

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**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. **NMSF078764**

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator **LOGOS OPERATING LLC**3a. Address **2010 AFTON PLACE, FARMINGTON, NM 87401** 3b. Phone No. (include area code)
(505) 278-87204. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SEC 19 T31N R05W NENW (C) 943 FNL 424 FWL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No. **ROSA UNIT 645H**9. API Well No. **30-039-31415**10. Field and Pool or Exploratory Area
BASIN MANCOS11. Country or Parish, State
RIO ARRIBA/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	
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity	
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other	
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon		
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat 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 performed 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 recompleat 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.)

Per NMOCD's request, see change in plans below:

Original bottom-hole location from 45' FNL & 362' FEL to **new bottom-hole location 44' FNL & 863' FEL**
Original TD @ 20,177' MD 6968' TVD to **new TD @ 14,415 MD 6952' TVD**

Geology tops have been updated per changes.

Original KOP @ 6385' MD 6329' TVD to **new KOP @ 6396' MD 6340' TVD**Original Landing Point @ 7380' MD 6947' TVD to **new Landing Point @ 7439' MD 6940' TVD**Production casing 5.5" set depth @ 20,177' MD 6968' TVD to **new casing depth @ 14,415' MD 6952' TVD**

New 5.5" Production cementing, grade and weight have been update per casing depth changes.

Attached: As-Drilled C-102, Operations Plan and EOW Directional Drill survey.

Dean R Mcclure

05/17/2023

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)
ETTA TRUJILLOTitle **Regulatory Specialist**

Signature

Etta Trujillo

Date

4/20/2023

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

(Instructions on page 2)

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 19 / NENW / 36.88974 / -107.406329	County or Parish/State: RIO ARRIBA / NM
Well Number: 645H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078764	Unit or CA Name: ROSA UNIT	Unit or CA Number: NMNM78407E
US Well Number: 300393141500S1	Well Status: Producing Gas Well	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2726852

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 04/20/2023

Time Sundry Submitted: 11:25

Date proposed operation will begin: 04/20/2023

Procedure Description: Per NMOCD's request, see change in plans below: Original bottom-hole location from 45' FNL & 362' FEL to new bottom-hole location 44' FNL & 863' FEL Original TD @ 20,177' MD 6968' TVD to new TD @ 14,415 MD 6952' TVD Geology tops have been updated per changes. Original KOP @ 6385' MD 6329' TVD to new KOP @ 6396' MD 6340' TVD Original Landing Point @ 7380' MD 6947' TVD to new Landing Point @ 7439' MD 6940' TVD Production casing 5.5" set depth @ 20,177' MD 6968' TVD to new casing depth @ 14,415' MD 6952' TVD New 5.5" Production cementing, grade and weight have been update per casing depth changes. Attached: As-Drilled C-102, Operations Plan and EOW Directional Drill survey.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

3160_5_Rosa_Unit_645H_Change_in_Plans_PROD_20230420_20230420112443.pdf

Well Name: ROSA UNIT

Well Location: T31N / R5W / SEC 19 /
NENW / 36.88974 / -107.406329County or Parish/State: RIO
ARRIBA / NM

Well Number: 645H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMSF078764

Unit or CA Name: ROSA UNIT

Unit or CA Number:
NMNM78407E

US Well Number: 300393141500S1

Well Status: Producing Gas Well

Operator: LOGOS OPERATING
LLC**Operator**

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

Operator Electronic Signature: ETTA TRUJILLO

Signed on: APR 20, 2023 11:25 AM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: Farmington

State: NM

Phone: (505) 324-4154

Email address: ETRUJILLO@LOGOSRESOURCESLLC.COM

Field

Representative Name:

Street Address:

City:

State:

Zip:

Phone:

Email address:

BLM Point of Contact

BLM POC Name: KENNETH G RENNICK

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5055647742

BLM POC Email Address: krennick@blm.gov

Disposition: Approved

Disposition Date: 04/25/2023

Signature: Kenneth Rennick

Received by **OCD: 4/25/2023 8:42:28 AM**
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 **Page 4 of 17**
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 30-039-31415	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 320608	⁵ Property Name ROSA UNIT	⁶ Well Number 645H
⁷ GRID No. 289408	⁸ Operator Name LOGOS OPERATING, LLC	⁹ Elevation 6305'

