157.27	7,349.08	7,346.71	158.59	180.09	-89.78	1,373.52	-10,152.92	20,056.64	19,845.92	210.73	95.179	
16,687.46	7,157.27	7,349.07	7,346.70	158.70	180.09	-89.79	1,373.52	-10,152.92	20,063.24	19,852.51	210.73	95.207	
16,700.00	7,157.26	7,349.07	7,346.70	158.90	180.09	-89.79	1,373.52	-10,152.92	20,075.75	19,865.00	210.74	95.261	
16,800.00	7,157.22	7,349.03	7,346.66	160.48	180.09	-89.78	1,373.52	-10,152.92	20,175.45	19,964.61	210.84	95.689	
16,900.00	7,157.18	7,348.98	7,346.61	162.06	180.09	-89.78	1,373.52	-10,152.92	20,275.17	20,064.22	210.94	96.116	
17,000.00	7,157.14	7,348.94	7,346.57	163.65	180.09	-89.78	1,373.52	-10,152.92	20,374.88	20,163.83	211.05	96.543	
17,100.00	7,157.10	7,348.90	7,346.53	165.23	180.09	-89.78	1,373.52	-10,152.92	20,474.60	20,263.45	211.15	96.969	
17,200.00	7,157.06	7,348.85	7,346.48	166.82	180.09	-89.78	1,373.52	-10,152.92	20,574.32	20,363.07	211.25	97.394	
17,300.00	7,157.02	7,348.81	7,346.44	168.40	180.08	-89.78	1,373.52	-10,152.92	20,674.04	20,462.69	211.35	97.819	
17,400.00	7,156.98	7,348.77	7,346.40	169.99	180.08	-89.78	1,373.52	-10,152.92	20,773.76	20,562.31	211.45	98.244	
17,500.00	7,156.94	7,348.73	7,346.36	171.57	180.08	-89.77	1,373.52	-10,152.92	20,873.49	20,661.94	211.55	98.667	
17,600.00	7,156.90	7,348.68	7,346.31	173.16	180.08	-89.77	1,373.52	-10,152.92	20,973.22	20,761.56	211.66	99.091	
17,700.00	7,156.85	7,348.64	7,346.27	174.75	180.08	-89.77	1,373.52	-10,152.92	21,072.95	20,861.19	211.76	99.513	
17,800.00	7,156.81	7,348.60	7,346.23	176.33	180.08	-89.77	1,373.52	-10,152.92	21,172.69	20,960.83	211.86	99.936	
17,900.00	7,156.77	7,348.56	7,346.19	177.92	180.08	-89.77	1,373.52	-10,152.92	21,272.43	21,060.46	211.97	100.357	
18,000.00	7,156.73	7,348.51	7,346.14	179.51	180.08	-89.77	1,373.52	-10,152.92	21,372.17	21,160.10	212.07	100.778	
18,100.00	7,156.69	7,348.47	7,346.10	181.09	180.07	-89.76	1,373.52	-10,152.92	21,471.91	21,259.73	212.18	101.199	
18,200.00	7,156.65	7,348.43	7,346.06	182.68	180.07	-89.76	1,373.52	-10,152.92	21,571.66	21,359.37	212.28	101.619	
18,300.00	7,156.61	7,348.38	7,346.01	184.27	180.07	-89.76	1,373.52	-10,152.92	21,671.40	21,459.02	212.39	102.038	
18,400.00	7,156.57	7,348.34	7,345.97	185.86	180.07	-89.76	1,373.52	-10,152.92	21,771.15	21,558.66	212.49	102.457	
18,500.00	7,156.53	7,348.30	7,345.93	187.45	180.07	-89.76	1,373.52	-10,152.92	21,870.90	21,658.31	212.60	102.875	
18,600.00	7,156.49	7,348.26	7,345.89	189.03	180.07	-89.76	1,373.52	-10,152.92	21,970.66	21,757.96	212.70	103.293	
18,700.00	7,156.45	7,348.21	7,345.84	190.62	180.07	-89.75	1,373.52	-10,152.92	22,070.42	21,857.61	212.81	103.710	
18,800.00	7,156.41	7,348.17	7,345.80	192.21	180.07	-89.75	1,373.52	-10,152.92	22,170.17	21,957.26	212.92	104.126	
18,900.00	7,156.37	7,348.13	7,345.76	193.80	180.06	-89.75	1,373.52	-10,152.92	22,269.93	22,056.91	213.02	104.542	
19,000.00	7,156.32	7,348.09	7,345.72	195.39	180.06	-89.75	1,373.52	-10,152.92	22,369.70	22,156.57	213.13	104.958	

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD												Offset Site Error:	0.00 usft
Survey Program:		400-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)
19,100.00	7,156.28	7,348.04	7,345.67	196.98	180.06	-89.75	1,373.52	-10,152.92	22,469.46	22,256.22	213.24	105.373	
19,200.00	7,156.24	7,348.00	7,345.63	198.57	180.06	-89.75	1,373.52	-10,152.92	22,569.23	22,355.88	213.35	105.787	
19,300.00	7,156.20	7,347.96	7,345.59	200.16	180.06	-89.74	1,373.52	-10,152.92	22,669.00	22,455.55	213.45	106.201	
19,400.00	7,156.16	7,347.91	7,345.55	201.75	180.06	-89.74	1,373.52	-10,152.92	22,768.77	22,555.21	213.56	106.614	
19,500.00	7,156.12	7,347.87	7,345.50	203.34	180.06	-89.74	1,373.52	-10,152.92	22,868.54	22,654.87	213.67	107.027	
19,600.00	7,156.08	7,347.83	7,345.46	204.93	180.06	-89.74	1,373.52	-10,152.92	22,968.32	22,754.54	213.78	107.439	
19,700.00	7,156.04	7,347.79	7,345.42	206.52	180.05	-89.74	1,373.52	-10,152.92	23,068.10	22,854.21	213.89	107.851	
19,800.00	7,156.00	7,347.74	7,345.37	208.11	180.05	-89.74	1,373.52	-10,152.92	23,167.88	22,953.88	214.00	108.262	
19,900.00	7,155.96	7,347.70	7,345.33	209.71	180.05	-89.74	1,373.52	-10,152.92	23,267.66	23,053.55	214.11	108.672	
20,000.00	7,155.92	7,347.66	7,345.29	211.30	180.05	-89.73	1,373.52	-10,152.92	23,367.44	23,153.22	214.22	109.082	
20,100.00	7,155.88	7,347.62	7,345.25	212.89	180.05	-89.73	1,373.52	-10,152.92	23,467.22	23,252.89	214.33	109.491	
20,200.00	7,155.84	7,347.57	7,345.20	214.48	180.05	-89.73	1,373.52	-10,152.92	23,567.01	23,352.57	214.44	109.900	
20,300.00	7,155.79	7,347.53	7,345.16	216.07	180.05	-89.73	1,373.52	-10,152.92	23,666.80	23,452.25	214.55	110.308	
20,400.00	7,155.75	7,347.49	7,345.12	217.66	180.05	-89.73	1,373.52	-10,152.92	23,766.59	23,551.93	214.66	110.716	
20,500.00	7,155.71	7,347.45	7,345.08	219.26	180.04	-89.73	1,373.52	-10,152.92	23,866.38	23,651.61	214.77	111.123	
20,600.00	7,155.67	7,347.40	7,345.03	220.85	180.04	-89.72	1,373.52	-10,152.92	23,966.17	23,751.29	214.89	111.530	
20,700.00	7,155.63	7,347.36	7,344.99	222.44	180.04	-89.72	1,373.52	-10,152.92	24,065.97	23,850.97	215.00	111.936	
20,800.00	7,155.59	7,347.32	7,344.95	224.03	180.04	-89.72	1,373.52	-10,152.92	24,165.77	23,950.66	215.11	112.342	
20,900.00	7,155.55	7,347.27	7,344.91	225.63	180.04	-89.72	1,373.52	-10,152.92	24,265.57	24,050.34	215.22	112.746	
21,000.00	7,155.51	7,347.23	7,344.86	227.22	180.04	-89.72	1,373.52	-10,152.92	24,365.37	24,150.03	215.34	113.151	
21,100.00	7,155.47	7,347.19	7,344.82	228.81	180.04	-89.72	1,373.52	-10,152.92	24,465.17	24,249.72	215.45	113.555	
21,200.00	7,155.43	7,347.15	7,344.78	230.40	180.04	-89.71	1,373.52	-10,152.92	24,564.97	24,349.41	215.56	113.958	
21,300.00	7,155.39	7,347.10	7,344.73	232.00	180.03	-89.71	1,373.52	-10,152.92	24,664.78	24,449.10	215.67	114.361	
21,400.00	7,155.35	7,347.06	7,344.69	233.59	180.03	-89.71	1,373.52	-10,152.92	24,764.58	24,548.79	215.79	114.763	
21,500.00	7,155.31	7,347.02	7,344.65	235.18	180.03	-89.71	1,373.52	-10,152.92	24,864.39	24,648.49	215.90	115.165	
21,600.00	7,155.26	7,346.98	7,344.61	236.78	180.03	-89.71	1,373.52	-10,152.92	24,964.20	24,748.18	216.02	115.566	
21,700.00	7,155.22	7,346.93	7,344.56	238.37	180.03	-89.71	1,373.52	-10,152.92	25,064.01	24,847.88	216.13	115.967	
21,800.00	7,155.18	7,346.89	7,344.52	239.96	180.03	-89.71	1,373.52	-10,152.92	25,163.83	24,947.58	216.25	116.367	
21,900.00	7,155.14	7,346.85	7,344.48	241.56	180.03	-89.70	1,373.52	-10,152.92	25,263.64	25,047.28	216.36	116.766	
21,953.88	7,155.12	7,346.82	7,344.46	242.42	180.03	-89.70	1,373.52	-10,152.92	25,317.42	25,101.00	216.42	116.981	
22,000.00	7,155.10	7,346.81	7,344.44	243.15	180.03	-89.64	1,373.52	-10,152.92	25,363.47	25,146.99	216.48	117.165	
22,019.01	7,155.09	7,346.80	7,344.43	243.46	180.03	-89.61	1,373.52	-10,152.92	25,382.45	25,165.96	216.50	117.242	
22,100.00	7,155.06	7,346.76	7,344.39	244.75	180.02	-89.61	1,373.52	-10,152.92	25,463.34	25,246.76	216.59	117.566	
22,200.00	7,155.02	7,346.72	7,344.35	246.34	180.02	-89.61	1,373.52	-10,152.92	25,563.22	25,346.52	216.70	117.965	
22,300.00	7,154.97	7,346.68	7,344.31	247.94	180.02	-89.61	1,373.53	-10,152.92	25,663.11	25,446.29	216.81	118.364	
22,400.00	7,154.93	7,346.64	7,344.27	249.53	180.02	-89.61	1,373.53	-10,152.92	25,762.99	25,546.06	216.93	118.763	
22,500.00	7,154.89	7,346.59	7,344.22	251.13	180.02	-89.60	1,373.53	-10,152.92	25,862.87	25,645.83	217.04	119.161	
22,600.00	7,154.85	7,346.55	7,344.18	252.72	180.02	-89.60	1,373.53	-10,152.92	25,962.75	25,745.60	217.16	119.558	
22,700.00	7,154.80	7,346.51	7,344.14	254.32	180.02	-89.60	1,373.53	-10,152.92	26,062.64	25,845.37	217.27	119.955	
22,800.00	7,154.76	7,346.47	7,344.10	255.91	180.02	-89.60	1,373.53	-10,152.92	26,162.53	25,945.14	217.38	120.351	
22,900.00	7,154.72	7,346.42	7,344.05	257.51	180.01	-89.60	1,373.53	-10,152.92	26,262.41	26,044.91	217.50	120.747	
23,000.00	7,154.68	7,346.38	7,344.01	259.11	180.01	-89.59	1,373.53	-10,152.92	26,362.30	26,144.68	217.61	121.142	
23,100.00	7,154.63	7,346.34	7,343.97	260.70	180.01	-89.59	1,373.53	-10,152.92	26,462.19	26,244.46	217.73	121.537	
23,200.00	7,154.59	7,346.30	7,343.93	262.30	180.01	-89.59	1,373.53	-10,152.92	26,562.08	26,344.23	217.84	121.931	
23,300.00	7,154.55	7,346.25	7,343.88	263.89	180.01	-89.59	1,373.53	-10,152.92	26,661.97	26,444.01	217.96	122.325	
23,400.00	7,154.51	7,346.21	7,343.84	265.49	180.01	-89.59	1,373.53	-10,152.92	26,761.86	26,543.78	218.08	122.718	
23,500.00	7,154.47	7,346.17	7,343.80	267.08	180.01	-89.58	1,373.53	-10,152.92	26,861.75	26,643.56	218.19	123.110	
23,600.00	7,154.42	7,346.13	7,343.76	268.68	180.01	-89.58	1,373.53	-10,152.92	26,961.64	26,743.33	218.31	123.502	
23,700.00	7,154.38	7,346.08	7,343.71	270.28	180.00	-89.58	1,373.53	-10,152.92	27,061.53	26,843.11	218.43	123.894	
23,800.00	7,154.34	7,346.04	7,343.67	271.87	180.00	-89.58	1,373.53	-10,152.92	27,161.43	26,942.89	218.54	124.285	
23,900.00	7,154.30	7,346.00	7,343.63	273.47	180.00	-89.58	1,373.53	-10,152.92	27,261.32	27,042.66	218.66	124.675	
24,000.00	7,154.25	7,345.96	7,343.59	275.07	180.00	-89.58	1,373.53	-10,152.92	27,361.22	27,142.44	218.78	125.065	

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 836H
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 836H	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) Pre-Ongard Well #112 - OH - OH-TD											Offset Site Error: 0.00 usft	
Survey Program: 400-A027Ua_INC-ONLY											Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
24,100.00	7,154.21	7,345.91	7,343.54	276.66	180.00	-89.57	1,373.53	-10,152.92	27,461.12	27,242.22	218.89	125.454
24,200.00	7,154.17	7,345.87	7,343.50	278.26	180.00	-89.57	1,373.53	-10,152.92	27,561.01	27,342.00	219.01	125.843
24,300.00	7,154.13	7,345.83	7,343.46	279.86	180.00	-89.57	1,373.53	-10,152.92	27,660.91	27,441.78	219.13	126.231
24,400.00	7,154.08	7,345.79	7,343.42	281.45	180.00	-89.57	1,373.53	-10,152.92	27,760.81	27,541.56	219.25	126.619
24,500.00	7,154.04	7,345.74	7,343.37	283.05	179.99	-89.57	1,373.53	-10,152.92	27,860.71	27,641.34	219.37	127.006
24,597.25	7,154.00	7,345.70	7,343.33	284.60	179.99	-89.56	1,373.53	-10,152.92	27,957.86	27,738.38	219.48	127.382
24,600.00	7,154.00	7,345.70	7,343.33	284.65	179.99	-89.57	1,373.53	-10,152.92	27,960.61	27,741.12	219.48	127.393
24,700.00	7,153.96	7,345.66	7,343.29	286.24	179.99	-89.72	1,373.53	-10,152.92	28,060.46	27,840.86	219.60	127.777
24,722.47	7,153.95	7,345.65	7,343.28	286.60	179.99	-89.74	1,373.53	-10,152.92	28,082.89	27,863.25	219.63	127.863
24,800.00	7,153.92	7,345.62	7,343.25	287.84	179.99	-89.74	1,373.53	-10,152.92	28,160.25	27,940.52	219.73	128.160
24,900.00	7,153.88	7,345.57	7,343.20	289.43	179.99	-89.74	1,373.53	-10,152.92	28,260.03	28,040.18	219.85	128.542
25,000.00	7,153.84	7,345.53	7,343.16	291.03	179.99	-89.74	1,373.53	-10,152.92	28,359.81	28,139.84	219.97	128.923
25,100.00	7,153.80	7,345.49	7,343.12	292.63	179.99	-89.73	1,373.53	-10,152.92	28,459.60	28,239.50	220.10	129.304
25,200.00	7,153.77	7,345.45	7,343.08	294.22	179.99	-89.73	1,373.53	-10,152.92	28,559.38	28,339.16	220.22	129.684
25,300.00	7,153.73	7,345.41	7,343.04	295.82	179.98	-89.73	1,373.53	-10,152.92	28,659.17	28,438.83	220.35	130.064
25,400.00	7,153.69	7,345.36	7,342.99	297.41	179.98	-89.73	1,373.53	-10,152.92	28,758.96	28,538.49	220.47	130.444
25,500.00	7,153.65	7,345.32	7,342.95	299.01	179.98	-89.73	1,373.53	-10,152.92	28,858.75	28,638.16	220.59	130.822
25,600.00	7,153.61	7,345.28	7,342.91	300.60	179.98	-89.73	1,373.53	-10,152.92	28,958.55	28,737.83	220.72	131.201
25,700.00	7,153.57	7,345.24	7,342.87	302.20	179.98	-89.73	1,373.53	-10,152.92	29,058.34	28,837.50	220.84	131.579
25,800.00	7,153.53	7,345.19	7,342.83	303.80	179.98	-89.72	1,373.53	-10,152.92	29,158.14	28,937.17	220.97	131.956
25,900.00	7,153.50	7,345.15	7,342.78	305.39	179.98	-89.72	1,373.53	-10,152.92	29,257.94	29,036.84	221.09	132.333
26,000.00	7,153.46	7,345.11	7,342.74	306.99	179.98	-89.72	1,373.53	-10,152.92	29,357.73	29,136.51	221.22	132.709
26,100.00	7,153.42	7,345.07	7,342.70	308.58	179.97	-89.72	1,373.53	-10,152.92	29,457.53	29,236.19	221.34	133.085
26,200.00	7,153.38	7,345.03	7,342.66	310.18	179.97	-89.72	1,373.53	-10,152.92	29,557.33	29,335.86	221.47	133.460
26,300.00	7,153.34	7,344.98	7,342.62	311.78	179.97	-89.72	1,373.53	-10,152.92	29,657.14	29,435.54	221.60	133.835
26,400.00	7,153.30	7,344.94	7,342.57	313.37	179.97	-89.72	1,373.53	-10,152.92	29,756.94	29,535.22	221.72	134.209
26,500.00	7,153.26	7,344.90	7,342.53	314.97	179.97	-89.72	1,373.53	-10,152.92	29,856.75	29,634.90	221.85	134.582
26,600.00	7,153.23	7,344.86	7,342.49	316.57	179.97	-89.71	1,373.53	-10,152.92	29,956.55	29,734.58	221.97	134.956
26,700.00	7,153.19	7,344.82	7,342.45	318.16	179.97	-89.71	1,373.53	-10,152.92	30,056.36	29,834.26	222.10	135.328
26,800.00	7,153.15	7,344.77	7,342.40	319.76	179.97	-89.71	1,373.53	-10,152.92	30,156.17	29,933.94	222.23	135.701
26,900.00	7,153.11	7,344.73	7,342.36	321.35	179.96	-89.71	1,373.53	-10,152.92	30,255.98	30,033.63	222.35	136.072
26,976.35	7,153.08	7,344.70	7,342.33	322.57	179.96	-89.71	1,373.53	-10,152.92	30,332.18	30,109.73	222.45	136.356
27,000.00	7,153.07	7,344.69	7,342.32	322.95	179.96	-89.71	1,373.53	-10,152.92	30,355.79	30,133.31	222.48	136.443
27,100.00	7,153.03	7,344.65	7,342.28	324.55	179.96	-89.71	1,373.53	-10,152.92	30,455.60	30,233.00	222.61	136.814
27,176.36	7,153.00	7,344.62	7,342.25	325.77	179.96	-89.71	1,373.53	-10,152.92	30,531.82	30,309.12	222.70	137.097

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 836H
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 836H	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 #006C - OH - OH-SVY													Offset Site Error:	0.00 usft		
Survey Program:		100-A020Ga_GYRO-NS					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Reference 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			
0.00	0.00	3,547.93	3,103.93	0.00	88.78	-76.80	2,083.60	-8,886.24	9,581.41							
125.00	125.00	3,600.00	3,151.49	0.06	89.62	147.72	2,094.60	-8,868.12	9,544.05	9,481.50	62.55	152.594				
225.00	225.00	3,600.00	3,151.49	0.17	89.62	-145.98	2,094.60	-8,868.12	9,515.43	9,452.59	62.84	151.434				
312.00	311.99	3,643.44	3,191.38	0.28	90.23	152.72	2,103.60	-8,853.45	9,490.82	9,427.29	63.53	149.400				
400.00	399.99	3,660.15	3,206.81	0.37	90.47	152.75	2,107.00	-8,848.02	9,466.65	9,402.36	64.29	147.245				
462.00	461.99	3,700.00	3,243.80	0.50	91.04	152.82	2,114.98	-8,835.52	9,450.19	9,385.32	64.87	145.671				
509.18	509.16	3,700.00	3,243.80	0.64	91.04	127.38	2,114.98	-8,835.52	9,437.79	9,372.75	65.03	145.123				
600.00	599.96	3,700.00	3,243.80	0.94	91.04	127.38	2,114.98	-8,835.52	9,414.86	9,349.46	65.40	143.950				
700.00	699.94	3,734.78	3,276.25	1.28	91.44	127.44	2,121.79	-8,825.01	9,390.41	9,324.24	66.17	141.917				
800.00	799.92	3,800.00	3,337.35	1.63	92.21	127.55	2,134.16	-8,805.86	9,366.68	9,299.46	67.22	139.339				
900.00	899.89	3,800.00	3,337.35	1.98	92.21	127.55	2,134.16	-8,805.86	9,343.41	9,275.69	67.72	137.977				
1,000.00	999.87	3,800.00	3,337.35	2.34	92.21	127.55	2,134.16	-8,805.86	9,321.15	9,252.93	68.22	136.642				
1,100.00	1,099.84	3,860.89	3,394.95	2.69	92.78	127.65	2,144.41	-8,789.02	9,299.20	9,230.07	69.13	134.512				
1,200.00	1,199.82	3,900.00	3,432.35	3.05	93.15	127.70	2,149.88	-8,778.94	9,278.26	9,208.36	69.90	132.743				
1,300.00	1,299.80	3,900.00	3,432.35	3.41	93.15	127.70	2,149.88	-8,778.94	9,258.06	9,187.66	70.40	131.510				
1,400.00	1,399.77	3,900.00	3,432.35	3.77	93.15	127.70	2,149.88	-8,778.94	9,238.89	9,168.00	70.90	130.317				
1,500.00	1,499.75	3,946.45	3,477.12	4.13	93.44	127.76	2,155.47	-8,767.91	9,220.15	9,148.56	71.59	128.792				
1,600.00	1,599.72	4,000.00	3,529.17	4.49	93.78	127.81	2,160.99	-8,756.64	9,202.86	9,130.55	72.31	127.277				
1,700.00	1,699.70	4,000.00	3,529.17	4.85	93.78	127.81	2,160.99	-8,756.64	9,185.79	9,112.99	72.80	126.185				
1,800.00	1,799.68	4,000.00	3,529.17	5.21	93.78	127.81	2,160.99	-8,756.64	9,169.78	9,096.50	73.28	125.132				
1,900.00	1,899.65	4,000.00	3,529.17	5.57	93.78	127.81	2,160.99	-8,756.64	9,154.84	9,081.08	73.76	124.117				
2,000.00	1,999.63	4,000.00	3,529.17	5.93	93.78	127.81	2,160.99	-8,756.64	9,140.96	9,066.73	74.23	123.141				
2,100.00	2,099.60	4,058.49	3,586.44	6.29	94.00	127.87	2,166.31	-8,746.01	9,127.20	9,052.33	74.87	121.912				
2,200.00	2,199.58	4,100.00	3,627.27	6.65	94.17	127.91	2,169.89	-8,739.47	9,114.89	9,039.44	75.45	120.808				
2,300.00	2,299.56	4,100.00	3,627.27	7.01	94.17	127.91	2,169.89	-8,739.47	9,103.17	9,027.26	75.91	119.923				
2,400.00	2,399.53	4,100.00	3,627.27	7.37	94.17	127.91	2,169.89	-8,739.47	9,092.54	9,016.18	76.36	119.075				
2,500.00	2,499.51	4,152.39	3,678.97	7.73	94.30	127.95	2,174.24	-8,732.14	9,082.48	9,005.55	76.92	118.071				
2,600.00	2,599.48	4,200.00	3,726.04	8.09	94.43	127.99	2,178.07	-8,726.16	9,073.37	8,995.89	77.47	117.116				
2,700.00	2,699.46	4,200.00	3,726.04	8.45	94.43	127.99	2,178.07	-8,726.16	9,064.92	8,987.01	77.91	116.352				
2,800.00	2,799.44	4,200.00	3,726.04	8.81	94.43	127.99	2,178.07	-8,726.16	9,057.57	8,979.23	78.34	115.622				
2,900.00	2,899.41	4,248.87	3,774.51	9.17	94.51	128.02	2,181.59	-8,720.94	9,050.69	8,971.85	78.84	114.793				
3,000.00	2,999.39	4,300.00	3,825.38	9.53	94.59	128.05	2,184.51	-8,716.77	9,045.13	8,965.79	79.34	114.000				
3,100.00	3,099.36	4,300.00	3,825.38	9.89	94.59	128.05	2,184.51	-8,716.77	9,039.99	8,960.24	79.75	113.347				
3,200.00	3,199.34	4,300.00	3,825.38	10.25	94.59	128.05	2,184.51	-8,716.77	9,035.95	8,955.79	80.16	112.728				
3,300.00	3,299.32	4,350.03	3,875.26	10.61	94.64	128.08	2,186.76	-8,713.68	9,032.59	8,951.98	80.61	112.053				
3,400.00	3,399.29	4,400.00	3,925.14	10.97	94.68	128.10	2,188.53	-8,711.32	9,030.08	8,949.02	81.06	111.405				
3,500.00	3,499.27	4,400.00	3,925.14	11.33	94.68	128.10	2,188.53	-8,711.32	9,028.25	8,946.81	81.44	110.857				
3,600.00	3,599.25	4,458.06	3,983.15	11.69	94.72	128.12	2,190.01	-8,709.36	9,027.07	8,945.20	81.87	110.258				
3,700.00	3,699.22	4,500.00	4,025.07	12.05	94.75	128.13	2,190.71	-8,708.39	9,026.59	8,944.31	82.28	109.702				
3,800.00	3,799.20	4,600.00	4,125.05	12.41	94.80	128.15	2,191.97	-8,706.48	9,026.42	8,943.68	82.74	109.096				
3,871.08	3,870.26	4,656.35	4,181.38	12.66	94.84	128.16	2,192.54	-8,705.48	9,026.34	8,943.29	83.05	108.688 CC				
3,900.00	3,899.17	4,677.22	4,202.25	12.77	94.85	128.16	2,192.69	-8,705.16	9,026.35	8,943.18	83.17	108.527 ES				
4,000.00	3,999.15	4,700.00	4,225.03	13.13	94.86	128.17	2,192.82	-8,704.84	9,026.78	8,943.23	83.55	108.034				
4,100.00	4,099.13	4,766.82	4,291.85	13.49	94.90	128.18	2,192.76	-8,704.44	9,027.66	8,943.69	83.97	107.511				
4,200.00	4,199.10	4,814.59	4,339.61	13.85	94.93	128.18	2,192.27	-8,704.73	9,029.30	8,944.93	84.36	107.030				
4,300.00	4,299.08	4,904.05	4,429.06	14.21	94.98	128.18	2,190.89	-8,705.64	9,031.25	8,946.46	84.79	106.519				
4,400.00	4,399.05	5,000.00	4,524.98	14.57	95.03	128.17	2,188.91	-8,706.81	9,033.27	8,948.05	85.21	106.008				
4,500.00	4,499.03	5,073.99	4,598.93	14.93	95.08	128.17	2,186.91	-8,707.96	9,035.45	8,949.83	85.62	105.528				
4,600.00	4,599.01	5,132.24	4,657.14	15.29	95.12	128.16	2,185.03	-8,709.15	9,038.00	8,951.98	86.01	105.076				
4,700.00	4,698.98	5,200.00	4,724.84	15.65	95.16	128.15	2,182.80	-8,711.00	9,041.11	8,954.69	86.41	104.625				
4,800.00	4,798.96	5,255.88	4,780.66	16.01	95.21	128.14	2,180.92	-8,712.78	9,044.61	8,957.81	86.80	104.195				
4,900.00	4,898.93	5,402.16	4,926.79	16.37	95.31	128.12	2,176.15	-8,717.27	9,048.18	8,960.89	87.28	103.666				

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 836H
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 836H	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 #006C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
				(usft)	(usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,000.00	4,998.91	5,517.67	5,042.22	16.73	95.40	128.11	2,173.07	-8,720.11	9,051.24	8,963.51	87.73	103.167	
5,100.00	5,098.89	5,648.36	5,172.85	17.09	95.49	128.10	2,170.21	-8,722.78	9,054.03	8,965.82	88.21	102.647	
5,200.00	5,198.86	5,771.60	5,296.05	17.45	95.57	128.10	2,167.98	-8,724.80	9,056.51	8,967.84	88.67	102.134	
5,300.00	5,298.84	5,879.67	5,404.11	17.81	95.65	128.10	2,166.47	-8,726.26	9,058.81	8,969.69	89.13	101.636	
5,400.00	5,398.81	5,974.94	5,499.37	18.17	95.72	128.10	2,165.18	-8,727.51	9,061.11	8,971.53	89.57	101.157	
5,500.00	5,498.79	6,075.13	5,599.53	18.53	95.79	128.10	2,163.83	-8,728.88	9,063.44	8,973.42	90.03	100.675	
5,600.00	5,598.77	6,173.34	5,697.73	18.89	95.86	128.10	2,162.55	-8,730.20	9,065.77	8,975.29	90.48	100.198	
5,700.00	5,698.74	6,280.21	5,804.58	19.25	95.94	128.10	2,161.16	-8,731.63	9,068.10	8,977.15	90.94	99.714	
5,800.00	5,798.72	6,382.19	5,906.54	19.61	96.02	128.10	2,159.87	-8,732.91	9,070.34	8,978.94	91.40	99.237	
5,900.00	5,898.69	6,478.49	6,002.82	19.97	96.09	128.11	2,158.59	-8,734.15	9,072.61	8,980.75	91.85	98.772	
6,000.00	5,998.67	6,585.74	6,110.06	20.33	96.18	128.11	2,157.12	-8,735.53	9,074.87	8,982.55	92.32	98.295	
6,100.00	6,098.65	6,697.73	6,222.03	20.69	96.26	128.11	2,155.72	-8,736.81	9,077.01	8,984.21	92.80	97.814	
6,200.00	6,198.62	6,830.28	6,354.57	21.05	96.37	128.11	2,154.45	-8,737.84	9,078.87	8,985.56	93.30	97.305	
6,300.00	6,298.60	6,936.95	6,461.23	21.41	96.46	128.12	2,153.55	-8,738.44	9,080.55	8,986.77	93.78	96.828	
6,400.00	6,398.57	7,049.25	6,573.53	21.77	96.55	128.12	2,152.52	-8,738.97	9,082.13	8,987.87	94.27	96.346	
6,500.00	6,498.55	7,161.51	6,685.78	22.13	96.64	128.13	2,151.65	-8,739.29	9,083.57	8,988.81	94.75	95.865	
6,531.56	6,530.10	7,196.22	6,720.49	22.25	96.67	128.13	2,151.48	-8,739.33	9,083.99	8,989.09	94.91	95.714	
6,550.00	6,548.53	7,213.94	6,738.21	22.31	96.69	166.50	2,151.41	-8,739.35	9,084.50	8,989.50	94.99	95.632	
6,600.00	6,598.36	7,260.26	6,784.54	22.49	96.72	-175.23	2,151.27	-8,739.39	9,088.48	8,993.26	95.22	95.448	
6,650.00	6,647.74	7,307.38	6,831.65	22.67	96.76	-171.16	2,151.19	-8,739.43	9,096.25	9,000.81	95.44	95.311	
6,700.00	6,696.35	7,361.57	6,885.84	22.84	96.81	-169.23	2,151.10	-8,739.47	9,107.73	9,012.08	95.65	95.214	
6,750.00	6,743.90	7,411.83	6,936.10	23.01	96.85	-167.96	2,151.01	-8,739.48	9,122.84	9,026.99	95.86	95.172 SF	
6,800.00	6,790.11	7,453.60	6,977.88	23.18	96.89	-166.92	2,150.95	-8,739.49	9,141.53	9,045.49	96.03	95.190	
6,850.00	6,834.67	7,493.88	7,018.16	23.35	96.93	-165.93	2,150.92	-8,739.51	9,163.68	9,067.48	96.20	95.259	
6,900.00	6,877.32	7,537.30	7,061.57	23.51	96.96	-164.92	2,150.91	-8,739.54	9,189.16	9,092.81	96.35	95.372	
6,950.00	6,917.80	7,579.38	7,103.66	23.68	97.00	-163.81	2,150.91	-8,739.56	9,217.78	9,121.29	96.49	95.533	
7,000.00	6,955.85	7,617.29	7,141.56	23.85	97.04	-162.53	2,150.92	-8,739.57	9,249.39	9,152.78	96.60	95.745	
7,050.00	6,991.24	7,650.85	7,175.12	24.03	97.07	-161.01	2,150.93	-8,739.58	9,283.78	9,187.08	96.70	96.005	
7,100.00	7,023.76	7,681.66	7,205.94	24.22	97.09	-159.17	2,150.94	-8,739.60	9,320.77	9,223.99	96.78	96.311	
7,150.00	7,053.20	7,710.01	7,234.28	24.42	97.12	-156.90	2,150.95	-8,739.62	9,360.11	9,263.27	96.84	96.659	
7,200.00	7,079.37	7,736.01	7,260.28	24.63	97.14	-154.02	2,150.97	-8,739.64	9,401.56	9,304.68	96.88	97.045	
7,250.00	7,102.13	7,758.60	7,282.88	24.86	97.16	-150.28	2,150.99	-8,739.65	9,444.87	9,347.96	96.90	97.468	
7,300.00	7,121.32	7,777.66	7,301.93	25.10	97.18	-145.29	2,151.01	-8,739.66	9,489.77	9,392.86	96.91	97.925	
7,350.00	7,136.84	7,793.06	7,317.34	25.35	97.19	-138.49	2,151.04	-8,739.67	9,535.98	9,439.08	96.90	98.412	
7,400.00	7,148.58	7,804.49	7,328.77	25.62	97.20	-129.04	2,151.05	-8,739.68	9,583.23	9,486.36	96.87	98.926	
7,450.00	7,156.47	7,811.95	7,336.23	25.90	97.21	-116.04	2,151.06	-8,739.68	9,631.22	9,534.39	96.83	99.462	
7,500.00	7,160.47	7,815.72	7,339.99	26.20	97.21	-99.33	2,151.07	-8,739.69	9,679.66	9,582.87	96.78	100.015	
7,526.22	7,161.00	7,816.20	7,340.48	26.36	97.21	-89.67	2,151.07	-8,739.69	9,705.14	9,608.38	96.75	100.310	
7,600.00	7,160.97	7,816.13	7,340.41	26.83	97.21	-89.66	2,151.07	-8,739.69	9,776.85	9,680.19	96.66	101.144	
7,700.00	7,160.93	7,816.04	7,340.31	27.53	97.21	-89.66	2,151.07	-8,739.69	9,874.11	9,777.56	96.55	102.270	
7,800.00	7,160.89	7,815.94	7,340.21	28.32	97.21	-89.66	2,151.07	-8,739.69	9,971.43	9,874.98	96.44	103.390	
7,900.00	7,160.85	7,815.85	7,340.12	29.16	97.21	-89.66	2,151.07	-8,739.69	10,068.79	9,972.45	96.35	104.506	
8,000.00	7,160.81	7,815.75	7,340.02	30.07	97.21	-89.65	2,151.07	-8,739.69	10,166.21	10,069.95	96.26	105.617	
8,100.00	7,160.77	7,815.66	7,339.93	31.04	97.21	-89.65	2,151.07	-8,739.69	10,263.68	10,167.50	96.17	106.722	
8,200.00	7,160.73	7,815.56	7,339.83	32.06	97.21	-89.65	2,151.07	-8,739.69	10,361.19	10,265.10	96.09	107.823	
8,300.00	7,160.69	7,815.47	7,339.74	33.12	97.21	-89.65	2,151.07	-8,739.69	10,458.75	10,362.73	96.02	108.920	
8,400.00	7,160.65	7,815.37	7,339.64	34.23	97.21	-89.64	2,151.07	-8,739.69	10,556.36	10,460.40	95.96	110.011	
8,500.00	7,160.60	7,815.28	7,339.55	35.37	97.21	-89.64	2,151.07	-8,739.69	10,654.01	10,558.12	95.90	111.098	
8,600.00	7,160.56	7,815.18	7,339.45	36.55	97.21	-89.64	2,151.07	-8,739.69	10,751.71	10,655.86	95.84	112.181	
8,700.00	7,160.52	7,815.09	7,339.36	37.76	97.21	-89.64	2,151.07	-8,739.69	10,849.44	10,753.65	95.79	113.259	
8,800.00	7,160.48	7,814.99	7,339.26	38.99	97.21	-89.63	2,151.07	-8,739.69	10,947.22	10,851.47	95.75	114.333	
8,900.00	7,160.44	7,814.90	7,339.17	40.26	97.21	-89.63	2,151.07	-8,739.69	11,045.04	10,949.33	95.71	115.402	

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 836H
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 836H	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 #006C - OH - OH-SVY												Offset Site Error: 0.00 usft
Survey Program: 100-A020Ga_GYRO-NS												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)		
9,000.00	7,160.40	7,814.80	7,339.07	41.54	97.21	-89.63	2,151.07	-8,739.69	11,142.90	11,047.22	95.67	116.468
9,100.00	7,160.36	7,814.71	7,338.98	42.85	97.21	-89.63	2,151.07	-8,739.69	11,240.79	11,145.15	95.64	117.529
9,200.00	7,160.32	7,814.61	7,338.89	44.18	97.21	-89.63	2,151.07	-8,739.69	11,338.72	11,243.11	95.62	118.586
9,300.00	7,160.28	7,814.52	7,338.79	45.53	97.21	-89.62	2,151.07	-8,739.69	11,436.69	11,341.09	95.59	119.639
9,400.00	7,160.24	7,814.42	7,338.70	46.89	97.21	-89.62	2,151.07	-8,739.69	11,534.69	11,439.12	95.57	120.688
9,500.00	7,160.20	7,814.33	7,338.60	48.26	97.21	-89.62	2,151.07	-8,739.69	11,632.73	11,537.17	95.56	121.733
9,600.00	7,160.16	7,814.23	7,338.51	49.65	97.21	-89.62	2,151.07	-8,739.69	11,730.79	11,635.25	95.55	122.775
9,700.00	7,160.12	7,814.14	7,338.41	51.05	97.21	-89.61	2,151.07	-8,739.69	11,828.90	11,733.36	95.54	123.812
9,800.00	7,160.08	7,814.05	7,338.32	52.47	97.21	-89.61	2,151.07	-8,739.69	11,927.03	11,831.49	95.53	124.846
9,900.00	7,160.04	7,813.95	7,338.22	53.89	97.21	-89.61	2,151.07	-8,739.69	12,025.19	11,929.66	95.53	125.877
10,000.00	7,160.00	7,813.86	7,338.13	55.33	97.21	-89.61	2,151.07	-8,739.69	12,123.39	12,027.85	95.53	126.903
10,100.00	7,159.95	7,813.76	7,338.03	56.77	97.21	-89.60	2,151.07	-8,739.69	12,221.61	12,126.07	95.54	127.927
10,200.00	7,159.91	7,813.67	7,337.94	58.22	97.21	-89.60	2,151.07	-8,739.69	12,319.86	12,224.32	95.54	128.947
10,300.00	7,159.87	7,813.57	7,337.85	59.68	97.21	-89.60	2,151.07	-8,739.69	12,418.14	12,322.59	95.55	129.963
10,400.00	7,159.83	7,813.48	7,337.75	61.15	97.21	-89.60	2,151.07	-8,739.69	12,516.45	12,420.88	95.56	130.976
10,500.00	7,159.79	7,813.39	7,337.66	62.62	97.21	-89.59	2,151.07	-8,739.69	12,614.78	12,519.20	95.58	131.986
10,600.00	7,159.75	7,813.29	7,337.56	64.10	97.21	-89.59	2,151.07	-8,739.69	12,713.14	12,617.54	95.59	132.993
10,700.00	7,159.71	7,813.20	7,337.47	65.58	97.21	-89.59	2,151.07	-8,739.69	12,811.52	12,715.91	95.61	133.996
10,800.00	7,159.67	7,813.10	7,337.38	67.07	97.21	-89.59	2,151.07	-8,739.69	12,909.93	12,814.30	95.63	134.996
10,900.00	7,159.63	7,813.01	7,337.28	68.57	97.21	-89.58	2,151.07	-8,739.69	13,008.37	12,912.71	95.65	135.993
11,000.00	7,159.59	7,812.92	7,337.19	70.07	97.21	-89.58	2,151.07	-8,739.69	13,106.82	13,011.14	95.68	136.987
11,100.00	7,159.55	7,812.82	7,337.09	71.57	97.21	-89.58	2,151.07	-8,739.69	13,205.30	13,109.60	95.71	137.978
11,200.00	7,159.51	7,812.73	7,337.00	73.08	97.21	-89.58	2,151.06	-8,739.69	13,303.81	13,208.07	95.73	138.966
11,300.00	7,159.47	7,812.63	7,336.91	74.59	97.21	-89.58	2,151.06	-8,739.69	13,402.33	13,306.57	95.76	139.951
11,400.00	7,159.43	7,812.54	7,336.81	76.11	97.21	-89.57	2,151.06	-8,739.68	13,500.88	13,405.08	95.80	140.933
11,500.00	7,159.39	7,812.45	7,336.72	77.63	97.21	-89.57	2,151.06	-8,739.68	13,599.45	13,503.62	95.83	141.913
11,600.00	7,159.35	7,812.35	7,336.63	79.15	97.21	-89.57	2,151.06	-8,739.68	13,698.04	13,602.17	95.86	142.889
11,638.27	7,159.33	7,812.32	7,336.59	79.73	97.21	-89.57	2,151.06	-8,739.68	13,735.77	13,639.89	95.88	143.262
11,640.51	7,159.33	7,812.31	7,336.59	79.77	97.21	-89.57	2,151.06	-8,739.68	13,737.98	13,642.10	95.88	143.284
11,700.00	7,159.30	7,812.26	7,336.53	80.68	97.21	-89.57	2,151.06	-8,739.68	13,796.64	13,700.74	95.90	143.862
11,800.00	7,159.26	7,812.17	7,336.44	82.20	97.21	-89.56	2,151.06	-8,739.68	13,895.26	13,799.32	95.94	144.833
11,900.00	7,159.22	7,812.07	7,336.34	83.74	97.21	-89.56	2,151.06	-8,739.68	13,993.91	13,897.93	95.98	145.801
12,000.00	7,159.18	7,811.98	7,336.25	85.27	97.21	-89.56	2,151.06	-8,739.68	14,092.57	13,996.55	96.02	146.766
12,100.00	7,159.14	7,811.88	7,336.16	86.81	97.21	-89.56	2,151.06	-8,739.68	14,191.25	14,095.19	96.06	147.728
12,200.00	7,159.10	7,811.79	7,336.06	88.35	97.21	-89.55	2,151.06	-8,739.68	14,289.95	14,193.84	96.11	148.688
12,300.00	7,159.06	7,811.70	7,335.97	89.89	97.21	-89.55	2,151.06	-8,739.68	14,388.66	14,292.51	96.15	149.645
12,400.00	7,159.02	7,811.60	7,335.88	91.43	97.21	-89.55	2,151.06	-8,739.68	14,487.40	14,391.20	96.20	150.599
12,500.00	7,158.98	7,811.51	7,335.78	92.98	97.21	-89.55	2,151.06	-8,739.68	14,586.15	14,489.90	96.25	151.551
12,600.00	7,158.94	7,811.42	7,335.69	94.52	97.21	-89.55	2,151.06	-8,739.68	14,684.92	14,588.62	96.29	152.500
12,700.00	7,158.90	7,811.32	7,335.60	96.07	97.21	-89.54	2,151.06	-8,739.68	14,783.70	14,687.36	96.34	153.447
12,800.00	7,158.86	7,811.23	7,335.50	97.62	97.21	-89.54	2,151.06	-8,739.68	14,882.50	14,786.11	96.39	154.391
12,900.00	7,158.81	7,811.14	7,335.41	99.17	97.21	-89.54	2,151.06	-8,739.68	14,981.32	14,884.87	96.45	155.332
13,000.00	7,158.77	7,811.04	7,335.32	100.73	97.21	-89.54	2,151.06	-8,739.68	15,080.15	14,983.65	96.50	156.271
13,100.00	7,158.73	7,810.95	7,335.22	102.28	97.21	-89.53	2,151.06	-8,739.68	15,179.00	15,082.45	96.55	157.208
13,200.00	7,158.69	7,810.86	7,335.13	103.84	97.21	-89.53	2,151.06	-8,739.68	15,277.86	15,181.26	96.61	158.142
13,300.00	7,158.65	7,810.76	7,335.04	105.40	97.21	-89.53	2,151.06	-8,739.68	15,376.74	15,280.08	96.66	159.073
13,400.00	7,158.61	7,810.67	7,334.94	106.96	97.21	-89.53	2,151.06	-8,739.68	15,475.63	15,378.91	96.72	160.002
13,500.00	7,158.57	7,810.58	7,334.85	108.52	97.21	-89.52	2,151.06	-8,739.68	15,574.54	15,477.76	96.78	160.929
13,600.00	7,158.53	7,810.49	7,334.76	110.08	97.21	-89.52	2,151.06	-8,739.68	15,673.46	15,576.62	96.84	161.853
13,700.00	7,158.49	7,810.39	7,334.67	111.64	97.21	-89.52	2,151.06	-8,739.68	15,772.39	15,675.50	96.90	162.775
13,800.00	7,158.45	7,810.30	7,334.57	113.21	97.21	-89.52	2,151.06	-8,739.68	15,871.34	15,774.38	96.96	163.694
13,900.00	7,158.41	7,810.21	7,334.48	114.77	97.21	-89.52	2,151.06	-8,739.68	15,970.30	15,873.28	97.02	164.611

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 836H
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 836H	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 #006C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program: 100-A020Ga_GYRO-NS												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)			
14,000.00	7,158.37	7,810.11	7,334.39	116.34	97.21	-89.51	2,151.06	-8,739.68	16,069.27	15,972.19	97.08	165.526	
14,100.00	7,158.32	7,810.02	7,334.29	117.91	97.21	-89.51	2,151.06	-8,739.68	16,168.26	16,071.12	97.14	166.438	
14,200.00	7,158.28	7,809.93	7,334.20	119.47	97.21	-89.51	2,151.06	-8,739.68	16,267.26	16,170.05	97.21	167.348	
14,300.00	7,158.24	7,809.84	7,334.11	121.04	97.21	-89.51	2,151.06	-8,739.68	16,366.27	16,269.00	97.27	168.255	
14,400.00	7,158.20	7,809.74	7,334.02	122.61	97.21	-89.50	2,151.06	-8,739.68	16,465.29	16,367.95	97.34	169.161	
14,500.00	7,158.16	7,809.65	7,333.92	124.18	97.21	-89.50	2,151.06	-8,739.68	16,564.32	16,466.92	97.40	170.064	
14,600.00	7,158.12	7,809.56	7,333.83	125.76	97.21	-89.50	2,151.06	-8,739.68	16,663.37	16,565.90	97.47	170.964	
14,700.00	7,158.08	7,809.47	7,333.74	127.33	97.21	-89.50	2,151.06	-8,739.68	16,762.43	16,664.89	97.53	171.862	
14,800.00	7,158.04	7,809.37	7,333.65	128.90	97.21	-89.49	2,151.06	-8,739.68	16,861.49	16,763.89	97.60	172.759	
14,900.00	7,158.00	7,809.28	7,333.55	130.47	97.21	-89.49	2,151.06	-8,739.68	16,960.57	16,862.90	97.67	173.652	
15,000.00	7,157.96	7,809.19	7,333.46	132.05	97.21	-89.49	2,151.06	-8,739.68	17,059.66	16,961.92	97.74	174.544	
15,100.00	7,157.92	7,809.10	7,333.37	133.62	97.21	-89.49	2,151.06	-8,739.68	17,158.76	17,060.95	97.81	175.433	
15,200.00	7,157.88	7,809.00	7,333.28	135.20	97.21	-89.48	2,151.06	-8,739.68	17,257.87	17,160.00	97.88	176.320	
15,300.00	7,157.83	7,808.91	7,333.18	136.78	97.21	-89.48	2,151.06	-8,739.68	17,356.99	17,259.05	97.95	177.205	
15,400.00	7,157.79	7,808.82	7,333.09	138.35	97.21	-89.48	2,151.06	-8,739.68	17,456.12	17,358.10	98.02	178.087	
15,500.00	7,157.75	7,808.73	7,333.00	139.93	97.21	-89.48	2,151.06	-8,739.68	17,555.27	17,457.17	98.09	178.968	
15,600.00	7,157.71	7,808.63	7,332.91	141.51	97.21	-89.48	2,151.06	-8,739.68	17,654.42	17,556.25	98.16	179.846	
15,700.00	7,157.67	7,808.54	7,332.82	143.09	97.21	-89.47	2,151.06	-8,739.68	17,753.58	17,655.34	98.24	180.722	
15,800.00	7,157.63	7,808.45	7,332.72	144.67	97.21	-89.47	2,151.06	-8,739.68	17,852.74	17,754.43	98.31	181.596	
15,900.00	7,157.59	7,808.36	7,332.63	146.24	97.21	-89.47	2,151.06	-8,739.68	17,951.92	17,853.54	98.38	182.467	
16,000.00	7,157.55	7,808.27	7,332.54	147.82	97.21	-89.47	2,151.06	-8,739.68	18,051.11	17,952.65	98.46	183.336	
16,100.00	7,157.51	7,808.17	7,332.45	149.41	97.21	-89.46	2,151.06	-8,739.68	18,150.31	18,051.77	98.53	184.203	
16,200.00	7,157.47	7,808.08	7,332.36	150.99	97.21	-89.46	2,151.06	-8,739.68	18,249.51	18,150.90	98.61	185.068	
16,300.00	7,157.43	7,807.99	7,332.26	152.57	97.21	-89.46	2,151.06	-8,739.68	18,348.73	18,250.04	98.69	185.931	
16,400.00	7,157.38	7,807.90	7,332.17	154.15	97.21	-89.46	2,151.06	-8,739.68	18,447.95	18,349.19	98.76	186.792	
16,500.00	7,157.34	7,807.81	7,332.08	155.73	97.21	-89.45	2,151.06	-8,739.68	18,547.18	18,448.34	98.84	187.650	
16,600.00	7,157.30	7,807.72	7,331.99	157.31	97.21	-89.45	2,151.06	-8,739.68	18,646.42	18,547.50	98.92	188.506	
16,680.84	7,157.27	7,807.64	7,331.91	158.59	97.21	-89.45	2,151.06	-8,739.68	18,726.65	18,627.67	98.98	189.197	
16,687.46	7,157.27	7,807.64	7,331.91	158.70	97.21	-89.46	2,151.06	-8,739.68	18,733.21	18,634.23	98.98	189.254	
16,700.00	7,157.26	7,807.62	7,331.90	158.90	97.21	-89.46	2,151.06	-8,739.68	18,745.66	18,646.67	98.99	189.361	
16,800.00	7,157.22	7,807.53	7,331.81	160.48	97.21	-89.45	2,151.06	-8,739.68	18,844.90	18,745.83	99.07	190.212	
16,900.00	7,157.18	7,807.44	7,331.71	162.06	97.21	-89.45	2,151.06	-8,739.68	18,944.15	18,845.00	99.15	191.062	
17,000.00	7,157.14	7,807.35	7,331.62	163.65	97.21	-89.45	2,151.06	-8,739.68	19,043.41	18,944.18	99.23	191.909	
17,100.00	7,157.10	7,807.26	7,331.53	165.23	97.21	-89.45	2,151.06	-8,739.68	19,142.67	19,043.36	99.31	192.755	
17,200.00	7,157.06	7,807.17	7,331.44	166.82	97.21	-89.44	2,151.06	-8,739.68	19,241.95	19,142.56	99.39	193.598	
17,300.00	7,157.02	7,807.08	7,331.35	168.40	97.21	-89.44	2,151.06	-8,739.68	19,341.23	19,241.75	99.47	194.439	
17,400.00	7,156.98	7,806.99	7,331.26	169.99	97.21	-89.44	2,151.06	-8,739.68	19,440.51	19,340.96	99.55	195.278	
17,500.00	7,156.94	7,806.89	7,331.17	171.57	97.21	-89.44	2,151.06	-8,739.68	19,539.81	19,440.17	99.63	196.115	
17,600.00	7,156.90	7,806.80	7,331.08	173.16	97.21	-89.44	2,151.06	-8,739.68	19,639.11	19,539.39	99.72	196.949	
17,700.00	7,156.85	7,806.71	7,330.98	174.75	97.21	-89.43	2,151.06	-8,739.68	19,738.42	19,638.62	99.80	197.782	
17,800.00	7,156.81	7,806.62	7,330.89	176.33	97.21	-89.43	2,151.06	-8,739.68	19,837.73	19,737.85	99.88	198.613	
17,900.00	7,156.77	7,806.53	7,330.80	177.92	97.21	-89.43	2,151.05	-8,739.68	19,937.05	19,837.09	99.96	199.441	
18,000.00	7,156.73	7,806.44	7,330.71	179.51	97.21	-89.43	2,151.05	-8,739.68	20,036.38	19,936.34	100.05	200.267	
18,100.00	7,156.69	7,806.35	7,330.62	181.09	97.21	-89.42	2,151.05	-8,739.68	20,135.72	20,035.59	100.13	201.092	
18,200.00	7,156.65	7,806.26	7,330.53	182.68	97.21	-89.42	2,151.05	-8,739.68	20,235.06	20,134.85	100.22	201.914	
18,300.00	7,156.61	7,806.17	7,330.44	184.27	97.21	-89.42	2,151.05	-8,739.68	20,334.41	20,234.11	100.30	202.734	
18,400.00	7,156.57	7,806.08	7,330.35	185.86	97.20	-89.42	2,151.05	-8,739.68	20,433.77	20,333.38	100.39	203.552	
18,500.00	7,156.53	7,805.99	7,330.26	187.45	97.20	-89.42	2,151.05	-8,739.68	20,533.13	20,432.65	100.47	204.368	
18,600.00	7,156.49	7,805.89	7,330.17	189.03	97.20	-89.41	2,151.05	-8,739.68	20,632.49	20,531.94	100.56	205.182	
18,700.00	7,156.45	7,805.80	7,330.08	190.62	97.20	-89.41	2,151.05	-8,739.68	20,731.87	20,631.22	100.64	205.993	
18,800.00	7,156.41	7,805.71	7,329.99	192.21	97.20	-89.41	2,151.05	-8,739.68	20,831.25	20,730.52	100.73	206.803	
18,900.00	7,156.37	7,805.62	7,329.90	193.80	97.20	-89.41	2,151.05	-8,739.68	20,930.63	20,829.82	100.82	207.611	

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 836H
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 836H	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 #006C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS						Rule Assigned:				Offset Well Error:	0.00 usft
Measured Depth	Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance			Separation		Warning	
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)	Factor	
19,000.00	7,156.32	7,805.53	7,329.81	195.39	97.20	-89.40	2,151.05	-8,739.68	21,030.02	20,929.12	100.90	208.416	
19,100.00	7,156.28	7,805.44	7,329.71	196.98	97.20	-89.40	2,151.05	-8,739.68	21,129.42	21,028.43	100.99	209.220	
19,200.00	7,156.24	7,805.35	7,329.62	198.57	97.20	-89.40	2,151.05	-8,739.68	21,228.82	21,127.74	101.08	210.021	
19,300.00	7,156.20	7,805.26	7,329.53	200.16	97.20	-89.40	2,151.05	-8,739.68	21,328.23	21,227.06	101.17	210.821	
19,400.00	7,156.16	7,805.17	7,329.44	201.75	97.20	-89.40	2,151.05	-8,739.68	21,427.64	21,326.39	101.26	211.618	
19,500.00	7,156.12	7,805.08	7,329.35	203.34	97.20	-89.39	2,151.05	-8,739.68	21,527.06	21,425.72	101.34	212.414	
19,600.00	7,156.08	7,804.99	7,329.26	204.93	97.20	-89.39	2,151.05	-8,739.68	21,626.49	21,525.05	101.43	213.207	
19,700.00	7,156.04	7,804.90	7,329.17	206.52	97.20	-89.39	2,151.05	-8,739.68	21,725.92	21,624.39	101.52	213.998	
19,800.00	7,156.00	7,804.81	7,329.08	208.11	97.20	-89.39	2,151.05	-8,739.68	21,825.35	21,723.74	101.61	214.788	
19,900.00	7,155.96	7,804.72	7,328.99	209.71	97.20	-89.38	2,151.05	-8,739.68	21,924.79	21,823.09	101.70	215.575	
20,000.00	7,155.92	7,804.63	7,328.90	211.30	97.20	-89.38	2,151.05	-8,739.68	22,024.24	21,922.44	101.79	216.360	
20,100.00	7,155.88	7,804.54	7,328.81	212.89	97.20	-89.38	2,151.05	-8,739.68	22,123.69	22,021.80	101.89	217.144	
20,200.00	7,155.84	7,804.45	7,328.72	214.48	97.20	-89.38	2,151.05	-8,739.68	22,223.14	22,121.17	101.98	217.925	
20,300.00	7,155.79	7,804.36	7,328.63	216.07	97.20	-89.37	2,151.05	-8,739.68	22,322.60	22,220.54	102.07	218.704	
20,400.00	7,155.75	7,804.27	7,328.54	217.66	97.20	-89.37	2,151.05	-8,739.68	22,422.07	22,319.91	102.16	219.481	
20,500.00	7,155.71	7,804.18	7,328.45	219.26	97.20	-89.37	2,151.05	-8,739.68	22,521.54	22,419.29	102.25	220.256	
20,600.00	7,155.67	7,804.09	7,328.36	220.85	97.20	-89.37	2,151.05	-8,739.68	22,621.01	22,518.67	102.34	221.030	
20,700.00	7,155.63	7,804.00	7,328.27	222.44	97.20	-89.37	2,151.05	-8,739.68	22,720.49	22,618.06	102.44	221.801	
20,800.00	7,155.59	7,800.00	7,324.27	224.03	97.20	-89.27	2,151.05	-8,739.68	22,819.98	22,717.45	102.52	222.583	
20,900.00	7,155.55	7,800.00	7,324.27	225.63	97.20	-89.27	2,151.05	-8,739.68	22,919.46	22,816.85	102.62	223.350	
21,000.00	7,155.51	7,800.00	7,324.27	227.22	97.20	-89.27	2,151.05	-8,739.68	23,018.96	22,916.25	102.71	224.115	
21,100.00	7,155.47	7,800.00	7,324.27	228.81	97.20	-89.27	2,151.05	-8,739.68	23,118.45	23,015.65	102.80	224.878	
21,200.00	7,155.43	7,800.00	7,324.27	230.40	97.20	-89.27	2,151.05	-8,739.68	23,217.95	23,115.05	102.90	225.639	
21,300.00	7,155.39	7,800.00	7,324.27	232.00	97.20	-89.27	2,151.05	-8,739.68	23,317.46	23,214.47	102.99	226.398	
21,400.00	7,155.35	7,800.00	7,324.27	233.59	97.20	-89.27	2,151.05	-8,739.68	23,416.97	23,313.88	103.09	227.155	
21,500.00	7,155.31	7,800.00	7,324.27	235.18	97.20	-89.27	2,151.05	-8,739.68	23,516.48	23,413.30	103.18	227.910	
21,600.00	7,155.26	7,800.00	7,324.27	236.78	97.20	-89.27	2,151.05	-8,739.68	23,616.00	23,512.72	103.28	228.663	
21,700.00	7,155.22	7,800.00	7,324.27	238.37	97.20	-89.27	2,151.05	-8,739.68	23,715.52	23,612.15	103.37	229.415	
21,800.00	7,155.18	7,800.00	7,324.27	239.96	97.20	-89.27	2,151.05	-8,739.68	23,815.05	23,711.58	103.47	230.164	
21,900.00	7,155.14	7,800.00	7,324.27	241.56	97.20	-89.27	2,151.05	-8,739.68	23,914.58	23,811.01	103.57	230.911	
21,953.88	7,155.12	7,800.00	7,324.27	242.42	97.20	-89.27	2,151.05	-8,739.68	23,968.21	23,864.59	103.62	231.313	
22,000.00	7,155.10	7,800.00	7,324.27	243.15	97.20	-89.19	2,151.05	-8,739.68	24,014.13	23,910.47	103.66	231.657	
22,019.01	7,155.09	7,800.00	7,324.27	243.46	97.20	-89.16	2,151.05	-8,739.68	24,033.07	23,929.39	103.68	231.798	
22,100.00	7,155.06	7,800.00	7,324.27	244.75	97.20	-89.16	2,151.05	-8,739.68	24,113.77	24,010.01	103.76	232.402	
22,200.00	7,155.02	7,800.00	7,324.27	246.34	97.20	-89.16	2,151.05	-8,739.68	24,213.41	24,109.55	103.86	233.145	
22,300.00	7,154.97	7,800.00	7,324.27	247.94	97.20	-89.16	2,151.05	-8,739.68	24,313.05	24,209.10	103.95	233.886	
22,400.00	7,154.93	7,800.00	7,324.27	249.53	97.20	-89.16	2,151.05	-8,739.68	24,412.70	24,308.65	104.05	234.626	
22,500.00	7,154.89	7,800.00	7,324.27	251.13	97.20	-89.16	2,151.05	-8,739.68	24,512.36	24,408.21	104.15	235.363	
22,600.00	7,154.85	7,800.00	7,324.27	252.72	97.20	-89.16	2,151.05	-8,739.68	24,612.01	24,507.77	104.24	236.099	
22,700.00	7,154.80	7,800.00	7,324.27	254.32	97.20	-89.16	2,151.05	-8,739.68	24,711.67	24,607.32	104.34	236.832	
22,800.00	7,154.76	7,800.00	7,324.27	255.91	97.20	-89.16	2,151.05	-8,739.68	24,811.33	24,706.89	104.44	237.564	
22,900.00	7,154.72	7,800.00	7,324.27	257.51	97.20	-89.16	2,151.05	-8,739.68	24,910.99	24,806.45	104.54	238.294	
23,000.00	7,154.68	7,800.00	7,324.27	259.11	97.20	-89.16	2,151.05	-8,739.68	25,010.66	24,906.02	104.64	239.021	
23,100.00	7,154.63	7,800.00	7,324.27	260.70	97.20	-89.16	2,151.05	-8,739.68	25,110.32	25,005.59	104.74	239.747	
23,200.00	7,154.59	7,800.00	7,324.27	262.30	97.20	-89.16	2,151.05	-8,739.68	25,209.99	25,105.16	104.84	240.471	
23,300.00	7,154.55	7,800.00	7,324.27	263.89	97.20	-89.16	2,151.05	-8,739.68	25,309.67	25,204.73	104.94	241.193	
23,400.00	7,154.51	7,800.00	7,324.27	265.49	97.20	-89.16	2,151.05	-8,739.68	25,409.34	25,304.31	105.04	241.913	
23,500.00	7,154.47	7,800.00	7,324.27	267.08	97.20	-89.16	2,151.05	-8,739.68	25,509.02	25,403.89	105.14	242.631	
23,600.00	7,154.42	7,800.00	7,324.27	268.68	97.20	-89.16	2,151.05	-8,739.68	25,608.70	25,503.47	105.24	243.347	
23,700.00	7,154.38	7,800.00	7,324.27	270.28	97.20	-89.16	2,151.05	-8,739.68	25,708.39	25,603.05	105.34	244.061	
23,800.00	7,154.34	7,801.33	7,325.60	271.87	97.20	-89.20	2,151.05	-8,739.68	25,808.07	25,702.63	105.44	244.769	
23,900.00	7,154.30	7,801.22	7,325.50	273.47	97.20	-89.19	2,151.05	-8,739.68	25,907.76	25,802.22	105.54	245.479	

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 836H
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 836H	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 #006C - OH - OH-SVY												Offset Site Error:	0.00 usft
Survey Program:		100-A020Ga_GYRO-NS						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)
24,000.00	7,154.25	7,801.12	7,325.39	275.07	97.20	-89.19	2,151.05	-8,739.68	26,007.45	25,901.81	105.64	246.188	
24,100.00	7,154.21	7,801.02	7,325.29	276.66	97.20	-89.19	2,151.05	-8,739.68	26,107.14	26,001.40	105.74	246.895	
24,200.00	7,154.17	7,800.92	7,325.19	278.26	97.20	-89.18	2,151.05	-8,739.68	26,206.84	26,101.00	105.84	247.600	
24,300.00	7,154.13	7,800.81	7,325.09	279.86	97.20	-89.18	2,151.05	-8,739.68	26,306.54	26,200.59	105.95	248.303	
24,400.00	7,154.08	7,800.71	7,324.98	281.45	97.20	-89.18	2,151.05	-8,739.68	26,406.24	26,300.19	106.05	249.004	
24,500.00	7,154.04	7,800.61	7,324.88	283.05	97.20	-89.18	2,151.05	-8,739.68	26,505.94	26,399.79	106.15	249.704	
24,597.25	7,154.00	7,800.51	7,324.78	284.60	97.20	-89.17	2,151.05	-8,739.68	26,602.90	26,496.65	106.25	250.382	
24,600.00	7,154.00	7,800.51	7,324.78	284.65	97.20	-89.18	2,151.05	-8,739.68	26,605.64	26,499.39	106.25	250.401	
24,700.00	7,153.96	7,800.41	7,324.68	286.24	97.20	-89.35	2,151.05	-8,739.68	26,705.28	26,598.92	106.35	251.096	
24,722.47	7,153.95	7,800.38	7,324.66	286.60	97.20	-89.38	2,151.05	-8,739.68	26,727.64	26,621.26	106.38	251.251	
24,800.00	7,153.92	7,800.31	7,324.58	287.84	97.20	-89.37	2,151.05	-8,739.68	26,804.80	26,698.34	106.46	251.787	
24,900.00	7,153.88	7,800.22	7,324.49	289.43	97.20	-89.37	2,151.05	-8,739.68	26,904.32	26,797.76	106.56	252.475	
25,000.00	7,153.84	7,800.12	7,324.39	291.03	97.20	-89.37	2,151.05	-8,739.68	27,003.85	26,897.18	106.67	253.162	
25,100.00	7,153.80	7,800.02	7,324.30	292.63	97.20	-89.37	2,151.05	-8,739.68	27,103.38	26,996.61	106.77	253.847	
25,200.00	7,153.77	7,799.93	7,324.20	294.22	97.20	-89.37	2,151.04	-8,739.68	27,202.91	27,096.04	106.87	254.531	
25,300.00	7,153.73	7,799.83	7,324.11	295.82	97.20	-89.36	2,151.04	-8,739.68	27,302.45	27,195.47	106.98	255.212	
25,400.00	7,153.69	7,799.74	7,324.01	297.41	97.20	-89.36	2,151.04	-8,739.68	27,401.99	27,294.90	107.08	255.892	
25,500.00	7,153.65	7,799.64	7,323.91	299.01	97.20	-89.36	2,151.04	-8,739.68	27,501.53	27,394.34	107.19	256.570	
25,600.00	7,153.61	7,799.55	7,323.82	300.60	97.20	-89.36	2,151.04	-8,739.68	27,601.08	27,493.78	107.29	257.246	
25,700.00	7,153.57	7,799.45	7,323.72	302.20	97.20	-89.36	2,151.04	-8,739.68	27,700.63	27,593.23	107.40	257.920	
25,800.00	7,153.53	7,799.35	7,323.63	303.80	97.20	-89.35	2,151.04	-8,739.68	27,800.18	27,692.68	107.51	258.592	
25,900.00	7,153.50	7,799.26	7,323.53	305.39	97.20	-89.35	2,151.04	-8,739.68	27,899.74	27,792.13	107.61	259.263	
26,000.00	7,153.46	7,799.16	7,323.43	306.99	97.20	-89.35	2,151.04	-8,739.68	27,999.30	27,891.58	107.72	259.932	
26,100.00	7,153.42	7,799.07	7,323.34	308.58	97.20	-89.35	2,151.04	-8,739.68	28,098.86	27,991.04	107.82	260.599	
26,200.00	7,153.38	7,798.97	7,323.24	310.18	97.20	-89.34	2,151.04	-8,739.68	28,198.43	28,090.50	107.93	261.265	
26,300.00	7,153.34	7,798.87	7,323.15	311.78	97.20	-89.34	2,151.04	-8,739.68	28,297.99	28,189.96	108.04	261.928	
26,400.00	7,153.30	7,798.78	7,323.05	313.37	97.20	-89.34	2,151.04	-8,739.68	28,397.57	28,289.42	108.14	262.590	
26,500.00	7,153.26	7,798.68	7,322.95	314.97	97.20	-89.34	2,151.04	-8,739.68	28,497.14	28,388.89	108.25	263.250	
26,600.00	7,153.23	7,798.58	7,322.86	316.57	97.20	-89.34	2,151.04	-8,739.68	28,596.72	28,488.36	108.36	263.909	
26,700.00	7,153.19	7,798.49	7,322.76	318.16	97.20	-89.33	2,151.04	-8,739.68	28,696.30	28,587.83	108.47	264.565	
26,800.00	7,153.15	7,798.39	7,322.67	319.76	97.20	-89.33	2,151.04	-8,739.68	28,795.88	28,687.31	108.57	265.220	
26,900.00	7,153.11	7,798.30	7,322.57	321.35	97.20	-89.33	2,151.04	-8,739.68	28,895.47	28,786.79	108.68	265.874	
26,976.35	7,153.08	7,798.22	7,322.50	322.57	97.20	-89.33	2,151.04	-8,739.68	28,971.50	28,862.74	108.76	266.371	
27,000.00	7,153.07	7,798.20	7,322.47	322.95	97.20	-89.33	2,151.04	-8,739.68	28,995.06	28,886.27	108.79	266.525	
27,100.00	7,153.03	7,798.10	7,322.38	324.55	97.20	-89.33	2,151.04	-8,739.68	29,094.65	28,985.75	108.90	267.175	
27,176.36	7,153.00	7,798.03	7,322.30	325.77	97.20	-89.32	2,151.04	-8,739.68	29,170.70	29,061.72	108.98	267.670	

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 836H
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 836H	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 #112Y - OH - OH-INC													Offset Site Error:	0.00 usft
Survey Program:		200-A027Ua_INC-ONLY						Rule Assigned:				Offset Well Error:	0.00 usft	
Measured Depth	Reference	Offset	Semi Major Axis		Highside Toolface	Offset Wellbore Centre		Distance			Separation Factor	Warning		
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)		Offset (usft)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			No-Go Distance (usft)	
0.00	0.00	187.00	187.00	0.00	5.60	-82.19	1,395.77	-10,177.83	10,273.09					
125.00	125.00	315.94	315.88	0.06	9.47	142.17	1,396.62	-10,177.83	10,273.54	10,264.02	9.52	1,079.113		
225.00	225.00	412.16	412.00	0.17	12.35	-151.38	1,395.77	-10,177.83	10,274.08	10,261.56	12.52	820.639		
312.00	311.99	499.16	498.99	0.28	14.96	147.12	1,395.77	-10,177.83	10,274.65	10,259.42	15.23	674.657		
400.00	399.99	615.32	615.11	0.37	18.44	147.12	1,395.48	-10,177.83	10,275.12	10,256.32	18.80	546.607		
462.00	461.99	649.28	648.99	0.50	19.46	147.12	1,395.77	-10,177.83	10,275.45	10,255.49	19.95	514.937		
509.18	509.16	696.45	696.16	0.64	20.87	121.45	1,395.77	-10,177.83	10,275.84	10,254.33	21.51	477.800		
600.00	599.96	815.52	815.18	0.94	24.44	121.46	1,395.47	-10,177.83	10,276.88	10,251.51	25.37	405.081		
700.00	699.94	887.35	886.94	1.28	26.59	121.47	1,395.77	-10,177.83	10,278.02	10,250.16	27.87	368.840		
800.00	799.92	1,015.72	1,015.27	1.63	30.44	121.48	1,395.47	-10,177.83	10,279.16	10,247.10	32.06	320.595		
900.00	899.89	1,087.42	1,086.89	1.98	32.58	121.49	1,395.77	-10,177.83	10,280.31	10,245.74	34.57	297.417		
1,000.00	999.87	1,215.93	1,215.35	2.34	36.43	121.50	1,395.47	-10,177.83	10,281.45	10,242.68	38.77	265.180		
1,100.00	1,099.84	1,287.49	1,286.84	2.69	38.58	121.51	1,395.77	-10,177.83	10,282.60	10,241.33	41.27	249.135		
1,200.00	1,199.82	1,416.13	1,415.43	3.05	42.43	121.52	1,395.46	-10,177.83	10,283.74	10,238.26	45.49	226.090		
1,300.00	1,299.80	1,487.57	1,486.80	3.41	44.57	121.53	1,395.77	-10,177.83	10,284.89	10,236.91	47.98	214.340		
1,400.00	1,399.77	1,616.34	1,615.52	3.77	48.43	121.55	1,395.46	-10,177.83	10,286.03	10,233.83	52.20	197.047		
1,500.00	1,499.75	1,687.64	1,686.75	4.13	50.57	121.55	1,395.77	-10,177.83	10,287.18	10,232.48	54.70	188.078		
1,600.00	1,599.72	1,816.55	1,815.60	4.49	54.43	121.57	1,395.45	-10,177.83	10,288.33	10,229.41	58.92	174.622		
1,700.00	1,699.70	1,887.72	1,886.70	4.85	56.56	121.58	1,395.77	-10,177.83	10,289.47	10,228.07	61.41	167.555		
1,800.00	1,799.68	2,016.75	2,015.69	5.21	60.43	121.59	1,395.45	-10,177.83	10,290.62	10,224.98	65.64	156.785		
1,900.00	1,899.65	2,087.79	2,086.65	5.57	62.56	121.60	1,395.77	-10,177.83	10,291.77	10,223.65	68.12	151.075		
2,000.00	1,999.63	2,216.96	2,215.77	5.93	66.43	121.61	1,395.45	-10,177.83	10,292.91	10,220.56	72.35	142.259		
2,100.00	2,099.60	2,287.86	2,286.60	6.29	68.55	121.62	1,395.77	-10,177.83	10,294.07	10,219.23	74.84	137.552		
2,200.00	2,199.58	2,417.17	2,415.86	6.65	72.43	121.63	1,395.44	-10,177.83	10,295.21	10,216.14	79.07	130.201		
2,300.00	2,299.56	2,487.94	2,486.56	7.01	74.55	121.64	1,395.77	-10,177.83	10,296.36	10,214.81	81.55	126.256		
2,400.00	2,399.53	2,617.38	2,615.95	7.37	78.43	121.65	1,395.44	-10,177.83	10,297.51	10,211.72	85.79	120.032		
2,500.00	2,499.51	2,688.01	2,686.51	7.73	80.54	121.66	1,395.77	-10,177.83	10,298.66	10,210.40	88.27	116.677		
2,600.00	2,599.48	2,817.58	2,816.03	8.09	84.43	121.67	1,395.43	-10,177.83	10,299.81	10,207.30	92.51	111.339		
2,700.00	2,699.46	2,888.09	2,886.46	8.45	86.54	121.68	1,395.77	-10,177.83	10,300.96	10,205.98	94.98	108.453		
2,800.00	2,799.44	3,017.79	3,016.12	8.81	90.43	121.69	1,395.43	-10,177.83	10,302.11	10,202.88	99.23	103.824		
2,900.00	2,899.41	3,088.16	3,086.41	9.17	92.54	121.70	1,395.77	-10,177.83	10,303.26	10,201.57	101.70	101.315		
3,000.00	2,999.39	3,218.00	3,216.21	9.53	96.43	121.71	1,395.42	-10,177.83	10,304.41	10,198.46	105.95	97.261		
3,100.00	3,099.36	3,288.23	3,286.36	9.89	98.53	121.72	1,395.77	-10,177.83	10,305.57	10,197.16	108.41	95.061		
3,200.00	3,199.34	3,418.21	3,416.30	10.25	102.43	121.73	1,395.42	-10,177.83	10,306.71	10,194.05	112.66	91.481		
3,300.00	3,299.32	3,488.31	3,486.32	10.61	104.53	121.74	1,395.77	-10,177.83	10,307.87	10,192.75	115.12	89.536		
3,400.00	3,399.29	3,618.42	3,616.38	10.97	108.42	121.75	1,395.41	-10,177.83	10,309.02	10,189.63	119.38	86.352		
3,500.00	3,499.27	3,688.38	3,686.27	11.33	110.52	121.76	1,395.77	-10,177.83	10,310.18	10,188.34	121.84	84.621		
3,600.00	3,599.25	3,818.63	3,816.47	11.69	114.42	121.77	1,395.41	-10,177.83	10,311.32	10,185.22	126.10	81.769		
3,700.00	3,699.22	3,888.45	3,886.22	12.05	116.52	121.78	1,395.77	-10,177.83	10,312.48	10,183.93	128.55	80.219		
3,800.00	3,799.20	4,018.84	4,016.56	12.41	120.42	121.79	1,395.41	-10,177.83	10,313.63	10,180.81	132.82	77.650		
3,900.00	3,899.17	4,088.53	4,086.17	12.77	122.51	121.80	1,395.77	-10,177.83	10,314.79	10,179.52	135.27	76.254		
4,000.00	3,999.15	4,219.06	4,216.65	13.13	126.42	121.81	1,395.40	-10,177.83	10,315.94	10,176.40	139.54	73.928		
4,100.00	4,099.13	4,288.60	4,286.13	13.49	128.51	121.82	1,395.77	-10,177.83	10,317.10	10,175.12	141.98	72.664		
4,200.00	4,199.10	4,419.27	4,416.74	13.85	132.42	121.84	1,395.40	-10,177.83	10,318.25	10,171.99	146.26	70.548		
4,300.00	4,299.08	4,488.68	4,486.08	14.21	134.50	121.84	1,395.77	-10,177.83	10,319.41	10,170.71	148.70	69.398		
4,400.00	4,399.05	4,619.48	4,616.83	14.57	138.42	121.86	1,395.39	-10,177.83	10,320.56	10,167.58	152.98	67.464		
4,500.00	4,499.03	4,688.75	4,686.03	14.93	140.50	121.87	1,395.77	-10,177.83	10,321.72	10,166.31	155.41	66.414		
4,600.00	4,599.01	4,819.69	4,816.92	15.29	144.42	121.88	1,395.39	-10,177.83	10,322.87	10,163.18	159.70	64.640		
4,700.00	4,698.98	4,888.82	4,885.98	15.65	146.49	121.89	1,395.77	-10,177.83	10,324.04	10,161.91	162.13	63.678		
4,800.00	4,798.96	5,019.91	5,017.01	16.01	150.42	121.90	1,395.38	-10,177.83	10,325.19	10,158.77	166.42	62.044		
4,900.00	4,898.93	5,088.90	5,085.93	16.37	152.49	121.91	1,395.77	-10,177.83	10,326.35	10,157.51	168.84	61.159		
5,000.00	4,998.91	5,220.12	5,217.10	16.73	156.42	121.92	1,395.38	-10,177.83	10,327.50	10,154.37	173.14	59.650		

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 836H
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 836H	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 #112Y - OH - OH-INC											Offset Site Error:	0.00 usft
Survey Program: 200-A027Ua_INC-ONLY											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
5,100.00	5,098.89	5,288.97	5,285.89	17.09	158.48	121.93	1,395.77	-10,177.83	10,328.67	10,153.11	175.56	58.833
5,200.00	5,198.86	5,420.33	5,417.20	17.45	162.42	121.94	1,395.38	-10,177.83	10,329.82	10,149.96	179.86	57.434
5,300.00	5,298.84	5,489.05	5,485.84	17.81	164.48	121.95	1,395.77	-10,177.83	10,330.99	10,148.71	182.27	56.678
5,400.00	5,398.81	5,620.55	5,617.29	18.17	168.42	121.96	1,395.37	-10,177.83	10,332.14	10,145.56	186.57	55.378
5,500.00	5,498.79	5,689.12	5,685.79	18.53	170.47	121.97	1,395.77	-10,177.83	10,333.31	10,144.32	188.99	54.677
5,600.00	5,598.77	5,820.76	5,817.38	18.89	174.42	121.98	1,395.37	-10,177.83	10,334.46	10,141.16	193.29	53.465
5,700.00	5,698.74	5,889.19	5,885.74	19.25	176.47	121.99	1,395.77	-10,177.83	10,335.63	10,139.92	195.70	52.812
5,800.00	5,798.72	6,020.98	6,017.47	19.61	180.42	122.00	1,395.36	-10,177.83	10,336.78	10,136.76	200.01	51.681
5,900.00	5,898.69	6,089.27	6,085.69	19.97	182.46	122.01	1,395.77	-10,177.83	10,337.95	10,135.53	202.42	51.072
6,000.00	5,998.67	6,221.19	6,217.57	20.33	186.42	122.02	1,395.36	-10,177.83	10,339.10	10,132.37	206.73	50.012
6,100.00	6,098.65	6,289.34	6,285.65	20.69	188.46	122.03	1,395.77	-10,177.83	10,340.27	10,131.14	209.13	49.443
6,200.00	6,198.62	6,421.41	6,417.66	21.05	192.41	122.04	1,395.35	-10,177.83	10,341.42	10,127.97	213.45	48.449
6,300.00	6,298.60	6,489.41	6,485.60	21.41	194.45	122.05	1,395.77	-10,177.83	10,342.60	10,126.75	215.85	47.916
6,400.00	6,398.57	6,621.62	6,617.76	21.77	198.41	122.06	1,395.35	-10,177.83	10,343.75	10,123.58	220.17	46.981
6,500.00	6,498.55	6,689.49	6,685.55	22.13	200.45	122.07	1,395.77	-10,177.83	10,344.92	10,122.36	222.56	46.480
6,531.56	6,530.10	6,728.65	6,724.69	22.25	201.62	122.08	1,396.57	-10,177.83	10,345.41	10,121.56	223.85	46.215
6,550.00	6,548.53	6,753.74	6,749.78	22.31	202.37	160.44	1,396.39	-10,177.83	10,345.87	10,121.20	224.67	46.049 ES
6,600.00	6,598.36	6,821.62	6,817.63	22.49	204.41	178.68	1,395.35	-10,177.83	10,349.71	10,122.83	226.88	45.618
6,650.00	6,647.74	6,838.80	6,834.74	22.67	204.92	-177.32	1,395.77	-10,177.83	10,357.52	10,129.95	227.57	45.514
6,700.00	6,696.35	6,887.41	6,883.35	22.84	206.38	-175.50	1,395.77	-10,177.83	10,369.14	10,139.94	229.20	45.241
6,750.00	6,743.90	6,947.65	6,943.57	23.01	208.18	-174.36	1,396.44	-10,177.83	10,384.59	10,153.43	231.17	44.922
6,800.00	6,790.11	7,010.64	7,006.53	23.18	210.07	-173.51	1,395.57	-10,177.83	10,403.49	10,170.28	233.21	44.609
6,850.00	6,834.67	7,025.85	7,021.67	23.35	210.53	-172.75	1,395.77	-10,177.83	10,425.99	10,192.17	233.82	44.590
6,900.00	6,877.32	7,068.50	7,064.32	23.51	211.80	-172.02	1,395.77	-10,177.83	10,451.89	10,216.65	235.24	44.431
6,950.00	6,917.80	7,112.26	7,108.06	23.68	213.12	-171.25	1,396.63	-10,177.83	10,481.14	10,244.46	236.68	44.283
7,000.00	6,955.85	7,164.16	7,159.95	23.85	214.67	-170.40	1,396.28	-10,177.83	10,513.28	10,274.92	238.36	44.107
7,050.00	6,991.24	7,212.46	7,208.23	24.03	216.12	-169.43	1,395.54	-10,177.83	10,548.22	10,308.31	239.92	43.966 SF
7,100.00	7,023.76	7,215.06	7,210.76	24.22	216.20	-168.20	1,395.77	-10,177.83	10,585.87	10,345.78	240.09	44.091
7,150.00	7,053.20	7,244.50	7,240.20	24.42	217.08	-166.71	1,395.77	-10,177.83	10,625.93	10,384.87	241.06	44.081
7,200.00	7,079.37	7,270.68	7,266.37	24.63	217.86	-164.79	1,395.77	-10,177.83	10,668.15	10,426.23	241.91	44.099
7,250.00	7,102.13	7,293.43	7,289.13	24.86	218.54	-162.23	1,395.77	-10,177.83	10,712.26	10,469.60	242.66	44.146
7,300.00	7,121.32	7,317.26	7,312.93	25.10	219.26	-158.65	1,396.61	-10,177.83	10,758.12	10,514.70	243.42	44.196
7,350.00	7,136.84	7,338.43	7,334.11	25.35	219.89	-153.39	1,396.51	-10,177.83	10,805.19	10,561.10	244.09	44.267
7,400.00	7,148.58	7,354.46	7,350.13	25.62	220.37	-145.06	1,396.38	-10,177.83	10,853.31	10,608.71	244.60	44.372
7,450.00	7,156.47	7,365.24	7,360.91	25.90	220.70	-130.90	1,396.27	-10,177.83	10,902.19	10,657.25	244.94	44.509
7,500.00	7,160.47	7,370.70	7,366.36	26.20	220.86	-106.87	1,396.20	-10,177.83	10,951.53	10,706.42	245.12	44.679
7,526.22	7,161.00	7,371.42	7,367.09	26.36	220.88	-90.55	1,396.19	-10,177.83	10,977.49	10,732.35	245.14	44.780
7,600.00	7,160.97	7,371.38	7,367.04	26.83	220.88	-90.55	1,396.19	-10,177.83	11,050.55	10,805.41	245.15	45.077
7,700.00	7,160.93	7,371.32	7,366.99	27.53	220.88	-90.55	1,396.19	-10,177.83	11,149.60	10,904.44	245.16	45.479
7,800.00	7,160.89	7,371.27	7,366.93	28.32	220.88	-90.54	1,396.20	-10,177.83	11,248.66	11,003.49	245.17	45.881
7,900.00	7,160.85	7,371.21	7,366.88	29.16	220.87	-90.54	1,396.20	-10,177.83	11,347.74	11,102.55	245.19	46.282
8,000.00	7,160.81	7,371.16	7,366.82	30.07	220.87	-90.54	1,396.20	-10,177.83	11,446.84	11,201.63	245.21	46.683
8,100.00	7,160.77	7,371.10	7,366.77	31.04	220.87	-90.54	1,396.20	-10,177.83	11,545.95	11,300.72	245.23	47.083
8,200.00	7,160.73	7,371.05	7,366.71	32.06	220.87	-90.54	1,396.20	-10,177.83	11,645.07	11,399.83	245.25	47.483
8,300.00	7,160.69	7,370.99	7,366.65	33.12	220.87	-90.53	1,396.20	-10,177.83	11,744.22	11,498.94	245.27	47.882
8,400.00	7,160.65	7,370.93	7,366.60	34.23	220.87	-90.53	1,396.20	-10,177.83	11,843.37	11,598.07	245.30	48.281
8,500.00	7,160.60	7,370.88	7,366.54	35.37	220.86	-90.53	1,396.20	-10,177.83	11,942.54	11,697.21	245.33	48.679
8,600.00	7,160.56	7,370.82	7,366.49	36.55	220.86	-90.53	1,396.20	-10,177.83	12,041.72	11,796.36	245.36	49.077
8,700.00	7,160.52	7,370.77	7,366.43	37.76	220.86	-90.53	1,396.20	-10,177.83	12,140.92	11,895.53	245.40	49.475
8,800.00	7,160.48	7,370.71	7,366.38	38.99	220.86	-90.52	1,396.20	-10,177.83	12,240.13	11,994.70	245.43	49.872
8,900.00	7,160.44	7,370.65	7,366.32	40.26	220.86	-90.52	1,396.20	-10,177.83	12,339.35	12,093.89	245.47	50.269
9,000.00	7,160.40	7,370.60	7,366.26	41.54	220.86	-90.52	1,396.20	-10,177.83	12,438.59	12,193.08	245.51	50.665

