

I. REQUEST FOR ALLOWABLE AND AUTHORIZATION TO TRANSPORT

¹ Operator name and Address LOGOS Operating, LLC 2010 Afton Place Farmington, NM 87401		² OGRID Number 289408
		³ Reason for Filing Code/ Effective Date NW
⁴ API Number 30-039-31410	⁵ Pool Name Basin Mancos	⁶ Pool Code 97232
⁷ Property Code 320608	⁸ Property Name Rosa Unit	⁹ Well Number 649H

II. ¹⁰ Surface Location

UL or lot no. C	Section 19	Township 31N	Range 5W	Lot Idn 1	Feet from the 965	North/South Line North	Feet from the 480	East/West line West	County Rio Arriba
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¹¹ Bottom Hole Location

UL or lot no. H	Section 21	Township 31N	Range 5W	Lot Idn	Feet from the 1717	North/South line North	Feet from the 171	East/West line East	County Rio Arriba
¹² Lse Code F	¹³ Producing Method Code F	¹⁴ Gas Connection Date	¹⁵ C-129 Permit Number		¹⁶ C-129 Effective Date		¹⁷ C-129 Expiration Date		

III. Oil and Gas Transporters

¹⁸ Transporter OGRID	¹⁹ Transporter Name and Address	²⁰ O/G/W
373888	Harvest Four Corners, LLC 1755 Arroyo Dr. Bloomfield, NM 87413	G

IV. Well Completion Data

²¹ Spud Date 4/9/2022	²² Ready Date 11/10/23	²³ TD 20,638’ MD / 7,188’ TVD	²⁴ PBTD 20,538’ MD / 7,187’ TVD	²⁵ Perforations 7,600’ MD / `20,439’ MD 7,204’ TVD / `7,185’ TVD	²⁶ DHC, MC R-13457
²⁷ Hole Size		²⁸ Casing & Tubing Size	²⁹ Depth Set		³⁰ Sacks Cement
17.5”		13-3/8”, 54.5#, J-55	322’		395sx (81bbls, 454cf)
12.5”		9-5/8”, 47#, L-80	6221’		5976sx (2343bbbs, 12,834cf) DV tool @ 4621’ & 3085’
8.5”		5.5”, 20#, HCP-110 (sidetrack)	20,614’		2876sx (823bbbs, 4629cf) TOC @ 1720’
		2-7/8”, 6.5#, J-55	pending		

V. Well Test Data

³¹ Date New Oil NA	³² Gas Delivery Date 11/24/23	³³ Test Date 11/24/23	³⁴ Test Length 12 hr	³⁵ Tbg. Pressure NA	³⁶ Csg. Pressure 2568
³⁷ Choke Size 18/64”	³⁸ Oil NA	³⁹ Water 504	⁴⁰ Gas 2988		⁴¹ Test Method F

⁴² I hereby certify that the rules of the Oil Conservation Division have been complied with and that the information given above is true and complete to the best of my knowledge and belief. Signature:		OIL CONSERVATION DIVISION	
Printed name: Lacey Granillo		Approved by: <i>PATRICIA MARTINEZ</i>	
Title: Regulatory Specialist		Title: <i>PETROLEUM SPECIALIST</i>	
E-mail Address: lgranillo@logosresourcesllc.com		Approval Date: <i>3/5/2024</i>	
Date:3/1/24	Phone: (505) 787-0118		



Request for Confidential "Tight Hole" Status

LOGOS Operating, LLC
Rosa Unit 649H
API# 30-039-31410
C Section 19 T31N R05W
Rio Arriba County, New Mexico

Per 19.15.7.16 WELL COMPLETION OR RECOMPLETION REPORT AND LOG (Form C-105): LOGOS Operating, LLC.
Request the Division keep Form C-105 and all pertained documentation confidential as of 12/28/2023 for 90 days acceptance of the referenced documents.

Sincerely,

Lacey Granillo

Lacey Granillo
Regulatory Specialist
Email: lgranillo@logosresourcesllc.com
Cell: 505-787-0118

District I
1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

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

☐ AMENDED REPORT

AS-DRILLED WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31410	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 320608	⁵ Property Name ROSA UNIT	⁶ Well Number 649H ST1
⁷ OGRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC	⁹ Elevation 6305'

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	19	31N	5W	1	965	NORTH	480	WEST	RIO ARriba

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	21	31N	5W		1717	NORTH	171	EAST	RIO ARriba
¹² Dedicated Acres 872.01	N/2 - Sections 19, 20, 21, T31N, R5W				¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13457		

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

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

Signature Lacey Granillo Date 3/5/24
Lacey Granillo
Printed Name
lgranillo@logosresourcesllc.com
E-mail Address

18 SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision and that the same is true and correct to the best of my belief.
Date Revised: MARCH 4, 2024
Date of Survey: JANUARY 2, 2015
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

SURFACE LOCATION (A)
965' FNL 480' FWL
SECTION 19, T31N, R5W
LAT 36.889673°N
LONG -107.405533°W
DATUM: NAD1927

S68°35.2'E
T75.5'

FIRST TAKE POINT (B)
1252' FNL 2621' FEL
SECTION 19, T31N, R5W
LAT 36.8888864°N
LONG -107.4030684°W
DATUM: NAD1927

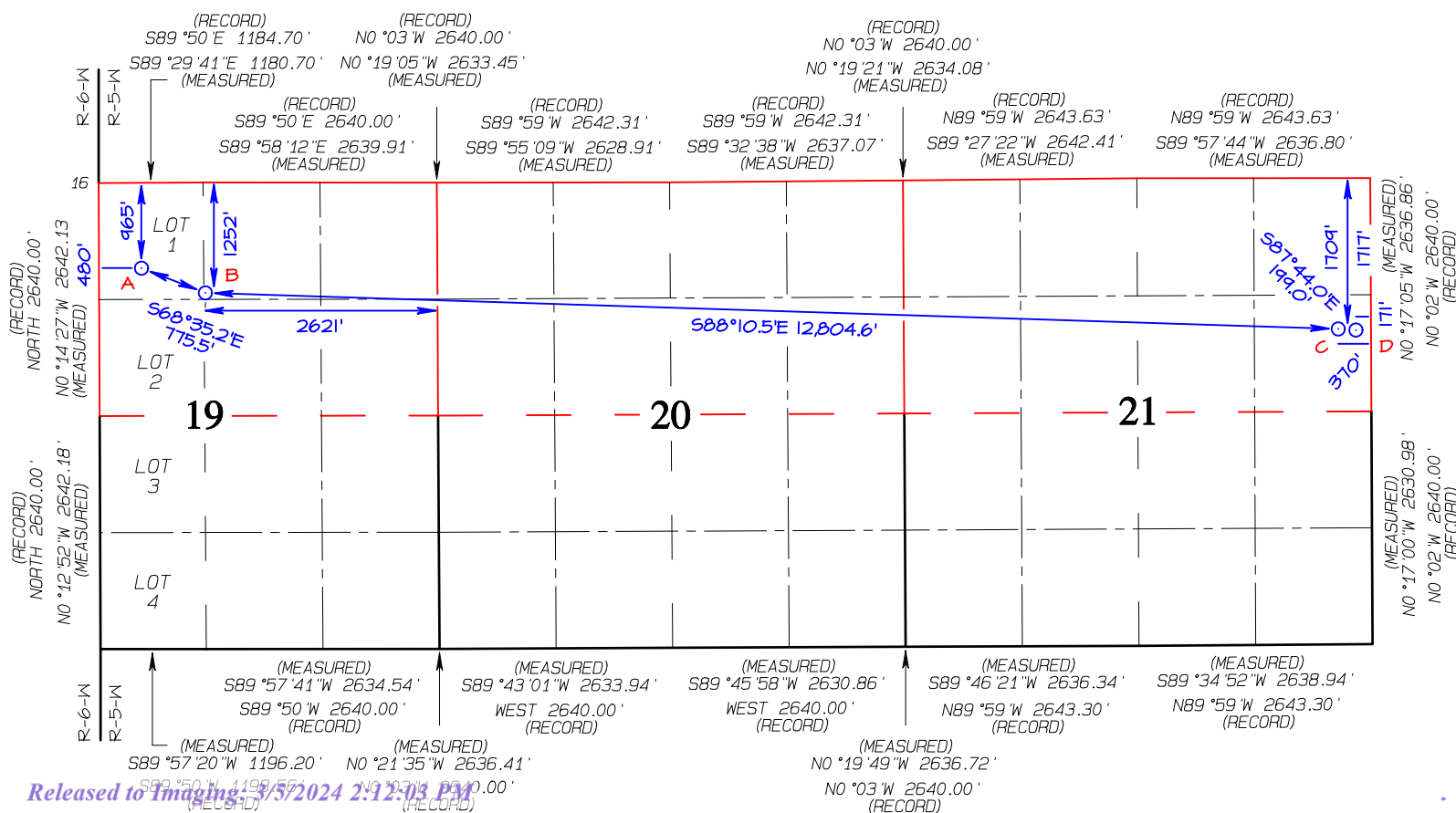
LAT 36.8888924°N
LONG -107.4036713°W
DATUM: NAD1983

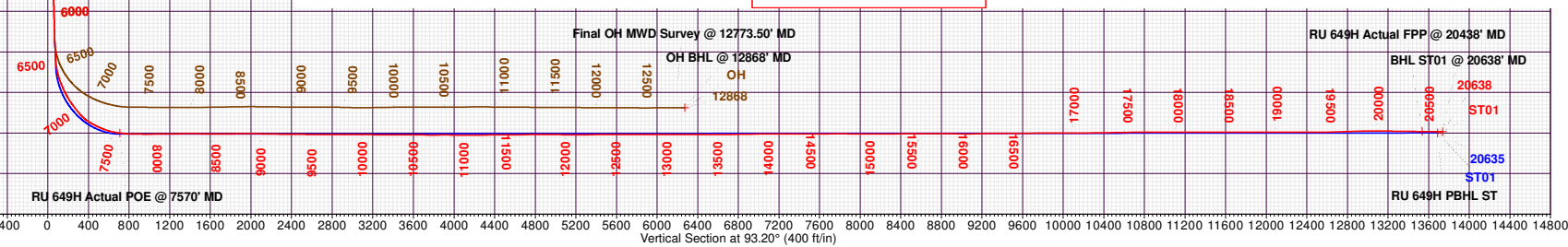
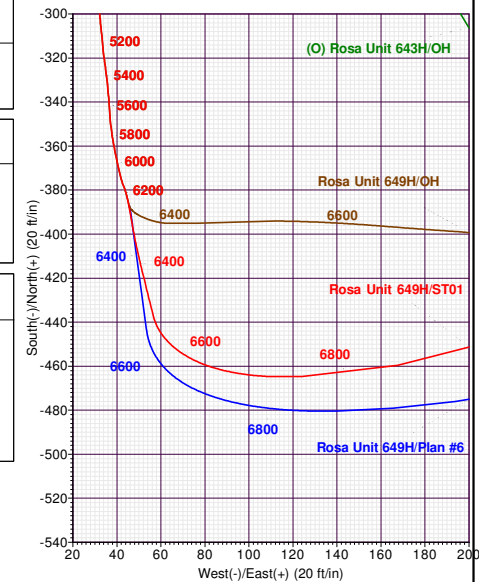
LAST TAKE POINT (C)
1709' FNL 370' FEL
SECTION 21, T31N, R5W
LAT 36.8875999°N
LONG -107.3593137°W
DATUM: NAD1927

LAT 36.8876062°N
LONG -107.3599155°W
DATUM: NAD1983

BOTTOM HOLE LOCATION (D)
1717' FNL 171' FEL
SECTION 21, T31N, R5W
LAT 36.8875756°N
LONG -107.3586340°W
DATUM: NAD1927

LAT 36.8875818°N
LONG -107.3592357°W
DATUM: NAD1983





Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 649H

OH

Design: OH

Standard Survey Report

05 October, 2023

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

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 27				
Site Position:		Northing:	2,143,451.58 usft	Latitude:	36.8896880
From:	Lat/Long	Easting:	2,848,002.44 usft	Longitude:	-107.4061860
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "		

Well	Rosa Unit 649H					
Well Position	+N/-S	0.00 ft	Northing:	2,143,448.37 usft	Latitude:	36.8896790
	+E/-W	0.00 ft	Easting:	2,848,017.09 usft	Longitude:	-107.4061360
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,305.00 ft
Grid Convergence:		0.26 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	8/6/2022	8.58	63.33	46,569.00000000

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	170.82	

Survey Program	Date	10/5/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
74.20	1,001.80	Survey #1 - Gyro (OH)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
1,082.50	1,400.50	Survey #2 - Corrected Run 2 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
1,495.50	6,225.50	Survey #3 - Corrected Run 3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
6,296.50	12,773.50	Survey #4 - Corrected Run 4 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
12,868.00	12,868.00	Survey #5 - Projection (OH)	Project	Projection	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	
74.20	0.26	333.90	74.20	0.15	-0.07	-0.16	0.35	0.35	0.00	
165.36	0.38	329.11	165.36	0.60	-0.32	-0.64	0.13	0.13	-5.25	
256.40	0.32	328.79	256.40	1.07	-0.61	-1.16	0.07	-0.07	-0.35	
347.59	0.35	27.94	347.59	1.54	-0.61	-1.61	0.36	0.03	64.86	
440.15	0.40	100.75	440.14	1.73	-0.16	-1.73	0.48	0.05	78.66	

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
534.77	1.18	158.75	534.76	0.76	0.52	-0.66	1.08	0.82	61.30	
629.29	2.63	166.70	629.22	-2.26	1.37	2.45	1.56	1.53	8.41	
723.92	3.85	172.54	723.70	-7.52	2.28	7.79	1.33	1.29	6.17	
818.59	4.68	170.06	818.11	-14.48	3.36	14.83	0.90	0.88	-2.62	
912.85	5.33	167.20	912.01	-22.54	5.00	23.05	0.74	0.69	-3.03	
1,001.80	6.13	165.28	1,000.51	-31.16	7.12	31.90	0.92	0.90	-2.16	
1,082.50	6.42	165.87	1,080.73	-39.70	9.31	40.68	0.37	0.36	0.73	
1,177.50	6.11	177.33	1,175.16	-49.90	10.85	50.99	1.35	-0.33	12.06	
1,305.50	5.25	179.24	1,302.53	-62.56	11.24	63.56	0.69	-0.67	1.49	
1,400.50	5.71	181.19	1,397.10	-71.63	11.20	72.50	0.52	0.48	2.05	
1,495.50	4.64	179.55	1,491.71	-80.20	11.13	80.95	1.14	-1.13	-1.73	
1,591.50	3.14	170.72	1,587.49	-86.68	11.59	87.42	1.68	-1.56	-9.20	
1,686.50	3.21	165.89	1,682.34	-91.83	12.66	92.67	0.29	0.07	-5.08	
1,781.50	4.23	160.16	1,777.14	-97.70	14.49	98.76	1.14	1.07	-6.03	
1,877.50	3.94	173.07	1,872.90	-104.31	16.09	105.54	1.00	-0.30	13.45	
1,971.50	3.29	189.53	1,966.71	-110.17	16.04	111.32	1.30	-0.69	17.51	
2,066.50	3.08	195.75	2,061.57	-115.32	14.89	116.22	0.43	-0.22	6.55	
2,161.50	3.51	198.47	2,156.41	-120.53	13.28	121.11	0.48	0.45	2.86	
2,257.50	4.55	200.21	2,252.17	-126.89	11.03	127.03	1.09	1.08	1.81	
2,352.50	4.84	202.09	2,346.85	-134.14	8.22	133.74	0.35	0.31	1.98	
2,447.50	4.51	198.79	2,441.54	-141.39	5.51	140.46	0.45	-0.35	-3.47	
2,542.50	3.88	190.41	2,536.28	-148.09	3.73	146.79	0.92	-0.66	-8.82	
2,637.50	3.21	167.84	2,631.10	-153.85	3.71	152.47	1.62	-0.71	-23.76	
2,733.50	2.49	149.26	2,726.99	-158.27	5.34	157.10	1.21	-0.75	-19.35	
2,828.50	2.66	129.79	2,821.89	-161.46	8.09	160.68	0.93	0.18	-20.49	
2,923.50	2.92	127.14	2,916.78	-164.33	11.71	164.09	0.31	0.27	-2.79	
3,018.50	3.42	137.77	3,011.64	-167.89	15.54	168.22	0.81	0.53	11.19	
3,114.50	3.93	143.60	3,107.44	-172.66	19.42	173.54	0.66	0.53	6.07	
3,209.50	4.37	137.46	3,202.19	-177.94	23.80	179.46	0.66	0.46	-6.46	
3,304.50	4.99	149.61	3,296.87	-184.17	28.34	186.34	1.23	0.65	12.79	
3,400.50	5.34	162.96	3,392.49	-192.05	31.76	194.65	1.30	0.36	13.91	
3,495.50	6.12	165.01	3,487.01	-201.17	34.36	204.07	0.85	0.82	2.16	
3,590.50	4.91	174.78	3,581.57	-210.11	36.04	213.17	1.61	-1.27	10.28	
3,685.50	3.93	191.15	3,676.29	-217.35	35.78	220.27	1.67	-1.03	17.23	
3,780.50	4.10	196.79	3,771.06	-223.79	34.17	226.38	0.45	0.18	5.94	
3,876.50	3.06	193.45	3,866.87	-229.57	32.59	231.83	1.10	-1.08	-3.48	
3,971.50	2.66	185.04	3,961.75	-234.23	31.80	236.31	0.61	-0.42	-8.85	
4,066.50	2.57	179.51	4,056.66	-238.56	31.63	240.55	0.28	-0.09	-5.82	
4,161.50	2.56	170.83	4,151.56	-242.78	31.98	244.78	0.41	-0.01	-9.14	
4,256.50	2.92	180.95	4,246.45	-247.30	32.28	249.28	0.63	0.38	10.65	
4,352.50	3.27	183.78	4,342.31	-252.48	32.06	254.36	0.40	0.36	2.95	
4,447.50	3.46	178.99	4,437.15	-258.05	31.93	259.84	0.36	0.20	-5.04	
4,541.50	3.63	183.58	4,530.97	-263.85	31.80	265.55	0.35	0.18	4.88	
4,637.50	3.78	184.40	4,626.77	-270.04	31.36	271.59	0.17	0.16	0.85	