¹⁰ Surface Location

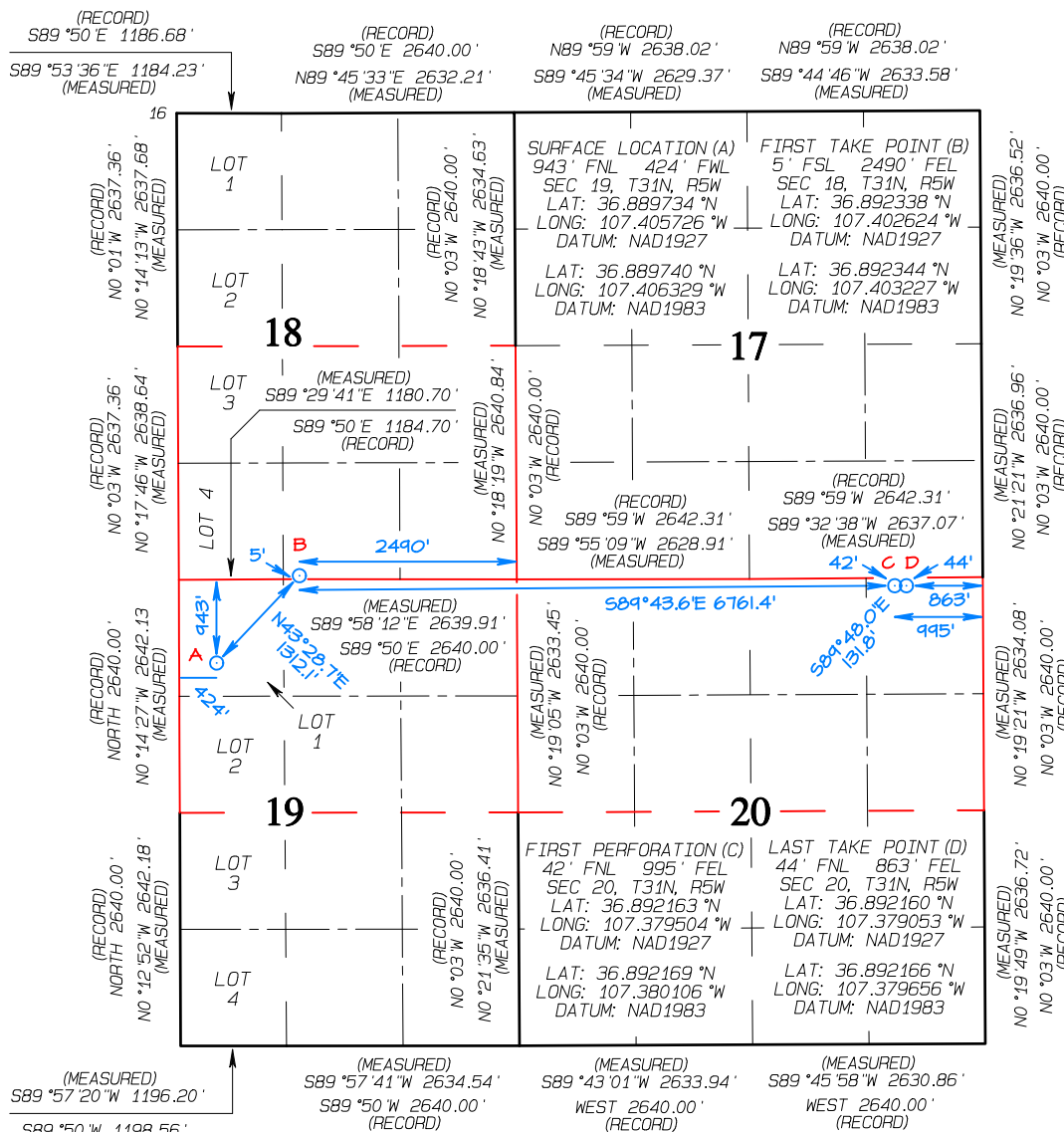
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	19	31N	5W	1	943	NORTH	424	WEST	RIO ARriba

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
A	20	31N	5W		44	NORTH	863	EAST	RIO ARriba

¹² Dedicated Acres 783.84	S/2 - Section 18 N/2 - Section 19 N/2 - Section 20	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. R-13457
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NO ALLOWABLE WILL BE ASSIGNED
TO THIS COMPLETION UNTIL ALL
INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS
BEEN APPROVED BY THE DIVISION



¹⁷ OPERATOR CERTIFICATION

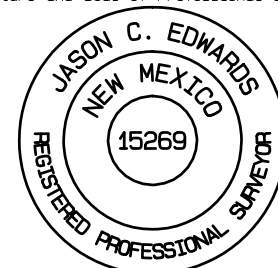
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this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

Etta Trujillo 11/17/2022
Signature Date
Etta Trujillo
Printed Name
etrujillo@logosresourcesllc.com
E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

Date Revised: NOVEMBER 17, 2022
Date of Survey: JANUARY 2, 2015
Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