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 836H
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 836H	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 #112Y - OH - OH-INC											Offset Site Error:	0.00 usft
Survey Program: 200-A027Ua_INC-ONLY											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
9,100.00	7,160.36	7,370.54	7,366.21	42.85	220.85	-90.52	1,396.20	-10,177.83	12,537.83	12,292.29	245.55	51.061
9,200.00	7,160.32	7,370.49	7,366.15	44.18	220.85	-90.51	1,396.21	-10,177.83	12,637.09	12,391.50	245.59	51.456
9,300.00	7,160.28	7,370.43	7,366.10	45.53	220.85	-90.51	1,396.21	-10,177.83	12,736.36	12,490.73	245.63	51.851
9,400.00	7,160.24	7,370.38	7,366.04	46.89	220.85	-90.51	1,396.21	-10,177.83	12,835.65	12,589.97	245.68	52.246
9,500.00	7,160.20	7,370.32	7,365.99	48.26	220.85	-90.51	1,396.21	-10,177.83	12,934.94	12,689.21	245.72	52.640
9,600.00	7,160.16	7,370.26	7,365.93	49.65	220.85	-90.51	1,396.21	-10,177.83	13,034.24	12,788.47	245.77	53.034
9,700.00	7,160.12	7,370.21	7,365.87	51.05	220.84	-90.50	1,396.21	-10,177.83	13,133.56	12,887.73	245.82	53.427
9,800.00	7,160.08	7,370.15	7,365.82	52.47	220.84	-90.50	1,396.21	-10,177.83	13,232.88	12,987.01	245.87	53.820
9,900.00	7,160.04	7,370.10	7,365.76	53.89	220.84	-90.50	1,396.21	-10,177.83	13,332.22	13,086.29	245.93	54.212
10,000.00	7,160.00	7,370.04	7,365.71	55.33	220.84	-90.50	1,396.21	-10,177.83	13,431.56	13,185.58	245.98	54.604
10,100.00	7,159.95	7,369.99	7,365.65	56.77	220.84	-90.50	1,396.21	-10,177.83	13,530.92	13,284.88	246.03	54.996
10,200.00	7,159.91	7,369.93	7,365.59	58.22	220.84	-90.49	1,396.21	-10,177.83	13,630.28	13,384.19	246.09	55.387
10,300.00	7,159.87	7,369.87	7,365.54	59.68	220.83	-90.49	1,396.21	-10,177.83	13,729.65	13,483.50	246.15	55.778
10,400.00	7,159.83	7,369.82	7,365.48	61.15	220.83	-90.49	1,396.21	-10,177.83	13,829.03	13,582.83	246.21	56.168
10,500.00	7,159.79	7,369.76	7,365.43	62.62	220.83	-90.49	1,396.21	-10,177.83	13,928.42	13,682.16	246.27	56.558
10,600.00	7,159.75	7,369.71	7,365.37	64.10	220.83	-90.49	1,396.21	-10,177.83	14,027.82	13,781.50	246.33	56.948
10,700.00	7,159.71	7,369.65	7,365.32	65.58	220.83	-90.48	1,396.22	-10,177.83	14,127.23	13,880.84	246.39	57.337
10,800.00	7,159.67	7,369.60	7,365.26	67.07	220.83	-90.48	1,396.22	-10,177.83	14,226.65	13,980.20	246.45	57.726
10,900.00	7,159.63	7,369.54	7,365.20	68.57	220.82	-90.48	1,396.22	-10,177.83	14,326.07	14,079.56	246.52	58.114
11,000.00	7,159.59	7,369.48	7,365.15	70.07	220.82	-90.48	1,396.22	-10,177.83	14,425.50	14,178.92	246.58	58.502
11,100.00	7,159.55	7,369.43	7,365.09	71.57	220.82	-90.47	1,396.22	-10,177.83	14,524.95	14,278.30	246.65	58.890
11,200.00	7,159.51	7,369.37	7,365.04	73.08	220.82	-90.47	1,396.22	-10,177.83	14,624.39	14,377.68	246.71	59.277
11,300.00	7,159.47	7,369.32	7,364.98	74.59	220.82	-90.47	1,396.22	-10,177.83	14,723.85	14,477.07	246.78	59.664
11,400.00	7,159.43	7,369.26	7,364.93	76.11	220.82	-90.47	1,396.22	-10,177.83	14,823.31	14,576.46	246.85	60.050
11,500.00	7,159.39	7,369.21	7,364.87	77.63	220.81	-90.47	1,396.22	-10,177.83	14,922.78	14,675.86	246.92	60.436
11,600.00	7,159.35	7,369.15	7,364.81	79.15	220.81	-90.46	1,396.22	-10,177.83	15,022.26	14,775.27	246.99	60.821
11,638.27	7,159.33	7,369.13	7,364.79	79.73	220.81	-90.46	1,396.22	-10,177.83	15,060.33	14,813.31	247.02	60.969
11,640.51	7,159.33	7,369.13	7,364.79	79.77	220.81	-90.46	1,396.22	-10,177.83	15,062.56	14,815.54	247.02	60.977
11,700.00	7,159.30	7,369.09	7,364.76	80.68	220.81	-90.46	1,396.22	-10,177.83	15,121.74	14,874.68	247.06	61.206
11,800.00	7,159.26	7,369.04	7,364.70	82.20	220.81	-90.46	1,396.22	-10,177.83	15,221.23	14,974.09	247.13	61.591
11,900.00	7,159.22	7,368.98	7,364.64	83.74	220.81	-90.46	1,396.22	-10,177.83	15,320.72	15,073.51	247.21	61.975
12,000.00	7,159.18	7,368.92	7,364.59	85.27	220.81	-90.45	1,396.22	-10,177.83	15,420.22	15,172.94	247.28	62.359
12,100.00	7,159.14	7,368.87	7,364.53	86.81	220.80	-90.45	1,396.23	-10,177.83	15,519.72	15,272.37	247.36	62.742
12,200.00	7,159.10	7,368.81	7,364.47	88.35	220.80	-90.45	1,396.23	-10,177.83	15,619.24	15,371.81	247.43	63.126
12,300.00	7,159.06	7,368.75	7,364.42	89.89	220.80	-90.45	1,396.23	-10,177.83	15,718.76	15,471.25	247.51	63.508
12,400.00	7,159.02	7,368.70	7,364.36	91.43	220.80	-90.44	1,396.23	-10,177.83	15,818.28	15,570.70	247.58	63.890
12,500.00	7,158.98	7,368.64	7,364.30	92.98	220.80	-90.44	1,396.23	-10,177.83	15,917.81	15,670.15	247.66	64.272
12,600.00	7,158.94	7,368.58	7,364.25	94.52	220.80	-90.44	1,396.23	-10,177.83	16,017.35	15,769.61	247.74	64.654
12,700.00	7,158.90	7,368.53	7,364.19	96.07	220.79	-90.44	1,396.23	-10,177.83	16,116.89	15,869.07	247.82	65.035
12,800.00	7,158.86	7,368.47	7,364.13	97.62	220.79	-90.44	1,396.23	-10,177.83	16,216.44	15,968.54	247.90	65.415
12,900.00	7,158.81	7,368.41	7,364.08	99.17	220.79	-90.43	1,396.23	-10,177.83	16,315.99	16,068.01	247.98	65.796
13,000.00	7,158.77	7,368.36	7,364.02	100.73	220.79	-90.43	1,396.23	-10,177.83	16,415.55	16,167.49	248.06	66.175
13,100.00	7,158.73	7,368.30	7,363.96	102.28	220.79	-90.43	1,396.23	-10,177.83	16,515.11	16,266.97	248.14	66.555
13,200.00	7,158.69	7,368.24	7,363.91	103.84	220.79	-90.43	1,396.23	-10,177.83	16,614.68	16,366.46	248.23	66.934
13,300.00	7,158.65	7,368.19	7,363.85	105.40	220.78	-90.43	1,396.23	-10,177.83	16,714.26	16,465.95	248.31	67.313
13,400.00	7,158.61	7,368.13	7,363.79	106.96	220.78	-90.42	1,396.23	-10,177.83	16,813.84	16,565.45	248.39	67.691
13,500.00	7,158.57	7,368.07	7,363.74	108.52	220.78	-90.42	1,396.23	-10,177.83	16,913.42	16,664.95	248.48	68.069
13,600.00	7,158.53	7,368.02	7,363.68	110.08	220.78	-90.42	1,396.24	-10,177.83	17,013.01	16,764.45	248.56	68.446
13,700.00	7,158.49	7,367.96	7,363.62	111.64	220.78	-90.42	1,396.24	-10,177.83	17,112.61	16,863.96	248.65	68.823
13,800.00	7,158.45	7,367.90	7,363.57	113.21	220.78	-90.41	1,396.24	-10,177.83	17,212.21	16,963.47	248.73	69.200
13,900.00	7,158.41	7,367.85	7,363.51	114.77	220.77	-90.41	1,396.24	-10,177.83	17,311.81	17,062.99	248.82	69.576
14,000.00	7,158.37	7,367.79	7,363.45	116.34	220.77	-90.41	1,396.24	-10,177.83	17,411.42	17,162.51	248.91	69.952

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 836H
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 836H	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 #112Y - OH - OH-INC													Offset Site Error:	0.00 usft				
Survey Program:		200-A027Ua_INC-ONLY					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Distance	Warning	Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor						
14,100.00	7,158.32	7,367.73	7,363.40	117.91	220.77	-90.41	1,396.24	-10,177.83	17,511.03	17,262.04	248.99	70.327						
14,200.00	7,158.28	7,367.68	7,363.34	119.47	220.77	-90.41	1,396.24	-10,177.83	17,610.65	17,361.57	249.08	70.703						
14,300.00	7,158.24	7,367.62	7,363.28	121.04	220.77	-90.40	1,396.24	-10,177.83	17,710.27	17,461.10	249.17	71.077						
14,400.00	7,158.20	7,367.56	7,363.23	122.61	220.77	-90.40	1,396.24	-10,177.83	17,809.89	17,560.64	249.26	71.451						
14,500.00	7,158.16	7,367.51	7,363.17	124.18	220.76	-90.40	1,396.24	-10,177.83	17,909.52	17,660.18	249.35	71.825						
14,600.00	7,158.12	7,367.45	7,363.11	125.76	220.76	-90.40	1,396.24	-10,177.83	18,009.16	17,759.72	249.44	72.199						
14,700.00	7,158.08	7,367.39	7,363.06	127.33	220.76	-90.40	1,396.24	-10,177.83	18,108.80	17,859.27	249.53	72.572						
14,800.00	7,158.04	7,367.34	7,363.00	128.90	220.76	-90.39	1,396.24	-10,177.83	18,208.44	17,958.82	249.62	72.945						
14,900.00	7,158.00	7,367.28	7,362.94	130.47	220.76	-90.39	1,396.24	-10,177.83	18,308.08	18,058.37	249.71	73.317						
15,000.00	7,157.96	7,367.22	7,362.89	132.05	220.76	-90.39	1,396.24	-10,177.83	18,407.73	18,157.93	249.80	73.689						
15,100.00	7,157.92	7,367.17	7,362.83	133.62	220.75	-90.39	1,396.25	-10,177.83	18,507.39	18,257.49	249.90	74.060						
15,200.00	7,157.88	7,367.11	7,362.77	135.20	220.75	-90.39	1,396.25	-10,177.83	18,607.04	18,357.05	249.99	74.431						
15,300.00	7,157.83	7,367.05	7,362.72	136.78	220.75	-90.38	1,396.25	-10,177.83	18,706.70	18,456.62	250.08	74.802						
15,400.00	7,157.79	7,367.00	7,362.66	138.35	220.75	-90.38	1,396.25	-10,177.83	18,806.37	18,556.19	250.18	75.172						
15,500.00	7,157.75	7,366.94	7,362.60	139.93	220.75	-90.38	1,396.25	-10,177.83	18,906.04	18,655.77	250.27	75.542						
15,600.00	7,157.71	7,366.88	7,362.55	141.51	220.75	-90.38	1,396.25	-10,177.83	19,005.71	18,755.34	250.37	75.912						
15,700.00	7,157.67	7,366.83	7,362.49	143.09	220.74	-90.37	1,396.25	-10,177.83	19,105.38	18,854.92	250.46	76.281						
15,800.00	7,157.63	7,366.77	7,362.43	144.67	220.74	-90.37	1,396.25	-10,177.83	19,205.06	18,954.50	250.56	76.650						
15,900.00	7,157.59	7,366.71	7,362.38	146.24	220.74	-90.37	1,396.25	-10,177.83	19,304.74	19,054.09	250.65	77.018						
16,000.00	7,157.55	7,366.66	7,362.32	147.82	220.74	-90.37	1,396.25	-10,177.83	19,404.43	19,153.68	250.75	77.386						
16,100.00	7,157.51	7,366.60	7,362.26	149.41	220.74	-90.37	1,396.25	-10,177.83	19,504.12	19,253.27	250.85	77.753						
16,200.00	7,157.47	7,366.54	7,362.21	150.99	220.73	-90.36	1,396.25	-10,177.83	19,603.81	19,352.86	250.94	78.120						
16,300.00	7,157.43	7,366.49	7,362.15	152.57	220.73	-90.36	1,396.25	-10,177.83	19,703.50	19,452.46	251.04	78.487						
16,400.00	7,157.38	7,366.43	7,362.10	154.15	220.73	-90.36	1,396.25	-10,177.83	19,803.20	19,552.06	251.14	78.853						
16,500.00	7,157.34	7,366.37	7,362.04	155.73	220.73	-90.36	1,396.25	-10,177.83	19,902.90	19,651.66	251.24	79.219						
16,600.00	7,157.30	7,366.32	7,361.98	157.31	220.73	-90.36	1,396.26	-10,177.83	20,002.60	19,751.27	251.34	79.585						
16,680.84	7,157.27	7,366.27	7,361.94	158.59	220.73	-90.35	1,396.26	-10,177.83	20,083.20	19,831.79	251.42	79.880						
16,687.46	7,157.27	7,366.27	7,361.93	158.70	220.73	-90.35	1,396.26	-10,177.83	20,089.80	19,838.38	251.42	79.904						
16,700.00	7,157.26	7,366.26	7,361.92	158.90	220.73	-90.35	1,396.26	-10,177.83	20,102.31	19,850.87	251.44	79.950						
16,800.00	7,157.22	7,366.20	7,361.87	160.48	220.72	-90.35	1,396.26	-10,177.83	20,202.01	19,950.47	251.54	80.315						
16,900.00	7,157.18	7,366.14	7,361.81	162.06	220.72	-90.34	1,396.26	-10,177.83	20,301.71	20,050.08	251.64	80.679						
17,000.00	7,157.14	7,366.08	7,361.75	163.65	220.72	-90.34	1,396.26	-10,177.83	20,401.42	20,149.68	251.74	81.043						
17,100.00	7,157.10	7,366.03	7,361.69	165.23	220.72	-90.34	1,396.26	-10,177.83	20,501.13	20,249.29	251.84	81.406						
17,200.00	7,157.06	7,365.97	7,361.63	166.82	220.72	-90.34	1,396.26	-10,177.83	20,600.84	20,348.90	251.94	81.769						
17,300.00	7,157.02	7,365.91	7,361.57	168.40	220.72	-90.34	1,396.26	-10,177.83	20,700.55	20,448.51	252.04	82.132						
17,400.00	7,156.98	7,365.85	7,361.52	169.99	220.71	-90.33	1,396.26	-10,177.83	20,800.27	20,548.13	252.14	82.494						
17,500.00	7,156.94	7,365.79	7,361.46	171.57	220.71	-90.33	1,396.26	-10,177.83	20,899.99	20,647.75	252.24	82.856						
17,600.00	7,156.90	7,365.73	7,361.40	173.16	220.71	-90.33	1,396.26	-10,177.83	20,999.71	20,747.37	252.35	83.217						
17,700.00	7,156.85	7,365.68	7,361.34	174.75	220.71	-90.33	1,396.26	-10,177.83	21,099.44	20,846.99	252.45	83.578						
17,800.00	7,156.81	7,365.62	7,361.28	176.33	220.71	-90.33	1,396.26	-10,177.83	21,199.17	20,946.61	252.55	83.939						
17,900.00	7,156.77	7,365.56	7,361.23	177.92	220.71	-90.32	1,396.26	-10,177.83	21,298.90	21,046.24	252.66	84.299						
18,000.00	7,156.73	7,365.50	7,361.17	179.51	220.70	-90.32	1,396.26	-10,177.83	21,398.63	21,145.87	252.76	84.659						
18,100.00	7,156.69	7,365.44	7,361.11	181.09	220.70	-90.32	1,396.27	-10,177.83	21,498.37	21,245.50	252.87	85.019						
18,200.00	7,156.65	7,365.38	7,361.05	182.68	220.70	-90.32	1,396.27	-10,177.83	21,598.11	21,345.13	252.97	85.378						
18,300.00	7,156.61	7,365.33	7,360.99	184.27	220.70	-90.31	1,396.27	-10,177.83	21,697.85	21,444.77	253.08	85.737						
18,400.00	7,156.57	7,365.27	7,360.93	185.86	220.70	-90.31	1,396.27	-10,177.83	21,797.59	21,544.41	253.18	86.095						
18,500.00	7,156.53	7,365.21	7,360.88	187.45	220.69	-90.31	1,396.27	-10,177.83	21,897.33	21,644.05	253.29	86.453						
18,600.00	7,156.49	7,365.15	7,360.82	189.03	220.69	-90.31	1,396.27	-10,177.83	21,997.08	21,743.69	253.39	86.810						
18,700.00	7,156.45	7,365.09	7,360.76	190.62	220.69	-90.31	1,396.27	-10,177.83	22,096.83	21,843.33	253.50	87.167						
18,800.00	7,156.41	7,365.03	7,360.70	192.21	220.69	-90.30	1,396.27	-10,177.83	22,196.58	21,942.98	253.61	87.524						
18,900.00	7,156.37	7,364.98	7,360.64	193.80	220.69	-90.30	1,396.27	-10,177.83	22,296.34	22,042.63	253.71	87.880						
19,000.00	7,156.32	7,364.92	7,360.58	195.39	220.69	-90.30	1,396.27	-10,177.83	22,396.09	22,142.27	253.82	88.236						

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 836H
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 836H	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 #112Y - OH - OH-INC											Offset Site Error: 0.00 usft
Survey Program: 200-A027Ua_INC-ONLY											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)	
19,100.00	7,156.28	7,364.86	7,360.53	196.98	220.68	-90.30	1,396.27	-10,177.83	22,495.85	22,241.93	88.592
19,200.00	7,156.24	7,364.80	7,360.47	198.57	220.68	-90.30	1,396.27	-10,177.83	22,595.61	22,341.58	88.947
19,300.00	7,156.20	7,364.74	7,360.41	200.16	220.68	-90.29	1,396.27	-10,177.83	22,695.38	22,441.23	89.302
19,400.00	7,156.16	7,364.68	7,360.35	201.75	220.68	-90.29	1,396.27	-10,177.83	22,795.14	22,540.89	89.656
19,500.00	7,156.12	7,364.63	7,360.29	203.34	220.68	-90.29	1,396.27	-10,177.83	22,894.91	22,640.55	90.010
19,600.00	7,156.08	7,364.57	7,360.24	204.93	220.68	-90.29	1,396.28	-10,177.83	22,994.68	22,740.21	90.364
19,700.00	7,156.04	7,364.51	7,360.18	206.52	220.67	-90.28	1,396.28	-10,177.83	23,094.45	22,839.87	90.717
19,800.00	7,156.00	7,364.45	7,360.12	208.11	220.67	-90.28	1,396.28	-10,177.83	23,194.22	22,939.53	91.070
19,900.00	7,155.96	7,364.39	7,360.06	209.71	220.67	-90.28	1,396.28	-10,177.83	23,294.00	23,039.20	91.422
20,000.00	7,155.92	7,364.34	7,360.00	211.30	220.67	-90.28	1,396.28	-10,177.83	23,393.77	23,138.87	91.774
20,100.00	7,155.88	7,364.28	7,359.94	212.89	220.67	-90.28	1,396.28	-10,177.83	23,493.55	23,238.54	92.126
20,200.00	7,155.84	7,364.22	7,359.89	214.48	220.67	-90.27	1,396.28	-10,177.83	23,593.33	23,338.21	92.477
20,300.00	7,155.79	7,364.16	7,359.83	216.07	220.66	-90.27	1,396.28	-10,177.83	23,693.12	23,437.88	92.828
20,400.00	7,155.75	7,364.10	7,359.77	217.66	220.66	-90.27	1,396.28	-10,177.83	23,792.90	23,537.55	93.178
20,500.00	7,155.71	7,364.04	7,359.71	219.26	220.66	-90.27	1,396.28	-10,177.83	23,892.69	23,637.23	93.528
20,600.00	7,155.67	7,363.99	7,359.65	220.85	220.66	-90.27	1,396.28	-10,177.83	23,992.47	23,736.90	93.878
20,700.00	7,155.63	7,363.93	7,359.60	222.44	220.66	-90.26	1,396.28	-10,177.83	24,092.26	23,836.58	94.227
20,800.00	7,155.59	7,363.87	7,359.54	224.03	220.65	-90.26	1,396.28	-10,177.83	24,192.05	23,936.26	94.576
20,900.00	7,155.55	7,363.81	7,359.48	225.63	220.65	-90.26	1,396.28	-10,177.83	24,291.85	24,035.94	94.924
21,000.00	7,155.51	7,363.75	7,359.42	227.22	220.65	-90.26	1,396.28	-10,177.83	24,391.64	24,135.62	95.272
21,100.00	7,155.47	7,363.70	7,359.36	228.81	220.65	-90.25	1,396.28	-10,177.83	24,491.44	24,235.31	95.620
21,200.00	7,155.43	7,363.64	7,359.30	230.40	220.65	-90.25	1,396.29	-10,177.83	24,591.24	24,334.99	95.967
21,300.00	7,155.39	7,363.58	7,359.25	232.00	220.65	-90.25	1,396.29	-10,177.83	24,691.04	24,434.68	96.314
21,400.00	7,155.35	7,363.52	7,359.19	233.59	220.64	-90.25	1,396.29	-10,177.83	24,790.84	24,534.37	96.661
21,500.00	7,155.31	7,363.46	7,359.13	235.18	220.64	-90.25	1,396.29	-10,177.83	24,890.64	24,634.05	97.007
21,600.00	7,155.26	7,363.41	7,359.07	236.78	220.64	-90.24	1,396.29	-10,177.83	24,990.45	24,733.75	97.353
21,700.00	7,155.22	7,363.35	7,359.01	238.37	220.64	-90.24	1,396.29	-10,177.83	25,090.25	24,833.44	97.698
21,800.00	7,155.18	7,363.29	7,358.96	239.96	220.64	-90.24	1,396.29	-10,177.83	25,190.06	24,933.13	98.043
21,900.00	7,155.14	7,363.23	7,358.90	241.56	220.64	-90.24	1,396.29	-10,177.83	25,289.87	25,032.83	98.387
21,953.88	7,155.12	7,363.20	7,358.87	242.42	220.63	-90.24	1,396.29	-10,177.83	25,343.65	25,086.54	98.573
22,000.00	7,155.10	7,363.18	7,358.84	243.15	220.63	-90.26	1,396.29	-10,177.83	25,389.69	25,132.53	98.732
22,019.01	7,155.09	7,363.17	7,358.83	243.46	220.63	-90.27	1,396.29	-10,177.83	25,408.68	25,151.50	98.797
22,100.00	7,155.06	7,363.13	7,358.80	244.75	220.63	-90.27	1,396.29	-10,177.83	25,489.56	25,232.29	99.077
22,200.00	7,155.02	7,363.09	7,358.76	246.34	220.63	-90.27	1,396.29	-10,177.83	25,589.44	25,332.06	99.421
22,300.00	7,154.97	7,363.04	7,358.71	247.94	220.63	-90.26	1,396.29	-10,177.83	25,689.32	25,431.82	99.765
22,400.00	7,154.93	7,363.00	7,358.67	249.53	220.63	-90.26	1,396.29	-10,177.83	25,789.20	25,531.58	100.109
22,500.00	7,154.89	7,362.96	7,358.63	251.13	220.63	-90.26	1,396.29	-10,177.83	25,889.07	25,631.35	100.452
22,600.00	7,154.85	7,362.91	7,358.58	252.72	220.63	-90.26	1,396.29	-10,177.83	25,988.95	25,731.12	100.795
22,700.00	7,154.80	7,362.87	7,358.54	254.32	220.62	-90.26	1,396.29	-10,177.83	26,088.84	25,830.88	101.138
22,800.00	7,154.76	7,362.83	7,358.50	255.91	220.62	-90.25	1,396.29	-10,177.83	26,188.72	25,930.65	101.480
22,900.00	7,154.72	7,362.78	7,358.45	257.51	220.62	-90.25	1,396.29	-10,177.83	26,288.60	26,030.42	101.822
23,000.00	7,154.68	7,362.74	7,358.41	259.11	220.62	-90.25	1,396.30	-10,177.83	26,388.48	26,130.19	102.163
23,100.00	7,154.63	7,362.70	7,358.37	260.70	220.62	-90.25	1,396.30	-10,177.83	26,488.37	26,229.95	102.504
23,200.00	7,154.59	7,362.65	7,358.32	262.30	220.62	-90.25	1,396.30	-10,177.83	26,588.25	26,329.72	102.845
23,300.00	7,154.55	7,362.61	7,358.28	263.89	220.62	-90.24	1,396.30	-10,177.83	26,688.14	26,429.49	103.185
23,400.00	7,154.51	7,362.57	7,358.23	265.49	220.62	-90.24	1,396.30	-10,177.83	26,788.03	26,529.27	103.525
23,500.00	7,154.47	7,362.52	7,358.19	267.08	220.61	-90.24	1,396.30	-10,177.83	26,887.91	26,629.04	103.864
23,600.00	7,154.42	7,362.48	7,358.15	268.68	220.61	-90.24	1,396.30	-10,177.83	26,987.80	26,728.81	104.203
23,700.00	7,154.38	7,362.44	7,358.10	270.28	220.61	-90.24	1,396.30	-10,177.83	27,087.69	26,828.58	104.542
23,800.00	7,154.34	7,362.39	7,358.06	271.87	220.61	-90.23	1,396.30	-10,177.83	27,187.58	26,928.36	104.880
23,900.00	7,154.30	7,362.35	7,358.02	273.47	220.61	-90.23	1,396.30	-10,177.83	27,287.47	27,028.13	105.218
24,000.00	7,154.25	7,362.31	7,357.97	275.07	220.61	-90.23	1,396.30	-10,177.83	27,387.37	27,127.91	105.555

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 836H
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 836H	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 #112Y - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		200-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)
24,100.00	7,154.21	7,362.26	7,357.93	276.66	220.61	-90.23	1,396.30	-10,177.83	27,487.26	27,227.68	259.58	105.892	
24,200.00	7,154.17	7,362.22	7,357.89	278.26	220.61	-90.23	1,396.30	-10,177.83	27,587.15	27,327.46	259.70	106.229	
24,300.00	7,154.13	7,362.18	7,357.84	279.86	220.60	-90.23	1,396.30	-10,177.83	27,687.05	27,427.23	259.81	106.565	
24,400.00	7,154.08	7,362.13	7,357.80	281.45	220.60	-90.22	1,396.30	-10,177.83	27,786.94	27,527.01	259.93	106.901	
24,500.00	7,154.04	7,362.09	7,357.76	283.05	220.60	-90.22	1,396.30	-10,177.83	27,886.84	27,626.79	260.05	107.237	
24,597.25	7,154.00	7,362.05	7,357.71	284.60	220.60	-90.22	1,396.30	-10,177.83	27,983.98	27,723.82	260.16	107.562	
24,600.00	7,154.00	7,362.04	7,357.71	284.65	220.60	-90.22	1,396.30	-10,177.83	27,986.73	27,726.57	260.17	107.572	
24,700.00	7,153.96	7,361.99	7,357.66	286.24	220.60	-90.18	1,396.30	-10,177.83	28,086.58	27,826.30	260.29	107.906	
24,722.47	7,153.95	7,361.97	7,357.64	286.60	220.60	-90.18	1,396.30	-10,177.83	28,109.01	27,848.69	260.32	107.980	
24,800.00	7,153.92	7,361.92	7,357.59	287.84	220.60	-90.18	1,396.30	-10,177.83	28,186.36	27,925.95	260.41	108.238	
24,900.00	7,153.88	7,361.85	7,357.51	289.43	220.59	-90.17	1,396.31	-10,177.83	28,286.14	28,025.61	260.53	108.570	
25,000.00	7,153.84	7,361.78	7,357.44	291.03	220.59	-90.17	1,396.31	-10,177.83	28,385.92	28,125.26	260.66	108.902	
25,100.00	7,153.80	7,361.71	7,357.37	292.63	220.59	-90.17	1,396.31	-10,177.83	28,485.70	28,224.92	260.78	109.233	
25,200.00	7,153.77	7,361.64	7,357.30	294.22	220.59	-90.17	1,396.31	-10,177.83	28,585.48	28,324.58	260.90	109.564	
25,300.00	7,153.73	7,361.56	7,357.23	295.82	220.59	-90.17	1,396.31	-10,177.83	28,685.27	28,424.24	261.03	109.894	
25,400.00	7,153.69	7,361.49	7,357.16	297.41	220.58	-90.16	1,396.31	-10,177.83	28,785.05	28,523.90	261.15	110.224	
25,500.00	7,153.65	7,361.42	7,357.09	299.01	220.58	-90.16	1,396.31	-10,177.83	28,884.84	28,623.56	261.27	110.554	
25,600.00	7,153.61	7,361.35	7,357.02	300.60	220.58	-90.16	1,396.31	-10,177.83	28,984.63	28,723.23	261.40	110.884	
25,700.00	7,153.57	7,361.28	7,356.95	302.20	220.58	-90.16	1,396.31	-10,177.83	29,084.41	28,822.89	261.52	111.213	
25,800.00	7,153.53	7,361.21	7,356.88	303.80	220.58	-90.16	1,396.31	-10,177.83	29,184.21	28,922.56	261.64	111.541	
25,900.00	7,153.50	7,361.14	7,356.81	305.39	220.57	-90.15	1,396.31	-10,177.83	29,284.00	29,022.23	261.77	111.870	
26,000.00	7,153.46	7,361.07	7,356.74	306.99	220.57	-90.15	1,396.31	-10,177.83	29,383.79	29,121.90	261.89	112.197	
26,100.00	7,153.42	7,361.00	7,356.67	308.58	220.57	-90.15	1,396.31	-10,177.83	29,483.59	29,221.57	262.02	112.525	
26,200.00	7,153.38	7,360.93	7,356.60	310.18	220.57	-90.15	1,396.31	-10,177.83	29,583.38	29,321.24	262.14	112.852	
26,300.00	7,153.34	7,360.86	7,356.53	311.78	220.56	-90.14	1,396.32	-10,177.83	29,683.18	29,420.91	262.27	113.179	
26,400.00	7,153.30	7,360.79	7,356.46	313.37	220.56	-90.14	1,396.32	-10,177.83	29,782.98	29,520.59	262.39	113.505	
26,500.00	7,153.26	7,360.72	7,356.39	314.97	220.56	-90.14	1,396.32	-10,177.83	29,882.78	29,620.26	262.52	113.831	
26,600.00	7,153.23	7,360.65	7,356.32	316.57	220.56	-90.14	1,396.32	-10,177.83	29,982.58	29,719.94	262.64	114.157	
26,700.00	7,153.19	7,360.58	7,356.25	318.16	220.56	-90.14	1,396.32	-10,177.83	30,082.39	29,819.62	262.77	114.482	
26,800.00	7,153.15	7,360.51	7,356.18	319.76	220.55	-90.13	1,396.32	-10,177.83	30,182.19	29,919.30	262.89	114.807	
26,900.00	7,153.11	7,360.44	7,356.11	321.35	220.55	-90.13	1,396.32	-10,177.83	30,282.00	30,018.98	263.02	115.132	
26,976.35	7,153.08	7,360.39	7,356.05	322.57	220.55	-90.13	1,396.32	-10,177.83	30,358.20	30,095.08	263.12	115.380	
27,000.00	7,153.07	7,360.37	7,356.04	322.95	220.55	-90.13	1,396.32	-10,177.83	30,381.81	30,118.66	263.15	115.456	
27,100.00	7,153.03	7,360.30	7,355.97	324.55	220.55	-90.13	1,396.32	-10,177.83	30,481.61	30,218.34	263.27	115.780	
27,176.36	7,153.00	7,360.25	7,355.91	325.77	220.55	-90.13	1,396.32	-10,177.83	30,557.83	30,294.46	263.37	116.027	

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 836H
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 836H	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 #184C - OH - OH-INC													Offset Site Error: 0.00 usft
Survey Program: 159-A027Ua_INC-ONLY													Offset Well Error: 0.00 usft
Reference	Offset	Semi Major Axis			Distance			Rule Assigned:			Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	
0.00	0.00	183.00	183.00	0.00	3.27	-92.05	-296.21	-8,281.39	8,286.68				
125.00	125.00	308.00	308.00	0.06	5.64	132.31	-296.21	-8,281.39	8,286.97	8,281.28	5.69	1,457.408	
225.00	225.00	408.00	408.00	0.17	7.53	-161.23	-296.21	-8,281.39	8,287.62	8,279.93	7.69	1,077.323	
312.00	311.99	494.87	494.87	0.28	9.17	137.27	-295.92	-8,281.39	8,288.18	8,278.74	9.44	878.099	
400.00	399.99	582.67	582.67	0.37	10.84	137.27	-295.98	-8,281.39	8,288.58	8,277.40	11.19	740.987	
462.00	461.99	644.53	644.53	0.50	12.01	137.27	-296.06	-8,281.39	8,288.87	8,276.37	12.50	663.158	
509.18	509.16	691.60	691.59	0.64	12.90	111.60	-296.15	-8,281.39	8,289.17	8,275.64	13.53	612.651	
600.00	599.96	783.00	782.96	0.94	14.79	111.61	-296.21	-8,281.39	8,289.91	8,274.19	15.72	527.497	
700.00	699.94	882.98	882.94	1.28	16.95	111.63	-296.21	-8,281.39	8,290.72	8,272.49	18.22	454.934	
800.00	799.92	982.95	982.92	1.63	19.11	111.64	-296.21	-8,281.39	8,291.52	8,270.79	20.74	399.798	
900.00	899.89	1,082.08	1,082.03	1.98	21.26	111.66	-295.19	-8,281.39	8,292.30	8,269.06	23.24	356.823	
1,000.00	999.87	1,181.15	1,181.09	2.34	23.40	111.67	-295.65	-8,281.39	8,293.12	8,267.38	25.74	322.190	
1,100.00	1,099.84	1,282.99	1,282.84	2.69	25.78	111.68	-296.21	-8,281.39	8,293.95	8,265.47	28.48	291.250	
1,200.00	1,199.82	1,382.96	1,382.82	3.05	28.60	111.70	-296.21	-8,281.39	8,294.76	8,263.11	31.65	262.074	
1,300.00	1,299.80	1,482.94	1,482.80	3.41	31.41	111.71	-296.21	-8,281.39	8,295.57	8,260.75	34.82	238.212	
1,400.00	1,399.77	1,582.29	1,582.13	3.77	34.21	111.74	-294.81	-8,281.39	8,296.33	8,258.35	37.98	218.434	
1,500.00	1,499.75	1,681.20	1,681.03	4.13	37.00	111.75	-295.23	-8,281.39	8,297.16	8,256.03	41.13	201.753	
1,600.00	1,599.72	1,780.14	1,779.96	4.49	39.78	111.75	-296.05	-8,281.39	8,298.00	8,253.73	44.27	187.438	
1,700.00	1,699.70	1,883.19	1,882.70	4.85	43.73	111.77	-296.21	-8,281.39	8,298.82	8,250.24	48.58	170.836	
1,800.00	1,799.68	1,983.16	1,982.68	5.21	47.75	111.78	-296.21	-8,281.39	8,299.63	8,246.68	52.95	156.740	
1,900.00	1,899.65	2,082.86	2,082.30	5.57	51.75	111.82	-292.93	-8,281.38	8,300.34	8,243.02	57.31	144.821	
2,000.00	1,999.63	2,180.71	2,180.11	5.93	55.68	111.83	-293.45	-8,281.38	8,301.17	8,239.56	61.60	134.753	
2,100.00	2,099.60	2,278.64	2,277.99	6.29	59.61	111.83	-294.81	-8,281.39	8,302.03	8,236.13	65.89	125.989	
2,200.00	2,199.58	2,383.96	2,382.58	6.65	64.25	111.84	-296.21	-8,281.39	8,302.88	8,231.99	70.89	117.118	
2,300.00	2,299.56	2,478.77	2,477.32	7.01	69.08	111.86	-295.40	-8,281.39	8,303.68	8,227.59	76.08	109.138	
2,400.00	2,399.53	2,584.36	2,582.53	7.37	74.45	111.87	-296.21	-8,281.39	8,304.52	8,222.70	81.82	101.499	
2,500.00	2,499.51	2,684.34	2,682.51	7.73	79.54	111.88	-296.21	-8,281.39	8,305.33	8,218.06	87.27	95.172	
2,600.00	2,599.48	2,781.16	2,779.09	8.09	84.47	111.92	-292.43	-8,281.38	8,306.03	8,213.48	92.55	89.743	
2,700.00	2,699.46	2,876.86	2,874.65	8.45	89.34	111.92	-294.64	-8,281.39	8,306.92	8,209.14	97.78	84.953	
2,800.00	2,799.44	2,985.34	2,982.44	8.81	94.33	111.92	-296.21	-8,281.39	8,307.78	8,204.65	103.13	80.556	
2,900.00	2,899.41	3,085.31	3,082.41	9.17	98.60	111.94	-296.21	-8,281.39	8,308.60	8,200.84	107.76	77.100	
3,000.00	2,999.39	3,185.29	3,182.39	9.53	102.87	111.95	-296.21	-8,281.39	8,309.42	8,197.02	112.40	73.929	
3,100.00	3,099.36	3,284.76	3,281.69	9.89	107.13	112.00	-291.06	-8,281.38	8,310.09	8,193.08	117.01	71.021	
3,200.00	3,199.34	3,382.84	3,379.72	10.25	111.32	112.01	-291.72	-8,281.38	8,310.93	8,189.37	121.56	68.368	
3,300.00	3,299.32	3,481.03	3,477.83	10.61	115.51	112.01	-293.24	-8,281.38	8,311.79	8,185.68	126.12	65.905	
3,400.00	3,399.29	3,579.30	3,576.01	10.97	119.72	112.01	-295.62	-8,281.39	8,312.68	8,182.01	130.68	63.611	
3,500.00	3,499.27	3,686.27	3,682.27	11.33	123.85	112.02	-296.21	-8,281.39	8,313.52	8,178.35	135.17	61.502	
3,600.00	3,599.25	3,786.24	3,782.25	11.69	127.62	112.03	-296.21	-8,281.39	8,314.34	8,175.04	139.30	59.686	
3,700.00	3,699.22	3,884.92	3,880.82	12.05	131.34	112.07	-293.33	-8,281.38	8,315.08	8,171.70	143.38	57.993	
3,800.00	3,799.20	3,982.59	3,978.44	12.41	135.02	112.07	-294.45	-8,281.39	8,315.94	8,168.52	147.42	56.409	
3,900.00	3,899.17	4,086.71	4,082.17	12.77	138.83	112.08	-296.21	-8,281.39	8,316.81	8,165.22	151.59	54.863	
4,000.00	3,999.15	4,186.68	4,182.15	13.13	142.08	112.09	-296.21	-8,281.39	8,317.63	8,162.43	155.20	53.593	
4,100.00	4,099.13	4,286.66	4,282.13	13.49	145.32	112.10	-296.21	-8,281.39	8,318.46	8,159.65	158.81	52.381	
4,200.00	4,199.10	4,386.63	4,382.10	13.85	148.57	112.12	-296.21	-8,281.39	8,319.28	8,156.87	162.41	51.223	
4,300.00	4,299.08	4,486.61	4,482.08	14.21	151.82	112.13	-296.21	-8,281.39	8,320.11	8,154.09	166.02	50.115	
4,400.00	4,399.05	4,586.59	4,582.05	14.57	155.06	112.15	-296.21	-8,281.39	8,320.93	8,151.30	169.63	49.054	
4,500.00	4,499.03	4,686.56	4,682.03	14.93	158.31	112.16	-296.21	-8,281.39	8,321.76	8,148.52	173.24	48.037	
4,600.00	4,599.01	4,786.54	4,782.01	15.29	161.56	112.17	-296.21	-8,281.39	8,322.58	8,145.74	176.84	47.062	
4,700.00	4,698.98	4,886.51	4,881.98	15.65	164.80	112.19	-296.21	-8,281.39	8,323.41	8,142.96	180.45	46.126	
4,800.00	4,798.96	4,986.49	4,981.96	16.01	168.05	112.20	-296.21	-8,281.39	8,324.24	8,140.18	184.06	45.227	
4,900.00	4,898.93	5,086.47	5,081.93	16.37	171.30	112.22	-296.21	-8,281.39	8,325.07	8,137.40	187.66	44.362	
5,000.00	4,998.91	5,186.42	5,181.62	16.73	174.54	112.31	-284.07	-8,281.38	8,325.60	8,134.33	191.27	43.528	

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 836H
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 836H	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 #184C - OH - OH-INC													Offset Site Error:	0.00 usft		
Survey Program:		159-A027Ua_INC-ONLY					Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned:		Offset Well Error:	0.00 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning			
5,100.00	5,098.89	5,286.10	5,281.27	17.09	177.78	112.33	-284.19	-8,281.38	8,326.44	8,131.57	194.87	42.729				
5,200.00	5,198.86	5,385.80	5,380.95	17.45	181.02	112.34	-284.50	-8,281.38	8,327.28	8,128.81	198.47	41.958				
5,300.00	5,298.84	5,485.52	5,480.64	17.81	184.26	112.35	-285.00	-8,281.38	8,328.12	8,126.06	202.06	41.215				
5,400.00	5,398.81	5,585.26	5,580.35	18.17	187.50	112.36	-285.70	-8,281.38	8,328.97	8,123.31	205.66	40.498				
5,500.00	5,498.79	5,685.02	5,680.07	18.53	190.74	112.37	-286.59	-8,281.38	8,329.82	8,120.56	209.26	39.805				
5,600.00	5,598.77	5,784.79	5,779.81	18.89	193.98	112.37	-287.68	-8,281.38	8,330.68	8,117.82	212.86	39.136				
5,700.00	5,698.74	5,884.59	5,879.56	19.25	197.22	112.38	-288.96	-8,281.38	8,331.54	8,115.08	216.47	38.489				
5,800.00	5,798.72	5,984.40	5,979.33	19.61	200.46	112.38	-290.44	-8,281.38	8,332.41	8,112.34	220.07	37.863				
5,900.00	5,898.69	6,084.23	6,079.11	19.97	203.70	112.38	-292.11	-8,281.38	8,333.28	8,109.61	223.67	37.257				
6,000.00	5,998.67	6,184.07	6,178.89	20.33	206.95	112.38	-293.98	-8,281.39	8,334.16	8,106.89	227.27	36.670				
6,100.00	6,098.65	6,283.93	6,278.69	20.69	210.19	112.38	-296.04	-8,281.39	8,335.04	8,104.16	230.88	36.102				
6,200.00	6,198.62	6,387.88	6,381.62	21.05	213.32	112.40	-296.21	-8,281.39	8,335.88	8,101.51	234.37	35.567				
6,300.00	6,298.60	6,487.86	6,481.60	21.41	216.31	112.41	-296.21	-8,281.39	8,336.71	8,098.99	237.72	35.070				
6,400.00	6,398.57	6,587.83	6,581.57	21.77	219.30	112.42	-296.21	-8,281.39	8,337.55	8,096.48	241.07	34.586				
6,500.00	6,498.55	6,687.81	6,681.55	22.13	222.29	112.44	-296.21	-8,281.39	8,338.38	8,093.97	244.42	34.115				
6,531.56	6,530.10	6,719.36	6,713.10	22.25	223.23	112.44	-296.21	-8,281.39	8,338.65	8,093.17	245.47	33.969				
6,550.00	6,548.53	6,737.79	6,731.53	22.31	223.78	150.80	-296.21	-8,281.39	8,339.07	8,092.98	246.09	33.886 ES				
6,600.00	6,598.36	6,787.62	6,781.36	22.49	225.27	168.99	-296.21	-8,281.39	8,342.89	8,095.13	247.76	33.673				
6,650.00	6,647.74	6,836.99	6,830.74	22.67	226.75	172.87	-296.21	-8,281.39	8,350.62	8,101.20	249.41	33.481				
6,700.00	6,696.35	6,885.61	6,879.35	22.84	228.20	174.53	-296.21	-8,281.39	8,362.19	8,111.15	251.04	33.311				
6,750.00	6,743.90	6,933.16	6,926.90	23.01	229.63	175.42	-296.21	-8,281.39	8,377.54	8,124.91	252.63	33.162				
6,800.00	6,790.11	6,979.36	6,973.11	23.18	231.01	175.97	-296.21	-8,281.39	8,396.58	8,142.41	254.17	33.035				
6,850.00	6,834.67	7,023.93	7,017.67	23.35	232.34	176.32	-296.21	-8,281.39	8,419.18	8,163.53	255.65	32.932				
6,900.00	6,877.32	7,066.58	7,060.32	23.51	233.62	176.56	-296.21	-8,281.39	8,445.21	8,188.14	257.07	32.851				
6,950.00	6,917.80	7,107.06	7,100.80	23.68	234.83	176.70	-296.21	-8,281.39	8,474.51	8,216.09	258.42	32.794				
7,000.00	6,955.85	7,145.11	7,138.85	23.85	235.96	176.78	-296.21	-8,281.39	8,506.89	8,247.21	259.68	32.759				
7,050.00	6,991.24	7,180.50	7,174.24	24.03	237.02	176.80	-296.21	-8,281.39	8,542.17	8,281.31	260.85	32.747 SF				
7,100.00	7,023.76	7,213.02	7,206.76	24.22	238.00	176.76	-296.21	-8,281.39	8,580.11	8,318.18	261.93	32.758				
7,150.00	7,053.20	7,242.45	7,236.20	24.42	238.88	176.65	-296.21	-8,281.39	8,620.49	8,357.59	262.89	32.791				
7,200.00	7,079.37	7,268.63	7,262.37	24.63	239.66	176.47	-296.21	-8,281.39	8,663.05	8,399.30	263.75	32.845				
7,250.00	7,102.13	7,291.39	7,285.13	24.86	240.34	176.17	-296.21	-8,281.39	8,707.54	8,443.04	264.50	32.921				
7,300.00	7,121.32	7,310.58	7,304.32	25.10	240.91	175.70	-296.21	-8,281.39	8,753.67	8,488.55	265.12	33.017				
7,350.00	7,136.84	7,326.10	7,319.84	25.35	241.38	174.92	-296.21	-8,281.39	8,801.18	8,535.55	265.63	33.134				
7,400.00	7,148.58	7,337.84	7,331.58	25.62	241.73	173.49	-296.21	-8,281.39	8,849.75	8,583.75	266.01	33.269				
7,450.00	7,156.47	7,345.73	7,339.47	25.90	241.96	170.14	-296.21	-8,281.39	8,899.10	8,632.84	266.26	33.422				
7,500.00	7,160.47	7,349.73	7,343.47	26.20	242.08	155.01	-296.21	-8,281.39	8,948.92	8,682.52	266.39	33.593				
7,526.22	7,161.00	7,350.26	7,344.00	26.36	242.10	88.72	-296.21	-8,281.39	8,975.13	8,708.72	266.41	33.689				
7,600.00	7,160.97	7,350.23	7,343.97	26.83	242.10	88.71	-296.21	-8,281.39	9,048.90	8,782.47	266.42	33.965				
7,700.00	7,160.93	7,350.19	7,343.93	27.53	242.10	88.69	-296.21	-8,281.39	9,148.88	8,882.45	266.43	34.339				
7,800.00	7,160.89	7,350.15	7,343.89	28.32	242.10	88.68	-296.21	-8,281.39	9,248.86	8,982.42	266.44	34.712				
7,900.00	7,160.85	7,350.11	7,343.85	29.16	242.09	88.66	-296.21	-8,281.39	9,348.85	9,082.39	266.45	35.086				
8,000.00	7,160.81	7,350.07	7,343.81	30.07	242.09	88.65	-296.21	-8,281.39	9,448.83	9,182.37	266.47	35.460				
8,100.00	7,160.77	7,350.02	7,343.77	31.04	242.09	88.63	-296.21	-8,281.39	9,548.82	9,282.34	266.48	35.833				
8,200.00	7,160.73	7,349.98	7,343.73	32.06	242.09	88.62	-296.21	-8,281.39	9,648.80	9,382.31	266.50	36.206				
8,300.00	7,160.69	7,349.94	7,343.69	33.12	242.09	88.61	-296.21	-8,281.39	9,748.79	9,482.28	266.51	36.579				
8,400.00	7,160.65	7,349.90	7,343.65	34.23	242.09	88.59	-296.21	-8,281.39	9,848.78	9,582.25	266.53	36.952				
8,500.00	7,160.60	7,349.86	7,343.60	35.37	242.09	88.58	-296.21	-8,281.39	9,948.76	9,682.22	266.55	37.325				
8,600.00	7,160.56	7,349.82	7,343.56	36.55	242.09	88.56	-296.21	-8,281.39	10,048.75	9,782.18	266.57	37.697				
8,700.00	7,160.52	7,349.78	7,343.52	37.76	242.09	88.55	-296.21	-8,281.39	10,148.74	9,882.15	266.59	38.069				
8,800.00	7,160.48	7,349.74	7,343.48	38.99	242.08	88.53	-296.21	-8,281.39	10,248.72	9,982.12	266.61	38.441				
8,900.00	7,160.44	7,349.70	7,343.44	40.26	242.08	88.52	-296.21	-8,281.39	10,348.71	10,082.08	266.63	38.813				
9,000.00	7,160.40	7,349.66	7,343.40	41.54	242.08	88.51	-296.21	-8,281.39	10,448.70	10,182.05	266.65	39.185				

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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 #184C - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program:		159-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)
9,100.00	7,160.36	7,349.62	7,343.36	42.85	242.08	88.49	-296.21	-8,281.39	10,548.69	10,282.01	266.68	39.556	
9,200.00	7,160.32	7,349.58	7,343.32	44.18	242.08	88.48	-296.21	-8,281.39	10,648.68	10,381.98	266.70	39.928	
9,300.00	7,160.28	7,349.54	7,343.28	45.53	242.08	88.46	-296.21	-8,281.39	10,748.66	10,481.94	266.73	40.299	
9,400.00	7,160.24	7,349.50	7,343.24	46.89	242.08	88.45	-296.21	-8,281.39	10,848.65	10,581.90	266.75	40.669	
9,500.00	7,160.20	7,349.46	7,343.20	48.26	242.08	88.43	-296.21	-8,281.39	10,948.64	10,681.86	266.78	41.040	
9,600.00	7,160.16	7,349.42	7,343.16	49.65	242.07	88.42	-296.21	-8,281.39	11,048.63	10,781.82	266.81	41.410	
9,700.00	7,160.12	7,349.38	7,343.12	51.05	242.07	88.40	-296.21	-8,281.39	11,148.62	10,881.78	266.84	41.781	
9,800.00	7,160.08	7,349.33	7,343.08	52.47	242.07	88.39	-296.21	-8,281.39	11,248.61	10,981.74	266.87	42.151	
9,900.00	7,160.04	7,349.29	7,343.04	53.89	242.07	88.38	-296.21	-8,281.39	11,348.60	11,081.70	266.90	42.520	
10,000.00	7,160.00	7,349.25	7,343.00	55.33	242.07	88.36	-296.21	-8,281.39	11,448.59	11,181.66	266.93	42.890	
10,100.00	7,159.95	7,349.21	7,342.95	56.77	242.07	88.35	-296.21	-8,281.39	11,548.58	11,281.61	266.96	43.259	
10,200.00	7,159.91	7,349.17	7,342.91	58.22	242.07	88.33	-296.21	-8,281.39	11,648.57	11,381.57	267.00	43.628	
10,300.00	7,159.87	7,349.13	7,342.87	59.68	242.07	88.32	-296.21	-8,281.39	11,748.56	11,481.53	267.03	43.997	
10,400.00	7,159.83	7,349.09	7,342.83	61.15	242.06	88.30	-296.21	-8,281.39	11,848.55	11,581.48	267.07	44.365	
10,500.00	7,159.79	7,349.05	7,342.79	62.62	242.06	88.29	-296.21	-8,281.39	11,948.54	11,681.43	267.11	44.733	
10,600.00	7,159.75	7,349.01	7,342.75	64.10	242.06	88.28	-296.21	-8,281.39	12,048.53	11,781.39	267.14	45.101	
10,700.00	7,159.71	7,348.97	7,342.71	65.58	242.06	88.26	-296.21	-8,281.39	12,148.52	11,881.34	267.18	45.469	
10,800.00	7,159.67	7,348.93	7,342.67	67.07	242.06	88.25	-296.21	-8,281.39	12,248.51	11,981.29	267.22	45.837	
10,900.00	7,159.63	7,348.89	7,342.63	68.57	242.06	88.23	-296.21	-8,281.39	12,348.50	12,081.24	267.26	46.204	
11,000.00	7,159.59	7,348.85	7,342.59	70.07	242.06	88.22	-296.21	-8,281.39	12,448.50	12,181.19	267.30	46.571	
11,100.00	7,159.55	7,348.81	7,342.55	71.57	242.06	88.20	-296.21	-8,281.39	12,548.49	12,281.14	267.35	46.937	
11,200.00	7,159.51	7,348.77	7,342.51	73.08	242.05	88.19	-296.21	-8,281.39	12,648.48	12,381.09	267.39	47.304	
11,300.00	7,159.47	7,348.73	7,342.47	74.59	242.05	88.18	-296.21	-8,281.39	12,748.47	12,481.04	267.43	47.670	
11,400.00	7,159.43	7,348.68	7,342.43	76.11	242.05	88.16	-296.21	-8,281.39	12,848.46	12,580.99	267.48	48.036	
11,500.00	7,159.39	7,348.64	7,342.39	77.63	242.05	88.15	-296.21	-8,281.39	12,948.46	12,680.93	267.52	48.401	
11,600.00	7,159.35	7,348.60	7,342.35	79.15	242.05	88.13	-296.21	-8,281.39	13,048.45	12,780.88	267.57	48.767	
11,638.27	7,159.33	7,348.59	7,342.33	79.73	242.05	88.13	-296.21	-8,281.39	13,086.72	12,819.13	267.59	48.906	
11,640.51	7,159.33	7,348.59	7,342.33	79.77	242.05	88.06	-296.21	-8,281.39	13,088.96	12,821.37	267.59	48.915	
11,700.00	7,159.30	7,348.56	7,342.30	80.68	242.05	88.05	-296.21	-8,281.39	13,148.44	12,880.82	267.62	49.132	
11,800.00	7,159.26	7,348.52	7,342.26	82.20	242.05	88.03	-296.21	-8,281.39	13,248.43	12,980.77	267.66	49.496	
11,900.00	7,159.22	7,348.48	7,342.22	83.74	242.05	88.02	-296.21	-8,281.39	13,348.43	13,080.71	267.71	49.861	
12,000.00	7,159.18	7,348.44	7,342.18	85.27	242.05	88.00	-296.21	-8,281.39	13,448.42	13,180.66	267.76	50.225	
12,100.00	7,159.14	7,348.40	7,342.14	86.81	242.04	87.99	-296.21	-8,281.39	13,548.41	13,280.60	267.81	50.589	
12,200.00	7,159.10	7,348.36	7,342.10	88.35	242.04	87.97	-296.21	-8,281.39	13,648.41	13,380.54	267.87	50.952	
12,300.00	7,159.06	7,348.32	7,342.06	89.89	242.04	87.96	-296.21	-8,281.39	13,748.40	13,480.48	267.92	51.316	
12,400.00	7,159.02	7,348.28	7,342.02	91.43	242.04	87.94	-296.21	-8,281.39	13,848.39	13,580.42	267.97	51.679	
12,500.00	7,158.98	7,348.24	7,341.98	92.98	242.04	87.93	-296.21	-8,281.39	13,948.39	13,680.36	268.02	52.041	
12,600.00	7,158.94	7,348.20	7,341.94	94.52	242.04	87.91	-296.21	-8,281.39	14,048.38	13,780.30	268.08	52.404	
12,700.00	7,158.90	7,348.15	7,341.90	96.07	242.04	87.90	-296.21	-8,281.39	14,148.37	13,880.24	268.14	52.766	
12,800.00	7,158.86	7,348.11	7,341.86	97.62	242.04	87.88	-296.21	-8,281.39	14,248.37	13,980.18	268.19	53.128	
12,900.00	7,158.81	7,348.07	7,341.81	99.17	242.03	87.87	-296.21	-8,281.39	14,348.36	14,080.11	268.25	53.489	
13,000.00	7,158.77	7,348.03	7,341.77	100.73	242.03	87.85	-296.21	-8,281.39	14,448.36	14,180.05	268.31	53.850	
13,100.00	7,158.73	7,347.99	7,341.73	102.28	242.03	87.84	-296.21	-8,281.39	14,548.35	14,279.98	268.37	54.211	
13,200.00	7,158.69	7,347.95	7,341.69	103.84	242.03	87.82	-296.21	-8,281.39	14,648.34	14,379.92	268.42	54.571	
13,300.00	7,158.65	7,347.91	7,341.65	105.40	242.03	87.81	-296.21	-8,281.39	14,748.34	14,479.85	268.49	54.932	
13,400.00	7,158.61	7,347.87	7,341.61	106.96	242.03	87.79	-296.21	-8,281.39	14,848.33	14,579.79	268.55	55.292	
13,500.00	7,158.57	7,347.83	7,341.57	108.52	242.03	87.78	-296.21	-8,281.39	14,948.33	14,679.72	268.61	55.651	
13,600.00	7,158.53	7,347.79	7,341.53	110.08	242.03	87.76	-296.21	-8,281.39	15,048.32	14,779.65	268.67	56.010	
13,700.00	7,158.49	7,347.75	7,341.49	111.64	242.02	87.75	-296.21	-8,281.39	15,148.32	14,879.58	268.73	56.369	
13,800.00	7,158.45	7,347.70	7,341.45	113.21	242.02	87.73	-296.21	-8,281.39	15,248.31	14,979.51	268.80	56.728	
13,900.00	7,158.41	7,347.66	7,341.41	114.77	242.02	87.72	-296.21	-8,281.39	15,348.30	15,079.44	268.86	57.086	
14,000.00	7,158.37	7,347.62	7,341.37	116.34	242.02	87.70	-296.21	-8,281.39	15,448.30	15,179.37	268.93	57.444	

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 836H
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 836H	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 #184C - OH - OH-INC											Offset Site Error:	0.00 usft
Survey Program: 159-A027Ua_INC-ONLY											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
14,100.00	7,158.32	7,347.58	7,341.32	117.91	242.02	87.69	-296.21	-8,281.39	15,548.29	15,279.30	268.99	57.801
14,200.00	7,158.28	7,347.54	7,341.28	119.47	242.02	87.68	-296.21	-8,281.39	15,648.29	15,379.23	269.06	58.159
14,300.00	7,158.24	7,347.50	7,341.24	121.04	242.02	87.66	-296.21	-8,281.39	15,748.28	15,479.15	269.13	58.516
14,400.00	7,158.20	7,347.46	7,341.20	122.61	242.02	87.65	-296.21	-8,281.39	15,848.28	15,579.08	269.20	58.872
14,500.00	7,158.16	7,347.42	7,341.16	124.18	242.01	87.63	-296.21	-8,281.39	15,948.27	15,679.01	269.27	59.228
14,600.00	7,158.12	7,347.38	7,341.12	125.76	242.01	87.62	-296.21	-8,281.39	16,048.27	15,778.93	269.34	59.584
14,700.00	7,158.08	7,347.34	7,341.08	127.33	242.01	87.60	-296.21	-8,281.39	16,148.26	15,878.86	269.41	59.940
14,800.00	7,158.04	7,347.30	7,341.04	128.90	242.01	87.59	-296.21	-8,281.39	16,248.26	15,978.78	269.48	60.295
14,900.00	7,158.00	7,347.26	7,341.00	130.47	242.01	87.57	-296.21	-8,281.39	16,348.26	16,078.70	269.55	60.650
15,000.00	7,157.96	7,347.21	7,340.96	132.05	242.01	87.56	-296.21	-8,281.39	16,448.25	16,178.63	269.62	61.004
15,100.00	7,157.92	7,347.17	7,340.92	133.62	242.01	87.54	-296.21	-8,281.39	16,548.25	16,278.55	269.70	61.359
15,200.00	7,157.88	7,347.13	7,340.88	135.20	242.01	87.53	-296.21	-8,281.39	16,648.24	16,378.47	269.77	61.712
15,300.00	7,157.83	7,347.09	7,340.83	136.78	242.00	87.51	-296.21	-8,281.39	16,748.24	16,478.39	269.85	62.066
15,400.00	7,157.79	7,347.05	7,340.79	138.35	242.00	87.50	-296.21	-8,281.39	16,848.23	16,578.31	269.92	62.419
15,500.00	7,157.75	7,347.01	7,340.75	139.93	242.00	87.48	-296.21	-8,281.39	16,948.23	16,678.23	270.00	62.772
15,600.00	7,157.71	7,346.97	7,340.71	141.51	242.00	87.47	-296.21	-8,281.39	17,048.22	16,778.15	270.07	63.124
15,700.00	7,157.67	7,346.93	7,340.67	143.09	242.00	87.45	-296.21	-8,281.39	17,148.22	16,878.07	270.15	63.476
15,800.00	7,157.63	7,346.89	7,340.63	144.67	242.00	87.44	-296.21	-8,281.39	17,248.22	16,977.99	270.23	63.828
15,900.00	7,157.59	7,346.85	7,340.59	146.24	242.00	87.42	-296.21	-8,281.39	17,348.21	17,077.90	270.31	64.180
16,000.00	7,157.55	7,346.81	7,340.55	147.82	242.00	87.41	-296.21	-8,281.39	17,448.21	17,177.82	270.39	64.531
16,100.00	7,157.51	7,346.77	7,340.51	149.41	241.99	87.39	-296.21	-8,281.39	17,548.20	17,277.74	270.47	64.881
16,200.00	7,157.47	7,346.72	7,340.47	150.99	241.99	87.38	-296.21	-8,281.39	17,648.20	17,377.65	270.55	65.232
16,300.00	7,157.43	7,346.68	7,340.43	152.57	241.99	87.36	-296.21	-8,281.39	17,748.20	17,477.57	270.63	65.582
16,400.00	7,157.38	7,346.64	7,340.38	154.15	241.99	87.35	-296.21	-8,281.39	17,848.19	17,577.48	270.71	65.931
16,500.00	7,157.34	7,346.60	7,340.34	155.73	241.99	87.33	-296.21	-8,281.39	17,948.19	17,677.40	270.79	66.280
16,600.00	7,157.30	7,346.56	7,340.30	157.31	241.99	87.32	-296.21	-8,281.39	18,048.18	17,777.31	270.87	66.629
16,680.84	7,157.27	7,346.53	7,340.27	158.59	241.99	87.31	-296.21	-8,281.39	18,129.02	17,858.08	270.94	66.911
16,687.46	7,157.27	7,346.53	7,340.27	158.70	241.99	86.90	-296.21	-8,281.39	18,135.64	17,864.69	270.95	66.934
16,700.00	7,157.26	7,346.52	7,340.26	158.90	241.99	86.90	-296.21	-8,281.39	18,148.18	17,877.22	270.96	66.978
16,800.00	7,157.22	7,346.48	7,340.22	160.48	241.99	86.88	-296.21	-8,281.39	18,248.18	17,977.14	271.04	67.326
16,900.00	7,157.18	7,346.44	7,340.18	162.06	241.99	86.86	-296.21	-8,281.39	18,348.17	18,077.05	271.13	67.674
17,000.00	7,157.14	7,346.40	7,340.14	163.65	241.98	86.85	-296.21	-8,281.39	18,448.17	18,176.96	271.21	68.021
17,100.00	7,157.10	7,346.36	7,340.10	165.23	241.98	86.83	-296.21	-8,281.39	18,548.17	18,276.87	271.30	68.368
17,200.00	7,157.06	7,346.32	7,340.06	166.82	241.98	86.81	-296.21	-8,281.39	18,648.17	18,376.78	271.38	68.715
17,300.00	7,157.02	7,346.28	7,340.02	168.40	241.98	86.80	-296.21	-8,281.39	18,748.16	18,476.69	271.47	69.061
17,400.00	7,156.98	7,346.23	7,339.98	169.99	241.98	86.78	-296.21	-8,281.39	18,848.16	18,576.60	271.56	69.407
17,500.00	7,156.94	7,346.19	7,339.94	171.57	241.98	86.76	-296.21	-8,281.39	18,948.16	18,676.51	271.65	69.753
17,600.00	7,156.90	7,346.15	7,339.90	173.16	241.98	86.74	-296.21	-8,281.39	19,048.16	18,776.42	271.73	70.098
17,700.00	7,156.85	7,346.11	7,339.85	174.75	241.98	86.73	-296.21	-8,281.39	19,148.15	18,876.33	271.82	70.443
17,800.00	7,156.81	7,346.07	7,339.81	176.33	241.97	86.71	-296.21	-8,281.39	19,248.15	18,976.24	271.91	70.788
17,900.00	7,156.77	7,346.03	7,339.77	177.92	241.97	86.69	-296.21	-8,281.39	19,348.15	19,076.15	272.00	71.132
18,000.00	7,156.73	7,345.99	7,339.73	179.51	241.97	86.68	-296.21	-8,281.39	19,448.15	19,176.05	272.09	71.476
18,100.00	7,156.69	7,345.95	7,339.69	181.09	241.97	86.66	-296.21	-8,281.39	19,548.14	19,275.96	272.18	71.819
18,200.00	7,156.65	7,345.91	7,339.65	182.68	241.97	86.64	-296.21	-8,281.39	19,648.14	19,375.86	272.28	72.162
18,300.00	7,156.61	7,345.87	7,339.61	184.27	241.97	86.62	-296.21	-8,281.39	19,748.14	19,475.77	272.37	72.505
18,400.00	7,156.57	7,345.83	7,339.57	185.86	241.97	86.61	-296.21	-8,281.39	19,848.14	19,575.67	272.46	72.847
18,500.00	7,156.53	7,345.79	7,339.53	187.45	241.97	86.59	-296.21	-8,281.39	19,948.13	19,675.58	272.55	73.189
18,600.00	7,156.49	7,345.75	7,339.49	189.03	241.96	86.57	-296.21	-8,281.39	20,048.13	19,775.48	272.65	73.531
18,700.00	7,156.45	7,345.70	7,339.45	190.62	241.96	86.56	-296.21	-8,281.39	20,148.13	19,875.39	272.74	73.872
18,800.00	7,156.41	7,345.66	7,339.41	192.21	241.96	86.54	-296.21	-8,281.39	20,248.13	19,975.29	272.84	74.213
18,900.00	7,156.37	7,345.62	7,339.37	193.80	241.96	86.52	-296.21	-8,281.39	20,348.12	20,075.19	272.93	74.554
19,000.00	7,156.32	7,345.58	7,339.32	195.39	241.96	86.51	-296.21	-8,281.39	20,448.12	20,175.09	273.03	74.894

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 836H
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 836H	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 #184C - OH - OH-INC													Offset Site Error:	0.00 usft		
Survey Program: 159-A027Ua_INC-ONLY				Reference Offset		Semi Major Axis		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)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning			
19,100.00	7,156.28	7,345.54	7,339.28	196.98	241.96	86.49	-296.21	-8,281.39	20,548.12	20,275.00	273.12	75.234				
19,200.00	7,156.24	7,345.50	7,339.24	198.57	241.96	86.47	-296.21	-8,281.39	20,648.12	20,374.90	273.22	75.573				
19,300.00	7,156.20	7,345.46	7,339.20	200.16	241.96	86.45	-296.21	-8,281.39	20,748.12	20,474.80	273.32	75.912				
19,400.00	7,156.16	7,345.42	7,339.16	201.75	241.95	86.44	-296.21	-8,281.39	20,848.11	20,574.70	273.42	76.251				
19,500.00	7,156.12	7,345.38	7,339.12	203.34	241.95	86.42	-296.21	-8,281.39	20,948.11	20,674.60	273.51	76.589				
19,600.00	7,156.08	7,345.34	7,339.08	204.93	241.95	86.40	-296.21	-8,281.39	21,048.11	20,774.50	273.61	76.927				
19,700.00	7,156.04	7,345.30	7,339.04	206.52	241.95	86.39	-296.21	-8,281.39	21,148.11	20,874.40	273.71	77.264				
19,800.00	7,156.00	7,345.26	7,339.00	208.11	241.95	86.37	-296.21	-8,281.39	21,248.11	20,974.29	273.81	77.602				
19,900.00	7,155.96	7,345.22	7,338.96	209.71	241.95	86.35	-296.21	-8,281.39	21,348.10	21,074.19	273.91	77.938				
20,000.00	7,155.92	7,345.17	7,338.92	211.30	241.95	86.34	-296.21	-8,281.39	21,448.10	21,174.09	274.01	78.275				
20,100.00	7,155.88	7,345.13	7,338.88	212.89	241.95	86.32	-296.21	-8,281.39	21,548.10	21,273.99	274.11	78.611				
20,200.00	7,155.84	7,345.09	7,338.84	214.48	241.94	86.30	-296.21	-8,281.39	21,648.10	21,373.88	274.21	78.946				
20,300.00	7,155.79	7,345.05	7,338.79	216.07	241.94	86.28	-296.21	-8,281.39	21,748.09	21,473.78	274.31	79.282				
20,400.00	7,155.75	7,345.01	7,338.75	217.66	241.94	86.27	-296.21	-8,281.39	21,848.09	21,573.68	274.42	79.617				
20,500.00	7,155.71	7,344.97	7,338.71	219.26	241.94	86.25	-296.21	-8,281.39	21,948.09	21,673.57	274.52	79.951				
20,600.00	7,155.67	7,344.93	7,338.67	220.85	241.94	86.23	-296.21	-8,281.39	22,048.09	21,773.47	274.62	80.285				
20,700.00	7,155.63	7,344.89	7,338.63	222.44	241.94	86.22	-296.21	-8,281.39	22,148.09	21,873.36	274.72	80.619				
20,800.00	7,155.59	7,344.85	7,338.59	224.03	241.94	86.20	-296.21	-8,281.39	22,248.09	21,973.26	274.83	80.953				
20,900.00	7,155.55	7,344.81	7,338.55	225.63	241.94	86.18	-296.21	-8,281.39	22,348.08	22,073.15	274.93	81.286				
21,000.00	7,155.51	7,344.77	7,338.51	227.22	241.94	86.16	-296.21	-8,281.39	22,448.08	22,173.05	275.04	81.619				
21,100.00	7,155.47	7,344.73	7,338.47	228.81	241.93	86.15	-296.21	-8,281.39	22,548.08	22,272.94	275.14	81.951				
21,200.00	7,155.43	7,344.69	7,338.43	230.40	241.93	86.13	-296.21	-8,281.39	22,648.08	22,372.83	275.25	82.283				
21,300.00	7,155.39	7,344.64	7,338.39	232.00	241.93	86.11	-296.21	-8,281.39	22,748.08	22,472.72	275.35	82.615				
21,400.00	7,155.35	7,344.60	7,338.35	233.59	241.93	86.10	-296.21	-8,281.39	22,848.07	22,572.62	275.46	82.946				
21,500.00	7,155.31	7,344.56	7,338.31	235.18	241.93	86.08	-296.21	-8,281.39	22,948.07	22,672.51	275.56	83.277				
21,600.00	7,155.26	7,344.52	7,338.26	236.78	241.93	86.06	-296.21	-8,281.39	23,048.07	22,772.40	275.67	83.607				
21,700.00	7,155.22	7,344.48	7,338.22	238.37	241.93	86.05	-296.21	-8,281.39	23,148.07	22,872.29	275.78	83.937				
21,800.00	7,155.18	7,344.44	7,338.18	239.96	241.93	86.03	-296.21	-8,281.39	23,248.07	22,972.18	275.89	84.267				
21,900.00	7,155.14	7,344.40	7,338.14	241.56	241.92	86.01	-296.21	-8,281.39	23,348.07	23,072.07	275.99	84.596				
21,953.88	7,155.12	7,344.38	7,338.12	242.42	241.92	86.00	-296.21	-8,281.39	23,401.94	23,125.89	276.05	84.774				
22,000.00	7,155.10	7,344.36	7,338.10	243.15	241.92	88.27	-296.21	-8,281.39	23,448.06	23,171.96	276.10	84.925				
22,019.01	7,155.09	7,344.35	7,338.09	243.46	241.92	88.59	-296.21	-8,281.39	23,467.07	23,190.95	276.12	84.988				
22,100.00	7,155.06	7,344.32	7,338.06	244.75	241.92	88.58	-296.21	-8,281.39	23,548.05	23,271.84	276.21	85.254				
22,200.00	7,155.02	7,344.27	7,338.02	246.34	241.92	88.57	-296.21	-8,281.39	23,648.03	23,371.71	276.32	85.582				
22,300.00	7,154.97	7,344.23	7,337.97	247.94	241.92	88.57	-296.21	-8,281.39	23,748.02	23,471.59	276.43	85.910				
22,400.00	7,154.93	7,344.19	7,337.93	249.53	241.92	88.56	-296.21	-8,281.39	23,848.00	23,571.46	276.54	86.237				
22,500.00	7,154.89	7,344.15	7,337.89	251.13	241.92	88.56	-296.21	-8,281.39	23,947.99	23,671.34	276.65	86.564				
22,600.00	7,154.85	7,344.10	7,337.85	252.72	241.92	88.55	-296.21	-8,281.39	24,047.98	23,771.21	276.76	86.891				
22,700.00	7,154.80	7,344.06	7,337.80	254.32	241.91	88.54	-296.21	-8,281.39	24,147.96	23,871.09	276.87	87.217				
22,800.00	7,154.76	7,344.02	7,337.76	255.91	241.91	88.54	-296.21	-8,281.39	24,247.95	23,970.96	276.98	87.543				
22,900.00	7,154.72	7,343.98	7,337.72	257.51	241.91	88.53	-296.21	-8,281.39	24,347.93	24,070.84	277.10	87.868				
23,000.00	7,154.68	7,343.93	7,337.68	259.11	241.91	88.53	-296.21	-8,281.39	24,447.92	24,170.71	277.21	88.193				
23,100.00	7,154.63	7,343.89	7,337.63	260.70	241.91	88.52	-296.21	-8,281.39	24,547.91	24,270.59	277.32	88.518				
23,200.00	7,154.59	7,343.85	7,337.59	262.30	241.91	88.51	-296.21	-8,281.39	24,647.89	24,370.46	277.43	88.843				
23,300.00	7,154.55	7,343.81	7,337.55	263.89	241.91	88.51	-296.21	-8,281.39	24,747.88	24,470.33	277.55	89.167				
23,400.00	7,154.51	7,343.77	7,337.51	265.49	241.91	88.50	-296.21	-8,281.39	24,847.87	24,570.21	277.66	89.490				
23,500.00	7,154.47	7,343.72	7,337.47	267.08	241.90	88.50	-296.21	-8,281.39	24,947.85	24,670.08	277.77	89.814				
23,600.00	7,154.42	7,343.68	7,337.42	268.68	241.90	88.49	-296.21	-8,281.39	25,047.84	24,769.95	277.89	90.137				
23,700.00	7,154.38	7,343.64	7,337.38	270.28	241.90	88.48	-296.21	-8,281.39	25,147.83	24,869.83	278.00	90.459				
23,800.00	7,154.34	7,343.60	7,337.34	271.87	241.90	88.48	-296.21	-8,281.39	25,247.82	24,969.70	278.12	90.781				
23,900.00	7,154.30	7,343.55	7,337.30	273.47	241.90	88.47	-296.21	-8,281.39	25,347.80	25,069.57	278.23	91.103				
24,000.00	7,154.25	7,343.51	7,337.25	275.07	241.90	88.47	-296.21	-8,281.39	25,447.79	25,169.44	278.35	91.425				

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 836H
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 836H	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 #184C - OH - OH-INC												Offset Site Error:	0.00 usft
Survey Program: Reference		159-A027Ua_INC-ONLY 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
24,100.00	7,154.21	7,343.47	7,337.21	276.66	241.90	88.46	-296.21	-8,281.39	25,547.78	25,269.32	278.46	91.746	
24,200.00	7,154.17	7,343.43	7,337.17	278.26	241.90	88.45	-296.21	-8,281.39	25,647.77	25,369.19	278.58	92.067	
24,300.00	7,154.13	7,343.38	7,337.13	279.86	241.89	88.45	-296.21	-8,281.39	25,747.75	25,469.06	278.69	92.387	
24,400.00	7,154.08	7,343.34	7,337.08	281.45	241.89	88.44	-296.21	-8,281.39	25,847.74	25,568.93	278.81	92.707	
24,500.00	7,154.04	7,343.30	7,337.04	283.05	241.89	88.44	-296.21	-8,281.39	25,947.73	25,668.80	278.93	93.027	
24,597.25	7,154.00	7,343.26	7,337.00	284.60	241.89	88.43	-296.21	-8,281.39	26,044.97	25,765.92	279.04	93.337	
24,600.00	7,154.00	7,343.26	7,337.00	284.65	241.89	88.38	-296.21	-8,281.39	26,047.72	25,768.67	279.04	93.346	
24,700.00	7,153.96	7,343.22	7,336.96	286.24	241.89	-81.04	-296.21	-8,281.39	26,147.71	25,868.55	279.16	93.665	
24,722.47	7,153.95	7,343.21	7,336.95	286.60	241.89	-86.56	-296.21	-8,281.39	26,170.18	25,891.00	279.19	93.737	
24,800.00	7,153.92	7,343.18	7,336.92	287.84	241.89	-86.54	-296.21	-8,281.39	26,247.71	25,968.43	279.28	93.984	
24,900.00	7,153.88	7,343.14	7,336.88	289.43	241.89	-86.53	-296.21	-8,281.39	26,347.71	26,068.32	279.39	94.303	
25,000.00	7,153.84	7,343.10	7,336.84	291.03	241.89	-86.52	-296.21	-8,281.39	26,447.71	26,168.20	279.51	94.621	
25,100.00	7,153.80	7,343.06	7,336.80	292.63	241.88	-86.51	-296.21	-8,281.39	26,547.71	26,268.08	279.63	94.939	
25,200.00	7,153.77	7,343.02	7,336.77	294.22	241.88	-86.49	-296.21	-8,281.39	26,647.70	26,367.96	279.75	95.257	
25,300.00	7,153.73	7,342.98	7,336.73	295.82	241.88	-86.48	-296.21	-8,281.39	26,747.70	26,467.84	279.86	95.574	
25,400.00	7,153.69	7,342.95	7,336.69	297.41	241.88	-86.47	-296.21	-8,281.39	26,847.70	26,567.72	279.98	95.890	
25,500.00	7,153.65	7,342.91	7,336.65	299.01	241.88	-86.45	-296.21	-8,281.39	26,947.70	26,667.60	280.10	96.207	
25,600.00	7,153.61	7,342.87	7,336.61	300.60	241.88	-86.44	-296.21	-8,281.39	27,047.70	26,767.48	280.22	96.523	
25,700.00	7,153.57	7,342.83	7,336.57	302.20	241.88	-86.43	-296.21	-8,281.39	27,147.69	26,867.35	280.34	96.839	
25,800.00	7,153.53	7,342.79	7,336.53	303.80	241.88	-86.41	-296.21	-8,281.39	27,247.69	26,967.23	280.46	97.154	
25,900.00	7,153.50	7,342.75	7,336.50	305.39	241.87	-86.40	-296.21	-8,281.39	27,347.69	27,067.11	280.58	97.469	
26,000.00	7,153.46	7,342.71	7,336.46	306.99	241.87	-86.39	-296.21	-8,281.39	27,447.69	27,166.99	280.70	97.784	
26,100.00	7,153.42	7,342.68	7,336.42	308.58	241.87	-86.37	-296.21	-8,281.39	27,547.69	27,266.87	280.82	98.098	
26,200.00	7,153.38	7,342.64	7,336.38	310.18	241.87	-86.36	-296.21	-8,281.39	27,647.68	27,366.75	280.94	98.412	
26,300.00	7,153.34	7,342.60	7,336.34	311.78	241.87	-86.35	-296.21	-8,281.39	27,747.68	27,466.62	281.06	98.725	
26,400.00	7,153.30	7,342.56	7,336.30	313.37	241.87	-86.33	-296.21	-8,281.39	27,847.68	27,566.50	281.18	99.039	
26,500.00	7,153.26	7,342.52	7,336.26	314.97	241.87	-86.32	-296.21	-8,281.39	27,947.68	27,666.38	281.30	99.351	
26,600.00	7,153.23	7,342.48	7,336.23	316.57	241.87	-86.31	-296.21	-8,281.39	28,047.68	27,766.26	281.42	99.664	
26,700.00	7,153.19	7,342.44	7,336.19	318.16	241.87	-86.30	-296.21	-8,281.39	28,147.68	27,866.13	281.54	99.976	
26,800.00	7,153.15	7,342.41	7,336.15	319.76	241.86	-86.28	-296.21	-8,281.39	28,247.67	27,966.01	281.67	100.288	
26,900.00	7,153.11	7,342.37	7,336.11	321.35	241.86	-86.27	-296.21	-8,281.39	28,347.67	28,065.88	281.79	100.599	
26,976.35	7,153.08	7,342.34	7,336.08	322.57	241.86	-86.26	-296.21	-8,281.39	28,424.02	28,142.14	281.88	100.837	
27,000.00	7,153.07	7,342.33	7,336.07	322.95	241.86	-86.26	-296.21	-8,281.39	28,447.67	28,165.76	281.91	100.910	
27,100.00	7,153.03	7,342.29	7,336.03	324.55	241.86	-86.24	-296.21	-8,281.39	28,547.67	28,265.64	282.03	101.221	
27,176.36	7,153.00	7,342.26	7,336.00	325.77	241.86	-86.23	-296.21	-8,281.39	28,624.02	28,341.90	282.13	101.458	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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													Offset Well Error: 0.00 usft
Reference													
Offset													
Semi Major Axis													
Highside													
Offset Wellbore Centre													
Distance													
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	367.78	367.78	0.00	0.64	96.17	-933.45	8,633.85	8,684.17				
125.00	125.00	494.78	494.78	0.06	1.03	-39.47	-933.88	8,633.83	8,683.86	8,682.78	1.08	8,023.209	
225.00	225.00	582.54	582.54	0.17	1.34	26.98	-934.25	8,633.85	8,683.27	8,681.77	1.50	5,770.232	
312.00	311.99	655.49	655.49	0.28	1.59	-34.52	-934.28	8,634.01	8,682.89	8,681.03	1.86	4,661.215	
400.00	399.99	735.14	735.14	0.37	1.87	-34.52	-934.36	8,634.30	8,682.77	8,680.54	2.23	3,895.673	
462.00	461.99	798.63	798.62	0.50	2.10	-34.52	-934.41	8,634.55	8,682.69	8,680.10	2.59	3,351.541	
509.18	509.16	840.85	840.85	0.64	2.24	-60.19	-934.44	8,634.72	8,682.51	8,679.63	2.88	3,017.880	
600.00	599.96	948.34	948.34	0.94	2.62	-60.20	-934.58	8,635.18	8,681.93	8,678.38	3.55	2,446.271	
700.00	699.94	1,055.16	1,055.15	1.28	2.99	-60.22	-934.56	8,635.27	8,680.92	8,676.65	4.27	2,035.228	
800.00	799.92	1,139.84	1,139.84	1.63	3.29	-60.23	-934.86	8,635.49	8,680.12	8,675.21	4.91	1,767.199	
900.00	899.89	1,250.43	1,250.42	1.98	3.67	-60.24	-935.33	8,635.80	8,679.36	8,673.71	5.65	1,535.455	
1,000.00	999.87	1,343.31	1,343.30	2.34	4.00	-60.24	-936.12	8,635.89	8,678.46	8,672.13	6.33	1,370.307	
1,100.00	1,099.84	1,415.98	1,415.97	2.69	4.25	-60.25	-936.54	8,636.19	8,677.84	8,670.90	6.94	1,249.628	
1,200.00	1,199.82	1,500.00	1,499.98	3.05	4.55	-60.26	-937.20	8,636.75	8,677.50	8,669.90	7.60	1,142.351	
1,300.00	1,299.80	1,637.38	1,637.36	3.41	5.03	-60.27	-938.32	8,637.34	8,676.90	8,668.46	8.43	1,028.681	
1,400.00	1,399.77	1,735.03	1,735.01	3.77	5.37	-60.28	-938.68	8,637.74	8,676.26	8,667.12	9.14	949.773	
1,500.00	1,499.75	1,847.80	1,847.78	4.13	5.77	-60.29	-938.96	8,638.01	8,675.43	8,665.54	9.89	877.343	
1,600.00	1,599.72	1,946.04	1,946.01	4.49	6.11	-60.30	-938.83	8,638.31	8,674.64	8,664.04	10.59	819.066	
1,700.00	1,699.70	2,061.77	2,061.75	4.85	6.51	-60.32	-938.92	8,638.53	8,673.75	8,662.40	11.35	763.905	
1,800.00	1,799.68	2,155.00	2,154.97	5.21	6.84	-60.33	-938.70	8,638.63	8,672.75	8,660.71	12.04	720.362	
1,900.00	1,899.65	2,274.13	2,274.10	5.57	7.25	-60.35	-938.37	8,638.86	8,671.85	8,659.03	12.81	676.714	
2,000.00	1,999.63	2,361.56	2,361.53	5.93	7.56	-60.36	-937.79	8,638.87	8,670.71	8,657.23	13.48	643.267	
2,100.00	2,099.60	2,445.65	2,445.62	6.29	7.85	-60.38	-936.90	8,639.15	8,669.85	8,655.72	14.13	613.474	
2,200.00	2,199.58	2,542.40	2,542.36	6.65	8.19	-60.40	-935.91	8,639.54	8,669.06	8,654.23	14.83	584.562	
2,300.00	2,299.56	2,667.95	2,667.91	7.01	8.63	-60.42	-934.62	8,639.99	8,668.25	8,652.62	15.63	554.660	
2,400.00	2,399.53	2,758.42	2,758.36	7.37	8.94	-60.44	-933.45	8,640.09	8,667.15	8,650.85	16.30	531.607	
2,500.00	2,499.51	2,853.03	2,852.96	7.73	9.27	-60.46	-932.38	8,640.43	8,666.31	8,649.31	16.99	509.968	
2,600.00	2,599.48	2,976.25	2,976.18	8.09	9.70	-60.49	-931.15	8,640.62	8,665.28	8,647.50	17.78	487.266	
2,700.00	2,699.46	3,052.60	3,052.53	8.45	9.97	-60.50	-930.31	8,640.70	8,664.21	8,645.80	18.41	470.625	
2,800.00	2,799.44	3,129.13	3,129.05	8.81	10.24	-60.52	-929.56	8,641.08	8,663.51	8,644.47	19.04	455.082	
2,900.00	2,899.41	3,230.93	3,230.85	9.17	10.59	-60.54	-928.47	8,641.64	8,662.87	8,643.12	19.75	438.562	
3,000.00	2,999.39	3,329.93	3,329.84	9.53	10.94	-60.56	-927.60	8,642.20	8,662.27	8,641.81	20.46	423.402	
3,100.00	3,099.36	3,440.42	3,440.33	9.89	11.32	-60.57	-926.80	8,642.70	8,661.57	8,640.36	21.20	408.475	
3,200.00	3,199.34	3,536.46	3,536.36	10.25	11.66	-60.59	-925.96	8,643.11	8,660.83	8,638.93	21.90	395.470	
3,300.00	3,299.32	3,600.00	3,599.90	10.61	11.88	-60.60	-925.54	8,643.43	8,660.25	8,637.76	22.48	385.206	
3,367.94	3,367.24	3,644.27	3,644.16	10.85	12.04	-60.61	-925.31	8,643.80	8,660.08	8,637.20	22.88	378.478	
3,400.00	3,399.29	3,659.07	3,658.97	10.97	12.09	-60.61	-925.25	8,643.98	8,660.11	8,637.06	23.05	375.737	
3,500.00	3,499.27	3,710.65	3,710.53	11.33	12.27	-60.62	-925.05	8,644.83	8,660.62	8,637.03	23.59	367.166	
3,600.00	3,599.25	3,800.00	3,799.87	11.69	12.58	-60.64	-924.82	8,646.53	8,661.42	8,637.16	24.26	357.022	
3,700.00	3,699.22	3,886.41	3,886.26	12.05	12.88	-60.65	-924.85	8,648.27	8,662.35	8,637.43	24.92	347.576	
3,800.00	3,799.20	4,004.17	4,004.00	12.41	13.30	-60.66	-924.93	8,650.68	8,663.32	8,637.63	25.70	337.159	
3,900.00	3,899.17	4,102.02	4,101.83	12.77	13.64	-60.68	-924.93	8,652.57	8,664.18	8,637.78	26.40	328.218	
4,000.00	3,999.15	4,228.82	4,228.61	13.13	14.08	-60.69	-925.50	8,654.76	8,664.86	8,637.66	27.20	318.533	
4,100.00	4,099.13	4,330.34	4,330.12	13.49	14.44	-60.70	-925.90	8,656.33	8,665.36	8,637.45	27.92	310.387	
4,200.00	4,199.10	4,413.02	4,412.79	13.85	14.73	-60.71	-926.48	8,657.68	8,666.00	8,637.43	28.57	303.356	
4,300.00	4,299.08	4,500.00	4,499.75	14.21	15.03	-60.72	-926.42	8,659.36	8,666.83	8,637.60	29.23	296.492	
4,400.00	4,399.05	4,557.95	4,557.68	14.57	15.24	-60.73	-925.79	8,660.72	8,667.97	8,638.18	29.79	290.943	
4,500.00	4,499.03	4,633.65	4,633.34	14.93	15.50	-60.75	-924.51	8,662.86	8,669.54	8,639.12	30.42	285.024	
4,600.00	4,599.01	5,022.32	5,021.68	15.29	16.86	-60.90	-910.73	8,668.47	8,669.69	8,637.54	32.14	269.730	
4,700.00	4,698.98	5,175.91	5,175.25	15.65	17.40	-60.93	-908.37	8,667.22	8,667.64	8,634.60	33.03	262.391	
4,800.00	4,798.96	5,281.50	5,280.82	16.01	17.77	-60.95	-907.62	8,665.78	8,665.15	8,631.39	33.76	256.674	
4,900.00	4,898.93	5,346.24	5,345.56	16.37	17.99	-60.95	-907.87	8,665.04	8,662.98	8,628.64	34.35	252.224	