SDT

Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,732.50	3.75	180.15	4,721.56	-276.27	31.12	277.69	0.30	-0.03	-4.47
4,826.50	4.11	178.92	4,815.34	-282.71	31.17	284.06	0.39	0.38	-1.31
4,921.50	4.24	176.26	4,910.09	-289.62	31.46	290.93	0.25	0.14	-2.80
5,016.50	4.28	176.43	5,004.83	-296.66	31.91	297.95	0.04	0.04	0.18
5,114.50	4.65	173.50	5,102.53	-304.26	32.59	305.56	0.44	0.38	-2.99
5,209.50	5.01	175.40	5,197.19	-312.22	33.36	313.54	0.41	0.38	2.00
5,304.50	4.65	172.07	5,291.86	-320.17	34.22	321.53	0.48	-0.38	-3.51
5,368.50	4.07	172.44	5,355.67	-324.99	34.88	326.39	0.91	-0.91	0.58
5,463.50	3.87	174.59	5,450.44	-331.52	35.63	332.96	0.26	-0.21	2.26
5,526.50	3.95	174.25	5,513.30	-335.80	36.04	337.25	0.13	0.13	-0.54
5,590.50	3.83	175.41	5,577.15	-340.12	36.44	341.58	0.22	-0.19	1.81
5,653.50	4.00	176.52	5,640.00	-344.41	36.74	345.86	0.30	0.27	1.76
5,717.50	3.98	175.08	5,703.85	-348.85	37.06	350.30	0.16	-0.03	-2.25
5,781.50	3.84	171.79	5,767.70	-353.19	37.56	354.66	0.41	-0.22	-5.14
5,844.50	3.39	170.23	5,830.57	-357.11	38.18	358.63	0.73	-0.71	-2.48
5,908.50	3.56	169.95	5,894.45	-360.93	38.85	362.51	0.27	0.27	-0.44
5,971.50	3.72	167.90	5,957.33	-364.86	39.62	366.50	0.33	0.25	-3.25
6,035.50	3.88	167.25	6,021.19	-369.00	40.53	370.74	0.26	0.25	-1.02
6,098.50	4.02	167.15	6,084.04	-373.23	41.49	375.07	0.22	0.22	-0.16
6,162.50	4.18	158.16	6,147.87	-377.58	42.86	379.58	1.03	0.25	-14.05
6,225.50	4.32	165.49	6,210.70	-382.01	44.31	384.19	0.89	0.22	11.63
6,296.50	4.15	165.45	6,281.51	-387.09	45.62	389.41	0.24	-0.24	-0.06
6,391.50	10.07	110.43	6,375.82	-393.32	54.28	396.95	8.84	6.23	-57.92
6,486.50	17.67	85.59	6,468.06	-395.12	76.49	402.26	9.99	8.00	-26.15
6,582.50	26.12	90.25	6,557.06	-394.09	112.22	406.94	8.98	8.80	4.85
6,677.50	35.17	94.56	6,638.72	-396.36	160.51	416.89	9.80	9.53	4.54
6,772.50	42.64	93.57	6,712.59	-400.54	219.98	430.50	7.89	7.86	-1.04
6,868.50	51.52	90.55	6,777.91	-402.93	290.16	444.06	9.53	9.25	-3.15
6,963.50	59.97	91.66	6,831.33	-404.49	368.59	458.10	8.95	8.89	1.17
7,058.50	66.70	89.98	6,873.95	-405.66	453.42	472.79	7.26	7.08	-1.77
7,153.50	73.70	90.70	6,906.11	-406.21	542.75	487.57	7.40	7.37	0.76
7,249.50	78.26	93.98	6,929.36	-410.03	635.77	506.19	5.79	4.75	3.42
7,344.50	86.24	96.04	6,942.17	-418.26	729.46	529.25	8.67	8.40	2.17
7,439.50	90.20	94.72	6,945.12	-427.16	823.98	553.11	4.39	4.17	-1.39
7,534.50	89.33	94.96	6,945.51	-435.18	918.64	576.12	0.95	-0.92	0.25
7,630.50	88.56	94.73	6,947.27	-443.29	1,014.28	599.38	0.84	-0.80	-0.24
7,725.50	90.03	94.63	6,948.44	-451.04	1,108.95	622.13	1.55	1.55	-0.11
7,819.50	90.77	94.89	6,947.79	-458.84	1,202.62	644.77	0.83	0.79	0.28
7,914.50	90.40	94.70	6,946.82	-466.78	1,297.29	667.71	0.44	-0.39	-0.20
8,009.50	89.70	94.22	6,946.73	-474.16	1,392.00	690.11	0.89	-0.74	-0.51
8,104.50	91.01	94.14	6,946.14	-481.09	1,486.74	712.06	1.38	1.38	-0.08
8,218.50	90.30	94.83	6,944.84	-490.00	1,600.38	738.98	0.87	-0.62	0.61
8,313.50	91.11	93.62	6,943.67	-497.00	1,695.12	761.00	1.53	0.85	-1.27

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,408.50	90.91	93.66	6,942.00	-503.03	1,789.91	782.07	0.21	-0.21	0.04	
8,504.50	90.54	93.46	6,940.78	-508.99	1,885.72	803.24	0.44	-0.39	-0.21	
8,598.50	90.13	93.34	6,940.23	-514.57	1,979.55	823.70	0.45	-0.44	-0.13	
8,693.50	88.59	95.09	6,941.29	-521.55	2,074.28	845.71	2.45	-1.62	1.84	
8,789.50	89.80	94.10	6,942.64	-529.24	2,169.96	868.56	1.63	1.26	-1.03	
8,883.50	89.40	93.45	6,943.30	-535.43	2,263.75	889.63	0.81	-0.43	-0.69	
8,978.50	90.13	93.57	6,943.69	-541.24	2,358.57	910.49	0.78	0.77	0.13	
9,072.50	89.53	93.98	6,943.97	-547.43	2,452.37	931.56	0.77	-0.64	0.44	
9,168.50	90.57	94.60	6,943.88	-554.61	2,548.10	953.92	1.26	1.08	0.65	
9,263.50	89.97	93.92	6,943.44	-561.67	2,642.83	975.99	0.95	-0.63	-0.72	
9,358.50	89.46	93.97	6,943.91	-568.20	2,737.60	997.56	0.54	-0.54	0.05	
9,453.50	88.69	93.64	6,945.44	-574.51	2,832.38	1,018.90	0.88	-0.81	-0.35	
9,548.50	88.05	93.34	6,948.14	-580.29	2,927.17	1,039.72	0.74	-0.67	-0.32	
9,643.50	89.09	92.73	6,950.52	-585.32	3,022.00	1,059.81	1.27	1.09	-0.64	
9,738.50	90.37	93.37	6,950.96	-590.37	3,116.86	1,079.93	1.51	1.35	0.67	
9,833.50	91.91	94.74	6,949.07	-597.09	3,211.60	1,101.67	2.17	1.62	1.44	
9,928.50	91.34	95.11	6,946.38	-605.24	3,306.21	1,124.81	0.72	-0.60	0.39	
10,023.50	90.67	94.91	6,944.71	-613.53	3,400.84	1,148.09	0.74	-0.71	-0.21	
10,118.50	90.13	94.75	6,944.05	-621.53	3,495.50	1,171.09	0.59	-0.57	-0.17	
10,213.50	89.40	94.46	6,944.44	-629.16	3,590.19	1,193.72	0.83	-0.77	-0.31	
10,308.50	90.77	93.30	6,944.30	-635.59	3,684.97	1,215.18	1.89	1.44	-1.22	
10,403.50	89.77	93.02	6,943.85	-640.82	3,779.82	1,235.48	1.09	-1.05	-0.29	
10,498.50	90.10	93.99	6,943.96	-646.63	3,874.64	1,256.34	1.08	0.35	1.02	
10,593.50	89.46	93.18	6,944.32	-652.57	3,969.45	1,277.32	1.09	-0.67	-0.85	
10,688.50	91.51	93.33	6,943.52	-657.97	4,064.29	1,297.77	2.16	2.16	0.16	
10,783.50	90.94	92.75	6,941.49	-663.00	4,159.13	1,317.87	0.86	-0.60	-0.61	
10,877.50	88.83	92.65	6,941.68	-667.43	4,253.02	1,337.22	2.25	-2.24	-0.11	
10,971.50	88.99	92.75	6,943.46	-671.86	4,346.90	1,356.56	0.20	0.17	0.11	
11,066.50	90.37	93.75	6,944.00	-677.24	4,441.74	1,377.00	1.79	1.45	1.05	
11,161.50	89.73	93.72	6,943.91	-683.43	4,536.54	1,398.23	0.67	-0.67	-0.03	
11,256.50	89.30	94.18	6,944.72	-689.98	4,631.31	1,419.81	0.66	-0.45	0.48	
11,351.50	88.96	94.28	6,946.16	-696.98	4,726.04	1,441.83	0.37	-0.36	0.11	
11,444.50	89.73	93.03	6,947.22	-702.91	4,818.85	1,462.49	1.58	0.83	-1.34	
11,539.50	89.23	92.76	6,948.08	-707.71	4,913.72	1,482.36	0.60	-0.53	-0.28	
11,634.50	90.44	92.40	6,948.36	-711.98	5,008.62	1,501.71	1.33	1.27	-0.38	
11,728.50	89.66	93.27	6,948.28	-716.63	5,102.50	1,521.28	1.24	-0.83	0.93	
11,823.50	89.46	93.09	6,949.01	-721.90	5,197.36	1,541.61	0.28	-0.21	-0.19	
11,918.50	88.82	93.27	6,950.43	-727.17	5,292.20	1,561.94	0.70	-0.67	0.19	
12,013.50	90.30	93.58	6,951.16	-732.85	5,387.02	1,582.66	1.59	1.56	0.33	
12,108.50	90.27	92.61	6,950.69	-737.98	5,481.88	1,602.86	1.02	-0.03	-1.02	
12,203.50	89.93	92.72	6,950.52	-742.39	5,576.78	1,622.35	0.38	-0.36	0.12	
12,298.50	89.66	93.35	6,950.86	-747.42	5,671.64	1,642.45	0.72	-0.28	0.66	
12,393.50	89.23	93.89	6,951.78	-753.42	5,766.45	1,663.49	0.73	-0.45	0.57	

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,488.50	89.93	93.16	6,952.48	-759.26	5,861.27	1,684.38	1.06	0.74	-0.77	
12,582.50	90.87	92.86	6,951.82	-764.20	5,955.13	1,704.22	1.05	1.00	-0.32	
12,677.50	90.34	92.37	6,950.82	-768.53	6,050.03	1,723.64	0.76	-0.56	-0.52	
12,773.50	89.83	92.38	6,950.68	-772.51	6,145.95	1,742.86	0.53	-0.53	0.01	
Final OH MWD Survey @ 12773.50' MD										
12,868.00	89.83	92.38	6,950.96	-776.43	6,240.36	1,761.79	0.00	0.00	0.00	
OH BHL @ 12868' MD										

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)	Latitude	Longitude
RU 649H OH BHL	0.00	0.00	6,950.96	-776.43	6,240.36	2,142,699.87	2,854,260.85	36.8875444	-107.3847973
- actual wellpath hits target center									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
12,773.50	6,950.68	-772.51	6,145.95	Final OH MWD Survey @ 12773.50' MD	
12,868.00	6,950.96	-776.43	6,240.36	OH BHL @ 12868' MD	

Checked By:	_____	Approved By:	_____	Date:	_____
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Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 649H

OH

Design: OH

Survey Report - Geographic

16 October, 2023

SDT
Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

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 27						
Site Position:		Northing:	2,143,451.58	usft	Latitude:	36.8896880		
From:	Lat/Long	Easting:	2,848,002.44	usft	Longitude:	-107.4061860		
Position Uncertainty:	0.00	ft	Slot Radius:	13-3/16	"	Grid Convergence:	0.26	°

Well	Rosa Unit 649H					
Well Position	+N/-S	0.00 ft	Northing:	2,143,448.37 usft	Latitude:	36.8896790
	+E/-W	0.00 ft	Easting:	2,848,017.09 usft	Longitude:	-107.4061360
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,305.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	User Defined	8/6/2022	8.58	63.33	46,569.00000000

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	170.82	

Survey Program	Date	10/5/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
74.20	1,001.80	Survey #1 - Gyro (OH)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
1,082.50	1,400.50	Survey #2 - Corrected Run 2 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
1,495.50	6,225.50	Survey #3 - Corrected Run 3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
6,296.50	12,773.50	Survey #4 - Corrected Run 4 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
12,868.00	12,868.00	Survey #5 - Projection (OH)	Project	Projection	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.00	0.00	0.00	0.00	0.00	0.00	2,143,448.37	2,848,017.09	36.8896790	-107.4061360	
74.20	0.26	333.90	74.20	0.15	-0.07	2,143,448.52	2,848,017.02	36.8896794	-107.4061363	
165.36	0.38	329.11	165.36	0.60	-0.32	2,143,448.96	2,848,016.77	36.8896806	-107.4061371	
256.40	0.32	328.79	256.40	1.07	-0.61	2,143,449.44	2,848,016.48	36.8896819	-107.4061381	
347.59	0.35	27.94	347.59	1.54	-0.61	2,143,449.90	2,848,016.48	36.8896832	-107.4061381	
440.15	0.40	100.75	440.14	1.73	-0.16	2,143,450.09	2,848,016.92	36.8896837	-107.4061365	
534.77	1.18	158.75	534.76	0.76	0.52	2,143,449.13	2,848,017.61	36.8896810	-107.4061342	
629.29	2.63	166.70	629.22	-2.26	1.37	2,143,446.11	2,848,018.47	36.8896727	-107.4061313	