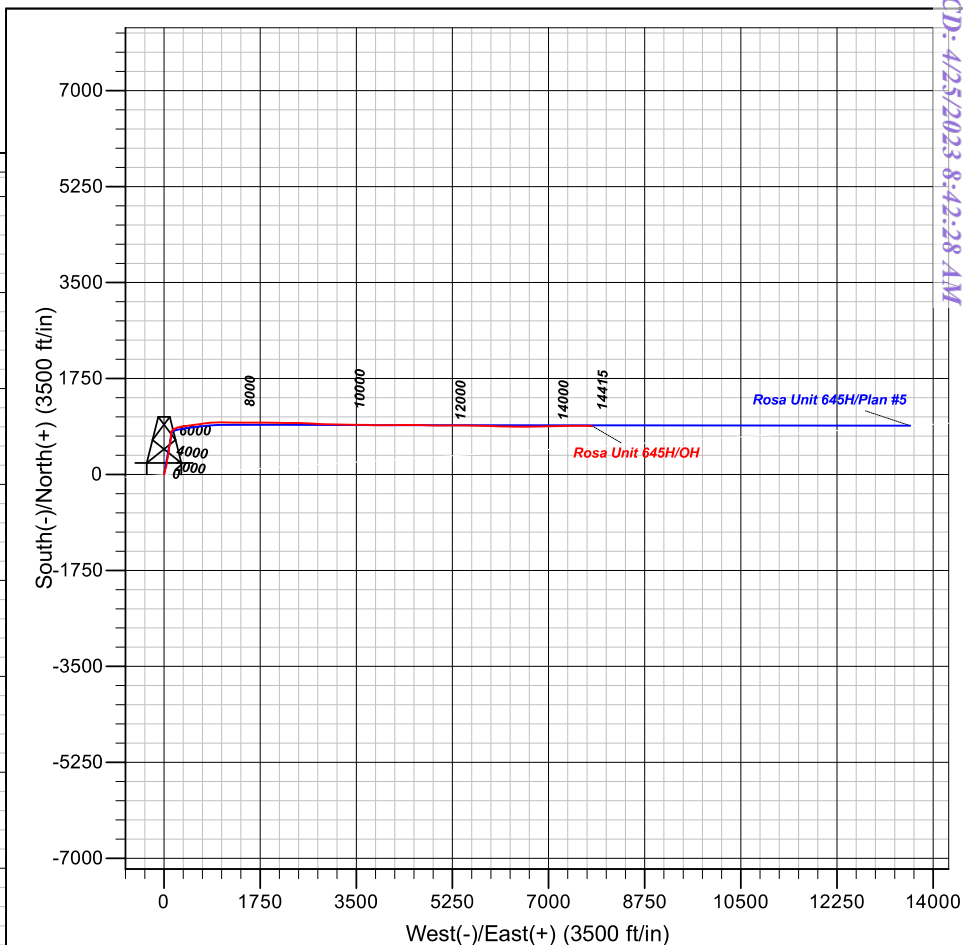
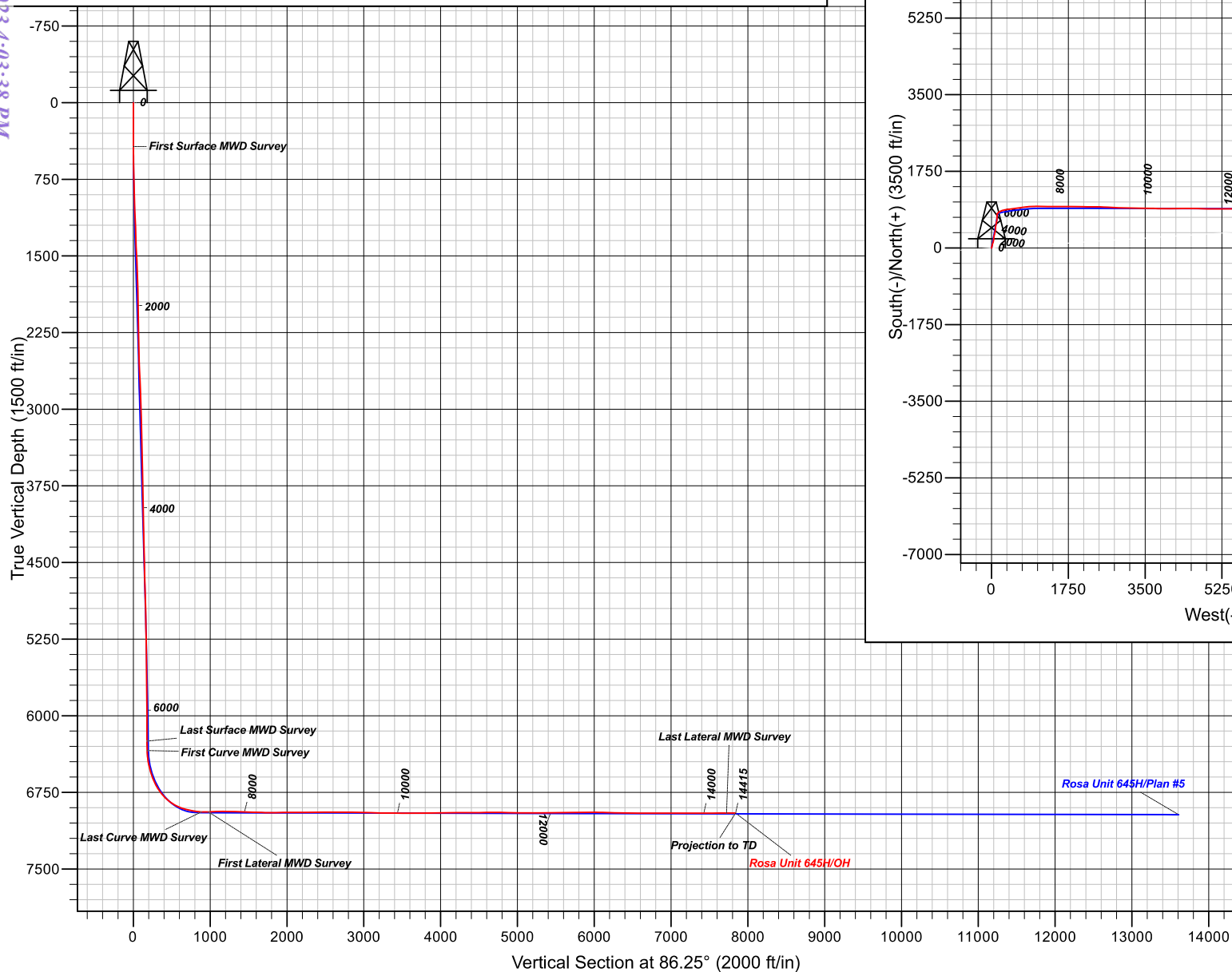
Company Name: Logos Operating LLC
 Project: Rio Arriba, NM NAD83
 Site: Rosa Unit 27
 Well: Rosa Unit 645H
 Wellbore: OH



WELL DETAILS: Rosa Unit 645H

GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223) 6305.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2143470.1710	2847960.5370	36.8897396	-107.4063290	B8



Design: OH (Rosa Unit 645H/OH)

Created By: Janie Collins Date: 18:33, November 01 2022

PROJECT DETAILS: Rio Arriba, NM NAD83

Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Western Zone

System Datum: Mean Sea Level
 Local North: True



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 645H - Slot B8

OH

Design: OH

Standard Survey Report

01 November, 2022





Lonestar Consulting, LLC

Survey Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 645H - Slot B8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Well:	Rosa Unit 645H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	edm

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:	2,143,451.5859 usft	Latitude:	36.8896880
From:	Lat/Long	Easting:	2,848,002.4398 usft	Longitude:	-107.4061860
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in		

Well	Rosa Unit 645H - Slot B8					
Well Position	+N/-S	0.00 ft	Northing:	2,143,470.1710 usft	Latitude:	36.8897395
	+E/-W	0.00 ft	Easting:	2,847,960.5370 usft	Longitude:	-107.4063290
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)	
	HDGM2022	8/6/2022	8.58	63.33	49,568.50000000	
	HDGM2022	10/9/2022	8.57	63.33	49,551.40000000	