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 836H
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 836H	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)		
5,000.00	4,998.91	5,400.00	5,399.31	16.73	18.18	-60.96	-908.25	8,664.63	8,661.26	8,626.37	34.90	248.207			
5,100.00	5,098.89	5,484.19	5,483.50	17.09	18.47	-60.97	-908.64	8,664.31	8,659.87	8,624.32	35.55	243.607			
5,200.00	5,198.86	5,535.00	5,534.32	17.45	18.65	-60.97	-908.63	8,664.34	8,658.90	8,622.81	36.09	239.947			
5,300.00	5,298.84	5,600.00	5,599.31	17.81	18.87	-60.98	-908.74	8,664.89	8,658.61	8,621.93	36.67	236.099			
5,322.50	5,321.33	5,600.00	5,599.31	17.89	18.87	-60.98	-908.74	8,664.89	8,658.58	8,621.82	36.75	235.579			
5,400.00	5,398.81	5,680.10	5,679.40	18.17	19.15	-60.99	-908.93	8,665.83	8,658.67	8,621.36	37.31	232.050			
5,444.45	5,443.25	5,719.60	5,718.90	18.33	19.29	-61.00	-909.00	8,666.22	8,658.65	8,621.04	37.61	230.209			
5,500.00	5,498.79	5,754.66	5,753.96	18.53	19.41	-61.00	-909.14	8,666.64	8,658.74	8,620.80	37.93	228.255			
5,600.00	5,598.77	5,872.02	5,871.31	18.89	19.83	-61.01	-910.02	8,668.04	8,658.94	8,620.24	38.71	223.714			
5,700.00	5,698.74	6,045.47	6,044.76	19.25	20.43	-61.03	-910.91	8,668.68	8,658.09	8,618.42	39.67	218.247			
5,800.00	5,798.72	6,169.44	6,168.72	19.61	20.83	-61.04	-911.34	8,668.87	8,657.22	8,616.79	40.43	214.127			
5,900.00	5,898.69	6,273.10	6,272.37	19.97	21.14	-61.05	-911.71	8,669.04	8,656.36	8,615.26	41.10	210.601			
6,000.00	5,998.67	6,392.03	6,391.31	20.33	21.50	-61.07	-911.38	8,668.89	8,655.15	8,613.33	41.82	206.955			
6,100.00	6,098.65	6,469.37	6,468.65	20.69	22.16	-61.08	-911.34	8,668.87	8,654.04	8,611.20	42.84	202.022			
6,200.00	6,198.62	6,567.07	6,566.32	21.05	23.05	-61.09	-910.49	8,668.87	8,652.90	8,608.82	44.09	196.275			
6,300.00	6,298.60	6,660.03	6,659.28	21.41	23.89	-61.10	-911.17	8,668.87	8,651.91	8,606.62	45.29	191.028			
6,400.00	6,398.57	6,769.34	6,768.57	21.77	25.16	-61.11	-911.34	8,668.87	8,650.86	8,603.95	46.92	184.389			
6,500.00	6,498.55	6,869.31	6,868.55	22.13	26.35	-61.13	-911.34	8,668.87	8,649.80	8,601.33	48.47	178.457			
6,531.56	6,530.10	6,900.79	6,900.03	22.25	26.73	-61.13	-911.11	8,668.87	8,649.45	8,600.49	48.96	176.665			
6,550.00	6,548.53	6,919.08	6,918.32	22.31	26.94	-22.78	-911.11	8,668.87	8,648.99	8,599.74	49.24	175.636			
6,600.00	6,598.36	6,968.52	6,967.76	22.49	27.53	-4.56	-911.13	8,668.87	8,645.07	8,595.06	50.01	172.863			
6,650.00	6,647.74	7,017.51	7,016.74	22.67	28.12	-0.60	-911.18	8,668.87	8,637.27	8,586.50	50.77	170.124			
6,700.00	6,696.35	7,065.74	7,064.98	22.84	28.69	1.16	-911.26	8,668.87	8,625.64	8,574.12	51.52	167.431			
6,750.00	6,743.90	7,114.70	7,113.90	23.01	29.30	2.23	-911.34	8,668.87	8,610.25	8,557.97	52.28	164.682			
6,800.00	6,790.11	7,160.90	7,160.11	23.18	30.01	2.99	-911.34	8,668.87	8,591.19	8,538.03	53.16	161.622			
6,850.00	6,834.67	7,205.46	7,204.67	23.35	30.69	3.63	-911.34	8,668.87	8,568.57	8,514.58	53.99	158.694			
6,900.00	6,877.32	7,248.11	7,247.32	23.51	31.35	4.22	-911.34	8,668.87	8,542.55	8,487.76	54.79	155.902			
6,950.00	6,917.80	7,288.59	7,287.80	23.68	31.98	4.82	-911.34	8,668.87	8,513.28	8,457.73	55.55	153.253			
7,000.00	6,955.85	7,326.64	7,325.85	23.85	32.56	5.46	-911.34	8,668.87	8,480.94	8,424.68	56.26	150.749			
7,050.00	6,991.24	7,361.63	7,360.83	24.03	33.10	6.18	-910.31	8,668.87	8,445.63	8,388.73	56.91	148.409			
7,100.00	7,023.76	7,393.24	7,392.44	24.22	33.59	7.05	-910.35	8,668.87	8,407.78	8,350.29	57.49	146.241			
7,150.00	7,053.20	7,421.87	7,421.06	24.42	34.03	8.13	-910.41	8,668.87	8,367.51	8,309.49	58.02	144.220			
7,200.00	7,079.37	7,447.32	7,446.52	24.63	34.42	9.52	-910.49	8,668.87	8,325.07	8,266.58	58.48	142.347			
7,250.00	7,102.13	7,469.45	7,468.65	24.86	34.76	11.39	-910.58	8,668.87	8,280.72	8,221.84	58.89	140.623			
7,300.00	7,121.32	7,488.12	7,487.31	25.10	35.05	14.04	-910.67	8,668.87	8,234.75	8,175.53	59.22	139.049			
7,350.00	7,136.84	7,503.21	7,502.40	25.35	35.28	18.09	-910.75	8,668.87	8,187.42	8,127.93	59.49	137.624			
7,400.00	7,148.58	7,514.63	7,513.82	25.62	35.46	24.90	-910.82	8,668.87	8,139.04	8,079.34	59.69	136.346			
7,450.00	7,156.47	7,522.31	7,521.49	25.90	35.58	38.07	-910.87	8,668.87	8,089.89	8,030.06	59.83	135.216			
7,500.00	7,160.47	7,526.19	7,525.38	26.20	35.64	66.65	-910.89	8,668.87	8,040.29	7,980.39	59.90	134.230			
7,526.22	7,161.00	7,526.71	7,525.90	26.36	35.65	89.86	-910.90	8,668.87	8,014.19	7,954.28	59.91	133.771			
7,600.00	7,160.97	7,526.68	7,525.87	26.83	35.65	89.86	-910.90	8,668.87	7,940.77	7,880.85	59.91	132.535			
7,700.00	7,160.93	7,526.64	7,525.83	27.53	35.65	89.86	-910.90	8,668.87	7,841.25	7,781.33	59.92	130.858			
7,800.00	7,160.89	7,526.60	7,525.79	28.32	35.64	89.85	-910.90	8,668.87	7,741.74	7,681.81	59.93	129.175			
7,900.00	7,160.85	7,526.56	7,525.75	29.16	35.64	89.85	-910.90	8,668.87	7,642.25	7,582.31	59.94	127.489			
8,000.00	7,160.81	7,526.52	7,525.71	30.07	35.64	89.85	-910.90	8,668.87	7,542.77	7,482.81	59.96	125.799			
8,100.00	7,160.77	7,526.48	7,525.67	31.04	35.64	89.85	-910.90	8,668.87	7,443.31	7,383.33	59.98	124.104			
8,200.00	7,160.73	7,526.44	7,525.63	32.06	35.64	89.84	-910.90	8,668.87	7,343.86	7,283.86	60.00	122.405			
8,300.00	7,160.69	7,526.40	7,525.59	33.12	35.64	89.84	-910.90	8,668.87	7,244.42	7,184.40	60.02	120.703			
8,400.00	7,160.65	7,526.36	7,525.55	34.23	35.64	89.84	-910.89	8,668.87	7,145.00	7,084.96	60.04	118.995			
8,500.00	7,160.60	7,526.33	7,525.51	35.37	35.64	89.83	-910.89	8,668.87	7,045.60	6,985.53	60.07	117.284			
8,600.00	7,160.56	7,526.29	7,525.48	36.55	35.64	89.83	-910.89	8,668.87	6,946.22	6,886.11	60.10	115.568			
8,700.00	7,160.52	7,526.25	7,525.44	37.76	35.64	89.83	-910.89	8,668.87	6,846.85	6,786.71	60.14	113.848			

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 836H
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 836H	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												Offset Well Error:	0.00 usft
Rule Assigned:													
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		Separation Factor	Warning	
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
8,800.00	7,160.48	7,526.21	7,525.40	38.99	35.64	89.83	-910.89	8,668.87	6,747.50	6,687.32	60.18	112.124	
8,900.00	7,160.44	7,526.17	7,525.36	40.26	35.64	89.82	-910.89	8,668.87	6,648.17	6,587.95	60.22	110.395	
9,000.00	7,160.40	7,526.13	7,525.32	41.54	35.64	89.82	-910.89	8,668.87	6,548.86	6,488.59	60.27	108.662	
9,100.00	7,160.36	7,526.09	7,525.28	42.85	35.64	89.82	-910.89	8,668.87	6,449.57	6,389.25	60.32	106.925	
9,200.00	7,160.32	7,526.05	7,525.24	44.18	35.64	89.81	-910.89	8,668.87	6,350.31	6,289.93	60.37	105.183	
9,300.00	7,160.28	7,526.01	7,525.20	45.53	35.64	89.81	-910.89	8,668.87	6,251.06	6,190.63	60.43	103.436	
9,400.00	7,160.24	7,525.97	7,525.16	46.89	35.64	89.81	-910.89	8,668.87	6,151.85	6,091.35	60.50	101.685	
9,500.00	7,160.20	7,525.93	7,525.12	48.26	35.63	89.80	-910.89	8,668.87	6,052.66	5,992.09	60.57	99.930	
9,600.00	7,160.16	7,525.89	7,525.08	49.65	35.63	89.80	-910.89	8,668.87	5,953.49	5,892.85	60.65	98.169	
9,700.00	7,160.12	7,525.86	7,525.04	51.05	35.63	89.80	-910.89	8,668.87	5,854.35	5,793.63	60.73	96.404	
9,800.00	7,160.08	7,525.82	7,525.01	52.47	35.63	89.80	-910.89	8,668.87	5,755.25	5,694.43	60.82	94.634	
9,900.00	7,160.04	7,525.78	7,524.97	53.89	35.63	89.79	-910.89	8,668.87	5,656.17	5,595.26	60.91	92.860	
10,000.00	7,160.00	7,525.74	7,524.93	55.33	35.63	89.79	-910.89	8,668.87	5,557.13	5,496.12	61.01	91.080	
10,100.00	7,159.95	7,525.70	7,524.89	56.77	35.63	89.79	-910.89	8,668.87	5,458.12	5,397.00	61.12	89.296	
10,200.00	7,159.91	7,525.66	7,524.85	58.22	35.63	89.78	-910.89	8,668.87	5,359.15	5,297.91	61.24	87.506	
10,300.00	7,159.87	7,525.62	7,524.81	59.68	35.63	89.78	-910.89	8,668.87	5,260.22	5,198.85	61.37	85.711	
10,400.00	7,159.83	7,525.58	7,524.77	61.15	35.63	89.78	-910.89	8,668.87	5,161.33	5,099.82	61.51	83.911	
10,500.00	7,159.79	7,525.54	7,524.73	62.62	35.63	89.78	-910.89	8,668.87	5,062.49	5,000.83	61.66	82.106	
10,600.00	7,159.75	7,525.50	7,524.69	64.10	35.63	89.77	-910.89	8,668.87	4,963.69	4,901.87	61.82	80.296	
10,700.00	7,159.71	7,525.46	7,524.65	65.58	35.63	89.77	-910.89	8,668.87	4,864.94	4,802.95	61.99	78.480	
10,800.00	7,159.67	7,525.42	7,524.61	67.07	35.63	89.77	-910.89	8,668.87	4,766.24	4,704.06	62.17	76.660	
10,900.00	7,159.63	7,525.39	7,524.57	68.57	35.63	89.76	-910.89	8,668.87	4,667.59	4,605.22	62.37	74.833	
11,000.00	7,159.59	7,525.35	7,524.54	70.07	35.63	89.76	-910.89	8,668.87	4,569.01	4,506.42	62.59	73.002	
11,100.00	7,159.55	7,525.31	7,524.50	71.57	35.62	89.76	-910.89	8,668.87	4,470.49	4,407.67	62.82	71.165	
11,200.00	7,159.51	7,525.27	7,524.46	73.08	35.62	89.76	-910.89	8,668.87	4,372.03	4,308.97	63.07	69.323	
11,300.00	7,159.47	7,525.23	7,524.42	74.59	35.62	89.75	-910.89	8,668.87	4,273.65	4,210.31	63.34	67.475	
11,400.00	7,159.43	7,525.19	7,524.38	76.11	35.62	89.75	-910.89	8,668.87	4,175.34	4,111.72	63.63	65.623	
11,500.00	7,159.39	7,525.15	7,524.34	77.63	35.62	89.75	-910.89	8,668.87	4,077.12	4,013.18	63.94	63.766	
11,600.00	7,159.35	7,525.11	7,524.30	79.15	35.62	89.74	-910.89	8,668.87	3,978.99	3,914.71	64.28	61.903	
11,638.27	7,159.33	7,525.10	7,524.29	79.73	35.62	89.74	-910.89	8,668.87	3,941.45	3,877.04	64.41	61.190	
11,640.51	7,159.33	7,525.10	7,524.28	79.77	35.62	89.74	-910.89	8,668.87	3,939.26	3,874.83	64.42	61.148	
11,700.00	7,159.30	7,525.07	7,524.26	80.68	35.62	89.74	-910.89	8,668.87	3,880.95	3,816.31	64.64	60.037	
11,800.00	7,159.26	7,525.03	7,524.22	82.20	35.62	89.74	-910.89	8,668.87	3,783.02	3,717.98	65.04	58.165	
11,900.00	7,159.22	7,524.99	7,524.18	83.74	35.62	89.74	-910.89	8,668.87	3,685.20	3,619.74	65.47	56.290	
12,000.00	7,159.18	7,524.95	7,524.14	85.27	35.62	89.73	-910.89	8,668.87	3,587.51	3,521.57	65.93	54.412	
12,100.00	7,159.14	7,524.91	7,524.10	86.81	35.62	89.73	-910.89	8,668.87	3,489.94	3,423.50	66.44	52.530	
12,200.00	7,159.10	7,524.87	7,524.06	88.35	35.62	89.73	-910.89	8,668.87	3,392.51	3,325.53	66.98	50.647	
12,300.00	7,159.06	7,524.83	7,524.02	89.89	35.62	89.72	-910.88	8,668.87	3,295.24	3,227.67	67.58	48.762	
12,400.00	7,159.02	7,524.79	7,523.98	91.43	35.62	89.72	-910.88	8,668.87	3,198.14	3,129.92	68.22	46.877	
12,500.00	7,158.98	7,524.75	7,523.94	92.98	35.62	89.72	-910.88	8,668.87	3,101.22	3,032.29	68.93	44.992	
12,600.00	7,158.94	7,524.71	7,523.90	94.52	35.62	89.72	-910.88	8,668.87	3,004.51	2,934.81	69.70	43.109	
12,700.00	7,158.90	7,524.67	7,523.86	96.07	35.62	89.71	-910.88	8,668.87	2,908.01	2,837.48	70.53	41.230	
12,800.00	7,158.86	7,524.64	7,523.82	97.62	35.61	89.71	-910.88	8,668.87	2,811.76	2,740.32	71.45	39.355	
12,900.00	7,158.81	7,524.60	7,523.78	99.17	35.61	89.71	-910.88	8,668.87	2,715.78	2,643.34	72.45	37.487	
13,000.00	7,158.77	7,524.56	7,523.74	100.73	35.61	89.70	-910.88	8,668.87	2,620.11	2,546.57	73.54	35.628	
13,100.00	7,158.73	7,524.52	7,523.71	102.28	35.61	89.70	-910.88	8,668.87	2,524.76	2,450.02	74.74	33.781	
13,200.00	7,158.69	7,524.48	7,523.67	103.84	35.61	89.70	-910.88	8,668.87	2,429.79	2,353.74	76.06	31.947	
13,300.00	7,158.65	7,524.44	7,523.63	105.40	35.61	89.70	-910.88	8,668.87	2,335.25	2,257.74	77.51	30.130	
13,400.00	7,158.61	7,524.40	7,523.59	106.96	35.61	89.69	-910.88	8,668.87	2,241.17	2,162.07	79.10	28.333	
13,500.00	7,158.57	7,524.36	7,523.55	108.52	35.61	89.69	-910.88	8,668.87	2,147.63	2,066.77	80.86	26.559	
13,600.00	7,158.53	7,524.32	7,523.51	110.08	35.61	89.69	-910.88	8,668.87	2,054.70	1,971.89	82.81	24.813	
13,700.00	7,158.49	7,524.28	7,523.47	111.64	35.61	89.68	-910.88	8,668.87	1,962.47	1,877.51	84.96	23.099	

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 836H
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 836H	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)
13,800.00	7,158.45	7,524.24	7,523.43	113.21	35.61	89.68	-910.88	8,668.87	1,871.03	1,783.68	87.34	21.421	
13,900.00	7,158.41	7,524.20	7,523.39	114.77	35.61	89.68	-910.88	8,668.87	1,780.51	1,690.52	89.99	19.785	
14,000.00	7,158.37	7,524.16	7,523.35	116.34	35.61	89.67	-910.88	8,668.87	1,691.06	1,598.13	92.94	18.196	
14,100.00	7,158.32	7,524.12	7,523.31	117.91	35.61	89.67	-910.88	8,668.87	1,602.86	1,506.65	96.22	16.659	
14,200.00	7,158.28	7,524.08	7,523.27	119.47	35.61	89.67	-910.88	8,668.87	1,516.13	1,416.26	99.87	15.181	
14,300.00	7,158.24	7,524.04	7,523.23	121.04	35.61	89.67	-910.88	8,668.87	1,431.12	1,327.18	103.94	13.769	
14,400.00	7,158.20	7,524.00	7,523.19	122.61	35.60	89.66	-910.88	8,668.87	1,348.18	1,239.70	108.48	12.428	
14,500.00	7,158.16	7,523.96	7,523.15	124.18	35.60	89.66	-910.88	8,668.87	1,267.70	1,154.18	113.52	11.167	
14,600.00	7,158.12	7,523.92	7,523.11	125.76	35.60	89.66	-910.88	8,668.87	1,190.19	1,071.07	119.11	9.992	
14,700.00	7,158.08	7,523.88	7,523.07	127.33	35.60	89.65	-910.88	8,668.87	1,116.25	990.98	125.27	8.911	
14,800.00	7,158.04	7,523.84	7,523.03	128.90	35.60	89.65	-910.88	8,668.87	1,046.66	914.68	131.98	7.931	
14,900.00	7,158.00	7,523.80	7,522.99	130.47	35.60	89.65	-910.88	8,668.87	982.33	843.16	139.16	7.059	
15,000.00	7,157.96	7,523.76	7,522.95	132.05	35.60	89.65	-910.88	8,668.87	924.36	777.68	146.67	6.302	
15,100.00	7,157.92	7,523.72	7,522.91	133.62	35.60	89.64	-910.88	8,668.87	874.02	719.79	154.24	5.667	
15,200.00	7,157.88	7,523.68	7,522.87	135.20	35.60	89.64	-910.88	8,668.87	832.70	671.26	161.44	5.158	
15,300.00	7,157.83	7,523.64	7,522.83	136.78	35.60	89.64	-910.88	8,668.87	801.79	634.03	167.75	4.780	
15,400.00	7,157.79	7,523.60	7,522.79	138.35	35.60	89.63	-910.88	8,668.87	782.52	609.92	172.60	4.534	
15,500.00	7,157.75	7,523.56	7,522.75	139.93	35.60	89.63	-910.88	8,668.87	775.76	600.26	175.50	4.420	
15,504.45	7,157.75	7,523.56	7,522.75	140.00	35.60	89.63	-910.88	8,668.87	775.76	600.18	175.58	4.418 CC, ES, SF	
15,600.00	7,157.71	7,523.52	7,522.71	141.51	35.60	89.63	-910.88	8,668.87	781.85	605.65	176.20	4.437	
15,700.00	7,157.67	7,523.48	7,522.67	143.09	35.60	89.62	-910.88	8,668.87	800.47	625.72	174.75	4.581	
15,800.00	7,157.63	7,523.44	7,522.63	144.67	35.60	89.62	-910.88	8,668.87	830.80	659.28	171.52	4.844	
15,900.00	7,157.59	7,523.41	7,522.59	146.24	35.60	89.62	-910.88	8,668.87	871.61	704.62	166.99	5.219	
16,000.00	7,157.55	7,523.37	7,522.55	147.82	35.59	89.62	-910.88	8,668.87	921.51	759.82	161.69	5.699	
16,100.00	7,157.51	7,523.33	7,522.52	149.41	35.59	89.61	-910.87	8,668.87	979.11	823.07	156.04	6.275	
16,200.00	7,157.47	7,523.29	7,522.48	150.99	35.59	89.61	-910.87	8,668.87	1,043.13	892.77	150.36	6.937	
16,300.00	7,157.43	7,523.25	7,522.44	152.57	35.59	89.61	-910.87	8,668.87	1,112.48	967.60	144.88	7.679	
16,400.00	7,157.38	7,523.21	7,522.40	154.15	35.59	89.60	-910.87	8,668.87	1,186.20	1,046.51	139.70	8.491	
16,500.00	7,157.34	7,523.17	7,522.36	155.73	35.59	89.60	-910.87	8,668.87	1,263.55	1,128.66	134.89	9.367	
16,600.00	7,157.30	7,523.13	7,522.32	157.31	35.59	89.60	-910.87	8,668.87	1,343.89	1,213.42	130.46	10.301	
16,680.84	7,157.27	7,523.10	7,522.28	158.59	35.59	89.60	-910.87	8,668.87	1,410.67	1,283.51	127.16	11.094	
16,687.46	7,157.27	7,523.09	7,522.28	158.70	35.59	89.60	-910.87	8,668.87	1,416.20	1,289.30	126.90	11.160	
16,700.00	7,157.26	7,523.09	7,522.28	158.90	35.59	89.59	-910.87	8,668.87	1,426.72	1,300.31	126.41	11.286	
16,800.00	7,157.22	7,523.05	7,522.24	160.48	35.59	89.59	-910.87	8,668.87	1,511.68	1,388.95	122.73	12.317	
16,900.00	7,157.18	7,523.01	7,522.20	162.06	35.59	89.59	-910.87	8,668.87	1,598.39	1,479.00	119.39	13.388	
17,000.00	7,157.14	7,522.97	7,522.16	163.65	35.59	89.59	-910.87	8,668.87	1,686.56	1,570.22	116.34	14.496	
17,100.00	7,157.10	7,522.93	7,522.12	165.23	35.59	89.58	-910.87	8,668.87	1,775.99	1,662.42	113.58	15.637	
17,200.00	7,157.06	7,522.89	7,522.08	166.82	35.59	89.58	-910.87	8,668.87	1,866.49	1,755.44	111.06	16.807	
17,300.00	7,157.02	7,522.85	7,522.04	168.40	35.59	89.58	-910.87	8,668.87	1,957.92	1,849.16	108.76	18.003	
17,400.00	7,156.98	7,522.81	7,521.99	169.99	35.59	89.57	-910.87	8,668.87	2,050.15	1,943.49	106.66	19.221	
17,500.00	7,156.94	7,522.77	7,521.95	171.57	35.59	89.57	-910.87	8,668.87	2,143.07	2,038.33	104.74	20.461	
17,600.00	7,156.90	7,522.72	7,521.91	173.16	35.59	89.57	-910.87	8,668.87	2,236.61	2,133.62	102.98	21.718	
17,700.00	7,156.85	7,522.68	7,521.87	174.75	35.58	89.57	-910.87	8,668.87	2,330.68	2,229.31	101.37	22.992	
17,800.00	7,156.81	7,522.64	7,521.83	176.33	35.58	89.56	-910.87	8,668.87	2,425.23	2,325.34	99.89	24.280	
17,900.00	7,156.77	7,522.60	7,521.79	177.92	35.58	89.56	-910.87	8,668.87	2,520.19	2,421.67	98.52	25.580	
18,000.00	7,156.73	7,522.56	7,521.75	179.51	35.58	89.56	-910.87	8,668.87	2,615.53	2,518.28	97.26	26.892	
18,100.00	7,156.69	7,522.52	7,521.71	181.09	35.58	89.55	-910.87	8,668.87	2,711.21	2,615.12	96.10	28.214	
18,200.00	7,156.65	7,522.48	7,521.67	182.68	35.58	89.55	-910.87	8,668.87	2,807.19	2,712.17	95.02	29.544	
18,300.00	7,156.61	7,522.44	7,521.63	184.27	35.58	89.55	-910.87	8,668.87	2,903.44	2,809.42	94.02	30.881	
18,400.00	7,156.57	7,522.40	7,521.59	185.86	35.58	89.54	-910.87	8,668.87	2,999.94	2,906.85	93.09	32.225	
18,500.00	7,156.53	7,522.36	7,521.55	187.45	35.58	89.54	-910.87	8,668.87	3,096.66	3,004.43	92.23	33.575	
18,600.00	7,156.49	7,522.32	7,521.51	189.03	35.58	89.54	-910.87	8,668.87	3,193.58	3,102.15	91.43	34.929	

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 836H
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 836H	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												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)		
18,700.00	7,156.45	7,522.28	7,521.47	190.62	35.58	89.54	-910.87	8,668.87	3,290.68	3,200.00	90.68	36.287	
18,800.00	7,156.41	7,522.24	7,521.43	192.21	35.58	89.53	-910.87	8,668.87	3,387.96	3,297.97	89.99	37.649	
18,900.00	7,156.37	7,522.20	7,521.39	193.80	35.58	89.53	-910.87	8,668.87	3,485.38	3,396.04	89.34	39.013	
19,000.00	7,156.32	7,522.16	7,521.35	195.39	35.58	89.53	-910.87	8,668.87	3,582.95	3,494.22	88.73	40.379	
19,100.00	7,156.28	7,522.12	7,521.31	196.98	35.58	89.52	-910.87	8,668.87	3,680.65	3,592.49	88.17	41.747	
19,200.00	7,156.24	7,522.08	7,521.27	198.57	35.58	89.52	-910.87	8,668.87	3,778.47	3,690.84	87.64	43.116	
19,300.00	7,156.20	7,522.04	7,521.23	200.16	35.57	89.52	-910.87	8,668.87	3,876.40	3,789.27	87.14	44.486	
19,400.00	7,156.16	7,522.00	7,521.19	201.75	35.57	89.51	-910.87	8,668.87	3,974.44	3,887.77	86.67	45.855	
19,500.00	7,156.12	7,521.96	7,521.15	203.34	35.57	89.51	-910.87	8,668.87	4,072.57	3,986.33	86.24	47.225	
19,600.00	7,156.08	7,521.92	7,521.11	204.93	35.57	89.51	-910.87	8,668.87	4,170.79	4,084.96	85.83	48.595	
19,700.00	7,156.04	7,521.88	7,521.07	206.52	35.57	89.51	-910.87	8,668.87	4,269.09	4,183.65	85.44	49.963	
19,800.00	7,156.00	7,521.84	7,521.03	208.11	35.57	89.50	-910.87	8,668.87	4,367.47	4,282.38	85.08	51.331	
19,900.00	7,155.96	7,521.80	7,520.99	209.71	35.57	89.50	-910.87	8,668.87	4,465.92	4,381.17	84.75	52.698	
20,000.00	7,155.92	7,521.76	7,520.95	211.30	35.57	89.50	-910.86	8,668.87	4,564.44	4,480.01	84.43	54.063	
20,100.00	7,155.88	7,521.72	7,520.91	212.89	35.57	89.49	-910.86	8,668.87	4,663.02	4,578.89	84.13	55.426	
20,200.00	7,155.84	7,521.68	7,520.87	214.48	35.57	89.49	-910.86	8,668.87	4,761.66	4,677.81	83.85	56.788	
20,300.00	7,155.79	7,521.64	7,520.83	216.07	35.57	89.49	-910.86	8,668.87	4,860.35	4,776.77	83.59	58.148	
20,400.00	7,155.75	7,521.60	7,520.79	217.66	35.57	89.48	-910.86	8,668.87	4,959.10	4,875.76	83.34	59.505	
20,500.00	7,155.71	7,521.56	7,520.75	219.26	35.57	89.48	-910.86	8,668.87	5,057.90	4,974.79	83.11	60.860	
20,600.00	7,155.67	7,521.52	7,520.70	220.85	35.57	89.48	-910.86	8,668.87	5,156.74	5,073.85	82.89	62.212	
20,700.00	7,155.63	7,521.48	7,520.66	222.44	35.57	89.48	-910.86	8,668.87	5,255.63	5,172.95	82.68	63.562	
20,800.00	7,155.59	7,521.44	7,520.62	224.03	35.57	89.47	-910.86	8,668.87	5,354.56	5,272.07	82.49	64.909	
20,900.00	7,155.55	7,521.39	7,520.58	225.63	35.56	89.47	-910.86	8,668.87	5,453.53	5,371.21	82.31	66.254	
21,000.00	7,155.51	7,521.35	7,520.54	227.22	35.56	89.47	-910.86	8,668.87	5,552.53	5,470.39	82.14	67.595	
21,100.00	7,155.47	7,521.31	7,520.50	228.81	35.56	89.46	-910.86	8,668.87	5,651.57	5,569.59	81.99	68.933	
21,200.00	7,155.43	7,521.27	7,520.46	230.40	35.56	89.46	-910.86	8,668.87	5,750.65	5,668.81	81.84	70.268	
21,300.00	7,155.39	7,521.23	7,520.42	232.00	35.56	89.46	-910.86	8,668.87	5,849.75	5,768.05	81.70	71.600	
21,400.00	7,155.35	7,521.19	7,520.38	233.59	35.56	89.45	-910.86	8,668.87	5,948.89	5,867.31	81.57	72.928	
21,500.00	7,155.31	7,521.15	7,520.34	235.18	35.56	89.45	-910.86	8,668.87	6,048.05	5,966.60	81.45	74.253	
21,600.00	7,155.26	7,521.11	7,520.30	236.78	35.56	89.45	-910.86	8,668.87	6,147.24	6,065.90	81.34	75.575	
21,700.00	7,155.22	7,521.07	7,520.26	238.37	35.56	89.45	-910.86	8,668.87	6,246.45	6,165.22	81.24	76.893	
21,800.00	7,155.18	7,521.03	7,520.22	239.96	35.56	89.44	-910.86	8,668.87	6,345.70	6,264.56	81.14	78.208	
21,900.00	7,155.14	7,520.99	7,520.18	241.56	35.56	89.44	-910.86	8,668.87	6,444.96	6,363.91	81.05	79.519	
21,953.88	7,155.12	7,520.97	7,520.16	242.42	35.56	89.44	-910.86	8,668.87	6,498.45	6,417.45	81.00	80.224	
22,000.00	7,155.10	7,520.95	7,520.14	243.15	35.56	89.47	-910.86	8,668.87	6,544.22	6,463.26	80.96	80.829	
22,019.01	7,155.09	7,520.95	7,520.13	243.46	35.56	89.48	-910.86	8,668.87	6,563.08	6,482.13	80.95	81.079	
22,100.00	7,155.06	7,520.92	7,520.11	244.75	35.56	89.48	-910.86	8,668.87	6,643.40	6,562.52	80.87	82.146	
22,200.00	7,155.02	7,520.88	7,520.07	246.34	35.56	89.47	-910.86	8,668.87	6,742.59	6,661.80	80.79	83.459	
22,300.00	7,154.97	7,520.85	7,520.04	247.94	35.56	89.47	-910.86	8,668.87	6,841.81	6,761.10	80.71	84.768	
22,400.00	7,154.93	7,520.81	7,520.00	249.53	35.56	89.47	-910.86	8,668.87	6,941.05	6,860.41	80.64	86.074	
22,500.00	7,154.89	7,520.78	7,519.97	251.13	35.56	89.47	-910.86	8,668.87	7,040.31	6,959.73	80.58	87.375	
22,600.00	7,154.85	7,520.74	7,519.93	252.72	35.55	89.46	-910.86	8,668.87	7,139.59	7,059.08	80.52	88.673	
22,700.00	7,154.80	7,520.71	7,519.90	254.32	35.55	89.46	-910.86	8,668.87	7,238.89	7,158.43	80.46	89.967	
22,800.00	7,154.76	7,520.67	7,519.86	255.91	35.55	89.46	-910.86	8,668.87	7,338.21	7,257.80	80.41	91.256	
22,900.00	7,154.72	7,520.64	7,519.83	257.51	35.55	89.46	-910.86	8,668.87	7,437.55	7,357.18	80.37	92.542	
23,000.00	7,154.68	7,520.60	7,519.79	259.11	35.55	89.46	-910.86	8,668.87	7,536.91	7,456.58	80.33	93.823	
23,100.00	7,154.63	7,520.57	7,519.76	260.70	35.55	89.45	-910.86	8,668.87	7,636.28	7,555.99	80.30	95.101	
23,200.00	7,154.59	7,520.53	7,519.72	262.30	35.55	89.45	-910.86	8,668.87	7,735.67	7,655.40	80.27	96.374	
23,300.00	7,154.55	7,520.50	7,519.69	263.89	35.55	89.45	-910.86	8,668.87	7,835.08	7,754.83	80.24	97.643	
23,400.00	7,154.51	7,520.46	7,519.65	265.49	35.55	89.45	-910.86	8,668.87	7,934.50	7,854.28	80.22	98.908	
23,500.00	7,154.47	7,520.43	7,519.62	267.08	35.55	89.44	-910.86	8,668.87	8,033.93	7,953.73	80.20	100.169	
23,600.00	7,154.42	7,520.39	7,519.58	268.68	35.55	89.44	-910.86	8,668.87	8,133.38	8,053.19	80.19	101.426	

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 836H
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 836H	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												Offset Well Error:	0.00 usft
Reference												Rule Assigned:	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance		No-Go Distance (usft)	Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
23,700.00	7,154.38	7,520.36	7,519.55	270.28	35.55	89.44	-910.86	8,668.87	8,232.84	8,152.66	80.18	102.678	
23,800.00	7,154.34	7,520.32	7,519.51	271.87	35.55	89.44	-910.86	8,668.87	8,332.31	8,252.14	80.18	103.926	
23,900.00	7,154.30	7,520.29	7,519.48	273.47	35.55	89.43	-910.86	8,668.87	8,431.80	8,351.63	80.17	105.171	
24,000.00	7,154.25	7,520.25	7,519.44	275.07	35.55	89.43	-910.86	8,668.87	8,531.30	8,451.13	80.17	106.411	
24,100.00	7,154.21	7,520.22	7,519.41	276.66	35.55	89.43	-910.86	8,668.87	8,630.81	8,550.63	80.18	107.646	
24,200.00	7,154.17	7,520.19	7,519.37	278.26	35.55	89.43	-910.85	8,668.87	8,730.33	8,650.15	80.18	108.878	
24,300.00	7,154.13	7,520.15	7,519.34	279.86	35.55	89.42	-910.85	8,668.87	8,829.87	8,749.67	80.19	110.105	
24,400.00	7,154.08	7,520.12	7,519.30	281.45	35.54	89.42	-910.85	8,668.87	8,929.41	8,849.20	80.21	111.328	
24,500.00	7,154.04	7,520.08	7,519.27	283.05	35.54	89.42	-910.85	8,668.87	9,028.96	8,948.74	80.22	112.547	
24,597.25	7,154.00	7,520.05	7,519.24	284.60	35.54	89.42	-910.85	8,668.87	9,125.78	9,045.54	80.24	113.728	
24,600.00	7,154.00	7,520.05	7,519.24	284.65	35.54	89.42	-910.85	8,668.87	9,128.52	9,048.28	80.24	113.762	
24,700.00	7,153.96	7,520.01	7,519.20	286.24	35.54	89.30	-910.85	8,668.87	9,228.18	9,147.90	80.27	114.962	
24,722.47	7,153.95	7,520.00	7,519.19	286.60	35.54	89.26	-910.85	8,668.87	9,250.59	9,170.31	80.28	115.229	
24,800.00	7,153.92	7,519.96	7,519.15	287.84	35.54	89.26	-910.85	8,668.87	9,327.93	9,247.62	80.31	116.146	
24,900.00	7,153.88	7,519.92	7,519.11	289.43	35.54	89.26	-910.85	8,668.87	9,427.69	9,347.33	80.35	117.326	
25,000.00	7,153.84	7,519.87	7,519.06	291.03	35.54	89.25	-910.85	8,668.87	9,527.45	9,447.06	80.40	118.501	
25,100.00	7,153.80	7,519.83	7,519.02	292.63	35.54	89.25	-910.85	8,668.87	9,627.23	9,546.78	80.45	119.673	
25,200.00	7,153.77	7,519.78	7,518.97	294.22	35.54	89.25	-910.85	8,668.87	9,727.00	9,646.51	80.49	120.841	
25,300.00	7,153.73	7,519.74	7,518.93	295.82	35.54	89.24	-910.85	8,668.87	9,826.78	9,746.24	80.54	122.004	
25,400.00	7,153.69	7,519.69	7,518.88	297.41	35.54	89.24	-910.85	8,668.87	9,926.57	9,845.97	80.60	123.164	
25,500.00	7,153.65	7,519.65	7,518.84	299.01	35.54	89.23	-910.85	8,668.87	10,026.35	9,945.71	80.65	124.320	
25,600.00	7,153.61	7,519.60	7,518.79	300.60	35.54	89.23	-910.85	8,668.87	10,126.15	10,045.44	80.70	125.472	
25,700.00	7,153.57	7,519.56	7,518.75	302.20	35.54	89.23	-910.85	8,668.87	10,225.95	10,145.18	80.76	126.620	
25,800.00	7,153.53	7,519.52	7,518.71	303.80	35.54	89.22	-910.85	8,668.87	10,325.75	10,244.93	80.82	127.764	
25,900.00	7,153.50	7,519.47	7,518.66	305.39	35.53	89.22	-910.85	8,668.87	10,425.55	10,344.67	80.88	128.904	
26,000.00	7,153.46	7,519.43	7,518.62	306.99	35.53	89.21	-910.85	8,668.87	10,525.36	10,444.42	80.94	130.041	
26,100.00	7,153.42	7,519.38	7,518.57	308.58	35.53	89.21	-910.85	8,668.87	10,625.17	10,544.17	81.00	131.173	
26,200.00	7,153.38	7,519.34	7,518.53	310.18	35.53	89.21	-910.85	8,668.87	10,724.99	10,643.92	81.06	132.302	
26,300.00	7,153.34	7,519.29	7,518.48	311.78	35.53	89.20	-910.85	8,668.87	10,824.81	10,743.68	81.13	133.426	
26,400.00	7,153.30	7,519.25	7,518.44	313.37	35.53	89.20	-910.85	8,668.87	10,924.63	10,843.43	81.20	134.547	
26,500.00	7,153.26	7,519.20	7,518.39	314.97	35.53	89.19	-910.85	8,668.87	11,024.45	10,943.19	81.26	135.664	
26,600.00	7,153.23	7,519.16	7,518.35	316.57	35.53	89.19	-910.85	8,668.87	11,124.28	11,042.95	81.33	136.777	
26,700.00	7,153.19	7,519.11	7,518.30	318.16	35.53	89.19	-910.85	8,668.87	11,224.11	11,142.71	81.40	137.886	
26,800.00	7,153.15	7,519.07	7,518.26	319.76	35.53	89.18	-910.85	8,668.87	11,323.95	11,242.48	81.47	138.992	
26,900.00	7,153.11	7,519.03	7,518.21	321.35	35.53	89.18	-910.85	8,668.87	11,423.79	11,342.24	81.54	140.093	
26,976.35	7,153.08	7,518.99	7,518.18	322.57	35.53	89.18	-910.85	8,668.87	11,500.01	11,418.41	81.60	140.932	
27,000.00	7,153.07	7,518.98	7,518.17	322.95	35.53	89.17	-910.85	8,668.87	11,523.63	11,442.01	81.62	141.191	
27,100.00	7,153.03	7,518.94	7,518.13	324.55	35.53	89.17	-910.85	8,668.87	11,623.47	11,541.78	81.69	142.285	
27,176.36	7,153.00	7,518.90	7,518.09	325.77	35.53	89.17	-910.85	8,668.87	11,699.71	11,617.96	81.75	143.118	

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 836H
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 836H	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		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)	
0.00	0.00	293.38	293.36	0.00	0.55	97.65	-1,411.93	10,516.39	10,611.15					
125.00	125.00	393.93	393.89	0.06	0.90	-37.98	-1,413.71	10,517.25	10,612.15	10,611.21	0.94	N/A		
225.00	225.00	502.87	502.81	0.17	1.28	28.47	-1,415.86	10,518.15	10,612.57	10,611.13	1.44	7,374.569		
312.00	311.99	585.71	585.63	0.28	1.57	-33.01	-1,417.51	10,518.76	10,612.88	10,611.04	1.83	5,792.123		
400.00	399.99	655.30	655.20	0.37	1.81	-33.01	-1,418.71	10,519.41	10,613.42	10,611.26	2.16	4,906.096		
462.00	461.99	723.36	723.25	0.50	2.05	-33.01	-1,419.72	10,520.12	10,613.86	10,611.32	2.54	4,180.128		
509.18	509.16	780.77	780.65	0.64	2.25	-58.67	-1,420.55	10,520.65	10,613.99	10,611.12	2.88	3,689.111		
600.00	599.96	878.41	878.29	0.94	2.59	-58.67	-1,421.88	10,521.51	10,613.91	10,610.40	3.51	3,019.790		
700.00	699.94	985.92	985.79	1.28	2.97	-58.68	-1,423.24	10,522.38	10,613.75	10,609.52	4.23	2,506.410		
800.00	799.92	1,087.32	1,087.17	1.63	3.32	-58.68	-1,424.42	10,523.17	10,613.53	10,608.59	4.94	2,148.588		
900.00	899.89	1,180.52	1,180.37	1.98	3.64	-58.69	-1,425.45	10,523.93	10,613.36	10,607.74	5.62	1,888.896		
1,000.00	999.87	1,274.50	1,274.33	2.34	3.97	-58.69	-1,426.44	10,524.77	10,613.24	10,606.94	6.30	1,683.955		
1,100.00	1,099.84	1,369.49	1,369.31	2.69	4.30	-58.70	-1,427.50	10,525.66	10,613.18	10,606.19	6.99	1,518.065		
1,200.00	1,199.82	1,466.00	1,465.81	3.05	4.64	-58.70	-1,428.66	10,526.59	10,613.16	10,605.47	7.69	1,380.774		
1,258.56	1,258.37	1,523.81	1,523.61	3.26	4.84	-58.70	-1,429.51	10,527.14	10,613.16	10,605.06	8.10	1,310.497		
1,300.00	1,299.80	1,564.71	1,564.51	3.41	4.98	-58.70	-1,430.18	10,527.52	10,613.16	10,604.77	8.39	1,264.934		
1,400.00	1,399.77	1,668.82	1,668.60	3.77	5.35	-58.70	-1,432.11	10,528.45	10,613.16	10,604.05	9.11	1,164.561		
1,500.00	1,499.75	1,779.44	1,779.19	4.13	5.74	-58.71	-1,433.88	10,529.39	10,613.08	10,603.22	9.86	1,076.420		
1,600.00	1,599.72	1,896.93	1,896.68	4.49	6.14	-58.71	-1,435.31	10,530.30	10,612.87	10,602.24	10.63	998.463		
1,700.00	1,699.70	2,018.61	2,018.34	4.85	6.57	-58.72	-1,436.34	10,531.08	10,612.47	10,601.06	11.41	929.849		
1,800.00	1,799.68	2,150.22	2,149.96	5.21	7.03	-58.73	-1,437.21	10,531.60	10,611.82	10,599.59	12.23	867.610		
1,900.00	1,899.65	2,258.84	2,258.57	5.57	7.41	-58.73	-1,437.81	10,531.81	10,610.95	10,597.98	12.97	818.165		
2,000.00	1,999.63	2,356.41	2,356.14	5.93	7.75	-58.74	-1,438.14	10,532.03	10,610.08	10,596.41	13.67	776.213		
2,100.00	2,099.60	2,491.60	2,491.33	6.29	8.22	-58.76	-1,438.29	10,532.21	10,609.10	10,594.60	14.50	731.741		
2,200.00	2,199.58	2,619.81	2,619.54	6.65	8.66	-58.77	-1,438.18	10,531.93	10,607.72	10,592.42	15.30	693.199		
2,300.00	2,299.56	2,723.10	2,722.83	7.01	9.02	-58.78	-1,437.96	10,531.61	10,606.25	10,590.23	16.02	662.065		
2,400.00	2,399.53	2,848.64	2,848.37	7.37	9.46	-58.80	-1,437.56	10,531.11	10,604.69	10,587.87	16.81	630.679		
2,500.00	2,499.51	2,989.67	2,989.39	7.73	9.95	-58.81	-1,437.06	10,530.06	10,602.77	10,585.10	17.66	600.298		
2,600.00	2,599.48	3,090.57	3,090.29	8.09	10.30	-58.82	-1,436.64	10,529.15	10,600.69	10,582.32	18.37	576.979		
2,700.00	2,699.46	3,213.24	3,212.95	8.45	10.73	-58.84	-1,436.12	10,527.90	10,598.50	10,579.34	19.16	553.215		
2,800.00	2,799.44	3,352.13	3,351.82	8.81	11.21	-58.85	-1,435.73	10,526.01	10,595.98	10,575.98	20.00	529.821		
2,900.00	2,899.41	3,435.00	3,434.69	9.17	11.50	-58.86	-1,435.68	10,524.74	10,593.32	10,572.67	20.65	513.050		
3,000.00	2,999.39	3,435.00	3,434.69	9.53	11.50	-58.86	-1,435.68	10,524.74	10,591.25	10,570.24	21.01	504.100		
3,100.00	3,099.36	3,467.00	3,466.67	9.89	11.61	-58.87	-1,434.72	10,524.80	10,589.96	10,568.47	21.48	492.955		
3,200.00	3,199.34	3,467.00	3,466.67	10.25	11.61	-58.87	-1,434.72	10,524.80	10,589.47	10,567.63	21.84	484.808		
3,204.45	3,203.79	3,467.00	3,466.67	10.26	11.61	-58.87	-1,434.72	10,524.80	10,589.47	10,567.61	21.86	484.454		
3,300.00	3,299.32	3,467.00	3,466.67	10.61	11.61	-58.87	-1,434.72	10,524.80	10,589.93	10,567.73	22.20	477.001		
3,400.00	3,399.29	3,467.00	3,466.67	10.97	11.61	-58.87	-1,434.72	10,524.80	10,591.34	10,568.78	22.56	469.519		
3,500.00	3,499.27	3,467.00	3,466.67	11.33	11.61	-58.87	-1,434.72	10,524.80	10,593.69	10,570.77	22.91	462.346		
3,600.00	3,599.25	3,467.00	3,466.67	11.69	11.61	-58.87	-1,434.72	10,524.80	10,596.98	10,573.71	23.27	455.468		
3,700.00	3,699.22	3,467.00	3,466.67	12.05	11.61	-58.87	-1,434.72	10,524.80	10,601.21	10,577.59	23.62	448.872		
3,800.00	3,799.20	3,467.00	3,466.67	12.41	11.61	-58.87	-1,434.72	10,524.80	10,606.39	10,582.42	23.97	442.545		
3,900.00	3,899.17	3,467.00	3,466.67	12.77	11.61	-58.87	-1,434.72	10,524.80	10,612.50	10,588.19	24.31	436.475		
4,000.00	3,999.15	3,467.00	3,466.67	13.13	11.61	-58.87	-1,434.72	10,524.80	10,619.55	10,594.89	24.66	430.651		
4,100.00	4,099.13	3,467.00	3,466.67	13.49	11.61	-58.87	-1,434.72	10,524.80	10,627.54	10,602.54	25.00	425.062		
4,200.00	4,199.10	3,467.00	3,466.67	13.85	11.61	-58.87	-1,434.72	10,524.80	10,636.47	10,611.12	25.34	419.699		
4,300.00	4,299.08	3,467.00	3,466.67	14.21	11.61	-58.87	-1,434.72	10,524.80	10,646.32	10,620.64	25.68	414.551		
4,400.00	4,399.05	3,467.00	3,466.67	14.57	11.61	-58.87	-1,434.72	10,524.80	10,657.11	10,631.09	26.02	409.609		
4,500.00	4,499.03	3,468.00	3,467.66	14.93	11.63	-58.87	-1,434.66	10,524.88	10,668.76	10,642.40	26.36	404.697		
4,600.00	4,599.01	3,469.00	3,468.64	15.29	11.65	-58.87	-1,434.62	10,525.08	10,681.43	10,654.75	26.68	400.283		
4,700.00	4,698.98	3,469.00	3,468.64	15.65	11.65	-58.87	-1,434.62	10,525.08	10,694.97	10,667.96	27.01	395.943		
4,800.00	4,798.96	3,469.00	3,468.64	16.01	11.65	-58.87	-1,434.62	10,525.08	10,709.42	10,682.09	27.34	391.775		

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 836H
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 836H	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
4,900.00	4,898.93	3,469.00	3,468.64	16.37	11.65	-58.87	-1,434.62	10,525.08	10,724.79	10,697.13	27.66	387.775	
5,000.00	4,998.91	3,469.00	3,468.64	16.73	11.65	-58.87	-1,434.62	10,525.08	10,741.07	10,713.09	27.98	383.934	
5,100.00	5,098.89	3,469.00	3,468.64	17.09	11.65	-58.87	-1,434.62	10,525.08	10,758.25	10,729.95	28.29	380.248	
5,200.00	5,198.86	3,469.00	3,468.64	17.45	11.65	-58.87	-1,434.62	10,525.08	10,776.33	10,747.72	28.61	376.709	
5,300.00	5,298.84	3,469.00	3,468.64	17.81	11.65	-58.87	-1,434.62	10,525.08	10,795.30	10,766.38	28.92	373.312	
5,400.00	5,398.81	3,469.00	3,468.64	18.17	11.65	-58.87	-1,434.62	10,525.08	10,815.17	10,785.94	29.23	370.053	
5,500.00	5,498.79	3,469.00	3,468.64	18.53	11.65	-58.87	-1,434.62	10,525.08	10,835.93	10,806.39	29.53	366.924	
5,600.00	5,598.77	3,469.00	3,468.64	18.89	11.65	-58.87	-1,434.62	10,525.08	10,857.56	10,827.73	29.83	363.923	
5,700.00	5,698.74	3,469.00	3,468.64	19.25	11.65	-58.87	-1,434.62	10,525.08	10,880.07	10,849.94	30.14	361.043	
5,800.00	5,798.72	3,469.00	3,468.64	19.61	11.65	-58.87	-1,434.62	10,525.08	10,903.46	10,873.02	30.43	358.281	
5,900.00	5,898.69	3,469.00	3,468.64	19.97	11.65	-58.87	-1,434.62	10,525.08	10,927.70	10,896.98	30.73	355.631	
6,000.00	5,998.67	3,469.00	3,468.64	20.33	11.65	-58.87	-1,434.62	10,525.08	10,952.81	10,921.79	31.02	353.091	
6,100.00	6,098.65	3,469.00	3,468.64	20.69	11.65	-58.87	-1,434.62	10,525.08	10,978.77	10,947.46	31.31	350.655	
6,200.00	6,198.62	3,469.00	3,468.64	21.05	11.65	-58.87	-1,434.62	10,525.08	11,005.58	10,973.98	31.60	348.320	
6,300.00	6,298.60	3,502.00	3,500.18	21.41	11.67	-58.89	-1,433.32	10,534.69	11,033.06	11,001.15	31.90	345.821	
6,400.00	6,398.57	3,502.00	3,500.18	21.77	11.67	-58.89	-1,433.32	10,534.69	11,061.25	11,029.07	32.19	343.670	
6,500.00	6,498.55	3,502.00	3,500.18	22.13	11.67	-58.89	-1,433.32	10,534.69	11,090.28	11,057.82	32.46	341.610	
6,531.56	6,530.10	3,502.00	3,500.18	22.25	11.67	-58.89	-1,433.32	10,534.69	11,099.62	11,067.06	32.55	340.978	
6,550.00	6,548.53	3,502.00	3,500.18	22.31	11.67	-20.60	-1,433.32	10,534.69	11,104.85	11,072.25	32.60	340.617	
6,600.00	6,598.36	3,502.00	3,500.18	22.49	11.67	-2.55	-1,433.32	10,534.69	11,116.62	11,083.89	32.74	339.594	
6,650.00	6,647.74	3,502.00	3,500.18	22.67	11.67	1.25	-1,433.32	10,534.69	11,124.79	11,091.93	32.87	338.492	
6,700.00	6,696.35	3,502.00	3,500.18	22.84	11.67	2.87	-1,433.32	10,534.69	11,129.32	11,096.33	32.99	337.303	
6,750.00	6,743.90	3,502.00	3,500.18	23.01	11.67	3.78	-1,433.32	10,534.69	11,130.18	11,097.06	33.12	336.039	
6,800.00	6,790.11	3,502.00	3,500.18	23.18	11.67	4.39	-1,433.32	10,534.69	11,127.37	11,094.13	33.24	334.713	
6,850.00	6,834.67	3,502.00	3,500.18	23.35	11.67	4.86	-1,433.32	10,534.69	11,120.91	11,087.55	33.36	333.334	
6,900.00	6,877.32	3,502.00	3,500.18	23.51	11.67	5.26	-1,433.32	10,534.69	11,110.83	11,077.35	33.48	331.913	
6,950.00	6,917.80	3,502.00	3,500.18	23.68	11.67	5.64	-1,433.32	10,534.69	11,097.17	11,063.59	33.58	330.460	
7,000.00	6,955.85	3,502.00	3,500.18	23.85	11.67	6.02	-1,433.32	10,534.69	11,080.02	11,046.34	33.68	328.982	
7,050.00	6,991.24	3,502.00	3,500.18	24.03	11.67	6.42	-1,433.32	10,534.69	11,059.46	11,025.69	33.77	327.485	
7,100.00	7,023.76	3,502.00	3,500.18	24.22	11.67	6.87	-1,433.32	10,534.69	11,035.60	11,001.74	33.85	325.978	
7,150.00	7,053.20	3,502.00	3,500.18	24.42	11.67	7.39	-1,433.32	10,534.69	11,008.56	10,974.63	33.93	324.465	
7,200.00	7,079.37	3,517.83	3,515.02	24.63	11.68	7.99	-1,432.80	10,540.15	10,978.13	10,944.12	34.01	322.795	
7,250.00	7,102.13	3,533.00	3,529.01	24.86	11.68	8.71	-1,432.30	10,546.00	10,945.42	10,911.34	34.08	321.158	
7,300.00	7,121.32	3,533.00	3,529.01	25.10	11.68	9.58	-1,432.30	10,546.00	10,909.70	10,875.57	34.13	319.659	
7,350.00	7,136.84	3,533.00	3,529.01	25.35	11.68	10.66	-1,432.30	10,546.00	10,871.48	10,837.31	34.17	318.174	
7,400.00	7,148.58	3,533.00	3,529.01	25.62	11.68	12.03	-1,432.30	10,546.00	10,830.99	10,796.79	34.20	316.705	
7,450.00	7,156.47	3,533.00	3,529.01	25.90	11.68	13.82	-1,432.30	10,546.00	10,788.44	10,754.22	34.22	315.254	
7,500.00	7,160.47	3,533.00	3,529.01	26.20	11.68	16.25	-1,432.30	10,546.00	10,744.08	10,709.84	34.24	313.822	
7,526.22	7,161.00	3,533.00	3,529.01	26.36	11.68	17.89	-1,432.30	10,546.00	10,720.17	10,685.93	34.24	313.064	
7,600.00	7,160.97	3,533.00	3,529.01	26.83	11.68	17.89	-1,432.30	10,546.00	10,652.39	10,618.14	34.25	311.038	
7,700.00	7,160.93	3,533.00	3,529.01	27.53	11.68	17.89	-1,432.30	10,546.00	10,560.63	10,526.38	34.26	308.266	
7,800.00	7,160.89	3,533.00	3,529.01	28.32	11.68	17.89	-1,432.30	10,546.00	10,469.03	10,434.76	34.28	305.441	
7,900.00	7,160.85	3,533.00	3,529.01	29.16	11.68	17.89	-1,432.30	10,546.00	10,377.58	10,343.29	34.30	302.562	
8,000.00	7,160.81	3,533.00	3,529.01	30.07	11.68	17.89	-1,432.30	10,546.00	10,286.30	10,251.97	34.33	299.628	
8,100.00	7,160.77	3,533.00	3,529.01	31.04	11.68	17.89	-1,432.30	10,546.00	10,195.17	10,160.80	34.37	296.639	
8,200.00	7,160.73	3,533.00	3,529.01	32.06	11.68	17.89	-1,432.30	10,546.00	10,104.22	10,069.80	34.42	293.595	
8,300.00	7,160.69	3,533.00	3,529.01	33.12	11.68	17.89	-1,432.30	10,546.00	10,013.43	9,978.96	34.47	290.496	
8,400.00	7,160.65	3,533.00	3,529.01	34.23	11.68	17.89	-1,432.30	10,546.00	9,922.83	9,888.29	34.53	287.342	
8,500.00	7,160.60	3,533.00	3,529.01	35.37	11.68	17.89	-1,432.30	10,546.00	9,832.40	9,797.80	34.60	284.132	
8,600.00	7,160.56	3,533.00	3,529.01	36.55	11.68	17.89	-1,432.30	10,546.00	9,742.16	9,707.48	34.69	280.869	
8,700.00	7,160.52	3,533.00	3,529.01	37.76	11.68	17.89	-1,432.30	10,546.00	9,652.12	9,617.34	34.78	277.551	
8,800.00	7,160.48	3,533.00	3,529.01	38.99	11.68	17.89	-1,432.30	10,546.00	9,562.27	9,527.40	34.88	274.180	

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 836H
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 836H	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: Reference		293-A020Ga_GYRO-NS, 3469-B001Mb_MWD+HRGM				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		Separation Factor	Warning
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)		
8,900.00	7,160.44	3,561.00	3,554.30	40.26	11.70	17.98	-1,431.56	10,557.99	9,472.58	9,437.56	35.01	270.560
9,000.00	7,160.40	3,561.00	3,554.30	41.54	11.70	17.98	-1,431.56	10,557.99	9,383.01	9,347.88	35.13	267.092
9,100.00	7,160.36	3,561.00	3,554.30	42.85	11.70	17.98	-1,431.56	10,557.99	9,293.66	9,258.40	35.26	263.574
9,200.00	7,160.32	3,561.00	3,554.30	44.18	11.70	17.98	-1,431.56	10,557.99	9,204.53	9,169.13	35.40	260.008
9,300.00	7,160.28	3,561.00	3,554.30	45.53	11.70	17.98	-1,431.56	10,557.99	9,115.63	9,080.07	35.55	256.395
9,400.00	7,160.24	3,561.00	3,554.30	46.89	11.70	17.98	-1,431.56	10,557.99	9,026.95	8,991.24	35.72	252.738
9,500.00	7,160.20	3,561.00	3,554.30	48.26	11.70	17.98	-1,431.56	10,557.99	8,938.52	8,902.63	35.89	249.037
9,600.00	7,160.16	3,561.00	3,554.30	49.65	11.70	17.98	-1,431.56	10,557.99	8,850.33	8,814.25	36.08	245.297
9,700.00	7,160.12	3,561.00	3,554.30	51.05	11.70	17.98	-1,431.56	10,557.99	8,762.40	8,726.12	36.28	241.518
9,800.00	7,160.08	3,561.00	3,554.30	52.47	11.70	17.98	-1,431.56	10,557.99	8,674.73	8,638.23	36.49	237.703
9,900.00	7,160.04	3,577.00	3,568.52	53.89	11.70	18.04	-1,431.57	10,565.33	8,587.13	8,550.40	36.73	233.790
10,000.00	7,160.00	3,592.00	3,581.73	55.33	11.71	18.11	-1,432.20	10,572.41	8,500.01	8,463.03	36.98	229.864
10,100.00	7,159.95	3,592.00	3,581.73	56.77	11.71	18.11	-1,432.20	10,572.41	8,412.99	8,375.76	37.23	225.968
10,200.00	7,159.91	3,592.00	3,581.73	58.22	11.71	18.11	-1,432.20	10,572.41	8,326.27	8,288.78	37.50	222.047
10,300.00	7,159.87	3,592.00	3,581.73	59.68	11.71	18.11	-1,432.20	10,572.41	8,239.85	8,202.08	37.78	218.106
10,400.00	7,159.83	3,592.00	3,581.73	61.15	11.71	18.11	-1,432.20	10,572.41	8,153.75	8,115.67	38.08	214.148
10,500.00	7,159.79	3,592.00	3,581.73	62.62	11.71	18.11	-1,432.20	10,572.41	8,067.96	8,029.57	38.39	210.175
10,600.00	7,159.75	3,592.00	3,581.73	64.10	11.71	18.11	-1,432.20	10,572.41	7,982.50	7,943.79	38.71	206.192
10,700.00	7,159.71	3,592.00	3,581.73	65.58	11.71	18.11	-1,432.20	10,572.41	7,897.38	7,858.33	39.06	202.202
10,800.00	7,159.67	3,592.00	3,581.73	67.07	11.71	18.11	-1,432.20	10,572.41	7,812.62	7,773.20	39.42	198.209
10,900.00	7,159.63	3,592.00	3,581.73	68.57	11.71	18.11	-1,432.20	10,572.41	7,728.22	7,688.43	39.79	194.216
11,000.00	7,159.59	3,592.00	3,581.73	70.07	11.71	18.11	-1,432.20	10,572.41	7,644.20	7,604.01	40.18	190.227
11,100.00	7,159.55	3,592.00	3,581.73	71.57	11.71	18.11	-1,432.20	10,572.41	7,560.56	7,519.97	40.59	186.246
11,200.00	7,159.51	3,592.00	3,581.73	73.08	11.71	18.11	-1,432.20	10,572.41	7,477.33	7,436.31	41.02	182.276
11,300.00	7,159.47	3,607.99	3,595.49	74.59	11.72	18.18	-1,433.36	10,580.46	7,394.01	7,352.54	41.47	178.312
11,400.00	7,159.43	3,623.00	3,607.94	76.11	11.73	18.25	-1,434.80	10,588.71	7,311.84	7,269.92	41.93	174.390
11,500.00	7,159.39	3,623.00	3,607.94	77.63	11.73	18.25	-1,434.80	10,588.71	7,229.67	7,187.27	42.41	170.480
11,600.00	7,159.35	3,623.00	3,607.94	79.15	11.73	18.25	-1,434.80	10,588.71	7,147.96	7,105.05	42.91	166.595
11,638.27	7,159.33	3,623.00	3,607.94	79.73	11.73	18.25	-1,434.80	10,588.71	7,116.81	7,073.70	43.10	165.116
11,640.51	7,159.33	3,623.00	3,607.94	79.77	11.73	18.28	-1,434.80	10,588.71	7,114.98	7,071.87	43.11	165.029
11,700.00	7,159.30	3,623.00	3,607.94	80.68	11.73	18.28	-1,434.80	10,588.71	7,066.71	7,023.29	43.42	162.738
11,800.00	7,159.26	3,623.00	3,607.94	82.20	11.73	18.28	-1,434.80	10,588.71	6,985.96	6,942.00	43.96	158.912
11,900.00	7,159.22	3,623.00	3,607.94	83.74	11.73	18.28	-1,434.80	10,588.71	6,905.71	6,861.19	44.52	155.121
12,000.00	7,159.18	3,623.00	3,607.94	85.27	11.73	18.28	-1,434.80	10,588.71	6,825.99	6,780.89	45.10	151.368
12,100.00	7,159.14	3,623.00	3,607.94	86.81	11.73	18.28	-1,434.80	10,588.71	6,746.80	6,701.11	45.69	147.656
12,200.00	7,159.10	3,623.00	3,607.94	88.35	11.73	18.28	-1,434.80	10,588.71	6,668.17	6,621.86	46.31	143.989
12,300.00	7,159.06	3,623.00	3,607.94	89.89	11.73	18.28	-1,434.80	10,588.71	6,590.12	6,543.17	46.95	140.367
12,400.00	7,159.02	3,623.00	3,607.94	91.43	11.73	18.28	-1,434.80	10,588.71	6,512.67	6,465.06	47.61	136.795
12,500.00	7,158.98	3,623.00	3,607.94	92.98	11.73	18.28	-1,434.80	10,588.71	6,435.85	6,387.56	48.29	133.275
12,600.00	7,158.94	3,623.00	3,607.94	94.52	11.73	18.28	-1,434.80	10,588.71	6,359.66	6,310.67	48.99	129.809
12,700.00	7,158.90	3,623.00	3,607.94	96.07	11.73	18.28	-1,434.80	10,588.71	6,284.15	6,234.43	49.72	126.399
12,800.00	7,158.86	3,654.00	3,631.96	97.62	11.77	18.43	-1,438.08	10,608.01	6,209.22	6,158.79	50.44	123.107
12,900.00	7,158.81	3,654.00	3,631.96	99.17	11.77	18.43	-1,438.08	10,608.01	6,134.80	6,083.60	51.20	119.811
13,000.00	7,158.77	3,654.00	3,631.96	100.73	11.77	18.43	-1,438.08	10,608.01	6,061.12	6,009.13	51.99	116.577
13,100.00	7,158.73	3,654.00	3,631.96	102.28	11.77	18.43	-1,438.08	10,608.01	5,988.20	5,935.39	52.80	113.405
13,200.00	7,158.69	3,654.00	3,631.96	103.84	11.77	18.43	-1,438.08	10,608.01	5,916.07	5,862.43	53.64	110.297
13,300.00	7,158.65	3,654.00	3,631.96	105.40	11.77	18.43	-1,438.08	10,608.01	5,844.76	5,790.26	54.49	107.255
13,400.00	7,158.61	3,654.00	3,631.96	106.96	11.77	18.43	-1,438.08	10,608.01	5,774.30	5,718.93	55.37	104.280
13,500.00	7,158.57	3,654.00	3,631.96	108.52	11.77	18.43	-1,438.08	10,608.01	5,704.73	5,648.45	56.28	101.372
13,600.00	7,158.53	3,654.00	3,631.96	110.08	11.77	18.43	-1,438.08	10,608.01	5,636.07	5,578.87	57.20	98.533
13,700.00	7,158.49	3,654.00	3,631.96	111.64	11.77	18.43	-1,438.08	10,608.01	5,568.36	5,510.21	58.15	95.764
13,800.00	7,158.45	3,670.09	3,643.48	113.21	11.79	18.50	-1,439.74	10,619.11	5,501.20	5,442.10	59.10	93.086

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 836H
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 836H	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		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)	
13,900.00	7,158.41	3,686.00	3,654.28	114.77	11.81	18.57	-1,441.32	10,630.68	5,435.50	5,375.43	60.07	90.489		
14,000.00	7,158.37	3,686.00	3,654.28	116.34	11.81	18.57	-1,441.32	10,630.68	5,370.43	5,309.35	61.08	87.923		
14,100.00	7,158.32	3,686.00	3,654.28	117.91	11.81	18.57	-1,441.32	10,630.68	5,306.44	5,244.32	62.12	85.428		
14,200.00	7,158.28	3,686.00	3,654.28	119.47	11.81	18.57	-1,441.32	10,630.68	5,243.58	5,180.41	63.17	83.004		
14,300.00	7,158.24	3,686.00	3,654.28	121.04	11.81	18.57	-1,441.32	10,630.68	5,181.89	5,117.64	64.25	80.652		
14,400.00	7,158.20	3,686.00	3,654.28	122.61	11.81	18.57	-1,441.32	10,630.68	5,121.40	5,056.05	65.35	78.372		
14,500.00	7,158.16	3,686.00	3,654.28	124.18	11.81	18.57	-1,441.32	10,630.68	5,062.17	4,995.71	66.47	76.163		
14,600.00	7,158.12	3,718.00	3,674.12	125.76	11.91	18.70	-1,444.17	10,655.60	5,003.93	4,936.37	67.56	74.064		
14,700.00	7,158.08	3,718.00	3,674.12	127.33	11.91	18.70	-1,444.17	10,655.60	4,946.83	4,878.11	68.72	71.987		
14,800.00	7,158.04	3,718.00	3,674.12	128.90	11.91	18.70	-1,444.17	10,655.60	4,891.11	4,821.22	69.89	69.981		
14,900.00	7,158.00	3,718.00	3,674.12	130.47	11.91	18.70	-1,444.17	10,655.60	4,836.82	4,765.74	71.08	68.046		
15,000.00	7,157.96	3,718.00	3,674.12	132.05	11.91	18.70	-1,444.17	10,655.60	4,784.00	4,711.71	72.29	66.180		
15,100.00	7,157.92	3,750.00	3,691.79	133.62	12.05	18.80	-1,445.83	10,682.22	4,732.27	4,658.80	73.47	64.414		
15,200.00	7,157.88	3,750.00	3,691.79	135.20	12.05	18.80	-1,445.83	10,682.22	4,681.97	4,607.27	74.70	62.675		
15,300.00	7,157.83	3,750.00	3,691.79	136.78	12.05	18.80	-1,445.83	10,682.22	4,633.29	4,557.34	75.95	61.005		
15,400.00	7,157.79	3,782.00	3,707.89	138.35	12.22	18.90	-1,447.60	10,709.81	4,586.09	4,508.91	77.18	59.420		
15,500.00	7,157.75	3,782.00	3,707.89	139.93	12.22	18.90	-1,447.60	10,709.81	4,540.18	4,461.73	78.45	57.872		
15,600.00	7,157.71	3,797.10	3,715.09	141.51	12.32	18.95	-1,448.74	10,723.03	4,495.96	4,416.23	79.73	56.390		
15,700.00	7,157.67	3,814.00	3,722.96	143.09	12.43	18.99	-1,449.63	10,737.96	4,453.06	4,372.05	81.01	54.968		
15,800.00	7,157.63	3,829.14	3,729.78	144.67	12.55	19.04	-1,450.41	10,751.46	4,411.70	4,329.39	82.31	53.600		
15,900.00	7,157.59	3,845.00	3,736.61	146.24	12.67	19.08	-1,451.58	10,765.72	4,372.09	4,288.47	83.62	52.288		
16,000.00	7,157.55	3,845.00	3,736.61	147.82	12.67	19.08	-1,451.58	10,765.72	4,334.16	4,249.25	84.92	51.040		
16,100.00	7,157.51	3,845.00	3,736.61	149.41	12.67	19.08	-1,451.58	10,765.72	4,298.23	4,212.02	86.21	49.855		
16,200.00	7,157.47	3,877.00	3,748.86	150.99	12.96	19.18	-1,454.11	10,795.17	4,263.97	4,176.41	87.56	48.699		
16,300.00	7,157.43	3,877.00	3,748.86	152.57	12.96	19.18	-1,454.11	10,795.17	4,231.48	4,142.62	88.85	47.624		
16,400.00	7,157.38	3,877.00	3,748.86	154.15	12.96	19.18	-1,454.11	10,795.17	4,201.11	4,110.97	90.14	46.608		
16,500.00	7,157.34	3,909.00	3,758.90	155.73	13.29	19.24	-1,455.54	10,825.50	4,172.57	4,081.10	91.47	45.616		
16,600.00	7,157.30	3,929.44	3,764.46	157.31	13.52	19.27	-1,455.32	10,845.16	4,145.79	4,053.02	92.77	44.688		
16,680.84	7,157.27	3,973.00	3,774.71	158.59	14.05	19.26	-1,451.00	10,887.25	4,125.11	4,031.30	93.81	43.973		
16,687.46	7,157.27	3,973.00	3,774.71	158.70	14.05	19.27	-1,451.00	10,887.25	4,123.45	4,029.55	93.89	43.917		
16,700.00	7,157.26	3,973.00	3,774.71	158.90	14.05	19.27	-1,451.00	10,887.25	4,120.32	4,026.27	94.05	43.809		
16,800.00	7,157.22	3,973.00	3,774.71	160.48	14.05	19.27	-1,451.00	10,887.25	4,096.69	4,001.39	95.30	42.986		
16,900.00	7,157.18	4,006.00	3,780.13	162.06	14.47	19.22	-1,445.14	10,919.26	4,075.05	3,978.53	96.53	42.216		
17,000.00	7,157.14	4,006.00	3,780.13	163.65	14.47	19.22	-1,445.14	10,919.26	4,055.30	3,957.56	97.74	41.490		
17,100.00	7,157.10	4,012.00	3,780.84	165.23	14.55	19.21	-1,443.99	10,925.11	4,037.85	3,938.92	98.93	40.817		
17,200.00	7,157.06	4,038.00	3,783.27	166.82	14.91	19.15	-1,439.00	10,950.51	4,022.46	3,922.36	100.09	40.187		
17,300.00	7,157.02	4,038.00	3,783.27	168.40	14.91	19.15	-1,439.00	10,950.51	4,009.16	3,907.93	101.22	39.608		
17,400.00	7,156.98	4,070.00	3,784.71	169.99	15.37	19.07	-1,432.83	10,981.87	3,998.08	3,895.73	102.35	39.064		
17,500.00	7,156.94	4,070.00	3,784.71	171.57	15.37	19.07	-1,432.83	10,981.87	3,988.92	3,885.52	103.41	38.574		
17,600.00	7,156.90	4,103.00	3,785.17	173.16	15.88	19.00	-1,427.07	11,014.36	3,981.85	3,877.35	104.50	38.104		
17,700.00	7,156.85	4,167.00	3,786.10	174.75	16.93	18.89	-1,418.38	11,077.75	3,976.05	3,870.33	105.71	37.612		
17,800.00	7,156.81	4,199.00	3,786.32	176.33	17.48	18.84	-1,414.68	11,109.54	3,971.60	3,864.78	106.82	37.180		
17,900.00	7,156.77	4,234.82	3,786.13	177.92	18.14	18.79	-1,411.08	11,145.17	3,968.82	3,860.88	107.94	36.767		
18,000.00	7,156.73	4,294.79	3,785.07	179.51	19.25	18.71	-1,405.84	11,204.91	3,967.55	3,858.35	109.20	36.333		
18,100.00	7,156.69	4,519.00	3,786.57	181.09	23.75	18.46	-1,386.70	11,428.26	3,963.17	3,851.60	111.56	35.524		
18,200.00	7,156.65	4,582.00	3,787.63	182.68	25.08	18.40	-1,381.78	11,491.06	3,959.25	3,846.31	112.94	35.055		
18,300.00	7,156.61	4,647.00	3,788.13	184.27	26.48	18.34	-1,377.38	11,555.91	3,956.44	3,842.10	114.35	34.600		
18,400.00	7,156.57	4,712.37	3,787.92	185.86	27.90	18.28	-1,372.81	11,621.12	3,954.58	3,838.84	115.75	34.166		
18,500.00	7,156.53	4,947.11	3,789.61	187.45	33.13	18.07	-1,356.58	11,855.25	3,952.07	3,833.60	118.47	33.359		
18,600.00	7,156.49	5,031.00	3,791.30	189.03	35.03	17.98	-1,349.67	11,938.84	3,947.57	3,827.54	120.04	32.887		
18,700.00	7,156.45	5,072.94	3,791.98	190.62	35.99	17.95	-1,346.60	11,980.66	3,943.87	3,822.58	121.29	32.515		
18,800.00	7,156.41	5,119.32	3,792.19	192.21	37.05	17.91	-1,344.12	12,026.97	3,941.71	3,819.13	122.58	32.156		

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 836H
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 836H	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		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)	
18,900.00	7,156.37	5,200.77	3,792.08	193.80	38.93	17.87	-1,340.94	12,108.36	3,940.60	3,816.41	124.19	31.731		
19,000.00	7,156.32	5,268.85	3,791.81	195.39	40.50	17.83	-1,338.25	12,176.38	3,939.82	3,814.15	125.67	31.351		
19,026.33	7,156.31	5,285.00	3,791.69	195.81	40.88	17.83	-1,337.81	12,192.53	3,939.79	3,813.74	126.04	31.257		
19,100.00	7,156.28	5,354.00	3,790.99	196.98	42.48	17.80	-1,335.82	12,261.49	3,939.85	3,812.52	127.32	30.943		
19,200.00	7,156.24	5,450.09	3,789.41	198.57	44.73	17.73	-1,331.63	12,357.48	3,940.09	3,811.04	129.05	30.533		
19,300.00	7,156.20	5,591.88	3,787.73	200.16	48.05	17.63	-1,324.28	12,499.06	3,939.59	3,808.42	131.16	30.036		
19,400.00	7,156.16	5,858.00	3,790.28	201.75	54.29	17.34	-1,302.25	12,764.14	3,935.39	3,801.28	134.12	29.343		
19,500.00	7,156.12	5,922.00	3,791.70	203.34	55.80	17.27	-1,296.52	12,827.86	3,930.67	3,795.15	135.52	29.004		
19,600.00	7,156.08	5,957.98	3,791.79	204.93	56.65	17.23	-1,293.49	12,863.72	3,927.57	3,790.87	136.70	28.732		
19,700.00	7,156.04	6,022.49	3,791.65	206.52	58.17	17.16	-1,288.61	12,928.04	3,925.54	3,787.46	138.09	28.428		
19,800.00	7,156.00	6,102.21	3,790.87	208.11	60.06	17.08	-1,282.80	13,007.54	3,924.31	3,784.72	139.59	28.114		
19,900.00	7,155.96	6,177.00	3,789.72	209.71	61.83	17.00	-1,277.72	13,082.15	3,923.74	3,782.69	141.05	27.819		
19,916.04	7,155.95	6,177.00	3,789.72	209.96	61.83	17.00	-1,277.72	13,082.15	3,923.70	3,782.53	141.18	27.793 CC		
20,000.00	7,155.92	6,253.48	3,788.13	211.30	63.65	16.93	-1,273.01	13,158.47	3,923.86	3,781.33	142.52	27.531 ES		
20,100.00	7,155.88	6,260.00	3,788.00	212.89	63.80	16.92	-1,272.61	13,164.98	3,925.17	3,781.83	143.33	27.385		
20,200.00	7,155.84	6,260.00	3,788.00	214.48	63.80	16.92	-1,272.61	13,164.98	3,929.01	3,785.01	144.00	27.284		
20,300.00	7,155.79	6,260.00	3,788.00	216.07	63.80	16.92	-1,272.61	13,164.98	3,935.40	3,790.81	144.59	27.218		
20,400.00	7,155.75	6,260.00	3,788.00	217.66	63.80	16.92	-1,272.61	13,164.98	3,944.31	3,799.23	145.09	27.186 SF		
20,500.00	7,155.71	6,260.00	3,788.00	219.26	63.80	16.92	-1,272.61	13,164.98	3,955.73	3,810.23	145.50	27.187		
20,600.00	7,155.67	6,260.00	3,788.00	220.85	63.80	16.92	-1,272.61	13,164.98	3,969.64	3,823.81	145.83	27.221		
20,700.00	7,155.63	6,260.00	3,788.00	222.44	63.80	16.92	-1,272.61	13,164.98	3,986.01	3,839.93	146.08	27.287		
20,800.00	7,155.59	6,260.00	3,788.00	224.03	63.80	16.92	-1,272.61	13,164.98	4,004.81	3,858.57	146.24	27.384		
20,900.00	7,155.55	6,260.00	3,788.00	225.63	63.80	16.92	-1,272.61	13,164.98	4,026.01	3,879.67	146.33	27.513		
21,000.00	7,155.51	6,260.00	3,788.00	227.22	63.80	16.92	-1,272.61	13,164.98	4,049.56	3,903.22	146.34	27.672		
21,100.00	7,155.47	6,260.00	3,788.00	228.81	63.80	16.92	-1,272.61	13,164.98	4,075.44	3,929.16	146.28	27.861		
21,200.00	7,155.43	6,260.00	3,788.00	230.40	63.80	16.92	-1,272.61	13,164.98	4,103.58	3,957.44	146.15	28.079		
21,300.00	7,155.39	6,260.00	3,788.00	232.00	63.80	16.92	-1,272.61	13,164.98	4,133.96	3,988.02	145.94	28.326		
21,400.00	7,155.35	6,260.00	3,788.00	233.59	63.80	16.92	-1,272.61	13,164.98	4,166.52	4,020.84	145.68	28.601		
21,500.00	7,155.31	6,260.00	3,788.00	235.18	63.80	16.92	-1,272.61	13,164.98	4,201.20	4,055.85	145.35	28.903		
21,600.00	7,155.26	6,260.00	3,788.00	236.78	63.80	16.92	-1,272.61	13,164.98	4,237.96	4,092.99	144.97	29.233		
21,700.00	7,155.22	6,260.00	3,788.00	238.37	63.80	16.92	-1,272.61	13,164.98	4,276.74	4,132.21	144.54	29.589		
21,800.00	7,155.18	6,260.00	3,788.00	239.96	63.80	16.92	-1,272.61	13,164.98	4,317.50	4,173.44	144.05	29.972		
21,900.00	7,155.14	6,260.00	3,788.00	241.56	63.80	16.92	-1,272.61	13,164.98	4,360.16	4,216.63	143.52	30.379		
21,953.88	7,155.12	6,260.00	3,788.00	242.42	63.80	16.92	-1,272.61	13,164.98	4,383.92	4,240.70	143.22	30.609		
22,000.00	7,155.10	6,260.00	3,788.00	243.15	63.80	17.15	-1,272.61	13,164.98	4,404.63	4,261.68	142.95	30.812		
22,019.01	7,155.09	6,260.00	3,788.00	243.46	63.80	17.24	-1,272.61	13,164.98	4,413.25	4,270.42	142.83	30.898		
22,100.00	7,155.06	6,260.00	3,788.00	244.75	63.80	17.24	-1,272.61	13,164.98	4,450.67	4,308.35	142.31	31.274		
22,200.00	7,155.02	6,260.00	3,788.00	246.34	63.80	17.24	-1,272.61	13,164.98	4,498.45	4,356.80	141.64	31.759		
22,300.00	7,154.97	6,260.00	3,788.00	247.94	63.80	17.24	-1,272.61	13,164.98	4,547.93	4,406.98	140.94	32.267		
22,400.00	7,154.93	6,260.00	3,788.00	249.53	63.80	17.24	-1,272.61	13,164.98	4,599.05	4,458.83	140.22	32.799		
22,500.00	7,154.89	6,260.00	3,788.00	251.13	63.80	17.24	-1,272.61	13,164.98	4,651.75	4,512.28	139.47	33.353		
22,600.00	7,154.85	6,260.00	3,788.00	252.72	63.80	17.24	-1,272.61	13,164.98	4,706.00	4,567.30	138.70	33.929		
22,700.00	7,154.80	6,260.00	3,788.00	254.32	63.80	17.24	-1,272.61	13,164.98	4,761.72	4,623.81	137.91	34.527		
22,800.00	7,154.76	6,260.00	3,788.00	255.91	63.80	17.24	-1,272.61	13,164.98	4,818.88	4,681.77	137.11	35.145		
22,900.00	7,154.72	6,260.00	3,788.00	257.51	63.80	17.24	-1,272.61	13,164.98	4,877.42	4,741.11	136.30	35.784		
23,000.00	7,154.68	6,260.00	3,788.00	259.11	63.80	17.24	-1,272.61	13,164.98	4,937.28	4,801.80	135.48	36.443		
23,100.00	7,154.63	6,260.00	3,788.00	260.70	63.80	17.24	-1,272.61	13,164.98	4,998.44	4,863.79	134.65	37.121		
23,200.00	7,154.59	6,260.00	3,788.00	262.30	63.80	17.24	-1,272.61	13,164.98	5,060.83	4,927.01	133.82	37.819		
23,300.00	7,154.55	6,260.00	3,788.00	263.89	63.80	17.24	-1,272.61	13,164.98	5,124.41	4,991.43	132.98	38.535		
23,400.00	7,154.51	6,260.00	3,788.00	265.49	63.80	17.24	-1,272.61	13,164.98	5,189.14	5,056.99	132.14	39.269		
23,500.00	7,154.47	6,260.00	3,788.00	267.08	63.80	17.24	-1,272.61	13,164.98	5,254.97	5,123.66	131.31	40.020		
23,600.00	7,154.42	6,260.00	3,788.00	268.68	63.80	17.24	-1,272.61	13,164.98	5,321.87	5,191.40	130.47	40.789		