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
723.92	3.85	172.54	723.70	-7.52	2.28	2,143,440.85	2,848,019.41	36.8896583	-107.4061282
818.59	4.68	170.06	818.11	-14.48	3.36	2,143,433.90	2,848,020.52	36.8896392	-107.4061245
912.85	5.33	167.20	912.01	-22.54	5.00	2,143,425.85	2,848,022.19	36.8896171	-107.4061189
1,001.80	6.13	165.28	1,000.51	-31.16	7.12	2,143,417.24	2,848,024.35	36.8895934	-107.4061117
1,082.50	6.42	165.87	1,080.73	-39.70	9.31	2,143,408.71	2,848,026.58	36.8895699	-107.4061042
1,177.50	6.11	177.33	1,175.16	-49.90	10.85	2,143,398.51	2,848,028.16	36.8895419	-107.4060989
1,305.50	5.25	179.24	1,302.53	-62.56	11.24	2,143,385.86	2,848,028.61	36.8895071	-107.4060976
1,400.50	5.71	181.19	1,397.10	-71.63	11.20	2,143,376.78	2,848,028.61	36.8894822	-107.4060977
1,495.50	4.64	179.55	1,491.71	-80.20	11.13	2,143,368.22	2,848,028.58	36.8894587	-107.4060979
1,591.50	3.14	170.72	1,587.49	-86.68	11.59	2,143,361.74	2,848,029.07	36.8894409	-107.4060964
1,686.50	3.21	165.89	1,682.34	-91.83	12.66	2,143,356.60	2,848,030.16	36.8894267	-107.4060927
1,781.50	4.23	160.16	1,777.14	-97.70	14.49	2,143,350.73	2,848,032.02	36.8894106	-107.4060864
1,877.50	3.94	173.07	1,872.90	-104.31	16.09	2,143,344.13	2,848,033.65	36.8893925	-107.4060810
1,971.50	3.29	189.53	1,966.71	-110.17	16.04	2,143,338.27	2,848,033.62	36.8893763	-107.4060812
2,066.50	3.08	195.75	2,061.57	-115.32	14.89	2,143,333.12	2,848,032.50	36.8893622	-107.4060851
2,161.50	3.51	198.47	2,156.41	-120.53	13.28	2,143,327.90	2,848,030.91	36.8893479	-107.4060906
2,257.50	4.55	200.21	2,252.17	-126.89	11.03	2,143,321.53	2,848,028.69	36.8893304	-107.4060983
2,352.50	4.84	202.09	2,346.85	-134.14	8.22	2,143,314.26	2,848,025.91	36.8893105	-107.4061079
2,447.50	4.51	198.79	2,441.54	-141.39	5.51	2,143,307.00	2,848,023.24	36.8892906	-107.4061172
2,542.50	3.88	190.41	2,536.28	-148.09	3.73	2,143,300.30	2,848,021.48	36.8892722	-107.4061233
2,637.50	3.21	167.84	2,631.10	-153.85	3.71	2,143,294.53	2,848,021.49	36.8892564	-107.4061233
2,733.50	2.49	149.26	2,726.99	-158.27	5.34	2,143,290.12	2,848,023.14	36.8892442	-107.4061177
2,828.50	2.66	129.79	2,821.89	-161.46	8.09	2,143,286.95	2,848,025.90	36.8892355	-107.4061083
2,923.50	2.92	127.14	2,916.78	-164.33	11.71	2,143,284.09	2,848,029.54	36.8892276	-107.4060960
3,018.50	3.42	137.77	3,011.64	-167.89	15.54	2,143,280.55	2,848,033.39	36.8892178	-107.4060829
3,114.50	3.93	143.60	3,107.44	-172.66	19.42	2,143,275.80	2,848,037.28	36.8892047	-107.4060696
3,209.50	4.37	137.46	3,202.19	-177.94	23.80	2,143,270.53	2,848,041.69	36.8891902	-107.4060546
3,304.50	4.99	149.61	3,296.87	-184.17	28.34	2,143,264.32	2,848,046.25	36.8891731	-107.4060391
3,400.50	5.34	162.96	3,392.49	-192.05	31.76	2,143,256.47	2,848,049.71	36.8891515	-107.4060274
3,495.50	6.12	165.01	3,487.01	-201.17	34.36	2,143,247.36	2,848,052.35	36.8891264	-107.4060185
3,590.50	4.91	174.78	3,581.57	-210.11	36.04	2,143,238.43	2,848,054.07	36.8891019	-107.4060128
3,685.50	3.93	191.15	3,676.29	-217.35	35.78	2,143,231.18	2,848,053.85	36.8890820	-107.4060136
3,780.50	4.10	196.79	3,771.06	-223.79	34.17	2,143,224.73	2,848,052.27	36.8890643	-107.4060191
3,876.50	3.06	193.45	3,866.87	-229.57	32.59	2,143,218.94	2,848,050.70	36.8890484	-107.4060246
3,971.50	2.66	185.04	3,961.75	-234.23	31.80	2,143,214.28	2,848,049.94	36.8890356	-107.4060273
4,066.50	2.57	179.51	4,056.66	-238.56	31.63	2,143,209.95	2,848,049.79	36.8890237	-107.4060279
4,161.50	2.56	170.83	4,151.56	-242.78	31.98	2,143,205.73	2,848,050.16	36.8890121	-107.4060266
4,256.50	2.92	180.95	4,246.45	-247.30	32.28	2,143,201.22	2,848,050.48	36.8889997	-107.4060256
4,352.50	3.27	183.78	4,342.31	-252.48	32.06	2,143,196.04	2,848,050.28	36.8889855	-107.4060264
4,447.50	3.46	178.99	4,437.15	-258.05	31.93	2,143,190.47	2,848,050.18	36.8889702	-107.4060268
4,541.50	3.63	183.58	4,530.97	-263.85	31.80	2,143,184.66	2,848,050.07	36.8889542	-107.4060273
4,637.50	3.78	184.40	4,626.77	-270.04	31.36	2,143,178.47	2,848,049.66	36.8889372	-107.4060288
4,732.50	3.75	180.15	4,721.56	-276.27	31.12	2,143,172.24	2,848,049.44	36.8889201	-107.4060296
4,826.50	4.11	178.92	4,815.34	-282.71	31.17	2,143,165.80	2,848,049.53	36.8889024	-107.4060294
4,921.50	4.24	176.26	4,910.09	-289.62	31.46	2,143,158.89	2,848,049.85	36.8888835	-107.4060284
5,016.50	4.28	176.43	5,004.83	-296.66	31.91	2,143,151.85	2,848,050.33	36.8888641	-107.4060269
5,114.50	4.65	173.50	5,102.53	-304.26	32.59	2,143,144.26	2,848,051.04	36.8888432	-107.4060246
5,209.50	5.01	175.40	5,197.19	-312.22	33.36	2,143,136.30	2,848,051.85	36.8888214	-107.4060219
5,304.50	4.65	172.07	5,291.86	-320.17	34.22	2,143,128.36	2,848,052.75	36.8887995	-107.4060190
5,368.50	4.07	172.44	5,355.67	-324.99	34.88	2,143,123.54	2,848,053.43	36.8887863	-107.4060167
5,463.50	3.87	174.59	5,450.44	-331.52	35.63	2,143,117.01	2,848,054.20	36.8887684	-107.4060142
5,526.50	3.95	174.25	5,513.30	-335.80	36.04	2,143,112.74	2,848,054.64	36.8887566	-107.4060128
5,590.50	3.83	175.41	5,577.15	-340.12	36.44	2,143,108.41	2,848,055.05	36.8887447	-107.4060114
5,653.50	4.00	176.52	5,640.00	-344.41	36.74	2,143,104.12	2,848,055.37	36.8887329	-107.4060104
5,717.50	3.98	175.08	5,703.85	-348.85	37.06	2,143,099.69	2,848,055.72	36.8887208	-107.4060093

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,781.50	3.84	171.79	5,767.70	-353.19	37.56	2,143,095.35	2,848,056.23	36.8887088	-107.4060076	
5,844.50	3.39	170.23	5,830.57	-357.11	38.18	2,143,091.43	2,848,056.87	36.8886981	-107.4060055	
5,908.50	3.56	169.95	5,894.45	-360.93	38.85	2,143,087.61	2,848,057.55	36.8886876	-107.4060032	
5,971.50	3.72	167.90	5,957.33	-364.86	39.62	2,143,083.69	2,848,058.34	36.8886768	-107.4060005	
6,035.50	3.88	167.25	6,021.19	-369.00	40.53	2,143,079.56	2,848,059.27	36.8886654	-107.4059974	
6,098.50	4.02	167.15	6,084.04	-373.23	41.49	2,143,075.33	2,848,060.25	36.8886538	-107.4059941	
6,162.50	4.18	158.16	6,147.87	-377.58	42.86	2,143,070.98	2,848,061.64	36.8886418	-107.4059895	
6,225.50	4.32	165.49	6,210.70	-382.01	44.31	2,143,066.56	2,848,063.11	36.8886297	-107.4059845	
6,296.50	4.15	165.45	6,281.51	-387.09	45.62	2,143,061.49	2,848,064.44	36.8886157	-107.4059800	
6,391.50	10.07	110.43	6,375.82	-393.32	54.28	2,143,055.29	2,848,073.13	36.8885986	-107.4059504	
6,486.50	17.67	85.59	6,468.06	-395.12	76.49	2,143,053.60	2,848,095.35	36.8885937	-107.4058744	
6,582.50	26.12	90.25	6,557.06	-394.09	112.22	2,143,054.79	2,848,131.07	36.8885965	-107.4057523	
6,677.50	35.17	94.56	6,638.72	-396.36	160.51	2,143,052.73	2,848,179.37	36.8885903	-107.4055871	
6,772.50	42.64	93.57	6,712.59	-400.54	219.98	2,143,048.81	2,848,238.86	36.8885788	-107.4053838	
6,868.50	51.52	90.55	6,777.91	-402.93	290.16	2,143,046.74	2,848,309.05	36.8885722	-107.4051438	
6,963.50	59.97	91.66	6,831.33	-404.49	368.59	2,143,045.54	2,848,387.49	36.8885679	-107.4048756	
7,058.50	66.70	89.98	6,873.95	-405.66	453.42	2,143,044.74	2,848,472.33	36.8885647	-107.4045855	
7,153.50	73.70	90.70	6,906.11	-406.21	542.75	2,143,044.60	2,848,561.65	36.8885632	-107.4042801	
7,249.50	78.26	93.98	6,929.36	-410.03	635.77	2,143,041.18	2,848,654.69	36.8885527	-107.4039620	
7,344.50	86.24	96.04	6,942.17	-418.26	729.46	2,143,033.37	2,848,748.42	36.8885301	-107.4036416	
7,439.50	90.20	94.72	6,945.12	-427.16	823.98	2,143,024.90	2,848,842.97	36.8885056	-107.4033184	
7,534.50	89.33	94.96	6,945.51	-435.18	918.64	2,143,017.31	2,848,937.67	36.8884836	-107.4029947	
7,630.50	88.56	94.73	6,947.27	-443.29	1,014.28	2,143,009.63	2,849,033.34	36.8884613	-107.4026677	
7,725.50	90.03	94.63	6,948.44	-451.04	1,108.95	2,143,002.30	2,849,128.05	36.8884400	-107.4023439	
7,819.50	90.77	94.89	6,947.79	-458.84	1,202.62	2,142,994.92	2,849,221.75	36.8884186	-107.4020236	
7,914.50	90.40	94.70	6,946.82	-466.78	1,297.29	2,142,987.40	2,849,316.45	36.8883968	-107.4016999	
8,009.50	89.70	94.22	6,946.73	-474.16	1,392.00	2,142,980.44	2,849,411.19	36.8883765	-107.4013761	
8,104.50	91.01	94.14	6,946.14	-481.09	1,486.74	2,142,973.94	2,849,505.97	36.8883574	-107.4010521	
8,218.50	90.30	94.83	6,944.84	-490.00	1,600.38	2,142,965.54	2,849,619.65	36.8883329	-107.4006635	
8,313.50	91.11	93.62	6,943.67	-497.00	1,695.12	2,142,958.96	2,849,714.41	36.8883137	-107.4003396	
8,408.50	90.91	93.66	6,942.00	-503.03	1,789.91	2,142,953.36	2,849,809.23	36.8882971	-107.4000154	
8,504.50	90.54	93.46	6,940.78	-508.99	1,885.72	2,142,947.82	2,849,905.06	36.8882807	-107.3996878	
8,598.50	90.13	93.34	6,940.23	-514.57	1,979.55	2,142,942.67	2,849,998.92	36.8882654	-107.3993669	
8,693.50	88.59	95.09	6,941.29	-521.55	2,074.28	2,142,936.11	2,850,093.68	36.8882462	-107.3990430	
8,789.50	89.80	94.10	6,942.64	-529.24	2,169.96	2,142,928.85	2,850,189.39	36.8882251	-107.3987158	
8,883.50	89.40	93.45	6,943.30	-535.43	2,263.75	2,142,923.08	2,850,283.21	36.8882080	-107.3983951	
8,978.50	90.13	93.57	6,943.69	-541.24	2,358.57	2,142,917.69	2,850,378.06	36.8881920	-107.3980709	
9,072.50	89.53	93.98	6,943.97	-547.43	2,452.37	2,142,911.92	2,850,471.88	36.8881750	-107.3977502	
9,168.50	90.57	94.60	6,943.88	-554.61	2,548.10	2,142,905.17	2,850,567.64	36.8881553	-107.3974228	
9,263.50	89.97	93.92	6,943.44	-561.67	2,642.83	2,142,898.54	2,850,662.40	36.8881359	-107.3970989	
9,358.50	89.46	93.97	6,943.91	-568.20	2,737.60	2,142,892.42	2,850,757.21	36.8881179	-107.3967748	
9,453.50	88.69	93.64	6,945.44	-574.51	2,832.38	2,142,886.55	2,850,852.01	36.8881005	-107.3964507	
9,548.50	88.05	93.34	6,948.14	-580.29	2,927.17	2,142,881.19	2,850,946.82	36.8880846	-107.3961266	
9,643.50	89.09	92.73	6,950.52	-585.32	3,022.00	2,142,876.59	2,851,041.68	36.8880708	-107.3958023	
9,738.50	90.37	93.37	6,950.96	-590.37	3,116.86	2,142,871.96	2,851,136.56	36.8880569	-107.3954779	
9,833.50	91.91	94.74	6,949.07	-597.09	3,211.60	2,142,865.66	2,851,231.33	36.8880384	-107.3951540	
9,928.50	91.34	95.11	6,946.38	-605.24	3,306.21	2,142,857.93	2,851,325.97	36.8880160	-107.3948305	
10,023.50	90.67	94.91	6,944.71	-613.53	3,400.84	2,142,850.06	2,851,420.63	36.8879932	-107.3945069	
10,118.50	90.13	94.75	6,944.05	-621.53	3,495.50	2,142,842.49	2,851,515.33	36.8879712	-107.3941832	
10,213.50	89.40	94.46	6,944.44	-629.16	3,590.19	2,142,835.29	2,851,610.05	36.8879502	-107.3938594	
10,308.50	90.77	93.30	6,944.30	-635.59	3,684.97	2,142,829.28	2,851,704.86	36.8879325	-107.3935353	
10,403.50	89.77	93.02	6,943.85	-640.82	3,779.82	2,142,824.47	2,851,799.73	36.8879181	-107.3932110	
10,498.50	90.10	93.99	6,943.96	-646.63	3,874.64	2,142,819.09	2,851,894.58	36.8879021	-107.3928868	
10,593.50	89.46	93.18	6,944.32	-652.57	3,969.45	2,142,813.57	2,851,989.42	36.8878857	-107.3925626	
10,688.50	91.51	93.33	6,943.52	-657.97	4,064.29	2,142,808.60	2,852,084.28	36.8878709	-107.3922383	

SDT
Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,783.50	90.94	92.75	6,941.49	-663.00	4,159.13	2,142,803.99	2,852,179.14	36.8878570	-107.3919139
10,877.50	88.83	92.65	6,941.68	-667.43	4,253.02	2,142,799.98	2,852,273.05	36.8878448	-107.3915929
10,971.50	88.99	92.75	6,943.46	-671.86	4,346.90	2,142,795.97	2,852,366.95	36.8878326	-107.3912719
11,066.50	90.37	93.75	6,944.00	-677.24	4,441.74	2,142,791.01	2,852,461.81	36.8878178	-107.3909476
11,161.50	89.73	93.72	6,943.91	-683.43	4,536.54	2,142,785.25	2,852,556.64	36.8878007	-107.3906234
11,256.50	89.30	94.18	6,944.72	-689.98	4,631.31	2,142,779.13	2,852,651.44	36.8877827	-107.3902994
11,351.50	88.96	94.28	6,946.16	-696.98	4,726.04	2,142,772.55	2,852,746.20	36.8877634	-107.3899754
11,444.50	89.73	93.03	6,947.22	-702.91	4,818.85	2,142,767.04	2,852,839.02	36.8877471	-107.3896581
11,539.50	89.23	92.76	6,948.08	-707.71	4,913.72	2,142,762.66	2,852,933.92	36.8877339	-107.3893337
11,634.50	90.44	92.40	6,948.36	-711.98	5,008.62	2,142,758.81	2,853,028.84	36.8877221	-107.3890092
11,728.50	89.66	93.27	6,948.28	-716.63	5,102.50	2,142,754.58	2,853,122.74	36.8877093	-107.3886881
11,823.50	89.46	93.09	6,949.01	-721.90	5,197.36	2,142,749.74	2,853,217.61	36.8876948	-107.3883638
11,918.50	88.82	93.27	6,950.43	-727.17	5,292.20	2,142,744.89	2,853,312.48	36.8876802	-107.3880395
12,013.50	90.30	93.58	6,951.16	-732.85	5,387.02	2,142,739.64	2,853,407.33	36.8876646	-107.3877153
12,108.50	90.27	92.61	6,950.69	-737.98	5,481.88	2,142,734.94	2,853,502.21	36.8876505	-107.3873909
12,203.50	89.93	92.72	6,950.52	-742.39	5,576.78	2,142,730.94	2,853,597.13	36.8876383	-107.3870664
12,298.50	89.66	93.35	6,950.86	-747.42	5,671.64	2,142,726.34	2,853,692.01	36.8876244	-107.3867420
12,393.50	89.23	93.89	6,951.78	-753.42	5,766.45	2,142,720.77	2,853,786.84	36.8876079	-107.3864178
12,488.50	89.93	93.16	6,952.48	-759.26	5,861.27	2,142,715.35	2,853,881.68	36.8875918	-107.3860936
12,582.50	90.87	92.86	6,951.82	-764.20	5,955.13	2,142,710.83	2,853,975.57	36.8875782	-107.3857726
12,677.50	90.34	92.37	6,950.82	-768.53	6,050.03	2,142,706.92	2,854,070.49	36.8875662	-107.3854482
12,773.50	89.83	92.38	6,950.68	-772.51	6,145.95	2,142,703.38	2,854,166.42	36.8875552	-107.3851202
Final OH MWD Survey @ 12773.50' MD									
12,868.00	89.83	92.38	6,950.96	-776.43	6,240.36	2,142,699.87	2,854,260.85	36.8875444	-107.3847973
OH BHL @ 12868' MD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
RU 649H OH BHL	0.00	0.00	6,950.96	-776.43	6,240.36	2,142,699.87	2,854,260.85	36.8875444	-107.3847973
- actual wellpath hits target center									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
12,773.50	6,950.68	-772.51	6,145.95	Final OH MWD Survey @ 12773.50' MD	
12,868.00	6,950.96	-776.43	6,240.36	OH BHL @ 12868' MD	