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		86.25

Survey Program	Date	11/1/2022			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
428.00	6,302.00	Survey #1 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
6,396.00	7,439.00	Survey #2 - Curve MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
7,532.00	14,415.00	Survey #3 - Lateral MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
428.00	0.39	124.34	428.00	-0.82	1.20	1.15	0.09	0.09	0.00	
521.00	1.86	29.31	520.98	0.32	2.20	2.22	2.08	1.58	-102.18	
584.00	3.16	21.59	583.92	2.82	3.34	3.52	2.13	2.06	-12.25	
677.00	4.53	13.30	676.71	8.78	5.13	5.69	1.59	1.47	-8.91	



Lonestar Consulting, LLC

Survey Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 645H - Slot B8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Well:	Rosa Unit 645H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	edm

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
766.00	5.64	9.94	765.36	16.51	6.69	7.76	1.29	1.25	-3.78
857.00	7.15	12.52	855.79	26.44	8.69	10.40	1.69	1.66	2.84
947.00	9.42	13.42	944.84	39.08	11.62	14.15	2.53	2.52	1.00
1,037.00	9.81	13.85	1,033.58	53.68	15.16	18.64	0.44	0.43	0.48
1,127.00	9.64	13.23	1,122.28	68.46	18.72	23.16	0.22	-0.19	-0.69
1,222.00	9.53	13.53	1,215.96	83.85	22.38	27.82	0.13	-0.12	0.32
1,317.00	9.82	12.72	1,309.61	99.40	26.01	32.45	0.34	0.31	-0.85
1,413.00	9.75	15.12	1,404.21	115.23	29.93	37.40	0.43	-0.07	2.50
1,508.00	9.82	16.50	1,497.83	130.77	34.33	42.81	0.26	0.07	1.45
1,603.00	9.42	18.43	1,591.49	145.91	39.09	48.55	0.54	-0.42	2.03
1,699.00	9.39	12.30	1,686.21	161.02	43.24	53.68	1.04	-0.03	-6.39
1,794.00	9.22	5.82	1,779.96	176.16	45.66	57.09	1.12	-0.18	-6.82
1,889.00	8.83	6.62	1,873.78	190.97	47.27	59.66	0.43	-0.41	0.84
1,984.00	8.54	5.94	1,967.69	205.23	48.85	62.16	0.32	-0.31	-0.72
2,079.00	7.80	7.39	2,061.73	218.64	50.40	64.60	0.81	-0.78	1.53
2,175.00	7.55	8.13	2,156.87	231.35	52.13	67.15	0.28	-0.26	0.77
2,269.00	7.06	5.24	2,250.10	243.21	53.54	69.33	0.65	-0.52	-3.07
2,364.00	6.92	5.26	2,344.40	254.72	54.59	71.14	0.15	-0.15	0.02
2,459.00	7.26	8.57	2,438.67	266.36	56.01	73.31	0.56	0.36	3.48
2,555.00	8.19	14.66	2,533.80	278.97	58.65	76.77	1.29	0.97	6.34
2,649.00	9.08	15.59	2,626.73	292.60	62.33	81.34	0.96	0.95	0.99
2,744.00	9.34	16.45	2,720.51	307.21	66.53	86.48	0.31	0.27	0.91
2,840.00	9.29	15.11	2,815.24	322.16	70.76	91.68	0.23	-0.05	-1.40
2,935.00	9.18	11.17	2,909.01	337.00	74.22	96.11	0.68	-0.12	-4.15
3,030.00	8.49	11.42	3,002.89	351.31	77.08	99.89	0.73	-0.73	0.26
3,126.00	7.55	11.89	3,097.95	364.43	79.78	103.45	0.98	-0.98	0.49
3,221.00	8.38	9.71	3,192.03	377.36	82.24	106.74	0.93	0.87	-2.29
3,317.00	9.03	8.38	3,286.92	391.70	84.52	109.95	0.71	0.68	-1.39
3,411.00	9.64	6.76	3,379.68	406.82	86.52	112.94	0.71	0.65	-1.72
3,507.00	9.14	7.04	3,474.39	422.37	88.40	115.83	0.52	-0.52	0.29
3,602.00	8.85	6.96	3,568.22	437.11	90.21	118.60	0.31	-0.31	-0.08
3,697.00	7.75	4.03	3,662.23	450.75	91.54	120.83	1.24	-1.16	-3.08
3,793.00	7.89	3.45	3,757.33	463.79	92.40	122.53	0.17	0.15	-0.60
3,888.00	7.37	3.98	3,851.49	476.38	93.21	124.17	0.55	-0.55	0.56
3,983.00	7.18	6.10	3,945.73	488.36	94.26	126.00	0.35	-0.20	2.23
4,078.00	7.45	9.36	4,039.95	500.34	95.90	128.41	0.52	0.28	3.43
4,174.00	7.91	14.76	4,135.09	512.87	98.59	131.92	0.89	0.48	5.63
4,269.00	8.40	12.90	4,229.13	525.95	101.81	135.99	0.59	0.52	-1.96
4,364.00	8.90	10.52	4,323.05	539.94	104.70	139.79	0.65	0.53	-2.51
4,459.00	7.94	8.35	4,417.03	553.66	106.99	142.97	1.06	-1.01	-2.28
4,554.00	6.96	4.68	4,511.23	565.89	108.41	145.19	1.15	-1.03	-3.86
4,649.00	5.54	7.35	4,605.66	576.17	109.47	146.92	1.53	-1.49	2.81



Lonestar Consulting, LLC

Survey Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 645H - Slot B8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Well:	Rosa Unit 645H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	edm