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 836H
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 836H	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		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)	
23,700.00	7,154.38	6,260.00	3,788.00	270.28	63.80	17.24	-1,272.61	13,164.98	5,389.80	5,260.16	129.64	41.575		
23,800.00	7,154.34	6,260.00	3,788.00	271.87	63.80	17.24	-1,272.61	13,164.98	5,458.71	5,329.90	128.81	42.377		
23,900.00	7,154.30	6,260.00	3,788.00	273.47	63.80	17.24	-1,272.61	13,164.98	5,528.57	5,400.58	127.99	43.194		
24,000.00	7,154.25	6,260.00	3,788.00	275.07	63.80	17.24	-1,272.61	13,164.98	5,599.35	5,472.17	127.18	44.028		
24,100.00	7,154.21	6,260.00	3,788.00	276.66	63.80	17.24	-1,272.61	13,164.98	5,671.00	5,544.63	126.37	44.876		
24,200.00	7,154.17	6,260.00	3,788.00	278.26	63.80	17.24	-1,272.61	13,164.98	5,743.51	5,617.94	125.57	45.739		
24,300.00	7,154.13	6,260.00	3,788.00	279.86	63.80	17.24	-1,272.61	13,164.98	5,816.83	5,692.04	124.78	46.616		
24,400.00	7,154.08	6,260.00	3,788.00	281.45	63.80	17.24	-1,272.61	13,164.98	5,890.93	5,766.93	124.00	47.507		
24,500.00	7,154.04	6,260.00	3,788.00	283.05	63.80	17.24	-1,272.61	13,164.98	5,965.79	5,842.56	123.23	48.411		
24,597.25	7,154.00	6,260.00	3,788.00	284.60	63.80	17.24	-1,272.61	13,164.98	6,039.29	5,916.79	122.49	49.303		
24,600.00	7,154.00	6,260.00	3,788.00	284.65	63.80	17.21	-1,272.61	13,164.98	6,041.38	5,918.90	122.47	49.328		
24,700.00	7,153.96	6,260.00	3,788.00	286.24	63.80	16.07	-1,272.61	13,164.98	6,117.84	5,996.09	121.74	50.252		
24,722.47	7,153.95	6,260.00	3,788.00	286.60	63.80	15.81	-1,272.61	13,164.98	6,135.15	6,013.57	121.58	50.460		
24,800.00	7,153.92	6,260.00	3,788.00	287.84	63.80	15.81	-1,272.61	13,164.98	6,195.19	6,074.14	121.05	51.180		
24,900.00	7,153.88	6,260.00	3,788.00	289.43	63.80	15.81	-1,272.61	13,164.98	6,273.18	6,152.82	120.36	52.120		
25,000.00	7,153.84	6,260.00	3,788.00	291.03	63.80	15.81	-1,272.61	13,164.98	6,351.80	6,232.11	119.69	53.070		
25,100.00	7,153.80	6,260.00	3,788.00	292.63	63.80	15.81	-1,272.61	13,164.98	6,431.00	6,311.98	119.02	54.031		
25,200.00	7,153.77	6,260.00	3,788.00	294.22	63.80	15.81	-1,272.61	13,164.98	6,510.78	6,392.41	118.37	55.003		
25,300.00	7,153.73	6,260.00	3,788.00	295.82	63.80	15.81	-1,272.61	13,164.98	6,591.11	6,473.38	117.73	55.985		
25,400.00	7,153.69	6,260.00	3,788.00	297.41	63.80	15.81	-1,272.61	13,164.98	6,671.98	6,554.88	117.10	56.976		
25,500.00	7,153.65	6,260.00	3,788.00	299.01	63.80	15.81	-1,272.61	13,164.98	6,753.35	6,636.87	116.48	57.977		
25,600.00	7,153.61	6,260.00	3,788.00	300.60	63.80	15.81	-1,272.61	13,164.98	6,835.22	6,719.34	115.88	58.987		
25,700.00	7,153.57	6,260.00	3,788.00	302.20	63.80	15.81	-1,272.61	13,164.98	6,917.57	6,802.29	115.28	60.006		
25,800.00	7,153.53	6,260.00	3,788.00	303.80	63.80	15.81	-1,272.61	13,164.98	7,000.37	6,885.68	114.70	61.033		
25,900.00	7,153.50	6,260.00	3,788.00	305.39	63.80	15.81	-1,272.61	13,164.98	7,083.62	6,969.50	114.13	62.069		
26,000.00	7,153.46	6,260.00	3,788.00	306.99	63.80	15.81	-1,272.61	13,164.98	7,167.30	7,053.74	113.56	63.112		
26,100.00	7,153.42	6,260.00	3,788.00	308.58	63.80	15.81	-1,272.61	13,164.98	7,251.39	7,138.38	113.01	64.163		
26,200.00	7,153.38	6,260.00	3,788.00	310.18	63.80	15.81	-1,272.61	13,164.98	7,335.88	7,223.41	112.48	65.222		
26,300.00	7,153.34	6,260.00	3,788.00	311.78	63.80	15.81	-1,272.61	13,164.98	7,420.76	7,308.81	111.95	66.288		
26,400.00	7,153.30	6,260.00	3,788.00	313.37	63.80	15.81	-1,272.61	13,164.98	7,506.01	7,394.58	111.43	67.360		
26,500.00	7,153.26	6,260.00	3,788.00	314.97	63.80	15.81	-1,272.61	13,164.98	7,591.62	7,480.69	110.93	68.439		
26,600.00	7,153.23	6,260.00	3,788.00	316.57	63.80	15.81	-1,272.61	13,164.98	7,677.57	7,567.15	110.43	69.525		
26,700.00	7,153.19	6,260.00	3,788.00	318.16	63.80	15.81	-1,272.61	13,164.98	7,763.87	7,653.92	109.94	70.616		
26,800.00	7,153.15	6,260.00	3,788.00	319.76	63.80	15.81	-1,272.61	13,164.98	7,850.49	7,741.02	109.47	71.714		
26,900.00	7,153.11	6,260.00	3,788.00	321.35	63.80	15.81	-1,272.61	13,164.98	7,937.42	7,828.41	109.01	72.817		
26,976.35	7,153.08	6,260.00	3,788.00	322.57	63.80	15.81	-1,272.61	13,164.98	8,004.00	7,895.34	108.66	73.662		
27,000.00	7,153.07	6,260.00	3,788.00	322.95	63.80	15.81	-1,272.61	13,164.98	8,024.66	7,916.11	108.55	73.925		
27,100.00	7,153.03	6,260.00	3,788.00	324.55	63.80	15.81	-1,272.61	13,164.98	8,112.19	8,004.08	108.11	75.039		
27,176.36	7,153.00	6,260.00	3,788.00	325.77	63.80	15.81	-1,272.61	13,164.98	8,179.22	8,071.44	107.77	75.892		

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 836H
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 836H	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: Distance				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		
0.00	0.00	364.00	364.00	0.00	1.30	103.87	-2,641.11	10,692.89	11,014.24						
125.00	125.00	489.00	489.00	0.06	1.75	-31.77	-2,641.11	10,692.89	11,013.88	11,012.07	1.81	6,088.961			
225.00	225.00	589.00	589.00	0.17	2.11	34.68	-2,641.11	10,692.89	11,013.22	11,010.94	2.28	4,822.692			
312.00	311.99	675.99	675.99	0.28	2.42	-26.82	-2,641.11	10,692.89	11,012.66	11,009.96	2.70	4,081.236			
400.00	399.99	763.99	763.99	0.37	2.74	-26.82	-2,641.11	10,692.89	11,012.17	11,009.06	3.10	3,548.412			
462.00	461.99	825.99	825.99	0.50	2.96	-26.82	-2,641.11	10,692.89	11,011.82	11,008.35	3.46	3,179.341			
509.18	509.16	873.16	873.16	0.64	3.13	-52.50	-2,641.11	10,692.89	11,011.37	11,007.60	3.77	2,920.494			
600.00	599.96	963.96	963.96	0.94	3.46	-52.50	-2,641.11	10,692.89	11,010.16	11,005.77	4.39	2,507.552			
700.00	699.94	1,063.94	1,063.94	1.28	3.81	-52.51	-2,641.11	10,692.89	11,008.83	11,003.73	5.09	2,162.077			
800.00	799.92	1,163.92	1,163.92	1.63	4.17	-52.52	-2,641.11	10,692.89	11,007.49	11,001.69	5.80	1,897.762			
900.00	899.89	1,263.89	1,263.89	1.98	4.53	-52.53	-2,641.11	10,692.89	11,006.16	10,999.65	6.51	1,690.073			
1,000.00	999.87	1,363.87	1,363.87	2.34	4.89	-52.54	-2,641.11	10,692.89	11,004.83	10,997.60	7.23	1,522.916			
1,100.00	1,099.84	1,463.84	1,463.84	2.69	5.25	-52.55	-2,641.11	10,692.89	11,003.50	10,995.55	7.94	1,385.616			
1,200.00	1,199.82	1,563.82	1,563.82	3.05	5.61	-52.56	-2,641.11	10,692.89	11,002.16	10,993.51	8.66	1,270.889			
1,300.00	1,299.80	1,663.80	1,663.80	3.41	5.96	-52.57	-2,641.11	10,692.89	11,000.83	10,991.46	9.37	1,173.621			
1,400.00	1,399.77	1,763.77	1,763.77	3.77	6.32	-52.58	-2,641.11	10,692.89	10,999.50	10,989.41	10.09	1,090.124			
1,500.00	1,499.75	1,863.75	1,863.75	4.13	6.68	-52.59	-2,641.11	10,692.89	10,998.17	10,987.36	10.81	1,017.678			
1,600.00	1,599.72	1,963.72	1,963.72	4.49	7.04	-52.59	-2,641.11	10,692.89	10,996.84	10,985.31	11.52	954.228			
1,700.00	1,699.70	2,063.70	2,063.70	4.85	7.40	-52.60	-2,641.11	10,692.89	10,995.51	10,983.27	12.24	898.202			
1,800.00	1,799.68	2,163.68	2,163.68	5.21	7.76	-52.61	-2,641.11	10,692.89	10,994.18	10,981.22	12.96	848.370			
1,900.00	1,899.65	2,263.65	2,263.65	5.57	8.11	-52.62	-2,641.11	10,692.89	10,992.85	10,979.17	13.68	803.760			
2,000.00	1,999.63	2,363.63	2,363.63	5.93	8.47	-52.63	-2,641.11	10,692.89	10,991.52	10,977.12	14.39	763.593			
2,100.00	2,099.60	2,463.60	2,463.60	6.29	8.83	-52.64	-2,641.11	10,692.89	10,990.19	10,975.08	15.11	727.239			
2,200.00	2,199.58	2,563.58	2,563.58	6.65	9.19	-52.65	-2,641.11	10,692.89	10,988.86	10,973.03	15.83	694.178			
2,300.00	2,299.56	2,663.56	2,663.56	7.01	9.55	-52.66	-2,641.11	10,692.89	10,987.53	10,970.98	16.55	663.984			
2,400.00	2,399.53	2,763.53	2,763.53	7.37	9.91	-52.67	-2,641.11	10,692.89	10,986.20	10,968.94	17.27	636.299			
2,500.00	2,499.51	2,863.51	2,863.51	7.73	10.26	-52.68	-2,641.11	10,692.89	10,984.87	10,966.89	17.98	610.823			
2,600.00	2,599.48	2,963.48	2,963.48	8.09	10.62	-52.69	-2,641.11	10,692.89	10,983.55	10,964.84	18.70	587.302			
2,700.00	2,699.46	3,063.46	3,063.46	8.45	10.98	-52.69	-2,641.11	10,692.89	10,982.22	10,962.80	19.42	565.519			
2,800.00	2,799.44	3,163.44	3,163.44	8.81	11.34	-52.70	-2,641.11	10,692.89	10,980.89	10,960.75	20.14	545.289			
2,900.00	2,899.41	3,263.41	3,263.41	9.17	11.70	-52.71	-2,641.11	10,692.89	10,979.56	10,958.71	20.86	526.452			
3,000.00	2,999.39	3,363.39	3,363.39	9.53	12.06	-52.72	-2,641.11	10,692.89	10,978.24	10,956.66	21.57	508.868			
3,100.00	3,099.36	3,459.00	3,459.00	9.89	12.40	-52.73	-2,641.11	10,692.89	10,976.91	10,954.63	22.28	492.761			
3,200.00	3,199.34	3,459.00	3,459.00	10.25	12.40	-52.73	-2,641.11	10,692.89	10,976.08	10,953.44	22.64	484.891			
3,241.20	3,240.53	3,459.00	3,459.00	10.39	12.40	-52.73	-2,641.11	10,692.89	10,976.00	10,953.22	22.78	481.742			
3,300.00	3,299.32	3,459.00	3,459.00	10.61	12.40	-52.73	-2,641.11	10,692.89	10,976.16	10,953.16	22.99	477.338			
3,400.00	3,399.29	3,459.00	3,459.00	10.97	12.40	-52.73	-2,641.11	10,692.89	10,977.15	10,953.80	23.35	470.089			
3,500.00	3,499.27	3,459.00	3,459.00	11.33	12.40	-52.73	-2,641.11	10,692.89	10,979.05	10,955.35	23.71	463.128			
3,600.00	3,599.25	3,459.00	3,459.00	11.69	12.40	-52.73	-2,641.11	10,692.89	10,981.86	10,957.80	24.06	456.445			
3,700.00	3,699.22	3,459.00	3,459.00	12.05	12.40	-52.73	-2,641.11	10,692.89	10,985.58	10,961.17	24.41	450.025			
3,800.00	3,799.20	3,459.00	3,459.00	12.41	12.40	-52.73	-2,641.11	10,692.89	10,990.21	10,965.45	24.76	443.859			
3,900.00	3,899.17	3,500.00	3,499.87	12.77	12.55	-52.74	-2,641.13	10,695.69	10,995.56	10,970.30	25.26	435.314			
4,000.00	3,999.15	3,500.00	3,499.87	13.13	12.55	-52.74	-2,641.13	10,695.69	11,001.63	10,976.02	25.61	429.667			
4,100.00	4,099.13	3,500.00	3,499.87	13.49	12.55	-52.74	-2,641.13	10,695.69	11,008.61	10,982.66	25.95	424.239			
4,200.00	4,199.10	3,500.00	3,499.87	13.85	12.55	-52.74	-2,641.13	10,695.69	11,016.49	10,990.20	26.29	419.022			
4,300.00	4,299.08	3,500.00	3,499.87	14.21	12.55	-52.74	-2,641.13	10,695.69	11,025.27	10,998.64	26.63	414.007			
4,400.00	4,399.05	3,500.00	3,499.87	14.57	12.55	-52.74	-2,641.13	10,695.69	11,034.95	11,007.98	26.97	409.186			
4,500.00	4,499.03	3,500.00	3,499.87	14.93	12.55	-52.74	-2,641.13	10,695.69	11,045.53	11,018.22	27.30	404.551			
4,600.00	4,599.01	3,500.00	3,499.87	15.29	12.55	-52.74	-2,641.13	10,695.69	11,057.00	11,029.36	27.64	400.094			
4,700.00	4,698.98	3,500.00	3,499.87	15.65	12.55	-52.74	-2,641.13	10,695.69	11,069.36	11,041.40	27.97	395.809			
4,800.00	4,798.96	3,500.00	3,499.87	16.01	12.55	-52.74	-2,641.13	10,695.69	11,082.62	11,054.32	28.29	391.690			
4,900.00	4,898.93	3,500.00	3,499.87	16.37	12.55	-52.74	-2,641.13	10,695.69	11,096.76	11,068.14	28.62	387.729			

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 836H
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 836H	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
Measured Depth (usft)	Reference 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	
5,000.00	4,998.91	3,500.00	3,499.87	16.73	12.55	-52.74	-2,641.13	10,695.69	11,111.78	11,082.83	28.94	383.920		
5,100.00	5,098.89	3,500.00	3,499.87	17.09	12.55	-52.74	-2,641.13	10,695.69	11,127.67	11,098.41	29.26	380.259		
5,200.00	5,198.86	3,500.00	3,499.87	17.45	12.55	-52.74	-2,641.13	10,695.69	11,144.45	11,114.87	29.58	376.738		
5,300.00	5,298.84	3,500.00	3,499.87	17.81	12.55	-52.74	-2,641.13	10,695.69	11,162.09	11,132.19	29.90	373.354		
5,400.00	5,398.81	3,500.00	3,499.87	18.17	12.55	-52.74	-2,641.13	10,695.69	11,180.60	11,150.39	30.21	370.102		
5,500.00	5,498.79	3,500.00	3,499.87	18.53	12.55	-52.74	-2,641.13	10,695.69	11,199.97	11,169.45	30.52	366.975		
5,600.00	5,598.77	3,500.00	3,499.87	18.89	12.55	-52.74	-2,641.13	10,695.69	11,220.20	11,189.38	30.83	363.970		
5,700.00	5,698.74	3,500.00	3,499.87	19.25	12.55	-52.74	-2,641.13	10,695.69	11,241.29	11,210.16	31.13	361.082		
5,800.00	5,798.72	3,500.00	3,499.87	19.61	12.55	-52.74	-2,641.13	10,695.69	11,263.22	11,231.79	31.43	358.307		
5,900.00	5,898.69	3,500.00	3,499.87	19.97	12.55	-52.74	-2,641.13	10,695.69	11,286.00	11,254.26	31.73	355.642		
6,000.00	5,998.67	3,500.00	3,499.87	20.33	12.55	-52.74	-2,641.13	10,695.69	11,309.61	11,277.58	32.03	353.081		
6,100.00	6,098.65	3,500.00	3,499.87	20.69	12.55	-52.74	-2,641.13	10,695.69	11,334.06	11,301.73	32.33	350.621		
6,200.00	6,198.62	3,500.00	3,499.87	21.05	12.55	-52.74	-2,641.13	10,695.69	11,359.33	11,326.71	32.62	348.260		
6,300.00	6,298.60	3,500.00	3,499.87	21.41	12.55	-52.74	-2,641.13	10,695.69	11,385.43	11,352.52	32.91	345.992		
6,400.00	6,398.57	3,500.00	3,499.87	21.77	12.55	-52.74	-2,641.13	10,695.69	11,412.34	11,379.15	33.19	343.816		
6,500.00	6,498.55	3,549.37	3,548.01	22.13	12.72	-52.75	-2,641.20	10,706.40	11,436.00	11,402.33	33.68	339.593		
6,531.56	6,530.10	3,550.16	3,548.77	22.25	12.72	-52.75	-2,641.20	10,706.64	11,444.79	11,411.02	33.77	338.923		
6,550.00	6,548.53	3,550.63	3,549.21	22.31	12.72	-14.51	-2,641.20	10,706.78	11,449.71	11,415.89	33.82	338.540		
6,600.00	6,598.36	3,600.00	3,594.87	22.49	12.90	3.42	-2,641.33	10,725.42	11,464.51	11,430.35	34.15	335.661		
6,650.00	6,647.74	3,600.00	3,594.87	22.67	12.90	7.17	-2,641.33	10,725.42	11,471.69	11,437.41	34.29	334.563		
6,700.00	6,696.35	3,600.00	3,594.87	22.84	12.90	8.76	-2,641.33	10,725.42	11,475.30	11,440.87	34.42	333.386		
6,750.00	6,743.90	3,600.00	3,594.87	23.01	12.90	9.68	-2,641.33	10,725.42	11,475.29	11,440.74	34.55	332.141		
6,800.00	6,790.11	3,600.00	3,594.87	23.18	12.90	10.34	-2,641.33	10,725.42	11,471.68	11,437.01	34.67	330.840		
6,850.00	6,834.67	3,600.00	3,594.87	23.35	12.90	10.88	-2,641.33	10,725.42	11,464.49	11,429.70	34.79	329.492		
6,900.00	6,877.32	3,600.00	3,594.87	23.51	12.90	11.39	-2,641.33	10,725.42	11,453.75	11,418.84	34.91	328.107		
6,950.00	6,917.80	3,600.00	3,594.87	23.68	12.90	11.92	-2,641.33	10,725.42	11,439.51	11,404.50	35.02	326.692		
7,000.00	6,955.85	3,600.00	3,594.87	23.85	12.90	12.50	-2,641.33	10,725.42	11,421.86	11,386.75	35.12	325.254		
7,050.00	6,991.24	3,600.00	3,594.87	24.03	12.90	13.14	-2,641.33	10,725.42	11,400.89	11,365.68	35.21	323.799		
7,100.00	7,023.76	3,600.00	3,594.87	24.22	12.90	13.89	-2,641.33	10,725.42	11,376.71	11,341.41	35.30	322.332		
7,150.00	7,053.20	3,600.00	3,594.87	24.42	12.90	14.77	-2,641.33	10,725.42	11,349.44	11,314.06	35.37	320.858		
7,200.00	7,079.37	3,600.00	3,594.87	24.63	12.90	15.81	-2,641.33	10,725.42	11,319.23	11,283.79	35.44	319.381		
7,250.00	7,102.13	3,600.00	3,594.87	24.86	12.90	17.07	-2,641.33	10,725.42	11,286.25	11,250.75	35.50	317.906		
7,300.00	7,121.32	3,600.00	3,594.87	25.10	12.90	18.60	-2,641.33	10,725.42	11,250.68	11,215.13	35.55	316.436		
7,350.00	7,136.84	3,600.00	3,594.87	25.35	12.90	20.49	-2,641.33	10,725.42	11,212.71	11,177.11	35.60	314.973		
7,400.00	7,148.58	3,600.00	3,594.87	25.62	12.90	22.87	-2,641.33	10,725.42	11,172.56	11,136.92	35.64	313.520		
7,450.00	7,156.47	3,600.00	3,594.87	25.90	12.90	25.93	-2,641.33	10,725.42	11,130.44	11,094.77	35.67	312.078		
7,500.00	7,160.47	3,600.00	3,594.87	26.20	12.90	29.92	-2,641.33	10,725.42	11,086.60	11,050.91	35.69	310.647		
7,526.22	7,161.00	3,600.00	3,594.87	26.36	12.90	32.53	-2,641.33	10,725.42	11,063.00	11,027.30	35.70	309.888		
7,600.00	7,160.97	3,600.00	3,594.87	26.83	12.90	32.53	-2,641.33	10,725.42	10,996.12	10,960.40	35.72	307.836		
7,700.00	7,160.93	3,600.00	3,594.87	27.53	12.90	32.53	-2,641.33	10,725.42	10,905.62	10,869.86	35.76	304.998		
7,800.00	7,160.89	3,600.00	3,594.87	28.32	12.90	32.53	-2,641.33	10,725.42	10,815.27	10,779.47	35.80	302.075		
7,900.00	7,160.85	3,600.00	3,594.87	29.16	12.90	32.53	-2,641.33	10,725.42	10,725.11	10,689.24	35.86	299.068		
8,000.00	7,160.81	3,600.00	3,594.87	30.07	12.90	32.53	-2,641.33	10,725.42	10,635.11	10,599.18	35.93	295.976		
8,100.00	7,160.77	3,600.00	3,594.87	31.04	12.90	32.53	-2,641.33	10,725.42	10,545.30	10,509.28	36.02	292.800		
8,200.00	7,160.73	3,600.00	3,594.87	32.06	12.90	32.53	-2,641.33	10,725.42	10,455.67	10,419.56	36.11	289.539		
8,300.00	7,160.69	3,600.00	3,594.87	33.12	12.90	32.53	-2,641.33	10,725.42	10,366.23	10,330.01	36.22	286.196		
8,400.00	7,160.65	3,600.00	3,594.87	34.23	12.90	32.53	-2,641.33	10,725.42	10,276.99	10,240.65	36.34	282.771		
8,500.00	7,160.60	3,600.00	3,594.87	35.37	12.90	32.53	-2,641.33	10,725.42	10,187.95	10,151.46	36.48	279.267		
8,600.00	7,160.56	3,600.00	3,594.87	36.55	12.90	32.53	-2,641.33	10,725.42	10,099.11	10,062.47	36.63	275.685		
8,700.00	7,160.52	3,600.00	3,594.87	37.76	12.90	32.53	-2,641.33	10,725.42	10,010.48	9,973.68	36.80	272.028		
8,800.00	7,160.48	3,600.00	3,594.87	38.99	12.90	32.53	-2,641.33	10,725.42	9,922.07	9,885.08	36.98	268.298		
8,900.00	7,160.44	3,600.00	3,594.87	40.26	12.90	32.53	-2,641.33	10,725.42	9,833.88	9,796.70	37.18	264.499		

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 836H
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 836H	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)			
9,000.00	7,160.40	3,600.00	3,594.87	41.54	12.90	32.53	-2,641.33	10,725.42	9,745.91	9,708.52	37.39	260.634	
9,100.00	7,160.36	3,600.00	3,594.87	42.85	12.90	32.53	-2,641.33	10,725.42	9,658.19	9,620.56	37.62	256.707	
9,200.00	7,160.32	3,600.00	3,594.87	44.18	12.90	32.53	-2,641.33	10,725.42	9,570.70	9,532.83	37.87	252.722	
9,300.00	7,160.28	3,600.00	3,594.87	45.53	12.90	32.53	-2,641.33	10,725.42	9,483.46	9,445.33	38.13	248.684	
9,400.00	7,160.24	3,600.00	3,594.87	46.89	12.90	32.53	-2,641.33	10,725.42	9,396.47	9,358.06	38.42	244.596	
9,500.00	7,160.20	3,600.00	3,594.87	48.26	12.90	32.53	-2,641.33	10,725.42	9,309.75	9,271.04	38.72	240.464	
9,600.00	7,160.16	3,600.00	3,594.87	49.65	12.90	32.53	-2,641.33	10,725.42	9,223.30	9,184.26	39.03	236.293	
9,700.00	7,160.12	3,600.00	3,594.87	51.05	12.90	32.53	-2,641.33	10,725.42	9,137.12	9,097.75	39.37	232.088	
9,800.00	7,160.08	3,600.00	3,594.87	52.47	12.90	32.53	-2,641.33	10,725.42	9,051.22	9,011.50	39.72	227.854	
9,900.00	7,160.04	3,600.00	3,594.87	53.89	12.90	32.53	-2,641.33	10,725.42	8,965.62	8,925.52	40.10	223.597	
10,000.00	7,160.00	3,600.00	3,594.87	55.33	12.90	32.53	-2,641.33	10,725.42	8,880.32	8,839.83	40.49	219.321	
10,100.00	7,159.95	3,600.00	3,594.87	56.77	12.90	32.53	-2,641.33	10,725.42	8,795.33	8,754.43	40.90	215.033	
10,200.00	7,159.91	3,600.00	3,594.87	58.22	12.90	32.53	-2,641.33	10,725.42	8,710.66	8,669.32	41.33	210.737	
10,300.00	7,159.87	3,600.00	3,594.87	59.68	12.90	32.53	-2,641.33	10,725.42	8,626.31	8,584.53	41.79	206.440	
10,400.00	7,159.83	3,600.00	3,594.87	61.15	12.90	32.53	-2,641.33	10,725.42	8,542.30	8,500.05	42.26	202.145	
10,500.00	7,159.79	3,600.00	3,594.87	62.62	12.90	32.53	-2,641.33	10,725.42	8,458.65	8,415.90	42.75	197.859	
10,600.00	7,159.75	3,600.00	3,594.87	64.10	12.90	32.53	-2,641.33	10,725.42	8,375.35	8,332.08	43.26	193.586	
10,700.00	7,159.71	3,614.20	3,607.37	65.58	12.96	32.62	-2,641.37	10,732.15	8,292.08	8,248.24	43.84	189.131	
10,800.00	7,159.67	3,627.76	3,619.00	67.07	13.01	32.69	-2,641.42	10,739.12	8,209.67	8,165.23	44.44	184.745	
10,900.00	7,159.63	3,627.76	3,619.00	68.57	13.01	32.69	-2,641.42	10,739.12	8,127.34	8,082.33	45.01	180.557	
11,000.00	7,159.59	3,627.76	3,619.00	70.07	13.01	32.69	-2,641.42	10,739.12	8,045.41	7,999.80	45.61	176.400	
11,100.00	7,159.55	3,627.76	3,619.00	71.57	13.01	32.69	-2,641.42	10,739.12	7,963.89	7,917.67	46.23	172.278	
11,200.00	7,159.51	3,627.76	3,619.00	73.08	13.01	32.69	-2,641.42	10,739.12	7,882.80	7,835.94	46.87	168.196	
11,300.00	7,159.47	3,627.76	3,619.00	74.59	13.01	32.69	-2,641.42	10,739.12	7,802.15	7,754.62	47.53	164.156	
11,400.00	7,159.43	3,627.76	3,619.00	76.11	13.01	32.69	-2,641.42	10,739.12	7,721.95	7,673.74	48.21	160.163	
11,500.00	7,159.39	3,627.76	3,619.00	77.63	13.01	32.69	-2,641.42	10,739.12	7,642.22	7,593.30	48.92	156.219	
11,600.00	7,159.35	3,627.76	3,619.00	79.15	13.01	32.69	-2,641.42	10,739.12	7,562.97	7,513.32	49.65	152.327	
11,638.27	7,159.33	3,627.76	3,619.00	79.73	13.01	32.69	-2,641.42	10,739.12	7,532.77	7,482.84	49.93	150.853	
11,640.51	7,159.33	3,627.76	3,619.00	79.77	13.01	32.72	-2,641.42	10,739.12	7,531.01	7,481.05	49.95	150.767	
11,700.00	7,159.30	3,627.76	3,619.00	80.68	13.01	32.72	-2,641.42	10,739.12	7,484.23	7,433.82	50.40	148.491	
11,800.00	7,159.26	3,627.76	3,619.00	82.20	13.01	32.72	-2,641.42	10,739.12	7,406.00	7,354.82	51.18	144.711	
11,900.00	7,159.22	3,627.76	3,619.00	83.74	13.01	32.72	-2,641.42	10,739.12	7,328.30	7,276.32	51.98	140.991	
12,000.00	7,159.18	3,627.76	3,619.00	85.27	13.01	32.72	-2,641.42	10,739.12	7,251.15	7,198.35	52.80	137.333	
12,100.00	7,159.14	3,627.76	3,619.00	86.81	13.01	32.72	-2,641.42	10,739.12	7,174.56	7,120.92	53.65	133.739	
12,200.00	7,159.10	3,627.76	3,619.00	88.35	13.01	32.72	-2,641.42	10,739.12	7,098.56	7,044.04	54.52	130.210	
12,300.00	7,159.06	3,627.76	3,619.00	89.89	13.01	32.72	-2,641.42	10,739.12	7,023.15	6,967.74	55.41	126.749	
12,400.00	7,159.02	3,627.76	3,619.00	91.43	13.01	32.72	-2,641.42	10,739.12	6,948.37	6,892.05	56.33	123.356	
12,500.00	7,158.98	3,627.76	3,619.00	92.98	13.01	32.72	-2,641.42	10,739.12	6,874.23	6,816.96	57.27	120.033	
12,600.00	7,158.94	3,627.76	3,619.00	94.52	13.01	32.72	-2,641.42	10,739.12	6,800.75	6,742.52	58.24	116.780	
12,700.00	7,158.90	3,627.76	3,619.00	96.07	13.01	32.72	-2,641.42	10,739.12	6,727.96	6,668.73	59.23	113.598	
12,800.00	7,158.86	3,662.48	3,647.23	97.62	13.13	32.91	-2,641.55	10,759.29	6,653.92	6,593.62	60.30	110.345	
12,900.00	7,158.81	3,665.42	3,649.51	99.17	13.14	32.92	-2,641.56	10,761.15	6,582.22	6,520.87	61.34	107.301	
13,000.00	7,158.77	3,700.00	3,674.90	100.73	13.27	33.10	-2,641.72	10,784.60	6,512.84	6,450.38	62.46	104.268	
13,100.00	7,158.73	3,700.00	3,674.90	102.28	13.27	33.10	-2,641.72	10,784.60	6,442.30	6,378.75	63.55	101.375	
13,200.00	7,158.69	3,700.00	3,674.90	103.84	13.27	33.10	-2,641.72	10,784.60	6,372.54	6,307.88	64.66	98.554	
13,300.00	7,158.65	3,700.00	3,674.90	105.40	13.27	33.10	-2,641.72	10,784.60	6,303.60	6,237.81	65.80	95.805	
13,400.00	7,158.61	3,700.00	3,674.90	106.96	13.27	33.10	-2,641.72	10,784.60	6,235.50	6,168.55	66.96	93.127	
13,500.00	7,158.57	3,700.00	3,674.90	108.52	13.27	33.10	-2,641.72	10,784.60	6,168.27	6,100.13	68.14	90.521	
13,600.00	7,158.53	3,700.00	3,674.90	110.08	13.27	33.10	-2,641.72	10,784.60	6,101.94	6,032.59	69.35	87.986	
13,700.00	7,158.49	3,700.00	3,674.90	111.64	13.27	33.10	-2,641.72	10,784.60	6,036.54	5,965.95	70.59	85.521	
13,800.00	7,158.45	3,700.00	3,674.90	113.21	13.27	33.10	-2,641.72	10,784.60	5,972.09	5,900.25	71.84	83.128	
13,900.00	7,158.41	3,700.00	3,674.90	114.77	13.27	33.10	-2,641.72	10,784.60	5,908.63	5,835.51	73.12	80.804	

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 836H
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 836H	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		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)
14,000.00	7,158.37	3,700.00	3,674.90	116.34	13.27	33.10	-2,641.72	10,784.60	5,846.20	5,771.77	74.43	78.550	
14,100.00	7,158.32	3,700.00	3,674.90	117.91	13.27	33.10	-2,641.72	10,784.60	5,784.82	5,709.06	75.75	76.364	
14,200.00	7,158.28	3,700.00	3,674.90	119.47	13.27	33.10	-2,641.72	10,784.60	5,724.53	5,647.43	77.10	74.247	
14,300.00	7,158.24	3,700.00	3,674.90	121.04	13.27	33.10	-2,641.72	10,784.60	5,665.36	5,586.89	78.47	72.197	
14,400.00	7,158.20	3,700.00	3,674.90	122.61	13.27	33.10	-2,641.72	10,784.60	5,607.35	5,527.49	79.86	70.213	
14,500.00	7,158.16	3,700.00	3,674.90	124.18	13.27	33.10	-2,641.72	10,784.60	5,550.54	5,469.27	81.27	68.296	
14,600.00	7,158.12	3,700.00	3,674.90	125.76	13.27	33.10	-2,641.72	10,784.60	5,494.96	5,412.26	82.70	66.443	
14,700.00	7,158.08	3,700.00	3,674.90	127.33	13.27	33.10	-2,641.72	10,784.60	5,440.65	5,356.50	84.15	64.655	
14,800.00	7,158.04	3,700.00	3,674.90	128.90	13.27	33.10	-2,641.72	10,784.60	5,387.65	5,302.03	85.61	62.930	
14,900.00	7,158.00	3,700.00	3,674.90	130.47	13.27	33.10	-2,641.72	10,784.60	5,335.99	5,248.90	87.09	61.267	
15,000.00	7,157.96	3,747.04	3,704.78	132.05	13.52	33.31	-2,641.96	10,820.87	5,282.27	5,193.61	88.66	59.577	
15,100.00	7,157.92	3,752.06	3,707.62	133.62	13.55	33.33	-2,641.98	10,825.00	5,232.67	5,142.49	90.18	58.023	
15,200.00	7,157.88	3,800.00	3,731.17	135.20	13.80	33.49	-2,642.26	10,866.71	5,187.29	5,095.54	91.75	56.539	
15,300.00	7,157.83	3,800.00	3,731.17	136.78	13.80	33.49	-2,642.26	10,866.71	5,139.81	5,046.52	93.29	55.093	
15,400.00	7,157.79	3,800.00	3,731.17	138.35	13.80	33.49	-2,642.26	10,866.71	5,093.85	4,999.00	94.85	53.705	
15,500.00	7,157.75	3,800.00	3,731.17	139.93	13.80	33.49	-2,642.26	10,866.71	5,049.46	4,953.04	96.41	52.374	
15,600.00	7,157.71	3,800.00	3,731.17	141.51	13.80	33.49	-2,642.26	10,866.71	5,006.66	4,908.68	97.98	51.099	
15,700.00	7,157.67	3,800.00	3,731.17	143.09	13.80	33.49	-2,642.26	10,866.71	4,965.52	4,865.96	99.55	49.879	
15,800.00	7,157.63	3,800.00	3,731.17	144.67	13.80	33.49	-2,642.26	10,866.71	4,926.05	4,824.93	101.13	48.712	
15,900.00	7,157.59	3,800.00	3,731.17	146.24	13.80	33.49	-2,642.26	10,866.71	4,888.32	4,785.62	102.70	47.599	
16,000.00	7,157.55	3,800.00	3,731.17	147.82	13.80	33.49	-2,642.26	10,866.71	4,852.36	4,748.09	104.27	46.537	
16,100.00	7,157.51	3,800.00	3,731.17	149.41	13.80	33.49	-2,642.26	10,866.71	4,818.20	4,712.36	105.83	45.526	
16,200.00	7,157.47	3,800.00	3,731.17	150.99	13.80	33.49	-2,642.26	10,866.71	4,785.89	4,678.50	107.39	44.565	
16,300.00	7,157.43	3,800.00	3,731.17	152.57	13.80	33.49	-2,642.26	10,866.71	4,755.46	4,646.52	108.94	43.654	
16,400.00	7,157.38	3,800.00	3,731.17	154.15	13.80	33.49	-2,642.26	10,866.71	4,726.95	4,616.48	110.47	42.790	
16,500.00	7,157.34	3,800.00	3,731.17	155.73	13.80	33.49	-2,642.26	10,866.71	4,700.40	4,588.41	111.98	41.974	
16,600.00	7,157.30	3,800.00	3,731.17	157.31	13.80	33.49	-2,642.26	10,866.71	4,675.83	4,562.35	113.48	41.204	
16,680.84	7,157.27	3,846.62	3,747.42	158.59	14.17	33.61	-2,642.55	10,910.36	4,654.17	4,539.30	114.87	40.517	
16,687.46	7,157.27	3,847.08	3,747.54	158.70	14.18	33.62	-2,642.55	10,910.79	4,652.66	4,537.69	114.97	40.469	
16,700.00	7,157.26	3,847.93	3,747.77	158.90	14.18	33.62	-2,642.56	10,911.62	4,649.83	4,534.67	115.16	40.378	
16,800.00	7,157.22	3,900.00	3,757.47	160.48	14.60	33.70	-2,642.89	10,962.70	4,631.41	4,514.65	116.77	39.663	
16,900.00	7,157.18	3,900.00	3,757.47	162.06	14.60	33.70	-2,642.89	10,962.70	4,610.97	4,492.74	118.23	38.999	
17,000.00	7,157.14	3,900.00	3,757.47	163.65	14.60	33.70	-2,642.89	10,962.70	4,592.61	4,472.94	119.67	38.378	
17,100.00	7,157.10	3,900.00	3,757.47	165.23	14.60	33.70	-2,642.89	10,962.70	4,576.37	4,455.30	121.07	37.799	
17,200.00	7,157.06	3,900.00	3,757.47	166.82	14.60	33.70	-2,642.89	10,962.70	4,562.26	4,439.82	122.44	37.260	
17,300.00	7,157.02	3,900.00	3,757.47	168.40	14.60	33.70	-2,642.89	10,962.70	4,550.30	4,426.53	123.78	36.763	
17,400.00	7,156.98	3,900.00	3,757.47	169.99	14.60	33.70	-2,642.89	10,962.70	4,540.52	4,415.45	125.07	36.304	
17,500.00	7,156.94	3,900.00	3,757.47	171.57	14.60	33.70	-2,642.89	10,962.70	4,532.92	4,406.60	126.32	35.885	
17,600.00	7,156.90	3,900.00	3,757.47	173.16	14.60	33.70	-2,642.89	10,962.70	4,527.52	4,399.99	127.53	35.503	
17,700.00	7,156.85	3,930.24	3,759.00	174.75	14.90	33.71	-2,643.09	10,992.89	4,523.91	4,395.04	128.87	35.105	
17,800.00	7,156.81	3,930.24	3,759.00	176.33	14.90	33.71	-2,643.09	10,992.89	4,522.25	4,392.26	129.99	34.788	
17,824.00	7,156.80	3,930.24	3,759.00	176.71	14.90	33.71	-2,643.09	10,992.89	4,522.18	4,391.93	130.26	34.718 CC	
17,900.00	7,156.77	3,986.86	3,759.00	177.92	15.53	33.72	-2,643.47	11,049.51	4,522.45	4,390.98	131.47	34.399	
18,000.00	7,156.73	4,086.86	3,759.00	179.51	16.86	33.72	-2,644.13	11,149.50	4,522.86	4,389.49	133.37	33.912	
18,100.00	7,156.69	4,186.85	3,759.00	181.09	18.42	33.73	-2,644.79	11,249.50	4,523.27	4,387.86	135.41	33.404	
18,200.00	7,156.65	4,286.85	3,759.00	182.68	20.15	33.74	-2,645.45	11,349.49	4,523.68	4,386.12	137.56	32.884	
18,300.00	7,156.61	4,386.85	3,759.00	184.27	22.01	33.75	-2,646.11	11,449.49	4,524.09	4,384.29	139.80	32.361	
18,400.00	7,156.57	4,486.84	3,759.00	185.86	23.98	33.76	-2,646.77	11,549.48	4,524.50	4,382.39	142.10	31.839	
18,500.00	7,156.53	4,586.84	3,759.00	187.45	26.03	33.77	-2,647.43	11,649.48	4,524.90	4,380.45	144.46	31.323	
18,600.00	7,156.49	4,686.84	3,759.00	189.03	28.14	33.78	-2,648.09	11,749.47	4,525.31	4,378.46	146.86	30.815	
18,700.00	7,156.45	4,786.83	3,759.00	190.62	30.30	33.78	-2,648.75	11,849.47	4,525.72	4,376.44	149.28	30.316	
18,800.00	7,156.41	4,886.83	3,759.00	192.21	32.50	33.79	-2,649.41	11,949.46	4,526.13	4,374.39	151.74	29.829	

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 836H
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 836H	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)		
18,900.00	7,156.37	4,986.83	3,759.00	193.80	34.73	33.80	-2,650.07	12,049.46	4,526.54	4,372.33	154.21	29.352
19,000.00	7,156.32	5,086.82	3,759.00	195.39	36.99	33.81	-2,650.73	12,149.45	4,526.95	4,370.24	156.71	28.888
19,100.00	7,156.28	5,186.82	3,759.00	196.98	39.27	33.82	-2,651.38	12,249.44	4,527.36	4,368.15	159.22	28.435
19,200.00	7,156.24	5,286.82	3,759.00	198.57	41.56	33.83	-2,652.04	12,349.44	4,527.77	4,366.03	161.74	27.995
19,300.00	7,156.20	5,386.81	3,759.00	200.16	43.88	33.84	-2,652.70	12,449.43	4,528.18	4,363.91	164.27	27.566
19,400.00	7,156.16	5,486.81	3,759.00	201.75	46.20	33.85	-2,653.36	12,549.43	4,528.59	4,361.78	166.81	27.148
19,500.00	7,156.12	5,586.81	3,759.00	203.34	48.54	33.85	-2,654.02	12,649.42	4,529.00	4,359.64	169.36	26.742
19,600.00	7,156.08	5,686.80	3,759.00	204.93	50.88	33.86	-2,654.68	12,749.42	4,529.41	4,357.50	171.91	26.347
19,700.00	7,156.04	5,786.80	3,759.00	206.52	53.24	33.87	-2,655.34	12,849.41	4,529.82	4,355.35	174.47	25.963
19,800.00	7,156.00	5,886.80	3,759.00	208.11	55.60	33.88	-2,656.00	12,949.41	4,530.23	4,353.19	177.04	25.588
19,900.00	7,155.96	5,986.80	3,759.00	209.71	57.97	33.89	-2,656.66	13,049.40	4,530.64	4,351.03	179.61	25.224
20,000.00	7,155.92	6,086.79	3,759.00	211.30	60.34	33.90	-2,657.32	13,149.40	4,531.05	4,348.86	182.19	24.870
20,100.00	7,155.88	6,186.79	3,759.00	212.89	62.72	33.91	-2,657.98	13,249.39	4,531.46	4,346.69	184.77	24.525
20,200.00	7,155.84	6,286.79	3,759.00	214.48	65.10	33.91	-2,658.64	13,349.39	4,531.87	4,344.52	187.36	24.188
20,300.00	7,155.79	6,386.78	3,759.00	216.07	67.49	33.92	-2,659.30	13,449.38	4,532.28	4,342.34	189.95	23.861
20,400.00	7,155.75	6,486.78	3,759.00	217.66	69.88	33.93	-2,659.96	13,549.38	4,532.69	4,340.16	192.54	23.542
20,500.00	7,155.71	6,586.78	3,759.00	219.26	72.27	33.94	-2,660.62	13,649.37	4,533.10	4,337.97	195.13	23.231
20,600.00	7,155.67	6,686.77	3,759.00	220.85	74.67	33.95	-2,661.28	13,749.36	4,533.52	4,335.79	197.73	22.928
20,700.00	7,155.63	6,786.77	3,759.00	222.44	77.07	33.96	-2,661.94	13,849.36	4,533.93	4,333.60	200.33	22.633
20,800.00	7,155.59	6,886.77	3,759.00	224.03	79.47	33.97	-2,662.60	13,949.35	4,534.34	4,331.41	202.93	22.345
20,900.00	7,155.55	6,986.76	3,759.00	225.63	81.88	33.97	-2,663.26	14,049.35	4,534.75	4,329.22	205.53	22.063
21,000.00	7,155.51	7,086.76	3,759.00	227.22	84.28	33.98	-2,663.92	14,149.34	4,535.16	4,327.02	208.14	21.789
21,100.00	7,155.47	7,186.76	3,759.00	228.81	86.69	33.99	-2,664.58	14,249.34	4,535.57	4,324.83	210.75	21.522
21,200.00	7,155.43	7,286.75	3,759.00	230.40	89.10	34.00	-2,665.24	14,349.33	4,535.98	4,322.63	213.36	21.260
21,300.00	7,155.39	7,386.75	3,759.00	232.00	91.51	34.01	-2,665.90	14,449.33	4,536.40	4,320.43	215.97	21.005
21,400.00	7,155.35	7,486.75	3,759.00	233.59	93.92	34.02	-2,666.56	14,549.32	4,536.81	4,318.23	218.58	20.756
21,500.00	7,155.31	7,542.33	3,759.00	235.18	95.26	34.02	-2,666.93	14,604.90	4,537.44	4,316.92	220.51	20.577 ES
21,600.00	7,155.26	7,542.33	3,759.00	236.78	95.26	34.02	-2,666.93	14,604.90	4,539.93	4,318.41	221.52	20.494
21,700.00	7,155.22	7,542.33	3,759.00	238.37	95.26	34.02	-2,666.93	14,604.90	4,544.62	4,322.20	222.42	20.432
21,800.00	7,155.18	7,542.33	3,759.00	239.96	95.26	34.02	-2,666.93	14,604.90	4,551.51	4,328.29	223.22	20.390
21,900.00	7,155.14	7,542.33	3,759.00	241.56	95.26	34.02	-2,666.93	14,604.90	4,560.57	4,336.66	223.91	20.368
21,953.88	7,155.12	7,542.33	3,759.00	242.42	95.26	34.02	-2,666.93	14,604.90	4,566.36	4,342.12	224.24	20.363 SF
22,000.00	7,155.10	7,542.33	3,759.00	243.15	95.26	34.07	-2,666.93	14,604.90	4,571.71	4,347.21	224.50	20.364
22,019.01	7,155.09	7,542.33	3,759.00	243.46	95.26	34.09	-2,666.93	14,604.90	4,573.98	4,349.39	224.59	20.366
22,100.00	7,155.06	7,542.33	3,759.00	244.75	95.26	34.09	-2,666.93	14,604.90	4,584.48	4,359.54	224.95	20.380
22,200.00	7,155.02	7,542.33	3,759.00	246.34	95.26	34.09	-2,666.93	14,604.90	4,599.38	4,374.09	225.29	20.415
22,300.00	7,154.97	7,542.33	3,759.00	247.94	95.26	34.09	-2,666.93	14,604.90	4,616.40	4,390.86	225.54	20.468
22,400.00	7,154.93	7,542.33	3,759.00	249.53	95.26	34.09	-2,666.93	14,604.90	4,635.51	4,409.83	225.69	20.540
22,500.00	7,154.89	7,542.33	3,759.00	251.13	95.26	34.09	-2,666.93	14,604.90	4,656.70	4,430.96	225.74	20.629
22,600.00	7,154.85	7,542.33	3,759.00	252.72	95.26	34.09	-2,666.93	14,604.90	4,679.92	4,454.23	225.69	20.736
22,700.00	7,154.80	7,542.33	3,759.00	254.32	95.26	34.09	-2,666.93	14,604.90	4,705.16	4,479.60	225.56	20.860
22,800.00	7,154.76	7,542.33	3,759.00	255.91	95.26	34.09	-2,666.93	14,604.90	4,732.37	4,507.03	225.34	21.001
22,900.00	7,154.72	7,542.33	3,759.00	257.51	95.26	34.09	-2,666.93	14,604.90	4,761.53	4,536.50	225.03	21.160
23,000.00	7,154.68	7,542.33	3,759.00	259.11	95.26	34.09	-2,666.93	14,604.90	4,792.60	4,567.96	224.64	21.335
23,100.00	7,154.63	7,542.33	3,759.00	260.70	95.26	34.09	-2,666.93	14,604.90	4,825.54	4,601.36	224.18	21.526
23,200.00	7,154.59	7,542.33	3,759.00	262.30	95.26	34.09	-2,666.93	14,604.90	4,860.31	4,636.68	223.64	21.733
23,300.00	7,154.55	7,542.33	3,759.00	263.89	95.26	34.09	-2,666.93	14,604.90	4,896.88	4,673.85	223.03	21.956
23,400.00	7,154.51	7,542.33	3,759.00	265.49	95.26	34.09	-2,666.93	14,604.90	4,935.21	4,712.85	222.36	22.195
23,500.00	7,154.47	7,542.33	3,759.00	267.08	95.26	34.09	-2,666.93	14,604.90	4,975.25	4,753.63	221.62	22.449
23,600.00	7,154.42	7,542.33	3,759.00	268.68	95.26	34.09	-2,666.93	14,604.90	5,016.97	4,796.14	220.83	22.719
23,700.00	7,154.38	7,542.33	3,759.00	270.28	95.26	34.09	-2,666.93	14,604.90	5,060.32	4,840.33	219.99	23.003
23,800.00	7,154.34	7,542.33	3,759.00	271.87	95.26	34.09	-2,666.93	14,604.90	5,105.26	4,886.16	219.09	23.302

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 836H
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 836H	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
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
23,900.00	7,154.30	7,542.33	3,759.00	273.47	95.26	34.09	-2,666.93	14,604.90	5,151.74	4,933.59	218.15	23.615	
24,000.00	7,154.25	7,542.33	3,759.00	275.07	95.26	34.09	-2,666.93	14,604.90	5,199.74	4,982.57	217.17	23.943	
24,100.00	7,154.21	7,542.33	3,759.00	276.66	95.26	34.09	-2,666.93	14,604.90	5,249.20	5,033.05	216.15	24.285	
24,200.00	7,154.17	7,542.33	3,759.00	278.26	95.26	34.09	-2,666.93	14,604.90	5,300.09	5,084.99	215.10	24.640	
24,300.00	7,154.13	7,542.33	3,759.00	279.86	95.26	34.09	-2,666.93	14,604.90	5,352.36	5,138.35	214.02	25.009	
24,400.00	7,154.08	7,542.33	3,759.00	281.45	95.26	34.09	-2,666.93	14,604.90	5,405.98	5,193.07	212.91	25.391	
24,500.00	7,154.04	7,542.33	3,759.00	283.05	95.26	34.09	-2,666.93	14,604.90	5,460.90	5,249.13	211.77	25.787	
24,597.25	7,154.00	7,542.33	3,759.00	284.60	95.26	34.09	-2,666.93	14,604.90	5,515.53	5,304.88	210.64	26.184	
24,600.00	7,154.00	7,542.33	3,759.00	284.65	95.26	34.07	-2,666.93	14,604.90	5,517.09	5,306.48	210.61	26.195	
24,700.00	7,153.96	7,542.33	3,759.00	286.24	95.26	33.48	-2,666.93	14,604.90	5,574.92	5,365.46	209.47	26.615	
24,722.47	7,153.95	7,542.33	3,759.00	286.60	95.26	33.34	-2,666.93	14,604.90	5,588.19	5,378.98	209.21	26.710	
24,800.00	7,153.92	7,542.33	3,759.00	287.84	95.26	33.34	-2,666.93	14,604.90	5,634.48	5,426.14	208.34	27.044	
24,900.00	7,153.88	7,542.33	3,759.00	289.43	95.26	33.34	-2,666.93	14,604.90	5,695.19	5,487.99	207.21	27.486	
25,000.00	7,153.84	7,542.33	3,759.00	291.03	95.26	33.34	-2,666.93	14,604.90	5,757.00	5,550.94	206.06	27.939	
25,100.00	7,153.80	7,542.33	3,759.00	292.63	95.26	33.34	-2,666.93	14,604.90	5,819.87	5,614.97	204.90	28.403	
25,200.00	7,153.77	7,542.33	3,759.00	294.22	95.26	33.34	-2,666.93	14,604.90	5,883.77	5,680.03	203.74	28.879	
25,300.00	7,153.73	7,542.33	3,759.00	295.82	95.26	33.34	-2,666.93	14,604.90	5,948.66	5,746.09	202.57	29.365	
25,400.00	7,153.69	7,542.33	3,759.00	297.41	95.26	33.34	-2,666.93	14,604.90	6,014.51	5,813.11	201.40	29.863	
25,500.00	7,153.65	7,542.33	3,759.00	299.01	95.26	33.34	-2,666.93	14,604.90	6,081.30	5,881.07	200.23	30.372	
25,600.00	7,153.61	7,542.33	3,759.00	300.60	95.26	33.34	-2,666.93	14,604.90	6,148.99	5,949.93	199.06	30.890	
25,700.00	7,153.57	7,542.33	3,759.00	302.20	95.26	33.34	-2,666.93	14,604.90	6,217.55	6,019.66	197.89	31.420	
25,800.00	7,153.53	7,542.33	3,759.00	303.80	95.26	33.34	-2,666.93	14,604.90	6,286.95	6,090.23	196.72	31.959	
25,900.00	7,153.50	7,542.33	3,759.00	305.39	95.26	33.34	-2,666.93	14,604.90	6,357.16	6,161.61	195.56	32.508	
26,000.00	7,153.46	7,542.33	3,759.00	306.99	95.26	33.34	-2,666.93	14,604.90	6,428.17	6,233.77	194.40	33.067	
26,100.00	7,153.42	7,542.33	3,759.00	308.58	95.26	33.34	-2,666.93	14,604.90	6,499.94	6,306.69	193.25	33.636	
26,200.00	7,153.38	7,542.33	3,759.00	310.18	95.26	33.34	-2,666.93	14,604.90	6,572.44	6,380.34	192.10	34.214	
26,300.00	7,153.34	7,542.33	3,759.00	311.78	95.26	33.34	-2,666.93	14,604.90	6,645.66	6,454.70	190.96	34.801	
26,400.00	7,153.30	7,542.33	3,759.00	313.37	95.26	33.34	-2,666.93	14,604.90	6,719.57	6,529.74	189.84	35.397	
26,500.00	7,153.26	7,542.33	3,759.00	314.97	95.26	33.34	-2,666.93	14,604.90	6,794.15	6,605.44	188.72	36.002	
26,600.00	7,153.23	7,542.33	3,759.00	316.57	95.26	33.34	-2,666.93	14,604.90	6,869.38	6,681.77	187.61	36.615	
26,700.00	7,153.19	7,542.33	3,759.00	318.16	95.26	33.34	-2,666.93	14,604.90	6,945.23	6,758.72	186.51	37.238	
26,800.00	7,153.15	7,542.33	3,759.00	319.76	95.26	33.34	-2,666.93	14,604.90	7,021.68	6,836.26	185.42	37.868	
26,900.00	7,153.11	7,542.33	3,759.00	321.35	95.26	33.34	-2,666.93	14,604.90	7,098.72	6,914.37	184.35	38.507	
26,976.35	7,153.08	7,542.33	3,759.00	322.57	95.26	33.34	-2,666.93	14,604.90	7,157.92	6,974.38	183.54	39.000	
27,000.00	7,153.07	7,542.33	3,759.00	322.95	95.26	33.34	-2,666.93	14,604.90	7,176.33	6,993.04	183.29	39.154	
27,100.00	7,153.03	7,542.33	3,759.00	324.55	95.26	33.34	-2,666.93	14,604.90	7,254.48	7,072.25	182.23	39.808	
27,176.36	7,153.00	7,542.33	3,759.00	325.77	95.26	33.34	-2,666.93	14,604.90	7,314.52	7,133.07	181.44	40.314	

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 836H
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 836H	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)			
0.00	0.00	0.00	0.00	0.00	0.00	34.43	24.76	16.97	30.01				
125.00	125.00	124.71	124.71	0.06	0.06	-101.79	25.18	17.39	30.69	30.59	0.10	318.096	
225.00	225.00	224.78	224.76	0.17	0.17	-33.69	25.03	19.08	31.22	30.95	0.27	117.276	
312.00	311.99	311.86	311.79	0.28	0.27	-90.75	23.71	21.74	31.49	31.08	0.41	77.664	
400.00	399.99	319.00	318.92	0.37	0.28	-90.32	23.57	21.98	86.99	84.46	2.53	34.433	
462.00	461.99	319.00	318.92	0.50	0.28	-90.32	23.57	21.98	146.51	143.85	2.65	55.208	
509.18	509.16	319.00	318.92	0.64	0.28	-111.72	23.57	21.98	192.88	190.19	2.69	71.632	
600.00	599.96	319.00	318.92	0.94	0.28	-111.72	23.57	21.98	282.95	280.21	2.74	103.340	
700.00	699.94	319.00	318.92	1.28	0.28	-111.72	23.57	21.98	382.53	379.75	2.78	137.645	
800.00	799.92	319.00	318.92	1.63	0.28	-111.72	23.57	21.98	482.29	479.47	2.82	170.940	
900.00	899.89	319.00	318.92	1.98	0.28	-111.72	23.57	21.98	582.13	579.26	2.87	203.045	
1,000.00	999.87	319.00	318.92	2.34	0.28	-111.72	23.57	21.98	682.01	679.10	2.92	233.845	
1,100.00	1,099.84	319.00	318.92	2.69	0.28	-111.72	23.57	21.98	781.93	778.96	2.97	263.264	
1,200.00	1,199.82	319.00	318.92	3.05	0.28	-111.72	23.57	21.98	881.86	878.83	3.03	291.253	
1,300.00	1,299.80	319.00	318.92	3.41	0.28	-111.72	23.57	21.98	981.81	978.72	3.09	317.787	
1,400.00	1,399.77	319.00	318.92	3.77	0.28	-111.72	23.57	21.98	1,081.77	1,078.61	3.16	342.862	
1,500.00	1,499.75	319.00	318.92	4.13	0.28	-111.72	23.57	21.98	1,181.73	1,178.51	3.22	366.487	
1,600.00	1,599.72	319.00	318.92	4.49	0.28	-111.72	23.57	21.98	1,281.70	1,278.41	3.30	388.685	
1,700.00	1,699.70	319.00	318.92	4.85	0.28	-111.72	23.57	21.98	1,381.68	1,378.30	3.37	409.491	
1,800.00	1,799.68	319.00	318.92	5.21	0.28	-111.72	23.57	21.98	1,481.66	1,478.20	3.45	428.947	
1,900.00	1,899.65	319.00	318.92	5.57	0.28	-111.72	23.57	21.98	1,581.64	1,578.10	3.54	447.100	
2,000.00	1,999.63	319.00	318.92	5.93	0.28	-111.72	23.57	21.98	1,681.62	1,678.00	3.62	464.002	
2,100.00	2,099.60	319.00	318.92	6.29	0.28	-111.72	23.57	21.98	1,781.60	1,777.89	3.71	479.707	
2,200.00	2,199.58	319.00	318.92	6.65	0.28	-111.72	23.57	21.98	1,881.59	1,877.78	3.81	494.271	
2,300.00	2,299.56	319.00	318.92	7.01	0.28	-111.72	23.57	21.98	1,981.58	1,977.68	3.90	507.751	
2,400.00	2,399.53	319.00	318.92	7.37	0.28	-111.72	23.57	21.98	2,081.57	2,077.57	4.00	520.202	
2,500.00	2,499.51	319.00	318.92	7.73	0.28	-111.72	23.57	21.98	2,181.56	2,177.45	4.10	531.679	
2,600.00	2,599.48	319.00	318.92	8.09	0.28	-111.72	23.57	21.98	2,281.55	2,277.34	4.21	542.236	
2,700.00	2,699.46	319.00	318.92	8.45	0.28	-111.72	23.57	21.98	2,381.54	2,377.23	4.31	551.925	
2,800.00	2,799.44	319.00	318.92	8.81	0.28	-111.72	23.57	21.98	2,481.53	2,477.11	4.43	560.795	
2,900.00	2,899.41	319.00	318.92	9.17	0.28	-111.72	23.57	21.98	2,581.53	2,576.99	4.54	568.894	
3,000.00	2,999.39	319.00	318.92	9.53	0.28	-111.72	23.57	21.98	2,681.52	2,676.87	4.65	576.267	
3,100.00	3,099.36	319.00	318.92	9.89	0.28	-111.72	23.57	21.98	2,781.51	2,776.74	4.77	582.958	
3,200.00	3,199.34	319.00	318.92	10.25	0.28	-111.72	23.57	21.98	2,881.51	2,876.62	4.89	589.007	
3,300.00	3,299.32	319.00	318.92	10.61	0.28	-111.72	23.57	21.98	2,981.50	2,976.49	5.02	594.454	
3,400.00	3,399.29	319.00	318.92	10.97	0.28	-111.72	23.57	21.98	3,081.50	3,076.36	5.14	599.335	
3,500.00	3,499.27	319.00	318.92	11.33	0.28	-111.72	23.57	21.98	3,181.49	3,176.22	5.27	603.684	
3,600.00	3,599.25	319.00	318.92	11.69	0.28	-111.72	23.57	21.98	3,281.49	3,276.09	5.40	607.535	
3,700.00	3,699.22	319.00	318.92	12.05	0.28	-111.72	23.57	21.98	3,381.48	3,375.95	5.54	610.917	
3,800.00	3,799.20	319.00	318.92	12.41	0.28	-111.72	23.57	21.98	3,481.48	3,475.81	5.67	613.860	
3,900.00	3,899.17	319.00	318.92	12.77	0.28	-111.72	23.57	21.98	3,581.48	3,575.67	5.81	616.392	
4,000.00	3,999.15	319.00	318.92	13.13	0.28	-111.72	23.57	21.98	3,681.47	3,675.52	5.95	618.536	
4,100.00	4,099.13	319.00	318.92	13.49	0.28	-111.72	23.57	21.98	3,781.47	3,775.37	6.10	620.319	
4,200.00	4,199.10	319.00	318.92	13.85	0.28	-111.72	23.57	21.98	3,881.47	3,875.22	6.24	621.762	
4,300.00	4,299.08	319.00	318.92	14.21	0.28	-111.72	23.57	21.98	3,981.46	3,975.07	6.39	622.887	
4,400.00	4,399.05	319.00	318.92	14.57	0.28	-111.72	23.57	21.98	4,081.46	4,074.92	6.54	623.713	
4,500.00	4,499.03	319.00	318.92	14.93	0.28	-111.72	23.57	21.98	4,181.46	4,174.76	6.70	624.260	
4,600.00	4,599.01	319.00	318.92	15.29	0.28	-111.72	23.57	21.98	4,281.46	4,274.60	6.86	624.545	
4,700.00	4,698.98	319.00	318.92	15.65	0.28	-111.72	23.57	21.98	4,381.45	4,374.44	7.01	624.585	
4,800.00	4,798.96	319.00	318.92	16.01	0.28	-111.72	23.57	21.98	4,481.45	4,474.27	7.18	624.396	
4,900.00	4,898.93	319.00	318.92	16.37	0.28	-111.72	23.57	21.98	4,581.45	4,574.11	7.34	623.993	
5,000.00	4,998.91	319.00	318.92	16.73	0.28	-111.72	23.57	21.98	4,681.45	4,673.94	7.51	623.389	

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 836H
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 836H	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)			
5,100.00	5,098.89	319.00	318.92	17.09	0.28	-111.72	23.57	21.98	4,781.45	4,773.77	7.68	622.597	
5,200.00	5,198.86	319.00	318.92	17.45	0.28	-111.72	23.57	21.98	4,881.44	4,873.59	7.85	621.631	
5,300.00	5,298.84	319.00	318.92	17.81	0.28	-111.72	23.57	21.98	4,981.44	4,973.41	8.03	620.501	
5,400.00	5,398.81	319.00	318.92	18.17	0.28	-111.72	23.57	21.98	5,081.44	5,073.23	8.21	619.218	
5,500.00	5,498.79	319.00	318.92	18.53	0.28	-111.72	23.57	21.98	5,181.44	5,173.05	8.39	617.793	
5,600.00	5,598.77	319.00	318.92	18.89	0.28	-111.72	23.57	21.98	5,281.44	5,272.87	8.57	616.236	
5,700.00	5,698.74	319.00	318.92	19.25	0.28	-111.72	23.57	21.98	5,381.44	5,372.68	8.76	614.555	
5,800.00	5,798.72	319.00	318.92	19.61	0.28	-111.72	23.57	21.98	5,481.43	5,472.49	8.95	612.759	
5,900.00	5,898.69	319.00	318.92	19.97	0.28	-111.72	23.57	21.98	5,581.43	5,572.30	9.14	610.857	
6,000.00	5,998.67	319.00	318.92	20.33	0.28	-111.72	23.57	21.98	5,681.43	5,672.10	9.33	608.856	
6,100.00	6,098.65	319.00	318.92	20.69	0.28	-111.72	23.57	21.98	5,781.43	5,771.90	9.53	606.763	
6,200.00	6,198.62	319.00	318.92	21.05	0.28	-111.72	23.57	21.98	5,881.43	5,871.70	9.73	604.586	
6,300.00	6,298.60	319.00	318.92	21.41	0.28	-111.72	23.57	21.98	5,981.43	5,971.50	9.93	602.330	
6,400.00	6,398.57	319.00	318.92	21.77	0.28	-111.72	23.57	21.98	6,081.43	6,071.29	10.14	600.001	
6,500.00	6,498.55	319.00	318.92	22.13	0.28	-111.72	23.57	21.98	6,181.42	6,171.08	10.34	597.606	
6,531.56	6,530.10	319.00	318.92	22.25	0.28	-111.72	23.57	21.98	6,212.98	6,202.57	10.41	596.837	
6,550.00	6,548.53	319.00	318.92	22.31	0.28	-34.06	23.57	21.98	6,231.42	6,220.97	10.45	596.393	
6,600.00	6,598.36	319.00	318.92	22.49	0.28	-11.58	23.57	21.98	6,281.28	6,270.73	10.55	595.257	
6,650.00	6,647.74	319.00	318.92	22.67	0.28	-6.95	23.57	21.98	6,330.71	6,320.06	10.65	594.282	
6,700.00	6,696.35	319.00	318.92	22.84	0.28	-4.99	23.57	21.98	6,379.43	6,368.68	10.75	593.479	
6,750.00	6,743.90	319.00	318.92	23.01	0.28	-3.90	23.57	21.98	6,427.15	6,416.30	10.84	592.840	
6,800.00	6,790.11	319.00	318.92	23.18	0.28	-3.22	23.57	21.98	6,473.60	6,462.67	10.93	592.347	
6,850.00	6,834.67	319.00	318.92	23.35	0.28	-2.76	23.57	21.98	6,518.52	6,507.51	11.01	591.973	
6,900.00	6,877.32	319.00	318.92	23.51	0.28	-2.42	23.57	21.98	6,561.68	6,550.59	11.09	591.682	
6,950.00	6,917.80	319.00	318.92	23.68	0.28	-2.17	23.57	21.98	6,602.84	6,591.68	11.16	591.423	
7,000.00	6,955.85	319.00	318.92	23.85	0.28	-1.98	23.57	21.98	6,641.80	6,630.56	11.24	591.132	
7,050.00	6,991.24	319.00	318.92	24.03	0.28	-1.83	23.57	21.98	6,678.34	6,667.04	11.31	590.735	
7,100.00	7,023.76	319.00	318.92	24.22	0.28	-1.71	23.57	21.98	6,712.29	6,700.92	11.37	590.143	
7,150.00	7,053.20	319.00	318.92	24.42	0.28	-1.61	23.57	21.98	6,743.48	6,732.03	11.44	589.265	
7,200.00	7,079.37	319.00	318.92	24.63	0.28	-1.53	23.57	21.98	6,771.75	6,760.24	11.52	588.002	
7,250.00	7,102.13	319.00	318.92	24.86	0.28	-1.47	23.57	21.98	6,796.97	6,785.38	11.59	586.260	
7,300.00	7,121.32	319.00	318.92	25.10	0.28	-1.42	23.57	21.98	6,819.02	6,807.34	11.68	583.953	
7,350.00	7,136.84	319.00	318.92	25.35	0.28	-1.39	23.57	21.98	6,837.79	6,826.02	11.77	581.008	
7,400.00	7,148.58	319.00	318.92	25.62	0.28	-1.36	23.57	21.98	6,853.20	6,841.33	11.87	577.373	
7,450.00	7,156.47	319.00	318.92	25.90	0.28	-1.34	23.57	21.98	6,865.16	6,853.18	11.98	573.019	
7,500.00	7,160.47	319.00	318.92	26.20	0.28	-1.33	23.57	21.98	6,873.63	6,861.53	12.10	567.948	
7,526.22	7,161.00	319.00	318.92	26.36	0.28	-1.33	23.57	21.98	6,876.67	6,864.50	12.17	565.051	
7,600.00	7,160.97	319.00	318.92	26.83	0.28	-1.33	23.57	21.98	6,884.22	6,871.84	12.38	555.895	
7,700.00	7,160.93	319.00	318.92	27.53	0.28	-1.33	23.57	21.98	6,895.71	6,882.99	12.72	542.281	
7,800.00	7,160.89	319.00	318.92	28.32	0.28	-1.33	23.57	21.98	6,908.62	6,895.53	13.09	527.740	
7,900.00	7,160.85	319.00	318.92	29.16	0.28	-1.33	23.57	21.98	6,922.95	6,909.45	13.50	512.664	
8,000.00	7,160.81	319.00	318.92	30.07	0.28	-1.33	23.57	21.98	6,938.70	6,924.75	13.95	497.382	
8,100.00	7,160.77	319.00	318.92	31.04	0.28	-1.33	23.57	21.98	6,955.85	6,941.42	14.43	482.163	
8,200.00	7,160.73	319.00	318.92	32.06	0.28	-1.33	23.57	21.98	6,974.39	6,959.46	14.93	467.215	
8,300.00	7,160.69	319.00	318.92	33.12	0.28	-1.33	23.57	21.98	6,994.31	6,978.86	15.45	452.692	
8,400.00	7,160.65	319.00	318.92	34.23	0.28	-1.33	23.57	21.98	7,015.60	6,999.61	15.99	438.704	
8,500.00	7,160.60	319.00	318.92	35.37	0.28	-1.33	23.57	21.98	7,038.25	7,021.70	16.55	425.320	
8,600.00	7,160.56	319.00	318.92	36.55	0.28	-1.33	23.57	21.98	7,062.24	7,045.12	17.12	412.583	
8,700.00	7,160.52	319.00	318.92	37.76	0.28	-1.33	23.57	21.98	7,087.56	7,069.86	17.70	400.511	
8,800.00	7,160.48	319.00	318.92	38.99	0.28	-1.33	23.57	21.98	7,114.19	7,095.91	18.28	389.107	
8,900.00	7,160.44	319.00	318.92	40.26	0.28	-1.33	23.57	21.98	7,142.13	7,123.25	18.88	378.361	
9,000.00	7,160.40	319.00	318.92	41.54	0.28	-1.33	23.57	21.98	7,171.35	7,151.88	19.47	368.254	

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 836H
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 836H	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)			
9,100.00	7,160.36	319.00	318.92	42.85	0.28	-1.33	23.57	21.98	7,201.84	7,181.77	20.07	358.762	
9,200.00	7,160.32	319.00	318.92	44.18	0.28	-1.33	23.57	21.98	7,233.59	7,212.91	20.68	349.857	
9,300.00	7,160.28	319.00	318.92	45.53	0.28	-1.33	23.57	21.98	7,266.57	7,245.30	21.28	341.511	
9,400.00	7,160.24	319.00	318.92	46.89	0.28	-1.33	23.57	21.98	7,300.78	7,278.90	21.88	333.693	
9,500.00	7,160.20	319.00	318.92	48.26	0.28	-1.33	23.57	21.98	7,336.19	7,313.71	22.48	326.372	
9,600.00	7,160.16	319.00	318.92	49.65	0.28	-1.33	23.57	21.98	7,372.78	7,349.71	23.07	319.518	
9,700.00	7,160.12	319.00	318.92	51.05	0.28	-1.33	23.57	21.98	7,410.54	7,386.88	23.67	313.104	
9,800.00	7,160.08	319.00	318.92	52.47	0.28	-1.33	23.57	21.98	7,449.46	7,425.20	24.26	307.103	
9,900.00	7,160.04	319.00	318.92	53.89	0.28	-1.33	23.57	21.98	7,489.51	7,464.66	24.84	301.487	
10,000.00	7,160.00	319.00	318.92	55.33	0.28	-1.33	23.57	21.98	7,530.67	7,505.25	25.42	296.232	
10,100.00	7,159.95	319.00	318.92	56.77	0.28	-1.33	23.57	21.98	7,572.93	7,546.93	26.00	291.317	
10,200.00	7,159.91	319.00	318.92	58.22	0.28	-1.33	23.57	21.98	7,616.27	7,589.70	26.56	286.718	
10,300.00	7,159.87	319.00	318.92	59.68	0.28	-1.33	23.57	21.98	7,660.66	7,633.54	27.13	282.417	
10,400.00	7,159.83	319.00	318.92	61.15	0.28	-1.33	23.57	21.98	7,706.10	7,678.42	27.68	278.394	
10,500.00	7,159.79	319.00	318.92	62.62	0.28	-1.33	23.57	21.98	7,752.57	7,724.34	28.23	274.632	
10,600.00	7,159.75	319.00	318.92	64.10	0.28	-1.33	23.57	21.98	7,800.04	7,771.27	28.77	271.114	
10,700.00	7,159.71	319.00	318.92	65.58	0.28	-1.33	23.57	21.98	7,848.49	7,819.19	29.30	267.827	
10,800.00	7,159.67	319.00	318.92	67.07	0.28	-1.33	23.57	21.98	7,897.92	7,868.09	29.83	264.754	
10,900.00	7,159.63	319.00	318.92	68.57	0.28	-1.33	23.57	21.98	7,948.29	7,917.94	30.35	261.885	
11,000.00	7,159.59	319.00	318.92	70.07	0.28	-1.33	23.57	21.98	7,999.60	7,968.74	30.86	259.206	
11,100.00	7,159.55	319.00	318.92	71.57	0.28	-1.33	23.57	21.98	8,051.83	8,020.46	31.37	256.706	
11,200.00	7,159.51	319.00	318.92	73.08	0.28	-1.33	23.57	21.98	8,104.95	8,073.09	31.86	254.375	
11,300.00	7,159.47	319.00	318.92	74.59	0.28	-1.33	23.57	21.98	8,158.95	8,126.60	32.35	252.203	
11,400.00	7,159.43	319.00	318.92	76.11	0.28	-1.33	23.57	21.98	8,213.81	8,180.98	32.83	250.181	
11,500.00	7,159.39	319.00	318.92	77.63	0.28	-1.33	23.57	21.98	8,269.52	8,236.22	33.30	248.301	
11,600.00	7,159.35	319.00	318.92	79.15	0.28	-1.33	23.57	21.98	8,326.06	8,292.29	33.77	246.554	
11,638.27	7,159.33	319.00	318.92	79.73	0.28	-1.33	23.57	21.98	8,347.91	8,313.97	33.95	245.920	
11,640.51	7,159.33	319.00	318.92	79.77	0.28	-1.34	23.57	21.98	8,349.20	8,315.24	33.96	245.883	
11,700.00	7,159.30	319.00	318.92	80.68	0.28	-1.34	23.57	21.98	8,383.41	8,349.18	34.23	244.934	
11,800.00	7,159.26	319.00	318.92	82.20	0.28	-1.34	23.57	21.98	8,441.55	8,406.87	34.68	243.433	
11,900.00	7,159.22	319.00	318.92	83.74	0.28	-1.34	23.57	21.98	8,500.47	8,465.35	35.12	242.045	
12,000.00	7,159.18	319.00	318.92	85.27	0.28	-1.34	23.57	21.98	8,560.16	8,524.60	35.55	240.765	
12,100.00	7,159.14	319.00	318.92	86.81	0.28	-1.34	23.57	21.98	8,620.59	8,584.61	35.98	239.586	
12,200.00	7,159.10	319.00	318.92	88.35	0.28	-1.34	23.57	21.98	8,681.75	8,645.35	36.40	238.503	
12,300.00	7,159.06	319.00	318.92	89.89	0.28	-1.34	23.57	21.98	8,743.63	8,706.82	36.81	237.512	
12,400.00	7,159.02	319.00	318.92	91.43	0.28	-1.34	23.57	21.98	8,806.21	8,768.99	37.22	236.607	
12,500.00	7,158.98	319.00	318.92	92.98	0.28	-1.34	23.57	21.98	8,869.47	8,831.86	37.62	235.785	
12,600.00	7,158.94	319.00	318.92	94.52	0.28	-1.34	23.57	21.98	8,933.41	8,895.40	38.01	235.041	
12,700.00	7,158.90	319.00	318.92	96.07	0.28	-1.34	23.57	21.98	8,998.00	8,959.61	38.39	234.372	
12,800.00	7,158.86	319.00	318.92	97.62	0.28	-1.34	23.57	21.98	9,063.24	9,024.47	38.77	233.773	
12,900.00	7,158.81	319.00	318.92	99.17	0.28	-1.34	23.57	21.98	9,129.11	9,089.97	39.14	233.243	
13,000.00	7,158.77	319.00	318.92	100.73	0.28	-1.34	23.57	21.98	9,195.59	9,156.08	39.50	232.776	
13,100.00	7,158.73	319.00	318.92	102.28	0.28	-1.34	23.57	21.98	9,262.67	9,222.81	39.86	232.372	
13,200.00	7,158.69	319.00	318.92	103.84	0.28	-1.34	23.57	21.98	9,330.35	9,290.13	40.21	232.025	
13,300.00	7,158.65	319.00	318.92	105.40	0.28	-1.34	23.57	21.98	9,398.60	9,358.04	40.56	231.735	
13,400.00	7,158.61	319.00	318.92	106.96	0.28	-1.34	23.57	21.98	9,467.41	9,426.51	40.90	231.498	
13,500.00	7,158.57	319.00	318.92	108.52	0.28	-1.34	23.57	21.98	9,536.78	9,495.55	41.23	231.312	
13,600.00	7,158.53	319.00	318.92	110.08	0.28	-1.34	23.57	21.98	9,606.68	9,565.13	41.56	231.175	
13,700.00	7,158.49	319.00	318.92	111.64	0.28	-1.34	23.57	21.98	9,677.12	9,635.24	41.88	231.085	
13,800.00	7,158.45	319.00	318.92	113.21	0.28	-1.34	23.57	21.98	9,748.07	9,705.88	42.19	231.039	
13,900.00	7,158.41	319.00	318.92	114.77	0.28	-1.34	23.57	21.98	9,819.53	9,777.03	42.50	231.035	
14,000.00	7,158.37	319.00	318.92	116.34	0.28	-1.34	23.57	21.98	9,891.48	9,848.67	42.81	231.073	

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 836H
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 836H	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)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset 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
14,100.00	7,158.32	319.00	318.92	117.91	0.28	-1.34	23.57	21.98	9,963.92	9,920.81	43.11	231.150	
14,200.00	7,158.28	319.00	318.92	119.47	0.28	-1.34	23.57	21.98	10,036.83	9,993.43	43.40	231.264	
14,300.00	7,158.24	319.00	318.92	121.04	0.28	-1.34	23.57	21.98	10,110.20	10,066.51	43.69	231.414	
14,400.00	7,158.20	319.00	318.92	122.61	0.28	-1.34	23.57	21.98	10,184.03	10,140.05	43.97	231.598	
14,500.00	7,158.16	319.00	318.92	124.18	0.28	-1.34	23.57	21.98	10,258.30	10,214.04	44.25	231.816	
14,600.00	7,158.12	319.00	318.92	125.76	0.28	-1.34	23.57	21.98	10,333.00	10,288.47	44.53	232.065	
14,700.00	7,158.08	319.00	318.92	127.33	0.28	-1.34	23.57	21.98	10,408.13	10,363.33	44.80	232.344	
14,800.00	7,158.04	319.00	318.92	128.90	0.28	-1.34	23.57	21.98	10,483.67	10,438.61	45.06	232.653	
14,900.00	7,158.00	319.00	318.92	130.47	0.28	-1.34	23.57	21.98	10,559.62	10,514.30	45.32	232.990	
15,000.00	7,157.96	319.00	318.92	132.05	0.28	-1.34	23.57	21.98	10,635.97	10,590.39	45.58	233.353	
15,100.00	7,157.92	319.00	318.92	133.62	0.28	-1.34	23.57	21.98	10,712.71	10,666.88	45.83	233.743	
15,200.00	7,157.88	319.00	318.92	135.20	0.28	-1.34	23.57	21.98	10,789.83	10,743.75	46.08	234.157	
15,300.00	7,157.83	319.00	318.92	136.78	0.28	-1.34	23.57	21.98	10,867.32	10,821.00	46.32	234.595	
15,400.00	7,157.79	319.00	318.92	138.35	0.28	-1.34	23.57	21.98	10,945.18	10,898.61	46.56	235.056	
15,500.00	7,157.75	319.00	318.92	139.93	0.28	-1.34	23.57	21.98	11,023.39	10,976.59	46.80	235.539	
15,600.00	7,157.71	319.00	318.92	141.51	0.28	-1.34	23.57	21.98	11,101.96	11,054.92	47.03	236.043	
15,700.00	7,157.67	319.00	318.92	143.09	0.28	-1.34	23.57	21.98	11,180.86	11,133.60	47.26	236.567	
15,800.00	7,157.63	319.00	318.92	144.67	0.28	-1.34	23.57	21.98	11,260.10	11,212.62	47.49	237.111	
15,900.00	7,157.59	319.00	318.92	146.24	0.28	-1.34	23.57	21.98	11,339.67	11,291.96	47.71	237.674	
16,000.00	7,157.55	319.00	318.92	147.82	0.28	-1.34	23.57	21.98	11,419.56	11,371.63	47.93	238.255	
16,100.00	7,157.51	319.00	318.92	149.41	0.28	-1.34	23.57	21.98	11,499.77	11,451.62	48.15	238.854	
16,200.00	7,157.47	319.00	318.92	150.99	0.28	-1.34	23.57	21.98	11,580.28	11,531.93	48.36	239.469	
16,300.00	7,157.43	319.00	318.92	152.57	0.28	-1.34	23.57	21.98	11,661.10	11,612.53	48.57	240.101	
16,400.00	7,157.38	319.00	318.92	154.15	0.28	-1.34	23.57	21.98	11,742.21	11,693.43	48.77	240.748	
16,500.00	7,157.34	319.00	318.92	155.73	0.28	-1.34	23.57	21.98	11,823.61	11,774.63	48.98	241.410	
16,600.00	7,157.30	319.00	318.92	157.31	0.28	-1.34	23.57	21.98	11,905.29	11,856.11	49.18	242.086	
16,680.84	7,157.27	319.00	318.92	158.59	0.28	-1.34	23.57	21.98	11,971.53	11,922.19	49.34	242.643	
16,687.46	7,157.27	319.00	318.92	158.70	0.28	-1.44	23.57	21.98	11,976.96	11,927.60	49.35	242.689	
16,700.00	7,157.26	319.00	318.92	158.90	0.28	-1.44	23.57	21.98	11,987.25	11,937.88	49.38	242.776	
16,800.00	7,157.22	319.00	318.92	160.48	0.28	-1.44	23.57	21.98	12,069.48	12,019.91	49.57	243.480	
16,900.00	7,157.18	319.00	318.92	162.06	0.28	-1.44	23.57	21.98	12,151.98	12,102.22	49.76	244.196	
17,000.00	7,157.14	319.00	318.92	163.65	0.28	-1.44	23.57	21.98	12,234.74	12,184.79	49.95	244.925	
17,100.00	7,157.10	319.00	318.92	165.23	0.28	-1.44	23.57	21.98	12,317.75	12,267.61	50.14	245.666	
17,200.00	7,157.06	319.00	318.92	166.82	0.28	-1.44	23.57	21.98	12,401.02	12,350.70	50.33	246.418	
17,300.00	7,157.02	319.00	318.92	168.40	0.28	-1.44	23.57	21.98	12,484.53	12,434.02	50.51	247.181	
17,400.00	7,156.98	319.00	318.92	169.99	0.28	-1.44	23.57	21.98	12,568.28	12,517.60	50.69	247.955	
17,500.00	7,156.94	319.00	318.92	171.57	0.28	-1.44	23.57	21.98	12,652.27	12,601.40	50.87	248.739	
17,600.00	7,156.90	319.00	318.92	173.16	0.28	-1.44	23.57	21.98	12,736.49	12,685.45	51.04	249.532	
17,700.00	7,156.85	319.00	318.92	174.75	0.28	-1.44	23.57	21.98	12,820.94	12,769.72	51.21	250.336	
17,800.00	7,156.81	319.00	318.92	176.33	0.28	-1.44	23.57	21.98	12,905.60	12,854.22	51.39	251.148	
17,900.00	7,156.77	319.00	318.92	177.92	0.28	-1.44	23.57	21.98	12,990.49	12,938.93	51.56	251.969	
18,000.00	7,156.73	319.00	318.92	179.51	0.28	-1.44	23.57	21.98	13,075.59	13,023.87	51.72	252.799	
18,100.00	7,156.69	319.00	318.92	181.09	0.28	-1.44	23.57	21.98	13,160.90	13,109.01	51.89	253.636	
18,200.00	7,156.65	319.00	318.92	182.68	0.28	-1.44	23.57	21.98	13,246.41	13,194.36	52.05	254.482	
18,300.00	7,156.61	319.00	318.92	184.27	0.28	-1.44	23.57	21.98	13,332.13	13,279.92	52.21	255.335	
18,400.00	7,156.57	319.00	318.92	185.86	0.28	-1.44	23.57	21.98	13,418.04	13,365.67	52.37	256.195	
18,500.00	7,156.53	319.00	318.92	187.45	0.28	-1.44	23.57	21.98	13,504.15	13,451.62	52.53	257.062	
18,600.00	7,156.49	319.00	318.92	189.03	0.28	-1.44	23.57	21.98	13,590.45	13,537.76	52.69	257.935	
18,700.00	7,156.45	319.00	318.92	190.62	0.28	-1.44	23.57	21.98	13,676.94	13,624.09	52.84	258.815	
18,800.00	7,156.41	319.00	318.92	192.21	0.28	-1.44	23.57	21.98	13,763.60	13,710.61	53.00	259.702	
18,900.00	7,156.37	319.00	318.92	193.80	0.28	-1.44	23.57	21.98	13,850.45	13,797.30	53.15	260.594	
19,000.00	7,156.32	319.00	318.92	195.39	0.28	-1.44	23.57	21.98	13,937.47	13,884.17	53.30	261.491	