Checked By:	Approved By:	Date:
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Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 649H

ST01

Design: ST01

Standard Survey Report

07 December, 2023

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

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 27				
Site Position:		Northing:	2,143,451.58	usft	Latitude:	36.8896880
From:	Lat/Long	Easting:	2,848,002.44	usft	Longitude:	-107.4061860
Position Uncertainty:		0.00	ft	Slot Radius:	13-3/16	"

Well	Rosa Unit 649H					
Well Position	+N/-S	0.00 ft	Northing:	2,143,448.37 usft	Latitude:	36.8896790
	+E/-W	0.00 ft	Easting:	2,848,017.09 usft	Longitude:	-107.4061360
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,305.00 ft
Grid Convergence:		0.26 °				

Wellbore	ST01				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HRGM	9/15/2023	8.50	63.28	49,441.24817656

Design	ST01				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	93.20	

Survey Program	Date	12/7/2023			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
74.20	1,001.80	Survey #1 - Gyro (OH)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
1,082.50	1,400.50	Survey #2 - Corrected Run 2 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
1,495.50	6,225.50	Survey #3 - Corrected Run 3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
6,337.00	6,621.00	Survey #1 - ST01/Gyro (ST01)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
6,698.00	6,887.00	Survey #2 - ST01/Corrected Run 2 (ST01)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
7,006.00	20,569.00	Survey #3 - ST01/Corrected Run 3 (ST01)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
20,638.00	20,638.00	Survey #4 - ST01/Projection (ST01)	Project	Projection	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	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	
74.20	0.26	333.90	74.20	0.15	-0.07	-0.08	0.35	0.35	0.00	
165.36	0.38	329.11	165.36	0.60	-0.32	-0.35	0.13	0.13	-5.25	
256.40	0.32	328.79	256.40	1.07	-0.61	-0.67	0.07	-0.07	-0.35	
347.59	0.35	27.94	347.59	1.54	-0.61	-0.69	0.36	0.03	64.86	

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
440.15	0.40	100.75	440.14	1.73	-0.16	-0.25	0.48	0.05	78.66
534.77	1.18	158.75	534.76	0.76	0.52	0.48	1.08	0.82	61.30
629.29	2.63	166.70	629.22	-2.26	1.37	1.49	1.56	1.53	8.41
723.92	3.85	172.54	723.70	-7.52	2.28	2.70	1.33	1.29	6.17
818.59	4.68	170.06	818.11	-14.48	3.36	4.17	0.90	0.88	-2.62
912.85	5.33	167.20	912.01	-22.54	5.00	6.25	0.74	0.69	-3.03
1,001.80	6.13	165.28	1,000.51	-31.16	7.12	8.85	0.92	0.90	-2.16
1,082.50	6.42	165.87	1,080.73	-39.70	9.31	11.52	0.37	0.36	0.73
1,177.50	6.11	177.33	1,175.16	-49.90	10.85	13.62	1.35	-0.33	12.06
1,305.50	5.25	179.24	1,302.53	-62.56	11.24	14.72	0.69	-0.67	1.49
1,400.50	5.71	181.19	1,397.10	-71.63	11.20	15.18	0.52	0.48	2.05
1,495.50	4.64	179.55	1,491.71	-80.20	11.13	15.59	1.14	-1.13	-1.73
1,591.50	3.14	170.72	1,587.49	-86.68	11.59	16.41	1.68	-1.56	-9.20
1,686.50	3.21	165.89	1,682.34	-91.83	12.66	17.76	0.29	0.07	-5.08
1,781.50	4.23	160.16	1,777.14	-97.70	14.49	19.92	1.14	1.07	-6.03
1,877.50	3.94	173.07	1,872.90	-104.31	16.09	21.89	1.00	-0.30	13.45
1,971.50	3.29	189.53	1,966.71	-110.17	16.04	22.16	1.30	-0.69	17.51
2,066.50	3.08	195.75	2,061.57	-115.32	14.89	21.31	0.43	-0.22	6.55
2,161.50	3.51	198.47	2,156.41	-120.53	13.28	19.99	0.48	0.45	2.86
2,257.50	4.55	200.21	2,252.17	-126.89	11.03	18.10	1.09	1.08	1.81
2,352.50	4.84	202.09	2,346.85	-134.14	8.22	15.70	0.35	0.31	1.98
2,447.50	4.51	198.79	2,441.54	-141.39	5.51	13.40	0.45	-0.35	-3.47
2,542.50	3.88	190.41	2,536.28	-148.09	3.73	11.99	0.92	-0.66	-8.82
2,637.50	3.21	167.84	2,631.10	-153.85	3.71	12.29	1.62	-0.71	-23.76
2,733.50	2.49	149.26	2,726.99	-158.27	5.34	14.17	1.21	-0.75	-19.35
2,828.50	2.66	129.79	2,821.89	-161.46	8.09	17.09	0.93	0.18	-20.49
2,923.50	2.92	127.14	2,916.78	-164.33	11.71	20.87	0.31	0.27	-2.79
3,018.50	3.42	137.77	3,011.64	-167.89	15.54	24.89	0.81	0.53	11.19
3,114.50	3.93	143.60	3,107.44	-172.66	19.42	29.03	0.66	0.53	6.07
3,209.50	4.37	137.46	3,202.19	-177.94	23.80	33.70	0.66	0.46	-6.46
3,304.50	4.99	149.61	3,296.87	-184.17	28.34	38.57	1.23	0.65	12.79
3,400.50	5.34	162.96	3,392.49	-192.05	31.76	42.43	1.30	0.36	13.91
3,495.50	6.12	165.01	3,487.01	-201.17	34.36	45.54	0.85	0.82	2.16
3,590.50	4.91	174.78	3,581.57	-210.11	36.04	47.72	1.61	-1.27	10.28
3,685.50	3.93	191.15	3,676.29	-217.35	35.78	47.86	1.67	-1.03	17.23
3,780.50	4.10	196.79	3,771.06	-223.79	34.17	46.61	0.45	0.18	5.94
3,876.50	3.06	193.45	3,866.87	-229.57	32.59	45.35	1.10	-1.08	-3.48
3,971.50	2.66	185.04	3,961.75	-234.23	31.80	44.83	0.61	-0.42	-8.85
4,066.50	2.57	179.51	4,056.66	-238.56	31.63	44.89	0.28	-0.09	-5.82
4,161.50	2.56	170.83	4,151.56	-242.78	31.98	45.49	0.41	-0.01	-9.14
4,256.50	2.92	180.95	4,246.45	-247.30	32.28	46.04	0.63	0.38	10.65
4,352.50	3.27	183.78	4,342.31	-252.48	32.06	46.10	0.40	0.36	2.95
4,447.50	3.46	178.99	4,437.15	-258.05	31.93	46.29	0.36	0.20	-5.04

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,541.50	3.63	183.58	4,530.97	-263.85	31.80	46.48	0.35	0.18	4.88
4,637.50	3.78	184.40	4,626.77	-270.04	31.36	46.39	0.17	0.16	0.85
4,732.50	3.75	180.15	4,721.56	-276.27	31.12	46.49	0.30	-0.03	-4.47
4,826.50	4.11	178.92	4,815.34	-282.71	31.17	46.90	0.39	0.38	-1.31
4,921.50	4.24	176.26	4,910.09	-289.62	31.46	47.58	0.25	0.14	-2.80
5,016.50	4.28	176.43	5,004.83	-296.66	31.91	48.42	0.04	0.04	0.18
5,114.50	4.65	173.50	5,102.53	-304.26	32.59	49.53	0.44	0.38	-2.99
5,209.50	5.01	175.40	5,197.19	-312.22	33.36	50.74	0.41	0.38	2.00
5,304.50	4.65	172.07	5,291.86	-320.17	34.22	52.04	0.48	-0.38	-3.51
5,368.50	4.07	172.44	5,355.67	-324.99	34.88	52.97	0.91	-0.91	0.58
5,463.50	3.87	174.59	5,450.44	-331.52	35.63	54.08	0.26	-0.21	2.26
5,526.50	3.95	174.25	5,513.30	-335.80	36.04	54.73	0.13	0.13	-0.54
5,590.50	3.83	175.41	5,577.15	-340.12	36.44	55.37	0.22	-0.19	1.81
5,653.50	4.00	176.52	5,640.00	-344.41	36.74	55.91	0.30	0.27	1.76
5,717.50	3.98	175.08	5,703.85	-348.85	37.06	56.48	0.16	-0.03	-2.25
5,781.50	3.84	171.79	5,767.70	-353.19	37.56	57.22	0.41	-0.22	-5.14
5,844.50	3.39	170.23	5,830.57	-357.11	38.18	58.05	0.73	-0.71	-2.48
5,908.50	3.56	169.95	5,894.45	-360.93	38.85	58.93	0.27	0.27	-0.44
5,971.50	3.72	167.90	5,957.33	-364.86	39.62	59.92	0.33	0.25	-3.25
6,035.50	3.88	167.25	6,021.19	-369.00	40.53	61.06	0.26	0.25	-1.02
6,098.50	4.02	167.15	6,084.04	-373.23	41.49	62.26	0.22	0.22	-0.16
6,162.50	4.18	158.16	6,147.87	-377.58	42.86	63.87	1.03	0.25	-14.05
6,225.50	4.32	165.49	6,210.70	-382.01	44.31	65.56	0.89	0.22	11.63
6,337.00	11.35	170.24	6,321.09	-396.91	47.22	69.30	6.33	6.30	4.26
6,432.00	13.20	165.94	6,413.92	-416.64	51.44	74.62	2.17	1.95	-4.53
6,527.00	12.23	166.20	6,506.59	-436.94	56.48	80.78	1.02	-1.02	0.27
6,621.00	14.96	124.98	6,598.15	-453.60	68.82	94.04	10.46	2.90	-43.85
6,698.00	19.23	102.81	6,671.81	-462.13	89.36	115.02	10.02	5.55	-28.79
6,792.00	24.70	87.38	6,759.03	-464.66	124.13	149.88	8.41	5.82	-16.41
6,887.00	30.23	80.11	6,843.31	-459.64	167.57	192.96	6.80	5.82	-7.65
7,006.00	39.16	71.87	6,941.11	-442.76	232.95	257.31	8.46	7.50	-6.92
7,101.00	42.71	72.62	7,012.86	-423.80	292.23	315.43	3.77	3.74	0.79
7,195.00	55.65	74.26	7,074.18	-403.66	360.29	382.26	13.83	13.77	1.74
7,290.00	64.52	73.74	7,121.51	-380.97	439.36	459.94	9.35	9.34	-0.55
7,384.00	68.98	72.31	7,158.61	-355.75	521.93	540.98	4.95	4.74	-1.52
7,479.00	78.41	70.31	7,185.25	-326.53	608.19	625.47	10.13	9.93	-2.11
7,570.00	82.48	70.35	7,200.36	-296.33	692.67	708.14	4.47	4.47	0.04
RU 649H Actual POE @ 7570' MD									
7,574.00	82.66	70.35	7,200.87	-294.99	696.41	711.79	4.47	4.47	0.04
7,668.00	88.59	71.46	7,208.04	-264.35	784.94	798.47	6.42	6.31	1.18
7,762.00	89.13	72.78	7,209.91	-235.50	874.38	886.16	1.52	0.57	1.40
7,857.00	90.20	73.81	7,210.47	-208.19	965.37	975.48	1.56	1.13	1.08
7,952.00	90.27	76.07	7,210.08	-183.51	1,057.10	1,065.69	2.38	0.07	2.38

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,046.00	90.10	77.80	7,209.77	-162.26	1,148.66	1,155.93	1.85	-0.18	1.84
8,141.00	91.44	79.05	7,208.50	-143.20	1,241.71	1,247.77	1.93	1.41	1.32
8,235.00	90.84	81.39	7,206.63	-127.24	1,334.32	1,339.35	2.57	-0.64	2.49
8,330.00	89.23	83.23	7,206.57	-114.53	1,428.46	1,432.63	2.57	-1.69	1.94
8,424.00	89.06	84.98	7,207.97	-104.87	1,521.95	1,525.43	1.87	-0.18	1.86
8,519.00	89.97	87.43	7,208.77	-98.59	1,616.73	1,619.71	2.75	0.96	2.58
8,613.00	90.67	89.57	7,208.25	-96.13	1,710.69	1,713.39	2.40	0.74	2.28
8,708.00	89.97	92.27	7,207.72	-97.65	1,805.67	1,808.30	2.94	-0.74	2.84
8,802.00	90.37	95.07	7,207.44	-103.67	1,899.46	1,902.29	3.01	0.43	2.98
8,897.00	89.97	94.87	7,207.16	-111.90	1,994.11	1,997.24	0.47	-0.42	-0.21
8,991.00	89.56	94.83	7,207.54	-119.85	2,087.77	2,091.20	0.44	-0.44	-0.04
9,086.00	89.16	94.69	7,208.60	-127.73	2,182.44	2,186.16	0.45	-0.42	-0.15
9,180.00	88.62	94.26	7,210.43	-135.06	2,276.13	2,280.12	0.73	-0.57	-0.46
9,275.00	89.80	92.72	7,211.74	-140.84	2,370.94	2,375.11	2.04	1.24	-1.62
9,369.00	89.29	92.90	7,212.48	-145.45	2,464.82	2,469.10	0.58	-0.54	0.19
9,464.00	88.45	92.69	7,214.36	-150.08	2,559.69	2,564.08	0.91	-0.88	-0.22
9,558.00	90.67	92.82	7,215.08	-154.60	2,653.58	2,658.07	2.37	2.36	0.14
9,653.00	90.37	93.17	7,214.21	-159.57	2,748.44	2,753.06	0.49	-0.32	0.37
9,747.00	89.63	92.66	7,214.21	-164.35	2,842.32	2,847.06	0.96	-0.79	-0.54
9,842.00	89.09	92.35	7,215.28	-168.50	2,937.22	2,942.05	0.66	-0.57	-0.33
9,947.00	90.30	93.04	7,215.83	-173.43	3,042.10	3,047.04	1.33	1.15	0.66
10,041.00	89.66	93.55	7,215.87	-178.84	3,135.95	3,141.04	0.87	-0.68	0.54
10,135.00	89.16	93.70	7,216.84	-184.78	3,229.75	3,235.03	0.56	-0.53	0.16
10,230.00	90.50	92.45	7,217.12	-189.88	3,324.61	3,330.03	1.93	1.41	-1.32
10,324.00	90.00	92.57	7,216.71	-193.99	3,418.52	3,424.02	0.55	-0.53	0.13
10,418.00	89.73	92.15	7,216.93	-197.86	3,512.44	3,518.01	0.53	-0.29	-0.45
10,513.00	89.43	92.11	7,217.63	-201.39	3,607.37	3,612.99	0.32	-0.32	-0.04
10,607.00	88.99	92.16	7,218.92	-204.90	3,701.30	3,706.96	0.47	-0.47	0.05
10,702.00	90.47	92.88	7,219.37	-209.07	3,796.20	3,801.95	1.73	1.56	0.76
10,796.00	90.00	92.88	7,218.98	-213.79	3,890.08	3,895.95	0.50	-0.50	0.00
10,891.00	89.53	92.35	7,219.37	-218.13	3,984.98	3,990.94	0.75	-0.49	-0.56
10,985.00	89.36	93.58	7,220.28	-222.99	4,078.85	4,084.94	1.32	-0.18	1.31
11,080.00	90.57	94.26	7,220.34	-229.49	4,173.62	4,179.93	1.46	1.27	0.72
11,174.00	90.37	94.19	7,219.57	-236.41	4,267.36	4,273.91	0.23	-0.21	-0.07
11,269.00	90.27	94.00	7,219.04	-243.19	4,362.12	4,368.89	0.23	-0.11	-0.20
11,363.00	89.80	93.85	7,218.98	-249.63	4,455.90	4,462.89	0.52	-0.50	-0.16
11,458.00	91.04	94.05	7,218.29	-256.17	4,550.67	4,557.87	1.32	1.31	0.21
11,552.00	90.91	93.91	7,216.69	-262.70	4,644.43	4,651.85	0.20	-0.14	-0.15
11,647.00	90.71	93.55	7,215.34	-268.88	4,739.22	4,746.84	0.43	-0.21	-0.38
11,742.00	90.13	93.49	7,214.65	-274.71	4,834.04	4,841.83	0.61	-0.61	-0.06
11,836.00	89.63	93.60	7,214.84	-280.52	4,927.86	4,935.83	0.54	-0.53	0.12
11,931.00	88.96	93.65	7,216.01	-286.53	5,022.66	5,030.82	0.71	-0.71	0.05
12,025.00	90.00	93.23	7,216.87	-292.17	5,116.48	5,124.81	1.19	1.11	-0.45
12,120.00	89.77	93.33	7,217.06	-297.60	5,211.33	5,219.81	0.26	-0.24	0.11