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,745.00	5.59	16.73	4,701.21	585.25	111.41	149.45	0.95	0.05	9.77
4,840.00	7.07	14.87	4,795.63	595.33	114.24	152.93	1.57	1.56	-1.96
4,935.00	9.13	12.25	4,889.67	608.35	117.34	156.88	2.20	2.17	-2.76
5,002.00	9.92	11.25	4,955.75	619.20	119.60	159.84	1.20	1.18	-1.49
5,097.00	9.05	5.48	5,049.45	634.66	121.91	163.15	1.36	-0.92	-6.07
5,193.00	9.56	2.23	5,144.19	650.15	122.94	165.20	0.76	0.53	-3.39
5,288.00	9.07	2.31	5,237.94	665.51	123.55	166.81	0.52	-0.52	0.08
5,382.00	8.44	2.12	5,330.84	679.81	124.10	168.30	0.67	-0.67	-0.20
5,477.00	7.90	2.61	5,424.88	693.30	124.65	169.73	0.57	-0.57	0.52
5,572.00	7.14	2.75	5,519.06	705.72	125.24	171.12	0.80	-0.80	0.15
5,635.00	6.58	2.88	5,581.61	713.23	125.60	171.98	0.89	-0.89	0.21
5,762.00	5.76	6.51	5,707.87	726.83	126.69	173.96	0.71	-0.65	2.86
5,826.00	4.88	8.69	5,771.60	732.71	127.47	175.12	1.41	-1.38	3.41
5,889.00	3.66	6.34	5,834.42	737.36	128.10	176.05	1.96	-1.94	-3.73
5,952.00	3.50	1.16	5,897.30	741.28	128.36	176.56	0.57	-0.25	-8.22
6,016.00	3.77	359.96	5,961.17	745.34	128.39	176.87	0.44	0.42	-1.88
6,080.00	4.54	359.73	6,025.00	749.98	128.38	177.16	1.20	1.20	-0.36
6,143.00	4.28	358.38	6,087.81	754.82	128.30	177.40	0.44	-0.41	-2.14
6,206.00	3.96	357.53	6,150.65	759.34	128.14	177.53	0.52	-0.51	-1.35
6,233.00	3.82	354.48	6,177.59	761.17	128.02	177.52	0.93	-0.52	-11.30
6,302.00	3.80	354.70	6,246.43	765.73	127.58	177.39	0.04	-0.03	0.32
6,396.00	6.85	18.60	6,340.03	774.15	129.08	179.44	3.95	3.24	25.43
6,492.00	16.24	39.09	6,434.01	790.04	139.40	190.77	10.53	9.78	21.34
6,586.00	23.19	50.46	6,522.48	812.06	162.00	214.76	8.41	7.39	12.10
6,682.00	29.84	61.54	6,608.39	835.51	197.63	251.86	8.61	6.93	11.54
6,776.00	37.00	71.57	6,686.86	855.64	245.13	300.56	9.60	7.62	10.67
6,870.00	46.70	79.62	6,756.84	870.79	305.80	362.09	11.78	10.32	8.56
6,966.00	55.70	82.01	6,816.94	882.62	379.58	436.50	9.57	9.38	2.49
7,061.00	65.59	82.87	6,863.45	893.47	461.57	519.01	10.44	10.41	0.91
7,155.00	73.15	82.36	6,896.55	904.78	548.74	606.74	8.06	8.04	-0.54
7,248.00	79.98	82.01	6,918.14	917.08	638.30	696.92	7.35	7.34	-0.38
7,345.00	82.53	81.73	6,932.89	930.64	733.21	792.50	2.64	2.63	-0.29
7,439.00	88.66	84.52	6,940.11	941.84	826.20	886.03	7.16	6.52	2.97
7,532.00	91.88	86.87	6,939.67	948.82	918.92	979.01	4.29	3.46	2.53
7,627.00	91.14	89.32	6,937.17	951.98	1,013.83	1,073.92	2.69	-0.78	2.58
7,722.00	90.13	91.33	6,936.11	951.44	1,108.81	1,168.67	2.37	-1.06	2.12
7,815.00	88.79	91.25	6,936.99	949.34	1,201.78	1,261.30	1.44	-1.44	-0.09
7,909.00	88.73	90.79	6,939.02	947.67	1,295.75	1,354.95	0.49	-0.06	-0.49
8,003.00	88.69	90.32	6,941.14	946.76	1,389.72	1,448.66	0.50	-0.04	-0.50
8,097.00	88.32	89.83	6,943.59	946.64	1,483.68	1,542.42	0.65	-0.39	-0.52
8,225.00	89.09	90.42	6,946.49	946.36	1,611.65	1,670.09	0.76	0.60	0.46
8,320.00	90.13	90.61	6,947.13	945.50	1,706.64	1,764.83	1.11	1.09	0.20



Lonestar Consulting, LLC

Survey Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 645H - Slot B8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Well:	Rosa Unit 645H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	edm