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 836H
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 836H	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)			
19,100.00	7,156.28	319.00	318.92	196.98	0.28	-1.44	23.57	21.98	14,024.67	13,971.22	53.45	262.394	
19,200.00	7,156.24	319.00	318.92	198.57	0.28	-1.44	23.57	21.98	14,112.04	14,058.44	53.60	263.302	
19,300.00	7,156.20	319.00	318.92	200.16	0.28	-1.44	23.57	21.98	14,199.57	14,145.83	53.74	264.215	
19,400.00	7,156.16	319.00	318.92	201.75	0.28	-1.44	23.57	21.98	14,287.27	14,233.38	53.89	265.133	
19,500.00	7,156.12	319.00	318.92	203.34	0.28	-1.44	23.57	21.98	14,375.13	14,321.10	54.03	266.056	
19,600.00	7,156.08	319.00	318.92	204.93	0.28	-1.44	23.57	21.98	14,463.14	14,408.97	54.17	266.982	
19,700.00	7,156.04	319.00	318.92	206.52	0.28	-1.44	23.57	21.98	14,551.31	14,497.00	54.31	267.913	
19,800.00	7,156.00	319.00	318.92	208.11	0.28	-1.44	23.57	21.98	14,639.64	14,585.18	54.45	268.848	
19,900.00	7,155.96	319.00	318.92	209.71	0.28	-1.44	23.57	21.98	14,728.11	14,673.52	54.59	269.787	
20,000.00	7,155.92	319.00	318.92	211.30	0.28	-1.44	23.57	21.98	14,816.73	14,762.00	54.73	270.729	
20,100.00	7,155.88	319.00	318.92	212.89	0.28	-1.44	23.57	21.98	14,905.49	14,850.62	54.87	271.674	
20,200.00	7,155.84	319.00	318.92	214.48	0.28	-1.44	23.57	21.98	14,994.39	14,939.39	55.00	272.623	
20,300.00	7,155.79	319.00	318.92	216.07	0.28	-1.44	23.57	21.98	15,083.44	15,028.30	55.13	273.575	
20,400.00	7,155.75	319.00	318.92	217.66	0.28	-1.44	23.57	21.98	15,172.61	15,117.35	55.27	274.530	
20,500.00	7,155.71	319.00	318.92	219.26	0.28	-1.44	23.57	21.98	15,261.93	15,206.53	55.40	275.488	
20,600.00	7,155.67	319.00	318.92	220.85	0.28	-1.44	23.57	21.98	15,351.37	15,295.84	55.53	276.448	
20,700.00	7,155.63	319.00	318.92	222.44	0.28	-1.44	23.57	21.98	15,440.95	15,385.29	55.66	277.411	
20,800.00	7,155.59	319.00	318.92	224.03	0.28	-1.44	23.57	21.98	15,530.65	15,474.86	55.79	278.376	
20,900.00	7,155.55	319.00	318.92	225.63	0.28	-1.44	23.57	21.98	15,620.48	15,564.56	55.92	279.343	
21,000.00	7,155.51	319.00	318.92	227.22	0.28	-1.44	23.57	21.98	15,710.43	15,654.38	56.05	280.313	
21,100.00	7,155.47	319.00	318.92	228.81	0.28	-1.44	23.57	21.98	15,800.50	15,744.33	56.17	281.284	
21,200.00	7,155.43	319.00	318.92	230.40	0.28	-1.44	23.57	21.98	15,890.69	15,834.39	56.30	282.257	
21,300.00	7,155.39	319.00	318.92	232.00	0.28	-1.44	23.57	21.98	15,980.99	15,924.57	56.42	283.232	
21,400.00	7,155.35	319.00	318.92	233.59	0.28	-1.44	23.57	21.98	16,071.42	16,014.87	56.55	284.209	
21,500.00	7,155.31	319.00	318.92	235.18	0.28	-1.44	23.57	21.98	16,161.95	16,105.28	56.67	285.187	
21,600.00	7,155.26	319.00	318.92	236.78	0.28	-1.44	23.57	21.98	16,252.59	16,195.80	56.79	286.166	
21,700.00	7,155.22	319.00	318.92	238.37	0.28	-1.44	23.57	21.98	16,343.35	16,286.43	56.92	287.147	
21,800.00	7,155.18	319.00	318.92	239.96	0.28	-1.44	23.57	21.98	16,434.21	16,377.17	57.04	288.128	
21,900.00	7,155.14	319.00	318.92	241.56	0.28	-1.44	23.57	21.98	16,525.18	16,468.02	57.16	289.111	
21,953.88	7,155.12	319.00	318.92	242.42	0.28	-1.44	23.57	21.98	16,574.23	16,517.01	57.22	289.641	
22,000.00	7,155.10	319.00	318.92	243.15	0.28	-0.42	23.57	21.98	16,616.25	16,558.97	57.28	290.095	
22,019.01	7,155.09	319.00	318.92	243.46	0.28	0.00	23.57	21.98	16,633.58	16,576.27	57.30	290.282	
22,100.00	7,155.06	319.00	318.92	244.75	0.28	0.00	23.57	21.98	16,707.43	16,650.03	57.40	291.080	
22,200.00	7,155.02	319.00	318.92	246.34	0.28	0.00	23.57	21.98	16,798.71	16,741.19	57.52	292.066	
22,300.00	7,154.97	319.00	318.92	247.94	0.28	0.00	23.57	21.98	16,890.08	16,832.45	57.64	293.052	
22,400.00	7,154.93	319.00	318.92	249.53	0.28	0.00	23.57	21.98	16,981.56	16,923.81	57.75	294.039	
22,500.00	7,154.89	319.00	318.92	251.13	0.28	0.00	23.57	21.98	17,073.13	17,015.26	57.87	295.027	
22,600.00	7,154.85	319.00	318.92	252.72	0.28	0.00	23.57	21.98	17,164.79	17,106.81	57.99	296.015	
22,700.00	7,154.80	319.00	318.92	254.32	0.28	0.00	23.57	21.98	17,256.55	17,198.45	58.10	297.003	
22,800.00	7,154.76	319.00	318.92	255.91	0.28	0.00	23.57	21.98	17,348.40	17,290.18	58.22	297.991	
22,900.00	7,154.72	319.00	318.92	257.51	0.28	0.00	23.57	21.98	17,440.33	17,382.00	58.33	298.980	
23,000.00	7,154.68	319.00	318.92	259.11	0.28	0.00	23.57	21.98	17,532.36	17,473.91	58.45	299.968	
23,100.00	7,154.63	319.00	318.92	260.70	0.28	0.00	23.57	21.98	17,624.47	17,565.91	58.56	300.957	
23,200.00	7,154.59	319.00	318.92	262.30	0.28	0.00	23.57	21.98	17,716.67	17,658.00	58.68	301.946	
23,300.00	7,154.55	319.00	318.92	263.89	0.28	0.00	23.57	21.98	17,808.95	17,750.16	58.79	302.934	
23,400.00	7,154.51	319.00	318.92	265.49	0.28	0.00	23.57	21.98	17,901.32	17,842.42	58.90	303.922	
23,500.00	7,154.47	319.00	318.92	267.08	0.28	0.00	23.57	21.98	17,993.77	17,934.75	59.01	304.910	
23,600.00	7,154.42	319.00	318.92	268.68	0.28	0.00	23.57	21.98	18,086.29	18,027.17	59.13	305.898	
23,700.00	7,154.38	319.00	318.92	270.28	0.28	0.00	23.57	21.98	18,178.90	18,119.66	59.24	306.885	
23,800.00	7,154.34	319.00	318.92	271.87	0.28	0.00	23.57	21.98	18,271.58	18,212.24	59.35	307.871	
23,900.00	7,154.30	319.00	318.92	273.47	0.28	0.00	23.57	21.98	18,364.34	18,304.89	59.46	308.857	
24,000.00	7,154.25	319.00	318.92	275.07	0.28	0.00	23.57	21.98	18,457.18	18,397.61	59.57	309.843	

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 836H
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 836H	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)			
24,100.00	7,154.21	319.00	318.92	276.66	0.28	0.00	23.57	21.98	18,550.09	18,490.41	59.68	310.828	
24,200.00	7,154.17	319.00	318.92	278.26	0.28	0.00	23.57	21.98	18,643.08	18,583.29	59.79	311.812	
24,300.00	7,154.13	319.00	318.92	279.86	0.28	0.00	23.57	21.98	18,736.13	18,676.23	59.90	312.795	
24,400.00	7,154.08	319.00	318.92	281.45	0.28	0.00	23.57	21.98	18,829.26	18,769.25	60.01	313.777	
24,500.00	7,154.04	319.00	318.92	283.05	0.28	0.00	23.57	21.98	18,922.46	18,862.34	60.12	314.759	
24,597.25	7,154.00	319.00	318.92	284.60	0.28	0.00	23.57	21.98	19,013.16	18,952.94	60.22	315.713	
24,600.00	7,154.00	319.00	318.92	284.65	0.28	-0.07	23.57	21.98	19,015.73	18,955.50	60.23	315.740	
24,700.00	7,153.96	319.00	318.92	286.24	0.28	-2.67	23.57	21.98	19,109.06	19,048.72	60.33	316.719	
24,722.47	7,153.95	319.00	318.92	286.60	0.28	-3.25	23.57	21.98	19,130.04	19,069.68	60.36	316.939	
24,800.00	7,153.92	319.00	318.92	287.84	0.28	-3.25	23.57	21.98	19,202.44	19,142.00	60.44	317.697	
24,900.00	7,153.88	319.00	318.92	289.43	0.28	-3.25	23.57	21.98	19,295.89	19,235.34	60.55	318.673	
25,000.00	7,153.84	319.00	318.92	291.03	0.28	-3.25	23.57	21.98	19,389.40	19,328.74	60.66	319.649	
25,100.00	7,153.80	319.00	318.92	292.63	0.28	-3.25	23.57	21.98	19,482.98	19,422.21	60.77	320.623	
25,200.00	7,153.77	319.00	318.92	294.22	0.28	-3.25	23.57	21.98	19,576.62	19,515.75	60.87	321.596	
25,300.00	7,153.73	319.00	318.92	295.82	0.28	-3.25	23.57	21.98	19,670.33	19,609.34	60.98	322.568	
25,400.00	7,153.69	319.00	318.92	297.41	0.28	-3.25	23.57	21.98	19,764.09	19,703.00	61.09	323.538	
25,500.00	7,153.65	319.00	318.92	299.01	0.28	-3.25	23.57	21.98	19,857.92	19,796.72	61.19	324.507	
25,600.00	7,153.61	319.00	318.92	300.60	0.28	-3.25	23.57	21.98	19,951.80	19,890.50	61.30	325.475	
25,700.00	7,153.57	319.00	318.92	302.20	0.28	-3.25	23.57	21.98	20,045.75	19,984.34	61.41	326.442	
25,800.00	7,153.53	319.00	318.92	303.80	0.28	-3.25	23.57	21.98	20,139.75	20,078.24	61.51	327.407	
25,900.00	7,153.50	319.00	318.92	305.39	0.28	-3.25	23.57	21.98	20,233.81	20,172.20	61.62	328.370	
26,000.00	7,153.46	319.00	318.92	306.99	0.28	-3.25	23.57	21.98	20,327.93	20,266.21	61.72	329.332	
26,100.00	7,153.42	319.00	318.92	308.58	0.28	-3.25	23.57	21.98	20,422.11	20,360.28	61.83	330.293	
26,200.00	7,153.38	319.00	318.92	310.18	0.28	-3.25	23.57	21.98	20,516.34	20,454.40	61.94	331.251	
26,300.00	7,153.34	319.00	318.92	311.78	0.28	-3.25	23.57	21.98	20,610.62	20,548.58	62.04	332.209	
26,400.00	7,153.30	319.00	318.92	313.37	0.28	-3.25	23.57	21.98	20,704.96	20,642.81	62.15	333.164	
26,500.00	7,153.26	319.00	318.92	314.97	0.28	-3.25	23.57	21.98	20,799.35	20,737.09	62.25	334.118	
26,600.00	7,153.23	319.00	318.92	316.57	0.28	-3.25	23.57	21.98	20,893.79	20,831.43	62.36	335.071	
26,700.00	7,153.19	319.00	318.92	318.16	0.28	-3.25	23.57	21.98	20,988.28	20,925.82	62.46	336.021	
26,800.00	7,153.15	319.00	318.92	319.76	0.28	-3.25	23.57	21.98	21,082.83	21,020.26	62.57	336.970	
26,900.00	7,153.11	319.00	318.92	321.35	0.28	-3.25	23.57	21.98	21,177.42	21,114.75	62.67	337.917	
26,976.35	7,153.08	319.00	318.92	322.57	0.28	-3.25	23.57	21.98	21,249.68	21,186.93	62.75	338.638	
27,000.00	7,153.07	319.00	318.92	322.95	0.28	-3.25	23.57	21.98	21,272.07	21,209.29	62.78	338.862	
27,100.00	7,153.03	319.00	318.92	324.55	0.28	-3.25	23.57	21.98	21,366.76	21,303.88	62.88	339.805	
27,176.36	7,153.00	319.00	318.92	325.77	0.28	-3.25	23.57	21.98	21,439.10	21,376.14	62.96	340.524	

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 836H
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 836H	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)	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	34.43	24.76	16.97	30.01				
125.00	125.00	124.71	124.71	0.06	0.06	-101.79	25.18	17.39	30.69	30.59	0.10	318.096	
225.00	225.00	224.78	224.76	0.17	0.17	-33.69	25.03	19.08	31.22	30.95	0.27	117.276	
312.00	311.99	311.86	311.79	0.28	0.27	-90.75	23.71	21.74	31.49	31.08	0.41	77.664	
400.00	399.99	399.82	399.68	0.37	0.37	-85.49	21.88	24.77	32.17	31.60	0.58	55.878	
462.00	461.99	461.78	461.59	0.50	0.50	-81.94	20.59	26.90	32.81	31.90	0.91	36.107	
509.18	509.16	508.64	508.41	0.64	0.63	-105.95	19.89	28.52	33.72	32.51	1.21	27.924	
600.00	599.96	598.66	598.38	0.94	0.92	-106.70	20.67	31.67	37.22	35.41	1.82	20.494	
700.00	699.94	697.49	697.05	1.28	1.25	-110.59	24.78	35.19	43.36	40.85	2.50	17.320	
800.00	799.92	795.77	794.98	1.63	1.59	-115.98	32.24	38.73	52.25	49.05	3.20	16.340	
900.00	899.89	893.29	891.84	1.98	1.94	-121.52	42.97	42.29	64.27	60.38	3.89	16.502	
1,000.00	999.87	989.84	987.31	2.34	2.31	-126.47	56.83	45.86	79.63	75.04	4.59	17.352	
1,100.00	1,099.84	1,085.20	1,081.10	2.69	2.68	-130.61	73.67	49.41	98.39	93.11	5.28	18.640	
1,200.00	1,199.82	1,179.20	1,172.95	3.05	3.06	-133.97	93.32	52.95	120.51	114.55	5.96	20.220	
1,300.00	1,299.80	1,275.09	1,266.17	3.41	3.47	-136.65	115.52	56.58	145.04	138.38	6.66	21.780	
1,400.00	1,399.77	1,371.82	1,360.18	3.77	3.89	-138.58	137.99	60.25	169.87	162.51	7.36	23.073	
1,500.00	1,499.75	1,468.56	1,454.20	4.13	4.32	-140.02	160.47	63.91	194.83	186.75	8.08	24.111	
1,600.00	1,599.72	1,565.29	1,548.21	4.49	4.75	-141.13	182.94	67.57	219.88	211.08	8.80	24.993	
1,700.00	1,699.70	1,662.02	1,642.23	4.85	5.18	-142.01	205.42	71.24	244.99	235.47	9.52	25.744	
1,800.00	1,799.68	1,758.76	1,736.24	5.21	5.61	-142.73	227.89	74.90	270.15	259.91	10.24	26.389	
1,900.00	1,899.65	1,855.49	1,830.26	5.57	6.05	-143.33	250.37	78.56	295.34	284.38	10.96	26.948	
2,000.00	1,999.63	1,952.23	1,924.27	5.93	6.49	-143.83	272.84	82.23	320.55	308.87	11.68	27.438	
2,100.00	2,099.60	2,048.96	2,018.29	6.29	6.93	-144.26	295.32	85.89	345.78	333.38	12.41	27.870	
2,200.00	2,199.58	2,145.69	2,112.30	6.65	7.37	-144.64	317.79	89.55	371.03	357.90	13.13	28.254	
2,300.00	2,299.56	2,242.43	2,206.32	7.01	7.81	-144.96	340.27	93.22	396.30	382.44	13.86	28.597	
2,400.00	2,399.53	2,339.16	2,300.33	7.37	8.25	-145.24	362.74	96.88	421.57	406.99	14.58	28.906	
2,500.00	2,499.51	2,435.89	2,394.35	7.73	8.69	-145.50	385.22	100.54	446.85	431.54	15.31	29.184	
2,600.00	2,599.48	2,532.63	2,488.36	8.09	9.13	-145.72	407.69	104.21	472.14	456.10	16.04	29.437	
2,700.00	2,699.46	2,629.36	2,582.38	8.45	9.57	-145.93	430.17	107.87	497.44	480.67	16.77	29.668	
2,800.00	2,799.44	2,726.09	2,676.39	8.81	10.02	-146.11	452.64	111.53	522.74	505.24	17.49	29.880	
2,900.00	2,899.41	2,822.83	2,770.41	9.17	10.46	-146.28	475.12	115.20	548.04	529.82	18.22	30.074	
3,000.00	2,999.39	2,919.56	2,864.42	9.53	10.90	-146.43	497.59	118.86	573.35	554.40	18.95	30.253	
3,100.00	3,099.36	3,016.29	2,958.44	9.89	11.35	-146.57	520.07	122.52	598.67	578.98	19.68	30.418	
3,200.00	3,199.34	3,113.03	3,052.46	10.25	11.79	-146.69	542.54	126.19	623.98	603.57	20.41	30.572	
3,300.00	3,299.32	3,209.76	3,146.47	10.61	12.24	-146.81	565.02	129.85	649.30	628.16	21.14	30.714	
3,400.00	3,399.29	3,306.50	3,240.49	10.97	12.68	-146.92	587.49	133.51	674.62	652.75	21.87	30.847	
3,500.00	3,499.27	3,403.23	3,334.50	11.33	13.13	-147.02	609.97	137.18	699.94	677.34	22.60	30.971	
3,600.00	3,599.25	3,499.96	3,428.52	11.69	13.57	-147.12	632.44	140.84	725.27	701.94	23.33	31.088	
3,700.00	3,699.22	3,596.70	3,522.53	12.05	14.02	-147.20	654.92	144.50	750.59	726.53	24.06	31.197	
3,800.00	3,799.20	3,693.43	3,616.55	12.41	14.46	-147.28	677.39	148.17	775.92	751.13	24.79	31.299	
3,900.00	3,899.17	3,790.16	3,710.56	12.77	14.91	-147.36	699.86	151.83	801.25	775.73	25.52	31.396	
4,000.00	3,999.15	3,886.90	3,804.58	13.13	15.35	-147.43	722.34	155.49	826.58	800.33	26.25	31.487	
4,100.00	4,099.13	3,983.63	3,898.59	13.49	15.80	-147.50	744.81	159.16	851.91	824.93	26.98	31.573	
4,200.00	4,199.10	4,080.36	3,992.61	13.85	16.24	-147.57	767.29	162.82	877.25	849.53	27.71	31.654	
4,300.00	4,299.08	4,177.10	4,086.62	14.21	16.69	-147.63	789.76	166.48	902.58	874.14	28.44	31.731	
4,400.00	4,399.05	4,273.83	4,180.64	14.57	17.13	-147.68	812.24	170.15	927.92	898.74	29.18	31.804	
4,500.00	4,499.03	4,370.56	4,274.65	14.93	17.58	-147.74	834.71	173.81	953.25	923.34	29.91	31.874	
4,600.00	4,599.01	4,467.30	4,368.67	15.29	18.02	-147.79	857.19	177.47	978.59	947.95	30.64	31.940	
4,700.00	4,698.98	4,564.03	4,462.68	15.65	18.47	-147.84	879.66	181.14	1,003.92	972.55	31.37	32.002	
4,800.00	4,798.96	4,660.77	4,556.70	16.01	18.92	-147.88	902.14	184.80	1,029.26	997.16	32.10	32.062	
4,900.00	4,898.93	4,757.50	4,650.71	16.37	19.36	-147.93	924.61	188.46	1,054.60	1,021.77	32.83	32.119	
5,000.00	4,998.91	4,854.23	4,744.73	16.73	19.81	-147.97	947.09	192.13	1,079.94	1,046.37	33.57	32.174	

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 836H
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 836H	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		Separation Factor	Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.00	5,098.89	4,950.97	4,838.74	17.09	20.25	-148.01	969.56	195.79	1,105.28	1,070.98	34.30	32.226	
5,200.00	5,198.86	5,047.70	4,932.76	17.45	20.70	-148.05	992.04	199.45	1,130.62	1,095.59	35.03	32.276	
5,300.00	5,298.84	5,144.43	5,026.77	17.81	21.15	-148.08	1,014.51	203.12	1,155.96	1,120.20	35.76	32.324	
5,400.00	5,398.81	5,241.17	5,120.79	18.17	21.59	-148.12	1,036.99	206.78	1,181.30	1,144.80	36.49	32.369	
5,500.00	5,498.79	5,337.90	5,214.80	18.53	22.04	-148.15	1,059.46	210.44	1,206.64	1,169.41	37.23	32.413	
5,600.00	5,598.77	5,434.63	5,308.82	18.89	22.48	-148.18	1,081.94	214.11	1,231.98	1,194.02	37.96	32.455	
5,700.00	5,698.74	5,531.37	5,402.83	19.25	22.93	-148.21	1,104.41	217.77	1,257.32	1,218.63	38.69	32.496	
5,800.00	5,798.72	5,628.10	5,496.85	19.61	23.38	-148.24	1,126.89	221.43	1,282.66	1,243.24	39.42	32.535	
5,900.00	5,898.69	5,724.83	5,590.86	19.97	23.82	-148.27	1,149.36	225.10	1,308.01	1,267.85	40.16	32.572	
6,000.00	5,998.67	5,821.57	5,684.88	20.33	24.27	-148.30	1,171.84	228.76	1,333.35	1,292.46	40.89	32.608	
6,100.00	6,098.65	5,918.30	5,778.89	20.69	24.71	-148.33	1,194.31	232.42	1,358.69	1,317.07	41.62	32.643	
6,200.00	6,198.62	6,015.04	5,872.91	21.05	25.16	-148.35	1,216.78	236.09	1,384.03	1,341.68	42.36	32.676	
6,300.00	6,298.60	6,111.77	5,966.92	21.41	25.61	-148.37	1,239.26	239.75	1,409.38	1,366.29	43.09	32.708	
6,400.00	6,398.57	6,208.50	6,060.94	21.77	26.05	-148.40	1,261.73	243.41	1,434.72	1,390.90	43.82	32.739	
6,500.00	6,498.55	6,305.24	6,154.95	22.13	26.50	-148.42	1,284.21	247.08	1,460.07	1,415.51	44.56	32.769	
6,531.56	6,530.10	6,335.76	6,184.63	22.25	26.64	-148.43	1,291.30	248.23	1,468.06	1,423.28	44.79	32.778	
6,550.00	6,548.53	6,353.61	6,201.97	22.31	26.72	-109.66	1,295.45	248.91	1,472.70	1,427.78	44.92	32.783	
6,600.00	6,598.36	6,401.95	6,248.95	22.49	26.95	-90.50	1,306.68	250.74	1,484.89	1,439.60	45.29	32.789	
6,650.00	6,647.74	6,450.00	6,295.65	22.67	27.17	-85.84	1,317.84	252.56	1,496.49	1,450.84	45.65	32.783	
6,700.00	6,696.35	6,497.46	6,341.78	22.84	27.39	-83.60	1,328.87	254.35	1,507.48	1,461.47	46.01	32.766	
6,750.00	6,743.90	6,544.04	6,387.04	23.01	27.60	-82.29	1,339.69	256.12	1,517.87	1,471.51	46.36	32.739	
6,800.00	6,790.11	6,589.44	6,431.18	23.18	27.81	-81.48	1,350.24	257.84	1,527.71	1,481.00	46.71	32.703	
6,850.00	6,834.67	6,633.40	6,473.90	23.35	28.01	-80.99	1,360.46	259.50	1,537.07	1,490.01	47.06	32.660	
6,900.00	6,877.32	6,675.64	6,514.95	23.51	28.21	-80.72	1,370.27	261.10	1,546.03	1,498.62	47.41	32.611	
6,950.00	6,917.80	6,716.70	6,554.86	23.68	28.40	-80.63	1,379.82	262.33	1,554.69	1,506.93	47.76	32.554	
7,000.00	6,955.85	6,753.22	6,590.35	23.85	28.56	-80.63	1,388.37	261.49	1,563.19	1,515.10	48.09	32.507	
7,050.00	6,991.24	6,783.38	6,619.57	24.03	28.70	-80.59	1,395.46	259.22	1,571.78	1,523.39	48.39	32.483	
7,100.00	7,023.76	6,807.55	6,642.90	24.22	28.80	-80.44	1,401.15	256.38	1,580.66	1,532.00	48.66	32.482	
7,150.00	7,053.20	6,826.31	6,660.90	24.42	28.88	-80.13	1,405.56	253.54	1,590.01	1,541.09	48.92	32.503	
7,200.00	7,079.37	6,840.27	6,674.25	24.63	28.94	-79.65	1,408.84	251.08	1,599.91	1,550.75	49.16	32.543	
7,250.00	7,102.13	6,850.00	6,683.51	24.86	28.98	-79.00	1,411.13	249.18	1,610.41	1,561.02	49.40	32.600	
7,300.00	7,121.32	6,850.00	6,683.51	25.10	28.98	-77.95	1,411.13	249.18	1,621.55	1,571.96	49.58	32.703	
7,350.00	7,136.84	6,859.22	6,692.27	25.35	29.02	-77.20	1,413.29	247.25	1,633.23	1,583.36	49.87	32.752	
7,400.00	7,148.58	6,859.58	6,692.60	25.62	29.02	-76.10	1,413.37	247.18	1,645.44	1,595.33	50.11	32.840	
7,450.00	7,156.47	6,850.00	6,683.51	25.90	28.98	-74.61	1,411.13	249.18	1,658.11	1,607.82	50.29	32.973	
7,500.00	7,160.47	6,850.00	6,683.51	26.20	28.98	-73.45	1,411.13	249.18	1,671.07	1,620.50	50.57	33.044	
7,526.22	7,161.00	6,850.00	6,683.51	26.36	28.98	-72.83	1,411.13	249.18	1,677.96	1,627.23	50.73	33.076	
7,600.00	7,160.97	6,850.00	6,683.51	26.83	28.98	-72.83	1,411.13	249.18	1,698.94	1,647.74	51.20	33.182	
7,700.00	7,160.93	6,833.66	6,667.94	27.53	28.91	-72.27	1,407.29	252.28	1,731.83	1,680.11	51.73	33.480	
7,800.00	7,160.89	6,825.63	6,660.26	28.32	28.88	-71.99	1,405.40	253.65	1,769.71	1,717.37	52.34	33.809	
7,900.00	7,160.85	6,818.66	6,653.57	29.16	28.85	-71.74	1,403.76	254.76	1,812.25	1,759.28	52.97	34.212	
8,000.00	7,160.81	6,800.00	6,635.62	30.07	28.77	-71.09	1,399.37	257.36	1,859.26	1,805.77	53.48	34.762	
8,100.00	7,160.77	6,800.00	6,635.62	31.04	28.77	-71.09	1,399.37	257.36	1,910.13	1,855.99	54.14	35.279	
8,200.00	7,160.73	6,800.00	6,635.62	32.06	28.77	-71.09	1,399.37	257.36	1,964.78	1,910.00	54.77	35.871	
8,300.00	7,160.69	6,800.00	6,635.62	33.12	28.77	-71.09	1,399.37	257.36	2,022.90	1,967.53	55.37	36.534	
8,400.00	7,160.65	6,800.00	6,635.62	34.23	28.77	-71.09	1,399.37	257.36	2,084.19	2,028.26	55.93	37.263	
8,500.00	7,160.60	6,800.00	6,635.62	35.37	28.77	-71.09	1,399.37	257.36	2,148.40	2,091.94	56.46	38.055	
8,600.00	7,160.56	6,800.00	6,635.62	36.55	28.77	-71.09	1,399.37	257.36	2,215.26	2,158.32	56.94	38.903	
8,700.00	7,160.52	6,800.00	6,635.62	37.76	28.77	-71.09	1,399.37	257.36	2,284.54	2,227.15	57.39	39.804	
8,800.00	7,160.48	6,800.00	6,635.62	38.99	28.77	-71.09	1,399.37	257.36	2,356.03	2,298.22	57.81	40.753	
8,900.00	7,160.44	6,779.34	6,615.67	40.26	28.68	-70.37	1,394.51	259.61	2,429.19	2,371.16	58.03	41.862	
9,000.00	7,160.40	6,777.06	6,613.46	41.54	28.67	-70.29	1,393.97	259.81	2,504.45	2,446.08	58.37	42.908	

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 836H
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 836H	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												Rule Assigned:	
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)			
9,100.00	7,160.36	6,774.95	6,611.42	42.85	28.66	-70.22	1,393.48	260.00	2,581.37	2,522.69	58.68	43.990	
9,200.00	7,160.32	6,772.99	6,609.52	44.18	28.65	-70.15	1,393.02	260.16	2,659.83	2,600.86	58.97	45.105	
9,300.00	7,160.28	6,771.17	6,607.76	45.53	28.64	-70.09	1,392.59	260.31	2,739.69	2,680.45	59.24	46.249	
9,400.00	7,160.24	6,750.00	6,587.23	46.89	28.55	-69.35	1,387.62	261.65	2,821.14	2,761.81	59.33	47.551	
9,500.00	7,160.20	6,750.00	6,587.23	48.26	28.55	-69.35	1,387.62	261.65	2,903.39	2,843.82	59.57	48.738	
9,600.00	7,160.16	6,750.00	6,587.23	49.65	28.55	-69.35	1,387.62	261.65	2,986.74	2,926.94	59.80	49.949	
9,700.00	7,160.12	6,750.00	6,587.23	51.05	28.55	-69.35	1,387.62	261.65	3,071.07	3,011.07	60.00	51.181	
9,800.00	7,160.08	6,750.00	6,587.23	52.47	28.55	-69.35	1,387.62	261.65	3,156.32	3,096.13	60.20	52.432	
9,900.00	7,160.04	6,750.00	6,587.23	53.89	28.55	-69.35	1,387.62	261.65	3,242.42	3,182.04	60.38	53.701	
10,000.00	7,160.00	6,750.00	6,587.23	55.33	28.55	-69.35	1,387.62	261.65	3,329.29	3,268.74	60.55	54.986	
10,100.00	7,159.95	6,750.00	6,587.23	56.77	28.55	-69.35	1,387.62	261.65	3,416.88	3,356.17	60.71	56.286	
10,200.00	7,159.91	6,750.00	6,587.23	58.22	28.55	-69.35	1,387.62	261.65	3,505.13	3,444.28	60.85	57.599	
10,300.00	7,159.87	6,750.00	6,587.23	59.68	28.55	-69.35	1,387.62	261.65	3,594.00	3,533.01	60.99	58.924	
10,400.00	7,159.83	6,750.00	6,587.23	61.15	28.55	-69.35	1,387.62	261.65	3,683.44	3,622.32	61.12	60.261	
10,500.00	7,159.79	6,750.00	6,587.23	62.62	28.55	-69.35	1,387.62	261.65	3,773.41	3,712.16	61.25	61.608	
10,600.00	7,159.75	6,750.00	6,587.23	64.10	28.55	-69.35	1,387.62	261.65	3,863.87	3,802.51	61.37	62.965	
10,700.00	7,159.71	6,750.00	6,587.23	65.58	28.55	-69.35	1,387.62	261.65	3,954.80	3,893.32	61.48	64.329	
10,800.00	7,159.67	6,750.00	6,587.23	67.07	28.55	-69.35	1,387.62	261.65	4,046.15	3,984.57	61.58	65.702	
10,900.00	7,159.63	6,750.00	6,587.23	68.57	28.55	-69.35	1,387.62	261.65	4,137.90	4,076.21	61.68	67.082	
11,000.00	7,159.59	6,750.00	6,587.23	70.07	28.55	-69.35	1,387.62	261.65	4,230.02	4,168.24	61.78	68.468	
11,100.00	7,159.55	6,750.00	6,587.23	71.57	28.55	-69.35	1,387.62	261.65	4,322.50	4,260.62	61.87	69.859	
11,200.00	7,159.51	6,750.00	6,587.23	73.08	28.55	-69.35	1,387.62	261.65	4,415.30	4,353.34	61.96	71.256	
11,300.00	7,159.47	6,750.00	6,587.23	74.59	28.55	-69.35	1,387.62	261.65	4,508.41	4,446.36	62.05	72.658	
11,400.00	7,159.43	6,750.00	6,587.23	76.11	28.55	-69.35	1,387.62	261.65	4,601.81	4,539.68	62.13	74.064	
11,500.00	7,159.39	6,750.00	6,587.23	77.63	28.55	-69.35	1,387.62	261.65	4,695.48	4,633.27	62.21	75.474	
11,600.00	7,159.35	6,750.00	6,587.23	79.15	28.55	-69.35	1,387.62	261.65	4,789.41	4,727.12	62.29	76.887	
11,638.27	7,159.33	6,750.00	6,587.23	79.73	28.55	-69.35	1,387.62	261.65	4,825.42	4,763.10	62.32	77.429	
11,640.51	7,159.33	6,750.00	6,587.23	79.77	28.55	-69.37	1,387.62	261.65	4,827.53	4,765.21	62.32	77.461	
11,700.00	7,159.30	6,750.00	6,587.23	80.68	28.55	-69.37	1,387.62	261.65	4,883.57	4,821.21	62.37	78.304	
11,800.00	7,159.26	6,750.00	6,587.23	82.20	28.55	-69.37	1,387.62	261.65	4,977.96	4,915.52	62.44	79.723	
11,900.00	7,159.22	6,750.00	6,587.23	83.74	28.55	-69.37	1,387.62	261.65	5,072.56	5,010.04	62.51	81.144	
12,000.00	7,159.18	6,750.00	6,587.23	85.27	28.55	-69.37	1,387.62	261.65	5,167.36	5,104.78	62.58	82.567	
12,100.00	7,159.14	6,750.00	6,587.23	86.81	28.55	-69.37	1,387.62	261.65	5,262.36	5,199.70	62.65	83.992	
12,200.00	7,159.10	6,750.00	6,587.23	88.35	28.55	-69.37	1,387.62	261.65	5,357.53	5,294.81	62.72	85.419	
12,300.00	7,159.06	6,750.00	6,587.23	89.89	28.55	-69.37	1,387.62	261.65	5,452.88	5,390.10	62.79	86.846	
12,400.00	7,159.02	6,750.00	6,587.23	91.43	28.55	-69.37	1,387.62	261.65	5,548.40	5,485.54	62.85	88.275	
12,500.00	7,158.98	6,750.00	6,587.23	92.98	28.55	-69.37	1,387.62	261.65	5,644.07	5,581.15	62.92	89.705	
12,600.00	7,158.94	6,750.00	6,587.23	94.52	28.55	-69.37	1,387.62	261.65	5,739.88	5,676.90	62.98	91.134	
12,700.00	7,158.90	6,750.00	6,587.23	96.07	28.55	-69.37	1,387.62	261.65	5,835.84	5,772.79	63.05	92.565	
12,800.00	7,158.86	6,750.00	6,587.23	97.62	28.55	-69.37	1,387.62	261.65	5,931.93	5,868.82	63.11	93.995	
12,900.00	7,158.81	6,750.00	6,587.23	99.17	28.55	-69.37	1,387.62	261.65	6,028.15	5,964.98	63.17	95.426	
13,000.00	7,158.77	6,750.00	6,587.23	100.73	28.55	-69.37	1,387.62	261.65	6,124.49	6,061.25	63.23	96.856	
13,100.00	7,158.73	6,750.00	6,587.23	102.28	28.55	-69.37	1,387.62	261.65	6,220.94	6,157.65	63.29	98.286	
13,200.00	7,158.69	6,750.00	6,587.23	103.84	28.55	-69.37	1,387.62	261.65	6,317.51	6,254.15	63.36	99.715	
13,300.00	7,158.65	6,750.00	6,587.23	105.40	28.55	-69.37	1,387.62	261.65	6,414.18	6,350.76	63.42	101.143	
13,400.00	7,158.61	6,750.00	6,587.23	106.96	28.55	-69.37	1,387.62	261.65	6,510.95	6,447.47	63.48	102.571	
13,500.00	7,158.57	6,750.00	6,587.23	108.52	28.55	-69.37	1,387.62	261.65	6,607.82	6,544.28	63.54	103.998	
13,600.00	7,158.53	6,750.00	6,587.23	110.08	28.55	-69.37	1,387.62	261.65	6,704.77	6,641.18	63.60	105.423	
13,700.00	7,158.49	6,750.00	6,587.23	111.64	28.55	-69.37	1,387.62	261.65	6,801.82	6,738.16	63.66	106.848	
13,800.00	7,158.45	6,750.00	6,587.23	113.21	28.55	-69.37	1,387.62	261.65	6,898.95	6,835.23	63.72	108.271	
13,900.00	7,158.41	6,750.00	6,587.23	114.77	28.55	-69.37	1,387.62	261.65	6,996.16	6,932.38	63.78	109.693	
14,000.00	7,158.37	6,750.00	6,587.23	116.34	28.55	-69.37	1,387.62	261.65	7,093.45	7,029.61	63.84	111.113	

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 836H
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 836H	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												Rule Assigned:	
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)			
14,100.00	7,158.32	6,750.00	6,587.23	117.91	28.55	-69.37	1,387.62	261.65	7,190.82	7,126.92	63.90	112.531	
14,200.00	7,158.28	6,750.00	6,587.23	119.47	28.55	-69.37	1,387.62	261.65	7,288.25	7,224.29	63.96	113.948	
14,300.00	7,158.24	6,750.00	6,587.23	121.04	28.55	-69.37	1,387.62	261.65	7,385.76	7,321.74	64.02	115.363	
14,400.00	7,158.20	6,750.00	6,587.23	122.61	28.55	-69.37	1,387.62	261.65	7,483.33	7,419.24	64.08	116.776	
14,500.00	7,158.16	6,750.00	6,587.23	124.18	28.55	-69.37	1,387.62	261.65	7,580.96	7,516.82	64.14	118.187	
14,600.00	7,158.12	6,750.00	6,587.23	125.76	28.55	-69.37	1,387.62	261.65	7,678.65	7,614.45	64.21	119.596	
14,700.00	7,158.08	6,750.00	6,587.23	127.33	28.55	-69.37	1,387.62	261.65	7,776.41	7,712.14	64.27	121.002	
14,800.00	7,158.04	6,750.00	6,587.23	128.90	28.55	-69.37	1,387.62	261.65	7,874.22	7,809.89	64.33	122.407	
14,900.00	7,158.00	6,750.00	6,587.23	130.47	28.55	-69.37	1,387.62	261.65	7,972.08	7,907.69	64.39	123.809	
15,000.00	7,157.96	6,750.00	6,587.23	132.05	28.55	-69.37	1,387.62	261.65	8,070.00	8,005.54	64.45	125.208	
15,100.00	7,157.92	6,750.00	6,587.23	133.62	28.55	-69.37	1,387.62	261.65	8,167.96	8,103.45	64.52	126.605	
15,200.00	7,157.88	6,750.00	6,587.23	135.20	28.55	-69.37	1,387.62	261.65	8,265.98	8,201.40	64.58	128.000	
15,300.00	7,157.83	6,750.00	6,587.23	136.78	28.55	-69.37	1,387.62	261.65	8,364.04	8,299.40	64.64	129.392	
15,400.00	7,157.79	6,750.00	6,587.23	138.35	28.55	-69.37	1,387.62	261.65	8,462.15	8,397.44	64.70	130.781	
15,500.00	7,157.75	6,750.00	6,587.23	139.93	28.55	-69.37	1,387.62	261.65	8,560.30	8,495.53	64.77	132.168	
15,600.00	7,157.71	6,750.00	6,587.23	141.51	28.55	-69.37	1,387.62	261.65	8,658.49	8,593.66	64.83	133.552	
15,700.00	7,157.67	6,750.00	6,587.23	143.09	28.55	-69.37	1,387.62	261.65	8,756.73	8,691.83	64.90	134.933	
15,800.00	7,157.63	6,750.00	6,587.23	144.67	28.55	-69.37	1,387.62	261.65	8,855.00	8,790.04	64.96	136.311	
15,900.00	7,157.59	6,750.00	6,587.23	146.24	28.55	-69.37	1,387.62	261.65	8,953.31	8,888.29	65.03	137.686	
16,000.00	7,157.55	6,750.00	6,587.23	147.82	28.55	-69.37	1,387.62	261.65	9,051.66	8,986.57	65.09	139.058	
16,100.00	7,157.51	6,750.00	6,587.23	149.41	28.55	-69.37	1,387.62	261.65	9,150.05	9,084.89	65.16	140.427	
16,200.00	7,157.47	6,750.00	6,587.23	150.99	28.55	-69.37	1,387.62	261.65	9,248.47	9,183.24	65.22	141.794	
16,300.00	7,157.43	6,750.00	6,587.23	152.57	28.55	-69.37	1,387.62	261.65	9,346.92	9,281.63	65.29	143.157	
16,400.00	7,157.38	6,750.00	6,587.23	154.15	28.55	-69.37	1,387.62	261.65	9,445.40	9,380.05	65.36	144.516	
16,500.00	7,157.34	6,750.00	6,587.23	155.73	28.55	-69.37	1,387.62	261.65	9,543.92	9,478.50	65.43	145.873	
16,600.00	7,157.30	6,750.00	6,587.23	157.31	28.55	-69.37	1,387.62	261.65	9,642.47	9,576.98	65.49	147.226	
16,680.84	7,157.27	6,750.00	6,587.23	158.59	28.55	-69.37	1,387.62	261.65	9,722.16	9,656.61	65.55	148.318	
16,687.46	7,157.27	6,750.00	6,587.23	158.70	28.55	-69.51	1,387.62	261.65	9,728.68	9,663.12	65.55	148.407	
16,700.00	7,157.26	6,750.00	6,587.23	158.90	28.55	-69.51	1,387.62	261.65	9,741.04	9,675.48	65.56	148.577	
16,800.00	7,157.22	6,750.00	6,587.23	160.48	28.55	-69.51	1,387.62	261.65	9,839.63	9,774.00	65.63	149.923	
16,900.00	7,157.18	6,750.00	6,587.23	162.06	28.55	-69.51	1,387.62	261.65	9,938.25	9,872.55	65.70	151.266	
17,000.00	7,157.14	6,750.00	6,587.23	163.65	28.55	-69.51	1,387.62	261.65	10,036.89	9,971.12	65.77	152.606	
17,100.00	7,157.10	6,750.00	6,587.23	165.23	28.55	-69.51	1,387.62	261.65	10,135.56	10,069.72	65.84	153.942	
17,200.00	7,157.06	6,750.00	6,587.23	166.82	28.55	-69.51	1,387.62	261.65	10,234.26	10,168.35	65.91	155.275	
17,300.00	7,157.02	6,750.00	6,587.23	168.40	28.55	-69.51	1,387.62	261.65	10,332.98	10,267.00	65.98	156.605	
17,400.00	7,156.98	6,750.00	6,587.23	169.99	28.55	-69.51	1,387.62	261.65	10,431.72	10,365.67	66.05	157.931	
17,500.00	7,156.94	6,750.00	6,587.23	171.57	28.55	-69.51	1,387.62	261.65	10,530.49	10,464.37	66.12	159.253	
17,600.00	7,156.90	6,750.00	6,587.23	173.16	28.55	-69.51	1,387.62	261.65	10,629.29	10,563.09	66.20	160.572	
17,700.00	7,156.85	6,750.00	6,587.23	174.75	28.55	-69.51	1,387.62	261.65	10,728.10	10,661.83	66.27	161.887	
17,800.00	7,156.81	6,750.00	6,587.23	176.33	28.55	-69.51	1,387.62	261.65	10,826.94	10,760.60	66.34	163.199	
17,900.00	7,156.77	6,750.00	6,587.23	177.92	28.55	-69.51	1,387.62	261.65	10,925.79	10,859.38	66.42	164.507	
18,000.00	7,156.73	6,750.00	6,587.23	179.51	28.55	-69.51	1,387.62	261.65	11,024.67	10,958.18	66.49	165.812	
18,100.00	7,156.69	6,750.00	6,587.23	181.09	28.55	-69.51	1,387.62	261.65	11,123.57	11,057.01	66.56	167.112	
18,200.00	7,156.65	6,750.00	6,587.23	182.68	28.55	-69.51	1,387.62	261.65	11,222.49	11,155.85	66.64	168.409	
18,300.00	7,156.61	6,750.00	6,587.23	184.27	28.55	-69.51	1,387.62	261.65	11,321.43	11,254.71	66.71	169.703	
18,400.00	7,156.57	6,750.00	6,587.23	185.86	28.55	-69.51	1,387.62	261.65	11,420.38	11,353.59	66.79	170.992	
18,500.00	7,156.53	6,750.00	6,587.23	187.45	28.55	-69.51	1,387.62	261.65	11,519.35	11,452.49	66.86	172.278	
18,600.00	7,156.49	6,750.00	6,587.23	189.03	28.55	-69.51	1,387.62	261.65	11,618.34	11,551.40	66.94	173.560	
18,700.00	7,156.45	6,750.00	6,587.23	190.62	28.55	-69.51	1,387.62	261.65	11,717.35	11,650.33	67.02	174.838	
18,800.00	7,156.41	6,750.00	6,587.23	192.21	28.55	-69.51	1,387.62	261.65	11,816.38	11,749.28	67.10	176.113	
18,900.00	7,156.37	6,750.00	6,587.23	193.80	28.55	-69.51	1,387.62	261.65	11,915.42	11,848.25	67.17	177.383	
19,000.00	7,156.32	6,750.00	6,587.23	195.39	28.55	-69.51	1,387.62	261.65	12,014.48	11,947.22	67.25	178.650	

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 836H
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 836H	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		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	
19,100.00	7,156.28	6,750.00	6,587.23	196.98	28.55	-69.51	1,387.62	261.65	12,113.55	12,046.22	67.33	179.913	
19,200.00	7,156.24	6,750.00	6,587.23	198.57	28.55	-69.51	1,387.62	261.65	12,212.64	12,145.23	67.41	181.172	
19,300.00	7,156.20	6,750.00	6,587.23	200.16	28.55	-69.51	1,387.62	261.65	12,311.74	12,244.25	67.49	182.427	
19,400.00	7,156.16	6,750.00	6,587.23	201.75	28.55	-69.51	1,387.62	261.65	12,410.85	12,343.29	67.57	183.678	
19,500.00	7,156.12	6,750.00	6,587.23	203.34	28.55	-69.51	1,387.62	261.65	12,509.99	12,442.34	67.65	184.926	
19,600.00	7,156.08	6,750.00	6,587.23	204.93	28.55	-69.51	1,387.62	261.65	12,609.13	12,541.40	67.73	186.169	
19,700.00	7,156.04	6,750.00	6,587.23	206.52	28.55	-69.51	1,387.62	261.65	12,708.29	12,640.48	67.81	187.409	
19,800.00	7,156.00	6,750.00	6,587.23	208.11	28.55	-69.51	1,387.62	261.65	12,807.46	12,739.57	67.89	188.644	
19,900.00	7,155.96	6,750.00	6,587.23	209.71	28.55	-69.51	1,387.62	261.65	12,906.64	12,838.67	67.97	189.876	
20,000.00	7,155.92	6,750.00	6,587.23	211.30	28.55	-69.51	1,387.62	261.65	13,005.84	12,937.78	68.06	191.104	
20,100.00	7,155.88	6,750.00	6,587.23	212.89	28.55	-69.51	1,387.62	261.65	13,105.05	13,036.91	68.14	192.327	
20,200.00	7,155.84	6,750.00	6,587.23	214.48	28.55	-69.51	1,387.62	261.65	13,204.27	13,136.04	68.22	193.547	
20,300.00	7,155.79	6,750.00	6,587.23	216.07	28.55	-69.51	1,387.62	261.65	13,303.50	13,235.19	68.31	194.763	
20,400.00	7,155.75	6,750.00	6,587.23	217.66	28.55	-69.51	1,387.62	261.65	13,402.74	13,334.35	68.39	195.975	
20,500.00	7,155.71	6,750.00	6,587.23	219.26	28.55	-69.51	1,387.62	261.65	13,502.00	13,433.52	68.47	197.182	
20,600.00	7,155.67	6,750.00	6,587.23	220.85	28.55	-69.51	1,387.62	261.65	13,601.26	13,532.70	68.56	198.386	
20,700.00	7,155.63	6,750.00	6,587.23	222.44	28.55	-69.51	1,387.62	261.65	13,700.54	13,631.89	68.64	199.586	
20,800.00	7,155.59	6,750.00	6,587.23	224.03	28.55	-69.51	1,387.62	261.65	13,799.83	13,731.10	68.73	200.782	
20,900.00	7,155.55	6,750.00	6,587.23	225.63	28.55	-69.51	1,387.62	261.65	13,899.12	13,830.31	68.82	201.973	
21,000.00	7,155.51	6,750.00	6,587.23	227.22	28.55	-69.51	1,387.62	261.65	13,998.43	13,929.53	68.90	203.161	
21,100.00	7,155.47	6,750.00	6,587.23	228.81	28.55	-69.51	1,387.62	261.65	14,097.75	14,028.76	68.99	204.345	
21,200.00	7,155.43	6,750.00	6,587.23	230.40	28.55	-69.51	1,387.62	261.65	14,197.07	14,128.00	69.08	205.525	
21,300.00	7,155.39	6,750.00	6,587.23	232.00	28.55	-69.51	1,387.62	261.65	14,296.41	14,227.24	69.16	206.700	
21,400.00	7,155.35	6,750.00	6,587.23	233.59	28.55	-69.51	1,387.62	261.65	14,395.75	14,326.50	69.25	207.872	
21,500.00	7,155.31	6,750.00	6,587.23	235.18	28.55	-69.51	1,387.62	261.65	14,495.11	14,425.77	69.34	209.040	
21,600.00	7,155.26	6,750.00	6,587.23	236.78	28.55	-69.51	1,387.62	261.65	14,594.47	14,525.04	69.43	210.203	
21,700.00	7,155.22	6,750.00	6,587.23	238.37	28.55	-69.51	1,387.62	261.65	14,693.84	14,624.32	69.52	211.363	
21,800.00	7,155.18	6,750.00	6,587.23	239.96	28.55	-69.51	1,387.62	261.65	14,793.22	14,723.61	69.61	212.518	
21,900.00	7,155.14	6,750.00	6,587.23	241.56	28.55	-69.51	1,387.62	261.65	14,892.61	14,822.91	69.70	213.670	
21,953.88	7,155.12	6,750.00	6,587.23	242.42	28.55	-69.51	1,387.62	261.65	14,946.16	14,876.42	69.75	214.289	
22,000.00	7,155.10	6,750.00	6,587.23	243.15	28.55	-67.93	1,387.62	261.65	14,992.02	14,922.24	69.79	214.818	
22,019.01	7,155.09	6,750.00	6,587.23	243.46	28.55	-67.20	1,387.62	261.65	15,010.94	14,941.13	69.81	215.035	
22,100.00	7,155.06	6,750.00	6,587.23	244.75	28.55	-67.20	1,387.62	261.65	15,091.54	15,021.65	69.88	215.962	
22,200.00	7,155.02	6,750.00	6,587.23	246.34	28.55	-67.20	1,387.62	261.65	15,191.06	15,121.08	69.97	217.103	
22,300.00	7,154.97	6,750.00	6,587.23	247.94	28.55	-67.20	1,387.62	261.65	15,290.58	15,220.52	70.06	218.239	
22,400.00	7,154.93	6,750.00	6,587.23	249.53	28.55	-67.20	1,387.62	261.65	15,390.11	15,319.96	70.16	219.372	
22,500.00	7,154.89	6,750.00	6,587.23	251.13	28.55	-67.20	1,387.62	261.65	15,489.65	15,419.40	70.25	220.501	
22,600.00	7,154.85	6,750.00	6,587.23	252.72	28.55	-67.20	1,387.62	261.65	15,589.20	15,518.86	70.34	221.625	
22,700.00	7,154.80	6,750.00	6,587.23	254.32	28.55	-67.20	1,387.62	261.65	15,688.75	15,618.31	70.43	222.746	
22,800.00	7,154.76	6,750.00	6,587.23	255.91	28.55	-67.20	1,387.62	261.65	15,788.30	15,717.77	70.53	223.862	
22,900.00	7,154.72	6,750.00	6,587.23	257.51	28.55	-67.20	1,387.62	261.65	15,887.86	15,817.24	70.62	224.975	
23,000.00	7,154.68	6,750.00	6,587.23	259.11	28.55	-67.20	1,387.62	261.65	15,987.43	15,916.71	70.71	226.083	
23,100.00	7,154.63	6,750.00	6,587.23	260.70	28.55	-67.20	1,387.62	261.65	16,087.00	16,016.19	70.81	227.187	
23,200.00	7,154.59	6,750.00	6,587.23	262.30	28.55	-67.20	1,387.62	261.65	16,186.58	16,115.67	70.90	228.288	
23,300.00	7,154.55	6,750.00	6,587.23	263.89	28.55	-67.20	1,387.62	261.65	16,286.16	16,215.16	71.00	229.384	
23,400.00	7,154.51	6,750.00	6,587.23	265.49	28.55	-67.20	1,387.62	261.65	16,385.75	16,314.65	71.10	230.477	
23,500.00	7,154.47	6,750.00	6,587.23	267.08	28.55	-67.20	1,387.62	261.65	16,485.34	16,414.15	71.19	231.565	
23,600.00	7,154.42	6,750.00	6,587.23	268.68	28.55	-67.20	1,387.62	261.65	16,584.94	16,513.65	71.29	232.649	
23,700.00	7,154.38	6,750.00	6,587.23	270.28	28.55	-67.20	1,387.62	261.65	16,684.54	16,613.16	71.38	233.730	
23,800.00	7,154.34	6,750.00	6,587.23	271.87	28.55	-67.20	1,387.62	261.65	16,784.15	16,712.67	71.48	234.806	
23,900.00	7,154.30	6,750.00	6,587.23	273.47	28.55	-67.20	1,387.62	261.65	16,883.76	16,812.18	71.58	235.878	
24,000.00	7,154.25	6,750.00	6,587.23	275.07	28.55	-67.20	1,387.62	261.65	16,983.38	16,911.70	71.68	236.947	

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 836H
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 836H	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)			
24,100.00	7,154.21	6,750.00	6,587.23	276.66	28.55	-67.20	1,387.62	261.65	17,083.00	17,011.22	71.77	238.011	
24,200.00	7,154.17	6,750.00	6,587.23	278.26	28.55	-67.20	1,387.62	261.65	17,182.62	17,110.75	71.87	239.072	
24,300.00	7,154.13	6,750.00	6,587.23	279.86	28.55	-67.20	1,387.62	261.65	17,282.25	17,210.28	71.97	240.129	
24,400.00	7,154.08	6,750.00	6,587.23	281.45	28.55	-67.20	1,387.62	261.65	17,381.89	17,309.82	72.07	241.181	
24,500.00	7,154.04	6,750.00	6,587.23	283.05	28.55	-67.20	1,387.62	261.65	17,481.52	17,409.35	72.17	242.230	
24,597.25	7,154.00	6,750.00	6,587.23	284.60	28.55	-67.20	1,387.62	261.65	17,578.42	17,506.16	72.27	243.246	
24,600.00	7,154.00	6,750.00	6,587.23	284.65	28.55	-67.33	1,387.62	261.65	17,581.17	17,508.90	72.27	243.275	
24,700.00	7,153.96	6,750.00	6,587.23	286.24	28.55	-71.16	1,387.62	261.65	17,680.74	17,608.37	72.37	244.315	
24,722.47	7,153.95	6,750.00	6,587.23	286.60	28.55	-71.86	1,387.62	261.65	17,703.09	17,630.70	72.39	244.548	
24,800.00	7,153.92	6,750.00	6,587.23	287.84	28.55	-71.86	1,387.62	261.65	17,780.20	17,707.73	72.47	245.351	
24,900.00	7,153.88	6,750.00	6,587.23	289.43	28.55	-71.86	1,387.62	261.65	17,879.66	17,807.09	72.57	246.382	
25,000.00	7,153.84	6,750.00	6,587.23	291.03	28.55	-71.86	1,387.62	261.65	17,979.13	17,906.47	72.67	247.409	
25,100.00	7,153.80	6,750.00	6,587.23	292.63	28.55	-71.86	1,387.62	261.65	18,078.61	18,005.84	72.77	248.432	
25,200.00	7,153.77	6,750.00	6,587.23	294.22	28.55	-71.86	1,387.62	261.65	18,178.09	18,105.22	72.87	249.452	
25,300.00	7,153.73	6,750.00	6,587.23	295.82	28.55	-71.86	1,387.62	261.65	18,277.58	18,204.61	72.97	250.468	
25,400.00	7,153.69	6,750.00	6,587.23	297.41	28.55	-71.86	1,387.62	261.65	18,377.08	18,304.00	73.08	251.480	
25,500.00	7,153.65	6,750.00	6,587.23	299.01	28.55	-71.86	1,387.62	261.65	18,476.58	18,403.40	73.18	252.488	
25,600.00	7,153.61	6,750.00	6,587.23	300.60	28.55	-71.86	1,387.62	261.65	18,576.08	18,502.80	73.28	253.492	
25,700.00	7,153.57	6,750.00	6,587.23	302.20	28.55	-71.86	1,387.62	261.65	18,675.59	18,602.21	73.38	254.493	
25,800.00	7,153.53	6,750.00	6,587.23	303.80	28.55	-71.86	1,387.62	261.65	18,775.11	18,701.62	73.49	255.489	
25,900.00	7,153.50	6,750.00	6,587.23	305.39	28.55	-71.86	1,387.62	261.65	18,874.63	18,801.04	73.59	256.482	
26,000.00	7,153.46	6,750.00	6,587.23	306.99	28.55	-71.86	1,387.62	261.65	18,974.15	18,900.46	73.69	257.471	
26,100.00	7,153.42	6,750.00	6,587.23	308.58	28.55	-71.86	1,387.62	261.65	19,073.68	18,999.88	73.80	258.457	
26,200.00	7,153.38	6,750.00	6,587.23	310.18	28.55	-71.86	1,387.62	261.65	19,173.22	19,099.31	73.90	259.439	
26,300.00	7,153.34	6,750.00	6,587.23	311.78	28.55	-71.86	1,387.62	261.65	19,272.76	19,198.75	74.01	260.417	
26,400.00	7,153.30	6,750.00	6,587.23	313.37	28.55	-71.86	1,387.62	261.65	19,372.30	19,298.19	74.11	261.391	
26,500.00	7,153.26	6,750.00	6,587.23	314.97	28.55	-71.86	1,387.62	261.65	19,471.85	19,397.63	74.22	262.361	
26,600.00	7,153.23	6,750.00	6,587.23	316.57	28.55	-71.86	1,387.62	261.65	19,571.40	19,497.08	74.32	263.328	
26,700.00	7,153.19	6,750.00	6,587.23	318.16	28.55	-71.86	1,387.62	261.65	19,670.96	19,596.53	74.43	264.291	
26,800.00	7,153.15	6,750.00	6,587.23	319.76	28.55	-71.86	1,387.62	261.65	19,770.53	19,695.99	74.54	265.251	
26,900.00	7,153.11	6,750.00	6,587.23	321.35	28.55	-71.86	1,387.62	261.65	19,870.09	19,795.45	74.64	266.206	
26,976.35	7,153.08	6,750.00	6,587.23	322.57	28.55	-71.86	1,387.62	261.65	19,946.11	19,871.39	74.72	266.934	
27,000.00	7,153.07	6,750.00	6,587.23	322.95	28.55	-71.86	1,387.62	261.65	19,969.67	19,894.92	74.75	267.159	
27,100.00	7,153.03	6,750.00	6,587.23	324.55	28.55	-71.86	1,387.62	261.65	20,069.24	19,994.39	74.86	268.107	
27,176.36	7,153.00	6,750.00	6,587.23	325.77	28.55	-71.86	1,387.62	261.65	20,145.28	20,070.34	74.94	268.829	

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 836H
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 836H	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	Highside	Offset Wellbore Centre	Distance	Distance	No-Go	Separation	Warning						
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Distance (usft)	Factor					
0.00	0.00	0.00	0.00	0.00	0.00	35.26	12.41	8.78	15.20								
125.00	125.00	125.00	125.00	0.06	0.06	-101.22	12.29	8.93	15.26	15.20	0.07	222.953					
225.00	225.00	225.02	225.02	0.17	0.19	-34.81	11.89	9.35	14.87	14.66	0.21	70.416					
312.00	311.99	312.01	312.00	0.28	0.31	-95.24	11.37	9.92	14.49	14.14	0.34	42.361					
321.94	321.94	321.95	321.95	0.29	0.32	-95.12	11.31	9.99	14.49	14.13	0.36	40.429	CC, ES				
400.00	399.99	322.00	321.99	0.37	0.32	-95.12	11.31	9.99	79.34	76.68	2.66	29.856					
462.00	461.99	322.00	321.99	0.50	0.32	-95.12	11.31	9.99	140.76	138.05	2.70	52.097					
509.18	509.16	322.00	321.99	0.64	0.32	-111.62	11.31	9.99	187.76	185.04	2.72	69.011					
600.00	599.96	322.00	321.99	0.94	0.32	-111.62	11.31	9.99	278.44	275.69	2.75	101.183					
700.00	699.94	322.00	321.99	1.28	0.32	-111.62	11.31	9.99	378.36	375.57	2.79	135.732					
800.00	799.92	322.00	321.99	1.63	0.32	-111.62	11.31	9.99	478.32	475.49	2.83	169.171					
900.00	899.89	322.00	321.99	1.98	0.32	-111.62	11.31	9.99	578.29	575.41	2.87	201.374					
1,000.00	999.87	322.00	321.99	2.34	0.32	-111.62	11.31	9.99	678.26	675.34	2.92	232.245					
1,100.00	1,099.84	322.00	321.99	2.69	0.32	-111.62	11.31	9.99	778.25	775.27	2.97	261.719					
1,200.00	1,199.82	322.00	321.99	3.05	0.32	-111.62	11.31	9.99	878.24	875.21	3.03	289.754					
1,300.00	1,299.80	322.00	321.99	3.41	0.32	-111.62	11.31	9.99	978.23	975.13	3.09	316.328					
1,400.00	1,399.77	322.00	321.99	3.77	0.32	-111.62	11.31	9.99	1,078.22	1,075.06	3.16	341.437					
1,500.00	1,499.75	322.00	321.99	4.13	0.32	-111.62	11.31	9.99	1,178.21	1,174.98	3.23	365.093					
1,600.00	1,599.72	322.00	321.99	4.49	0.32	-111.62	11.31	9.99	1,278.21	1,274.91	3.30	387.321					
1,700.00	1,699.70	322.00	321.99	4.85	0.32	-111.62	11.31	9.99	1,378.20	1,374.83	3.38	408.155					
1,800.00	1,799.68	322.00	321.99	5.21	0.32	-111.62	11.31	9.99	1,478.20	1,474.74	3.46	427.637					
1,900.00	1,899.65	322.00	321.99	5.57	0.32	-111.62	11.31	9.99	1,578.19	1,574.65	3.54	445.815					
2,000.00	1,999.63	322.00	321.99	5.93	0.32	-111.62	11.31	9.99	1,678.19	1,674.56	3.63	462.741					
2,100.00	2,099.60	322.00	321.99	6.29	0.32	-111.62	11.31	9.99	1,778.19	1,774.47	3.72	478.470					
2,200.00	2,199.58	322.00	321.99	6.65	0.32	-111.62	11.31	9.99	1,878.19	1,874.38	3.81	493.058					
2,300.00	2,299.56	322.00	321.99	7.01	0.32	-111.62	11.31	9.99	1,978.18	1,974.28	3.91	506.561					
2,400.00	2,399.53	322.00	321.99	7.37	0.32	-111.62	11.31	9.99	2,078.18	2,074.18	4.00	519.035					
2,500.00	2,499.51	322.00	321.99	7.73	0.32	-111.62	11.31	9.99	2,178.18	2,174.07	4.11	530.535					
2,600.00	2,599.48	322.00	321.99	8.09	0.32	-111.62	11.31	9.99	2,278.18	2,273.97	4.21	541.114					
2,700.00	2,699.46	322.00	321.99	8.45	0.32	-111.62	11.31	9.99	2,378.18	2,373.86	4.32	550.825					
2,800.00	2,799.44	322.00	321.99	8.81	0.32	-111.62	11.31	9.99	2,478.18	2,473.75	4.43	559.717					
2,900.00	2,899.41	322.00	321.99	9.17	0.32	-111.62	11.31	9.99	2,578.17	2,573.63	4.54	567.837					
3,000.00	2,999.39	322.00	321.99	9.53	0.32	-111.62	11.31	9.99	2,678.17	2,673.52	4.66	575.232					
3,100.00	3,099.36	322.00	321.99	9.89	0.32	-111.62	11.31	9.99	2,778.17	2,773.40	4.77	581.944					
3,200.00	3,199.34	322.00	321.99	10.25	0.32	-111.62	11.31	9.99	2,878.17	2,873.28	4.89	588.014					
3,300.00	3,299.32	322.00	321.99	10.61	0.32	-111.62	11.31	9.99	2,978.17	2,973.15	5.02	593.481					
3,400.00	3,399.29	322.00	321.99	10.97	0.32	-111.62	11.31	9.99	3,078.17	3,073.02	5.14	598.382					
3,500.00	3,499.27	322.00	321.99	11.33	0.32	-111.62	11.31	9.99	3,178.17	3,172.89	5.27	602.751					
3,600.00	3,599.25	322.00	321.99	11.69	0.32	-111.62	11.31	9.99	3,278.17	3,272.76	5.40	606.621					
3,700.00	3,699.22	322.00	321.99	12.05	0.32	-111.62	11.31	9.99	3,378.17	3,372.63	5.54	610.022					
3,800.00	3,799.20	322.00	321.99	12.41	0.32	-111.62	11.31	9.99	3,478.17	3,472.49	5.67	612.985					
3,900.00	3,899.17	322.00	321.99	12.77	0.32	-111.62	11.31	9.99	3,578.16	3,572.35	5.81	615.534					
4,000.00	3,999.15	322.00	321.99	13.13	0.32	-111.62	11.31	9.99	3,678.16	3,672.21	5.95	617.697					
4,100.00	4,099.13	322.00	321.99	13.49	0.32	-111.62	11.31	9.99	3,778.16	3,772.06	6.10	619.498					
4,200.00	4,199.10	322.00	321.99	13.85	0.32	-111.62	11.31	9.99	3,878.16	3,871.92	6.25	620.958					
4,300.00	4,299.08	322.00	321.99	14.21	0.32	-111.62	11.31	9.99	3,978.16	3,971.77	6.39	622.100					
4,400.00	4,399.05	322.00	321.99	14.57	0.32	-111.62	11.31	9.99	4,078.16	4,071.62	6.55	622.943					
4,500.00	4,499.03	322.00	321.99	14.93	0.32	-111.62	11.31	9.99	4,178.16	4,171.46	6.70	623.506					
4,600.00	4,599.01	322.00	321.99	15.29	0.32	-111.62	11.31	9.99	4,278.16	4,271.30	6.86	623.808					
4,700.00	4,698.98	322.00	321.99	15.65	0.32	-111.62	11.31	9.99	4,378.16	4,371.14	7.02	623.864					
4,800.00	4,798.96	322.00	321.99	16.01	0.32	-111.62	11.31	9.99	4,478.16	4,470.98	7.18	623.690					
4,900.00	4,898.93	322.00	321.99	16.37	0.32	-111.62	11.31	9.99	4,578.16	4,570.81	7.35	623.302					

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 836H
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 836H	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)			
5,000.00	4,998.91	322.00	321.99	16.73	0.32	-111.62	11.31	9.99	4,678.16	4,670.65	7.51	622.713	
5,100.00	5,098.89	322.00	321.99	17.09	0.32	-111.62	11.31	9.99	4,778.16	4,770.48	7.68	621.936	
5,200.00	5,198.86	322.00	321.99	17.45	0.32	-111.62	11.31	9.99	4,878.16	4,870.30	7.86	620.983	
5,300.00	5,298.84	322.00	321.99	17.81	0.32	-111.62	11.31	9.99	4,978.16	4,970.13	8.03	619.867	
5,400.00	5,398.81	322.00	321.99	18.17	0.32	-111.62	11.31	9.99	5,078.16	5,069.95	8.21	618.598	
5,500.00	5,498.79	322.00	321.99	18.53	0.32	-111.62	11.31	9.99	5,178.16	5,169.77	8.39	617.186	
5,600.00	5,598.77	322.00	321.99	18.89	0.32	-111.62	11.31	9.99	5,278.16	5,269.58	8.57	615.641	
5,700.00	5,698.74	322.00	321.99	19.25	0.32	-111.62	11.31	9.99	5,378.16	5,369.40	8.76	613.973	
5,800.00	5,798.72	322.00	321.99	19.61	0.32	-111.62	11.31	9.99	5,478.16	5,469.21	8.95	612.190	
5,900.00	5,898.69	322.00	321.99	19.97	0.32	-111.62	11.31	9.99	5,578.16	5,569.02	9.14	610.300	
6,000.00	5,998.67	322.00	321.99	20.33	0.32	-111.62	11.31	9.99	5,678.16	5,668.82	9.33	608.310	
6,100.00	6,098.65	322.00	321.99	20.69	0.32	-111.62	11.31	9.99	5,778.16	5,768.62	9.53	606.229	
6,200.00	6,198.62	322.00	321.99	21.05	0.32	-111.62	11.31	9.99	5,878.16	5,868.42	9.73	604.063	
6,300.00	6,298.60	322.00	321.99	21.41	0.32	-111.62	11.31	9.99	5,978.16	5,968.22	9.93	601.817	
6,400.00	6,398.57	322.00	321.99	21.77	0.32	-111.62	11.31	9.99	6,078.16	6,068.02	10.14	599.500	
6,500.00	6,498.55	322.00	321.99	22.13	0.32	-111.62	11.31	9.99	6,178.16	6,167.81	10.35	597.115	
6,531.56	6,530.10	322.00	321.99	22.25	0.32	-111.62	11.31	9.99	6,209.71	6,199.30	10.41	596.349	
6,550.00	6,548.53	322.00	321.99	22.31	0.32	-30.77	11.31	9.99	6,228.15	6,217.70	10.45	595.906	
6,600.00	6,598.36	322.00	321.99	22.49	0.32	-10.59	11.31	9.99	6,278.02	6,267.46	10.56	594.772	
6,650.00	6,647.74	322.00	321.99	22.67	0.32	-6.37	11.31	9.99	6,327.47	6,316.81	10.66	593.798	
6,700.00	6,696.35	322.00	321.99	22.84	0.32	-4.57	11.31	9.99	6,376.20	6,365.45	10.75	592.996	
6,750.00	6,743.90	322.00	321.99	23.01	0.32	-3.58	11.31	9.99	6,423.95	6,413.10	10.84	592.358	
6,800.00	6,790.11	322.00	321.99	23.18	0.32	-2.95	11.31	9.99	6,470.43	6,459.50	10.93	591.866	
6,850.00	6,834.67	322.00	321.99	23.35	0.32	-2.53	11.31	9.99	6,515.40	6,504.38	11.02	591.494	
6,900.00	6,877.32	322.00	321.99	23.51	0.32	-2.22	11.31	9.99	6,558.60	6,547.51	11.09	591.204	
6,950.00	6,917.80	322.00	321.99	23.68	0.32	-1.99	11.31	9.99	6,599.82	6,588.65	11.17	590.946	
7,000.00	6,955.85	322.00	321.99	23.85	0.32	-1.82	11.31	9.99	6,638.83	6,627.59	11.24	590.657	
7,050.00	6,991.24	322.00	321.99	24.03	0.32	-1.68	11.31	9.99	6,675.44	6,664.13	11.31	590.260	
7,100.00	7,023.76	322.00	321.99	24.22	0.32	-1.57	11.31	9.99	6,709.45	6,698.07	11.38	589.670	
7,150.00	7,053.20	322.00	321.99	24.42	0.32	-1.48	11.31	9.99	6,740.71	6,729.26	11.45	588.792	
7,200.00	7,079.37	322.00	321.99	24.63	0.32	-1.41	11.31	9.99	6,769.06	6,757.54	11.52	587.531	
7,250.00	7,102.13	322.00	321.99	24.86	0.32	-1.35	11.31	9.99	6,794.36	6,782.76	11.60	585.790	
7,300.00	7,121.32	322.00	321.99	25.10	0.32	-1.31	11.31	9.99	6,816.48	6,804.80	11.68	583.484	
7,350.00	7,136.84	322.00	321.99	25.35	0.32	-1.28	11.31	9.99	6,835.34	6,823.56	11.77	580.540	
7,400.00	7,148.58	322.00	321.99	25.62	0.32	-1.25	11.31	9.99	6,850.83	6,838.95	11.88	576.905	
7,450.00	7,156.47	322.00	321.99	25.90	0.32	-1.24	11.31	9.99	6,862.88	6,850.89	11.99	572.552	
7,500.00	7,160.47	322.00	321.99	26.20	0.32	-1.23	11.31	9.99	6,871.44	6,859.33	12.11	567.480	
7,526.22	7,161.00	322.00	321.99	26.36	0.32	-1.23	11.31	9.99	6,874.52	6,862.34	12.18	564.584	
7,600.00	7,160.97	322.00	321.99	26.83	0.32	-1.23	11.31	9.99	6,882.20	6,869.81	12.39	555.426	
7,700.00	7,160.93	322.00	321.99	27.53	0.32	-1.23	11.31	9.99	6,893.87	6,881.14	12.72	541.817	
7,800.00	7,160.89	322.00	321.99	28.32	0.32	-1.23	11.31	9.99	6,906.96	6,893.86	13.10	527.289	
7,900.00	7,160.85	322.00	321.99	29.16	0.32	-1.23	11.31	9.99	6,921.47	6,907.96	13.51	512.232	
8,000.00	7,160.81	322.00	321.99	30.07	0.32	-1.23	11.31	9.99	6,937.39	6,923.43	13.96	496.974	
8,100.00	7,160.77	322.00	321.99	31.04	0.32	-1.23	11.31	9.99	6,954.72	6,940.28	14.44	481.784	
8,200.00	7,160.73	322.00	321.99	32.06	0.32	-1.23	11.31	9.99	6,973.43	6,958.49	14.94	466.867	
8,300.00	7,160.69	322.00	321.99	33.12	0.32	-1.23	11.31	9.99	6,993.53	6,978.07	15.46	452.376	
8,400.00	7,160.65	322.00	321.99	34.23	0.32	-1.23	11.31	9.99	7,014.99	6,998.99	16.00	438.421	
8,500.00	7,160.60	322.00	321.99	35.37	0.32	-1.23	11.31	9.99	7,037.81	7,021.25	16.56	425.069	
8,600.00	7,160.56	322.00	321.99	36.55	0.32	-1.23	11.31	9.99	7,061.97	7,044.84	17.13	412.364	
8,700.00	7,160.52	322.00	321.99	37.76	0.32	-1.23	11.31	9.99	7,087.46	7,069.75	17.70	400.323	
8,800.00	7,160.48	322.00	321.99	38.99	0.32	-1.23	11.31	9.99	7,114.26	7,095.97	18.29	388.949	
8,900.00	7,160.44	322.00	321.99	40.26	0.32	-1.23	11.31	9.99	7,142.37	7,123.48	18.88	378.231	

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 836H
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 836H	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)				
9,000.00	7,160.40	322.00	321.99	41.54	0.32	-1.23	11.31	9.99	7,171.75	7,152.27	19.48	368.151		
9,100.00	7,160.36	322.00	321.99	42.85	0.32	-1.23	11.31	9.99	7,202.41	7,182.33	20.08	358.684		
9,200.00	7,160.32	322.00	321.99	44.18	0.32	-1.23	11.31	9.99	7,234.32	7,213.64	20.68	349.804		
9,300.00	7,160.28	322.00	321.99	45.53	0.32	-1.23	11.31	9.99	7,267.47	7,246.18	21.28	341.480		
9,400.00	7,160.24	322.00	321.99	46.89	0.32	-1.23	11.31	9.99	7,301.83	7,279.95	21.88	333.683		
9,500.00	7,160.20	322.00	321.99	48.26	0.32	-1.23	11.31	9.99	7,337.40	7,314.92	22.48	326.382		
9,600.00	7,160.16	322.00	321.99	49.65	0.32	-1.23	11.31	9.99	7,374.15	7,351.07	23.08	319.547		
9,700.00	7,160.12	322.00	321.99	51.05	0.32	-1.23	11.31	9.99	7,412.07	7,388.40	23.67	313.151		
9,800.00	7,160.08	322.00	321.99	52.47	0.32	-1.23	11.31	9.99	7,451.13	7,426.88	24.26	307.165		
9,900.00	7,160.04	322.00	321.99	53.89	0.32	-1.23	11.31	9.99	7,491.33	7,466.49	24.84	301.565		
10,000.00	7,160.00	322.00	321.99	55.33	0.32	-1.23	11.31	9.99	7,532.64	7,507.22	25.42	296.325		
10,100.00	7,159.95	322.00	321.99	56.77	0.32	-1.23	11.31	9.99	7,575.05	7,549.06	25.99	291.424		
10,200.00	7,159.91	322.00	321.99	58.22	0.32	-1.23	11.31	9.99	7,618.53	7,591.97	26.56	286.838		
10,300.00	7,159.87	322.00	321.99	59.68	0.32	-1.23	11.31	9.99	7,663.08	7,635.95	27.12	282.549		
10,400.00	7,159.83	322.00	321.99	61.15	0.32	-1.23	11.31	9.99	7,708.66	7,680.98	27.68	278.537		
10,500.00	7,159.79	322.00	321.99	62.62	0.32	-1.23	11.31	9.99	7,755.26	7,727.04	28.22	274.786		
10,600.00	7,159.75	322.00	321.99	64.10	0.32	-1.23	11.31	9.99	7,802.87	7,774.10	28.76	271.279		
10,700.00	7,159.71	322.00	321.99	65.58	0.32	-1.23	11.31	9.99	7,851.46	7,822.16	29.30	268.001		
10,800.00	7,159.67	322.00	321.99	67.07	0.32	-1.23	11.31	9.99	7,901.02	7,871.19	29.82	264.938		
10,900.00	7,159.63	322.00	321.99	68.57	0.32	-1.23	11.31	9.99	7,951.52	7,921.18	30.34	262.077		
11,000.00	7,159.59	322.00	321.99	70.07	0.32	-1.23	11.31	9.99	8,002.96	7,972.11	30.85	259.406		
11,100.00	7,159.55	322.00	321.99	71.57	0.32	-1.23	11.31	9.99	8,055.31	8,023.96	31.35	256.914		
11,200.00	7,159.51	322.00	321.99	73.08	0.32	-1.23	11.31	9.99	8,108.56	8,076.71	31.85	254.590		
11,300.00	7,159.47	322.00	321.99	74.59	0.32	-1.23	11.31	9.99	8,162.68	8,130.35	32.34	252.426		
11,400.00	7,159.43	322.00	321.99	76.11	0.32	-1.23	11.31	9.99	8,217.67	8,184.85	32.82	250.411		
11,500.00	7,159.39	322.00	321.99	77.63	0.32	-1.23	11.31	9.99	8,273.50	8,240.21	33.29	248.537		
11,600.00	7,159.35	322.00	321.99	79.15	0.32	-1.23	11.31	9.99	8,330.15	8,296.40	33.75	246.796		
11,638.27	7,159.33	322.00	321.99	79.73	0.32	-1.23	11.31	9.99	8,352.05	8,318.12	33.93	246.164		
11,640.51	7,159.33	322.00	321.99	79.77	0.32	-1.24	11.31	9.99	8,353.33	8,319.39	33.94	246.127		
11,700.00	7,159.30	322.00	321.99	80.68	0.32	-1.24	11.31	9.99	8,387.61	8,353.40	34.21	245.182		
11,800.00	7,159.26	322.00	321.99	82.20	0.32	-1.24	11.31	9.99	8,445.87	8,411.21	34.66	243.687		
11,900.00	7,159.22	322.00	321.99	83.74	0.32	-1.24	11.31	9.99	8,504.90	8,469.80	35.10	242.304		
12,000.00	7,159.18	322.00	321.99	85.27	0.32	-1.24	11.31	9.99	8,564.70	8,529.16	35.53	241.029		
12,100.00	7,159.14	322.00	321.99	86.81	0.32	-1.24	11.31	9.99	8,625.23	8,589.27	35.96	239.855		
12,200.00	7,159.10	322.00	321.99	88.35	0.32	-1.24	11.31	9.99	8,686.50	8,650.12	36.38	238.777		
12,300.00	7,159.06	322.00	321.99	89.89	0.32	-1.24	11.31	9.99	8,748.48	8,711.69	36.79	237.790		
12,400.00	7,159.02	322.00	321.99	91.43	0.32	-1.24	11.31	9.99	8,811.16	8,773.97	37.20	236.890		
12,500.00	7,158.98	322.00	321.99	92.98	0.32	-1.24	11.31	9.99	8,874.53	8,836.94	37.59	236.072		
12,600.00	7,158.94	322.00	321.99	94.52	0.32	-1.24	11.31	9.99	8,938.56	8,900.58	37.98	235.332		
12,700.00	7,158.90	322.00	321.99	96.07	0.32	-1.24	11.31	9.99	9,003.25	8,964.89	38.37	234.667		
12,800.00	7,158.86	322.00	321.99	97.62	0.32	-1.24	11.31	9.99	9,068.58	9,029.84	38.74	234.072		
12,900.00	7,158.81	322.00	321.99	99.17	0.32	-1.24	11.31	9.99	9,134.54	9,095.43	39.11	233.545		
13,000.00	7,158.77	322.00	321.99	100.73	0.32	-1.24	11.31	9.99	9,201.12	9,161.64	39.48	233.082		
13,100.00	7,158.73	322.00	321.99	102.28	0.32	-1.24	11.31	9.99	9,268.29	9,228.46	39.83	232.681		
13,200.00	7,158.69	322.00	321.99	103.84	0.32	-1.24	11.31	9.99	9,336.05	9,295.87	40.18	232.338		
13,300.00	7,158.65	322.00	321.99	105.40	0.32	-1.24	11.31	9.99	9,404.39	9,363.86	40.53	232.051		
13,400.00	7,158.61	322.00	321.99	106.96	0.32	-1.24	11.31	9.99	9,473.28	9,432.42	40.87	231.817		
13,500.00	7,158.57	322.00	321.99	108.52	0.32	-1.24	11.31	9.99	9,542.73	9,501.54	41.20	231.634		
13,600.00	7,158.53	322.00	321.99	110.08	0.32	-1.24	11.31	9.99	9,612.72	9,571.20	41.52	231.500		
13,700.00	7,158.49	322.00	321.99	111.64	0.32	-1.24	11.31	9.99	9,683.24	9,641.39	41.84	231.412		
13,800.00	7,158.45	322.00	321.99	113.21	0.32	-1.24	11.31	9.99	9,754.27	9,712.11	42.16	231.369		
13,900.00	7,158.41	322.00	321.99	114.77	0.32	-1.24	11.31	9.99	9,825.80	9,783.33	42.47	231.368		