SDT

Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
12,214.00	90.74	93.22	7,216.64	-302.97	5,305.17	5,313.81	1.04	1.03	-0.12	
12,309.00	90.30	93.17	7,215.78	-308.27	5,400.02	5,408.81	0.47	-0.46	-0.05	
12,404.00	90.17	93.24	7,215.39	-313.58	5,494.87	5,503.81	0.16	-0.14	0.07	
12,499.00	90.00	93.70	7,215.25	-319.33	5,589.70	5,598.81	0.52	-0.18	0.48	
12,593.00	89.26	93.43	7,215.85	-325.17	5,683.51	5,692.80	0.84	-0.79	-0.29	
12,687.00	90.54	93.42	7,216.02	-330.79	5,777.34	5,786.80	1.36	1.36	-0.01	
12,782.00	90.40	93.23	7,215.24	-336.30	5,872.18	5,881.79	0.25	-0.15	-0.20	
12,876.00	90.03	92.99	7,214.88	-341.40	5,966.04	5,975.79	0.47	-0.39	-0.26	
12,970.00	89.70	93.21	7,215.11	-346.48	6,059.90	6,069.79	0.42	-0.35	0.23	
13,065.00	89.26	93.09	7,215.97	-351.70	6,154.75	6,164.79	0.48	-0.46	-0.13	
13,159.00	90.74	93.06	7,215.97	-356.74	6,248.62	6,258.79	1.57	1.57	-0.03	
13,254.00	90.47	92.75	7,214.97	-361.56	6,343.49	6,353.78	0.43	-0.28	-0.33	
13,348.00	90.20	92.90	7,214.42	-366.19	6,437.37	6,447.78	0.33	-0.29	0.16	
13,443.00	89.93	93.15	7,214.31	-371.20	6,532.24	6,542.78	0.39	-0.28	0.26	
13,537.00	89.66	93.00	7,214.64	-376.25	6,626.10	6,636.77	0.33	-0.29	-0.16	
13,631.00	91.14	94.02	7,213.99	-382.00	6,719.92	6,730.77	1.91	1.57	1.09	
13,725.00	91.01	93.80	7,212.22	-388.41	6,813.69	6,824.74	0.27	-0.14	-0.23	
13,820.00	90.77	93.43	7,210.75	-394.40	6,908.48	6,919.73	0.46	-0.25	-0.39	
13,914.00	90.57	92.89	7,209.65	-399.58	7,002.33	7,013.72	0.61	-0.21	-0.57	
14,009.00	89.93	92.15	7,209.24	-403.76	7,097.24	7,108.71	1.03	-0.67	-0.78	
14,104.00	89.76	92.19	7,209.49	-407.35	7,192.17	7,203.70	0.18	-0.18	0.04	
14,198.00	89.80	91.92	7,209.85	-410.72	7,286.11	7,297.68	0.29	0.04	-0.29	
14,293.00	89.73	91.69	7,210.24	-413.72	7,381.06	7,392.65	0.25	-0.07	-0.24	
14,387.00	90.94	92.58	7,209.69	-417.22	7,474.99	7,486.63	1.60	1.29	0.95	
14,482.00	90.57	92.64	7,208.44	-421.54	7,569.89	7,581.61	0.39	-0.39	0.06	
14,577.00	90.30	93.08	7,207.72	-426.28	7,664.77	7,676.61	0.54	-0.28	0.46	
14,671.00	90.03	92.69	7,207.45	-431.02	7,758.65	7,770.61	0.50	-0.29	-0.41	
14,765.00	89.80	92.37	7,207.59	-435.16	7,852.55	7,864.60	0.42	-0.24	-0.34	
14,860.00	89.53	91.96	7,208.14	-438.75	7,947.48	7,959.58	0.52	-0.28	-0.43	
14,954.00	89.66	93.97	7,208.81	-443.62	8,041.35	8,053.58	2.14	0.14	2.14	
15,049.00	89.56	94.11	7,209.46	-450.31	8,136.11	8,148.56	0.18	-0.11	0.15	
15,143.00	90.77	93.98	7,209.18	-456.94	8,229.88	8,242.55	1.29	1.29	-0.14	
15,238.00	90.70	94.14	7,207.97	-463.66	8,324.63	8,337.53	0.18	-0.07	0.17	
15,332.00	90.27	93.59	7,207.17	-470.00	8,418.41	8,431.52	0.74	-0.46	-0.59	
15,427.00	90.10	93.24	7,206.86	-475.66	8,513.24	8,526.52	0.41	-0.18	-0.37	
15,521.00	90.13	93.81	7,206.68	-481.44	8,607.06	8,620.52	0.61	0.03	0.61	
15,616.00	90.07	93.58	7,206.51	-487.56	8,701.87	8,715.51	0.25	-0.06	-0.24	
15,710.00	89.80	93.63	7,206.62	-493.47	8,795.68	8,809.51	0.29	-0.29	0.05	
15,805.00	89.33	93.64	7,207.34	-499.49	8,890.49	8,904.51	0.49	-0.49	0.01	
15,899.00	89.30	93.91	7,208.46	-505.68	8,984.28	8,998.50	0.29	-0.03	0.29	
15,994.00	91.14	93.44	7,208.10	-511.77	9,079.08	9,093.49	2.00	1.94	-0.49	
16,088.00	91.21	93.72	7,206.17	-517.64	9,172.87	9,187.46	0.31	0.07	0.30	
16,183.00	90.77	93.79	7,204.53	-523.86	9,267.65	9,282.45	0.47	-0.46	0.07	

SDT

Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,277.00	90.60	93.72	7,203.40	-530.02	9,361.45	9,376.43	0.20	-0.18	-0.07
16,372.00	90.40	93.55	7,202.57	-536.04	9,456.25	9,471.43	0.28	-0.21	-0.18
16,467.00	90.13	93.40	7,202.14	-541.80	9,551.07	9,566.43	0.33	-0.28	-0.16
16,561.00	90.34	93.18	7,201.75	-547.19	9,644.92	9,660.43	0.32	0.22	-0.23
16,656.00	90.30	93.93	7,201.22	-553.08	9,739.73	9,755.42	0.79	-0.04	0.79
16,750.00	90.30	93.67	7,200.73	-559.31	9,833.53	9,849.41	0.28	0.00	-0.28
16,845.00	90.23	94.01	7,200.29	-565.67	9,928.31	9,944.41	0.37	-0.07	0.36
16,939.00	89.80	93.77	7,200.26	-572.05	10,022.09	10,038.40	0.52	-0.46	-0.26
17,034.00	89.33	93.67	7,200.98	-578.21	10,116.89	10,133.39	0.51	-0.49	-0.11
17,129.00	91.28	92.92	7,200.48	-583.67	10,211.73	10,228.39	2.20	2.05	-0.79
17,223.00	91.21	92.61	7,198.44	-588.21	10,305.60	10,322.36	0.34	-0.07	-0.33
17,318.00	90.77	92.70	7,196.79	-592.61	10,400.48	10,417.34	0.47	-0.46	0.09
17,412.00	90.94	92.47	7,195.39	-596.85	10,494.37	10,511.33	0.30	0.18	-0.24
17,507.00	90.81	92.18	7,193.94	-600.70	10,589.28	10,606.30	0.33	-0.14	-0.31
17,601.00	90.44	92.21	7,192.92	-604.30	10,683.21	10,700.28	0.39	-0.39	0.03
17,696.00	90.27	92.16	7,192.33	-607.92	10,778.14	10,795.27	0.19	-0.18	-0.05
17,791.00	90.00	92.20	7,192.10	-611.54	10,873.07	10,890.25	0.29	-0.28	0.04
17,885.00	89.66	92.15	7,192.38	-615.10	10,967.00	10,984.24	0.37	-0.36	-0.05
17,980.00	90.61	92.00	7,192.16	-618.54	11,061.94	11,079.22	1.01	1.00	-0.16
18,075.00	90.37	92.28	7,191.35	-622.09	11,156.87	11,174.20	0.39	-0.25	0.29
18,169.00	90.17	92.62	7,190.90	-626.11	11,250.78	11,268.19	0.42	-0.21	0.36
18,264.00	90.10	92.56	7,190.68	-630.40	11,345.68	11,363.18	0.10	-0.07	-0.06
18,358.00	89.93	92.76	7,190.65	-634.76	11,439.58	11,457.18	0.28	-0.18	0.21
18,453.00	90.00	93.07	7,190.71	-639.59	11,534.46	11,552.18	0.33	0.07	0.33
18,548.00	90.07	93.72	7,190.65	-645.22	11,629.29	11,647.18	0.69	0.07	0.68
18,642.00	89.93	93.97	7,190.65	-651.52	11,723.08	11,741.17	0.30	-0.15	0.27
18,737.00	90.03	94.56	7,190.69	-658.59	11,817.82	11,836.15	0.63	0.11	0.62
18,831.00	89.87	94.35	7,190.77	-665.89	11,911.53	11,930.13	0.28	-0.17	-0.22
18,926.00	89.76	94.29	7,191.08	-673.05	12,006.26	12,025.11	0.13	-0.12	-0.06
19,020.00	89.83	94.22	7,191.41	-680.02	12,100.00	12,119.09	0.11	0.07	-0.07
19,115.00	89.73	93.93	7,191.78	-686.77	12,194.76	12,214.08	0.32	-0.11	-0.31
19,210.00	89.73	94.11	7,192.23	-693.43	12,289.53	12,309.07	0.19	0.00	0.19
19,304.00	90.24	93.72	7,192.25	-699.85	12,383.31	12,403.06	0.68	0.54	-0.41
19,399.00	90.34	93.58	7,191.77	-705.90	12,478.11	12,498.06	0.18	0.11	-0.15
19,494.00	89.87	93.64	7,191.59	-711.88	12,572.92	12,593.06	0.50	-0.49	0.06
19,588.00	91.92	92.74	7,190.13	-717.11	12,666.76	12,687.04	2.38	2.18	-0.96
19,683.00	92.49	92.85	7,186.47	-721.74	12,761.58	12,781.97	0.61	0.60	0.12
19,777.00	91.51	92.98	7,183.19	-726.52	12,855.40	12,875.91	1.05	-1.04	0.14
19,872.00	90.40	92.11	7,181.61	-730.73	12,950.29	12,970.89	1.48	-1.17	-0.92
19,966.00	89.97	91.98	7,181.30	-734.09	13,044.23	13,064.87	0.48	-0.46	-0.14
20,061.00	89.73	91.84	7,181.55	-737.25	13,139.17	13,159.84	0.29	-0.25	-0.15
20,155.00	89.50	92.10	7,182.18	-740.48	13,233.12	13,253.82	0.37	-0.24	0.28
20,249.00	89.39	92.18	7,183.09	-743.99	13,327.05	13,347.80	0.14	-0.12	0.09

SDT
Survey Report

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
20,344.00	89.46	92.30	7,184.05	-747.71	13,421.97	13,442.78	0.15	0.07	0.13	
20,438.00	89.03	92.14	7,185.28	-751.35	13,515.89	13,536.76	0.48	-0.45	-0.17	
RU 649H Actual FPP @ 20438' MD										
20,439.00	89.03	92.14	7,185.30	-751.39	13,516.89	13,537.76	0.48	-0.45	-0.17	
20,533.00	89.36	92.77	7,186.62	-755.41	13,610.79	13,631.74	0.76	0.35	0.67	
20,569.00	89.43	92.55	7,187.00	-757.08	13,646.75	13,667.73	0.64	0.19	-0.61	
Final ST01 MWD Survey @ 20569' MD										
20,638.00	89.43	92.55	7,187.69	-760.15	13,715.68	13,736.73	0.00	0.00	0.00	
BHL ST01 @ 20638' MD										

Design Targets										
Target Name										
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude		Longitude
- Shape										
RU 649H SHL	0.00	0.00	0.00	0.00	0.00	2,143,448.37	2,848,017.09	36.8896790		-107.4061360
- actual wellpath hits target center										
- Point										
RU 649H OH BHL	0.00	0.00	6,950.96	-776.43	6,240.36	2,142,699.87	2,854,260.85	36.8875444		-107.3847973
- actual wellpath misses target center by 496.13ft at 13174.83ft MD (7215.77 TVD, -357.58 N, 6264.42 E)										
- Point										
RU 649H Actual FPP	0.00	0.00	7,185.28	-751.35	13,515.89	2,142,757.52	2,861,536.18	36.8876062		-107.3599189
- actual wellpath hits target center										
- Point										
RU 649H ST01 BHL	0.00	0.00	7,187.69	-760.15	13,715.68	2,142,749.61	2,861,736.01	36.8875818		-107.3592358
- actual wellpath hits target center										
- Point										
RU 649H PBHL ST	0.00	0.00	7,198.93	-765.34	13,665.67	2,142,744.21	2,861,686.03	36.8875676		-107.3594068
- actual wellpath misses target center by 23.84ft at 20569.00ft MD (7187.00 TVD, -757.08 N, 13646.75 E)										
- Point										
RU 649H Actual POE	0.00	0.00	7,200.36	-296.33	692.67	2,143,155.14	2,848,711.08	36.8888650		-107.4037674
- actual wellpath hits target center										
- Point										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
7,570.00	7,200.36	-296.33	692.67	RU 649H Actual POE @ 7570' MD	
20,438.00	7,185.28	-751.35	13,515.89	RU 649H Actual FPP @ 20438' MD	
20,569.00	7,187.00	-757.08	13,646.75	Final ST01 MWD Survey @ 20569' MD	
20,638.00	7,187.69	-760.15	13,715.68	BHL ST01 @ 20638' MD	

Checked By: _____

Approved By: _____

Date: _____

Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 649H

ST01

Design: ST01

Survey Report - Geographic

07 December, 2023

SDT
Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

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 27				
Site Position:		Northing:	2,143,451.58 usft	Latitude:	36.8896880
From:	Lat/Long	Easting:	2,848,002.44 usft	Longitude:	-107.4061860
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.26 °

Well	Rosa Unit 649H					
Well Position	+N/-S	0.00 ft	Northing:	2,143,448.37 usft	Latitude:	36.8896790
	+E/-W	0.00 ft	Easting:	2,848,017.09 usft	Longitude:	-107.4061360
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	6,305.00 ft

Wellbore	ST01				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HRGM	9/15/2023	8.50	63.28	49,441.24817656

Design	ST01				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	93.20	

Survey Program	Date	12/7/2023			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
74.20	1,001.80	Survey #1 - Gyro (OH)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
1,082.50	1,400.50	Survey #2 - Corrected Run 2 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
1,495.50	6,225.50	Survey #3 - Corrected Run 3 (OH)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
6,337.00	6,621.00	Survey #1 - ST01/Gyro (ST01)	A020Ga_GYRO-NS	OWSG Gyrocompass Gyro	
6,698.00	6,887.00	Survey #2 - ST01/Corrected Run 2 (ST01)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
7,006.00	20,569.00	Survey #3 - ST01/Corrected Run 3 (ST01)	MWD+HRGM+MS	MWD + HRGM + Multi-Station Correction	
20,638.00	20,638.00	Survey #4 - ST01/Projection (ST01)	Project	Projection	