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,413.00	90.13	90.45	6,946.92	944.64	1,799.64	1,857.57	0.17	0.00	-0.17	
8,508.00	90.17	89.57	6,946.67	944.63	1,894.64	1,952.36	0.93	0.04	-0.93	
8,602.00	90.30	91.13	6,946.29	944.05	1,988.63	2,046.12	1.67	0.14	1.66	
8,698.00	90.27	91.30	6,945.81	942.02	2,084.61	2,141.76	0.18	-0.03	0.18	
8,791.00	90.34	90.55	6,945.31	940.52	2,177.59	2,234.44	0.81	0.08	-0.81	
8,886.00	90.10	90.32	6,944.95	939.80	2,272.59	2,329.19	0.35	-0.25	-0.24	
8,981.00	90.27	89.87	6,944.64	939.64	2,367.59	2,423.98	0.51	0.18	-0.47	
9,075.00	90.67	91.40	6,943.87	938.60	2,461.58	2,517.69	1.68	0.43	1.63	
9,169.00	90.13	92.63	6,943.22	935.29	2,555.52	2,611.21	1.43	-0.57	1.31	
9,263.00	90.30	92.35	6,942.86	931.21	2,649.43	2,704.66	0.35	0.18	-0.30	
9,359.00	89.06	92.76	6,943.40	926.93	2,745.33	2,800.07	1.36	-1.29	0.43	
9,453.00	89.09	92.28	6,944.92	922.80	2,839.22	2,893.50	0.51	0.03	-0.51	
9,547.00	88.83	92.40	6,946.62	918.96	2,933.13	2,986.95	0.30	-0.28	0.13	
9,642.00	88.89	91.82	6,948.51	915.46	3,028.05	3,081.44	0.61	0.06	-0.61	
9,737.00	88.69	91.68	6,950.52	912.56	3,122.98	3,175.98	0.26	-0.21	-0.15	
9,833.00	89.73	90.93	6,951.84	910.37	3,218.94	3,271.59	1.34	1.08	-0.78	
9,928.00	89.80	90.74	6,952.23	908.99	3,313.93	3,366.29	0.21	0.07	-0.20	
10,024.00	89.40	90.51	6,952.90	907.94	3,409.93	3,462.01	0.48	-0.42	-0.24	
10,119.00	89.46	91.03	6,953.85	906.67	3,504.91	3,556.71	0.55	0.06	0.55	
10,215.00	90.50	91.08	6,953.88	904.90	3,600.89	3,652.37	1.08	1.08	0.05	
10,308.00	90.50	91.30	6,953.07	902.97	3,693.87	3,745.02	0.24	0.00	0.24	
10,404.00	90.50	90.93	6,952.23	901.10	3,789.85	3,840.67	0.39	0.00	-0.39	
10,501.00	90.90	90.34	6,951.05	900.02	3,886.83	3,937.38	0.73	0.41	-0.61	
10,597.00	90.67	90.32	6,949.73	899.47	3,982.82	4,033.12	0.24	-0.24	-0.02	
10,692.00	90.40	89.78	6,948.84	899.39	4,077.82	4,127.91	0.64	-0.28	-0.57	
10,786.00	90.34	89.31	6,948.24	900.14	4,171.81	4,221.75	0.50	-0.06	-0.50	
10,881.00	90.44	88.44	6,947.59	902.00	4,266.79	4,316.65	0.92	0.11	-0.92	
10,973.00	89.83	89.28	6,947.37	903.83	4,358.77	4,408.55	1.13	-0.66	0.91	
11,067.00	90.47	89.64	6,947.13	904.72	4,452.77	4,502.41	0.78	0.68	0.38	
11,161.00	90.84	90.89	6,946.05	904.28	4,546.76	4,596.17	1.39	0.39	1.33	
11,256.00	89.56	91.94	6,945.72	901.94	4,641.73	4,690.78	1.74	-1.35	1.11	
11,350.00	89.56	91.81	6,946.44	898.86	4,735.67	4,784.32	0.14	0.00	-0.14	
11,446.00	89.60	91.37	6,947.15	896.20	4,831.63	4,879.90	0.46	0.04	-0.46	
11,541.00	89.30	90.86	6,948.06	894.35	4,926.61	4,974.55	0.62	-0.32	-0.54	
11,636.00	89.43	90.49	6,949.11	893.23	5,021.60	5,069.27	0.41	0.14	-0.39	
11,730.00	89.73	90.07	6,949.80	892.77	5,115.59	5,163.03	0.55	0.32	-0.45	
11,825.00	89.60	89.45	6,950.36	893.17	5,210.59	5,257.85	0.67	-0.14	-0.65	
11,921.00	90.27	90.05	6,950.47	893.59	5,306.59	5,353.67	0.94	0.70	0.63	
12,015.00	90.67	89.67	6,949.69	893.82	5,400.58	5,447.48	0.59	0.43	-0.40	
12,110.00	90.54	90.86	6,948.69	893.38	5,495.58	5,542.24	1.26	-0.14	1.25	
12,207.00	90.67	90.67	6,947.67	892.08	5,592.56	5,638.93	0.24	0.13	-0.20	
12,303.00	90.97	89.95	6,946.29	891.56	5,688.55	5,734.68	0.81	0.31	-0.75	



Lonestar Consulting, LLC Survey Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 645H - Slot B8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Well:	Rosa Unit 645H	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	edm

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
12,398.00	90.37	91.12	6,945.18	890.68	5,783.54	5,829.41	1.38	-0.63	1.23	
12,493.00	89.93	92.26	6,944.93	887.87	5,878.49	5,923.98	1.29	-0.46	1.20	
12,588.00	89.97	91.96	6,945.02	884.38	5,973.43	6,018.48	0.32	0.04	-0.32	
12,683.00	88.62	92.20	6,946.19	880.93	6,068.36	6,112.98	1.44	-1.42	0.25	
12,777.00	88.89	91.76	6,948.23	877.68	6,162.28	6,206.49	0.55	0.29	-0.47	
12,873.00	89.03	91.47	6,949.97	874.98	6,258.23	6,302.05	0.34	0.15	-0.30	
12,968.00	89.30	91.10	6,951.35	872.85	6,353.19	6,396.68	0.48	0.28	-0.39	
13,062.00	89.46	90.58	6,952.37	871.47	6,447.17	6,490.37	0.58	0.17	-0.55	
13,156.00	89.70	89.91	6,953.06	871.07	6,541.17	6,584.14	0.76	0.26	-0.71	
13,251.00	90.00	89.18	6,953.31	871.82	6,636.17	6,678.98	0.83	0.32	-0.77	
13,346.00	89.87	88.68	6,953.42	873.60	6,731.15	6,773.87	0.54	-0.14	-0.53	
13,441.00	89.77	88.93	6,953.72	875.58	6,826.13	6,868.78	0.28	-0.11	0.26	
13,537.00	90.00	88.17	6,953.91	878.01	6,922.10	6,964.70	0.83	0.24	-0.79	
13,631.00	90.13	89.08	6,953.80	880.26	7,016.07	7,058.62	0.98	0.14	0.97	
13,726.00	90.20	88.78	6,953.53	882.04	7,111.05	7,153.51	0.32	0.07	-0.32	
13,821.00	90.10	88.98	6,953.28	883.89	7,206.03	7,248.41	0.24	-0.11	0.21	
13,915.00	89.73	89.40	6,953.42	885.22	7,300.02	7,342.29	0.60	-0.39	0.45	
14,013.00	89.70	89.16	6,953.91	886.45	7,398.01	7,440.15	0.25	-0.03	-0.24	
14,107.00	90.54	89.92	6,953.71	887.21	7,492.01	7,533.99	1.21	0.89	0.81	
14,202.00	90.94	90.23	6,952.48	887.08	7,587.00	7,628.77	0.53	0.42	0.33	
14,297.00	89.73	90.80	6,951.93	886.23	7,681.99	7,723.51	1.41	-1.27	0.60	
14,415.00	89.73	90.80	6,952.48	884.58	7,799.98	7,841.13	0.00	0.00	0.00	