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 836H
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 836H	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 (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Semi Major Axis Offset	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
14,000.00	7,158.37	322.00	321.99	116.34	0.32	-1.24	11.31	9.99	9,897.83	9,855.06	42.77	231.408	
14,100.00	7,158.32	322.00	321.99	117.91	0.32	-1.24	11.31	9.99	9,970.34	9,927.27	43.07	231.487	
14,200.00	7,158.28	322.00	321.99	119.47	0.32	-1.24	11.31	9.99	10,043.32	9,999.96	43.36	231.604	
14,300.00	7,158.24	322.00	321.99	121.04	0.32	-1.24	11.31	9.99	10,116.77	10,073.12	43.65	231.756	
14,400.00	7,158.20	322.00	321.99	122.61	0.32	-1.24	11.31	9.99	10,190.66	10,146.73	43.94	231.943	
14,500.00	7,158.16	322.00	321.99	124.18	0.32	-1.24	11.31	9.99	10,265.00	10,220.79	44.21	232.163	
14,600.00	7,158.12	322.00	321.99	125.76	0.32	-1.24	11.31	9.99	10,339.77	10,295.29	44.49	232.414	
14,700.00	7,158.08	322.00	321.99	127.33	0.32	-1.24	11.31	9.99	10,414.97	10,370.21	44.76	232.695	
14,800.00	7,158.04	322.00	321.99	128.90	0.32	-1.24	11.31	9.99	10,490.58	10,445.56	45.02	233.006	
14,900.00	7,158.00	322.00	321.99	130.47	0.32	-1.24	11.31	9.99	10,566.59	10,521.31	45.28	233.345	
15,000.00	7,157.96	322.00	321.99	132.05	0.32	-1.24	11.31	9.99	10,643.00	10,597.47	45.54	233.710	
15,100.00	7,157.92	322.00	321.99	133.62	0.32	-1.24	11.31	9.99	10,719.80	10,674.01	45.79	234.102	
15,200.00	7,157.88	322.00	321.99	135.20	0.32	-1.24	11.31	9.99	10,796.98	10,750.94	46.04	234.518	
15,300.00	7,157.83	322.00	321.99	136.78	0.32	-1.24	11.31	9.99	10,874.53	10,828.25	46.28	234.957	
15,400.00	7,157.79	322.00	321.99	138.35	0.32	-1.24	11.31	9.99	10,952.45	10,905.93	46.52	235.420	
15,500.00	7,157.75	322.00	321.99	139.93	0.32	-1.24	11.31	9.99	11,030.72	10,983.96	46.76	235.905	
15,600.00	7,157.71	322.00	321.99	141.51	0.32	-1.24	11.31	9.99	11,109.34	11,062.35	46.99	236.410	
15,700.00	7,157.67	322.00	321.99	143.09	0.32	-1.24	11.31	9.99	11,188.30	11,141.08	47.22	236.937	
15,800.00	7,157.63	322.00	321.99	144.67	0.32	-1.24	11.31	9.99	11,267.60	11,220.15	47.45	237.482	
15,900.00	7,157.59	322.00	321.99	146.24	0.32	-1.24	11.31	9.99	11,347.22	11,299.55	47.67	238.047	
16,000.00	7,157.55	322.00	321.99	147.82	0.32	-1.24	11.31	9.99	11,427.16	11,379.28	47.89	238.629	
16,100.00	7,157.51	322.00	321.99	149.41	0.32	-1.24	11.31	9.99	11,507.42	11,459.32	48.10	239.229	
16,200.00	7,157.47	322.00	321.99	150.99	0.32	-1.24	11.31	9.99	11,587.98	11,539.67	48.31	239.846	
16,300.00	7,157.43	322.00	321.99	152.57	0.32	-1.24	11.31	9.99	11,668.85	11,620.33	48.52	240.479	
16,400.00	7,157.38	322.00	321.99	154.15	0.32	-1.24	11.31	9.99	11,750.01	11,701.28	48.73	241.127	
16,500.00	7,157.34	322.00	321.99	155.73	0.32	-1.24	11.31	9.99	11,831.45	11,782.52	48.93	241.791	
16,600.00	7,157.30	322.00	321.99	157.31	0.32	-1.24	11.31	9.99	11,913.19	11,864.05	49.13	242.468	
16,680.84	7,157.27	322.00	321.99	158.59	0.32	-1.24	11.31	9.99	11,979.46	11,930.17	49.29	243.026	
16,687.46	7,157.27	322.00	321.99	158.70	0.32	-1.34	11.31	9.99	11,984.89	11,935.58	49.31	243.072	
16,700.00	7,157.26	322.00	321.99	158.90	0.32	-1.34	11.31	9.99	11,995.19	11,945.86	49.33	243.160	
16,800.00	7,157.22	322.00	321.99	160.48	0.32	-1.34	11.31	9.99	12,077.47	12,027.94	49.53	243.865	
16,900.00	7,157.18	322.00	321.99	162.06	0.32	-1.34	11.31	9.99	12,160.01	12,110.29	49.72	244.582	
17,000.00	7,157.14	322.00	321.99	163.65	0.32	-1.34	11.31	9.99	12,242.81	12,192.91	49.91	245.312	
17,100.00	7,157.10	322.00	321.99	165.23	0.32	-1.34	11.31	9.99	12,325.87	12,275.78	50.09	246.054	
17,200.00	7,157.06	322.00	321.99	166.82	0.32	-1.34	11.31	9.99	12,409.18	12,358.90	50.28	246.807	
17,300.00	7,157.02	322.00	321.99	168.40	0.32	-1.34	11.31	9.99	12,492.73	12,442.27	50.46	247.571	
17,400.00	7,156.98	322.00	321.99	169.99	0.32	-1.34	11.31	9.99	12,576.52	12,525.88	50.64	248.346	
17,500.00	7,156.94	322.00	321.99	171.57	0.32	-1.34	11.31	9.99	12,660.55	12,609.73	50.82	249.131	
17,600.00	7,156.90	322.00	321.99	173.16	0.32	-1.34	11.31	9.99	12,744.81	12,693.82	50.99	249.926	
17,700.00	7,156.85	322.00	321.99	174.75	0.32	-1.34	11.31	9.99	12,829.29	12,778.13	51.17	250.730	
17,800.00	7,156.81	322.00	321.99	176.33	0.32	-1.34	11.31	9.99	12,914.00	12,862.66	51.34	251.544	
17,900.00	7,156.77	322.00	321.99	177.92	0.32	-1.34	11.31	9.99	12,998.92	12,947.42	51.51	252.366	
18,000.00	7,156.73	322.00	321.99	179.51	0.32	-1.34	11.31	9.99	13,084.06	13,032.39	51.68	253.196	
18,100.00	7,156.69	322.00	321.99	181.09	0.32	-1.34	11.31	9.99	13,169.41	13,117.57	51.84	254.035	
18,200.00	7,156.65	322.00	321.99	182.68	0.32	-1.34	11.31	9.99	13,254.96	13,202.95	52.00	254.881	
18,300.00	7,156.61	322.00	321.99	184.27	0.32	-1.34	11.31	9.99	13,340.71	13,288.54	52.17	255.735	
18,400.00	7,156.57	322.00	321.99	185.86	0.32	-1.34	11.31	9.99	13,426.66	13,374.33	52.33	256.596	
18,500.00	7,156.53	322.00	321.99	187.45	0.32	-1.34	11.31	9.99	13,512.80	13,460.31	52.48	257.464	
18,600.00	7,156.49	322.00	321.99	189.03	0.32	-1.34	11.31	9.99	13,599.13	13,546.49	52.64	258.338	
18,700.00	7,156.45	322.00	321.99	190.62	0.32	-1.34	11.31	9.99	13,685.65	13,632.85	52.80	259.219	
18,800.00	7,156.41	322.00	321.99	192.21	0.32	-1.34	11.31	9.99	13,772.35	13,719.40	52.95	260.106	
18,900.00	7,156.37	322.00	321.99	193.80	0.32	-1.34	11.31	9.99	13,859.23	13,806.13	53.10	260.999	

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 836H
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 836H	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)					
19,000.00	7,156.32	322.00	321.99	195.39	0.32	-1.34	11.31	9.99	13,946.28	13,893.03	53.25	261.897			
19,100.00	7,156.28	322.00	321.99	196.98	0.32	-1.34	11.31	9.99	14,033.51	13,980.11	53.40	262.801			
19,200.00	7,156.24	322.00	321.99	198.57	0.32	-1.34	11.31	9.99	14,120.91	14,067.36	53.55	263.710			
19,300.00	7,156.20	322.00	321.99	200.16	0.32	-1.34	11.31	9.99	14,208.47	14,154.78	53.69	264.624			
19,400.00	7,156.16	322.00	321.99	201.75	0.32	-1.34	11.31	9.99	14,296.20	14,242.36	53.84	265.542			
19,500.00	7,156.12	322.00	321.99	203.34	0.32	-1.34	11.31	9.99	14,384.09	14,330.10	53.98	266.465			
19,600.00	7,156.08	322.00	321.99	204.93	0.32	-1.34	11.31	9.99	14,472.13	14,418.01	54.12	267.393			
19,700.00	7,156.04	322.00	321.99	206.52	0.32	-1.34	11.31	9.99	14,560.33	14,506.06	54.26	268.324			
19,800.00	7,156.00	322.00	321.99	208.11	0.32	-1.34	11.31	9.99	14,648.68	14,594.27	54.40	269.260			
19,900.00	7,155.96	322.00	321.99	209.71	0.32	-1.34	11.31	9.99	14,737.18	14,682.63	54.54	270.199			
20,000.00	7,155.92	322.00	321.99	211.30	0.32	-1.34	11.31	9.99	14,825.82	14,771.14	54.68	271.141			
20,100.00	7,155.88	322.00	321.99	212.89	0.32	-1.34	11.31	9.99	14,914.61	14,859.80	54.82	272.088			
20,200.00	7,155.84	322.00	321.99	214.48	0.32	-1.34	11.31	9.99	15,003.54	14,948.59	54.95	273.037			
20,300.00	7,155.79	322.00	321.99	216.07	0.32	-1.34	11.31	9.99	15,092.61	15,037.52	55.08	273.990			
20,400.00	7,155.75	322.00	321.99	217.66	0.32	-1.34	11.31	9.99	15,181.81	15,126.60	55.22	274.945			
20,500.00	7,155.71	322.00	321.99	219.26	0.32	-1.34	11.31	9.99	15,271.15	15,215.80	55.35	275.903			
20,600.00	7,155.67	322.00	321.99	220.85	0.32	-1.34	11.31	9.99	15,360.62	15,305.14	55.48	276.864			
20,700.00	7,155.63	322.00	321.99	222.44	0.32	-1.34	11.31	9.99	15,450.22	15,394.61	55.61	277.827			
20,800.00	7,155.59	322.00	321.99	224.03	0.32	-1.34	11.31	9.99	15,539.95	15,484.21	55.74	278.793			
20,900.00	7,155.55	322.00	321.99	225.63	0.32	-1.34	11.31	9.99	15,629.80	15,573.93	55.87	279.761			
21,000.00	7,155.51	322.00	321.99	227.22	0.32	-1.34	11.31	9.99	15,719.77	15,663.77	56.00	280.731			
21,100.00	7,155.47	322.00	321.99	228.81	0.32	-1.34	11.31	9.99	15,809.86	15,753.74	56.12	281.702			
21,200.00	7,155.43	322.00	321.99	230.40	0.32	-1.34	11.31	9.99	15,900.08	15,843.83	56.25	282.676			
21,300.00	7,155.39	322.00	321.99	232.00	0.32	-1.34	11.31	9.99	15,990.40	15,934.03	56.37	283.651			
21,400.00	7,155.35	322.00	321.99	233.59	0.32	-1.34	11.31	9.99	16,080.85	16,024.35	56.50	284.628			
21,500.00	7,155.31	322.00	321.99	235.18	0.32	-1.34	11.31	9.99	16,171.40	16,114.78	56.62	285.607			
21,600.00	7,155.26	322.00	321.99	236.78	0.32	-1.34	11.31	9.99	16,262.07	16,205.32	56.74	286.586			
21,700.00	7,155.22	322.00	321.99	238.37	0.32	-1.34	11.31	9.99	16,352.84	16,295.98	56.87	287.567			
21,800.00	7,155.18	322.00	321.99	239.96	0.32	-1.34	11.31	9.99	16,443.73	16,386.74	56.99	288.549			
21,900.00	7,155.14	322.00	321.99	241.56	0.32	-1.34	11.31	9.99	16,534.71	16,477.60	57.11	289.533			
21,953.88	7,155.12	322.00	321.99	242.42	0.32	-1.34	11.31	9.99	16,583.78	16,526.61	57.17	290.063			
22,000.00	7,155.10	322.00	321.99	243.15	0.32	-0.32	11.31	9.99	16,625.80	16,568.58	57.23	290.517			
22,019.01	7,155.09	322.00	321.99	243.46	0.32	0.10	11.31	9.99	16,643.13	16,585.88	57.25	290.704			
22,100.00	7,155.06	322.00	321.99	244.75	0.32	0.10	11.31	9.99	16,717.00	16,659.65	57.35	291.502			
22,200.00	7,155.02	322.00	321.99	246.34	0.32	0.10	11.31	9.99	16,808.30	16,750.83	57.47	292.488			
22,300.00	7,154.97	322.00	321.99	247.94	0.32	0.10	11.31	9.99	16,899.69	16,842.11	57.58	293.475			
22,400.00	7,154.93	322.00	321.99	249.53	0.32	0.10	11.31	9.99	16,991.19	16,933.48	57.70	294.462			
22,500.00	7,154.89	322.00	321.99	251.13	0.32	0.10	11.31	9.99	17,082.77	17,024.96	57.82	295.450			
22,600.00	7,154.85	322.00	321.99	252.72	0.32	0.10	11.31	9.99	17,174.46	17,116.52	57.94	296.438			
22,700.00	7,154.80	322.00	321.99	254.32	0.32	0.10	11.31	9.99	17,266.23	17,208.18	58.05	297.426			
22,800.00	7,154.76	322.00	321.99	255.91	0.32	0.10	11.31	9.99	17,358.10	17,299.93	58.17	298.415			
22,900.00	7,154.72	322.00	321.99	257.51	0.32	0.10	11.31	9.99	17,450.05	17,391.77	58.28	299.404			
23,000.00	7,154.68	322.00	321.99	259.11	0.32	0.10	11.31	9.99	17,542.09	17,483.70	58.40	300.392			
23,100.00	7,154.63	322.00	321.99	260.70	0.32	0.10	11.31	9.99	17,634.22	17,575.71	58.51	301.381			
23,200.00	7,154.59	322.00	321.99	262.30	0.32	0.10	11.31	9.99	17,726.44	17,667.81	58.63	302.370			
23,300.00	7,154.55	322.00	321.99	263.89	0.32	0.10	11.31	9.99	17,818.73	17,760.00	58.74	303.358			
23,400.00	7,154.51	322.00	321.99	265.49	0.32	0.10	11.31	9.99	17,911.12	17,852.26	58.85	304.347			
23,500.00	7,154.47	322.00	321.99	267.08	0.32	0.10	11.31	9.99	18,003.58	17,944.61	58.96	305.335			
23,600.00	7,154.42	322.00	321.99	268.68	0.32	0.10	11.31	9.99	18,096.12	18,037.05	59.08	306.322			
23,700.00	7,154.38	322.00	321.99	270.28	0.32	0.10	11.31	9.99	18,188.74	18,129.56	59.19	307.309			
23,800.00	7,154.34	322.00	321.99	271.87	0.32	0.10	11.31	9.99	18,281.44	18,222.14	59.30	308.296			
23,900.00	7,154.30	322.00	321.99	273.47	0.32	0.10	11.31	9.99	18,374.22	18,314.81	59.41	309.282			

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 836H
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 836H	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	
24,000.00	7,154.25	322.00	321.99	275.07	0.32	0.10	11.31	9.99	18,467.07	18,407.55	59.52	310.268	
24,100.00	7,154.21	322.00	321.99	276.66	0.32	0.10	11.31	9.99	18,559.99	18,500.36	59.63	311.253	
24,200.00	7,154.17	322.00	321.99	278.26	0.32	0.10	11.31	9.99	18,652.99	18,593.25	59.74	312.237	
24,300.00	7,154.13	322.00	321.99	279.86	0.32	0.10	11.31	9.99	18,746.06	18,686.21	59.85	313.220	
24,400.00	7,154.08	322.00	321.99	281.45	0.32	0.10	11.31	9.99	18,839.21	18,779.25	59.96	314.203	
24,500.00	7,154.04	322.00	321.99	283.05	0.32	0.10	11.31	9.99	18,932.42	18,872.35	60.07	315.184	
24,597.25	7,154.00	322.00	321.99	284.60	0.32	0.10	11.31	9.99	19,023.13	18,962.96	60.17	316.138	
24,600.00	7,154.00	322.00	321.99	284.65	0.32	0.03	11.31	9.99	19,025.70	18,965.52	60.18	316.165	
24,700.00	7,153.96	322.00	321.99	286.24	0.32	-2.57	11.31	9.99	19,119.04	19,058.76	60.28	317.144	
24,722.47	7,153.95	322.00	321.99	286.60	0.32	-3.15	11.31	9.99	19,140.02	19,079.71	60.31	317.364	
24,800.00	7,153.92	322.00	321.99	287.84	0.32	-3.15	11.31	9.99	19,212.44	19,152.05	60.39	318.122	
24,900.00	7,153.88	322.00	321.99	289.43	0.32	-3.15	11.31	9.99	19,305.90	19,245.40	60.50	319.099	
25,000.00	7,153.84	322.00	321.99	291.03	0.32	-3.15	11.31	9.99	19,399.43	19,338.82	60.61	320.074	
25,100.00	7,153.80	322.00	321.99	292.63	0.32	-3.15	11.31	9.99	19,493.02	19,432.31	60.72	321.049	
25,200.00	7,153.77	322.00	321.99	294.22	0.32	-3.15	11.31	9.99	19,586.68	19,525.85	60.82	322.022	
25,300.00	7,153.73	322.00	321.99	295.82	0.32	-3.15	11.31	9.99	19,680.40	19,619.46	60.93	322.994	
25,400.00	7,153.69	322.00	321.99	297.41	0.32	-3.15	11.31	9.99	19,774.17	19,713.14	61.04	323.964	
25,500.00	7,153.65	322.00	321.99	299.01	0.32	-3.15	11.31	9.99	19,868.01	19,806.87	61.14	324.933	
25,600.00	7,153.61	322.00	321.99	300.60	0.32	-3.15	11.31	9.99	19,961.91	19,900.66	61.25	325.901	
25,700.00	7,153.57	322.00	321.99	302.20	0.32	-3.15	11.31	9.99	20,055.87	19,994.52	61.36	326.868	
25,800.00	7,153.53	322.00	321.99	303.80	0.32	-3.15	11.31	9.99	20,149.89	20,088.43	61.46	327.833	
25,900.00	7,153.50	322.00	321.99	305.39	0.32	-3.15	11.31	9.99	20,243.96	20,182.39	61.57	328.796	
26,000.00	7,153.46	322.00	321.99	306.99	0.32	-3.15	11.31	9.99	20,338.09	20,276.42	61.68	329.758	
26,100.00	7,153.42	322.00	321.99	308.58	0.32	-3.15	11.31	9.99	20,432.28	20,370.50	61.78	330.719	
26,200.00	7,153.38	322.00	321.99	310.18	0.32	-3.15	11.31	9.99	20,526.52	20,464.64	61.89	331.678	
26,300.00	7,153.34	322.00	321.99	311.78	0.32	-3.15	11.31	9.99	20,620.82	20,558.83	61.99	332.635	
26,400.00	7,153.30	322.00	321.99	313.37	0.32	-3.15	11.31	9.99	20,715.17	20,653.07	62.10	333.591	
26,500.00	7,153.26	322.00	321.99	314.97	0.32	-3.15	11.31	9.99	20,809.57	20,747.37	62.20	334.545	
26,600.00	7,153.23	322.00	321.99	316.57	0.32	-3.15	11.31	9.99	20,904.02	20,841.72	62.31	335.497	
26,700.00	7,153.19	322.00	321.99	318.16	0.32	-3.15	11.31	9.99	20,998.53	20,936.12	62.41	336.447	
26,800.00	7,153.15	322.00	321.99	319.76	0.32	-3.15	11.31	9.99	21,093.09	21,030.57	62.52	337.396	
26,900.00	7,153.11	322.00	321.99	321.35	0.32	-3.15	11.31	9.99	21,187.69	21,125.07	62.62	338.343	
26,976.35	7,153.08	322.00	321.99	322.57	0.32	-3.15	11.31	9.99	21,259.95	21,197.25	62.70	339.065	
27,000.00	7,153.07	322.00	321.99	322.95	0.32	-3.15	11.31	9.99	21,282.35	21,219.62	62.73	339.288	
27,100.00	7,153.03	322.00	321.99	324.55	0.32	-3.15	11.31	9.99	21,377.05	21,314.22	62.83	340.231	
27,176.36	7,153.00	322.00	321.99	325.77	0.32	-3.15	11.31	9.99	21,449.40	21,386.49	62.91	340.950	

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 836H
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 836H	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)				
0.00	0.00	0.00	0.00	0.00	0.00	35.26	12.41	8.78	15.20					
125.00	125.00	125.00	125.00	0.06	0.06	-101.22	12.29	8.93	15.26	15.20	0.07	222.953		
225.00	225.00	225.02	225.02	0.17	0.19	-34.81	11.89	9.35	14.87	14.66	0.21	70.416		
312.00	311.99	312.01	312.00	0.28	0.31	-95.24	11.37	9.92	14.49	14.14	0.34	42.361		
391.99	391.98	392.00	391.99	0.36	0.39	-94.30	10.90	10.50	14.48	14.00	0.49	29.690 CC		
400.00	399.99	400.01	400.00	0.37	0.40	-94.20	10.86	10.55	14.48	13.98	0.50	28.823		
462.00	461.99	462.01	462.00	0.50	0.52	-93.47	10.49	11.00	14.49	13.63	0.85	17.012 ES		
509.18	509.16	509.03	509.02	0.64	0.65	-120.33	10.46	11.33	14.92	13.77	1.15	12.926		
600.00	599.96	599.34	599.30	0.94	0.92	-128.13	12.52	11.90	18.11	16.34	1.77	10.208		
700.00	699.94	698.38	698.18	1.28	1.25	-137.02	18.04	12.44	24.94	22.47	2.48	10.069		
800.00	799.92	796.79	796.18	1.63	1.60	-143.52	26.92	12.89	35.43	32.25	3.18	11.129		
900.00	899.89	894.33	892.96	1.98	1.95	-147.75	39.03	13.24	49.51	45.62	3.89	12.737		
1,000.00	999.87	990.81	988.23	2.34	2.31	-150.49	54.24	13.49	67.05	62.47	4.58	14.626		
1,100.00	1,099.84	1,087.39	1,083.10	2.69	2.69	-152.29	72.30	13.66	87.59	82.31	5.28	16.583		
1,200.00	1,199.82	1,185.14	1,179.04	3.05	3.09	-153.45	91.01	13.82	108.62	102.63	5.99	18.132		
1,300.00	1,299.80	1,282.88	1,274.98	3.41	3.49	-154.23	109.73	13.99	129.69	122.98	6.70	19.353		
1,400.00	1,399.77	1,380.62	1,370.91	3.77	3.90	-154.79	128.44	14.15	150.77	143.35	7.42	20.330		
1,500.00	1,499.75	1,478.37	1,466.85	4.13	4.31	-155.21	147.15	14.31	171.85	163.72	8.13	21.130		
1,600.00	1,599.72	1,576.11	1,562.78	4.49	4.72	-155.54	165.87	14.47	192.95	184.10	8.85	21.798		
1,700.00	1,699.70	1,673.86	1,658.72	4.85	5.13	-155.81	184.58	14.64	214.05	204.48	9.57	22.364		
1,800.00	1,799.68	1,771.60	1,754.65	5.21	5.55	-156.03	203.29	14.80	235.16	224.87	10.29	22.849		
1,900.00	1,899.65	1,869.34	1,850.59	5.57	5.96	-156.21	222.01	14.96	256.27	245.25	11.01	23.269		
2,000.00	1,999.63	1,967.09	1,946.53	5.93	6.37	-156.37	240.72	15.12	277.38	265.64	11.74	23.636		
2,100.00	2,099.60	2,064.83	2,042.46	6.29	6.79	-156.50	259.43	15.29	298.49	286.03	12.46	23.960		
2,200.00	2,199.58	2,162.58	2,138.40	6.65	7.21	-156.61	278.14	15.45	319.60	306.42	13.18	24.247		
2,300.00	2,299.56	2,260.32	2,234.33	7.01	7.62	-156.71	296.86	15.61	340.71	326.81	13.90	24.504		
2,400.00	2,399.53	2,358.06	2,330.27	7.37	8.04	-156.80	315.57	15.77	361.83	347.20	14.63	24.735		
2,500.00	2,499.51	2,455.81	2,426.21	7.73	8.45	-156.88	334.28	15.93	382.95	367.59	15.35	24.944		
2,600.00	2,599.48	2,553.55	2,522.14	8.09	8.87	-156.95	353.00	16.10	404.06	387.99	16.08	25.134		
2,700.00	2,699.46	2,651.29	2,618.08	8.45	9.29	-157.02	371.71	16.26	425.18	408.38	16.80	25.307		
2,800.00	2,799.44	2,749.04	2,714.01	8.81	9.71	-157.08	390.42	16.42	446.30	428.77	17.53	25.466		
2,900.00	2,899.41	2,846.78	2,809.95	9.17	10.12	-157.13	409.13	16.58	467.41	449.16	18.25	25.611		
3,000.00	2,999.39	2,944.53	2,905.88	9.53	10.54	-157.18	427.85	16.75	488.53	469.56	18.98	25.745		
3,100.00	3,099.36	3,042.27	3,001.82	9.89	10.96	-157.22	446.56	16.91	509.65	489.95	19.70	25.870		
3,200.00	3,199.34	3,140.01	3,097.76	10.25	11.38	-157.26	465.27	17.07	530.77	510.34	20.43	25.985		
3,300.00	3,299.32	3,237.76	3,193.69	10.61	11.79	-157.30	483.99	17.23	551.89	530.74	21.15	26.092		
3,400.00	3,399.29	3,335.50	3,289.63	10.97	12.21	-157.33	502.70	17.40	573.01	551.13	21.88	26.192		
3,500.00	3,499.27	3,433.25	3,385.56	11.33	12.63	-157.37	521.41	17.56	594.13	571.52	22.60	26.285		
3,600.00	3,599.25	3,530.99	3,481.50	11.69	13.05	-157.40	540.13	17.72	615.25	591.92	23.33	26.373		
3,700.00	3,699.22	3,628.73	3,577.43	12.05	13.46	-157.42	558.84	17.88	636.37	612.31	24.05	26.455		
3,800.00	3,799.20	3,726.48	3,673.37	12.41	13.88	-157.45	577.55	18.05	657.49	632.70	24.78	26.532		
3,900.00	3,899.17	3,824.22	3,769.31	12.77	14.30	-157.48	596.26	18.21	678.61	653.10	25.51	26.605		
4,000.00	3,999.15	3,921.97	3,865.24	13.13	14.72	-157.50	614.98	18.37	699.73	673.49	26.23	26.674		
4,100.00	4,099.13	4,019.71	3,961.18	13.49	15.14	-157.52	633.69	18.53	720.85	693.89	26.96	26.738		
4,200.00	4,199.10	4,117.45	4,057.11	13.85	15.56	-157.54	652.40	18.70	741.97	714.28	27.69	26.800		
4,300.00	4,299.08	4,215.20	4,153.05	14.21	15.97	-157.56	671.12	18.86	763.09	734.67	28.41	26.858		
4,400.00	4,399.05	4,312.94	4,248.98	14.57	16.39	-157.58	689.83	19.02	784.21	755.07	29.14	26.913		
4,500.00	4,499.03	4,410.69	4,344.92	14.93	16.81	-157.60	708.54	19.18	805.33	775.46	29.87	26.965		
4,600.00	4,599.01	4,508.43	4,440.86	15.29	17.23	-157.61	727.25	19.34	826.45	795.86	30.59	27.015		
4,700.00	4,698.98	4,606.17	4,536.79	15.65	17.65	-157.63	745.97	19.51	847.57	816.25	31.32	27.063		
4,800.00	4,798.96	4,703.92	4,632.73	16.01	18.07	-157.64	764.68	19.67	868.69	836.64	32.05	27.108		
4,900.00	4,898.93	4,801.66	4,728.66	16.37	18.48	-157.66	783.39	19.83	889.81	857.04	32.77	27.151		

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 836H
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 836H	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	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)	Distance Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning
5,000.00	4,998.91	4,899.40	4,824.60	16.73	18.90	-157.67	802.11	19.99	910.93	877.43	33.50	27.193	
5,100.00	5,098.89	4,997.15	4,920.54	17.09	19.32	-157.68	820.82	20.16	932.05	897.82	34.23	27.232	
5,200.00	5,198.86	5,094.89	5,016.47	17.45	19.74	-157.70	839.53	20.32	953.17	918.22	34.95	27.270	
5,300.00	5,298.84	5,192.64	5,112.41	17.81	20.16	-157.71	858.25	20.48	974.29	938.61	35.68	27.306	
5,400.00	5,398.81	5,290.38	5,208.34	18.17	20.58	-157.72	876.96	20.64	995.41	959.01	36.41	27.341	
5,500.00	5,498.79	5,388.12	5,304.28	18.53	21.00	-157.73	895.67	20.81	1,016.53	979.40	37.13	27.374	
5,600.00	5,598.77	5,485.87	5,400.21	18.89	21.41	-157.74	914.38	20.97	1,037.65	999.79	37.86	27.406	
5,700.00	5,698.74	5,583.61	5,496.15	19.25	21.83	-157.75	933.10	21.13	1,058.78	1,020.19	38.59	27.437	
5,800.00	5,798.72	5,681.36	5,592.09	19.61	22.25	-157.76	951.81	21.29	1,079.90	1,040.58	39.32	27.466	
5,900.00	5,898.69	5,779.10	5,688.02	19.97	22.67	-157.77	970.52	21.46	1,101.02	1,060.97	40.04	27.495	
6,000.00	5,998.67	5,876.84	5,783.96	20.33	23.09	-157.78	989.24	21.62	1,122.14	1,081.37	40.77	27.522	
6,100.00	6,098.65	5,974.59	5,879.89	20.69	23.51	-157.79	1,007.95	21.78	1,143.26	1,101.76	41.50	27.548	
6,200.00	6,198.62	6,072.33	5,975.83	21.05	23.93	-157.80	1,026.66	21.94	1,164.38	1,122.15	42.23	27.574	
6,300.00	6,298.60	6,170.08	6,071.76	21.41	24.35	-157.80	1,045.37	22.10	1,185.50	1,142.55	42.96	27.598	
6,400.00	6,398.57	6,267.82	6,167.70	21.77	24.76	-157.81	1,064.09	22.27	1,206.62	1,162.94	43.68	27.622	
6,500.00	6,498.55	6,365.56	6,263.64	22.13	25.18	-157.82	1,082.80	22.43	1,227.74	1,183.33	44.41	27.645	
6,531.56	6,530.10	6,396.41	6,293.91	22.25	25.32	-157.82	1,088.71	22.48	1,234.41	1,189.77	44.64	27.652	
6,550.00	6,548.53	6,414.43	6,311.60	22.31	25.39	-119.12	1,092.16	22.51	1,238.31	1,193.54	44.77	27.656	
6,600.00	6,598.36	6,463.15	6,359.42	22.49	25.60	-100.12	1,101.48	22.59	1,248.94	1,203.80	45.14	27.671	
6,650.00	6,647.74	6,511.44	6,406.81	22.67	25.81	-95.58	1,110.73	22.67	1,259.61	1,214.11	45.49	27.689	
6,700.00	6,696.35	6,558.98	6,453.48	22.84	26.01	-93.43	1,119.83	22.75	1,270.33	1,224.48	45.84	27.710	
6,750.00	6,743.90	6,605.50	6,499.13	23.01	26.21	-92.16	1,128.74	22.83	1,281.12	1,234.93	46.19	27.735	
6,800.00	6,790.11	6,650.70	6,543.50	23.18	26.40	-91.35	1,137.39	22.90	1,292.06	1,245.52	46.53	27.766	
6,850.00	6,834.67	6,702.31	6,594.11	23.35	26.63	-90.91	1,147.26	24.63	1,303.10	1,256.17	46.93	27.769	
6,900.00	6,877.32	6,757.26	6,647.66	23.51	26.86	-90.63	1,157.71	31.02	1,314.04	1,266.69	47.35	27.754	
6,950.00	6,917.80	6,814.87	6,703.00	23.68	27.10	-90.46	1,168.51	42.75	1,324.79	1,277.00	47.79	27.723	
7,000.00	6,955.85	6,875.45	6,759.81	23.85	27.34	-90.37	1,179.61	60.52	1,335.24	1,287.00	48.25	27.676	
7,050.00	6,991.24	6,939.28	6,817.60	24.03	27.59	-90.34	1,190.89	85.11	1,345.30	1,296.57	48.72	27.612	
7,100.00	7,023.76	7,006.66	6,875.65	24.22	27.85	-90.37	1,202.24	117.32	1,354.82	1,305.60	49.21	27.529	
7,150.00	7,053.20	7,077.79	6,932.94	24.42	28.10	-90.44	1,213.44	157.90	1,363.68	1,313.96	49.72	27.427	
7,200.00	7,079.37	7,152.79	6,988.14	24.63	28.36	-90.54	1,224.23	207.44	1,371.74	1,321.50	50.24	27.304	
7,250.00	7,102.13	7,231.62	7,039.57	24.86	28.62	-90.64	1,234.30	266.27	1,378.85	1,328.08	50.78	27.155	
7,300.00	7,121.32	7,314.03	7,085.28	25.10	28.90	-90.72	1,243.26	334.18	1,384.88	1,333.54	51.34	26.977	
7,350.00	7,136.84	7,399.52	7,123.18	25.35	29.21	-90.77	1,250.70	410.37	1,389.68	1,337.76	51.92	26.765	
7,400.00	7,148.58	7,487.31	7,151.34	25.62	29.55	-90.75	1,256.25	493.27	1,393.15	1,340.60	52.55	26.513	
7,450.00	7,156.47	7,576.43	7,168.19	25.90	29.94	-90.67	1,259.59	580.64	1,395.21	1,342.01	53.21	26.223	
7,500.00	7,160.47	7,661.35	7,173.00	26.20	30.36	-90.52	1,260.58	665.36	1,395.85	1,341.96	53.89	25.903	
7,526.22	7,161.00	7,687.57	7,172.98	26.36	30.50	-90.49	1,260.59	691.58	1,395.87	1,341.67	54.20	25.755	
7,600.00	7,160.97	7,761.34	7,172.95	26.83	30.91	-90.49	1,260.63	765.35	1,395.92	1,340.79	55.13	25.320	
7,700.00	7,160.93	7,861.34	7,172.90	27.53	31.54	-90.49	1,260.68	865.35	1,395.99	1,339.47	56.52	24.699	
7,800.00	7,160.89	7,961.34	7,172.84	28.32	32.24	-90.49	1,260.73	965.35	1,396.06	1,338.01	58.05	24.048	
7,900.00	7,160.85	8,061.34	7,172.79	29.16	33.00	-90.49	1,260.79	1,065.35	1,396.13	1,336.41	59.72	23.378	
8,000.00	7,160.81	8,161.34	7,172.74	30.07	33.83	-90.49	1,260.84	1,165.35	1,396.20	1,334.70	61.51	22.700	
8,100.00	7,160.77	8,261.34	7,172.69	31.04	34.71	-90.49	1,260.89	1,265.35	1,396.27	1,332.87	63.41	22.021	
8,200.00	7,160.73	8,361.34	7,172.64	32.06	35.63	-90.49	1,260.94	1,365.35	1,396.34	1,330.94	65.41	21.348	
8,300.00	7,160.69	8,461.34	7,172.59	33.12	36.61	-90.49	1,261.00	1,465.35	1,396.41	1,328.91	67.50	20.687	
8,400.00	7,160.65	8,561.34	7,172.54	34.23	37.63	-90.49	1,261.05	1,565.35	1,396.48	1,326.80	69.68	20.041	
8,500.00	7,160.60	8,661.34	7,172.49	35.37	38.68	-90.49	1,261.10	1,665.35	1,396.55	1,324.62	71.94	19.414	
8,600.00	7,160.56	8,761.34	7,172.44	36.55	39.78	-90.49	1,261.15	1,765.35	1,396.62	1,322.36	74.26	18.807	
8,700.00	7,160.52	8,861.34	7,172.39	37.76	40.90	-90.49	1,261.21	1,865.35	1,396.69	1,320.04	76.65	18.222	
8,800.00	7,160.48	8,961.34	7,172.34	38.99	42.06	-90.49	1,261.26	1,965.35	1,396.76	1,317.67	79.10	17.659	
8,900.00	7,160.44	9,061.34	7,172.29	40.26	43.25	-90.49	1,261.31	2,065.35	1,396.83	1,315.24	81.59	17.119	

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 836H
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 836H	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		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)			
9,000.00	7,160.40	9,161.34	7,172.24	41.54	44.46	-90.49	1,261.36	2,165.35	1,396.90	1,312.76	84.14	16.602	
9,100.00	7,160.36	9,261.34	7,172.18	42.85	45.69	-90.48	1,261.42	2,265.35	1,396.97	1,310.24	86.73	16.107	
9,200.00	7,160.32	9,361.34	7,172.13	44.18	46.95	-90.48	1,261.47	2,365.35	1,397.04	1,307.68	89.36	15.634	
9,300.00	7,160.28	9,461.34	7,172.08	45.53	48.23	-90.48	1,261.52	2,465.35	1,397.11	1,305.09	92.03	15.182	
9,400.00	7,160.24	9,561.34	7,172.03	46.89	49.52	-90.48	1,261.57	2,565.35	1,397.18	1,302.46	94.73	14.750	
9,500.00	7,160.20	9,661.34	7,171.98	48.26	50.84	-90.48	1,261.63	2,665.35	1,397.25	1,299.80	97.46	14.337	
9,600.00	7,160.16	9,761.34	7,171.93	49.65	52.17	-90.48	1,261.68	2,765.35	1,397.32	1,297.11	100.22	13.943	
9,700.00	7,160.12	9,861.34	7,171.88	51.05	53.51	-90.48	1,261.73	2,865.35	1,397.39	1,294.39	103.00	13.567	
9,800.00	7,160.08	9,961.34	7,171.83	52.47	54.87	-90.48	1,261.78	2,965.35	1,397.46	1,291.66	105.81	13.208	
9,900.00	7,160.04	10,061.34	7,171.78	53.89	56.24	-90.48	1,261.84	3,065.35	1,397.53	1,288.90	108.64	12.864	
10,000.00	7,160.00	10,161.34	7,171.73	55.33	57.62	-90.48	1,261.89	3,165.35	1,397.60	1,286.12	111.49	12.536	
10,100.00	7,159.95	10,261.34	7,171.68	56.77	59.01	-90.48	1,261.94	3,265.35	1,397.67	1,283.32	114.36	12.222	
10,200.00	7,159.91	10,361.34	7,171.63	58.22	60.42	-90.48	1,261.99	3,365.35	1,397.74	1,280.50	117.24	11.922	
10,300.00	7,159.87	10,461.34	7,171.57	59.68	61.83	-90.48	1,262.05	3,465.35	1,397.81	1,277.67	120.14	11.634	
10,400.00	7,159.83	10,561.34	7,171.52	61.15	63.25	-90.48	1,262.10	3,565.35	1,397.88	1,274.82	123.06	11.359	
10,500.00	7,159.79	10,661.34	7,171.47	62.62	64.68	-90.48	1,262.15	3,665.35	1,397.95	1,271.96	125.99	11.095	
10,600.00	7,159.75	10,761.34	7,171.42	64.10	66.12	-90.48	1,262.20	3,765.35	1,398.02	1,269.09	128.94	10.843	
10,700.00	7,159.71	10,861.34	7,171.37	65.58	67.57	-90.48	1,262.25	3,865.35	1,398.09	1,266.20	131.89	10.600	
10,800.00	7,159.67	10,961.34	7,171.32	67.07	69.02	-90.48	1,262.31	3,965.35	1,398.16	1,263.30	134.86	10.367	
10,900.00	7,159.63	11,061.34	7,171.27	68.57	70.48	-90.48	1,262.36	4,065.35	1,398.23	1,260.40	137.84	10.144	
11,000.00	7,159.59	11,161.34	7,171.22	70.07	71.94	-90.48	1,262.41	4,165.35	1,398.30	1,257.48	140.83	9.929	
11,100.00	7,159.55	11,261.34	7,171.17	71.57	73.42	-90.48	1,262.46	4,265.35	1,398.37	1,254.55	143.83	9.723	
11,200.00	7,159.51	11,361.34	7,171.12	73.08	74.89	-90.48	1,262.52	4,365.35	1,398.44	1,251.61	146.83	9.524	
11,300.00	7,159.47	11,461.34	7,171.07	74.59	76.37	-90.48	1,262.57	4,465.35	1,398.52	1,248.67	149.85	9.333	
11,400.00	7,159.43	11,561.34	7,171.02	76.11	77.86	-90.47	1,262.62	4,565.35	1,398.59	1,245.72	152.87	9.149	
11,500.00	7,159.39	11,661.34	7,170.96	77.63	79.35	-90.47	1,262.67	4,665.35	1,398.66	1,242.76	155.90	8.972	
11,600.00	7,159.35	11,761.34	7,170.91	79.15	80.84	-90.47	1,262.73	4,765.35	1,398.73	1,239.79	158.93	8.801	
11,638.27	7,159.33	11,799.61	7,170.89	79.73	81.42	-90.47	1,262.75	4,803.62	1,398.75	1,238.66	160.10	8.737	
11,640.51	7,159.33	11,801.85	7,170.89	79.77	81.45	-90.47	1,262.75	4,805.86	1,398.75	1,238.59	160.16	8.733	
11,700.00	7,159.30	11,861.34	7,170.86	80.68	82.34	-90.47	1,262.78	4,865.35	1,398.77	1,236.80	161.97	8.636	
11,800.00	7,159.26	11,961.34	7,170.81	82.20	83.85	-90.47	1,262.83	4,965.35	1,398.80	1,233.78	165.02	8.476	
11,900.00	7,159.22	12,061.34	7,170.76	83.74	85.35	-90.47	1,262.88	5,065.35	1,398.83	1,230.76	168.08	8.323	
12,000.00	7,159.18	12,161.34	7,170.71	85.27	86.86	-90.47	1,262.94	5,165.35	1,398.86	1,227.73	171.14	8.174	
12,100.00	7,159.14	12,261.34	7,170.66	86.81	88.37	-90.47	1,262.99	5,265.35	1,398.90	1,224.69	174.20	8.030	
12,200.00	7,159.10	12,361.34	7,170.61	88.35	89.89	-90.47	1,263.04	5,365.35	1,398.93	1,221.65	177.27	7.891	
12,300.00	7,159.06	12,461.34	7,170.56	89.89	91.41	-90.47	1,263.09	5,465.35	1,398.96	1,218.61	180.35	7.757	
12,400.00	7,159.02	12,561.34	7,170.51	91.43	92.93	-90.47	1,263.15	5,565.35	1,398.99	1,215.56	183.43	7.627	
12,500.00	7,158.98	12,661.34	7,170.46	92.98	94.46	-90.47	1,263.20	5,665.35	1,399.02	1,212.51	186.51	7.501	
12,600.00	7,158.94	12,761.34	7,170.41	94.52	95.98	-90.47	1,263.25	5,765.35	1,399.05	1,209.45	189.60	7.379	
12,700.00	7,158.90	12,861.34	7,170.35	96.07	97.51	-90.47	1,263.30	5,865.35	1,399.08	1,206.39	192.69	7.261	
12,800.00	7,158.86	12,961.34	7,170.30	97.62	99.04	-90.47	1,263.36	5,965.35	1,399.11	1,203.33	195.78	7.146	
12,900.00	7,158.81	13,061.34	7,170.25	99.17	100.58	-90.47	1,263.41	6,065.35	1,399.14	1,200.26	198.88	7.035	
13,000.00	7,158.77	13,161.34	7,170.20	100.73	102.11	-90.47	1,263.46	6,165.35	1,399.17	1,197.19	201.98	6.927	
13,100.00	7,158.73	13,261.34	7,170.15	102.28	103.65	-90.47	1,263.51	6,265.35	1,399.21	1,194.12	205.09	6.822	
13,200.00	7,158.69	13,361.34	7,170.10	103.84	105.19	-90.47	1,263.57	6,365.35	1,399.24	1,191.04	208.20	6.721	
13,300.00	7,158.65	13,461.34	7,170.05	105.40	106.73	-90.47	1,263.62	6,465.35	1,399.27	1,187.96	211.31	6.622	
13,400.00	7,158.61	13,561.34	7,170.00	106.96	108.27	-90.47	1,263.67	6,565.35	1,399.30	1,184.88	214.42	6.526	
13,500.00	7,158.57	13,661.34	7,169.95	108.52	109.82	-90.47	1,263.72	6,665.35	1,399.33	1,181.79	217.54	6.433	
13,600.00	7,158.53	13,761.34	7,169.90	110.08	111.37	-90.47	1,263.77	6,765.35	1,399.36	1,178.70	220.66	6.342	
13,700.00	7,158.49	13,861.34	7,169.85	111.64	112.91	-90.47	1,263.83	6,865.35	1,399.39	1,175.61	223.78	6.253	
13,800.00	7,158.45	13,961.34	7,169.80	113.21	114.46	-90.46	1,263.88	6,965.35	1,399.42	1,172.52	226.90	6.168	
13,900.00	7,158.41	14,061.34	7,169.74	114.77	116.01	-90.46	1,263.93	7,065.35	1,399.45	1,169.43	230.03	6.084	

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 836H
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 836H	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)	Reference Depth (usft)	Measured Depth (usft)	Offset 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)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning	
14,000.00	7,158.37	14,161.34	7,169.69	116.34	117.57	-90.46	1,263.98	7,165.35	1,399.48	1,166.33	233.15	6.002		
14,100.00	7,158.32	14,261.34	7,169.64	117.91	119.12	-90.46	1,264.04	7,265.35	1,399.52	1,163.23	236.28	5.923		
14,200.00	7,158.28	14,361.34	7,169.59	119.47	120.68	-90.46	1,264.09	7,365.35	1,399.55	1,160.13	239.42	5.846		
14,300.00	7,158.24	14,461.34	7,169.54	121.04	122.23	-90.46	1,264.14	7,465.35	1,399.58	1,157.03	242.55	5.770		
14,400.00	7,158.20	14,561.34	7,169.49	122.61	123.79	-90.46	1,264.19	7,565.35	1,399.61	1,153.92	245.68	5.697		
14,500.00	7,158.16	14,661.34	7,169.44	124.18	125.35	-90.46	1,264.25	7,665.35	1,399.64	1,150.82	248.82	5.625		
14,600.00	7,158.12	14,761.34	7,169.39	125.76	126.91	-90.46	1,264.30	7,765.35	1,399.67	1,147.71	251.96	5.555		
14,700.00	7,158.08	14,861.34	7,169.34	127.33	128.47	-90.46	1,264.35	7,865.35	1,399.70	1,144.60	255.10	5.487		
14,800.00	7,158.04	14,961.34	7,169.29	128.90	130.03	-90.46	1,264.40	7,965.35	1,399.73	1,141.49	258.24	5.420		
14,900.00	7,158.00	15,061.34	7,169.24	130.47	131.59	-90.46	1,264.46	8,065.35	1,399.76	1,138.38	261.39	5.355		
15,000.00	7,157.96	15,161.34	7,169.19	132.05	133.16	-90.46	1,264.51	8,165.35	1,399.79	1,135.26	264.53	5.292		
15,100.00	7,157.92	15,261.34	7,169.13	133.62	134.72	-90.46	1,264.56	8,265.35	1,399.82	1,132.15	267.68	5.230		
15,200.00	7,157.88	15,361.34	7,169.08	135.20	136.29	-90.46	1,264.61	8,365.35	1,399.86	1,129.03	270.83	5.169		
15,300.00	7,157.83	15,461.34	7,169.03	136.78	137.85	-90.46	1,264.67	8,465.35	1,399.89	1,125.91	273.97	5.110		
15,400.00	7,157.79	15,561.34	7,168.98	138.35	139.42	-90.46	1,264.72	8,565.35	1,399.92	1,122.79	277.13	5.052		
15,500.00	7,157.75	15,661.34	7,168.93	139.93	140.99	-90.46	1,264.77	8,665.35	1,399.95	1,119.67	280.28	4.995		
15,600.00	7,157.71	15,761.34	7,168.88	141.51	142.56	-90.46	1,264.82	8,765.35	1,399.98	1,116.55	283.43	4.939		
15,700.00	7,157.67	15,861.34	7,168.83	143.09	144.12	-90.46	1,264.88	8,865.35	1,400.01	1,113.43	286.58	4.885		
15,800.00	7,157.63	15,961.34	7,168.78	144.67	145.69	-90.46	1,264.93	8,965.35	1,400.04	1,110.30	289.74	4.832		
15,900.00	7,157.59	16,061.34	7,168.73	146.24	147.26	-90.46	1,264.98	9,065.35	1,400.07	1,107.18	292.89	4.780		
16,000.00	7,157.55	16,161.34	7,168.68	147.82	148.84	-90.46	1,265.03	9,165.35	1,400.10	1,104.05	296.05	4.729		
16,100.00	7,157.51	16,261.34	7,168.63	149.41	150.41	-90.46	1,265.08	9,265.35	1,400.13	1,100.92	299.21	4.679		
16,200.00	7,157.47	16,361.34	7,168.58	150.99	151.98	-90.45	1,265.14	9,365.35	1,400.17	1,097.80	302.37	4.631		
16,300.00	7,157.43	16,461.34	7,168.52	152.57	153.55	-90.45	1,265.19	9,465.35	1,400.20	1,094.67	305.53	4.583		
16,400.00	7,157.38	16,561.34	7,168.47	154.15	155.13	-90.45	1,265.24	9,565.35	1,400.23	1,091.54	308.69	4.536		
16,500.00	7,157.34	16,661.34	7,168.42	155.73	156.70	-90.45	1,265.29	9,665.35	1,400.26	1,088.41	311.85	4.490		
16,600.00	7,157.30	16,761.34	7,168.37	157.31	158.28	-90.45	1,265.35	9,765.35	1,400.29	1,085.28	315.01	4.445		
16,680.84	7,157.27	16,842.18	7,168.33	158.59	159.55	-90.45	1,265.39	9,846.19	1,400.31	1,082.74	317.57	4.409		
16,687.46	7,157.27	16,848.80	7,168.33	158.70	159.66	-90.45	1,265.39	9,852.80	1,400.31	1,082.53	317.78	4.407		
16,700.00	7,157.26	16,861.34	7,168.32	158.90	159.85	-90.45	1,265.40	9,865.35	1,400.30	1,082.12	318.18	4.401		
16,800.00	7,157.22	16,961.34	7,168.27	160.48	161.43	-90.45	1,265.45	9,965.35	1,400.22	1,078.88	321.34	4.357		
16,900.00	7,157.18	17,061.34	7,168.22	162.06	163.01	-90.45	1,265.50	10,065.35	1,400.13	1,075.63	324.51	4.315		
17,000.00	7,157.14	17,161.34	7,168.17	163.65	164.58	-90.45	1,265.56	10,165.35	1,400.05	1,072.38	327.67	4.273		
17,100.00	7,157.10	17,261.34	7,168.12	165.23	166.16	-90.45	1,265.61	10,265.35	1,399.96	1,069.13	330.84	4.232		
17,200.00	7,157.06	17,361.34	7,168.07	166.82	167.74	-90.45	1,265.66	10,365.35	1,399.88	1,065.87	334.01	4.191		
17,300.00	7,157.02	17,461.34	7,168.02	168.40	169.32	-90.45	1,265.71	10,465.35	1,399.80	1,062.62	337.17	4.152		
17,400.00	7,156.98	17,561.34	7,167.97	169.99	170.89	-90.45	1,265.77	10,565.35	1,399.71	1,059.37	340.34	4.113		
17,500.00	7,156.94	17,661.34	7,167.92	171.57	172.47	-90.45	1,265.82	10,665.35	1,399.63	1,056.11	343.51	4.074		
17,600.00	7,156.90	17,761.34	7,167.86	173.16	174.05	-90.45	1,265.87	10,765.35	1,399.54	1,052.86	346.68	4.037		
17,700.00	7,156.85	17,861.34	7,167.81	174.75	175.63	-90.45	1,265.92	10,865.35	1,399.46	1,049.61	349.85	4.000		
17,800.00	7,156.81	17,961.34	7,167.76	176.33	177.21	-90.45	1,265.98	10,965.35	1,399.37	1,046.35	353.02	3.964		
17,900.00	7,156.77	18,061.34	7,167.71	177.92	178.80	-90.45	1,266.03	11,065.35	1,399.29	1,043.09	356.19	3.928		
18,000.00	7,156.73	18,161.34	7,167.66	179.51	180.38	-90.45	1,266.08	11,165.35	1,399.20	1,039.84	359.37	3.894		
18,100.00	7,156.69	18,261.34	7,167.61	181.09	181.96	-90.45	1,266.13	11,265.35	1,399.12	1,036.58	362.54	3.859		
18,200.00	7,156.65	18,361.34	7,167.56	182.68	183.54	-90.45	1,266.19	11,365.35	1,399.04	1,033.32	365.71	3.825		
18,300.00	7,156.61	18,461.34	7,167.51	184.27	185.12	-90.45	1,266.24	11,465.35	1,398.95	1,030.06	368.89	3.792		
18,400.00	7,156.57	18,561.34	7,167.46	185.86	186.71	-90.45	1,266.29	11,565.35	1,398.87	1,026.80	372.06	3.760		
18,500.00	7,156.53	18,661.34	7,167.41	187.45	188.29	-90.45	1,266.34	11,665.35	1,398.78	1,023.54	375.24	3.728		
18,600.00	7,156.49	18,761.34	7,167.36	189.03	189.87	-90.45	1,266.40	11,765.35	1,398.70	1,020.29	378.41	3.696		
18,700.00	7,156.45	18,861.34	7,167.31	190.62	191.46	-90.44	1,266.45	11,865.35	1,398.61	1,017.02	381.59	3.665		
18,800.00	7,156.41	18,961.34	7,167.25	192.21	193.04	-90.44	1,266.50	11,965.35	1,398.53	1,013.76	384.76	3.635		
18,900.00	7,156.37	19,061.34	7,167.20	193.80	194.62	-90.44	1,266.55	12,065.35	1,398.44	1,010.50	387.94	3.605		

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 836H
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 836H	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		Rule Assigned: 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)		
19,000.00	7,156.32	19,161.34	7,167.15	195.39	196.21	-90.44	1,266.60	12,165.35	1,398.36	1,007.24	391.12	3.575	
19,100.00	7,156.28	19,261.34	7,167.10	196.98	197.79	-90.44	1,266.66	12,265.35	1,398.27	1,003.98	394.30	3.546	
19,200.00	7,156.24	19,361.34	7,167.05	198.57	199.38	-90.44	1,266.71	12,365.35	1,398.19	1,000.72	397.47	3.518	
19,300.00	7,156.20	19,461.34	7,167.00	200.16	200.96	-90.44	1,266.76	12,465.35	1,398.11	997.45	400.65	3.490	
19,400.00	7,156.16	19,561.34	7,166.95	201.75	202.55	-90.44	1,266.81	12,565.35	1,398.02	994.19	403.83	3.462	
19,500.00	7,156.12	19,661.34	7,166.90	203.34	204.13	-90.44	1,266.87	12,665.35	1,397.94	990.93	407.01	3.435	
19,600.00	7,156.08	19,761.34	7,166.85	204.93	205.72	-90.44	1,266.92	12,765.35	1,397.85	987.66	410.19	3.408	
19,700.00	7,156.04	19,861.34	7,166.80	206.52	207.31	-90.44	1,266.97	12,865.35	1,397.77	984.40	413.37	3.381	
19,800.00	7,156.00	19,961.34	7,166.75	208.11	208.89	-90.44	1,267.02	12,965.35	1,397.68	981.13	416.55	3.355	
19,900.00	7,155.96	20,061.34	7,166.70	209.71	210.48	-90.44	1,267.08	13,065.35	1,397.60	977.87	419.73	3.330	
20,000.00	7,155.92	20,161.34	7,166.64	211.30	212.07	-90.44	1,267.13	13,165.35	1,397.51	974.60	422.91	3.304	
20,100.00	7,155.88	20,261.34	7,166.59	212.89	213.65	-90.44	1,267.18	13,265.35	1,397.43	971.33	426.10	3.280	
20,200.00	7,155.84	20,361.34	7,166.54	214.48	215.24	-90.44	1,267.23	13,365.35	1,397.35	968.07	429.28	3.255	
20,300.00	7,155.79	20,461.34	7,166.49	216.07	216.83	-90.44	1,267.29	13,465.35	1,397.26	964.80	432.46	3.231	
20,400.00	7,155.75	20,561.34	7,166.44	217.66	218.42	-90.44	1,267.34	13,565.35	1,397.18	961.53	435.64	3.207	
20,500.00	7,155.71	20,661.34	7,166.39	219.26	220.01	-90.44	1,267.39	13,665.35	1,397.09	958.27	438.82	3.184	
20,600.00	7,155.67	20,761.34	7,166.34	220.85	221.59	-90.44	1,267.44	13,765.35	1,397.01	955.00	442.01	3.161	
20,700.00	7,155.63	20,861.34	7,166.29	222.44	223.18	-90.44	1,267.50	13,865.35	1,396.92	951.73	445.19	3.138	
20,800.00	7,155.59	20,961.34	7,166.24	224.03	224.77	-90.44	1,267.55	13,965.35	1,396.84	948.46	448.38	3.115	
20,900.00	7,155.55	21,061.34	7,166.19	225.63	226.36	-90.44	1,267.60	14,065.35	1,396.75	945.20	451.56	3.093	
21,000.00	7,155.51	21,161.34	7,166.14	227.22	227.95	-90.44	1,267.65	14,165.35	1,396.67	941.93	454.74	3.071	
21,100.00	7,155.47	21,261.34	7,166.09	228.81	229.54	-90.44	1,267.71	14,265.35	1,396.59	938.66	457.93	3.050	
21,200.00	7,155.43	21,361.34	7,166.03	230.40	231.13	-90.44	1,267.76	14,365.35	1,396.50	935.39	461.11	3.029	
21,300.00	7,155.39	21,461.34	7,165.98	232.00	232.72	-90.43	1,267.81	14,465.35	1,396.42	932.12	464.30	3.008	
21,400.00	7,155.35	21,561.34	7,165.93	233.59	234.31	-90.43	1,267.86	14,565.35	1,396.33	928.85	467.48	2.987	
21,500.00	7,155.31	21,661.34	7,165.88	235.18	235.90	-90.43	1,267.92	14,665.35	1,396.25	925.58	470.67	2.967	
21,600.00	7,155.26	21,761.34	7,165.83	236.78	237.49	-90.43	1,267.97	14,765.35	1,396.16	922.31	473.86	2.946	
21,700.00	7,155.22	21,861.34	7,165.78	238.37	239.08	-90.43	1,268.02	14,865.35	1,396.08	919.04	477.04	2.927	
21,800.00	7,155.18	21,961.34	7,165.73	239.96	240.67	-90.43	1,268.07	14,965.35	1,395.99	915.77	480.23	2.907	
21,900.00	7,155.14	22,061.34	7,165.68	241.56	242.26	-90.43	1,268.12	15,065.35	1,395.91	912.50	483.41	2.888	
21,953.88	7,155.12	22,115.22	7,165.65	242.42	243.12	-90.43	1,268.15	15,119.23	1,395.86	910.73	485.13	2.877	
21,958.49	7,155.12	22,119.83	7,165.65	242.49	243.19	-90.43	1,268.16	15,123.84	1,395.86	910.58	485.28	2.876	
22,000.00	7,155.10	22,161.34	7,165.63	243.15	243.85	-90.43	1,268.18	15,165.35	1,396.01	909.41	486.60	2.869	
22,019.01	7,155.09	22,180.35	7,165.62	243.46	244.15	-90.43	1,268.19	15,184.36	1,396.18	908.97	487.21	2.866	
22,100.00	7,155.06	22,261.33	7,165.58	244.75	245.44	-90.43	1,268.23	15,265.34	1,397.03	907.24	489.79	2.852	
22,200.00	7,155.02	22,361.33	7,165.53	246.34	247.03	-90.43	1,268.28	15,365.33	1,398.08	905.11	492.98	2.836	
22,300.00	7,154.97	22,461.32	7,165.48	247.94	248.62	-90.43	1,268.33	15,465.33	1,399.14	902.97	496.16	2.820	
22,400.00	7,154.93	22,561.32	7,165.42	249.53	250.21	-90.43	1,268.39	15,565.32	1,400.19	900.84	499.35	2.804	
22,500.00	7,154.89	22,661.31	7,165.37	251.13	251.81	-90.43	1,268.44	15,665.32	1,401.24	898.70	502.54	2.788	
22,600.00	7,154.85	22,761.31	7,165.32	252.72	253.40	-90.43	1,268.49	15,765.31	1,402.29	896.56	505.73	2.773	
22,700.00	7,154.80	22,861.30	7,165.27	254.32	254.99	-90.43	1,268.54	15,865.31	1,403.35	894.43	508.92	2.758	
22,800.00	7,154.76	22,961.30	7,165.22	255.91	256.58	-90.43	1,268.60	15,965.30	1,404.40	892.29	512.11	2.742	
22,900.00	7,154.72	23,061.29	7,165.17	257.51	258.17	-90.43	1,268.65	16,065.30	1,405.45	890.15	515.30	2.727	
23,000.00	7,154.68	23,161.28	7,165.12	259.11	259.76	-90.43	1,268.70	16,165.29	1,406.50	888.01	518.49	2.713	
23,100.00	7,154.63	23,261.28	7,165.07	260.70	261.36	-90.42	1,268.75	16,265.28	1,407.55	885.88	521.68	2.698	
23,200.00	7,154.59	23,361.27	7,165.02	262.30	262.95	-90.42	1,268.81	16,365.28	1,408.61	883.74	524.87	2.684	
23,300.00	7,154.55	23,461.27	7,164.97	263.89	264.54	-90.42	1,268.86	16,465.27	1,409.66	881.60	528.06	2.670	
23,400.00	7,154.51	23,561.26	7,164.92	265.49	266.13	-90.42	1,268.91	16,565.27	1,410.71	879.46	531.25	2.655	
23,500.00	7,154.47	23,661.26	7,164.87	267.08	267.73	-90.42	1,268.96	16,665.26	1,411.76	877.33	534.44	2.642	
23,600.00	7,154.42	23,761.25	7,164.82	268.68	269.32	-90.42	1,269.02	16,765.26	1,412.82	875.19	537.63	2.628	
23,700.00	7,154.38	23,861.25	7,164.76	270.28	270.91	-90.42	1,269.07	16,865.25	1,413.87	873.05	540.82	2.614	
23,800.00	7,154.34	23,961.24	7,164.71	271.87	272.51	-90.42	1,269.12	16,965.25	1,414.92	870.91	544.01	2.601	

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 836H
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 836H	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		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	7,154.30	24,061.23	7,164.66	273.47	274.10	-90.42	1,269.17	17,065.24	1,415.97	868.77	547.20	2.588		
24,000.00	7,154.25	24,161.23	7,164.61	275.07	275.69	-90.42	1,269.23	17,165.23	1,417.02	866.63	550.39	2.575		
24,100.00	7,154.21	24,261.22	7,164.56	276.66	277.28	-90.42	1,269.28	17,265.23	1,418.08	864.49	553.58	2.562		
24,200.00	7,154.17	24,361.22	7,164.51	278.26	278.88	-90.42	1,269.33	17,365.22	1,419.13	862.35	556.78	2.549		
24,300.00	7,154.13	24,461.21	7,164.46	279.86	280.47	-90.42	1,269.38	17,465.22	1,420.18	860.21	559.97	2.536		
24,400.00	7,154.08	24,561.21	7,164.41	281.45	282.06	-90.42	1,269.44	17,565.21	1,421.23	858.07	563.16	2.524		
24,500.00	7,154.04	24,661.20	7,164.36	283.05	283.66	-90.42	1,269.49	17,665.21	1,422.29	855.93	566.35	2.511		
24,597.25	7,154.00	24,758.44	7,164.31	284.60	285.21	-90.41	1,269.54	17,762.45	1,423.31	853.85	569.46	2.499		
24,600.00	7,154.00	24,761.20	7,164.31	284.65	285.25	-90.41	1,269.54	17,765.20	1,423.34	853.79	569.54	2.499		
24,700.00	7,153.96	24,861.19	7,164.26	286.24	286.85	-90.41	1,269.59	17,865.20	1,423.47	850.73	572.73	2.485		
24,722.47	7,153.95	24,883.66	7,164.24	286.60	287.20	-90.41	1,269.60	17,887.67	1,423.26	849.81	573.45	2.482		
24,800.00	7,153.92	24,961.19	7,164.21	287.84	288.44	-90.41	1,269.64	17,965.19	1,422.38	846.45	575.93	2.470		
24,900.00	7,153.88	25,061.18	7,164.15	289.43	290.03	-90.41	1,269.70	18,065.19	1,421.25	842.13	579.12	2.454		
25,000.00	7,153.84	25,161.18	7,164.10	291.03	291.63	-90.41	1,269.75	18,165.18	1,420.11	837.81	582.31	2.439		
25,100.00	7,153.80	25,261.17	7,164.05	292.63	293.22	-90.41	1,269.80	18,265.17	1,418.98	833.48	585.50	2.424		
25,200.00	7,153.77	25,361.16	7,164.00	294.22	294.82	-90.41	1,269.85	18,365.17	1,417.85	829.16	588.69	2.408		
25,300.00	7,153.73	25,461.16	7,163.95	295.82	296.41	-90.41	1,269.91	18,465.16	1,416.71	824.83	591.88	2.394		
25,400.00	7,153.69	25,561.15	7,163.90	297.41	298.01	-90.41	1,269.96	18,565.15	1,415.58	820.51	595.07	2.379		
25,500.00	7,153.65	25,661.14	7,163.85	299.01	299.60	-90.41	1,270.01	18,665.15	1,414.45	816.18	598.26	2.364		
25,600.00	7,153.61	25,761.14	7,163.80	300.60	301.19	-90.41	1,270.06	18,765.14	1,413.31	811.86	601.46	2.350		
25,700.00	7,153.57	25,861.13	7,163.75	302.20	302.79	-90.41	1,270.12	18,865.14	1,412.18	807.53	604.65	2.336		
25,800.00	7,153.53	25,961.12	7,163.70	303.80	304.38	-90.41	1,270.17	18,965.13	1,411.05	803.21	607.84	2.321		
25,900.00	7,153.50	26,061.12	7,163.65	305.39	305.98	-90.41	1,270.22	19,065.12	1,409.91	798.88	611.03	2.307		
26,000.00	7,153.46	26,161.11	7,163.60	306.99	307.57	-90.41	1,270.27	19,165.12	1,408.78	794.56	614.23	2.294		
26,100.00	7,153.42	26,261.10	7,163.54	308.58	309.17	-90.41	1,270.33	19,265.11	1,407.65	790.23	617.42	2.280		
26,200.00	7,153.38	26,361.10	7,163.49	310.18	310.76	-90.41	1,270.38	19,365.10	1,406.51	785.90	620.61	2.266		
26,300.00	7,153.34	26,461.09	7,163.44	311.78	312.36	-90.41	1,270.43	19,465.10	1,405.38	781.58	623.80	2.253		
26,400.00	7,153.30	26,561.09	7,163.39	313.37	313.95	-90.41	1,270.48	19,565.09	1,404.25	777.25	627.00	2.240		
26,500.00	7,153.26	26,661.08	7,163.34	314.97	315.55	-90.41	1,270.54	19,665.08	1,403.12	772.93	630.19	2.226		
26,600.00	7,153.23	26,761.07	7,163.29	316.57	317.14	-90.41	1,270.59	19,765.08	1,401.98	768.60	633.38	2.213		
26,700.00	7,153.19	26,861.07	7,163.24	318.16	318.74	-90.41	1,270.64	19,865.07	1,400.85	764.27	636.57	2.201		
26,800.00	7,153.15	26,961.06	7,163.19	319.76	320.34	-90.41	1,270.69	19,965.06	1,399.72	759.95	639.77	2.188		
26,900.00	7,153.11	27,061.05	7,163.14	321.35	321.93	-90.41	1,270.75	20,065.06	1,398.58	755.62	642.96	2.175		
26,976.35	7,153.08	27,137.40	7,163.10	322.57	323.15	-90.41	1,270.79	20,141.40	1,397.72	752.32	645.40	2.166		
27,000.00	7,153.07	27,161.05	7,163.09	322.95	323.53	-90.41	1,270.80	20,165.05	1,397.45	751.29	646.15	2.163		
27,100.00	7,153.03	27,261.04	7,163.04	324.55	325.12	-90.41	1,270.85	20,265.05	1,396.32	746.97	649.35	2.150		
27,176.36	7,153.00	27,335.53	7,163.00	325.77	326.31	-90.41	1,270.89	20,339.53	1,395.45	743.68	651.77	2.141 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 836H
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 836H	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		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	-145.57	-12.38	-8.48	15.01				
125.00	125.00	125.11	125.11	0.06	0.05	81.57	-11.82	-8.45	14.46	14.37	0.09	161.709	
214.71	214.71	214.81	214.81	0.16	0.18	147.52	-11.03	-8.40	14.09	13.83	0.26	54.797	
225.00	225.00	225.10	225.09	0.17	0.19	152.38	-10.93	-8.40	14.09	13.82	0.28	50.993	
289.42	289.42	289.51	289.50	0.25	0.28	112.71	-10.44	-8.32	14.00	13.60	0.41	34.555 CC, ES	
312.00	311.99	290.00	289.99	0.28	0.28	93.27	-10.43	-8.32	26.10	25.48	0.61	42.485	
400.00	399.99	290.00	289.99	0.37	0.28	93.27	-10.43	-8.32	110.90	108.25	2.65	41.923	
462.00	461.99	290.00	289.99	0.50	0.28	93.27	-10.43	-8.32	172.58	169.91	2.67	64.602	
509.18	509.16	290.00	289.99	0.64	0.28	57.74	-10.43	-8.32	219.62	216.93	2.69	81.756	
600.00	599.96	290.00	289.99	0.94	0.28	57.74	-10.43	-8.32	310.27	307.56	2.72	114.253	
700.00	699.94	290.00	289.99	1.28	0.28	57.74	-10.43	-8.32	410.17	407.42	2.75	149.076	
800.00	799.92	290.00	289.99	1.63	0.28	57.74	-10.43	-8.32	510.11	507.32	2.79	182.748	
900.00	899.89	290.00	289.99	1.98	0.28	57.74	-10.43	-8.32	610.07	607.23	2.84	215.140	
1,000.00	999.87	290.00	289.99	2.34	0.28	57.74	-10.43	-8.32	710.04	707.15	2.88	246.159	
1,100.00	1,099.84	290.00	289.99	2.69	0.28	57.74	-10.43	-8.32	810.02	807.08	2.94	275.738	
1,200.00	1,199.82	290.00	289.99	3.05	0.28	57.74	-10.43	-8.32	910.00	907.00	3.00	303.838	
1,300.00	1,299.80	290.00	289.99	3.41	0.28	57.74	-10.43	-8.32	1,009.99	1,006.93	3.06	330.438	
1,400.00	1,399.77	290.00	289.99	3.77	0.28	57.74	-10.43	-8.32	1,109.97	1,106.85	3.12	355.538	
1,500.00	1,499.75	290.00	289.99	4.13	0.28	57.74	-10.43	-8.32	1,209.97	1,206.77	3.19	379.153	
1,600.00	1,599.72	290.00	289.99	4.49	0.28	57.74	-10.43	-8.32	1,309.96	1,306.69	3.26	401.310	
1,700.00	1,699.70	290.00	289.99	4.85	0.28	57.74	-10.43	-8.32	1,409.95	1,406.61	3.34	422.046	
1,800.00	1,799.68	290.00	289.99	5.21	0.28	57.74	-10.43	-8.32	1,509.94	1,506.52	3.42	441.407	
1,900.00	1,899.65	290.00	289.99	5.57	0.28	57.74	-10.43	-8.32	1,609.94	1,606.44	3.50	459.443	
2,000.00	1,999.63	290.00	289.99	5.93	0.28	57.74	-10.43	-8.32	1,709.93	1,706.34	3.59	476.209	
2,100.00	2,099.60	290.00	289.99	6.29	0.28	57.74	-10.43	-8.32	1,809.93	1,806.25	3.68	491.763	
2,200.00	2,199.58	290.00	289.99	6.65	0.28	57.74	-10.43	-8.32	1,909.93	1,906.15	3.77	506.162	
2,300.00	2,299.56	290.00	289.99	7.01	0.28	57.74	-10.43	-8.32	2,009.92	2,006.05	3.87	519.465	
2,400.00	2,399.53	290.00	289.99	7.37	0.28	57.74	-10.43	-8.32	2,109.92	2,105.95	3.97	531.731	
2,500.00	2,499.51	290.00	289.99	7.73	0.28	57.74	-10.43	-8.32	2,209.92	2,205.85	4.07	543.015	
2,600.00	2,599.48	290.00	289.99	8.09	0.28	57.74	-10.43	-8.32	2,309.92	2,305.74	4.17	553.372	
2,700.00	2,699.46	290.00	289.99	8.45	0.28	57.74	-10.43	-8.32	2,409.91	2,405.63	4.28	562.857	
2,800.00	2,799.44	290.00	289.99	8.81	0.28	57.74	-10.43	-8.32	2,509.91	2,505.52	4.39	571.520	
2,900.00	2,899.41	290.00	289.99	9.17	0.28	57.74	-10.43	-8.32	2,609.91	2,605.40	4.50	579.409	
3,000.00	2,999.39	290.00	289.99	9.53	0.28	57.74	-10.43	-8.32	2,709.91	2,705.29	4.62	586.572	
3,100.00	3,099.36	290.00	289.99	9.89	0.28	57.74	-10.43	-8.32	2,809.91	2,805.17	4.74	593.052	
3,200.00	3,199.34	290.00	289.99	10.25	0.28	57.74	-10.43	-8.32	2,909.90	2,905.04	4.86	598.891	
3,300.00	3,299.32	290.00	289.99	10.61	0.28	57.74	-10.43	-8.32	3,009.90	3,004.92	4.98	604.128	
3,400.00	3,399.29	290.00	289.99	10.97	0.28	57.74	-10.43	-8.32	3,109.90	3,104.79	5.11	608.801	
3,500.00	3,499.27	290.00	289.99	11.33	0.28	57.74	-10.43	-8.32	3,209.90	3,204.66	5.24	612.944	
3,600.00	3,599.25	290.00	289.99	11.69	0.28	57.74	-10.43	-8.32	3,309.90	3,304.53	5.37	616.591	
3,700.00	3,699.22	290.00	289.99	12.05	0.28	57.74	-10.43	-8.32	3,409.90	3,404.40	5.50	619.772	
3,800.00	3,799.20	290.00	289.99	12.41	0.28	57.74	-10.43	-8.32	3,509.90	3,504.26	5.64	622.517	
3,900.00	3,899.17	290.00	289.99	12.77	0.28	57.74	-10.43	-8.32	3,609.90	3,604.12	5.78	624.854	
4,000.00	3,999.15	290.00	289.99	13.13	0.28	57.74	-10.43	-8.32	3,709.89	3,703.98	5.92	626.807	
4,100.00	4,099.13	290.00	289.99	13.49	0.28	57.74	-10.43	-8.32	3,809.89	3,803.83	6.06	628.401	
4,200.00	4,199.10	290.00	289.99	13.85	0.28	57.74	-10.43	-8.32	3,909.89	3,903.68	6.21	629.660	
4,300.00	4,299.08	290.00	289.99	14.21	0.28	57.74	-10.43	-8.32	4,009.89	4,003.53	6.36	630.604	
4,400.00	4,399.05	290.00	289.99	14.57	0.28	57.74	-10.43	-8.32	4,109.89	4,103.38	6.51	631.254	
4,500.00	4,499.03	290.00	289.99	14.93	0.28	57.74	-10.43	-8.32	4,209.89	4,203.23	6.67	631.627	
4,600.00	4,599.01	290.00	289.99	15.29	0.28	57.74	-10.43	-8.32	4,309.89	4,303.07	6.82	631.743	
4,700.00	4,698.98	290.00	289.99	15.65	0.28	57.74	-10.43	-8.32	4,409.89	4,402.91	6.98	631.618	
4,800.00	4,798.96	290.00	289.99	16.01	0.28	57.74	-10.43	-8.32	4,509.89	4,502.74	7.14	631.268	

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

SDT

Anticollision Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)			
4,900.00	4,898.93	290.00	289.99	16.37	0.28	57.74	-10.43	-8.32	4,609.89	4,602.58	7.31	630.707	
5,000.00	4,998.91	290.00	289.99	16.73	0.28	57.74	-10.43	-8.32	4,709.89	4,702.41	7.48	629.949	
5,100.00	5,098.89	290.00	289.99	17.09	0.28	57.74	-10.43	-8.32	4,809.89	4,802.24	7.65	629.007	
5,200.00	5,198.86	290.00	289.99	17.45	0.28	57.74	-10.43	-8.32	4,909.89	4,902.07	7.82	627.894	
5,300.00	5,298.84	290.00	289.99	17.81	0.28	57.74	-10.43	-8.32	5,009.89	5,001.89	8.00	626.621	
5,400.00	5,398.81	290.00	289.99	18.17	0.28	57.74	-10.43	-8.32	5,109.89	5,101.71	8.17	625.199	
5,500.00	5,498.79	290.00	289.99	18.53	0.28	57.74	-10.43	-8.32	5,209.88	5,201.53	8.35	623.638	
5,600.00	5,598.77	290.00	289.99	18.89	0.28	57.74	-10.43	-8.32	5,309.88	5,301.35	8.54	621.949	
5,700.00	5,698.74	290.00	289.99	19.25	0.28	57.74	-10.43	-8.32	5,409.88	5,401.16	8.72	620.139	
5,800.00	5,798.72	290.00	289.99	19.61	0.28	57.74	-10.43	-8.32	5,509.88	5,500.97	8.91	618.218	
5,900.00	5,898.69	290.00	289.99	19.97	0.28	57.74	-10.43	-8.32	5,609.88	5,600.78	9.10	616.193	
6,000.00	5,998.67	290.00	289.99	20.33	0.28	57.74	-10.43	-8.32	5,709.88	5,700.58	9.30	614.073	
6,100.00	6,098.65	290.00	289.99	20.69	0.28	57.74	-10.43	-8.32	5,809.88	5,800.39	9.50	611.865	
6,200.00	6,198.62	290.00	289.99	21.05	0.28	57.74	-10.43	-8.32	5,909.88	5,900.19	9.70	609.574	
6,300.00	6,298.60	290.00	289.99	21.41	0.28	57.74	-10.43	-8.32	6,009.88	5,999.98	9.90	607.208	
6,400.00	6,398.57	290.00	289.99	21.77	0.28	57.74	-10.43	-8.32	6,109.88	6,099.78	10.10	604.772	
6,500.00	6,498.55	290.00	289.99	22.13	0.28	57.74	-10.43	-8.32	6,209.88	6,199.57	10.31	602.273	
6,531.56	6,530.10	290.00	289.99	22.25	0.28	57.74	-10.43	-8.32	6,241.44	6,231.06	10.38	601.472	
6,550.00	6,548.53	290.00	289.99	22.31	0.28	-23.61	-10.43	-8.32	6,259.88	6,249.46	10.42	601.007	
6,600.00	6,598.36	290.00	289.99	22.49	0.28	-8.67	-10.43	-8.32	6,309.75	6,299.24	10.52	599.815	
6,650.00	6,647.74	290.00	289.99	22.67	0.28	-5.26	-10.43	-8.32	6,359.22	6,348.60	10.62	598.784	
6,700.00	6,696.35	290.00	289.99	22.84	0.28	-3.79	-10.43	-8.32	6,407.99	6,397.27	10.72	597.930	
6,750.00	6,743.90	290.00	289.99	23.01	0.28	-2.98	-10.43	-8.32	6,455.78	6,444.97	10.81	597.244	
6,800.00	6,790.11	290.00	289.99	23.18	0.28	-2.46	-10.43	-8.32	6,502.31	6,491.41	10.90	596.708	
6,850.00	6,834.67	290.00	289.99	23.35	0.28	-2.11	-10.43	-8.32	6,547.34	6,536.36	10.98	596.296	
6,900.00	6,877.32	290.00	289.99	23.51	0.28	-1.86	-10.43	-8.32	6,590.61	6,579.55	11.06	595.969	
6,950.00	6,917.80	290.00	289.99	23.68	0.28	-1.67	-10.43	-8.32	6,631.90	6,620.77	11.13	595.676	
7,000.00	6,955.85	290.00	289.99	23.85	0.28	-1.52	-10.43	-8.32	6,670.99	6,659.79	11.21	595.354	
7,050.00	6,991.24	290.00	289.99	24.03	0.28	-1.41	-10.43	-8.32	6,707.69	6,696.41	11.27	594.926	
7,100.00	7,023.76	290.00	289.99	24.22	0.28	-1.32	-10.43	-8.32	6,741.79	6,730.45	11.34	594.305	
7,150.00	7,053.20	290.00	289.99	24.42	0.28	-1.24	-10.43	-8.32	6,773.15	6,761.74	11.41	593.396	
7,200.00	7,079.37	290.00	289.99	24.63	0.28	-1.19	-10.43	-8.32	6,801.60	6,790.11	11.49	592.101	
7,250.00	7,102.13	290.00	289.99	24.86	0.28	-1.14	-10.43	-8.32	6,827.00	6,815.44	11.56	590.324	
7,300.00	7,121.32	290.00	289.99	25.10	0.28	-1.10	-10.43	-8.32	6,849.23	6,837.59	11.65	587.977	
7,350.00	7,136.84	290.00	289.99	25.35	0.28	-1.08	-10.43	-8.32	6,868.20	6,856.45	11.74	584.988	
7,400.00	7,148.58	290.00	289.99	25.62	0.28	-1.06	-10.43	-8.32	6,883.79	6,871.95	11.84	581.302	
7,450.00	7,156.47	290.00	289.99	25.90	0.28	-1.05	-10.43	-8.32	6,895.96	6,884.00	11.95	576.892	
7,500.00	7,160.47	290.00	289.99	26.20	0.28	-1.04	-10.43	-8.32	6,904.63	6,892.55	12.08	571.758	
7,526.22	7,161.00	290.00	289.99	26.36	0.28	-1.04	-10.43	-8.32	6,907.76	6,895.62	12.14	568.829	
7,600.00	7,160.97	290.00	289.99	26.83	0.28	-1.04	-10.43	-8.32	6,915.61	6,903.25	12.36	559.564	
7,700.00	7,160.93	290.00	289.99	27.53	0.28	-1.04	-10.43	-8.32	6,927.48	6,914.78	12.69	545.806	
7,800.00	7,160.89	290.00	289.99	28.32	0.28	-1.04	-10.43	-8.32	6,940.77	6,927.70	13.07	531.131	
7,900.00	7,160.85	290.00	289.99	29.16	0.28	-1.04	-10.43	-8.32	6,955.47	6,941.99	13.48	515.932	
8,000.00	7,160.81	290.00	289.99	30.07	0.28	-1.04	-10.43	-8.32	6,971.58	6,957.65	13.93	500.537	
8,100.00	7,160.77	290.00	289.99	31.04	0.28	-1.04	-10.43	-8.32	6,989.08	6,974.68	14.40	485.216	
8,200.00	7,160.73	290.00	289.99	32.06	0.28	-1.04	-10.43	-8.32	7,007.96	6,993.06	14.91	470.175	
8,300.00	7,160.69	290.00	289.99	33.12	0.28	-1.04	-10.43	-8.32	7,028.22	7,012.79	15.43	455.568	
8,400.00	7,160.65	290.00	289.99	34.23	0.28	-1.04	-10.43	-8.32	7,049.84	7,033.87	15.97	441.501	
8,500.00	7,160.60	290.00	289.99	35.37	0.28	-1.04	-10.43	-8.32	7,072.80	7,056.28	16.52	428.046	
8,600.00	7,160.56	290.00	289.99	36.55	0.28	-1.04	-10.43	-8.32	7,097.10	7,080.01	17.09	415.243	
8,700.00	7,160.52	290.00	289.99	37.76	0.28	-1.04	-10.43	-8.32	7,122.72	7,105.05	17.67	403.110	
8,800.00	7,160.48	290.00	289.99	38.99	0.28	-1.04	-10.43	-8.32	7,149.65	7,131.40	18.26	391.649	

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 836H
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 836H	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		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)			
8,900.00	7,160.44	290.00	289.99	40.26	0.28	-1.04	-10.43	-8.32	7,177.87	7,159.02	18.85	380.849	
9,000.00	7,160.40	290.00	289.99	41.54	0.28	-1.04	-10.43	-8.32	7,207.37	7,187.93	19.44	370.692	
9,100.00	7,160.36	290.00	289.99	42.85	0.28	-1.04	-10.43	-8.32	7,238.13	7,218.09	20.04	361.153	
9,200.00	7,160.32	290.00	289.99	44.18	0.28	-1.04	-10.43	-8.32	7,270.13	7,249.49	20.64	352.204	
9,300.00	7,160.28	290.00	289.99	45.53	0.28	-1.04	-10.43	-8.32	7,303.36	7,282.12	21.24	343.815	
9,400.00	7,160.24	290.00	289.99	46.89	0.28	-1.04	-10.43	-8.32	7,337.81	7,315.97	21.84	335.956	
9,500.00	7,160.20	290.00	289.99	48.26	0.28	-1.04	-10.43	-8.32	7,373.45	7,351.01	22.44	328.597	
9,600.00	7,160.16	290.00	289.99	49.65	0.28	-1.04	-10.43	-8.32	7,410.27	7,387.24	23.03	321.707	
9,700.00	7,160.12	290.00	289.99	51.05	0.28	-1.04	-10.43	-8.32	7,448.25	7,424.62	23.63	315.258	
9,800.00	7,160.08	290.00	289.99	52.47	0.28	-1.04	-10.43	-8.32	7,487.37	7,463.16	24.21	309.223	
9,900.00	7,160.04	290.00	289.99	53.89	0.28	-1.04	-10.43	-8.32	7,527.62	7,502.83	24.80	303.575	
10,000.00	7,160.00	290.00	289.99	55.33	0.28	-1.04	-10.43	-8.32	7,568.98	7,543.60	25.37	298.290	
10,100.00	7,159.95	290.00	289.99	56.77	0.28	-1.04	-10.43	-8.32	7,611.42	7,585.47	25.95	293.344	
10,200.00	7,159.91	290.00	289.99	58.22	0.28	-1.04	-10.43	-8.32	7,654.94	7,628.42	26.51	288.717	
10,300.00	7,159.87	290.00	289.99	59.68	0.28	-1.04	-10.43	-8.32	7,699.51	7,672.43	27.07	284.389	
10,400.00	7,159.83	290.00	289.99	61.15	0.28	-1.04	-10.43	-8.32	7,745.11	7,717.48	27.63	280.339	
10,500.00	7,159.79	290.00	289.99	62.62	0.28	-1.04	-10.43	-8.32	7,791.73	7,763.55	28.17	276.551	
10,600.00	7,159.75	290.00	289.99	64.10	0.28	-1.04	-10.43	-8.32	7,839.35	7,810.63	28.71	273.009	
10,700.00	7,159.71	290.00	289.99	65.58	0.28	-1.04	-10.43	-8.32	7,887.95	7,858.70	29.25	269.698	
10,800.00	7,159.67	290.00	289.99	67.07	0.28	-1.04	-10.43	-8.32	7,937.51	7,907.73	29.77	266.602	
10,900.00	7,159.63	290.00	289.99	68.57	0.28	-1.04	-10.43	-8.32	7,988.01	7,957.72	30.29	263.710	
11,000.00	7,159.59	290.00	289.99	70.07	0.28	-1.04	-10.43	-8.32	8,039.44	8,008.64	30.80	261.010	
11,100.00	7,159.55	290.00	289.99	71.57	0.28	-1.04	-10.43	-8.32	8,091.79	8,060.48	31.30	258.489	
11,200.00	7,159.51	290.00	289.99	73.08	0.28	-1.04	-10.43	-8.32	8,145.02	8,113.22	31.80	256.138	
11,300.00	7,159.47	290.00	289.99	74.59	0.28	-1.04	-10.43	-8.32	8,199.12	8,166.84	32.29	253.946	
11,400.00	7,159.43	290.00	289.99	76.11	0.28	-1.04	-10.43	-8.32	8,254.09	8,221.32	32.77	251.905	
11,500.00	7,159.39	290.00	289.99	77.63	0.28	-1.04	-10.43	-8.32	8,309.89	8,276.65	33.24	250.007	
11,600.00	7,159.35	290.00	289.99	79.15	0.28	-1.04	-10.43	-8.32	8,366.52	8,332.82	33.70	248.242	
11,638.27	7,159.33	290.00	289.99	79.73	0.28	-1.04	-10.43	-8.32	8,388.40	8,354.53	33.88	247.601	
11,640.51	7,159.33	290.00	289.99	79.77	0.28	-1.06	-10.43	-8.32	8,389.69	8,355.80	33.89	247.564	
11,700.00	7,159.30	290.00	289.99	80.68	0.28	-1.06	-10.43	-8.32	8,423.95	8,389.79	34.16	246.604	
11,800.00	7,159.26	290.00	289.99	82.20	0.28	-1.06	-10.43	-8.32	8,482.17	8,447.56	34.61	245.086	
11,900.00	7,159.22	290.00	289.99	83.74	0.28	-1.06	-10.43	-8.32	8,541.17	8,506.12	35.05	243.682	
12,000.00	7,159.18	290.00	289.99	85.27	0.28	-1.06	-10.43	-8.32	8,600.92	8,565.44	35.48	242.385	
12,100.00	7,159.14	290.00	289.99	86.81	0.28	-1.06	-10.43	-8.32	8,661.42	8,625.51	35.91	241.191	
12,200.00	7,159.10	290.00	289.99	88.35	0.28	-1.06	-10.43	-8.32	8,722.64	8,686.31	36.33	240.092	
12,300.00	7,159.06	290.00	289.99	89.89	0.28	-1.06	-10.43	-8.32	8,784.58	8,747.84	36.74	239.086	
12,400.00	7,159.02	290.00	289.99	91.43	0.28	-1.06	-10.43	-8.32	8,847.21	8,810.06	37.15	238.167	
12,500.00	7,158.98	290.00	289.99	92.98	0.28	-1.06	-10.43	-8.32	8,910.52	8,872.98	37.54	237.331	
12,600.00	7,158.94	290.00	289.99	94.52	0.28	-1.06	-10.43	-8.32	8,974.51	8,936.57	37.94	236.573	
12,700.00	7,158.90	290.00	289.99	96.07	0.28	-1.06	-10.43	-8.32	9,039.14	9,000.82	38.32	235.890	
12,800.00	7,158.86	290.00	289.99	97.62	0.28	-1.06	-10.43	-8.32	9,104.42	9,065.72	38.70	235.279	
12,900.00	7,158.81	290.00	289.99	99.17	0.28	-1.06	-10.43	-8.32	9,170.32	9,131.25	39.07	234.735	
13,000.00	7,158.77	290.00	289.99	100.73	0.28	-1.06	-10.43	-8.32	9,236.83	9,197.40	39.43	234.256	
13,100.00	7,158.73	290.00	289.99	102.28	0.28	-1.06	-10.43	-8.32	9,303.94	9,264.15	39.79	233.839	
13,200.00	7,158.69	290.00	289.99	103.84	0.28	-1.06	-10.43	-8.32	9,371.64	9,331.50	40.14	233.481	
13,300.00	7,158.65	290.00	289.99	105.40	0.28	-1.06	-10.43	-8.32	9,439.91	9,399.43	40.48	233.179	
13,400.00	7,158.61	290.00	289.99	106.96	0.28	-1.06	-10.43	-8.32	9,508.75	9,467.92	40.82	232.930	
13,500.00	7,158.57	290.00	289.99	108.52	0.28	-1.06	-10.43	-8.32	9,578.13	9,536.97	41.16	232.733	
13,600.00	7,158.53	290.00	289.99	110.08	0.28	-1.06	-10.43	-8.32	9,648.05	9,606.57	41.48	232.585	
13,700.00	7,158.49	290.00	289.99	111.64	0.28	-1.06	-10.43	-8.32	9,718.50	9,676.69	41.80	232.483	
13,800.00	7,158.45	290.00	289.99	113.21	0.28	-1.06	-10.43	-8.32	9,789.46	9,747.34	42.12	232.427	