Survey										
Measured	Vertical	Map	Map	Latitude	Longitude					
Depth	Depth	Northing	Easting			Inclination	Azimuth	+N/-S	+E/-W	
(ft)	(ft)	(usft)	(usft)			(°)	(°)	(ft)	(ft)	
0.00	0.00	2,143,448.37	2,848,017.09	36.8896790	-107.4061360	0.00	0.00	0.00	0.00	
74.20	0.26	2,143,448.52	2,848,017.02	36.8896794	-107.4061363	0.15	333.90	0.15	-0.07	
165.36	0.38	2,143,448.96	2,848,016.77	36.8896806	-107.4061371	0.60	329.11	0.60	-0.32	
256.40	0.32	2,143,449.44	2,848,016.48	36.8896819	-107.4061381	1.07	328.79	1.07	-0.61	
347.59	0.35	2,143,449.90	2,848,016.48	36.8896832	-107.4061381	1.54	27.94	1.54	-0.61	
440.15	0.40	2,143,450.09	2,848,016.92	36.8896837	-107.4061365	1.73	100.75	1.73	-0.16	

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
534.77	1.18	158.75	534.76	0.76	0.52	2,143,449.13	2,848,017.61	36.8896810	-107.4061342	
629.29	2.63	166.70	629.22	-2.26	1.37	2,143,446.11	2,848,018.47	36.8896727	-107.4061313	
723.92	3.85	172.54	723.70	-7.52	2.28	2,143,440.85	2,848,019.41	36.8896583	-107.4061282	
818.59	4.68	170.06	818.11	-14.48	3.36	2,143,433.90	2,848,020.52	36.8896392	-107.4061245	
912.85	5.33	167.20	912.01	-22.54	5.00	2,143,425.85	2,848,022.19	36.8896171	-107.4061189	
1,001.80	6.13	165.28	1,000.51	-31.16	7.12	2,143,417.24	2,848,024.35	36.8895934	-107.4061117	
1,082.50	6.42	165.87	1,080.73	-39.70	9.31	2,143,408.71	2,848,026.58	36.8895699	-107.4061042	
1,177.50	6.11	177.33	1,175.16	-49.90	10.85	2,143,398.51	2,848,028.16	36.8895419	-107.4060989	
1,305.50	5.25	179.24	1,302.53	-62.56	11.24	2,143,385.86	2,848,028.61	36.8895071	-107.4060976	
1,400.50	5.71	181.19	1,397.10	-71.63	11.20	2,143,376.78	2,848,028.61	36.8894822	-107.4060977	
1,495.50	4.64	179.55	1,491.71	-80.20	11.13	2,143,368.22	2,848,028.58	36.8894587	-107.4060979	
1,591.50	3.14	170.72	1,587.49	-86.68	11.59	2,143,361.74	2,848,029.07	36.8894409	-107.4060964	
1,686.50	3.21	165.89	1,682.34	-91.83	12.66	2,143,356.60	2,848,030.16	36.8894267	-107.4060927	
1,781.50	4.23	160.16	1,777.14	-97.70	14.49	2,143,350.73	2,848,032.02	36.8894106	-107.4060864	
1,877.50	3.94	173.07	1,872.90	-104.31	16.09	2,143,344.13	2,848,033.65	36.8893925	-107.4060810	
1,971.50	3.29	189.53	1,966.71	-110.17	16.04	2,143,338.27	2,848,033.62	36.8893763	-107.4060812	
2,066.50	3.08	195.75	2,061.57	-115.32	14.89	2,143,333.12	2,848,032.50	36.8893622	-107.4060851	
2,161.50	3.51	198.47	2,156.41	-120.53	13.28	2,143,327.90	2,848,030.91	36.8893479	-107.4060906	
2,257.50	4.55	200.21	2,252.17	-126.89	11.03	2,143,321.53	2,848,028.69	36.8893304	-107.4060983	
2,352.50	4.84	202.09	2,346.85	-134.14	8.22	2,143,314.26	2,848,025.91	36.8893105	-107.4061079	
2,447.50	4.51	198.79	2,441.54	-141.39	5.51	2,143,307.00	2,848,023.24	36.8892906	-107.4061172	
2,542.50	3.88	190.41	2,536.28	-148.09	3.73	2,143,300.30	2,848,021.48	36.8892722	-107.4061233	
2,637.50	3.21	167.84	2,631.10	-153.85	3.71	2,143,294.53	2,848,021.49	36.8892564	-107.4061233	
2,733.50	2.49	149.26	2,726.99	-158.27	5.34	2,143,290.12	2,848,023.14	36.8892442	-107.4061177	
2,828.50	2.66	129.79	2,821.89	-161.46	8.09	2,143,286.95	2,848,025.90	36.8892355	-107.4061083	
2,923.50	2.92	127.14	2,916.78	-164.33	11.71	2,143,284.09	2,848,029.54	36.8892276	-107.4060960	
3,018.50	3.42	137.77	3,011.64	-167.89	15.54	2,143,280.55	2,848,033.39	36.8892178	-107.4060829	
3,114.50	3.93	143.60	3,107.44	-172.66	19.42	2,143,275.80	2,848,037.28	36.8892047	-107.4060696	
3,209.50	4.37	137.46	3,202.19	-177.94	23.80	2,143,270.53	2,848,041.69	36.8891902	-107.4060546	
3,304.50	4.99	149.61	3,296.87	-184.17	28.34	2,143,264.32	2,848,046.25	36.8891731	-107.4060391	
3,400.50	5.34	162.96	3,392.49	-192.05	31.76	2,143,256.47	2,848,049.71	36.8891515	-107.4060274	
3,495.50	6.12	165.01	3,487.01	-201.17	34.36	2,143,247.36	2,848,052.35	36.8891264	-107.4060185	
3,590.50	4.91	174.78	3,581.57	-210.11	36.04	2,143,238.43	2,848,054.07	36.8891019	-107.4060128	
3,685.50	3.93	191.15	3,676.29	-217.35	35.78	2,143,231.18	2,848,053.85	36.8890820	-107.4060136	
3,780.50	4.10	196.79	3,771.06	-223.79	34.17	2,143,224.73	2,848,052.27	36.8890643	-107.4060191	
3,876.50	3.06	193.45	3,866.87	-229.57	32.59	2,143,218.94	2,848,050.70	36.8890484	-107.4060246	
3,971.50	2.66	185.04	3,961.75	-234.23	31.80	2,143,214.28	2,848,049.94	36.8890356	-107.4060273	
4,066.50	2.57	179.51	4,056.66	-238.56	31.63	2,143,209.95	2,848,049.79	36.8890237	-107.4060279	
4,161.50	2.56	170.83	4,151.56	-242.78	31.98	2,143,205.73	2,848,050.16	36.8890121	-107.4060266	
4,256.50	2.92	180.95	4,246.45	-247.30	32.28	2,143,201.22	2,848,050.48	36.8889997	-107.4060256	
4,352.50	3.27	183.78	4,342.31	-252.48	32.06	2,143,196.04	2,848,050.28	36.8889855	-107.4060264	
4,447.50	3.46	178.99	4,437.15	-258.05	31.93	2,143,190.47	2,848,050.18	36.8889702	-107.4060268	
4,541.50	3.63	183.58	4,530.97	-263.85	31.80	2,143,184.66	2,848,050.07	36.8889542	-107.4060273	
4,637.50	3.78	184.40	4,626.77	-270.04	31.36	2,143,178.47	2,848,049.66	36.8889372	-107.4060288	
4,732.50	3.75	180.15	4,721.56	-276.27	31.12	2,143,172.24	2,848,049.44	36.8889201	-107.4060296	
4,826.50	4.11	178.92	4,815.34	-282.71	31.17	2,143,165.80	2,848,049.53	36.8889024	-107.4060294	
4,921.50	4.24	176.26	4,910.09	-289.62	31.46	2,143,158.89	2,848,049.85	36.8888835	-107.4060284	
5,016.50	4.28	176.43	5,004.83	-296.66	31.91	2,143,151.85	2,848,050.33	36.8888641	-107.4060269	
5,114.50	4.65	173.50	5,102.53	-304.26	32.59	2,143,144.26	2,848,051.04	36.8888432	-107.4060246	
5,209.50	5.01	175.40	5,197.19	-312.22	33.36	2,143,136.30	2,848,051.85	36.8888214	-107.4060219	
5,304.50	4.65	172.07	5,291.86	-320.17	34.22	2,143,128.36	2,848,052.75	36.8887995	-107.4060190	
5,368.50	4.07	172.44	5,355.67	-324.99	34.88	2,143,123.54	2,848,053.43	36.8887863	-107.4060167	
5,463.50	3.87	174.59	5,450.44	-331.52	35.63	2,143,117.01	2,848,054.20	36.8887684	-107.4060142	
5,526.50	3.95	174.25	5,513.30	-335.80	36.04	2,143,112.74	2,848,054.64	36.8887566	-107.4060128	
5,590.50	3.83	175.41	5,577.15	-340.12	36.44	2,143,108.41	2,848,055.05	36.8887447	-107.4060114	

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,653.50	4.00	176.52	5,640.00	-344.41	36.74	2,143,104.12	2,848,055.37	36.8887329	-107.4060104
5,717.50	3.98	175.08	5,703.85	-348.85	37.06	2,143,099.69	2,848,055.72	36.8887208	-107.4060093
5,781.50	3.84	171.79	5,767.70	-353.19	37.56	2,143,095.35	2,848,056.23	36.8887088	-107.4060076
5,844.50	3.39	170.23	5,830.57	-357.11	38.18	2,143,091.43	2,848,056.87	36.8886981	-107.4060055
5,908.50	3.56	169.95	5,894.45	-360.93	38.85	2,143,087.61	2,848,057.55	36.8886876	-107.4060032
5,971.50	3.72	167.90	5,957.33	-364.86	39.62	2,143,083.69	2,848,058.34	36.8886768	-107.4060005
6,035.50	3.88	167.25	6,021.19	-369.00	40.53	2,143,079.56	2,848,059.27	36.8886654	-107.4059974
6,098.50	4.02	167.15	6,084.04	-373.23	41.49	2,143,075.33	2,848,060.25	36.8886538	-107.4059941
6,162.50	4.18	158.16	6,147.87	-377.58	42.86	2,143,070.98	2,848,061.64	36.8886418	-107.4059895
6,225.50	4.32	165.49	6,210.70	-382.01	44.31	2,143,066.56	2,848,063.11	36.8886297	-107.4059845
6,337.00	11.35	170.24	6,321.09	-396.91	47.22	2,143,051.68	2,848,066.09	36.8885888	-107.4059745
6,432.00	13.20	165.94	6,413.92	-416.64	51.44	2,143,031.96	2,848,070.40	36.8885345	-107.4059601
6,527.00	12.23	166.20	6,506.59	-436.94	56.48	2,143,011.69	2,848,075.52	36.8884788	-107.4059429
6,621.00	14.96	124.98	6,598.15	-453.60	68.82	2,142,995.08	2,848,087.94	36.8884330	-107.4059007
6,698.00	19.23	102.81	6,671.81	-462.13	89.36	2,142,986.65	2,848,108.52	36.8884096	-107.4058304
6,792.00	24.70	87.38	6,759.03	-464.66	124.13	2,142,984.26	2,848,143.30	36.8884026	-107.4057115
6,887.00	30.23	80.11	6,843.31	-459.64	167.57	2,142,989.48	2,848,186.71	36.8884164	-107.4055630
7,006.00	39.16	71.87	6,941.11	-442.76	232.95	2,143,006.65	2,848,252.02	36.8884628	-107.4053394
7,101.00	42.71	72.62	7,012.86	-423.80	292.23	2,143,025.88	2,848,311.21	36.8885149	-107.4051367
7,195.00	55.65	74.26	7,074.18	-403.66	360.29	2,143,046.32	2,848,379.18	36.8885702	-107.4049040
7,290.00	64.52	73.74	7,121.51	-380.97	439.36	2,143,069.36	2,848,458.15	36.8886325	-107.4046336
7,384.00	68.98	72.31	7,158.61	-355.75	521.93	2,143,094.96	2,848,540.61	36.8887018	-107.4043512
7,479.00	78.41	70.31	7,185.25	-326.53	608.19	2,143,124.56	2,848,626.74	36.8887820	-107.4040563
7,570.00	82.48	70.35	7,200.36	-296.33	692.67	2,143,155.14	2,848,711.08	36.8888650	-107.4037674
RU 649H Actual POE @ 7570' MD									
7,574.00	82.66	70.35	7,200.87	-294.99	696.41	2,143,156.49	2,848,714.81	36.8888687	-107.4037546
7,668.00	88.59	71.46	7,208.04	-264.35	784.94	2,143,187.53	2,848,803.20	36.8889528	-107.4034519
7,762.00	89.13	72.78	7,209.91	-235.50	874.38	2,143,216.79	2,848,892.51	36.8890321	-107.4031460
7,857.00	90.20	73.81	7,210.47	-208.19	965.37	2,143,244.50	2,848,983.38	36.8891071	-107.4028349
7,952.00	90.27	76.07	7,210.08	-183.51	1,057.10	2,143,269.59	2,849,075.00	36.8891749	-107.4025212
8,046.00	90.10	77.80	7,209.77	-162.26	1,148.66	2,143,291.25	2,849,166.46	36.8892332	-107.4022081
8,141.00	91.44	79.05	7,208.50	-143.20	1,241.71	2,143,310.73	2,849,259.43	36.8892855	-107.4018899
8,235.00	90.84	81.39	7,206.63	-127.24	1,334.32	2,143,327.10	2,849,351.97	36.8893294	-107.4015732
8,330.00	89.23	83.23	7,206.57	-114.53	1,428.46	2,143,340.24	2,849,446.05	36.8893643	-107.4012513
8,424.00	89.06	84.98	7,207.97	-104.87	1,521.95	2,143,350.31	2,849,539.49	36.8893908	-107.4009316
8,519.00	89.97	87.43	7,208.77	-98.59	1,616.73	2,143,357.02	2,849,634.24	36.8894080	-107.4006075
8,613.00	90.67	89.57	7,208.25	-96.13	1,710.69	2,143,359.90	2,849,728.19	36.8894148	-107.4002862
8,708.00	89.97	92.27	7,207.72	-97.65	1,805.67	2,143,358.80	2,849,823.17	36.8894106	-107.3999614
8,802.00	90.37	95.07	7,207.44	-103.67	1,899.46	2,143,353.20	2,849,917.00	36.8893940	-107.3996407
8,897.00	89.97	94.87	7,207.16	-111.90	1,994.11	2,143,345.40	2,850,011.67	36.8893714	-107.3993171
8,991.00	89.56	94.83	7,207.54	-119.85	2,087.77	2,143,337.87	2,850,105.37	36.8893496	-107.3989968
9,086.00	89.16	94.69	7,208.60	-127.73	2,182.44	2,143,330.41	2,850,200.07	36.8893279	-107.3986731
9,180.00	88.62	94.26	7,210.43	-135.06	2,276.13	2,143,323.50	2,850,293.80	36.8893077	-107.3983527
9,275.00	89.80	92.72	7,211.74	-140.84	2,370.94	2,143,318.14	2,850,388.63	36.8892918	-107.3980285
9,369.00	89.29	92.90	7,212.48	-145.45	2,464.82	2,143,313.95	2,850,482.54	36.8892791	-107.3977074
9,464.00	88.45	92.69	7,214.36	-150.08	2,559.69	2,143,309.74	2,850,577.42	36.8892664	-107.3973830
9,558.00	90.67	92.82	7,215.08	-154.60	2,653.58	2,143,305.65	2,850,671.33	36.8892540	-107.3970620
9,653.00	90.37	93.17	7,214.21	-159.57	2,748.44	2,143,301.11	2,850,766.21	36.8892403	-107.3967376
9,747.00	89.63	92.66	7,214.21	-164.35	2,842.32	2,143,296.75	2,850,860.11	36.8892271	-107.3964166
9,842.00	89.09	92.35	7,215.28	-168.50	2,937.22	2,143,293.02	2,850,955.03	36.8892157	-107.3960921
9,947.00	90.30	93.04	7,215.83	-173.43	3,042.10	2,143,288.55	2,851,059.93	36.8892021	-107.3957334
10,041.00	89.66	93.55	7,215.87	-178.84	3,135.95	2,143,283.57	2,851,153.80	36.8891873	-107.3954125
10,135.00	89.16	93.70	7,216.84	-184.78	3,229.75	2,143,278.05	2,851,247.63	36.8891709	-107.3950918
10,230.00	90.50	92.45	7,217.12	-189.88	3,324.61	2,143,273.38	2,851,342.51	36.8891569	-107.3947674
10,324.00	90.00	92.57	7,216.71	-193.99	3,418.52	2,143,269.68	2,851,436.44	36.8891455	-107.3944463