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
428.00	428.00	-0.82	1.20	First Surface MWD Survey	
6,302.00	6,246.43	765.73	127.58	Last Surface MWD Survey	
6,396.00	6,340.03	774.15	129.08	First Curve MWD Survey	
7,439.00	6,940.11	941.84	826.20	Last Curve MWD Survey	
7,532.00	6,939.67	948.82	918.92	First Lateral MWD Survey	
14,297.00	6,951.93	886.23	7,681.99	Last Lateral MWD Survey	
14,415.00	6,952.48	884.58	7,799.98	Projection to TD	



LOGOS Operating, LLC Operations Plan

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

Date:	April 19, 2023	Pool:	Basin Mancos
Well Name:	Rosa Unit 645H	GL Elevation:	6,305'
Surface Location:	Sec 19, T31N, R5W 943 FNL, 424 FWL (36.8899740° N, 107.406329° W – NAD83)	Measured Depth:	14,415' (KB)
Bottom Hole Location:	Sec 20, T31N, R5W 44 FNL, 863 FEL (36.892166° N, 107.379656° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078764, CA Serial #NMNM78407E

I. GEOLOGY

A. Formation Tops (Based on 25' KB Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2403	2385	*POINT LOOKOUT	5696	5642
KIRTLAND	2550	2530	*MANCOS	6195	6139
*FRUITLAND	3060	3035	KICKOFF POINT	6396	6340
*PICTURED CLIFFS	3378	3349	LANDING POINT	7439	6940
LEWIS	3493	3463			
CHACRA	4610	4568			
*CLIFF HOUSE	5418	5367			
MENEFEE	5466	5414	TD	14,415	6952

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

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

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

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

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4" directional vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain returns prior to cementing. Notify Engineering of any mud losses. Mud weights of 6.5-13 ppg will be used as necessary to maintain sufficient overbalance of reservoir pressure.

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

ROSA UNIT 645H



times.

- B. BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes**. Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes**. Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.
- C. GeoHazards:** There are no Geohazards
- D. Maximum Anticipated Pressure:** $6952' \text{ TVD} \times 0.43 = 2989 \text{ psi}$
- E. H2S Concerns:** — There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OHSIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	325'	13.375"	54.5 LBS	J-55	BTC
INTERMEDIATE	12.25"	6,132'	9.625"	47.0 LBS	L-80	BTC
PRODUCTION	8.5"	14,397'	5.5"	20 LBS	P-110	BTC

NOTE: All casing depths are approximate, based on KB elevation (25') and will be based on drilling conditions +/- 50'. Weights, grades and connections will be based on availability and may vary but will be equivalent or greater.

B. FLOAT EQUIPMENT:

- SURFACE CASING:** 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- INTERMEDIATE CASING:** 9-5/8" cement nose guide shoe with a self-fill insert float. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancellation plugs for DV tools may be used if losses while cementing are not encountered.
- PRODUCTION CASING:** Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

ROSA UNIT 645H



C. CEMENTING:

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

1. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface.
263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess.
2. INTERMEDIATE: Intermediate casing shall be kept fluid filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine TOC.

	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess	Shoe Joint (ft)	Cement (ft3/ft) Capacity of casing	Excess (0%)			Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	4,541	1,494	0.3132	1	200	0.4181	1	83.62	14.9	552	98	1.15	479	15.8
Stage 1 Lead	2,385	2,156	0.3132	1	0	0.4181	1	0	0.0	675	120	2.30	294	12
										1,227	219		773	
Stage 2 Tail	3,925	615	0.3132	2.3	0	0.4181	1	0	0.0	443	79	1.73	256	13.2
Stage 2 Lead	2,986	939	0.3132	2.3	0	0	1	0	0.0	676	120	2.30	294	12
										1,119	199		550	
Stage 3 Tail	2,236	750	0.3132	2.4	0	0.4181	1	0	0.0	564	100	1.73	326	13.2
Stage 3 Lead	350	1,887	0.3132	3	0	0	1	0	0.0	1,773	316	2.30	771	12
Stage 3 Lead	-	350	0.3132	1	0	0	1	0	0.0	109	19	2.30	48	12
										2,446	436		1144	

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

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

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (30%)	Shoe Joint (ft)	Cement (ft3/ft) Capacity of casing	Excess (0%)		Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)	
Cased Lead	5,132	1,000	0.2531	1	0	0.12451	1	0	0.0	253	45	1.53	165	13.2
Open Hole Lead	6,132	8,283	0.2291	1.3	84	0.12451	1	10.45884	1.9	2,477	441	1.53	1,619	13.2
										2,730	486		1,785	

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

Cement calculations are used for volume estimation. Well conditions will dictate final cement job design. Actual volumes will be calculated and determined by conditions onsite. All cement slurries will meet or exceed minimum BLM and New Mexico Oil Conservation Division requirements. Slurries used will be the slurries listed above or equivalent slurries depending on service provider selected. Cement yields may change depending on slurries selected. All waiting on cement times shall be a minimum of 8 hours or adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.