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 836H
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 836H	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)			
13,900.00	7,158.41	290.00	289.99	114.77	0.28	-1.06	-10.43	-8.32	9,860.92	9,818.50	42.43	232.413	
14,000.00	7,158.37	290.00	289.99	116.34	0.28	-1.06	-10.43	-8.32	9,932.88	9,890.15	42.73	232.440	
14,100.00	7,158.32	290.00	289.99	117.91	0.28	-1.06	-10.43	-8.32	10,005.32	9,962.29	43.03	232.507	
14,200.00	7,158.28	290.00	289.99	119.47	0.28	-1.06	-10.43	-8.32	10,078.23	10,034.91	43.33	232.611	
14,300.00	7,158.24	290.00	289.99	121.04	0.28	-1.06	-10.43	-8.32	10,151.60	10,107.99	43.62	232.751	
14,400.00	7,158.20	290.00	289.99	122.61	0.28	-1.06	-10.43	-8.32	10,225.43	10,181.53	43.90	232.926	
14,500.00	7,158.16	290.00	289.99	124.18	0.28	-1.06	-10.43	-8.32	10,299.69	10,255.51	44.18	233.134	
14,600.00	7,158.12	290.00	289.99	125.76	0.28	-1.06	-10.43	-8.32	10,374.39	10,329.94	44.45	233.374	
14,700.00	7,158.08	290.00	289.99	127.33	0.28	-1.06	-10.43	-8.32	10,449.51	10,404.79	44.72	233.645	
14,800.00	7,158.04	290.00	289.99	128.90	0.28	-1.06	-10.43	-8.32	10,525.05	10,480.06	44.99	233.945	
14,900.00	7,158.00	290.00	289.99	130.47	0.28	-1.06	-10.43	-8.32	10,600.99	10,555.74	45.25	234.273	
15,000.00	7,157.96	290.00	289.99	132.05	0.28	-1.06	-10.43	-8.32	10,677.32	10,631.82	45.51	234.628	
15,100.00	7,157.92	290.00	289.99	133.62	0.28	-1.06	-10.43	-8.32	10,754.05	10,708.29	45.76	235.009	
15,200.00	7,157.88	290.00	289.99	135.20	0.28	-1.06	-10.43	-8.32	10,831.15	10,785.14	46.01	235.415	
15,300.00	7,157.83	290.00	289.99	136.78	0.28	-1.06	-10.43	-8.32	10,908.63	10,862.38	46.25	235.844	
15,400.00	7,157.79	290.00	289.99	138.35	0.28	-1.06	-10.43	-8.32	10,986.47	10,939.97	46.49	236.297	
15,500.00	7,157.75	290.00	289.99	139.93	0.28	-1.06	-10.43	-8.32	11,064.67	11,017.93	46.73	236.772	
15,600.00	7,157.71	290.00	289.99	141.51	0.28	-1.06	-10.43	-8.32	11,143.21	11,096.25	46.96	237.269	
15,700.00	7,157.67	290.00	289.99	143.09	0.28	-1.06	-10.43	-8.32	11,222.10	11,174.90	47.19	237.786	
15,800.00	7,157.63	290.00	289.99	144.67	0.28	-1.06	-10.43	-8.32	11,301.32	11,253.90	47.42	238.322	
15,900.00	7,157.59	290.00	289.99	146.24	0.28	-1.06	-10.43	-8.32	11,380.86	11,333.22	47.64	238.878	
16,000.00	7,157.55	290.00	289.99	147.82	0.28	-1.06	-10.43	-8.32	11,460.73	11,412.87	47.86	239.452	
16,100.00	7,157.51	290.00	289.99	149.41	0.28	-1.06	-10.43	-8.32	11,540.91	11,492.84	48.08	240.043	
16,200.00	7,157.47	290.00	289.99	150.99	0.28	-1.06	-10.43	-8.32	11,621.40	11,573.11	48.29	240.651	
16,300.00	7,157.43	290.00	289.99	152.57	0.28	-1.06	-10.43	-8.32	11,702.19	11,653.69	48.50	241.276	
16,400.00	7,157.38	290.00	289.99	154.15	0.28	-1.06	-10.43	-8.32	11,783.28	11,734.57	48.71	241.916	
16,500.00	7,157.34	290.00	289.99	155.73	0.28	-1.06	-10.43	-8.32	11,864.65	11,815.74	48.91	242.571	
16,600.00	7,157.30	290.00	289.99	157.31	0.28	-1.06	-10.43	-8.32	11,946.31	11,897.19	49.11	243.241	
16,680.84	7,157.27	290.00	289.99	158.59	0.28	-1.06	-10.43	-8.32	12,012.52	11,963.25	49.27	243.792	
16,687.46	7,157.27	290.00	289.99	158.70	0.28	-1.15	-10.43	-8.32	12,017.95	11,968.66	49.29	243.838	
16,700.00	7,157.26	290.00	289.99	158.90	0.28	-1.15	-10.43	-8.32	12,028.24	11,978.93	49.31	243.924	
16,800.00	7,157.22	290.00	289.99	160.48	0.28	-1.15	-10.43	-8.32	12,110.44	12,060.94	49.51	244.622	
16,900.00	7,157.18	290.00	289.99	162.06	0.28	-1.15	-10.43	-8.32	12,192.91	12,143.21	49.70	245.331	
17,000.00	7,157.14	290.00	289.99	163.65	0.28	-1.15	-10.43	-8.32	12,275.64	12,225.75	49.89	246.054	
17,100.00	7,157.10	290.00	289.99	165.23	0.28	-1.15	-10.43	-8.32	12,358.63	12,308.55	50.08	246.788	
17,200.00	7,157.06	290.00	289.99	166.82	0.28	-1.15	-10.43	-8.32	12,441.86	12,391.60	50.26	247.534	
17,300.00	7,157.02	290.00	289.99	168.40	0.28	-1.15	-10.43	-8.32	12,525.34	12,474.90	50.45	248.291	
17,400.00	7,156.98	290.00	289.99	169.99	0.28	-1.15	-10.43	-8.32	12,609.07	12,558.44	50.63	249.059	
17,500.00	7,156.94	290.00	289.99	171.57	0.28	-1.15	-10.43	-8.32	12,693.02	12,642.22	50.81	249.837	
17,600.00	7,156.90	290.00	289.99	173.16	0.28	-1.15	-10.43	-8.32	12,777.21	12,726.23	50.98	250.625	
17,700.00	7,156.85	290.00	289.99	174.75	0.28	-1.15	-10.43	-8.32	12,861.62	12,810.47	51.16	251.423	
17,800.00	7,156.81	290.00	289.99	176.33	0.28	-1.15	-10.43	-8.32	12,946.26	12,894.93	51.33	252.229	
17,900.00	7,156.77	290.00	289.99	177.92	0.28	-1.15	-10.43	-8.32	13,031.12	12,979.62	51.50	253.045	
18,000.00	7,156.73	290.00	289.99	179.51	0.28	-1.15	-10.43	-8.32	13,116.18	13,064.52	51.67	253.869	
18,100.00	7,156.69	290.00	289.99	181.09	0.28	-1.15	-10.43	-8.32	13,201.46	13,149.63	51.83	254.701	
18,200.00	7,156.65	290.00	289.99	182.68	0.28	-1.15	-10.43	-8.32	13,286.94	13,234.95	52.00	255.541	
18,300.00	7,156.61	290.00	289.99	184.27	0.28	-1.15	-10.43	-8.32	13,372.62	13,320.47	52.16	256.389	
18,400.00	7,156.57	290.00	289.99	185.86	0.28	-1.15	-10.43	-8.32	13,458.51	13,406.19	52.32	257.243	
18,500.00	7,156.53	290.00	289.99	187.45	0.28	-1.15	-10.43	-8.32	13,544.58	13,492.10	52.48	258.105	
18,600.00	7,156.49	290.00	289.99	189.03	0.28	-1.15	-10.43	-8.32	13,630.85	13,578.21	52.63	258.974	
18,700.00	7,156.45	290.00	289.99	190.62	0.28	-1.15	-10.43	-8.32	13,717.30	13,664.51	52.79	259.849	
18,800.00	7,156.41	290.00	289.99	192.21	0.28	-1.15	-10.43	-8.32	13,803.93	13,750.99	52.94	260.730	

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 836H
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 836H	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)		
18,900.00	7,156.37	290.00	289.99	193.80	0.28	-1.15	-10.43	-8.32	13,890.74	13,837.65	53.10	261.617
19,000.00	7,156.32	290.00	289.99	195.39	0.28	-1.15	-10.43	-8.32	13,977.73	13,924.49	53.25	262.509
19,100.00	7,156.28	290.00	289.99	196.98	0.28	-1.15	-10.43	-8.32	14,064.90	14,011.50	53.40	263.408
19,200.00	7,156.24	290.00	289.99	198.57	0.28	-1.15	-10.43	-8.32	14,152.23	14,098.69	53.54	264.311
19,300.00	7,156.20	290.00	289.99	200.16	0.28	-1.15	-10.43	-8.32	14,239.73	14,186.04	53.69	265.219
19,400.00	7,156.16	290.00	289.99	201.75	0.28	-1.15	-10.43	-8.32	14,327.39	14,273.56	53.84	266.132
19,500.00	7,156.12	290.00	289.99	203.34	0.28	-1.15	-10.43	-8.32	14,415.22	14,361.24	53.98	267.050
19,600.00	7,156.08	290.00	289.99	204.93	0.28	-1.15	-10.43	-8.32	14,503.20	14,449.08	54.12	267.972
19,700.00	7,156.04	290.00	289.99	206.52	0.28	-1.15	-10.43	-8.32	14,591.33	14,537.07	54.26	268.899
19,800.00	7,156.00	290.00	289.99	208.11	0.28	-1.15	-10.43	-8.32	14,679.62	14,625.22	54.40	269.829
19,900.00	7,155.96	290.00	289.99	209.71	0.28	-1.15	-10.43	-8.32	14,768.06	14,713.52	54.54	270.763
20,000.00	7,155.92	290.00	289.99	211.30	0.28	-1.15	-10.43	-8.32	14,856.65	14,801.96	54.68	271.701
20,100.00	7,155.88	290.00	289.99	212.89	0.28	-1.15	-10.43	-8.32	14,945.37	14,890.56	54.82	272.642
20,200.00	7,155.84	290.00	289.99	214.48	0.28	-1.15	-10.43	-8.32	15,034.24	14,979.29	54.95	273.587
20,300.00	7,155.79	290.00	289.99	216.07	0.28	-1.15	-10.43	-8.32	15,123.25	15,068.17	55.09	274.534
20,400.00	7,155.75	290.00	289.99	217.66	0.28	-1.15	-10.43	-8.32	15,212.40	15,157.18	55.22	275.485
20,500.00	7,155.71	290.00	289.99	219.26	0.28	-1.15	-10.43	-8.32	15,301.68	15,246.32	55.35	276.439
20,600.00	7,155.67	290.00	289.99	220.85	0.28	-1.15	-10.43	-8.32	15,391.09	15,335.60	55.48	277.395
20,700.00	7,155.63	290.00	289.99	222.44	0.28	-1.15	-10.43	-8.32	15,480.63	15,425.01	55.62	278.353
20,800.00	7,155.59	290.00	289.99	224.03	0.28	-1.15	-10.43	-8.32	15,570.30	15,514.55	55.74	279.315
20,900.00	7,155.55	290.00	289.99	225.63	0.28	-1.15	-10.43	-8.32	15,660.09	15,604.22	55.87	280.278
21,000.00	7,155.51	290.00	289.99	227.22	0.28	-1.15	-10.43	-8.32	15,750.01	15,694.01	56.00	281.243
21,100.00	7,155.47	290.00	289.99	228.81	0.28	-1.15	-10.43	-8.32	15,840.04	15,783.92	56.13	282.211
21,200.00	7,155.43	290.00	289.99	230.40	0.28	-1.15	-10.43	-8.32	15,930.20	15,873.95	56.25	283.180
21,300.00	7,155.39	290.00	289.99	232.00	0.28	-1.15	-10.43	-8.32	16,020.47	15,964.09	56.38	284.151
21,400.00	7,155.35	290.00	289.99	233.59	0.28	-1.15	-10.43	-8.32	16,110.86	16,054.36	56.50	285.124
21,500.00	7,155.31	290.00	289.99	235.18	0.28	-1.15	-10.43	-8.32	16,201.36	16,144.73	56.63	286.098
21,600.00	7,155.26	290.00	289.99	236.78	0.28	-1.15	-10.43	-8.32	16,291.97	16,235.22	56.75	287.074
21,700.00	7,155.22	290.00	289.99	238.37	0.28	-1.15	-10.43	-8.32	16,382.70	16,325.82	56.87	288.051
21,800.00	7,155.18	290.00	289.99	239.96	0.28	-1.15	-10.43	-8.32	16,473.52	16,416.53	57.00	289.029
21,900.00	7,155.14	290.00	289.99	241.56	0.28	-1.15	-10.43	-8.32	16,564.46	16,507.34	57.12	290.008
21,953.88	7,155.12	290.00	289.99	242.42	0.28	-1.15	-10.43	-8.32	16,613.50	16,556.31	57.18	290.536
22,000.00	7,155.10	290.00	289.99	243.15	0.28	-0.13	-10.43	-8.32	16,655.50	16,598.26	57.24	290.988
22,019.01	7,155.09	290.00	289.99	243.46	0.28	0.29	-10.43	-8.32	16,672.82	16,615.56	57.26	291.175
22,100.00	7,155.06	290.00	289.99	244.75	0.28	0.29	-10.43	-8.32	16,746.64	16,689.28	57.36	291.970
22,200.00	7,155.02	290.00	289.99	246.34	0.28	0.29	-10.43	-8.32	16,837.88	16,780.41	57.48	292.952
22,300.00	7,154.97	290.00	289.99	247.94	0.28	0.29	-10.43	-8.32	16,929.23	16,871.63	57.60	293.935
22,400.00	7,154.93	290.00	289.99	249.53	0.28	0.29	-10.43	-8.32	17,020.67	16,962.95	57.71	294.919
22,500.00	7,154.89	290.00	289.99	251.13	0.28	0.29	-10.43	-8.32	17,112.20	17,054.37	57.83	295.903
22,600.00	7,154.85	290.00	289.99	252.72	0.28	0.29	-10.43	-8.32	17,203.83	17,145.89	57.95	296.887
22,700.00	7,154.80	290.00	289.99	254.32	0.28	0.29	-10.43	-8.32	17,295.56	17,237.49	58.06	297.872
22,800.00	7,154.76	290.00	289.99	255.91	0.28	0.29	-10.43	-8.32	17,387.37	17,329.19	58.18	298.857
22,900.00	7,154.72	290.00	289.99	257.51	0.28	0.29	-10.43	-8.32	17,479.27	17,420.98	58.29	299.842
23,000.00	7,154.68	290.00	289.99	259.11	0.28	0.29	-10.43	-8.32	17,571.27	17,512.86	58.41	300.828
23,100.00	7,154.63	290.00	289.99	260.70	0.28	0.29	-10.43	-8.32	17,663.35	17,604.82	58.52	301.813
23,200.00	7,154.59	290.00	289.99	262.30	0.28	0.29	-10.43	-8.32	17,755.51	17,696.87	58.64	302.798
23,300.00	7,154.55	290.00	289.99	263.89	0.28	0.29	-10.43	-8.32	17,847.76	17,789.01	58.75	303.784
23,400.00	7,154.51	290.00	289.99	265.49	0.28	0.29	-10.43	-8.32	17,940.09	17,881.23	58.86	304.769
23,500.00	7,154.47	290.00	289.99	267.08	0.28	0.29	-10.43	-8.32	18,032.51	17,973.53	58.98	305.753
23,600.00	7,154.42	290.00	289.99	268.68	0.28	0.29	-10.43	-8.32	18,125.00	18,065.91	59.09	306.738
23,700.00	7,154.38	290.00	289.99	270.28	0.28	0.29	-10.43	-8.32	18,217.58	18,158.37	59.20	307.722
23,800.00	7,154.34	290.00	289.99	271.87	0.28	0.29	-10.43	-8.32	18,310.23	18,250.91	59.31	308.705

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 836H
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 836H	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		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	7,154.30	290.00	289.99	273.47	0.28	0.29	-10.43	-8.32	18,402.96	18,343.53	59.42	309.688	
24,000.00	7,154.25	290.00	289.99	275.07	0.28	0.29	-10.43	-8.32	18,495.76	18,436.23	59.53	310.671	
24,100.00	7,154.21	290.00	289.99	276.66	0.28	0.29	-10.43	-8.32	18,588.64	18,529.00	59.65	311.653	
24,200.00	7,154.17	290.00	289.99	278.26	0.28	0.29	-10.43	-8.32	18,681.59	18,621.84	59.76	312.634	
24,300.00	7,154.13	290.00	289.99	279.86	0.28	0.29	-10.43	-8.32	18,774.62	18,714.75	59.87	313.614	
24,400.00	7,154.08	290.00	289.99	281.45	0.28	0.29	-10.43	-8.32	18,867.72	18,807.74	59.97	314.594	
24,500.00	7,154.04	290.00	289.99	283.05	0.28	0.29	-10.43	-8.32	18,960.88	18,900.80	60.08	315.573	
24,597.25	7,154.00	290.00	289.99	284.60	0.28	0.29	-10.43	-8.32	19,051.55	18,991.36	60.19	316.524	
24,600.00	7,154.00	290.00	289.99	284.65	0.28	0.22	-10.43	-8.32	19,054.12	18,993.93	60.19	316.551	
24,700.00	7,153.96	290.00	289.99	286.24	0.28	-2.38	-10.43	-8.32	19,147.42	19,087.12	60.30	317.527	
24,722.47	7,153.95	290.00	289.99	286.60	0.28	-2.96	-10.43	-8.32	19,168.39	19,108.07	60.33	317.746	
24,800.00	7,153.92	290.00	289.99	287.84	0.28	-2.96	-10.43	-8.32	19,240.78	19,180.37	60.41	318.502	
24,900.00	7,153.88	290.00	289.99	289.43	0.28	-2.96	-10.43	-8.32	19,334.20	19,273.68	60.52	319.476	
25,000.00	7,153.84	290.00	289.99	291.03	0.28	-2.96	-10.43	-8.32	19,427.68	19,367.06	60.63	320.449	
25,100.00	7,153.80	290.00	289.99	292.63	0.28	-2.96	-10.43	-8.32	19,521.24	19,460.50	60.73	321.420	
25,200.00	7,153.77	290.00	289.99	294.22	0.28	-2.96	-10.43	-8.32	19,614.85	19,554.01	60.84	322.391	
25,300.00	7,153.73	290.00	289.99	295.82	0.28	-2.96	-10.43	-8.32	19,708.53	19,647.58	60.95	323.360	
25,400.00	7,153.69	290.00	289.99	297.41	0.28	-2.96	-10.43	-8.32	19,802.27	19,741.21	61.06	324.328	
25,500.00	7,153.65	290.00	289.99	299.01	0.28	-2.96	-10.43	-8.32	19,896.07	19,834.91	61.16	325.295	
25,600.00	7,153.61	290.00	289.99	300.60	0.28	-2.96	-10.43	-8.32	19,989.93	19,928.66	61.27	326.260	
25,700.00	7,153.57	290.00	289.99	302.20	0.28	-2.96	-10.43	-8.32	20,083.85	20,022.47	61.38	327.224	
25,800.00	7,153.53	290.00	289.99	303.80	0.28	-2.96	-10.43	-8.32	20,177.83	20,116.35	61.48	328.187	
25,900.00	7,153.50	290.00	289.99	305.39	0.28	-2.96	-10.43	-8.32	20,271.87	20,210.28	61.59	329.148	
26,000.00	7,153.46	290.00	289.99	306.99	0.28	-2.96	-10.43	-8.32	20,365.96	20,304.26	61.69	330.108	
26,100.00	7,153.42	290.00	289.99	308.58	0.28	-2.96	-10.43	-8.32	20,460.11	20,398.31	61.80	331.066	
26,200.00	7,153.38	290.00	289.99	310.18	0.28	-2.96	-10.43	-8.32	20,554.31	20,492.40	61.91	332.022	
26,300.00	7,153.34	290.00	289.99	311.78	0.28	-2.96	-10.43	-8.32	20,648.57	20,586.56	62.01	332.977	
26,400.00	7,153.30	290.00	289.99	313.37	0.28	-2.96	-10.43	-8.32	20,742.88	20,680.76	62.12	333.931	
26,500.00	7,153.26	290.00	289.99	314.97	0.28	-2.96	-10.43	-8.32	20,837.25	20,775.03	62.22	334.882	
26,600.00	7,153.23	290.00	289.99	316.57	0.28	-2.96	-10.43	-8.32	20,931.67	20,869.34	62.33	335.832	
26,700.00	7,153.19	290.00	289.99	318.16	0.28	-2.96	-10.43	-8.32	21,026.14	20,963.70	62.43	336.780	
26,800.00	7,153.15	290.00	289.99	319.76	0.28	-2.96	-10.43	-8.32	21,120.66	21,058.12	62.54	337.727	
26,900.00	7,153.11	290.00	289.99	321.35	0.28	-2.96	-10.43	-8.32	21,215.23	21,152.58	62.64	338.672	
26,976.35	7,153.08	290.00	289.99	322.57	0.28	-2.96	-10.43	-8.32	21,287.46	21,224.74	62.72	339.392	
27,000.00	7,153.07	290.00	289.99	322.95	0.28	-2.96	-10.43	-8.32	21,309.85	21,247.10	62.75	339.615	
27,100.00	7,153.03	290.00	289.99	324.55	0.28	-2.96	-10.43	-8.32	21,404.52	21,341.66	62.85	340.556	
27,176.36	7,153.00	290.00	289.99	325.77	0.28	-2.96	-10.43	-8.32	21,476.83	21,413.90	62.93	341.273	

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 836H
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 836H	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 - p5-Prelim 3													Offset Site Error: 0.00 usft
Survey Program: 125-Standard Keeper 104, 290-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)			
0.00	0.00	0.00	0.00	0.00	0.00	-145.57	-12.38	-8.48	15.01				
125.00	125.00	125.11	125.11	0.06	0.05	81.57	-11.82	-8.45	14.46	14.37	0.09	161.709	
214.71	214.71	214.81	214.81	0.16	0.18	147.52	-11.03	-8.40	14.09	13.83	0.26	54.797	
225.00	225.00	225.10	225.09	0.17	0.19	152.38	-10.93	-8.40	14.09	13.82	0.28	50.993	
312.00	311.99	312.09	312.08	0.28	0.31	94.12	-10.29	-8.27	13.90	13.45	0.45	30.771	
400.00	399.99	400.08	400.07	0.37	0.42	97.65	-9.72	-8.09	13.43	12.80	0.63	21.200	
460.89	460.88	460.91	460.90	0.50	0.48	99.97	-9.40	-7.97	13.19	12.34	0.85	15.492 CC	
462.00	461.99	462.01	462.00	0.50	0.48	99.99	-9.40	-7.97	13.19	12.33	0.85	15.429	
509.18	509.16	509.05	509.04	0.64	0.50	75.34	-9.84	-7.87	13.28	12.25	1.03	12.926 ES	
600.00	599.96	599.59	599.53	0.94	0.47	73.05	-12.87	-7.67	14.51	13.16	1.35	10.717	
700.00	699.94	699.08	698.79	1.28	0.48	63.29	-19.49	-7.43	18.29	16.56	1.74	10.529	
800.00	799.92	798.13	797.32	1.63	0.52	52.70	-29.50	-7.19	25.38	23.24	2.14	11.883	
900.00	899.89	896.51	894.79	1.98	0.60	44.70	-42.80	-6.93	36.12	33.57	2.56	14.136	
1,000.00	999.87	993.99	990.87	2.34	0.69	39.30	-59.28	-6.66	50.50	47.51	2.99	16.874	
1,100.00	1,099.84	1,090.75	1,085.63	2.69	0.78	35.69	-78.81	-6.38	68.35	64.91	3.44	19.877	
1,200.00	1,199.82	1,188.86	1,181.48	3.05	0.89	33.40	-99.73	-6.09	87.47	83.58	3.89	22.491	
1,300.00	1,299.80	1,286.97	1,277.33	3.41	1.01	31.94	-120.64	-5.80	106.68	102.33	4.35	24.544	
1,400.00	1,399.77	1,385.07	1,373.19	3.77	1.13	30.92	-141.56	-5.51	125.94	121.13	4.81	26.188	
1,500.00	1,499.75	1,483.18	1,469.04	4.13	1.25	30.18	-162.47	-5.22	145.22	139.94	5.27	27.530	
1,600.00	1,599.72	1,581.29	1,564.89	4.49	1.38	29.61	-183.38	-4.93	164.52	158.78	5.74	28.644	
1,700.00	1,699.70	1,679.40	1,660.74	4.85	1.51	29.16	-204.30	-4.64	183.84	177.62	6.21	29.582	
1,800.00	1,799.68	1,777.50	1,756.60	5.21	1.64	28.79	-225.21	-4.35	203.16	196.47	6.69	30.383	
1,900.00	1,899.65	1,875.61	1,852.45	5.57	1.77	28.49	-246.13	-4.07	222.49	215.33	7.16	31.073	
2,000.00	1,999.63	1,973.72	1,948.30	5.93	1.91	28.23	-267.04	-3.78	241.82	234.19	7.63	31.674	
2,100.00	2,099.60	2,071.83	2,044.15	6.29	2.05	28.02	-287.95	-3.49	261.16	253.05	8.11	32.202	
2,200.00	2,199.58	2,169.94	2,140.00	6.65	2.20	27.83	-308.87	-3.20	280.50	271.92	8.59	32.669	
2,300.00	2,299.56	2,268.04	2,235.86	7.01	2.34	27.67	-329.78	-2.91	299.85	290.79	9.06	33.086	
2,400.00	2,399.53	2,366.15	2,331.71	7.37	2.49	27.53	-350.70	-2.62	319.20	309.66	9.54	33.459	
2,500.00	2,499.51	2,464.26	2,427.56	7.73	2.65	27.40	-371.61	-2.33	338.54	328.53	10.02	33.795	
2,600.00	2,599.48	2,562.37	2,523.41	8.09	2.80	27.29	-392.53	-2.04	357.89	347.40	10.50	34.100	
2,700.00	2,699.46	2,660.48	2,619.27	8.45	2.96	27.19	-413.44	-1.75	377.24	366.27	10.97	34.378	
2,800.00	2,799.44	2,758.58	2,715.12	8.81	3.12	27.09	-434.35	-1.46	396.60	385.14	11.45	34.631	
2,900.00	2,899.41	2,856.69	2,810.97	9.17	3.28	27.01	-455.27	-1.18	415.95	404.02	11.93	34.864	
3,000.00	2,999.39	2,954.80	2,906.82	9.53	3.45	26.94	-476.18	-0.89	435.30	422.89	12.41	35.078	
3,100.00	3,099.36	3,052.91	3,002.68	9.89	3.61	26.87	-497.10	-0.60	454.65	441.77	12.89	35.275	
3,200.00	3,199.34	3,151.01	3,098.53	10.25	3.78	26.80	-518.01	-0.31	474.01	460.64	13.37	35.458	
3,300.00	3,299.32	3,249.12	3,194.38	10.61	3.95	26.75	-538.92	-0.02	493.36	479.52	13.85	35.628	
3,400.00	3,399.29	3,347.23	3,290.23	10.97	4.13	26.69	-559.84	0.27	512.72	498.39	14.33	35.787	
3,500.00	3,499.27	3,445.34	3,386.08	11.33	4.30	26.64	-580.75	0.56	532.08	517.27	14.81	35.934	
3,600.00	3,599.25	3,543.45	3,481.94	11.69	4.48	26.59	-601.67	0.85	551.43	536.15	15.29	36.072	
3,700.00	3,699.22	3,641.55	3,577.79	12.05	4.66	26.55	-622.58	1.14	570.79	555.02	15.77	36.202	
3,800.00	3,799.20	3,739.66	3,673.64	12.41	4.84	26.51	-643.49	1.43	590.15	573.90	16.25	36.324	
3,900.00	3,899.17	3,837.77	3,769.49	12.77	5.03	26.47	-664.41	1.72	609.50	592.78	16.73	36.438	
4,000.00	3,999.15	3,935.88	3,865.35	13.13	5.21	26.44	-685.32	2.00	628.86	611.65	17.21	36.546	
4,100.00	4,099.13	4,033.98	3,961.20	13.49	5.40	26.40	-706.24	2.29	648.22	630.53	17.69	36.648	
4,200.00	4,199.10	4,132.09	4,057.05	13.85	5.59	26.37	-727.15	2.58	667.58	649.41	18.17	36.744	
4,300.00	4,299.08	4,230.20	4,152.90	14.21	5.78	26.34	-748.07	2.87	686.93	668.29	18.65	36.835	
4,400.00	4,399.05	4,328.31	4,248.76	14.57	5.98	26.31	-768.98	3.16	706.29	687.16	19.13	36.921	
4,500.00	4,499.03	4,426.42	4,344.61	14.93	6.17	26.29	-789.89	3.45	725.65	706.04	19.61	37.003	
4,600.00	4,599.01	4,524.52	4,440.46	15.29	6.37	26.26	-810.81	3.74	745.01	724.92	20.09	37.081	
4,700.00	4,698.98	4,622.63	4,536.31	15.65	6.57	26.24	-831.72	4.03	764.37	743.80	20.57	37.155	
4,800.00	4,798.96	4,720.74	4,632.16	16.01	6.77	26.22	-852.64	4.32	783.73	762.67	21.05	37.226	

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 836H
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 836H	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 - p5-Prelim 3													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 290-Standard Keeper 104						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	
4,900.00	4,898.93	4,818.85	4,728.02	16.37	6.98	26.19	-873.55	4.61	803.09	781.55	21.53	37.293		
5,000.00	4,998.91	4,916.96	4,823.87	16.73	7.18	26.17	-894.46	4.89	822.44	800.43	22.02	37.357		
5,100.00	5,098.89	5,015.06	4,919.72	17.09	7.39	26.15	-915.38	5.18	841.80	819.31	22.50	37.419		
5,200.00	5,198.86	5,113.17	5,015.57	17.45	7.60	26.13	-936.29	5.47	861.16	838.19	22.98	37.478		
5,300.00	5,298.84	5,211.28	5,111.43	17.81	7.81	26.12	-957.21	5.76	880.52	857.06	23.46	37.534		
5,400.00	5,398.81	5,309.39	5,207.28	18.17	8.02	26.10	-978.12	6.05	899.88	875.94	23.94	37.588		
5,500.00	5,498.79	5,407.49	5,303.13	18.53	8.24	26.08	-999.04	6.34	919.24	894.82	24.42	37.639		
5,600.00	5,598.77	5,505.60	5,398.98	18.89	8.45	26.07	-1,019.95	6.63	938.60	913.70	24.90	37.689		
5,700.00	5,698.74	5,603.71	5,494.84	19.25	8.67	26.05	-1,040.86	6.92	957.96	932.57	25.39	37.736		
5,800.00	5,798.72	5,701.82	5,590.69	19.61	8.89	26.04	-1,061.78	7.21	977.32	951.45	25.87	37.782		
5,900.00	5,898.69	5,799.93	5,686.54	19.97	9.11	26.02	-1,082.69	7.50	996.68	970.33	26.35	37.826		
6,000.00	5,998.67	5,898.03	5,782.39	20.33	9.34	26.01	-1,103.61	7.78	1,016.04	989.21	26.83	37.868		
6,100.00	6,098.65	5,996.14	5,878.24	20.69	9.56	26.00	-1,124.52	8.07	1,035.40	1,008.09	27.31	37.909		
6,200.00	6,198.62	6,094.25	5,974.10	21.05	9.79	25.98	-1,145.43	8.36	1,054.76	1,026.96	27.79	37.948		
6,300.00	6,298.60	6,192.36	6,069.95	21.41	10.02	25.97	-1,166.35	8.65	1,074.12	1,045.84	28.28	37.986		
6,400.00	6,398.57	6,290.46	6,165.80	21.77	10.25	25.96	-1,187.26	8.94	1,093.48	1,064.72	28.76	38.022		
6,500.00	6,498.55	6,388.57	6,261.65	22.13	10.48	25.95	-1,208.18	9.23	1,112.84	1,083.60	29.24	38.057		
6,531.56	6,530.10	6,419.54	6,291.90	22.25	10.56	25.95	-1,214.78	9.32	1,118.95	1,089.56	29.39	38.068		
6,550.00	6,548.53	6,437.62	6,309.58	22.31	10.60	63.98	-1,218.63	9.37	1,122.53	1,093.05	29.48	38.075		
6,600.00	6,598.36	6,486.53	6,357.36	22.49	10.72	81.44	-1,229.06	9.52	1,132.32	1,102.60	29.72	38.098		
6,650.00	6,647.74	6,535.00	6,404.72	22.67	10.83	84.79	-1,239.39	9.66	1,142.23	1,112.27	29.96	38.126		
6,700.00	6,696.35	6,582.74	6,451.36	22.84	10.95	86.08	-1,249.57	9.80	1,152.26	1,122.06	30.20	38.157		
6,750.00	6,743.90	6,629.45	6,497.00	23.01	11.06	86.76	-1,259.53	9.94	1,162.45	1,132.01	30.44	38.192		
6,800.00	6,790.11	6,677.31	6,543.75	23.18	11.18	87.27	-1,269.73	10.26	1,172.87	1,142.18	30.69	38.218		
6,850.00	6,834.67	6,732.25	6,597.28	23.35	11.31	87.74	-1,281.41	14.10	1,183.33	1,152.35	30.98	38.199		
6,900.00	6,877.32	6,789.59	6,652.59	23.51	11.45	88.12	-1,293.48	23.13	1,193.66	1,162.38	31.28	38.155		
6,950.00	6,917.80	6,849.57	6,709.33	23.68	11.60	88.45	-1,305.87	37.98	1,203.78	1,172.17	31.61	38.081		
7,000.00	6,955.85	6,912.41	6,767.05	23.85	11.75	88.74	-1,318.47	59.33	1,213.57	1,181.60	31.96	37.967		
7,050.00	6,991.24	6,978.31	6,825.06	24.03	11.92	89.01	-1,331.13	87.86	1,222.91	1,190.56	32.35	37.805		
7,100.00	7,023.76	7,047.43	6,882.46	24.22	12.11	89.26	-1,343.67	124.20	1,231.69	1,198.92	32.77	37.591		
7,150.00	7,053.20	7,119.82	6,938.08	24.42	12.33	89.49	-1,355.82	168.85	1,239.76	1,206.53	33.23	37.312		
7,200.00	7,079.37	7,195.43	6,990.49	24.63	12.58	89.68	-1,367.27	222.06	1,247.00	1,213.27	33.73	36.972		
7,250.00	7,102.13	7,274.04	7,038.06	24.86	12.88	89.82	-1,377.67	283.73	1,253.27	1,218.99	34.28	36.562		
7,300.00	7,121.32	7,355.27	7,079.01	25.10	13.24	89.90	-1,386.63	353.23	1,258.46	1,223.59	34.87	36.092		
7,350.00	7,136.84	7,438.51	7,111.68	25.35	13.65	89.91	-1,393.78	429.40	1,262.46	1,226.95	35.50	35.559		
7,400.00	7,148.58	7,523.02	7,134.62	25.62	14.12	89.83	-1,398.81	510.51	1,265.19	1,229.01	36.18	34.973		
7,450.00	7,156.47	7,607.91	7,146.91	25.90	14.63	89.67	-1,401.52	594.40	1,266.62	1,229.74	36.88	34.345		
7,500.00	7,160.47	7,679.38	7,148.99	26.20	15.09	89.48	-1,402.00	665.81	1,266.84	1,229.25	37.58	33.707		
7,524.11	7,161.00	7,703.48	7,148.98	26.34	15.25	89.46	-1,402.00	689.91	1,266.83	1,228.92	37.91	33.413		
7,526.22	7,161.00	7,705.60	7,148.98	26.36	15.26	89.46	-1,402.00	692.03	1,266.83	1,228.89	37.94	33.386		
7,600.00	7,160.97	7,779.37	7,148.94	26.83	15.77	89.46	-1,402.02	765.80	1,266.84	1,227.83	39.01	32.474		
7,700.00	7,160.93	7,879.37	7,148.89	27.53	16.50	89.46	-1,402.04	865.80	1,266.84	1,226.27	40.57	31.230		
7,800.00	7,160.89	7,979.37	7,148.84	28.32	17.27	89.45	-1,402.06	965.80	1,266.84	1,224.61	42.24	29.994		
7,900.00	7,160.85	8,079.37	7,148.78	29.16	18.08	89.45	-1,402.08	1,065.80	1,266.85	1,222.84	44.01	28.785		
8,000.00	7,160.81	8,179.37	7,148.73	30.07	18.92	89.45	-1,402.10	1,165.80	1,266.85	1,220.97	45.88	27.615		
8,100.00	7,160.77	8,279.37	7,148.68	31.04	19.79	89.45	-1,402.12	1,265.80	1,266.85	1,219.03	47.82	26.491		
8,200.00	7,160.73	8,379.37	7,148.63	32.06	20.68	89.45	-1,402.15	1,365.80	1,266.86	1,217.02	49.84	25.418		
8,300.00	7,160.69	8,479.37	7,148.58	33.12	21.59	89.45	-1,402.17	1,465.80	1,266.86	1,214.94	51.92	24.399		
8,400.00	7,160.65	8,579.37	7,148.52	34.23	22.52	89.45	-1,402.19	1,565.80	1,266.86	1,212.80	54.06	23.434		
8,500.00	7,160.60	8,679.37	7,148.47	35.37	23.47	89.45	-1,402.21	1,665.80	1,266.87	1,210.62	56.25	22.522		
8,600.00	7,160.56	8,779.37	7,148.42	36.55	24.43	89.45	-1,402.23	1,765.80	1,266.87	1,208.38	58.49	21.661		
8,700.00	7,160.52	8,879.37	7,148.37	37.76	25.41	89.45	-1,402.25	1,865.80	1,266.87	1,206.11	60.76	20.849		

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 836H
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 836H	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 - p5-Prelim 3												Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 290-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	7,160.48	8,979.37	7,148.32	38.99	26.41	89.45	-1,402.27	1,965.80	1,266.88	1,203.80	63.08	20.085	
8,900.00	7,160.44	9,079.37	7,148.27	40.26	27.41	89.45	-1,402.29	2,065.80	1,266.88	1,201.46	65.42	19.365	
9,000.00	7,160.40	9,179.37	7,148.21	41.54	28.42	89.45	-1,402.32	2,165.80	1,266.88	1,199.09	67.80	18.686	
9,100.00	7,160.36	9,279.37	7,148.16	42.85	29.45	89.45	-1,402.34	2,265.80	1,266.89	1,196.69	70.20	18.046	
9,200.00	7,160.32	9,379.37	7,148.11	44.18	30.48	89.45	-1,402.36	2,365.80	1,266.89	1,194.26	72.63	17.443	
9,300.00	7,160.28	9,479.37	7,148.06	45.53	31.53	89.45	-1,402.38	2,465.80	1,266.90	1,191.81	75.08	16.873	
9,400.00	7,160.24	9,579.37	7,148.01	46.89	32.58	89.45	-1,402.40	2,565.80	1,266.90	1,189.34	77.55	16.336	
9,500.00	7,160.20	9,679.37	7,147.96	48.26	33.63	89.45	-1,402.42	2,665.80	1,266.90	1,186.86	80.04	15.827	
9,600.00	7,160.16	9,779.37	7,147.90	49.65	34.70	89.45	-1,402.44	2,765.80	1,266.91	1,184.35	82.55	15.347	
9,700.00	7,160.12	9,879.37	7,147.85	51.05	35.77	89.45	-1,402.46	2,865.80	1,266.91	1,181.83	85.08	14.892	
9,800.00	7,160.08	9,979.37	7,147.80	52.47	36.84	89.44	-1,402.48	2,965.80	1,266.91	1,179.30	87.61	14.460	
9,900.00	7,160.04	10,079.37	7,147.75	53.89	37.93	89.44	-1,402.51	3,065.80	1,266.92	1,176.75	90.17	14.051	
10,000.00	7,160.00	10,179.37	7,147.70	55.33	39.01	89.44	-1,402.53	3,165.80	1,266.92	1,174.19	92.73	13.663	
10,100.00	7,159.95	10,279.37	7,147.65	56.77	40.10	89.44	-1,402.55	3,265.80	1,266.92	1,171.62	95.30	13.293	
10,200.00	7,159.91	10,379.37	7,147.59	58.22	41.20	89.44	-1,402.57	3,365.80	1,266.93	1,169.04	97.89	12.942	
10,300.00	7,159.87	10,479.37	7,147.54	59.68	42.30	89.44	-1,402.59	3,465.80	1,266.93	1,166.44	100.49	12.608	
10,400.00	7,159.83	10,579.37	7,147.49	61.15	43.40	89.44	-1,402.61	3,565.80	1,266.93	1,163.84	103.09	12.289	
10,500.00	7,159.79	10,679.37	7,147.44	62.62	44.51	89.44	-1,402.63	3,665.80	1,266.94	1,161.23	105.71	11.985	
10,600.00	7,159.75	10,779.37	7,147.39	64.10	45.62	89.44	-1,402.65	3,765.80	1,266.94	1,158.61	108.33	11.695	
10,700.00	7,159.71	10,879.37	7,147.33	65.58	46.73	89.44	-1,402.67	3,865.80	1,266.94	1,155.99	110.96	11.418	
10,800.00	7,159.67	10,979.37	7,147.28	67.07	47.85	89.44	-1,402.70	3,965.80	1,266.95	1,153.35	113.60	11.153	
10,900.00	7,159.63	11,079.37	7,147.23	68.57	48.97	89.44	-1,402.72	4,065.80	1,266.95	1,150.71	116.24	10.899	
11,000.00	7,159.59	11,179.37	7,147.18	70.07	50.09	89.44	-1,402.74	4,165.80	1,266.95	1,148.06	118.89	10.657	
11,100.00	7,159.55	11,279.37	7,147.13	71.57	51.21	89.44	-1,402.76	4,265.80	1,266.96	1,145.41	121.55	10.424	
11,200.00	7,159.51	11,379.37	7,147.08	73.08	52.34	89.44	-1,402.78	4,365.80	1,266.96	1,142.75	124.21	10.200	
11,300.00	7,159.47	11,479.37	7,147.02	74.59	53.47	89.44	-1,402.80	4,465.80	1,266.97	1,140.09	126.87	9.986	
11,400.00	7,159.43	11,579.37	7,146.97	76.11	54.60	89.44	-1,402.82	4,565.80	1,266.97	1,137.42	129.55	9.780	
11,500.00	7,159.39	11,679.37	7,146.92	77.63	55.74	89.44	-1,402.84	4,665.80	1,266.97	1,134.75	132.22	9.582	
11,600.00	7,159.35	11,779.37	7,146.87	79.15	56.87	89.44	-1,402.87	4,765.80	1,266.98	1,132.07	134.91	9.392	
11,638.27	7,159.33	11,818.25	7,146.85	79.73	57.31	89.44	-1,402.87	4,804.68	1,266.98	1,131.04	135.93	9.321	
11,640.51	7,159.33	11,821.13	7,146.85	79.77	57.35	89.44	-1,402.87	4,807.56	1,266.98	1,130.98	135.99	9.316	
11,700.00	7,159.30	11,881.73	7,146.81	80.68	58.04	89.44	-1,402.77	4,868.16	1,266.89	1,129.30	137.59	9.207	
11,800.00	7,159.26	11,981.73	7,146.76	82.20	59.18	89.43	-1,402.61	4,968.16	1,266.75	1,126.46	140.28	9.030	
11,900.00	7,159.22	12,081.73	7,146.70	83.74	60.32	89.43	-1,402.44	5,068.16	1,266.61	1,123.63	142.98	8.859	
12,000.00	7,159.18	12,181.73	7,146.64	85.27	61.46	89.43	-1,402.28	5,168.16	1,266.46	1,120.79	145.68	8.694	
12,100.00	7,159.14	12,281.73	7,146.59	86.81	62.61	89.43	-1,402.11	5,268.16	1,266.32	1,117.94	148.38	8.534	
12,200.00	7,159.10	12,381.73	7,146.53	88.35	63.76	89.43	-1,401.95	5,368.16	1,266.18	1,115.09	151.08	8.381	
12,300.00	7,159.06	12,481.73	7,146.47	89.89	64.91	89.43	-1,401.78	5,468.16	1,266.03	1,112.24	153.79	8.232	
12,400.00	7,159.02	12,581.73	7,146.42	91.43	66.06	89.43	-1,401.62	5,568.16	1,265.89	1,109.39	156.50	8.089	
12,500.00	7,158.98	12,681.73	7,146.36	92.98	67.21	89.43	-1,401.45	5,668.16	1,265.75	1,106.53	159.22	7.950	
12,600.00	7,158.94	12,781.73	7,146.30	94.52	68.36	89.43	-1,401.29	5,768.16	1,265.60	1,103.67	161.93	7.816	
12,700.00	7,158.90	12,881.73	7,146.25	96.07	69.52	89.43	-1,401.13	5,868.16	1,265.46	1,100.81	164.65	7.686	
12,800.00	7,158.86	12,981.73	7,146.19	97.62	70.68	89.43	-1,400.96	5,968.16	1,265.32	1,097.94	167.38	7.560	
12,900.00	7,158.81	13,081.73	7,146.14	99.17	71.84	89.43	-1,400.80	6,068.16	1,265.17	1,095.07	170.10	7.438	
13,000.00	7,158.77	13,181.73	7,146.08	100.73	73.00	89.43	-1,400.63	6,168.16	1,265.03	1,092.20	172.83	7.320	
13,100.00	7,158.73	13,281.73	7,146.02	102.28	74.16	89.42	-1,400.47	6,268.16	1,264.89	1,089.33	175.56	7.205	
13,200.00	7,158.69	13,381.73	7,145.97	103.84	75.32	89.42	-1,400.30	6,368.16	1,264.74	1,086.45	178.29	7.094	
13,300.00	7,158.65	13,481.73	7,145.91	105.40	76.49	89.42	-1,400.14	6,468.15	1,264.60	1,083.57	181.03	6.986	
13,400.00	7,158.61	13,581.73	7,145.85	106.96	77.65	89.42	-1,399.97	6,568.15	1,264.46	1,080.69	183.76	6.881	
13,500.00	7,158.57	13,681.73	7,145.80	108.52	78.82	89.42	-1,399.81	6,668.15	1,264.31	1,077.81	186.50	6.779	
13,600.00	7,158.53	13,781.73	7,145.74	110.08	79.99	89.42	-1,399.64	6,768.15	1,264.17	1,074.92	189.25	6.680	
13,700.00	7,158.49	13,881.73	7,145.68	111.64	81.16	89.42	-1,399.48	6,868.15	1,264.03	1,072.04	191.99	6.584	

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 836H
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 836H	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 - p5-Prelim 3													Offset Site Error:	0.00 usft
Survey Program:		125-Standard Keeper 104, 290-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)	
13,800.00	7,158.45	13,981.73	7,145.63	113.21	82.33	89.42	-1,399.31	6,968.15	1,263.88	1,069.15	194.74	6.490		
13,900.00	7,158.41	14,081.73	7,145.57	114.77	83.50	89.42	-1,399.15	7,068.15	1,263.74	1,066.26	197.48	6.399		
14,000.00	7,158.37	14,181.73	7,145.51	116.34	84.67	89.42	-1,398.98	7,168.15	1,263.60	1,063.36	200.23	6.311		
14,100.00	7,158.32	14,281.73	7,145.46	117.91	85.84	89.42	-1,398.82	7,268.15	1,263.45	1,060.47	202.98	6.224		
14,200.00	7,158.28	14,381.73	7,145.40	119.47	87.02	89.42	-1,398.65	7,368.15	1,263.31	1,057.57	205.74	6.140		
14,300.00	7,158.24	14,481.73	7,145.34	121.04	88.20	89.41	-1,398.49	7,468.15	1,263.17	1,054.67	208.49	6.059		
14,400.00	7,158.20	14,581.73	7,145.29	122.61	89.37	89.41	-1,398.32	7,568.15	1,263.02	1,051.77	211.25	5.979		
14,500.00	7,158.16	14,681.73	7,145.23	124.18	90.55	89.41	-1,398.16	7,668.15	1,262.88	1,048.87	214.01	5.901		
14,600.00	7,158.12	14,781.73	7,145.18	125.76	91.73	89.41	-1,397.99	7,768.15	1,262.74	1,045.97	216.77	5.825		
14,700.00	7,158.08	14,881.73	7,145.12	127.33	92.91	89.41	-1,397.83	7,868.15	1,262.59	1,043.06	219.53	5.751		
14,800.00	7,158.04	14,981.73	7,145.06	128.90	94.09	89.41	-1,397.66	7,968.15	1,262.45	1,040.16	222.29	5.679		
14,900.00	7,158.00	15,081.73	7,145.01	130.47	95.28	89.41	-1,397.50	8,068.15	1,262.31	1,037.25	225.06	5.609		
15,000.00	7,157.96	15,181.73	7,144.95	132.05	96.46	89.41	-1,397.33	8,168.15	1,262.16	1,034.34	227.82	5.540		
15,100.00	7,157.92	15,281.73	7,144.89	133.62	97.65	89.41	-1,397.17	8,268.15	1,262.02	1,031.43	230.59	5.473		
15,200.00	7,157.88	15,381.73	7,144.84	135.20	98.83	89.41	-1,397.00	8,368.15	1,261.88	1,028.51	233.36	5.407		
15,300.00	7,157.83	15,481.72	7,144.78	136.78	100.02	89.41	-1,396.84	8,468.15	1,261.73	1,025.60	236.13	5.343		
15,400.00	7,157.79	15,581.72	7,144.72	138.35	101.21	89.41	-1,396.67	8,568.15	1,261.59	1,022.68	238.90	5.281		
15,500.00	7,157.75	15,681.72	7,144.67	139.93	102.40	89.41	-1,396.51	8,668.15	1,261.45	1,019.77	241.68	5.220		
15,600.00	7,157.71	15,781.72	7,144.61	141.51	103.59	89.40	-1,396.34	8,768.15	1,261.30	1,016.85	244.45	5.160		
15,700.00	7,157.67	15,881.72	7,144.55	143.09	104.78	89.40	-1,396.18	8,868.15	1,261.16	1,013.93	247.23	5.101		
15,800.00	7,157.63	15,981.72	7,144.50	144.67	105.97	89.40	-1,396.01	8,968.15	1,261.02	1,011.01	250.01	5.044		
15,900.00	7,157.59	16,081.72	7,144.44	146.24	107.16	89.40	-1,395.85	9,068.15	1,260.87	1,008.09	252.79	4.988		
16,000.00	7,157.55	16,181.72	7,144.38	147.82	108.36	89.40	-1,395.69	9,168.15	1,260.73	1,005.16	255.57	4.933		
16,100.00	7,157.51	16,281.72	7,144.33	149.41	109.55	89.40	-1,395.52	9,268.15	1,260.59	1,002.24	258.35	4.879		
16,200.00	7,157.47	16,381.72	7,144.27	150.99	110.75	89.40	-1,395.36	9,368.15	1,260.44	999.31	261.13	4.827		
16,300.00	7,157.43	16,481.72	7,144.22	152.57	111.94	89.40	-1,395.19	9,468.15	1,260.30	996.38	263.91	4.775		
16,400.00	7,157.38	16,581.72	7,144.16	154.15	113.14	89.40	-1,395.03	9,568.15	1,260.16	993.46	266.70	4.725		
16,500.00	7,157.34	16,681.72	7,144.10	155.73	114.34	89.40	-1,394.86	9,668.15	1,260.01	990.53	269.49	4.676		
16,600.00	7,157.30	16,781.72	7,144.05	157.31	115.54	89.40	-1,394.70	9,768.15	1,259.87	987.60	272.27	4.627		
16,680.84	7,157.27	16,862.56	7,144.00	158.59	116.51	89.40	-1,394.56	9,848.99	1,259.75	985.23	274.53	4.589		
16,685.46	7,157.27	16,866.40	7,144.00	158.67	116.55	89.40	-1,394.56	9,852.83	1,259.75	985.09	274.65	4.587		
16,687.46	7,157.27	16,868.32	7,144.00	158.70	116.58	89.40	-1,394.56	9,854.74	1,259.75	985.04	274.71	4.586		
16,700.00	7,157.26	16,880.87	7,143.99	158.90	116.73	89.40	-1,394.54	9,867.29	1,259.75	984.70	275.06	4.580		
16,800.00	7,157.22	16,980.87	7,143.93	160.48	117.93	89.40	-1,394.45	9,967.29	1,259.80	981.95	277.85	4.534		
16,900.00	7,157.18	17,080.87	7,143.88	162.06	119.13	89.39	-1,394.35	10,067.29	1,259.84	979.19	280.64	4.489		
17,000.00	7,157.14	17,180.87	7,143.82	163.65	120.33	89.39	-1,394.25	10,167.29	1,259.88	976.44	283.43	4.445		
17,100.00	7,157.10	17,280.87	7,143.76	165.23	121.54	89.39	-1,394.16	10,267.29	1,259.92	973.69	286.23	4.402		
17,200.00	7,157.06	17,380.87	7,143.71	166.82	122.74	89.39	-1,394.06	10,367.29	1,259.96	970.93	289.02	4.359		
17,300.00	7,157.02	17,480.87	7,143.65	168.40	123.95	89.39	-1,393.96	10,467.29	1,260.00	968.18	291.82	4.318		
17,400.00	7,156.98	17,580.87	7,143.59	169.99	125.15	89.39	-1,393.87	10,567.29	1,260.04	965.42	294.61	4.277		
17,500.00	7,156.94	17,680.87	7,143.53	171.57	126.36	89.39	-1,393.77	10,667.29	1,260.08	962.67	297.41	4.237		
17,600.00	7,156.90	17,780.87	7,143.48	173.16	127.57	89.39	-1,393.67	10,767.29	1,260.12	959.91	300.21	4.197		
17,700.00	7,156.85	17,880.87	7,143.42	174.75	128.78	89.39	-1,393.58	10,867.29	1,260.16	957.15	303.01	4.159		
17,800.00	7,156.81	17,980.87	7,143.36	176.33	129.99	89.39	-1,393.48	10,967.29	1,260.20	954.39	305.81	4.121		
17,900.00	7,156.77	18,080.87	7,143.31	177.92	131.20	89.39	-1,393.38	11,067.29	1,260.24	951.62	308.61	4.084		
18,000.00	7,156.73	18,180.87	7,143.25	179.51	132.41	89.39	-1,393.28	11,167.29	1,260.28	948.86	311.42	4.047		
18,100.00	7,156.69	18,280.87	7,143.19	181.09	133.62	89.39	-1,393.19	11,267.29	1,260.32	946.10	314.22	4.011		
18,200.00	7,156.65	18,380.87	7,143.14	182.68	134.84	89.39	-1,393.09	11,367.29	1,260.36	943.33	317.02	3.976		
18,300.00	7,156.61	18,480.87	7,143.08	184.27	136.05	89.38	-1,392.99	11,467.29	1,260.40	940.57	319.83	3.941		
18,400.00	7,156.57	18,580.87	7,143.02	185.86	137.27	89.38	-1,392.90	11,567.29	1,260.44	937.80	322.64	3.907		
18,500.00	7,156.53	18,680.87	7,142.97	187.45	138.48	89.38	-1,392.80	11,667.29	1,260.48	935.03	325.45	3.873		
18,600.00	7,156.49	18,780.87	7,142.91	189.03	139.70	89.38	-1,392.70	11,767.29	1,260.52	932.26	328.26	3.840		

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 836H
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 836H	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 - p5-Prelim 3											Offset Site Error:		0.00 usft
Survey Program:		125-Standard Keeper 104, 290-Standard Keeper 104							Rule Assigned:				Offset Well Error:		0.00 usft
Measured Depth	Reference	Offset	Semi Major Axis												
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		
18,700.00	7,156.45	18,880.87	7,142.85	190.62	140.92	89.38	-1,392.61	11,867.29	1,260.56	929.49	331.07	3.808			
18,800.00	7,156.41	18,980.87	7,142.80	192.21	142.14	89.38	-1,392.51	11,967.29	1,260.60	926.72	333.88	3.776			
18,900.00	7,156.37	19,080.87	7,142.74	193.80	143.35	89.38	-1,392.41	12,067.29	1,260.64	923.95	336.69	3.744			
19,000.00	7,156.32	19,180.87	7,142.68	195.39	144.57	89.38	-1,392.32	12,167.29	1,260.68	921.18	339.50	3.713			
19,100.00	7,156.28	19,280.87	7,142.62	196.98	145.80	89.38	-1,392.22	12,267.29	1,260.72	918.40	342.32	3.683			
19,200.00	7,156.24	19,380.87	7,142.57	198.57	147.02	89.38	-1,392.12	12,367.29	1,260.76	915.63	345.13	3.653			
19,300.00	7,156.20	19,480.87	7,142.51	200.16	148.24	89.38	-1,392.03	12,467.29	1,260.80	912.85	347.95	3.624			
19,400.00	7,156.16	19,580.87	7,142.45	201.75	149.46	89.38	-1,391.93	12,567.29	1,260.84	910.08	350.76	3.595			
19,500.00	7,156.12	19,680.87	7,142.40	203.34	150.69	89.38	-1,391.83	12,667.29	1,260.88	907.30	353.58	3.566			
19,600.00	7,156.08	19,780.87	7,142.34	204.93	151.91	89.38	-1,391.74	12,767.29	1,260.92	904.52	356.40	3.538			
19,700.00	7,156.04	19,880.87	7,142.28	206.52	153.14	89.37	-1,391.64	12,867.29	1,260.96	901.74	359.22	3.510			
19,800.00	7,156.00	19,980.87	7,142.23	208.11	154.36	89.37	-1,391.54	12,967.29	1,261.00	898.96	362.04	3.483			
19,900.00	7,155.96	20,080.87	7,142.17	209.71	155.59	89.37	-1,391.45	13,067.29	1,261.04	896.18	364.86	3.456			
20,000.00	7,155.92	20,180.87	7,142.11	211.30	156.82	89.37	-1,391.35	13,167.29	1,261.08	893.40	367.68	3.430			
20,100.00	7,155.88	20,280.87	7,142.06	212.89	158.05	89.37	-1,391.25	13,267.29	1,261.12	890.61	370.51	3.404			
20,200.00	7,155.84	20,380.87	7,142.00	214.48	159.28	89.37	-1,391.16	13,367.29	1,261.16	887.83	373.33	3.378			
20,300.00	7,155.79	20,480.87	7,141.94	216.07	160.51	89.37	-1,391.06	13,467.29	1,261.20	885.04	376.16	3.353			
20,400.00	7,155.75	20,580.87	7,141.89	217.66	161.74	89.37	-1,390.96	13,567.29	1,261.24	882.26	378.98	3.328			
20,500.00	7,155.71	20,680.87	7,141.83	219.26	162.97	89.37	-1,390.86	13,667.29	1,261.28	879.47	381.81	3.303			
20,600.00	7,155.67	20,780.87	7,141.77	220.85	164.21	89.37	-1,390.77	13,767.29	1,261.32	876.68	384.64	3.279			
20,700.00	7,155.63	20,880.87	7,141.71	222.44	165.44	89.37	-1,390.67	13,867.29	1,261.36	873.89	387.47	3.255			
20,800.00	7,155.59	20,980.87	7,141.66	224.03	166.67	89.37	-1,390.57	13,967.29	1,261.40	871.10	390.30	3.232			
20,900.00	7,155.55	21,080.87	7,141.60	225.63	167.91	89.37	-1,390.48	14,067.29	1,261.44	868.31	393.13	3.209			
21,000.00	7,155.51	21,180.87	7,141.54	227.22	169.15	89.37	-1,390.38	14,167.29	1,261.48	865.52	395.96	3.186			
21,100.00	7,155.47	21,280.87	7,141.49	228.81	170.38	89.36	-1,390.28	14,267.29	1,261.52	862.73	398.79	3.163			
21,200.00	7,155.43	21,380.87	7,141.43	230.40	171.62	89.36	-1,390.19	14,367.29	1,261.56	859.94	401.63	3.141			
21,300.00	7,155.39	21,480.87	7,141.37	232.00	172.86	89.36	-1,390.09	14,467.29	1,261.60	857.14	404.46	3.119			
21,400.00	7,155.35	21,580.87	7,141.32	233.59	174.10	89.36	-1,389.99	14,567.29	1,261.64	854.35	407.30	3.098			
21,500.00	7,155.31	21,680.87	7,141.26	235.18	175.34	89.36	-1,389.90	14,667.29	1,261.68	851.55	410.13	3.076			
21,600.00	7,155.26	21,780.87	7,141.20	236.78	176.58	89.36	-1,389.80	14,767.29	1,261.72	848.76	412.97	3.055			
21,700.00	7,155.22	21,880.87	7,141.15	238.37	177.82	89.36	-1,389.70	14,867.29	1,261.76	845.96	415.81	3.035			
21,800.00	7,155.18	21,980.87	7,141.09	239.96	179.06	89.36	-1,389.61	14,967.29	1,261.80	843.16	418.64	3.014			
21,900.00	7,155.14	22,080.87	7,141.03	241.56	180.31	89.36	-1,389.51	15,067.29	1,261.84	840.36	421.48	2.994			
21,953.88	7,155.12	22,134.75	7,141.00	242.42	180.98	89.36	-1,389.46	15,121.17	1,261.87	838.85	423.01	2.983			
22,000.00	7,155.10	22,181.14	7,140.97	243.15	181.56	89.36	-1,389.40	15,167.56	1,261.69	837.36	424.32	2.973			
22,019.01	7,155.09	22,200.15	7,140.96	243.46	181.79	89.36	-1,389.38	15,186.57	1,261.51	836.64	424.86	2.969			
22,100.00	7,155.06	22,281.13	7,140.92	244.75	182.80	89.36	-1,389.28	15,267.55	1,260.60	833.44	427.17	2.951			
22,200.00	7,155.02	22,381.12	7,140.86	246.34	184.05	89.36	-1,389.17	15,367.54	1,259.48	829.48	430.01	2.929			
22,300.00	7,154.97	22,481.12	7,140.80	247.94	185.29	89.35	-1,389.05	15,467.54	1,258.37	825.51	432.85	2.907			
22,400.00	7,154.93	22,581.11	7,140.74	249.53	186.54	89.35	-1,388.93	15,567.53	1,257.25	821.55	435.70	2.886			
22,500.00	7,154.89	22,681.11	7,140.69	251.13	187.79	89.35	-1,388.81	15,667.52	1,256.13	817.59	438.54	2.864			
22,600.00	7,154.85	22,781.10	7,140.63	252.72	189.04	89.35	-1,388.69	15,767.52	1,255.01	813.63	441.39	2.843			
22,700.00	7,154.80	22,881.09	7,140.57	254.32	190.29	89.35	-1,388.57	15,867.51	1,253.89	809.66	444.23	2.823			
22,800.00	7,154.76	22,981.09	7,140.51	255.91	191.54	89.35	-1,388.46	15,967.51	1,252.78	805.70	447.08	2.802			
22,900.00	7,154.72	23,081.08	7,140.46	257.51	192.79	89.35	-1,388.34	16,067.50	1,251.66	801.73	449.93	2.782			
23,000.00	7,154.68	23,181.07	7,140.40	259.11	194.04	89.35	-1,388.22	16,167.49	1,250.54	797.76	452.78	2.762			
23,100.00	7,154.63	23,281.07	7,140.34	260.70	195.29	89.34	-1,388.10	16,267.49	1,249.42	793.79	455.63	2.742			
23,200.00	7,154.59	23,381.06	7,140.29	262.30	196.55	89.34	-1,387.98	16,367.48	1,248.30	789.82	458.48	2.723			
23,300.00	7,154.55	23,481.06	7,140.23	263.89	197.80	89.34	-1,387.87	16,467.47	1,247.19	785.85	461.33	2.703			
23,400.00	7,154.51	23,581.05	7,140.17	265.49	199.05	89.34	-1,387.75	16,567.47	1,246.07	781.88	464.19	2.684			
23,500.00	7,154.47	23,681.04	7,140.11	267.08	200.31	89.34	-1,387.63	16,667.46	1,244.95	777.91	467.04	2.666			
23,600.00	7,154.42	23,781.04	7,140.06	268.68	201.57	89.34	-1,387.51	16,767.46	1,243.83	773.94	469.89	2.647			

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 836H
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 836H	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 - p5-Prelim 3													Offset Site Error:	0.00 usft	
Survey Program:		125-Standard Keeper 104, 290-Standard Keeper 104					Rule Assigned:							Offset Well Error:	0.00 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre		Distance		No-Go		Separation		Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Distance (usft)	Factor			
23,700.00	7,154.38	23,881.03	7,140.00	270.28	202.82	89.34	-1,387.39	16,867.45	1,242.71	769.97	472.75	2.629			
23,800.00	7,154.34	23,981.02	7,139.94	271.87	204.08	89.34	-1,387.27	16,967.44	1,241.60	765.99	475.60	2.611			
23,900.00	7,154.30	24,081.02	7,139.88	273.47	205.34	89.33	-1,387.16	17,067.44	1,240.48	762.02	478.46	2.593			
24,000.00	7,154.25	24,181.01	7,139.83	275.07	206.60	89.33	-1,387.04	17,167.43	1,239.36	758.04	481.32	2.575			
24,100.00	7,154.21	24,281.01	7,139.77	276.66	207.86	89.33	-1,386.92	17,267.42	1,238.24	754.07	484.18	2.557			
24,200.00	7,154.17	24,381.00	7,139.71	278.26	209.12	89.33	-1,386.80	17,367.42	1,237.12	750.09	487.04	2.540			
24,300.00	7,154.13	24,480.99	7,139.65	279.86	210.38	89.33	-1,386.68	17,467.41	1,236.01	746.11	489.90	2.523			
24,400.00	7,154.08	24,580.99	7,139.60	281.45	211.65	89.33	-1,386.56	17,567.40	1,234.89	742.13	492.76	2.506			
24,500.00	7,154.04	24,680.98	7,139.54	283.05	212.91	89.33	-1,386.45	17,667.40	1,233.77	738.15	495.62	2.489			
24,597.25	7,154.00	24,778.22	7,139.48	284.60	214.14	89.33	-1,386.33	17,764.64	1,232.68	734.28	498.40	2.473			
24,600.00	7,154.00	24,780.97	7,139.48	284.65	214.18	89.33	-1,386.33	17,767.39	1,232.65	734.17	498.48	2.473			
24,661.31	7,153.97	24,842.28	7,139.45	285.63	214.95	89.32	-1,386.25	17,828.70	1,232.33	732.09	500.24	2.463			
24,700.00	7,153.96	24,880.97	7,139.42	286.24	215.44	89.32	-1,386.21	17,867.39	1,232.46	731.11	501.34	2.458			
24,722.47	7,153.95	24,903.44	7,139.41	286.60	215.72	89.32	-1,386.18	17,889.86	1,232.65	730.66	501.99	2.456			
24,800.00	7,153.92	24,980.97	7,139.37	287.84	216.71	89.32	-1,386.09	17,967.38	1,233.48	729.27	504.21	2.446			
24,900.00	7,153.88	25,080.96	7,139.31	289.43	217.97	89.32	-1,385.97	18,067.38	1,234.55	727.48	507.07	2.435			
25,000.00	7,153.84	25,180.96	7,139.25	291.03	219.24	89.32	-1,385.85	18,167.37	1,235.61	725.68	509.94	2.423			
25,100.00	7,153.80	25,280.95	7,139.19	292.63	220.51	89.32	-1,385.74	18,267.37	1,236.68	723.88	512.80	2.412			
25,200.00	7,153.77	25,380.95	7,139.14	294.22	221.78	89.32	-1,385.62	18,367.36	1,237.75	722.08	515.67	2.400			
25,300.00	7,153.73	25,480.94	7,139.08	295.82	223.05	89.32	-1,385.50	18,467.36	1,238.82	720.28	518.53	2.389			
25,400.00	7,153.69	25,580.93	7,139.02	297.41	224.32	89.32	-1,385.38	18,567.35	1,239.88	718.48	521.40	2.378			
25,500.00	7,153.65	25,680.93	7,138.96	299.01	225.59	89.32	-1,385.26	18,667.34	1,240.95	716.68	524.27	2.367			
25,600.00	7,153.61	25,780.92	7,138.91	300.60	226.86	89.32	-1,385.14	18,767.34	1,242.02	714.88	527.14	2.356			
25,700.00	7,153.57	25,880.92	7,138.85	302.20	228.13	89.32	-1,385.03	18,867.33	1,243.09	713.08	530.01	2.345			
25,800.00	7,153.53	25,980.91	7,138.79	303.80	229.41	89.32	-1,384.91	18,967.33	1,244.15	711.27	532.88	2.335			
25,900.00	7,153.50	26,080.91	7,138.73	305.39	230.68	89.32	-1,384.79	19,067.32	1,245.22	709.47	535.75	2.324			
26,000.00	7,153.46	26,180.90	7,138.68	306.99	231.96	89.32	-1,384.67	19,167.32	1,246.29	707.66	538.63	2.314			
26,100.00	7,153.42	26,280.89	7,138.62	308.58	233.23	89.32	-1,384.55	19,267.31	1,247.36	705.86	541.50	2.304			
26,200.00	7,153.38	26,380.89	7,138.56	310.18	234.51	89.32	-1,384.43	19,367.30	1,248.42	704.05	544.37	2.293			
26,300.00	7,153.34	26,480.88	7,138.50	311.78	235.79	89.32	-1,384.32	19,467.30	1,249.49	702.24	547.25	2.283			
26,400.00	7,153.30	26,580.88	7,138.45	313.37	237.07	89.32	-1,384.20	19,567.29	1,250.56	700.43	550.12	2.273			
26,500.00	7,153.26	26,680.87	7,138.39	314.97	238.34	89.32	-1,384.08	19,667.29	1,251.63	698.63	553.00	2.263			
26,600.00	7,153.23	26,780.87	7,138.33	316.57	239.62	89.32	-1,383.96	19,767.28	1,252.69	696.82	555.88	2.254			
26,700.00	7,153.19	26,880.86	7,138.27	318.16	240.91	89.32	-1,383.84	19,867.27	1,253.76	695.00	558.76	2.244			
26,800.00	7,153.15	26,980.85	7,138.22	319.76	242.19	89.32	-1,383.72	19,967.27	1,254.83	693.19	561.63	2.234			
26,900.00	7,153.11	27,080.85	7,138.16	321.35	243.47	89.32	-1,383.61	20,067.26	1,255.89	691.38	564.51	2.225			
26,976.35	7,153.08	27,157.19	7,138.12	322.57	244.45	89.32	-1,383.52	20,143.61	1,256.71	690.00	566.71	2.218			
27,000.00	7,153.07	27,180.84	7,138.10	322.95	244.75	89.32	-1,383.49	20,167.26	1,256.96	689.57	567.40	2.215			
27,100.00	7,153.03	27,280.84	7,138.04	324.55	246.03	89.32	-1,383.37	20,267.25	1,258.03	687.75	570.28	2.206			
27,176.36	7,153.00	27,357.19	7,138.00	325.77	247.02	89.32	-1,383.28	20,343.60	1,258.84	686.37	572.48	2.199 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 836H
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 836H	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	Offset	Semi Major Axis	Highside	Offset Wellbore Centre		Distance			No-Go		Separation	Warning			
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Distance (usft)	Factor				
312.44	312.43	312.00	311.99	0.00	0.00	0.00	-0.43	1.52	0.44							
400.00	399.99	312.00	311.99	0.16	0.00	0.00	-0.43	1.52	88.00							
462.00	461.99	312.00	311.99	0.38	0.00	0.00	-0.43	1.52	150.00							
509.18	509.16	312.00	311.99	0.55	0.00	9.51	-0.43	1.52	197.17	196.62	0.55	358.750				
600.00	599.96	312.00	311.99	0.88	0.00	9.51	-0.43	1.52	287.99	287.12	0.87	329.374				
700.00	699.94	312.00	311.99	1.24	0.00	9.51	-0.43	1.52	387.99	386.76	1.23	314.773				
800.00	799.92	312.00	311.99	1.60	0.00	9.51	-0.43	1.52	487.99	486.39	1.59	306.702				
900.00	899.89	312.00	311.99	1.96	0.00	9.51	-0.43	1.52	587.98	586.03	1.95	301.582				
1,000.00	999.87	312.00	311.99	2.32	0.00	9.51	-0.43	1.52	687.98	685.68	2.31	298.046				
1,100.00	1,099.84	312.00	311.99	2.68	0.00	9.51	-0.43	1.52	787.98	785.32	2.67	295.457				
1,200.00	1,199.82	312.00	311.99	3.04	0.00	9.51	-0.43	1.52	887.98	884.96	3.03	293.480				
1,300.00	1,299.80	312.00	311.99	3.40	0.00	9.51	-0.43	1.52	987.98	984.60	3.38	291.920				
1,400.00	1,399.77	312.00	311.99	3.76	0.00	9.51	-0.43	1.52	1,087.98	1,084.24	3.74	290.659				
1,500.00	1,499.75	312.00	311.99	4.12	0.00	9.51	-0.43	1.52	1,187.98	1,183.88	4.10	289.617				
1,600.00	1,599.72	312.00	311.99	4.48	0.00	9.51	-0.43	1.52	1,287.98	1,283.52	4.46	288.743				
1,700.00	1,699.70	312.00	311.99	4.84	0.00	9.51	-0.43	1.52	1,387.98	1,383.16	4.82	287.999				
1,800.00	1,799.68	312.00	311.99	5.20	0.00	9.51	-0.43	1.52	1,487.98	1,482.80	5.18	287.358				
1,900.00	1,899.65	312.00	311.99	5.56	0.00	9.51	-0.43	1.52	1,587.98	1,582.44	5.54	286.799				
2,000.00	1,999.63	312.00	311.99	5.92	0.00	9.51	-0.43	1.52	1,687.98	1,682.08	5.90	286.309				
2,100.00	2,099.60	312.00	311.99	6.28	0.00	9.51	-0.43	1.52	1,787.98	1,781.73	6.25	285.874				
2,200.00	2,199.58	312.00	311.99	6.64	0.00	9.51	-0.43	1.52	1,887.98	1,881.37	6.61	285.487				
2,300.00	2,299.56	312.00	311.99	7.00	0.00	9.51	-0.43	1.52	1,987.98	1,981.01	6.97	285.139				
2,400.00	2,399.53	312.00	311.99	7.36	0.00	9.51	-0.43	1.52	2,087.98	2,080.65	7.33	284.826				
2,500.00	2,499.51	312.00	311.99	7.72	0.00	9.51	-0.43	1.52	2,187.98	2,180.29	7.69	284.541				
2,600.00	2,599.48	312.00	311.99	8.08	0.00	9.51	-0.43	1.52	2,287.98	2,279.93	8.05	284.282				
2,700.00	2,699.46	312.00	311.99	8.44	0.00	9.51	-0.43	1.52	2,387.98	2,379.57	8.41	284.045				
2,800.00	2,799.44	312.00	311.99	8.80	0.00	9.51	-0.43	1.52	2,487.98	2,479.21	8.77	283.828				
2,900.00	2,899.41	312.00	311.99	9.16	0.00	9.51	-0.43	1.52	2,587.98	2,578.85	9.12	283.627				
3,000.00	2,999.39	312.00	311.99	9.52	0.00	9.51	-0.43	1.52	2,687.98	2,678.50	9.48	283.442				
3,100.00	3,099.36	312.00	311.99	9.88	0.00	9.51	-0.43	1.52	2,787.98	2,778.14	9.84	283.270				
3,200.00	3,199.34	312.00	311.99	10.24	0.00	9.51	-0.43	1.52	2,887.98	2,877.78	10.20	283.110				
3,300.00	3,299.32	312.00	311.99	10.60	0.00	9.51	-0.43	1.52	2,987.98	2,977.42	10.56	282.962				
3,400.00	3,399.29	312.00	311.99	10.96	0.00	9.51	-0.43	1.52	3,087.98	3,077.06	10.92	282.822				
3,500.00	3,499.27	312.00	311.99	11.32	0.00	9.51	-0.43	1.52	3,187.98	3,176.70	11.28	282.692				
3,600.00	3,599.25	312.00	311.99	11.68	0.00	9.51	-0.43	1.52	3,287.98	3,276.34	11.64	282.570				
3,700.00	3,699.22	312.00	311.99	12.04	0.00	9.51	-0.43	1.52	3,387.98	3,375.98	11.99	282.455				
3,800.00	3,799.20	312.00	311.99	12.40	0.00	9.51	-0.43	1.52	3,487.98	3,475.63	12.35	282.347				
3,900.00	3,899.17	312.00	311.99	12.76	0.00	9.51	-0.43	1.52	3,587.98	3,575.27	12.71	282.244				
4,000.00	3,999.15	312.00	311.99	13.12	0.00	9.51	-0.43	1.52	3,687.98	3,674.91	13.07	282.148				
4,100.00	4,099.13	312.00	311.99	13.48	0.00	9.51	-0.43	1.52	3,787.98	3,774.55	13.43	282.056				
4,200.00	4,199.10	312.00	311.99	13.84	0.00	9.51	-0.43	1.52	3,887.98	3,874.19	13.79	281.970				
4,300.00	4,299.08	312.00	311.99	14.20	0.00	9.51	-0.43	1.52	3,987.98	3,973.83	14.15	281.888				
4,400.00	4,399.05	312.00	311.99	14.57	0.00	9.51	-0.43	1.52	4,087.98	4,073.47	14.51	281.809				
4,500.00	4,499.03	312.00	311.99	14.93	0.00	9.51	-0.43	1.52	4,187.98	4,173.11	14.86	281.735				
4,600.00	4,599.01	312.00	311.99	15.29	0.00	9.51	-0.43	1.52	4,287.98	4,272.75	15.22	281.664				
4,700.00	4,698.98	312.00	311.99	15.65	0.00	9.51	-0.43	1.52	4,387.98	4,372.40	15.58	281.596				
4,800.00	4,798.96	312.00	311.99	16.01	0.00	9.51	-0.43	1.52	4,487.98	4,472.04	15.94	281.532				
4,900.00	4,898.93	312.00	311.99	16.37	0.00	9.51	-0.43	1.52	4,587.98	4,571.68	16.30	281.470				
5,000.00	4,998.91	312.00	311.99	16.73	0.00	9.51	-0.43	1.52	4,687.98	4,671.32	16.66	281.411				
5,100.00	5,098.89	312.00	311.99	17.09	0.00	9.51	-0.43	1.52	4,787.98	4,770.96	17.02	281.354				
5,200.00	5,198.86	312.00	311.99	17.45	0.00	9.51	-0.43	1.52	4,887.98	4,870.60	17.38	281.300				
5,300.00	5,298.84	312.00	311.99	17.81	0.00	9.51	-0.43	1.52	4,987.98	4,970.24	17.74	281.248				

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 836H
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 836H	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		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)				
5,400.00	5,398.81	312.00	311.99	18.17	0.00	9.51	-0.43	1.52	5,087.98	5,069.88	18.09	281.198		
5,500.00	5,498.79	312.00	311.99	18.53	0.00	9.51	-0.43	1.52	5,187.98	5,169.53	18.45	281.150		
5,600.00	5,598.77	312.00	311.99	18.89	0.00	9.51	-0.43	1.52	5,287.98	5,269.17	18.81	281.103		
5,700.00	5,698.74	312.00	311.99	19.25	0.00	9.51	-0.43	1.52	5,387.98	5,368.81	19.17	281.059		
5,800.00	5,798.72	312.00	311.99	19.61	0.00	9.51	-0.43	1.52	5,487.98	5,468.45	19.53	281.016		
5,900.00	5,898.69	312.00	311.99	19.97	0.00	9.51	-0.43	1.52	5,587.98	5,568.09	19.89	280.975		
6,000.00	5,998.67	312.00	311.99	20.33	0.00	9.51	-0.43	1.52	5,687.98	5,667.73	20.25	280.935		
6,100.00	6,098.65	312.00	311.99	20.69	0.00	9.51	-0.43	1.52	5,787.98	5,767.37	20.61	280.896		
6,200.00	6,198.62	312.00	311.99	21.05	0.00	9.51	-0.43	1.52	5,887.98	5,867.01	20.96	280.859		
6,300.00	6,298.60	312.00	311.99	21.41	0.00	9.51	-0.43	1.52	5,987.98	5,966.66	21.32	280.823		
6,400.00	6,398.57	312.00	311.99	21.77	0.00	9.51	-0.43	1.52	6,087.98	6,066.30	21.68	280.789		
6,500.00	6,498.55	312.00	311.99	22.13	0.00	9.51	-0.43	1.52	6,187.98	6,165.94	22.04	280.755		
6,531.56	6,530.10	312.00	311.99	22.24	0.00	9.51	-0.43	1.52	6,219.54	6,197.38	22.15	280.745		
6,550.00	6,548.53	312.00	311.99	22.31	0.00	-27.12	-0.43	1.52	6,237.98	6,215.68	22.30	279.775		
6,600.00	6,598.36	312.00	311.99	22.49	0.00	-9.58	-0.43	1.52	6,287.85	6,265.47	22.38	280.987		
6,650.00	6,647.74	312.00	311.99	22.67	0.00	-5.78	-0.43	1.52	6,337.30	6,314.96	22.35	283.600		
6,700.00	6,696.35	312.00	311.99	22.84	0.00	-4.15	-0.43	1.52	6,386.06	6,363.85	22.20	287.627		
6,750.00	6,743.90	312.00	311.99	23.01	0.00	-3.26	-0.43	1.52	6,433.82	6,411.87	21.95	293.116		
6,800.00	6,790.11	312.00	311.99	23.18	0.00	-2.69	-0.43	1.52	6,480.33	6,458.74	21.59	300.147		
6,850.00	6,834.67	312.00	311.99	23.35	0.00	-2.31	-0.43	1.52	6,525.32	6,504.19	21.13	308.828		
6,900.00	6,877.32	312.00	311.99	23.51	0.00	-2.03	-0.43	1.52	6,568.56	6,547.99	20.57	319.290		
6,950.00	6,917.80	312.00	311.99	23.68	0.00	-1.82	-0.43	1.52	6,609.81	6,589.88	19.93	331.695		
7,000.00	6,955.85	312.00	311.99	23.85	0.00	-1.66	-0.43	1.52	6,648.86	6,629.66	19.20	346.224		
7,050.00	6,991.24	312.00	311.99	24.03	0.00	-1.53	-0.43	1.52	6,685.51	6,667.09	18.41	363.067		
7,100.00	7,023.76	312.00	311.99	24.22	0.00	-1.43	-0.43	1.52	6,719.57	6,702.00	17.57	382.402		
7,150.00	7,053.20	312.00	311.99	24.42	0.00	-1.35	-0.43	1.52	6,750.87	6,734.18	16.70	404.352		
7,200.00	7,079.37	312.00	311.99	24.63	0.00	-1.29	-0.43	1.52	6,779.27	6,763.46	15.81	428.912		
7,250.00	7,102.13	312.00	311.99	24.86	0.00	-1.24	-0.43	1.52	6,804.62	6,789.69	14.93	455.825		
7,300.00	7,121.32	312.00	311.99	25.10	0.00	-1.20	-0.43	1.52	6,826.80	6,812.70	14.09	484.408		
7,350.00	7,136.84	312.00	311.99	25.35	0.00	-1.17	-0.43	1.52	6,845.70	6,832.37	13.34	513.328		
7,400.00	7,148.58	312.00	311.99	25.62	0.00	-1.15	-0.43	1.52	6,861.24	6,848.55	12.70	540.419		
7,450.00	7,156.47	312.00	311.99	25.90	0.00	-1.13	-0.43	1.52	6,873.35	6,861.14	12.21	562.709		
7,500.00	7,160.47	312.00	311.99	26.20	0.00	-1.13	-0.43	1.52	6,881.96	6,870.04	11.93	576.906		
7,526.22	7,161.00	312.00	311.99	26.35	0.00	-1.13	-0.43	1.52	6,885.07	6,873.21	11.87	580.179		
7,600.00	7,160.97	312.00	311.99	26.83	0.00	-1.13	-0.43	1.52	6,892.84	6,880.76	12.07	570.991		
7,700.00	7,160.93	312.00	311.99	27.53	0.00	-1.13	-0.43	1.52	6,904.60	6,892.22	12.39	557.410		
7,800.00	7,160.89	312.00	311.99	28.31	0.00	-1.13	-0.43	1.52	6,917.80	6,905.05	12.74	542.877		
7,900.00	7,160.85	312.00	311.99	29.16	0.00	-1.13	-0.43	1.52	6,932.41	6,919.27	13.14	527.735		
8,000.00	7,160.81	312.00	311.99	30.07	0.00	-1.13	-0.43	1.52	6,948.43	6,934.86	13.56	512.285		
8,100.00	7,160.77	312.00	311.99	31.04	0.00	-1.13	-0.43	1.52	6,965.84	6,951.82	14.02	496.777		
8,200.00	7,160.73	312.00	311.99	32.06	0.00	-1.13	-0.43	1.52	6,984.65	6,970.14	14.51	481.414		
8,300.00	7,160.69	312.00	311.99	33.12	0.00	-1.13	-0.43	1.52	7,004.83	6,989.81	15.02	466.351		
8,400.00	7,160.65	312.00	311.99	34.23	0.00	-1.13	-0.43	1.52	7,026.38	7,010.83	15.56	451.705		
8,500.00	7,160.60	312.00	311.99	35.37	0.00	-1.13	-0.43	1.52	7,049.29	7,033.18	16.11	437.557		
8,600.00	7,160.56	312.00	311.99	36.55	0.00	-1.13	-0.43	1.52	7,073.53	7,056.84	16.68	423.961		
8,700.00	7,160.52	312.00	311.99	37.76	0.00	-1.13	-0.43	1.52	7,099.10	7,081.82	17.27	410.949		
8,800.00	7,160.48	312.00	311.99	38.99	0.00	-1.13	-0.43	1.52	7,125.97	7,108.09	17.88	398.535		
8,900.00	7,160.44	312.00	311.99	40.26	0.00	-1.13	-0.43	1.52	7,154.15	7,135.65	18.50	386.721		
9,000.00	7,160.40	312.00	311.99	41.54	0.00	-1.13	-0.43	1.52	7,183.61	7,164.48	19.13	375.500		
9,100.00	7,160.36	312.00	311.99	42.85	0.00	-1.13	-0.43	1.52	7,214.33	7,194.56	19.77	364.855		
9,200.00	7,160.32	312.00	311.99	44.18	0.00	-1.13	-0.43	1.52	7,246.31	7,225.88	20.43	354.767		
9,300.00	7,160.28	312.00	311.99	45.52	0.00	-1.13	-0.43	1.52	7,279.51	7,258.43	21.09	345.213		