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,418.00	89.73	92.15	7,216.93	-197.86	3,512.44	2,143,266.23	2,851,530.37	36.8891349	-107.3941251
10,513.00	89.43	92.11	7,217.63	-201.39	3,607.37	2,143,263.12	2,851,625.32	36.8891251	-107.3938005
10,607.00	88.99	92.16	7,218.92	-204.90	3,701.30	2,143,260.04	2,851,719.26	36.8891155	-107.3934793
10,702.00	90.47	92.88	7,219.37	-209.07	3,796.20	2,143,256.29	2,851,814.18	36.8891040	-107.3931548
10,796.00	90.00	92.88	7,218.98	-213.79	3,890.08	2,143,251.99	2,851,908.08	36.8890910	-107.3928338
10,891.00	89.53	92.35	7,219.37	-218.13	3,984.98	2,143,248.08	2,852,003.00	36.8890790	-107.3925092
10,985.00	89.36	93.58	7,220.28	-222.99	4,078.85	2,143,243.64	2,852,096.89	36.8890656	-107.3921883
11,080.00	90.57	94.26	7,220.34	-229.49	4,173.62	2,143,237.57	2,852,191.69	36.8890478	-107.3918642
11,174.00	90.37	94.19	7,219.57	-236.41	4,267.36	2,143,231.06	2,852,285.46	36.8890287	-107.3915436
11,269.00	90.27	94.00	7,219.04	-243.19	4,362.12	2,143,224.70	2,852,380.25	36.8890100	-107.3912196
11,363.00	89.80	93.85	7,218.98	-249.63	4,455.90	2,143,218.69	2,852,474.05	36.8889923	-107.3908989
11,458.00	91.04	94.05	7,218.29	-256.17	4,550.67	2,143,212.57	2,852,568.85	36.8889743	-107.3905749
11,552.00	90.91	93.91	7,216.69	-262.70	4,644.43	2,143,206.46	2,852,662.64	36.8889563	-107.3902543
11,647.00	90.71	93.55	7,215.34	-268.88	4,739.22	2,143,200.71	2,852,757.46	36.8889393	-107.3899301
11,742.00	90.13	93.49	7,214.65	-274.71	4,834.04	2,143,195.30	2,852,852.30	36.8889233	-107.3896059
11,836.00	89.63	93.60	7,214.84	-280.52	4,927.86	2,143,189.91	2,852,946.14	36.8889073	-107.3892851
11,931.00	88.96	93.65	7,216.01	-286.53	5,022.66	2,143,184.33	2,853,040.97	36.8888907	-107.3889609
12,025.00	90.00	93.23	7,216.87	-292.17	5,116.48	2,143,179.11	2,853,134.82	36.8888752	-107.3886401
12,120.00	89.77	93.33	7,217.06	-297.60	5,211.33	2,143,174.10	2,853,229.69	36.8888602	-107.3883158
12,214.00	90.74	93.22	7,216.64	-302.97	5,305.17	2,143,169.15	2,853,323.55	36.8888454	-107.3879949
12,309.00	90.30	93.17	7,215.78	-308.27	5,400.02	2,143,164.28	2,853,418.43	36.8888308	-107.3876705
12,404.00	90.17	93.24	7,215.39	-313.58	5,494.87	2,143,159.39	2,853,513.30	36.8888162	-107.3873462
12,499.00	90.00	93.70	7,215.25	-319.33	5,589.70	2,143,154.06	2,853,608.15	36.8888003	-107.3870219
12,593.00	89.26	93.43	7,215.85	-325.17	5,683.51	2,143,148.64	2,853,701.99	36.8887842	-107.3867011
12,687.00	90.54	93.42	7,216.02	-330.79	5,777.34	2,143,143.44	2,853,795.84	36.8887687	-107.3863803
12,782.00	90.40	93.23	7,215.24	-336.30	5,872.18	2,143,138.36	2,853,890.70	36.8887535	-107.3860560
12,876.00	90.03	92.99	7,214.88	-341.40	5,966.04	2,143,133.68	2,853,984.59	36.8887395	-107.3857350
12,970.00	89.70	93.21	7,215.11	-346.48	6,059.90	2,143,129.02	2,854,078.47	36.8887255	-107.3854141
13,065.00	89.26	93.09	7,215.97	-351.70	6,154.75	2,143,124.22	2,854,173.34	36.8887111	-107.3850897
13,159.00	90.74	93.06	7,215.97	-356.74	6,248.62	2,143,119.60	2,854,267.23	36.8886972	-107.3847688
13,254.00	90.47	92.75	7,214.97	-361.56	6,343.49	2,143,115.21	2,854,362.12	36.8886839	-107.3844444
13,348.00	90.20	92.90	7,214.42	-366.19	6,437.37	2,143,111.00	2,854,456.02	36.8886711	-107.3841233
13,443.00	89.93	93.15	7,214.31	-371.20	6,532.24	2,143,106.41	2,854,550.91	36.8886573	-107.3837989
13,537.00	89.66	93.00	7,214.64	-376.25	6,626.10	2,143,101.78	2,854,644.80	36.8886434	-107.3834780
13,631.00	91.14	94.02	7,213.99	-382.00	6,719.92	2,143,096.45	2,854,738.64	36.8886275	-107.3831572
13,725.00	91.01	93.80	7,212.22	-388.41	6,813.69	2,143,090.46	2,854,832.43	36.8886098	-107.3828365
13,820.00	90.77	93.43	7,210.75	-394.40	6,908.48	2,143,084.90	2,854,927.26	36.8885933	-107.3825124
13,914.00	90.57	92.89	7,209.65	-399.58	7,002.33	2,143,080.14	2,855,021.13	36.8885790	-107.3821915
14,009.00	89.93	92.15	7,209.24	-403.76	7,097.24	2,143,076.38	2,855,116.05	36.8885675	-107.3818669
14,104.00	89.76	92.19	7,209.49	-407.35	7,192.17	2,143,073.21	2,855,211.00	36.8885575	-107.3815423
14,198.00	89.80	91.92	7,209.85	-410.72	7,286.11	2,143,070.26	2,855,304.95	36.8885482	-107.3812211
14,293.00	89.73	91.69	7,210.24	-413.72	7,381.06	2,143,067.69	2,855,399.92	36.8885399	-107.3808964
14,387.00	90.94	92.58	7,209.69	-417.22	7,474.99	2,143,064.61	2,855,493.86	36.8885302	-107.3805752
14,482.00	90.57	92.64	7,208.44	-421.54	7,569.89	2,143,060.71	2,855,588.77	36.8885183	-107.3802507
14,577.00	90.30	93.08	7,207.72	-426.28	7,664.77	2,143,056.40	2,855,683.67	36.8885052	-107.3799263
14,671.00	90.03	92.69	7,207.45	-431.02	7,758.65	2,143,052.09	2,855,777.57	36.8884921	-107.3796053
14,765.00	89.80	92.37	7,207.59	-435.16	7,852.55	2,143,048.36	2,855,871.50	36.8884807	-107.3792842
14,860.00	89.53	91.96	7,208.14	-438.75	7,947.48	2,143,045.19	2,855,966.44	36.8884707	-107.3789596
14,954.00	89.66	93.97	7,208.81	-443.62	8,041.35	2,143,040.75	2,856,060.33	36.8884573	-107.3786386
15,049.00	89.56	94.11	7,209.46	-450.31	8,136.11	2,143,034.48	2,856,155.12	36.8884388	-107.3783146
15,143.00	90.77	93.98	7,209.18	-456.94	8,229.88	2,143,028.27	2,856,248.91	36.8884205	-107.3779939
15,238.00	90.70	94.14	7,207.97	-463.66	8,324.63	2,143,021.97	2,856,343.70	36.8884020	-107.3776699
15,332.00	90.27	93.59	7,207.17	-470.00	8,418.41	2,143,016.05	2,856,437.51	36.8883845	-107.3773493
15,427.00	90.10	93.24	7,206.86	-475.66	8,513.24	2,143,010.82	2,856,532.36	36.8883689	-107.3770250
15,521.00	90.13	93.81	7,206.68	-481.44	8,607.06	2,143,005.46	2,856,626.21	36.8883529	-107.3767042

SDT

Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,616.00	90.07	93.58	7,206.51	-487.56	8,701.87	2,142,999.76	2,856,721.04	36.8883360	-107.3763800	
15,710.00	89.80	93.63	7,206.62	-493.47	8,795.68	2,142,994.27	2,856,814.87	36.8883197	-107.3760592	
15,805.00	89.33	93.64	7,207.34	-499.49	8,890.49	2,142,988.67	2,856,909.71	36.8883031	-107.3757350	
15,899.00	89.30	93.91	7,208.46	-505.68	8,984.28	2,142,982.91	2,857,003.52	36.8882860	-107.3754143	
15,994.00	91.14	93.44	7,208.10	-511.77	9,079.08	2,142,977.24	2,857,098.35	36.8882692	-107.3750900	
16,088.00	91.21	93.72	7,206.17	-517.64	9,172.87	2,142,971.79	2,857,192.17	36.8882530	-107.3747694	
16,183.00	90.77	93.79	7,204.53	-523.86	9,267.65	2,142,966.00	2,857,286.98	36.8882358	-107.3744453	
16,277.00	90.60	93.72	7,203.40	-530.02	9,361.45	2,142,960.26	2,857,380.80	36.8882188	-107.3741246	
16,372.00	90.40	93.55	7,202.57	-536.04	9,456.25	2,142,954.66	2,857,475.63	36.8882022	-107.3738005	
16,467.00	90.13	93.40	7,202.14	-541.80	9,551.07	2,142,949.33	2,857,570.48	36.8881863	-107.3734762	
16,561.00	90.34	93.18	7,201.75	-547.19	9,644.92	2,142,944.35	2,857,664.34	36.8881714	-107.3731553	
16,656.00	90.30	93.93	7,201.22	-553.08	9,739.73	2,142,938.89	2,857,759.18	36.8881551	-107.3728311	
16,750.00	90.30	93.67	7,200.73	-559.31	9,833.53	2,142,933.08	2,857,853.00	36.8881379	-107.3725104	
16,845.00	90.23	94.01	7,200.29	-565.67	9,928.31	2,142,927.14	2,857,947.81	36.8881204	-107.3721863	
16,939.00	89.80	93.77	7,200.26	-572.05	10,022.09	2,142,921.18	2,858,041.63	36.8881028	-107.3718656	
17,034.00	89.33	93.67	7,200.98	-578.21	10,116.89	2,142,915.44	2,858,136.45	36.8880857	-107.3715415	
17,129.00	91.28	92.92	7,200.48	-583.67	10,211.73	2,142,910.41	2,858,231.31	36.8880706	-107.3712172	
17,223.00	91.21	92.61	7,198.44	-588.21	10,305.60	2,142,906.30	2,858,325.20	36.8880581	-107.3708962	
17,318.00	90.77	92.70	7,196.79	-592.61	10,400.48	2,142,902.32	2,858,420.10	36.8880459	-107.3705718	
17,412.00	90.94	92.47	7,195.39	-596.85	10,494.37	2,142,898.50	2,858,514.01	36.8880342	-107.3702507	
17,507.00	90.81	92.18	7,193.94	-600.70	10,589.28	2,142,895.07	2,858,608.94	36.8880235	-107.3699261	
17,601.00	90.44	92.21	7,192.92	-604.30	10,683.21	2,142,891.89	2,858,702.88	36.8880135	-107.3696050	
17,696.00	90.27	92.16	7,192.33	-607.92	10,778.14	2,142,888.70	2,858,797.82	36.8880035	-107.3692804	
17,791.00	90.00	92.20	7,192.10	-611.54	10,873.07	2,142,885.51	2,858,892.77	36.8879934	-107.3689558	
17,885.00	89.66	92.15	7,192.38	-615.10	10,967.00	2,142,882.36	2,858,986.71	36.8879835	-107.3686346	
17,980.00	90.61	92.00	7,192.16	-618.54	11,061.94	2,142,879.35	2,859,081.66	36.8879740	-107.3683099	
18,075.00	90.37	92.28	7,191.35	-622.09	11,156.87	2,142,876.22	2,859,176.61	36.8879641	-107.3679853	
18,169.00	90.17	92.62	7,190.90	-626.11	11,250.78	2,142,872.63	2,859,270.54	36.8879530	-107.3676642	
18,264.00	90.10	92.56	7,190.68	-630.40	11,345.68	2,142,868.76	2,859,365.46	36.8879411	-107.3673397	
18,358.00	89.93	92.76	7,190.65	-634.76	11,439.58	2,142,864.82	2,859,459.38	36.8879290	-107.3670186	
18,453.00	90.00	93.07	7,190.71	-639.59	11,534.46	2,142,860.41	2,859,554.27	36.8879156	-107.3666942	
18,548.00	90.07	93.72	7,190.65	-645.22	11,629.29	2,142,855.21	2,859,649.13	36.8879001	-107.3663699	
18,642.00	89.93	93.97	7,190.65	-651.52	11,723.08	2,142,849.32	2,859,742.95	36.8878826	-107.3660492	
18,737.00	90.03	94.56	7,190.69	-658.59	11,817.82	2,142,842.68	2,859,837.71	36.8878631	-107.3657253	
18,831.00	89.87	94.35	7,190.77	-665.89	11,911.53	2,142,835.80	2,859,931.46	36.8878430	-107.3654049	
18,926.00	89.76	94.29	7,191.08	-673.05	12,006.26	2,142,829.07	2,860,026.22	36.8878232	-107.3650809	
19,020.00	89.83	94.22	7,191.41	-680.02	12,100.00	2,142,822.51	2,860,119.99	36.8878039	-107.3647604	
19,115.00	89.73	93.93	7,191.78	-686.77	12,194.76	2,142,816.19	2,860,214.78	36.8877853	-107.3644364	
19,210.00	89.73	94.11	7,192.23	-693.43	12,289.53	2,142,809.95	2,860,309.57	36.8877669	-107.3641124	
19,304.00	90.24	93.72	7,192.25	-699.85	12,383.31	2,142,803.95	2,860,403.38	36.8877491	-107.3637917	
19,399.00	90.34	93.58	7,191.77	-705.90	12,478.11	2,142,798.33	2,860,498.21	36.8877324	-107.3634675	
19,494.00	89.87	93.64	7,191.59	-711.88	12,572.92	2,142,792.77	2,860,593.05	36.8877159	-107.3631433	
19,588.00	91.92	92.74	7,190.13	-717.11	12,666.76	2,142,787.96	2,860,686.91	36.8877014	-107.3628225	
19,683.00	92.49	92.85	7,186.47	-721.74	12,761.58	2,142,783.76	2,860,781.74	36.8876885	-107.3624982	
19,777.00	91.51	92.98	7,183.19	-726.52	12,855.40	2,142,779.40	2,860,875.58	36.8876753	-107.3621774	
19,872.00	90.40	92.11	7,181.61	-730.73	12,950.29	2,142,775.61	2,860,970.49	36.8876636	-107.3618530	
19,966.00	89.97	91.98	7,181.30	-734.09	13,044.23	2,142,772.68	2,861,064.45	36.8876543	-107.3615318	
20,061.00	89.73	91.84	7,181.55	-737.25	13,139.17	2,142,769.93	2,861,159.41	36.8876454	-107.3612071	
20,155.00	89.50	92.10	7,182.18	-740.48	13,233.12	2,142,767.12	2,861,253.36	36.8876364	-107.3608859	
20,249.00	89.39	92.18	7,183.09	-743.99	13,327.05	2,142,764.03	2,861,347.31	36.8876267	-107.3605647	
20,344.00	89.46	92.30	7,184.05	-747.71	13,421.97	2,142,760.75	2,861,442.24	36.8876164	-107.3602401	
20,438.00	89.03	92.14	7,185.28	-751.35	13,515.89	2,142,757.52	2,861,536.18	36.8876062	-107.3599189	
RU 649H Actual FPP @ 20438' MD										
20,439.00	89.03	92.14	7,185.30	-751.39	13,516.89	2,142,757.49	2,861,537.18	36.8876061	-107.3599155	
20,533.00	89.36	92.77	7,186.62	-755.41	13,610.79	2,142,753.89	2,861,631.10	36.8875949	-107.3595944	

SDT
Survey Report - Geographic

Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 649H
Project:	Rio Arriba, NM NAD83	TVD Reference:	6305+30 @ 6335.00ft (H&P 530)
Site:	Rosa Unit 27	MD Reference:	6305+30 @ 6335.00ft (H&P 530)
Well:	Rosa Unit 649H	North Reference:	True
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000 Multi User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
20,569.00	89.43	92.55	7,187.00	-757.08	13,646.75	2,142,752.38	2,861,667.07	36.8875903	-107.3594715
Final ST01 MWD Survey @ 20569' MD									
20,638.00	89.43	92.55	7,187.69	-760.15	13,715.68	2,142,749.61	2,861,736.01	36.8875818	-107.3592358
BHL ST01 @ 20638' MD									