IV. **COMPLETION**

A. **CBL**

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

B. **PRESSURE TEST**

- C. Pressure test 5-1/2" casing to 1533 psi (0.22 psi/ft * 6,968' TVD) for 30 minutes. Increase pressure to Open RSI sleeves.

D. **STIMULATION**

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

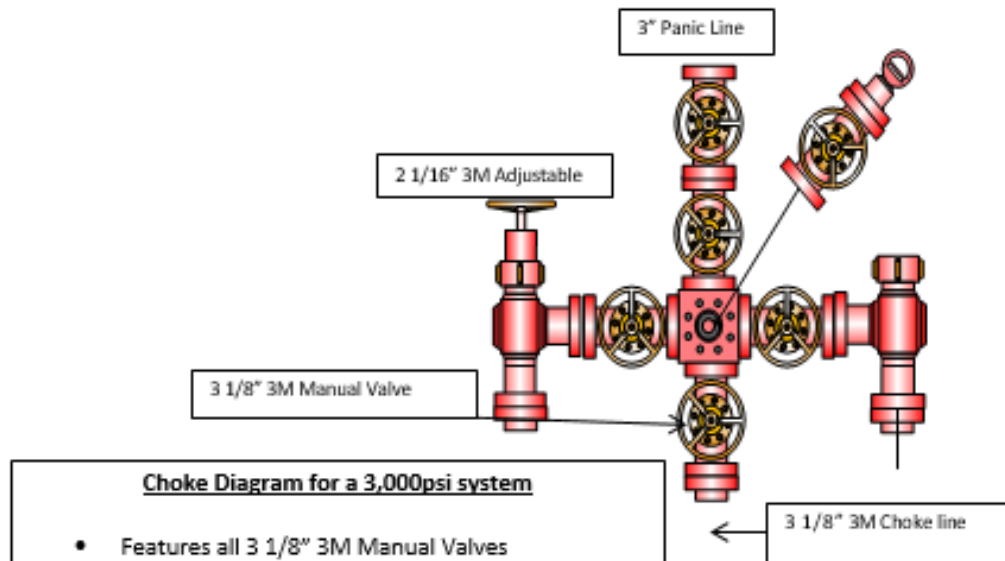
E. **PRODUCTION TUBING**

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-24 months after completion.

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

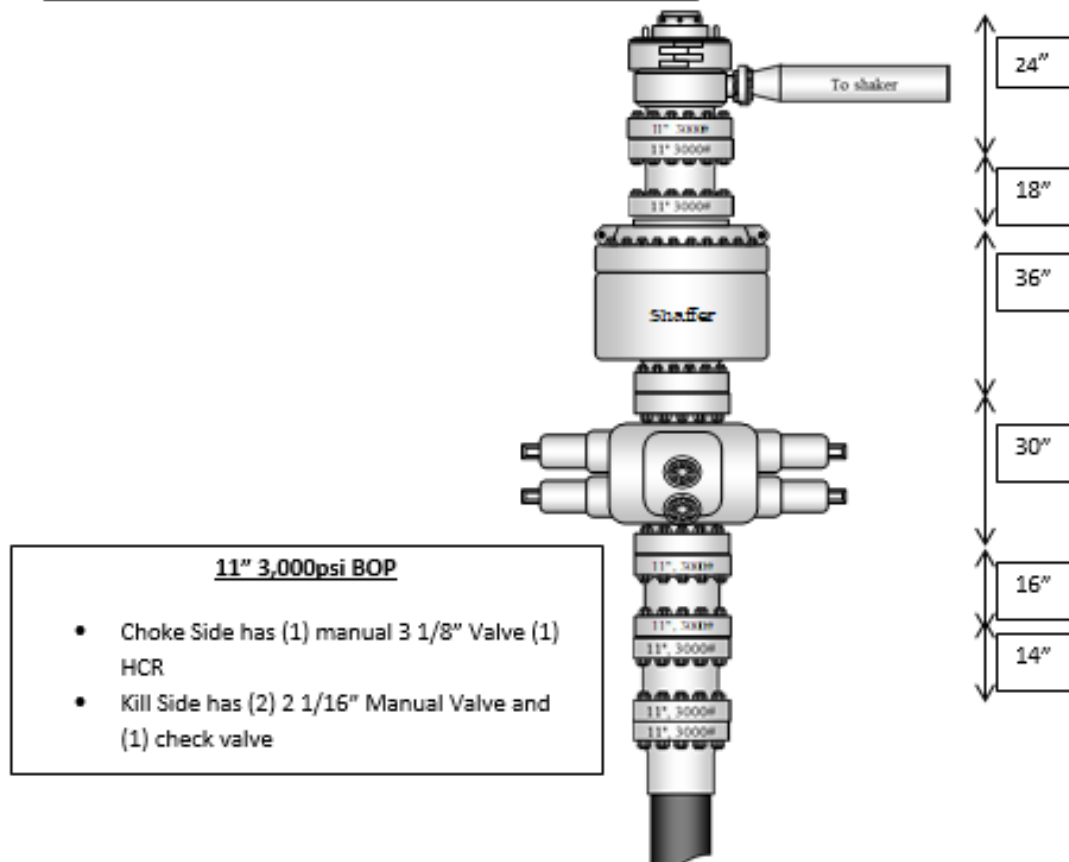


3M 11" B.O.P.E Diagram



Choke Diagram for a 3,000psi system

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



ROSA UNIT 645H

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

CONDITIONS

Action 210381

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 210381
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
dmcclure	None	5/17/2023