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 836H
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 836H	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)			
9,400.00	7,160.24	312.00	311.99	46.89	0.00	-1.13	-0.43	1.52	7,313.94	7,292.18	21.76	336.169	
9,500.00	7,160.20	312.00	311.99	48.26	0.00	-1.13	-0.43	1.52	7,349.56	7,327.13	22.43	327.609	
9,600.00	7,160.16	312.00	311.99	49.65	0.00	-1.13	-0.43	1.52	7,386.37	7,363.25	23.12	319.506	
9,700.00	7,160.12	312.00	311.99	51.05	0.00	-1.13	-0.43	1.52	7,424.33	7,400.53	23.81	311.837	
9,800.00	7,160.08	312.00	311.99	52.47	0.00	-1.13	-0.43	1.52	7,463.45	7,438.95	24.50	304.575	
9,900.00	7,160.04	312.00	311.99	53.89	0.00	-1.13	-0.43	1.52	7,503.70	7,478.49	25.21	297.696	
10,000.00	7,160.00	312.00	311.99	55.33	0.00	-1.13	-0.43	1.52	7,545.05	7,519.14	25.91	291.179	
10,100.00	7,159.95	312.00	311.99	56.77	0.00	-1.13	-0.43	1.52	7,587.50	7,560.88	26.62	285.001	
10,200.00	7,159.91	312.00	311.99	58.22	0.00	-1.13	-0.43	1.52	7,631.03	7,603.69	27.34	279.142	
10,300.00	7,159.87	312.00	311.99	59.68	0.00	-1.13	-0.43	1.52	7,675.60	7,647.55	28.06	273.582	
10,400.00	7,159.83	312.00	311.99	61.14	0.00	-1.13	-0.43	1.52	7,721.22	7,692.44	28.78	268.303	
10,500.00	7,159.79	312.00	311.99	62.62	0.00	-1.13	-0.43	1.52	7,767.86	7,738.36	29.50	263.287	
10,600.00	7,159.75	312.00	311.99	64.10	0.00	-1.13	-0.43	1.52	7,815.50	7,785.27	30.23	258.520	
10,700.00	7,159.71	312.00	311.99	65.58	0.00	-1.13	-0.43	1.52	7,864.12	7,833.16	30.96	253.986	
10,800.00	7,159.67	312.00	311.99	67.07	0.00	-1.13	-0.43	1.52	7,913.70	7,882.01	31.70	249.672	
10,900.00	7,159.63	312.00	311.99	68.57	0.00	-1.13	-0.43	1.52	7,964.24	7,931.80	32.43	245.563	
11,000.00	7,159.59	312.00	311.99	70.07	0.00	-1.13	-0.43	1.52	8,015.70	7,982.53	33.17	241.648	
11,100.00	7,159.55	312.00	311.99	71.57	0.00	-1.13	-0.43	1.52	8,068.07	8,034.16	33.91	237.915	
11,200.00	7,159.51	312.00	311.99	73.08	0.00	-1.13	-0.43	1.52	8,121.34	8,086.69	34.65	234.355	
11,300.00	7,159.47	312.00	311.99	74.59	0.00	-1.13	-0.43	1.52	8,175.48	8,140.08	35.40	230.956	
11,400.00	7,159.43	312.00	311.99	76.11	0.00	-1.13	-0.43	1.52	8,230.48	8,194.34	36.14	227.710	
11,500.00	7,159.39	312.00	311.99	77.63	0.00	-1.13	-0.43	1.52	8,286.33	8,249.44	36.89	224.608	
11,600.00	7,159.35	312.00	311.99	79.15	0.00	-1.13	-0.43	1.52	8,343.00	8,305.35	37.64	221.643	
11,638.27	7,159.33	312.00	311.99	79.73	0.00	-1.13	-0.43	1.52	8,364.90	8,326.97	37.93	220.542	
11,640.51	7,159.33	312.00	311.99	79.77	0.00	-1.14	-0.43	1.52	8,366.18	8,328.24	37.95	220.475	
11,700.00	7,159.30	312.00	311.99	80.68	0.00	-1.14	-0.43	1.52	8,400.47	8,362.08	38.39	218.803	
11,800.00	7,159.26	312.00	311.99	82.20	0.00	-1.14	-0.43	1.52	8,458.74	8,419.60	39.15	216.087	
11,900.00	7,159.22	312.00	311.99	83.74	0.00	-1.14	-0.43	1.52	8,517.78	8,477.88	39.90	213.486	
12,000.00	7,159.18	312.00	311.99	85.27	0.00	-1.14	-0.43	1.52	8,577.59	8,536.93	40.65	210.994	
12,100.00	7,159.14	312.00	311.99	86.81	0.00	-1.14	-0.43	1.52	8,638.13	8,596.72	41.41	208.605	
12,200.00	7,159.10	312.00	311.99	88.35	0.00	-1.14	-0.43	1.52	8,699.41	8,657.24	42.17	206.314	
12,300.00	7,159.06	312.00	311.99	89.89	0.00	-1.14	-0.43	1.52	8,761.39	8,718.47	42.92	204.115	
12,400.00	7,159.02	312.00	311.99	91.43	0.00	-1.14	-0.43	1.52	8,824.08	8,780.40	43.68	202.004	
12,500.00	7,158.98	312.00	311.99	92.98	0.00	-1.14	-0.43	1.52	8,887.45	8,843.00	44.44	199.976	
12,600.00	7,158.94	312.00	311.99	94.52	0.00	-1.14	-0.43	1.52	8,951.48	8,906.28	45.20	198.028	
12,700.00	7,158.90	312.00	311.99	96.07	0.00	-1.14	-0.43	1.52	9,016.17	8,970.21	45.96	196.154	
12,800.00	7,158.86	312.00	311.99	97.62	0.00	-1.14	-0.43	1.52	9,081.51	9,034.78	46.73	194.352	
12,900.00	7,158.81	312.00	311.99	99.17	0.00	-1.14	-0.43	1.52	9,147.46	9,099.97	47.49	192.618	
13,000.00	7,158.77	312.00	311.99	100.73	0.00	-1.14	-0.43	1.52	9,214.03	9,165.78	48.25	190.949	
13,100.00	7,158.73	312.00	311.99	102.28	0.00	-1.14	-0.43	1.52	9,281.21	9,232.19	49.02	189.341	
13,200.00	7,158.69	312.00	311.99	103.84	0.00	-1.14	-0.43	1.52	9,348.96	9,299.18	49.78	187.792	
13,300.00	7,158.65	312.00	311.99	105.40	0.00	-1.14	-0.43	1.52	9,417.30	9,366.75	50.55	186.299	
13,400.00	7,158.61	312.00	311.99	106.96	0.00	-1.14	-0.43	1.52	9,486.19	9,434.88	51.32	184.859	
13,500.00	7,158.57	312.00	311.99	108.52	0.00	-1.14	-0.43	1.52	9,555.64	9,503.55	52.08	183.470	
13,600.00	7,158.53	312.00	311.99	110.08	0.00	-1.14	-0.43	1.52	9,625.62	9,572.77	52.85	182.130	
13,700.00	7,158.49	312.00	311.99	111.64	0.00	-1.14	-0.43	1.52	9,696.13	9,642.51	53.62	180.836	
13,800.00	7,158.45	312.00	311.99	113.21	0.00	-1.14	-0.43	1.52	9,767.15	9,712.76	54.39	179.586	
13,900.00	7,158.41	312.00	311.99	114.77	0.00	-1.14	-0.43	1.52	9,838.68	9,783.52	55.16	178.379	
14,000.00	7,158.37	312.00	311.99	116.34	0.00	-1.14	-0.43	1.52	9,910.70	9,854.77	55.93	177.213	
14,100.00	7,158.32	312.00	311.99	117.91	0.00	-1.14	-0.43	1.52	9,983.20	9,926.50	56.70	176.085	
14,200.00	7,158.28	312.00	311.99	119.47	0.00	-1.14	-0.43	1.52	10,056.17	9,998.71	57.47	174.994	
14,300.00	7,158.24	312.00	311.99	121.04	0.00	-1.14	-0.43	1.52	10,129.61	10,071.37	58.24	173.939	

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 836H
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 836H	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	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Distance		No-Go	Separation	Warning			
Depth (usft)	Depth (usft)	Depth (usft)	Depth (usft)	(usft)	(usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Distance (usft)	Factor				
14,400.00	7,158.20	312.00	311.99	122.61	0.00	-1.14	-0.43	1.52	10,203.49	10,144.49	59.01	172.918				
14,500.00	7,158.16	312.00	311.99	124.18	0.00	-1.14	-0.43	1.52	10,277.82	10,218.04	59.78	171.930				
14,600.00	7,158.12	312.00	311.99	125.76	0.00	-1.14	-0.43	1.52	10,352.58	10,292.03	60.55	170.973				
14,700.00	7,158.08	312.00	311.99	127.33	0.00	-1.14	-0.43	1.52	10,427.77	10,366.44	61.32	170.046				
14,800.00	7,158.04	312.00	311.99	128.90	0.00	-1.14	-0.43	1.52	10,503.36	10,441.27	62.10	169.147				
14,900.00	7,158.00	312.00	311.99	130.47	0.00	-1.14	-0.43	1.52	10,579.37	10,516.50	62.87	168.277				
15,000.00	7,157.96	312.00	311.99	132.05	0.00	-1.14	-0.43	1.52	10,655.77	10,592.12	63.64	167.433				
15,100.00	7,157.92	312.00	311.99	133.62	0.00	-1.14	-0.43	1.52	10,732.55	10,668.14	64.42	166.614				
15,200.00	7,157.88	312.00	311.99	135.20	0.00	-1.14	-0.43	1.52	10,809.72	10,744.53	65.19	165.820				
15,300.00	7,157.83	312.00	311.99	136.78	0.00	-1.14	-0.43	1.52	10,887.26	10,821.30	65.96	165.050				
15,400.00	7,157.79	312.00	311.99	138.35	0.00	-1.14	-0.43	1.52	10,965.16	10,898.42	66.74	164.302				
15,500.00	7,157.75	312.00	311.99	139.93	0.00	-1.14	-0.43	1.52	11,043.42	10,975.91	67.51	163.576				
15,600.00	7,157.71	312.00	311.99	141.51	0.00	-1.14	-0.43	1.52	11,122.02	11,053.74	68.29	162.871				
15,700.00	7,157.67	312.00	311.99	143.09	0.00	-1.14	-0.43	1.52	11,200.97	11,131.91	69.06	162.186				
15,800.00	7,157.63	312.00	311.99	144.67	0.00	-1.14	-0.43	1.52	11,280.25	11,210.42	69.84	161.521				
15,900.00	7,157.59	312.00	311.99	146.24	0.00	-1.14	-0.43	1.52	11,359.86	11,289.25	70.61	160.874				
16,000.00	7,157.55	312.00	311.99	147.82	0.00	-1.14	-0.43	1.52	11,439.79	11,368.40	71.39	160.246				
16,100.00	7,157.51	312.00	311.99	149.41	0.00	-1.14	-0.43	1.52	11,520.03	11,447.87	72.17	159.635				
16,200.00	7,157.47	312.00	311.99	150.99	0.00	-1.14	-0.43	1.52	11,600.58	11,527.64	72.94	159.040				
16,300.00	7,157.43	312.00	311.99	152.57	0.00	-1.14	-0.43	1.52	11,681.43	11,607.71	73.72	158.462				
16,400.00	7,157.38	312.00	311.99	154.15	0.00	-1.14	-0.43	1.52	11,762.58	11,688.08	74.49	157.899				
16,500.00	7,157.34	312.00	311.99	155.73	0.00	-1.14	-0.43	1.52	11,844.01	11,768.74	75.27	157.352				
16,600.00	7,157.30	312.00	311.99	157.31	0.00	-1.14	-0.43	1.52	11,925.72	11,849.68	76.05	156.818				
16,680.84	7,157.27	312.00	311.99	158.59	0.00	-1.14	-0.43	1.52	11,991.99	11,915.31	76.68	156.398				
16,687.46	7,157.27	312.00	311.99	158.70	0.00	-1.24	-0.43	1.52	11,997.42	11,920.68	76.74	156.345				
16,700.00	7,157.26	312.00	311.99	158.90	0.00	-1.24	-0.43	1.52	12,007.72	11,930.88	76.83	156.280				
16,800.00	7,157.22	312.00	311.99	160.48	0.00	-1.24	-0.43	1.52	12,089.98	12,012.37	77.61	155.775				
16,900.00	7,157.18	312.00	311.99	162.06	0.00	-1.24	-0.43	1.52	12,172.50	12,094.12	78.39	155.282				
17,000.00	7,157.14	312.00	311.99	163.65	0.00	-1.24	-0.43	1.52	12,255.29	12,176.12	79.17	154.802				
17,100.00	7,157.10	312.00	311.99	165.23	0.00	-1.24	-0.43	1.52	12,338.33	12,258.39	79.95	154.335				
17,200.00	7,157.06	312.00	311.99	166.82	0.00	-1.24	-0.43	1.52	12,421.63	12,340.90	80.72	153.879				
17,300.00	7,157.02	312.00	311.99	168.40	0.00	-1.24	-0.43	1.52	12,505.16	12,423.66	81.50	153.435				
17,400.00	7,156.98	312.00	311.99	169.99	0.00	-1.24	-0.43	1.52	12,588.94	12,506.66	82.28	153.002				
17,500.00	7,156.94	312.00	311.99	171.57	0.00	-1.24	-0.43	1.52	12,672.95	12,589.90	83.06	152.579				
17,600.00	7,156.90	312.00	311.99	173.16	0.00	-1.24	-0.43	1.52	12,757.20	12,673.36	83.84	152.167				
17,700.00	7,156.85	312.00	311.99	174.75	0.00	-1.24	-0.43	1.52	12,841.67	12,757.05	84.62	151.765				
17,800.00	7,156.81	312.00	311.99	176.33	0.00	-1.24	-0.43	1.52	12,926.36	12,840.96	85.39	151.372				
17,900.00	7,156.77	312.00	311.99	177.92	0.00	-1.24	-0.43	1.52	13,011.26	12,925.09	86.17	150.989				
18,000.00	7,156.73	312.00	311.99	179.51	0.00	-1.24	-0.43	1.52	13,096.39	13,009.43	86.95	150.615				
18,100.00	7,156.69	312.00	311.99	181.09	0.00	-1.24	-0.43	1.52	13,181.72	13,093.98	87.73	150.250				
18,200.00	7,156.65	312.00	311.99	182.68	0.00	-1.24	-0.43	1.52	13,267.25	13,178.74	88.51	149.893				
18,300.00	7,156.61	312.00	311.99	184.27	0.00	-1.24	-0.43	1.52	13,352.99	13,263.70	89.29	149.545				
18,400.00	7,156.57	312.00	311.99	185.86	0.00	-1.24	-0.43	1.52	13,438.92	13,348.85	90.07	149.205				
18,500.00	7,156.53	312.00	311.99	187.45	0.00	-1.24	-0.43	1.52	13,525.05	13,434.20	90.85	148.872				
18,600.00	7,156.49	312.00	311.99	189.03	0.00	-1.24	-0.43	1.52	13,611.36	13,519.73	91.63	148.547				
18,700.00	7,156.45	312.00	311.99	190.62	0.00	-1.24	-0.43	1.52	13,697.87	13,605.46	92.41	148.230				
18,800.00	7,156.41	312.00	311.99	192.21	0.00	-1.24	-0.43	1.52	13,784.55	13,691.36	93.19	147.919				
18,900.00	7,156.37	312.00	311.99	193.80	0.00	-1.24	-0.43	1.52	13,871.42	13,777.45	93.97	147.616				
19,000.00	7,156.32	312.00	311.99	195.39	0.00	-1.24	-0.43	1.52	13,958.46	13,863.71	94.75	147.319				
19,100.00	7,156.28	312.00	311.99	196.98	0.00	-1.24	-0.43	1.52	14,045.67	13,950.14	95.53	147.029				
19,200.00	7,156.24	312.00	311.99	198.57	0.00	-1.24	-0.43	1.52	14,133.05	14,036.74	96.31	146.745				
19,300.00	7,156.20	312.00	311.99	200.16	0.00	-1.24	-0.43	1.52	14,220.60	14,123.51	97.09	146.467				

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 836H
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 836H	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		Semi Major Axis		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)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	No-Go Distance (usft)	Separation Factor	Warning		
19,400.00	7,156.16	312.00	311.99	201.75	0.00	-1.24	-0.43	1.52	14,308.31	14,210.44	97.87	146.195			
19,500.00	7,156.12	312.00	311.99	203.34	0.00	-1.24	-0.43	1.52	14,396.18	14,297.53	98.65	145.929			
19,600.00	7,156.08	312.00	311.99	204.93	0.00	-1.24	-0.43	1.52	14,484.21	14,384.78	99.43	145.668			
19,700.00	7,156.04	312.00	311.99	206.52	0.00	-1.24	-0.43	1.52	14,572.39	14,472.18	100.21	145.413			
19,800.00	7,156.00	312.00	311.99	208.11	0.00	-1.24	-0.43	1.52	14,660.73	14,559.73	100.99	145.164			
19,900.00	7,155.96	312.00	311.99	209.70	0.00	-1.24	-0.43	1.52	14,749.21	14,647.44	101.78	144.919			
20,000.00	7,155.92	312.00	311.99	211.30	0.00	-1.24	-0.43	1.52	14,837.84	14,735.29	102.56	144.680			
20,100.00	7,155.88	312.00	311.99	212.89	0.00	-1.24	-0.43	1.52	14,926.62	14,823.28	103.34	144.445			
20,200.00	7,155.84	312.00	311.99	214.48	0.00	-1.24	-0.43	1.52	15,015.53	14,911.41	104.12	144.216			
20,300.00	7,155.79	312.00	311.99	216.07	0.00	-1.24	-0.43	1.52	15,104.59	14,999.69	104.90	143.991			
20,400.00	7,155.75	312.00	311.99	217.66	0.00	-1.24	-0.43	1.52	15,193.78	15,088.10	105.68	143.770			
20,500.00	7,155.71	312.00	311.99	219.26	0.00	-1.24	-0.43	1.52	15,283.10	15,176.64	106.46	143.554			
20,600.00	7,155.67	312.00	311.99	220.85	0.00	-1.24	-0.43	1.52	15,372.56	15,265.31	107.24	143.342			
20,700.00	7,155.63	312.00	311.99	222.44	0.00	-1.24	-0.43	1.52	15,462.14	15,354.12	108.03	143.135			
20,800.00	7,155.59	312.00	311.99	224.03	0.00	-1.24	-0.43	1.52	15,551.85	15,443.05	108.81	142.931			
20,900.00	7,155.55	312.00	311.99	225.63	0.00	-1.24	-0.43	1.52	15,641.69	15,532.10	109.59	142.731			
21,000.00	7,155.51	312.00	311.99	227.22	0.00	-1.24	-0.43	1.52	15,731.65	15,621.28	110.37	142.536			
21,100.00	7,155.47	312.00	311.99	228.81	0.00	-1.24	-0.43	1.52	15,821.73	15,710.58	111.15	142.344			
21,200.00	7,155.43	312.00	311.99	230.40	0.00	-1.24	-0.43	1.52	15,911.93	15,799.99	111.93	142.155			
21,300.00	7,155.39	312.00	311.99	232.00	0.00	-1.24	-0.43	1.52	16,002.24	15,889.53	112.72	141.970			
21,400.00	7,155.35	312.00	311.99	233.59	0.00	-1.24	-0.43	1.52	16,092.67	15,979.17	113.50	141.789			
21,500.00	7,155.31	312.00	311.99	235.18	0.00	-1.24	-0.43	1.52	16,183.21	16,068.93	114.28	141.611			
21,600.00	7,155.26	312.00	311.99	236.78	0.00	-1.24	-0.43	1.52	16,273.86	16,158.80	115.06	141.437			
21,700.00	7,155.22	312.00	311.99	238.37	0.00	-1.24	-0.43	1.52	16,364.63	16,248.78	115.84	141.265			
21,800.00	7,155.18	312.00	311.99	239.96	0.00	-1.24	-0.43	1.52	16,455.49	16,338.87	116.63	141.097			
21,900.00	7,155.14	312.00	311.99	241.56	0.00	-1.24	-0.43	1.52	16,546.47	16,429.06	117.41	140.932			
21,953.88	7,155.12	312.00	311.99	242.42	0.00	-1.24	-0.43	1.52	16,595.53	16,477.70	117.83	140.845			
22,000.00	7,155.10	312.00	311.99	243.15	0.00	-0.22	-0.43	1.52	16,637.55	16,519.47	118.08	140.902			
22,019.01	7,155.09	312.00	311.99	243.46	0.00	0.20	-0.43	1.52	16,654.87	16,536.66	118.22	140.885			
22,100.00	7,155.06	312.00	311.99	244.75	0.00	0.20	-0.43	1.52	16,728.73	16,609.88	118.85	140.756			
22,200.00	7,155.02	312.00	311.99	246.34	0.00	0.20	-0.43	1.52	16,820.01	16,700.38	119.63	140.600			
22,300.00	7,154.97	312.00	311.99	247.94	0.00	0.20	-0.43	1.52	16,911.39	16,790.98	120.41	140.446			
22,400.00	7,154.93	312.00	311.99	249.53	0.00	0.20	-0.43	1.52	17,002.87	16,881.68	121.19	140.296			
22,500.00	7,154.89	312.00	311.99	251.13	0.00	0.20	-0.43	1.52	17,094.45	16,972.47	121.97	140.148			
22,600.00	7,154.85	312.00	311.99	252.72	0.00	0.20	-0.43	1.52	17,186.11	17,063.36	122.76	140.002			
22,700.00	7,154.80	312.00	311.99	254.32	0.00	0.20	-0.43	1.52	17,277.88	17,154.34	123.54	139.860			
22,800.00	7,154.76	312.00	311.99	255.91	0.00	0.20	-0.43	1.52	17,369.73	17,245.41	124.32	139.719			
22,900.00	7,154.72	312.00	311.99	257.51	0.00	0.20	-0.43	1.52	17,461.67	17,336.57	125.10	139.581			
23,000.00	7,154.68	312.00	311.99	259.10	0.00	0.20	-0.43	1.52	17,553.70	17,427.81	125.88	139.446			
23,100.00	7,154.63	312.00	311.99	260.70	0.00	0.20	-0.43	1.52	17,645.81	17,519.15	126.66	139.312			
23,200.00	7,154.59	312.00	311.99	262.30	0.00	0.20	-0.43	1.52	17,738.01	17,610.57	127.45	139.181			
23,300.00	7,154.55	312.00	311.99	263.89	0.00	0.20	-0.43	1.52	17,830.30	17,702.07	128.23	139.052			
23,400.00	7,154.51	312.00	311.99	265.49	0.00	0.20	-0.43	1.52	17,922.67	17,793.66	129.01	138.926			
23,500.00	7,154.47	312.00	311.99	267.08	0.00	0.20	-0.43	1.52	18,015.12	17,885.33	129.79	138.801			
23,600.00	7,154.42	312.00	311.99	268.68	0.00	0.20	-0.43	1.52	18,107.65	17,977.07	130.57	138.679			
23,700.00	7,154.38	312.00	311.99	270.28	0.00	0.20	-0.43	1.52	18,200.26	18,068.90	131.35	138.558			
23,800.00	7,154.34	312.00	311.99	271.87	0.00	0.20	-0.43	1.52	18,292.94	18,160.81	132.14	138.440			
23,900.00	7,154.30	312.00	311.99	273.47	0.00	0.20	-0.43	1.52	18,385.71	18,252.79	132.92	138.323			
24,000.00	7,154.25	312.00	311.99	275.07	0.00	0.20	-0.43	1.52	18,478.54	18,344.84	133.70	138.209			
24,100.00	7,154.21	312.00	311.99	276.66	0.00	0.20	-0.43	1.52	18,571.46	18,436.98	134.48	138.096			
24,200.00	7,154.17	312.00	311.99	278.26	0.00	0.20	-0.43	1.52	18,664.44	18,529.18	135.26	137.985			
24,300.00	7,154.13	312.00	311.99	279.86	0.00	0.20	-0.43	1.52	18,757.50	18,621.46	136.05	137.876			

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 836H
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 836H	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
24,400.00	7,154.08	312.00	311.99	281.45	0.00	0.20	-0.43	1.52	18,850.63	18,713.80	136.83	137.769
24,500.00	7,154.04	312.00	311.99	283.05	0.00	0.20	-0.43	1.52	18,943.83	18,806.22	137.61	137.663
24,597.25	7,154.00	312.00	311.99	284.60	0.00	0.20	-0.43	1.52	19,034.53	18,896.16	138.37	137.562
24,600.00	7,154.00	312.00	311.99	284.65	0.00	0.13	-0.43	1.52	19,037.10	18,898.71	138.39	137.558
24,700.00	7,153.96	312.00	311.99	286.24	0.00	-2.47	-0.43	1.52	19,130.43	18,990.76	139.67	136.965
24,722.47	7,153.95	312.00	311.99	286.60	0.00	-3.05	-0.43	1.52	19,151.41	19,011.32	140.09	136.709
24,800.00	7,153.92	312.00	311.99	287.84	0.00	-3.05	-0.43	1.52	19,223.82	19,083.12	140.70	136.631
24,900.00	7,153.88	312.00	311.99	289.43	0.00	-3.05	-0.43	1.52	19,317.27	19,175.79	141.49	136.532
25,000.00	7,153.84	312.00	311.99	291.03	0.00	-3.05	-0.43	1.52	19,410.79	19,268.52	142.27	136.435
25,100.00	7,153.80	312.00	311.99	292.63	0.00	-3.05	-0.43	1.52	19,504.37	19,361.31	143.06	136.338
25,200.00	7,153.77	312.00	311.99	294.22	0.00	-3.05	-0.43	1.52	19,598.02	19,454.17	143.85	136.244
25,300.00	7,153.73	312.00	311.99	295.82	0.00	-3.05	-0.43	1.52	19,691.72	19,547.09	144.63	136.150
25,400.00	7,153.69	312.00	311.99	297.41	0.00	-3.05	-0.43	1.52	19,785.49	19,640.07	145.42	136.059
25,500.00	7,153.65	312.00	311.99	299.01	0.00	-3.05	-0.43	1.52	19,879.32	19,733.12	146.21	135.968
25,600.00	7,153.61	312.00	311.99	300.60	0.00	-3.05	-0.43	1.52	19,973.21	19,826.22	146.99	135.879
25,700.00	7,153.57	312.00	311.99	302.20	0.00	-3.05	-0.43	1.52	20,067.16	19,919.38	147.78	135.791
25,800.00	7,153.53	312.00	311.99	303.80	0.00	-3.05	-0.43	1.52	20,161.17	20,012.60	148.57	135.705
25,900.00	7,153.50	312.00	311.99	305.39	0.00	-3.05	-0.43	1.52	20,255.23	20,105.88	149.35	135.620
26,000.00	7,153.46	312.00	311.99	306.99	0.00	-3.05	-0.43	1.52	20,349.35	20,199.21	150.14	135.536
26,100.00	7,153.42	312.00	311.99	308.58	0.00	-3.05	-0.43	1.52	20,443.53	20,292.60	150.93	135.453
26,200.00	7,153.38	312.00	311.99	310.18	0.00	-3.05	-0.43	1.52	20,537.76	20,386.05	151.71	135.371
26,300.00	7,153.34	312.00	311.99	311.78	0.00	-3.05	-0.43	1.52	20,632.05	20,479.55	152.50	135.291
26,400.00	7,153.30	312.00	311.99	313.37	0.00	-3.05	-0.43	1.52	20,726.39	20,573.10	153.29	135.212
26,500.00	7,153.26	312.00	311.99	314.97	0.00	-3.05	-0.43	1.52	20,820.78	20,666.70	154.08	135.134
26,600.00	7,153.23	312.00	311.99	316.57	0.00	-3.05	-0.43	1.52	20,915.22	20,760.36	154.86	135.057
26,700.00	7,153.19	312.00	311.99	318.16	0.00	-3.05	-0.43	1.52	21,009.72	20,854.07	155.65	134.981
26,800.00	7,153.15	312.00	311.99	319.76	0.00	-3.05	-0.43	1.52	21,104.27	20,947.83	156.44	134.906
26,900.00	7,153.11	312.00	311.99	321.35	0.00	-3.05	-0.43	1.52	21,198.86	21,041.64	157.22	134.832
26,976.35	7,153.08	312.00	311.99	322.57	0.00	-3.05	-0.43	1.52	21,271.12	21,113.29	157.82	134.777
27,000.00	7,153.07	312.00	311.99	322.95	0.00	-3.05	-0.43	1.52	21,293.51	21,135.50	158.01	134.760
27,100.00	7,153.03	312.00	311.99	324.55	0.00	-3.05	-0.43	1.52	21,388.21	21,229.41	158.80	134.688
27,176.36	7,153.00	312.00	311.99	325.77	0.00	-3.05	-0.43	1.52	21,460.54	21,301.14	159.40	134.634 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 836H
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 836H	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)

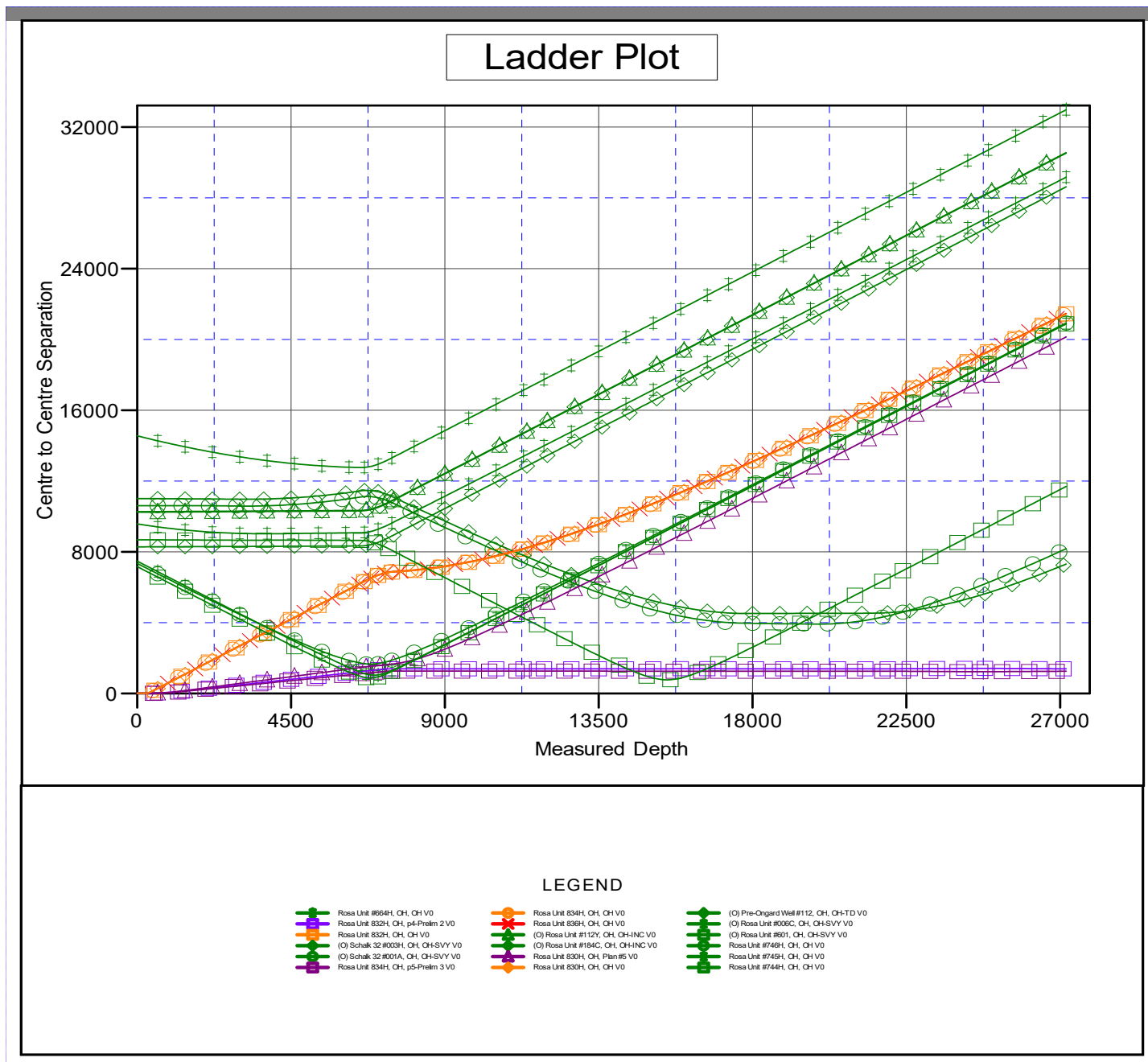
Offset Depths are relative to Offset Datum

Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 836H

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

Grid Convergence at Surface is: 0.31°



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 836H
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 836H	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)

Coordinates are relative to: Rosa Unit 836H

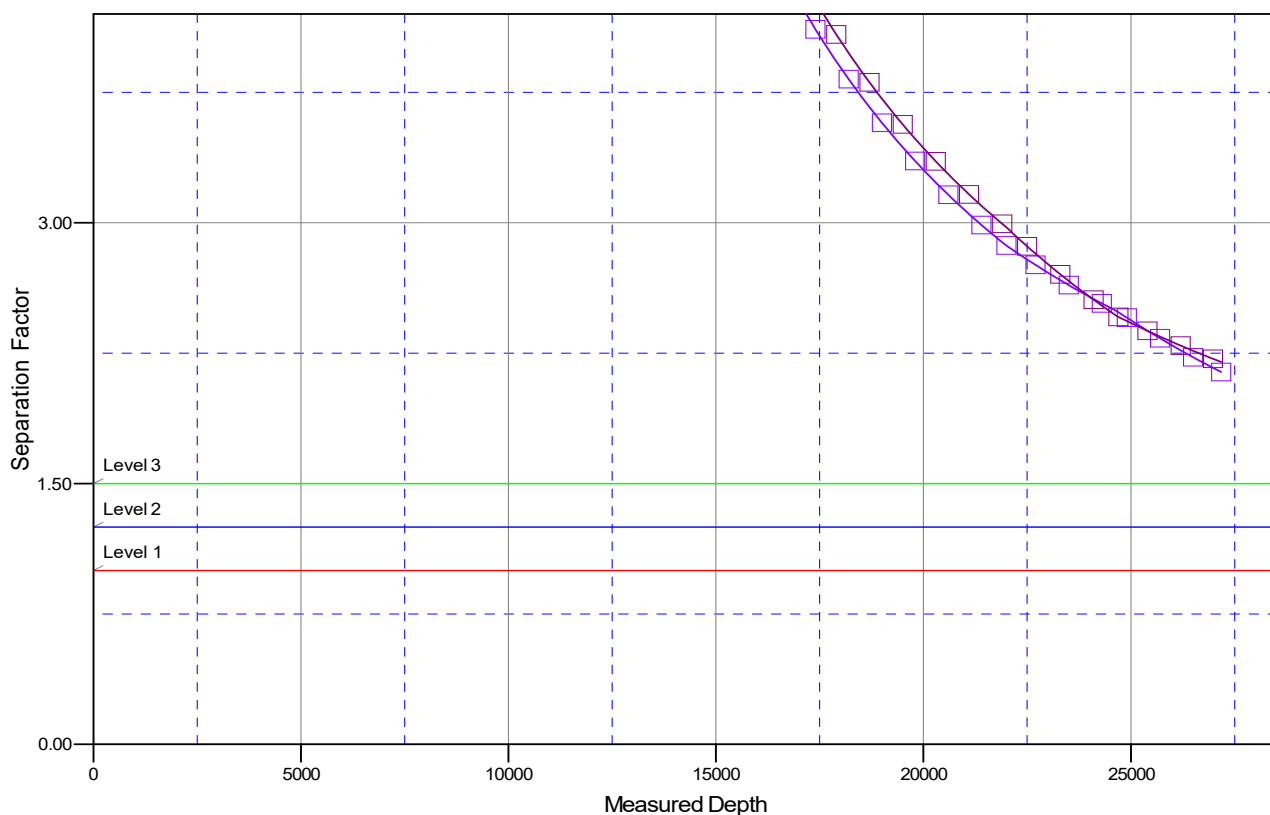
Offset Depths are relative to Offset Datum

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

Central Meridian is -107.833334

Grid Convergence at Surface is: 0.31°

Separation Factor Plot



LEGEND

Rosa Unit #864H, OH, OH V0	Rosa Unit 834H, OH, OH V0	(C) Pre-Ordard Well #112, OH, OH-TD V0
Rosa Unit 832H, OH, OH V0	Rosa Unit 836H, OH, OH V0	(C) Rosa Unit #806C, OH, OH-SVY V0
(C) Schak 32 #003H, OH, OH-SVY V0	(C) Rosa Unit #112V, OH, OH-INC V0	Rosa Unit #601, OH, OH-SVY V0
(C) Schak 32 #001A, OH, OH-SVY V0	(C) Rosa Unit #184C, OH, OH-INC V0	Rosa Unit #746H, OH, OH V0
Rosa Unit 834H, OH, p5-Prelim 3 V0	Rosa Unit 830H, OH, Plan #5 V0	Rosa Unit #745H, OH, OH V0
	Rosa Unit 830H, OH, OH V0	Rosa Unit #744H, 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 836H

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 836H
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 836H	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 836H					
Well Position	+N/-S	0.00 usft	Northing:	2,133,441.96 usft	Latitude:	36.861857
	+E/-W	0.00 usft	Easting:	2,872,981.99 usft	Longitude:	-107.320952
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	49,495.62268365

Design	p5-Prelim 3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	312.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	90.12	

Plan Survey Tool Program	Date	8/11/2025			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	125.00	312.00	Survey #1 (OH)	Standard Keeper 104	
				Standard Wireline Keeper ver 1	
2	312.00	27,176.36	p5-Prelim 3 (OH)	MWD+HRGM+MS	
				MWD + HRGM + Multi-Station	

SDT

Planning Report

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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 836H	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
312.00	0.36	130.69	311.99	-0.43	1.52	0.00	0.00	0.00	0.00	
462.00	0.36	130.69	461.99	-1.04	2.24	0.00	0.00	0.00	0.00	
509.18	1.26	156.36	509.16	-1.61	2.55	2.00	1.90	54.41	35.18	
6,531.56	1.26	156.36	6,530.10	-122.45	55.45	0.00	0.00	0.00	0.00	
7,526.22	90.02	90.01	7,161.00	-135.23	692.30	9.00	8.92	-6.67	-66.35	RU 836H POE
11,638.27	90.02	90.01	7,159.33	-135.96	4,804.35	0.00	0.00	0.00	0.00	
11,640.51	90.02	89.99	7,159.33	-135.96	4,806.59	1.00	0.01	-1.00	-89.65	
16,680.84	90.02	89.99	7,157.27	-134.88	9,846.92	0.00	0.00	0.00	0.00	
16,687.46	90.02	89.92	7,157.27	-134.88	9,853.53	1.00	0.00	-1.00	-90.04	
21,953.88	90.02	89.92	7,155.12	-127.67	15,119.95	0.00	0.00	0.00	0.00	
22,019.01	90.02	90.57	7,155.09	-127.95	15,185.08	1.00	0.00	1.00	89.92	
24,597.25	90.02	90.57	7,154.00	-153.73	17,763.19	0.00	0.00	0.00	0.00	
24,722.47	90.02	89.32	7,153.95	-153.62	17,888.41	1.00	0.00	-1.00	-90.10	
26,976.35	90.02	89.32	7,153.08	-126.90	20,142.13	0.00	0.00	0.00	0.00	
27,176.36	90.02	89.32	7,153.00	-124.52	20,342.12	0.00	0.00	0.00	0.00	RU 836H PBHL

SDT

Planning Report

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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 836H	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	0.39	135.64	125.00	-0.30	0.30	0.30	0.31	0.31	0.00
225.00	0.51	69.19	225.00	-0.39	0.95	0.95	0.50	0.12	-66.45
312.00	0.36	130.69	311.99	-0.43	1.52	1.52	0.53	-0.17	70.69
Start 150.00 hold at 312.00 MD									
400.00	0.36	130.69	399.99	-0.79	1.94	1.94	0.00	0.00	0.00
462.00	0.36	130.69	461.99	-1.04	2.24	2.24	0.00	0.00	0.00
Start DLS 2.00 TFO 35.18									
509.18	1.26	156.36	509.16	-1.61	2.55	2.56	2.00	1.90	54.41
Start 6022.38 hold at 509.18 MD									
600.00	1.26	156.36	599.96	-3.44	3.35	3.36	0.00	0.00	0.00
700.00	1.26	156.36	699.94	-5.44	4.23	4.24	0.00	0.00	0.00
800.00	1.26	156.36	799.92	-7.45	5.11	5.12	0.00	0.00	0.00
900.00	1.26	156.36	899.89	-9.46	5.99	6.01	0.00	0.00	0.00
1,000.00	1.26	156.36	999.87	-11.46	6.87	6.89	0.00	0.00	0.00
1,100.00	1.26	156.36	1,099.84	-13.47	7.74	7.77	0.00	0.00	0.00
1,200.00	1.26	156.36	1,199.82	-15.48	8.62	8.65	0.00	0.00	0.00
1,300.00	1.26	156.36	1,299.80	-17.48	9.50	9.54	0.00	0.00	0.00
1,400.00	1.26	156.36	1,399.77	-19.49	10.38	10.42	0.00	0.00	0.00
1,500.00	1.26	156.36	1,499.75	-21.49	11.26	11.30	0.00	0.00	0.00
1,600.00	1.26	156.36	1,599.72	-23.50	12.14	12.18	0.00	0.00	0.00
1,700.00	1.26	156.36	1,699.70	-25.51	13.01	13.07	0.00	0.00	0.00
1,800.00	1.26	156.36	1,799.68	-27.51	13.89	13.95	0.00	0.00	0.00
1,900.00	1.26	156.36	1,899.65	-29.52	14.77	14.83	0.00	0.00	0.00
2,000.00	1.26	156.36	1,999.63	-31.53	15.65	15.71	0.00	0.00	0.00
2,100.00	1.26	156.36	2,099.60	-33.53	16.53	16.60	0.00	0.00	0.00
2,200.00	1.26	156.36	2,199.58	-35.54	17.41	17.48	0.00	0.00	0.00
2,300.00	1.26	156.36	2,299.56	-37.55	18.28	18.36	0.00	0.00	0.00
2,400.00	1.26	156.36	2,399.53	-39.55	19.16	19.25	0.00	0.00	0.00
2,500.00	1.26	156.36	2,499.51	-41.56	20.04	20.13	0.00	0.00	0.00
2,600.00	1.26	156.36	2,599.48	-43.57	20.92	21.01	0.00	0.00	0.00
2,700.00	1.26	156.36	2,699.46	-45.57	21.80	21.89	0.00	0.00	0.00
2,762.55	1.26	156.36	2,762.00	-46.83	22.35	22.44	0.00	0.00	0.00
Ojo Alamo									
2,800.00	1.26	156.36	2,799.44	-47.58	22.68	22.78	0.00	0.00	0.00
2,885.58	1.26	156.36	2,885.00	-49.30	23.43	23.53	0.00	0.00	0.00
Kirtland									
2,900.00	1.26	156.36	2,899.41	-49.58	23.55	23.66	0.00	0.00	0.00
3,000.00	1.26	156.36	2,999.39	-51.59	24.43	24.54	0.00	0.00	0.00
3,100.00	1.26	156.36	3,099.36	-53.60	25.31	25.42	0.00	0.00	0.00
3,200.00	1.26	156.36	3,199.34	-55.60	26.19	26.31	0.00	0.00	0.00
3,259.67	1.26	156.36	3,259.00	-56.80	26.71	26.83	0.00	0.00	0.00
Fruitland									
3,300.00	1.26	156.36	3,299.32	-57.61	27.07	27.19	0.00	0.00	0.00
3,300.68	1.26	156.36	3,300.00	-57.62	27.07	27.19	0.00	0.00	0.00
Top of Coals									
3,388.70	1.26	156.36	3,388.00	-59.39	27.85	27.97	0.00	0.00	0.00
Base of Coals									
3,400.00	1.26	156.36	3,399.29	-59.62	27.95	28.07	0.00	0.00	0.00
3,500.00	1.26	156.36	3,499.27	-61.62	28.82	28.95	0.00	0.00	0.00
3,600.00	1.26	156.36	3,599.25	-63.63	29.70	29.84	0.00	0.00	0.00
3,612.76	1.26	156.36	3,612.00	-63.89	29.81	29.95	0.00	0.00	0.00
Pictured Cliffs									

SDT

Planning Report

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Project:	Rio Arriba, NM (NAD83)	MD Reference:	6563+30 @ 6593.00usft (H&P 530)
Site:	Rosa Unit 42	North Reference:	True
Well:	Rosa Unit 836H	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)
3,700.00	1.26	156.36	3,699.22	-65.64	30.58	30.72	0.00	0.00	0.00
3,711.78	1.26	156.36	3,711.00	-65.87	30.68	30.82	0.00	0.00	0.00
Lewis									
3,800.00	1.26	156.36	3,799.20	-67.64	31.46	31.60	0.00	0.00	0.00
3,900.00	1.26	156.36	3,899.17	-69.65	32.34	32.48	0.00	0.00	0.00
4,000.00	1.26	156.36	3,999.15	-71.66	33.22	33.37	0.00	0.00	0.00
4,100.00	1.26	156.36	4,099.13	-73.66	34.09	34.25	0.00	0.00	0.00
4,200.00	1.26	156.36	4,199.10	-75.67	34.97	35.13	0.00	0.00	0.00
4,300.00	1.26	156.36	4,299.08	-77.67	35.85	36.01	0.00	0.00	0.00
4,400.00	1.26	156.36	4,399.05	-79.68	36.73	36.90	0.00	0.00	0.00
4,500.00	1.26	156.36	4,499.03	-81.69	37.61	37.78	0.00	0.00	0.00
4,600.00	1.26	156.36	4,599.01	-83.69	38.49	38.66	0.00	0.00	0.00
4,700.00	1.26	156.36	4,698.98	-85.70	39.36	39.54	0.00	0.00	0.00
4,800.00	1.26	156.36	4,798.96	-87.71	40.24	40.43	0.00	0.00	0.00
4,825.05	1.26	156.36	4,824.00	-88.21	40.46	40.65	0.00	0.00	0.00
Chacra									
4,900.00	1.26	156.36	4,898.93	-89.71	41.12	41.31	0.00	0.00	0.00
5,000.00	1.26	156.36	4,998.91	-91.72	42.00	42.19	0.00	0.00	0.00
5,100.00	1.26	156.36	5,098.89	-93.73	42.88	43.07	0.00	0.00	0.00
5,200.00	1.26	156.36	5,198.86	-95.73	43.76	43.96	0.00	0.00	0.00
5,300.00	1.26	156.36	5,298.84	-97.74	44.63	44.84	0.00	0.00	0.00
5,348.17	1.26	156.36	5,347.00	-98.71	45.06	45.26	0.00	0.00	0.00
Upper Cliff House									
5,400.00	1.26	156.36	5,398.81	-99.74	45.51	45.72	0.00	0.00	0.00
5,500.00	1.26	156.36	5,498.79	-101.75	46.39	46.60	0.00	0.00	0.00
5,600.00	1.26	156.36	5,598.77	-103.76	47.27	47.49	0.00	0.00	0.00
5,633.24	1.26	156.36	5,632.00	-104.42	47.56	47.78	0.00	0.00	0.00
Cliff House									
5,667.25	1.26	156.36	5,666.00	-105.11	47.86	48.08	0.00	0.00	0.00
Menefee									
5,700.00	1.26	156.36	5,698.74	-105.76	48.15	48.37	0.00	0.00	0.00
5,800.00	1.26	156.36	5,798.72	-107.77	49.03	49.25	0.00	0.00	0.00
5,849.29	1.26	156.36	5,848.00	-108.76	49.46	49.69	0.00	0.00	0.00
Point Lookout									
5,900.00	1.26	156.36	5,898.69	-109.78	49.90	50.13	0.00	0.00	0.00
6,000.00	1.26	156.36	5,998.67	-111.78	50.78	51.02	0.00	0.00	0.00
6,100.00	1.26	156.36	6,098.65	-113.79	51.66	51.90	0.00	0.00	0.00
6,200.00	1.26	156.36	6,198.62	-115.80	52.54	52.78	0.00	0.00	0.00
6,300.00	1.26	156.36	6,298.60	-117.80	53.42	53.66	0.00	0.00	0.00
6,393.43	1.26	156.36	6,392.00	-119.68	54.24	54.49	0.00	0.00	0.00
Mancos									
6,400.00	1.26	156.36	6,398.57	-119.81	54.30	54.55	0.00	0.00	0.00
6,500.00	1.26	156.36	6,498.55	-121.82	55.17	55.43	0.00	0.00	0.00
6,531.56	1.26	156.36	6,530.10	-122.45	55.45	55.71	0.00	0.00	0.00
Start DLS 9.00 TFO -66.35									
6,550.00	2.45	117.99	6,548.53	-122.82	55.88	56.14	9.00	6.48	-208.08
6,600.00	6.76	99.76	6,598.36	-123.82	59.73	59.98	9.00	8.62	-36.46
6,650.00	11.22	95.82	6,647.74	-124.81	67.47	67.73	9.00	8.92	-7.88
6,700.00	15.70	94.10	6,696.35	-125.79	79.07	79.33	9.00	8.97	-3.43
6,750.00	20.19	93.14	6,743.90	-126.75	94.44	94.71	9.00	8.98	-1.93
6,800.00	24.69	92.51	6,790.11	-127.68	113.50	113.77	9.00	8.99	-1.25
6,850.00	29.18	92.07	6,834.67	-128.58	136.13	136.39	9.00	8.99	-0.89
6,900.00	33.68	91.74	6,877.32	-129.44	162.18	162.45	9.00	8.99	-0.67

SDT

Planning Report

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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 836H	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	38.18	91.47	6,917.80	-130.25	191.50	191.77	9.00	8.99	-0.53
7,000.00	42.68	91.26	6,955.85	-131.02	223.91	224.18	9.00	9.00	-0.43
7,050.00	47.17	91.08	6,991.24	-131.74	259.20	259.47	9.00	9.00	-0.36
7,072.13	49.16	91.00	7,006.00	-132.04	275.68	275.96	9.00	9.00	-0.33
Top Black									
7,100.00	51.67	90.92	7,023.76	-132.40	297.16	297.44	9.00	9.00	-0.30
7,150.00	56.17	90.78	7,053.20	-133.00	337.55	337.83	9.00	9.00	-0.28
7,200.00	60.67	90.66	7,079.37	-133.53	380.14	380.41	9.00	9.00	-0.25
7,250.00	65.17	90.54	7,102.13	-134.00	424.64	424.92	9.00	9.00	-0.23
7,300.00	69.67	90.44	7,121.32	-134.39	470.79	471.07	9.00	9.00	-0.21
7,350.00	74.17	90.34	7,136.84	-134.71	518.31	518.59	9.00	9.00	-0.20
7,400.00	78.67	90.24	7,148.58	-134.96	566.90	567.18	9.00	9.00	-0.19
7,450.00	83.16	90.15	7,156.47	-135.12	616.26	616.54	9.00	9.00	-0.19
7,500.00	87.66	90.06	7,160.47	-135.21	666.09	666.37	9.00	9.00	-0.18
7,526.22	90.02	90.01	7,161.00	-135.23	692.30	692.58	9.00	9.00	-0.18
Start 4112.05 hold at 7526.22 MD									
7,600.00	90.02	90.01	7,160.97	-135.24	766.08	766.36	0.00	0.00	0.00
7,700.00	90.02	90.01	7,160.93	-135.26	866.08	866.36	0.00	0.00	0.00
7,800.00	90.02	90.01	7,160.89	-135.28	966.08	966.36	0.00	0.00	0.00
7,900.00	90.02	90.01	7,160.85	-135.29	1,066.08	1,066.36	0.00	0.00	0.00
8,000.00	90.02	90.01	7,160.81	-135.31	1,166.08	1,166.36	0.00	0.00	0.00
8,100.00	90.02	90.01	7,160.77	-135.33	1,266.08	1,266.36	0.00	0.00	0.00
8,200.00	90.02	90.01	7,160.73	-135.35	1,366.08	1,366.36	0.00	0.00	0.00
8,300.00	90.02	90.01	7,160.69	-135.36	1,466.08	1,466.36	0.00	0.00	0.00
8,400.00	90.02	90.01	7,160.65	-135.38	1,566.08	1,566.36	0.00	0.00	0.00
8,500.00	90.02	90.01	7,160.60	-135.40	1,666.08	1,666.36	0.00	0.00	0.00
8,600.00	90.02	90.01	7,160.56	-135.42	1,766.08	1,766.36	0.00	0.00	0.00
8,700.00	90.02	90.01	7,160.52	-135.44	1,866.08	1,866.36	0.00	0.00	0.00
8,800.00	90.02	90.01	7,160.48	-135.45	1,966.08	1,966.36	0.00	0.00	0.00
8,900.00	90.02	90.01	7,160.44	-135.47	2,066.08	2,066.36	0.00	0.00	0.00
9,000.00	90.02	90.01	7,160.40	-135.49	2,166.08	2,166.36	0.00	0.00	0.00
9,100.00	90.02	90.01	7,160.36	-135.51	2,266.08	2,266.36	0.00	0.00	0.00
9,200.00	90.02	90.01	7,160.32	-135.52	2,366.08	2,366.36	0.00	0.00	0.00
9,300.00	90.02	90.01	7,160.28	-135.54	2,466.08	2,466.36	0.00	0.00	0.00
9,400.00	90.02	90.01	7,160.24	-135.56	2,566.08	2,566.36	0.00	0.00	0.00
9,500.00	90.02	90.01	7,160.20	-135.58	2,666.08	2,666.36	0.00	0.00	0.00
9,600.00	90.02	90.01	7,160.16	-135.60	2,766.08	2,766.36	0.00	0.00	0.00
9,700.00	90.02	90.01	7,160.12	-135.61	2,866.08	2,866.36	0.00	0.00	0.00
9,800.00	90.02	90.01	7,160.08	-135.63	2,966.08	2,966.36	0.00	0.00	0.00
9,900.00	90.02	90.01	7,160.04	-135.65	3,066.08	3,066.36	0.00	0.00	0.00
10,000.00	90.02	90.01	7,160.00	-135.67	3,166.08	3,166.35	0.00	0.00	0.00
10,100.00	90.02	90.01	7,159.95	-135.68	3,266.08	3,266.35	0.00	0.00	0.00
10,200.00	90.02	90.01	7,159.91	-135.70	3,366.08	3,366.35	0.00	0.00	0.00
10,300.00	90.02	90.01	7,159.87	-135.72	3,466.08	3,466.35	0.00	0.00	0.00
10,400.00	90.02	90.01	7,159.83	-135.74	3,566.08	3,566.35	0.00	0.00	0.00
10,500.00	90.02	90.01	7,159.79	-135.76	3,666.08	3,666.35	0.00	0.00	0.00
10,600.00	90.02	90.01	7,159.75	-135.77	3,766.08	3,766.35	0.00	0.00	0.00
10,700.00	90.02	90.01	7,159.71	-135.79	3,866.08	3,866.35	0.00	0.00	0.00
10,800.00	90.02	90.01	7,159.67	-135.81	3,966.08	3,966.35	0.00	0.00	0.00
10,900.00	90.02	90.01	7,159.63	-135.83	4,066.08	4,066.35	0.00	0.00	0.00
11,000.00	90.02	90.01	7,159.59	-135.84	4,166.08	4,166.35	0.00	0.00	0.00
11,100.00	90.02	90.01	7,159.55	-135.86	4,266.08	4,266.35	0.00	0.00	0.00
11,200.00	90.02	90.01	7,159.51	-135.88	4,366.08	4,366.35	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)
11,300.00	90.02	90.01	7,159.47	-135.90	4,466.08	4,466.35	0.00	0.00	0.00
11,400.00	90.02	90.01	7,159.43	-135.92	4,566.08	4,566.35	0.00	0.00	0.00
11,500.00	90.02	90.01	7,159.39	-135.93	4,666.08	4,666.35	0.00	0.00	0.00
11,600.00	90.02	90.01	7,159.35	-135.95	4,766.08	4,766.35	0.00	0.00	0.00
11,638.27	90.02	90.01	7,159.33	-135.96	4,804.35	4,804.62	0.00	0.00	0.00
Start DLS 1.00 TFO -89.65									
11,640.51	90.02	89.99	7,159.33	-135.96	4,806.59	4,806.86	1.00	0.01	-1.00
Start 5040.33 hold at 11640.51 MD									
11,700.00	90.02	89.99	7,159.30	-135.94	4,866.08	4,866.35	0.00	0.00	0.00
11,800.00	90.02	89.99	7,159.26	-135.92	4,966.08	4,966.35	0.00	0.00	0.00
11,900.00	90.02	89.99	7,159.22	-135.90	5,066.08	5,066.35	0.00	0.00	0.00
12,000.00	90.02	89.99	7,159.18	-135.88	5,166.08	5,166.35	0.00	0.00	0.00
12,100.00	90.02	89.99	7,159.14	-135.86	5,266.08	5,266.35	0.00	0.00	0.00
12,200.00	90.02	89.99	7,159.10	-135.84	5,366.08	5,366.35	0.00	0.00	0.00
12,300.00	90.02	89.99	7,159.06	-135.82	5,466.08	5,466.35	0.00	0.00	0.00
12,400.00	90.02	89.99	7,159.02	-135.80	5,566.08	5,566.35	0.00	0.00	0.00
12,500.00	90.02	89.99	7,158.98	-135.77	5,666.08	5,666.35	0.00	0.00	0.00
12,600.00	90.02	89.99	7,158.94	-135.75	5,766.08	5,766.35	0.00	0.00	0.00
12,700.00	90.02	89.99	7,158.90	-135.73	5,866.08	5,866.35	0.00	0.00	0.00
12,800.00	90.02	89.99	7,158.86	-135.71	5,966.08	5,966.35	0.00	0.00	0.00
12,900.00	90.02	89.99	7,158.81	-135.69	6,066.08	6,066.35	0.00	0.00	0.00
13,000.00	90.02	89.99	7,158.77	-135.67	6,166.08	6,166.35	0.00	0.00	0.00
13,100.00	90.02	89.99	7,158.73	-135.65	6,266.08	6,266.35	0.00	0.00	0.00
13,200.00	90.02	89.99	7,158.69	-135.62	6,366.08	6,366.35	0.00	0.00	0.00
13,300.00	90.02	89.99	7,158.65	-135.60	6,466.08	6,466.35	0.00	0.00	0.00
13,400.00	90.02	89.99	7,158.61	-135.58	6,566.08	6,566.35	0.00	0.00	0.00
13,500.00	90.02	89.99	7,158.57	-135.56	6,666.08	6,666.35	0.00	0.00	0.00
13,600.00	90.02	89.99	7,158.53	-135.54	6,766.08	6,766.35	0.00	0.00	0.00
13,700.00	90.02	89.99	7,158.49	-135.52	6,866.08	6,866.35	0.00	0.00	0.00
13,800.00	90.02	89.99	7,158.45	-135.50	6,966.08	6,966.35	0.00	0.00	0.00
13,900.00	90.02	89.99	7,158.41	-135.48	7,066.08	7,066.35	0.00	0.00	0.00
14,000.00	90.02	89.99	7,158.37	-135.45	7,166.08	7,166.35	0.00	0.00	0.00
14,100.00	90.02	89.99	7,158.32	-135.43	7,266.08	7,266.35	0.00	0.00	0.00
14,200.00	90.02	89.99	7,158.28	-135.41	7,366.08	7,366.34	0.00	0.00	0.00
14,300.00	90.02	89.99	7,158.24	-135.39	7,466.08	7,466.34	0.00	0.00	0.00
14,400.00	90.02	89.99	7,158.20	-135.37	7,566.08	7,566.34	0.00	0.00	0.00
14,500.00	90.02	89.99	7,158.16	-135.35	7,666.08	7,666.34	0.00	0.00	0.00
14,600.00	90.02	89.99	7,158.12	-135.33	7,766.08	7,766.34	0.00	0.00	0.00
14,700.00	90.02	89.99	7,158.08	-135.30	7,866.08	7,866.34	0.00	0.00	0.00
14,800.00	90.02	89.99	7,158.04	-135.28	7,966.08	7,966.34	0.00	0.00	0.00
14,900.00	90.02	89.99	7,158.00	-135.26	8,066.08	8,066.34	0.00	0.00	0.00
15,000.00	90.02	89.99	7,157.96	-135.24	8,166.08	8,166.34	0.00	0.00	0.00
15,100.00	90.02	89.99	7,157.92	-135.22	8,266.08	8,266.34	0.00	0.00	0.00
15,200.00	90.02	89.99	7,157.88	-135.20	8,366.08	8,366.34	0.00	0.00	0.00
15,300.00	90.02	89.99	7,157.83	-135.18	8,466.08	8,466.34	0.00	0.00	0.00
15,400.00	90.02	89.99	7,157.79	-135.15	8,566.08	8,566.34	0.00	0.00	0.00
15,500.00	90.02	89.99	7,157.75	-135.13	8,666.08	8,666.34	0.00	0.00	0.00
15,600.00	90.02	89.99	7,157.71	-135.11	8,766.08	8,766.34	0.00	0.00	0.00
15,700.00	90.02	89.99	7,157.67	-135.09	8,866.08	8,866.34	0.00	0.00	0.00
15,800.00	90.02	89.99	7,157.63	-135.07	8,966.08	8,966.34	0.00	0.00	0.00
15,900.00	90.02	89.99	7,157.59	-135.05	9,066.08	9,066.34	0.00	0.00	0.00
16,000.00	90.02	89.99	7,157.55	-135.03	9,166.08	9,166.34	0.00	0.00	0.00
16,100.00	90.02	89.99	7,157.51	-135.01	9,266.08	9,266.34	0.00	0.00	0.00
16,200.00	90.02	89.99	7,157.47	-134.98	9,366.08	9,366.34	0.00	0.00	0.00

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)
16,300.00	90.02	89.99	7,157.43	-134.96	9,466.08	9,466.34	0.00	0.00	0.00
16,400.00	90.02	89.99	7,157.38	-134.94	9,566.08	9,566.34	0.00	0.00	0.00
16,500.00	90.02	89.99	7,157.34	-134.92	9,666.08	9,666.34	0.00	0.00	0.00
16,600.00	90.02	89.99	7,157.30	-134.90	9,766.08	9,766.34	0.00	0.00	0.00
16,680.84	90.02	89.99	7,157.27	-134.88	9,846.92	9,847.18	0.00	0.00	0.00
Start DLS 1.00 TFO -90.04									
16,687.46	90.02	89.92	7,157.27	-134.88	9,853.53	9,853.79	1.00	0.00	-1.00
Start 5266.43 hold at 16687.45 MD									
16,700.00	90.02	89.92	7,157.26	-134.86	9,866.08	9,866.34	0.00	0.00	0.00
16,800.00	90.02	89.92	7,157.22	-134.72	9,966.08	9,966.34	0.00	0.00	0.00
16,900.00	90.02	89.92	7,157.18	-134.59	10,066.08	10,066.34	0.00	0.00	0.00
17,000.00	90.02	89.92	7,157.14	-134.45	10,166.08	10,166.34	0.00	0.00	0.00
17,100.00	90.02	89.92	7,157.10	-134.31	10,266.08	10,266.34	0.00	0.00	0.00
17,200.00	90.02	89.92	7,157.06	-134.17	10,366.08	10,366.33	0.00	0.00	0.00
17,300.00	90.02	89.92	7,157.02	-134.04	10,466.08	10,466.33	0.00	0.00	0.00
17,400.00	90.02	89.92	7,156.98	-133.90	10,566.08	10,566.33	0.00	0.00	0.00
17,500.00	90.02	89.92	7,156.94	-133.76	10,666.08	10,666.33	0.00	0.00	0.00
17,600.00	90.02	89.92	7,156.90	-133.63	10,766.08	10,766.33	0.00	0.00	0.00
17,700.00	90.02	89.92	7,156.85	-133.49	10,866.08	10,866.33	0.00	0.00	0.00
17,800.00	90.02	89.92	7,156.81	-133.35	10,966.08	10,966.33	0.00	0.00	0.00
17,900.00	90.02	89.92	7,156.77	-133.22	11,066.08	11,066.33	0.00	0.00	0.00
18,000.00	90.02	89.92	7,156.73	-133.08	11,166.08	11,166.33	0.00	0.00	0.00
18,100.00	90.02	89.92	7,156.69	-132.94	11,266.08	11,266.33	0.00	0.00	0.00
18,200.00	90.02	89.92	7,156.65	-132.81	11,366.08	11,366.33	0.00	0.00	0.00
18,300.00	90.02	89.92	7,156.61	-132.67	11,466.08	11,466.33	0.00	0.00	0.00
18,400.00	90.02	89.92	7,156.57	-132.53	11,566.08	11,566.33	0.00	0.00	0.00
18,500.00	90.02	89.92	7,156.53	-132.40	11,666.08	11,666.33	0.00	0.00	0.00
18,600.00	90.02	89.92	7,156.49	-132.26	11,766.08	11,766.33	0.00	0.00	0.00
18,700.00	90.02	89.92	7,156.45	-132.12	11,866.08	11,866.33	0.00	0.00	0.00
18,800.00	90.02	89.92	7,156.41	-131.99	11,966.08	11,966.33	0.00	0.00	0.00
18,900.00	90.02	89.92	7,156.37	-131.85	12,066.07	12,066.32	0.00	0.00	0.00
19,000.00	90.02	89.92	7,156.32	-131.71	12,166.07	12,166.32	0.00	0.00	0.00
19,100.00	90.02	89.92	7,156.28	-131.58	12,266.07	12,266.32	0.00	0.00	0.00
19,200.00	90.02	89.92	7,156.24	-131.44	12,366.07	12,366.32	0.00	0.00	0.00
19,300.00	90.02	89.92	7,156.20	-131.30	12,466.07	12,466.32	0.00	0.00	0.00
19,400.00	90.02	89.92	7,156.16	-131.17	12,566.07	12,566.32	0.00	0.00	0.00
19,500.00	90.02	89.92	7,156.12	-131.03	12,666.07	12,666.32	0.00	0.00	0.00
19,600.00	90.02	89.92	7,156.08	-130.89	12,766.07	12,766.32	0.00	0.00	0.00
19,700.00	90.02	89.92	7,156.04	-130.75	12,866.07	12,866.32	0.00	0.00	0.00
19,800.00	90.02	89.92	7,156.00	-130.62	12,966.07	12,966.32	0.00	0.00	0.00
19,900.00	90.02	89.92	7,155.96	-130.48	13,066.07	13,066.32	0.00	0.00	0.00
20,000.00	90.02	89.92	7,155.92	-130.34	13,166.07	13,166.32	0.00	0.00	0.00
20,100.00	90.02	89.92	7,155.88	-130.21	13,266.07	13,266.32	0.00	0.00	0.00
20,200.00	90.02	89.92	7,155.84	-130.07	13,366.07	13,366.32	0.00	0.00	0.00
20,300.00	90.02	89.92	7,155.79	-129.93	13,466.07	13,466.32	0.00	0.00	0.00
20,400.00	90.02	89.92	7,155.75	-129.80	13,566.07	13,566.32	0.00	0.00	0.00
20,500.00	90.02	89.92	7,155.71	-129.66	13,666.07	13,666.31	0.00	0.00	0.00
20,600.00	90.02	89.92	7,155.67	-129.52	13,766.07	13,766.31	0.00	0.00	0.00
20,700.00	90.02	89.92	7,155.63	-129.39	13,866.07	13,866.31	0.00	0.00	0.00
20,800.00	90.02	89.92	7,155.59	-129.25	13,966.07	13,966.31	0.00	0.00	0.00
20,900.00	90.02	89.92	7,155.55	-129.11	14,066.07	14,066.31	0.00	0.00	0.00
21,000.00	90.02	89.92	7,155.51	-128.98	14,166.07	14,166.31	0.00	0.00	0.00
21,100.00	90.02	89.92	7,155.47	-128.84	14,266.07	14,266.31	0.00	0.00	0.00
21,200.00	90.02	89.92	7,155.43	-128.70	14,366.07	14,366.31	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)
21,300.00	90.02	89.92	7,155.39	-128.57	14,466.07	14,466.31	0.00	0.00	0.00
21,400.00	90.02	89.92	7,155.35	-128.43	14,566.07	14,566.31	0.00	0.00	0.00
21,500.00	90.02	89.92	7,155.31	-128.29	14,666.07	14,666.31	0.00	0.00	0.00
21,600.00	90.02	89.92	7,155.26	-128.16	14,766.07	14,766.31	0.00	0.00	0.00
21,700.00	90.02	89.92	7,155.22	-128.02	14,866.07	14,866.31	0.00	0.00	0.00
21,800.00	90.02	89.92	7,155.18	-127.88	14,966.07	14,966.31	0.00	0.00	0.00
21,900.00	90.02	89.92	7,155.14	-127.75	15,066.07	15,066.31	0.00	0.00	0.00
21,953.88	90.02	89.92	7,155.12	-127.67	15,119.95	15,120.19	0.00	0.00	0.00
Start DLS 1.00 TFO 89.92									
22,000.00	90.02	90.38	7,155.10	-127.79	15,166.07	15,166.31	1.00	0.00	1.00
22,019.01	90.02	90.57	7,155.09	-127.95	15,185.08	15,185.32	1.00	0.00	1.00
Start 2578.24 hold at 22019.01 MD									
22,100.00	90.02	90.57	7,155.06	-128.76	15,266.07	15,266.30	0.00	0.00	0.00
22,200.00	90.02	90.57	7,155.02	-129.76	15,366.06	15,366.30	0.00	0.00	0.00
22,300.00	90.02	90.57	7,154.97	-130.76	15,466.06	15,466.30	0.00	0.00	0.00
22,400.00	90.02	90.57	7,154.93	-131.76	15,566.05	15,566.29	0.00	0.00	0.00
22,500.00	90.02	90.57	7,154.89	-132.76	15,666.05	15,666.29	0.00	0.00	0.00
22,600.00	90.02	90.57	7,154.85	-133.76	15,766.04	15,766.29	0.00	0.00	0.00
22,700.00	90.02	90.57	7,154.80	-134.76	15,866.04	15,866.28	0.00	0.00	0.00
22,800.00	90.02	90.57	7,154.76	-135.76	15,966.03	15,966.28	0.00	0.00	0.00
22,900.00	90.02	90.57	7,154.72	-136.76	16,066.03	16,066.28	0.00	0.00	0.00
22,900.00	90.02	90.57	7,154.68	-137.76	16,166.02	16,166.27	0.00	0.00	0.00
23,100.00	90.02	90.57	7,154.63	-138.76	16,266.02	16,266.27	0.00	0.00	0.00
23,200.00	90.02	90.57	7,154.59	-139.76	16,366.01	16,366.27	0.00	0.00	0.00
23,300.00	90.02	90.57	7,154.55	-140.76	16,466.01	16,466.27	0.00	0.00	0.00
23,400.00	90.02	90.57	7,154.51	-141.76	16,566.00	16,566.26	0.00	0.00	0.00
23,500.00	90.02	90.57	7,154.47	-142.76	16,666.00	16,666.26	0.00	0.00	0.00
23,600.00	90.02	90.57	7,154.42	-143.76	16,765.99	16,766.26	0.00	0.00	0.00
23,700.00	90.02	90.57	7,154.38	-144.76	16,865.99	16,866.25	0.00	0.00	0.00
23,800.00	90.02	90.57	7,154.34	-145.76	16,965.98	16,966.25	0.00	0.00	0.00
23,900.00	90.02	90.57	7,154.30	-146.76	17,065.98	17,066.25	0.00	0.00	0.00
24,000.00	90.02	90.57	7,154.25	-147.76	17,165.97	17,166.24	0.00	0.00	0.00
24,100.00	90.02	90.57	7,154.21	-148.76	17,265.97	17,266.24	0.00	0.00	0.00
24,200.00	90.02	90.57	7,154.17	-149.76	17,365.96	17,366.24	0.00	0.00	0.00
24,300.00	90.02	90.57	7,154.13	-150.76	17,465.96	17,466.23	0.00	0.00	0.00
24,400.00	90.02	90.57	7,154.08	-151.76	17,565.95	17,566.23	0.00	0.00	0.00
24,500.00	90.02	90.57	7,154.04	-152.76	17,665.95	17,666.23	0.00	0.00	0.00
24,597.25	90.02	90.57	7,154.00	-153.73	17,763.19	17,763.47	0.00	0.00	0.00
Start DLS 1.00 TFO -90.10									
24,600.00	90.02	90.55	7,154.00	-153.76	17,765.94	17,766.22	1.00	0.00	-1.00
24,700.00	90.02	89.55	7,153.96	-153.84	17,865.94	17,866.22	1.00	0.00	-1.00
24,722.47	90.02	89.32	7,153.95	-153.62	17,888.41	17,888.69	1.00	0.00	-1.00
Start 2253.88 hold at 24722.47 MD									
24,800.00	90.02	89.32	7,153.92	-152.70	17,965.93	17,966.21	0.00	0.00	0.00
24,900.00	90.02	89.32	7,153.88	-151.51	18,065.93	18,066.20	0.00	0.00	0.00
25,000.00	90.02	89.32	7,153.84	-150.33	18,165.92	18,166.19	0.00	0.00	0.00
25,100.00	90.02	89.32	7,153.80	-149.14	18,265.91	18,266.19	0.00	0.00	0.00
25,200.00	90.02	89.32	7,153.77	-147.96	18,365.91	18,366.18	0.00	0.00	0.00
25,300.00	90.02	89.32	7,153.73	-146.77	18,465.90	18,466.17	0.00	0.00	0.00
25,400.00	90.02	89.32	7,153.69	-145.58	18,565.89	18,566.16	0.00	0.00	0.00
25,500.00	90.02	89.32	7,153.65	-144.40	18,665.88	18,666.15	0.00	0.00	0.00
25,600.00	90.02	89.32	7,153.61	-143.21	18,765.88	18,766.14	0.00	0.00	0.00
25,700.00	90.02	89.32	7,153.57	-142.03	18,865.87	18,866.13	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	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)	
25,800.00	90.02	89.32	7,153.53	-140.84	18,965.86	18,966.12	0.00	0.00	0.00	
25,900.00	90.02	89.32	7,153.50	-139.66	19,065.86	19,066.11	0.00	0.00	0.00	
26,000.00	90.02	89.32	7,153.46	-138.47	19,165.85	19,166.10	0.00	0.00	0.00	
26,100.00	90.02	89.32	7,153.42	-137.29	19,265.84	19,266.09	0.00	0.00	0.00	
26,200.00	90.02	89.32	7,153.38	-136.10	19,365.84	19,366.08	0.00	0.00	0.00	
26,300.00	90.02	89.32	7,153.34	-134.91	19,465.83	19,466.07	0.00	0.00	0.00	
26,400.00	90.02	89.32	7,153.30	-133.73	19,565.82	19,566.06	0.00	0.00	0.00	
26,500.00	90.02	89.32	7,153.26	-132.54	19,665.81	19,666.05	0.00	0.00	0.00	
26,600.00	90.02	89.32	7,153.23	-131.36	19,765.81	19,766.04	0.00	0.00	0.00	
26,700.00	90.02	89.32	7,153.19	-130.17	19,865.80	19,866.03	0.00	0.00	0.00	
26,800.00	90.02	89.32	7,153.15	-128.99	19,965.79	19,966.02	0.00	0.00	0.00	
26,900.00	90.02	89.32	7,153.11	-127.80	20,065.79	20,066.01	0.00	0.00	0.00	
26,976.35	90.02	89.32	7,153.08	-126.90	20,142.13	20,142.35	0.00	0.00	0.00	
Start 200.01 hold at 26976.35 MD										
27,000.00	90.02	89.32	7,153.07	-126.62	20,165.78	20,166.00	0.00	0.00	0.00	
27,100.00	90.02	89.32	7,153.03	-125.43	20,265.77	20,265.99	0.00	0.00	0.00	
27,176.36	90.02	89.32	7,153.00	-124.52	20,342.12	20,342.34	0.00	0.00	0.00	
TD at 27176.36										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
RU 836H SHL	0.00	0.31	0.00	0.00	0.00	2,133,441.96	2,872,981.99	36.861857	-107.320952	
- plan hits target center										
- Point										
RU 836H KOP	0.00	0.00	6,530.10	-122.45	55.45	2,133,319.81	2,873,038.09	36.861521	-107.320763	
- plan hits target center										
- Point										
RU 836H PBHL	0.00	0.00	7,153.00	-124.64	20,342.12	2,133,426.46	2,893,324.48	36.861494	-107.251417	
- plan misses target center by 0.11usft at 27176.36usft MD (7153.00 TVD, -124.52 N, 20342.12 E)										
- Point										
RU 836H FPP	0.00	0.00	7,153.08	-126.90	20,142.13	2,133,423.13	2,893,124.50	36.861489	-107.252101	
- plan hits target center										
- Point										
RU 836H POE	0.00	0.00	7,161.00	-135.23	692.30	2,133,310.45	2,873,675.00	36.861486	-107.318586	
- plan hits target center										
- Point										

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 836H
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 836H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	p5-Prelim 3		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,762.55	2,762.00	Ojo Alamo				
2,885.58	2,885.00	Kirtland				
3,259.67	3,259.00	Fruitland		0.00		
3,300.68	3,300.00	Top of Coals		0.00		
3,388.70	3,388.00	Base of Coals		0.00		
3,612.76	3,612.00	Pictured Cliffs				
3,711.78	3,711.00	Lewis		0.00		
4,825.05	4,824.00	Chacra		0.00		
5,348.17	5,347.00	Upper Cliff House		0.00		
5,633.24	5,632.00	Cliff House				
5,667.25	5,666.00	Menefee				
5,849.29	5,848.00	Point Lookout				
6,393.43	6,392.00	Mancos				
7,072.13	7,006.00	Top Black				

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
312.00	311.99	-0.43	1.52	Start 150.00 hold at 312.00 MD	
462.00	461.99	-1.04	2.24	Start DLS 2.00 TFO 35.18	
509.18	509.16	-1.61	2.55	Start 6022.38 hold at 509.18 MD	
6,531.56	6,530.10	-122.45	55.45	Start DLS 9.00 TFO -66.35	
7,526.22	7,161.00	-135.23	692.30	Start 4112.05 hold at 7526.22 MD	
11,638.27	7,159.33	-135.96	4,804.35	Start DLS 1.00 TFO -89.65	
11,640.51	7,159.33	-135.96	4,806.59	Start 5040.33 hold at 11640.51 MD	
16,680.84	7,157.27	-134.88	9,846.92	Start DLS 1.00 TFO -90.04	
16,687.46	7,157.27	-134.88	9,853.53	Start 5266.43 hold at 16687.45 MD	
21,953.88	7,155.12	-127.67	15,119.95	Start DLS 1.00 TFO 89.92	
22,019.01	7,155.09	-127.95	15,185.08	Start 2578.24 hold at 22019.01 MD	
24,597.25	7,154.00	-153.73	17,763.19	Start DLS 1.00 TFO -90.10	
24,722.47	7,153.95	-153.62	17,888.41	Start 2253.88 hold at 24722.47 MD	
26,976.35	7,153.08	-126.90	20,142.13	Start 200.01 hold at 26976.35 MD	
27,176.36	7,153.00	-124.52	20,342.12	TD at 27176.36	



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 836H	GL Elevation:	6,563'
Surface Location:	Sec 36, T31N, R5W 550' FNL, 475' FWL (36.861857° N, -107.320952° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 33, T31N, R4W 685' FNL, 50' FEL (36.861494° N, -107.251417° W – NAD83)	Measured Depth:	27,176'(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	2,763'	2,762'	*POINT LOOKOUT	5,849'	5,848'
KIRTLAND	2,886'	2,885'	*MANCOS	6,393'	6,392'
*FRUITLAND	3,260'	3,259'	KICKOFF POINT	6,532'	6,530'
*PICTURED CLIFFS	3,613'	3,300'	LANDING POINT	7,526'	7,161'
LEWIS	3,712'	3,711'	TD	27,176'	7,153'
CHACRA	4,825'	4,824'			
*CLIFF HOUSE	5,633'	5,632'			
MENEFEE	5,667'	5,666'			

* 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:** $7,161' \text{ TVD} \times 0.43 = 3,080 \text{ psi}$
- E. **H2S Concerns:** There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. **MATERIALS**

A. **CASING EQUIPMENT:**

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE (Pre-Set)	17.5"	347' (GL)	13-3/8"	54.5 LBS	J-55	BTC
INTERMEDIATE	12.25"	6,503'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	27,176'	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	6,003	500	0.3132	1.3	221	39	1.15	192	15.8
Stage 1 Lead	4,900	1,103	0.3132	1.3	449	80	2.66	169	11.8
					670	119		361	
Stage 2 Tail	4,300	600	0.3132	1.3	244	44	1.76	139	13.5
Stage 2 Lead	3,688	612	0.3132	1.3	249	44	2.66	94	11.8
					493	88		232	
Stage 3 Tail	3,038	650	0.3132	1.3	265	47	1.76	150	13.5
Stage 3 Lead	377	2,661	0.3132	1.3	1,083	193	2.66	407	11.8
Stage 3 Lead	-	377	0.3627	1	137	24	2.66	51	11.8
					1,485	264		609	
					2,649	472		1,203	

Set Depth, ft RKB 6503

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	6,403	100	0.2531	1	25	5	2.03	12	13.2
Open Hole Tail	6,503	20,673	0.2291	1.15	5,457	972	2.03	2,688	13.2
					5,482	976		2,701	

Set Depth, ft RKB 27176



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 * 7,161' TVD = 1576 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.

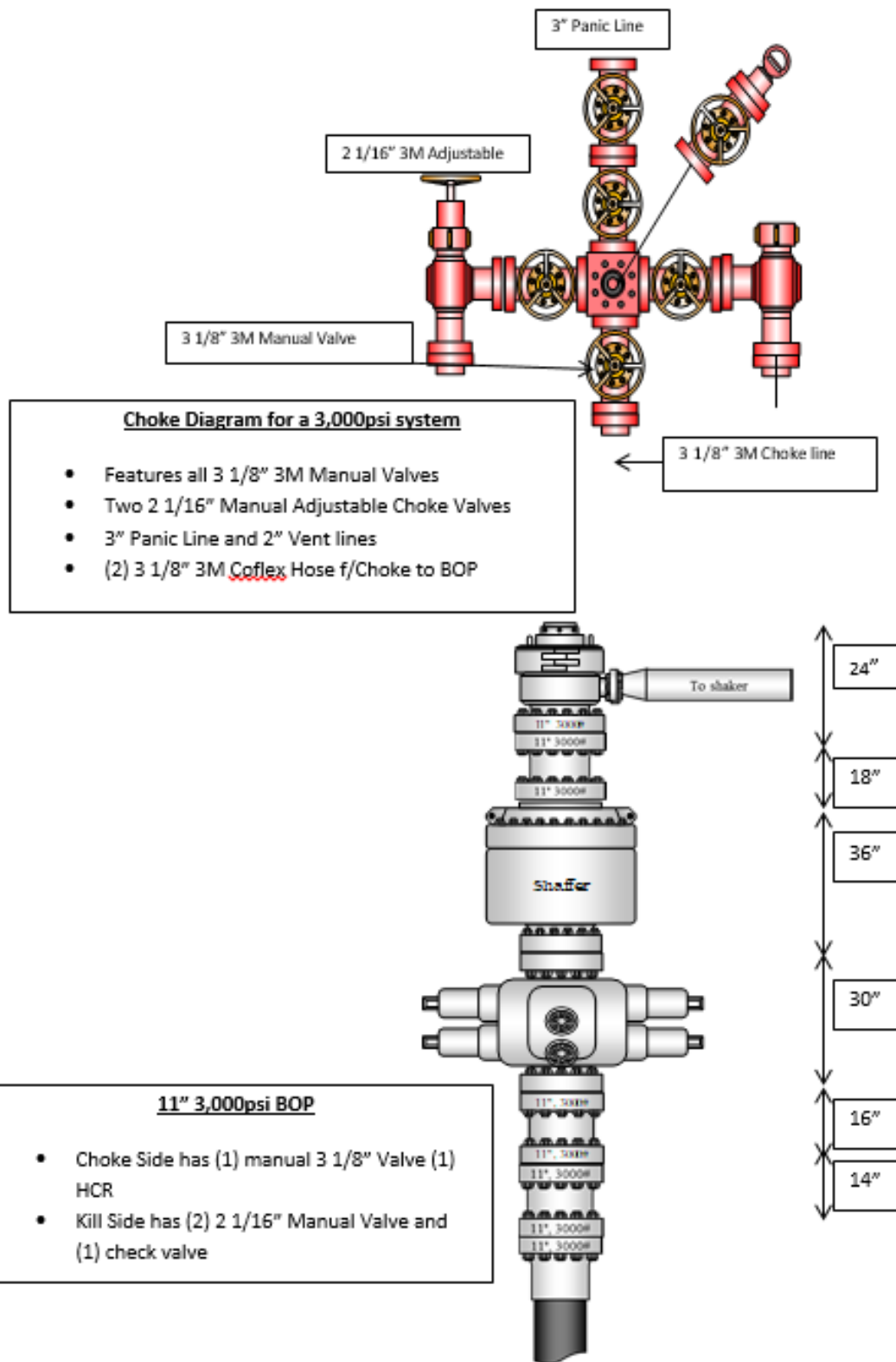
E. PRODUCTION TUBING

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



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

CONDITIONS

Action 514180

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 514180
	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