Design Targets									
Target Name									
- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- Shape									
RU 649H SHL	0.00	0.00	0.00	0.00	0.00	2,143,448.37	2,848,017.09	36.8896790	-107.4061360
- actual wellpath hits target center									
- Point									
RU 649H OH BHL	0.00	0.00	6,950.96	-776.43	6,240.36	2,142,699.87	2,854,260.85	36.8875444	-107.3847973
- actual wellpath misses target center by 496.13ft at 13174.83ft MD (7215.77 TVD, -357.58 N, 6264.42 E)									
- Point									
RU 649H Actual FPP	0.00	0.00	7,185.28	-751.35	13,515.89	2,142,757.52	2,861,536.18	36.8876062	-107.3599189
- actual wellpath hits target center									
- Point									
RU 649H ST01 BHL	0.00	0.00	7,187.69	-760.15	13,715.68	2,142,749.61	2,861,736.01	36.8875818	-107.3592358
- actual wellpath hits target center									
- Point									
RU 649H PBHL ST	0.00	0.00	7,198.93	-765.34	13,665.67	2,142,744.21	2,861,686.03	36.8875676	-107.3594068
- actual wellpath misses target center by 23.84ft at 20569.00ft MD (7187.00 TVD, -757.08 N, 13646.75 E)									
- Point									
RU 649H Actual POE	0.00	0.00	7,200.36	-296.33	692.67	2,143,155.14	2,848,711.08	36.8888650	-107.4037674
- actual wellpath hits target center									
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,570.00	7,200.36	-296.33	692.67	RU 649H Actual POE @ 7570' MD
20,438.00	7,185.28	-751.35	13,515.89	RU 649H Actual FPP @ 20438' MD
20,569.00	7,187.00	-757.08	13,646.75	Final ST01 MWD Survey @ 20569' MD
20,638.00	7,187.69	-760.15	13,715.68	BHL ST01 @ 20638' MD

Checked By: _____

Approved By: _____

Date: _____

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

SUNDRY NOTICES AND REPORTS ON WELLS
**Do not use this form for proposals to drill or to re-enter an
abandoned well. Use Form 3160-3 (APD) for such proposals.**

5. Lease Serial No. NMSF078769

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

LOGOS OPERATING, LLC

3a. Address 2010 AFTON PLACE
FARMINGTON, NM 87401

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

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

965' FNL & 480' FWL UL C SEC 19 31N 5W

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

NMNM78407E

8. Well Name and No.

ROSA UNIT 649H

9. API Well No.

30-039-31410

10. Field and Pool or Exploratory Area

BASIN MANCOS

11. Country or Parish, State

RIO ARRIBA COUNTY, NM

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

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

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

10/12/2023- MIRU Frack stack.
10/13/23- MIRU Equip and WL. PT to 11,500 PSI. Test good. Open toe sleeves; 20,387'- 20,390', 20,435'- 20,439'
10/14/23 thru 10/16/23- Continue to RU for frac.
10/17/23 thru 11/3/23- Frac'd stage 1 w/ 230,249lb Proppant and 6,707 bls of slickwater. Start frac. Set CFP @ 20,372'
Perf intervals @ 20,357'- 7,600' total holes 3,032. Perfed 5-6spf, w/ 0.38" holes, 60 phasing. Frac 65 total stages w/ 100 # mesh w/ 40/70 sand & 29,272,632lb Proppant and
768,109 bls of slickwater. Set kill plug @ 7,570'. PT to 6,500# PSI- good test.
11/4/23 thru 11/7/23- Prep to RDMO Frac.
11/8/23 thru 11/9/23- Prep for CTU drillout operations. DO kill plug @ 7,570'. Circulate, CO & continue to DO composite frac plugs.
11/10/23- POOH w/2-3/8" CT and drill out BHA. RDMO
Per the approved operations plan, the 2-7/8", 6.5#, J-55, EUE, tubing will be run once volumes and pressures decline and could be close to a year after the well is brought online.

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

Lacey Granillo

Title Regulatory Specialist

Signature Lacey Granillo

Date 12/27/23

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States

(Instructions on page 2)

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

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local area or regional procedures and practices, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. If the proposal will involve **hydraulic fracturing operations**, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Submit To Appropriate District Office Two Copies <u>District I</u> 1625 N. French Dr., Hobbs, NM 88240 <u>District II</u> 811 S. First St., Artesia, NM 88210 <u>District III</u> 1000 Rio Brazos Rd., Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505		State of New Mexico Energy, Minerals and Natural Resources Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505				Form C-105 Revised April 3, 2017				
1. WELL API NO. 30-039-31410										
2. Type of Lease ☐ STATE ☐ FEE ☒ FED/INDIAN										
3. State Oil & Gas Lease No.										
WELL COMPLETION OR RECOMPLETION REPORT AND LOG										
4. Reason for filing: ☒ COMPLETION REPORT (Fill in boxes #1 through #31 for State and Fee wells only) ☐ C-144 CLOSURE ATTACHMENT (Fill in boxes #1 through #9, #15 Date Rig Released and #32 and/or #33; attach this and the plat to the C-144 closure report in accordance with 19.15.17.13.K NMAC)							5. Lease Name or Unit Agreement Name ROSA UNIT			
							6. Well Number: 649H			
7. Type of Completion: ☒ NEW WELL ☐ WORKOVER ☐ DEEPENING ☐ PLUGBACK ☐ DIFFERENT RESERVOIR ☐ OTHER										
8. Name of Operator LOGOS OPERATING, LLC Amended							9. OGRID 289408			
10. Address of Operator 2010 AFTON PLACE, FARMINGTON, NM 87401							11. Pool name or Wildcat BASIN MANCOS			
12. Location	Unit Ltr	Section	Township	Range	Lot	Feet from the	N/S Line	Feet from the	E/W Line	County
Surface:	C	19	31N	R05W	1	965'	FNL	480'	FWL	RIO ARRIBA
BH:	H	21	31N	R06W		1717'	FNL	171'	FEL	RIO ARRIBA
13. Date Spudded 4/9/22	14. Date T.D. Reached 9/30/2023		15. Date Rig Released 9/30/23		16. Date Completed (Ready to Produce) 11/10/2023			17. Elevations (DF and RKB, RT, GR, etc.) 6305'		
18. Total Measured Depth of Well 20,638' MD / 7,188' TVD			19. Plug Back Measured Depth 20,538' MD / 7,187' TVD		20. Was Directional Survey Made? Y			21. Type Electric and Other Logs Run CBL		
22. Producing Interval(s), of this completion - Top, Bottom, Name BASIN MANCOS (7,600' MD to 20,439' MD)										
23. CASING RECORD (Report all strings set in well)										
CASING SIZE		WEIGHT LB./FT.		DEPTH SET		HOLE SIZE		CEMENTING RECORD		AMOUNT PULLED
13-3/8"		54.5#		322' (GL)		17-1/2"		395 sks		(81bbbs, 454cf)
9-5/8"		47#		6221'		12-1/2"		5976 sks		(2343bbbs, 12,834cf)
5-1/2"		20#		20,614'		8-1/2"		2876 sks		DV tool @ 4621' & 3085' (823bbbs, 4629cf) TOC @ 1720'
24. LINER RECORD										
SIZE	TOP	BOTTOM		SACKS CEMENT	SCREEN		25. TUBING RECORD			
							SIZE		DEPTH SET	PACKER SET
							Pending			
26. Perforation record (interval, size, and number) 7600' MD to 20,439' MD, 0.38" , 5-6SPF, 3080 total holes										
						27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.				
						DEPTH INTERVAL		AMOUNT AND KIND MATERIAL USED		
						7600' MD -20,439' MD		Frac'd 65 stages of, 29,502,881lb Proppant, 100# mesh & 40/70 sand. 774,816 bls of slickwater.		
28. PRODUCTION										
Date First Production 11/24/23		Production Method (Flowing, gas lift, pumping - Size and type pump) Flowing				Well Status (Prod. or Shut-in) Producing				
Date of Test 11/24/23	Hours Tested 12hrs	Choke Size 18/64	Prod'n For Test Period	Oil - Bbl n/a	Gas - MCF 2988 mcf	Water - Bbl. 504 bbbs	Gas - Oil Ratio n/a			
Flow Tubing Press. n/a	Casing Pressure 2568	Calculated 24-Hour Rate	Oil - Bbl. n/a	Gas - MCF 3698 mcf	Water - Bbl. 576 bbbs	Oil Gravity - API - (Corr.) n/a				
29. Disposition of Gas (Sold, used for fuel, vented, etc.) SOLD							30. Test Witnessed By			
31. List Attachments										
32. If a temporary pit was used at the well, attach a plat with the location of the temporary pit.							33. Rig Release Date:			
34. If an on-site burial was used at the well, report the exact location of the on-site burial:										
Latitude				Longitude				NAD83		

I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Printed

Signature: Lacey GranilloName Lacey GranilloTitle Regulatory SpecialistDate 3/1/24

E-mail Address lgranillo@logosresourcesllc.com

INSTRUCTIONS

This form is to be filed with the appropriate District Office of the Division not later than 20 days after the completion of any newly-drilled or deepened well and not later than 60 days after completion of closure. When submitted as a completion report, this shall be accompanied by one copy of all electrical and radio-activity logs run on the well and a summary of all special tests conducted, including drill stem tests. All depths reported shall be measured depths. In the case of directionally drilled wells, true vertical depths shall also be reported. For multiple completions, items 11, 12 and 26-31 shall be reported for each zone.

INDICATE FORMATION TOPS IN CONFORMANCE WITH GEOGRAPHICAL SECTION OF STATE

Southeastern New Mexico		Northwestern New Mexico	
T. Anhy	T. Canyon	T. Ojo Alamo 2448	T. Penn A"
T. Salt	T. Strawn	T. Kirtland 2547	T. Penn. "B"
B. Salt	T. Atoka	T. Fruitland 2893	T. Penn. "C"
T. Yates	T. Miss	T. Pictured Cliffs 3363	T. Penn. "D"
T. 7 Rivers	T. Devonian	T. Cliff House 5393	T. Leadville
T. Queen	T. Silurian	T. Menefee 5443	T. Madison
T. Grayburg	T. Montoya	T. Point Lookout 5637	T. Elbert
T. San Andres	T. Simpson	T. Mancos 6151	T. McCracken
T. Glorieta	T. McKee	T. Gallup	T. Ignacio Otzte
T. Paddock	T. Ellenburger	Base Greenhorn	T. Granite
T. Blinebry	T. Gr. Wash	T. Dakota	
T. Tubb	T. Delaware Sand	T. Morrison	
T. Drinkard	T. Bone Springs	T. Todilto	
T. Abo	T.	T. Entrada	
T. Wolfcamp	T.	T. Wingate	
T. Penn	T.	T. Chinle	
T. Cisco (Bough C)	T.	T. Permian	

OIL OR GAS
SANDS OR ZONES

No. 1, from.....to.....No. 3, from.....to.....

No. 2, from.....to.....No. 4, from.....to.....

IMPORTANT WATER SANDS

Include data on rate of water inflow and elevation to which water rose in hole.

No. 1, from.....to.....feet.....

No. 2, from.....to.....feet.....

No. 3, from.....to.....feet.....

LITHOLOGY RECORD (Attach additional sheet if necessary)

From	To	Thickness In Feet	Lithology	From	To	Thickness In Feet	Lithology
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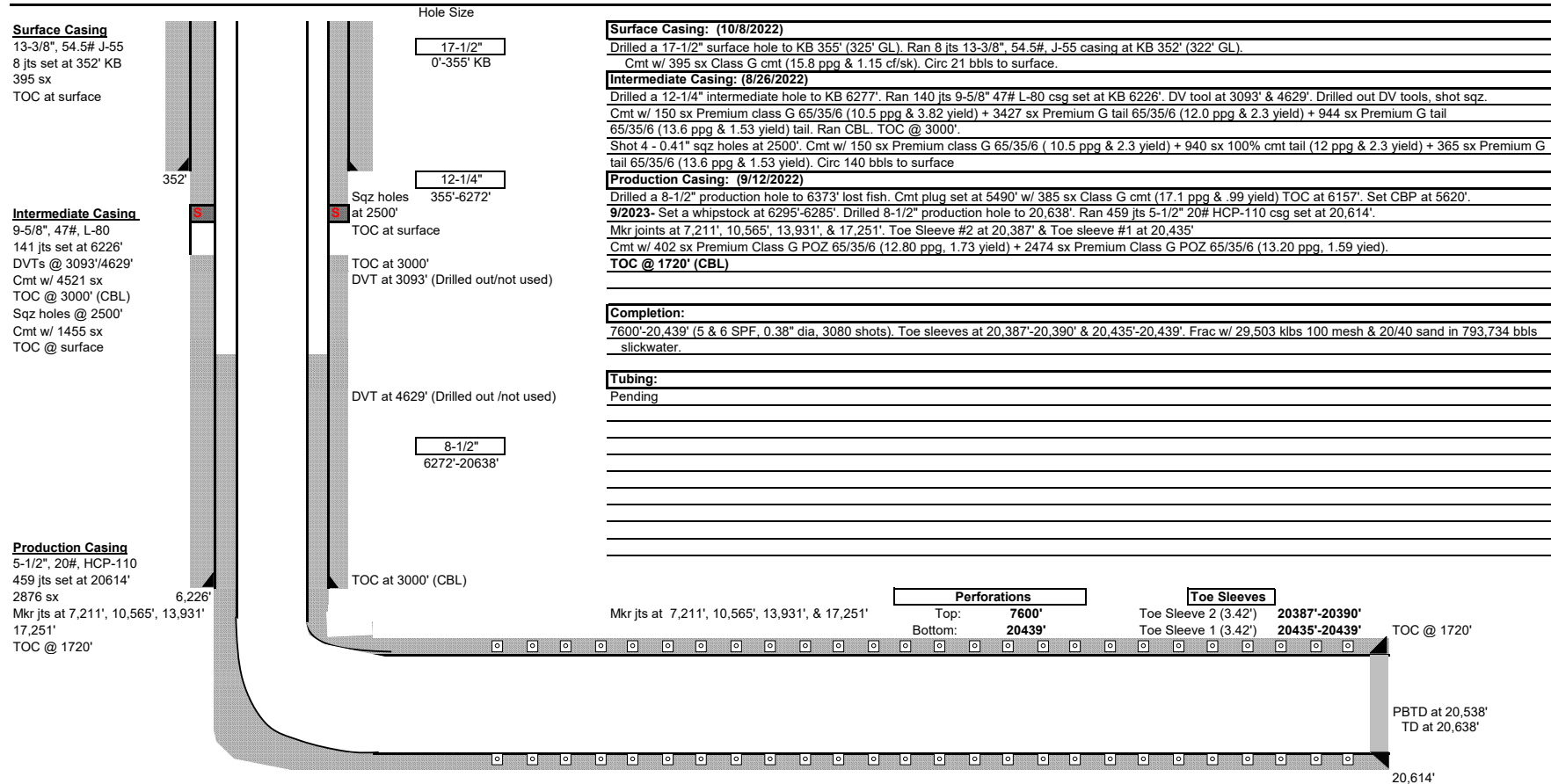


Well Name: Rosa Unit 649H
 Location: A - Sec 19, T31N, R05W, 965' FNL, 480' FWL
 County: Rio Arriba
 API #: 30-039-31410
 Co-ordinates: 36.889679, -107.406136 NAD83
 Operator: LOGOS Operating, LLC

Wellbore Schematic

Ground Elevation: 6305'
 KB Elevation: 6335'
 TD (TVD): 7200'
 TD (MD): 20,638'
 PBDT: 20,528'

Prepared By: 9/22/2023 Peace
 Reviewed By:
 Last Updated: 12/27/2023 Moss
 Spud Date: 4/9/2022
 Completion Date:
 Last Workover Date: N/A



Formation Tops: (MD)			
Nacimiento	Surface	Chacra	4570'
Ojo Alamo	2441'	Cliff House	5380'
Kirtland	2541'	Menefee	5430'
Fruitland	3008'	Point Lookout	5623'
Pictured Cliffs	3355'	Mancos	6137'
Lewis	3464'		

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

ACKNOWLEDGMENTS

Action 320124

ACKNOWLEDGMENTS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 320124
	Action Type: [C-104] Tight Hole Completion Packet (C-104CT)

ACKNOWLEDGMENTS

☒	I hereby certify that the required Water Use Report has been, or will be, submitted for this wells completion.
☒	I hereby certify that the required FracFocus disclosure has been, or will be, submitted for this wells completion.

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CONDITIONS

Action 320124

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 320124
	Action Type: [C-104] Tight Hole Completion Packet (C-104CT)

CONDITIONS

Created By	Condition	Condition Date
plmartinez	File 3160-4 Completion Report and 3160-5 Completion Sundry within 10 days to NMOCD after BLM approval.	3/5/2024