

Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 15 / NWSE / 36.896862 / -107.448459	County or Parish/State: RIO ARRIBA / NM
Well Number: 590H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078765	Unit or CA Name: ROSA UNIT	Unit or CA Number: NMNM78407E
US Well Number: 3003931478	Operator: LOGOS OPERATING LLC	

Notice of Intent

Sundry ID: 2830348

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 01/07/2025

Time Sundry Submitted: 11:42

Date proposed operation will begin: 01/08/2025

Procedure Description: LOGOS Operating request a change in plans for the following (based on KB elevation): Original surface-hole location from 1643' FSL & 2124' FEL to new surface-hole location 1701' FSL & 1801' FEL Original bottom-hole location from 2596' FSL & 164' FWL to new bottom-hole location 2404' FSL & 334' FWL Original TD @ 20,120' (MD) 6,890' (TVD) to new TD @ 20,498' (MD) 6,900' (TVD). Geology tops have been updated per changes. Original KOP @ 6,362' MD 6332' TVD to new KOP @ 6,331' MD 6328' TVD Original Landing point @ 7,350' MD 6,950' TVD to new Landing point @ 7,327' MD 6,958' TVD Added 20" Conductor casing @ 320' MD Original 13.375" Surface casing @ 320' MD to new 13.375" Surface casing @ 3418' MD Original 9.625" casing Intermediate @ 6,242' MD to new 9.625" Intermediate casing @ 6,233' MD Original 5.5" casing Production casing @ 20,120' MD to new 5.5" Production casing @ 20,498' MD All cementing bbls and sacks have been update per casing depth changes. Attached: New C102, Operation and Directional Drill plans.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

Rosa_Unit_590H_C102_Plat_20241213_signed_20250210071829.pdf

Rosa_590H_Operations_Plan_Prelim_2_4_string._01.05.2025_20250110095758.pdf

Logos___Rosa_Unit_590H_Plan_Data_Prelim_2_20250107114134.pdf

Well Name: ROSA UNIT

Well Location: T31N / R6W / SEC 15 /
NWSE / 36.896862 / -107.448459County or Parish/State: RIO
ARRIBA / NM

Well Number: 590H

Type of Well: CONVENTIONAL GAS
WELL

Allottee or Tribe Name:

Lease Number: NMSF078765

Unit or CA Name: ROSA UNIT

Unit or CA Number:
NMNM78407E

US Well Number: 3003931478

Operator: LOGOS OPERATING LLC

Conditions of Approval**Additional**

LOGOS_Operating_LLC_Rosa_Unit_590H_APD_Change_ID_2830348_MHK_20250212083830.pdf

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:** FEB 10, 2025 07:19 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:** MATTHEW H KADE**BLM POC Title:** Petroleum Engineer**BLM POC Phone:** 5055647736**BLM POC Email Address:** MKADE@BLM.GOV**Disposition:** Approved**Disposition Date:** 02/13/2025**Signature:** Dave J Mankiewicz



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington District Office
6251 College Boulevard, Suite A
Farmington, New Mexico 87402
<http://www.blm.gov/nm>



February 12, 2025

CONDITIONS OF APPROVAL

Sundry Notice of Intent ID # 2830348 Request for APD Change

Operator: LOGOS Operating LLC
Lease: NMSF 078765
Agreement: NMNM 78407E
Well: Rosa Unit 590H (API # 30-039-31478)
Location: NWSE Sec 15 T31N R6W (Rio Arriba County, NM)

The requested change to the Application for Permit to Drill is approved with the following Conditions of Approval:

1. This approval is only for the sundry notice and well listed above.
2. No changes to the original APD or COA are granted with the approval of this Sundry Notice other than directional plan, bottomhole location change, casing changes, and cement volumes.

If you have any questions regarding this, please feel free to contact Matthew Kade of this office at (505) 564-7736 or mkade@blm.gov.



LOGOS Operating, LLC Operations Plan

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

Date:	December 12, 2024	Pool:	Basin Mancos
Well Name:	Rosa Unit 590H	GL Elevation:	6,325'
Surface Location:	Sec 15, T31N, R6W 1701' FSL, 1801' FEL (36.897027° N, -107.447352° W – NAD83)	KB:	30'
Bottom Hole Location:	Sec 17, T31N, R6W 2404' FSL, 334' FWL (36.898873° N, -107.494139° W – NAD83)	Measured Depth:	20,498' (KB)
Lease Serial CA Serial	# NMSF078765 # NMNM78407E	County:	Rio Arriba

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2400'	2399'	*POINT LOOKOUT	5665'	5662'
KIRTLAND	2514'	2513'	*MANCOS	6148'	6145'
*FRUITLAND	2975'	2974'	KICKOFF POINT	6331'	6328'
*PICTURED CLIFFS	3369'	3368'	LANDING POINT	7327'	6958'
LEWIS	3469'	3468'	TD	20498'	6900'
CHACRA	4590'	4588'			
*CLIFF HOUSE	5389'	5387'			
MENEFEE	5423'	5421'			

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

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

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

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

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 26"/24" conductor hole. LSND (WBM) will be used to drill the 17-1/2" surface hole and 12-1/4" intermediate hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

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



- B. BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **3000 psi (High) for 10 minutes**. Pressure test surface casing to **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:** 6,958' TVD x 0.43 = 2,992 psi
- E. H2S Concerns:** There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
CONDUCTOR	26" or 24"	320' or greater (GL)	20"	94 LBS	J-55 or equiv	LTC/BTC
SURFACE	17.5"	3,418'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,223'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,498'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

- 1. CONDUCTOR CASING:** 20" cement nose guide shoe. Place float collar 1 joint above shoe. Run (1) standard centralizer on each of the bottom (3) joints of casing.
- 2. SURFACE CASING:** 13-3/8" cement nose guide shoe with 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., 2,000ft., 1,500 ft., 1,000 ft., and 500ft.
 - Casing will be kept fluid filled during drilling
- 3. INTERMEDIATE CASING:** 9-5/8" cement float shoe. Place float collar one joint above the shoe. Install (1) centralizer on each of the bottom (3) joints and one standard centralizer every (3) joints to 2,500 ft. Run (1) centralizer at 2,500 ft., 2,300ft., 2,000ft., 1,500 ft., and 1,000 ft. Optional use of DV Tools (2) will be strategically placed above loss circulation zones anticipated in the Mesaverde and Fruitland Coal. Optional use of cancelation plugs for DV tools may be used if losses while cementing are not encountered. Optional use of an ICP may be used in conjunction with DV Tools.
- 4. PRODUCTION CASING:** Run 5-1/2" casing with cement nose guide Float Shoe, 5-1/2" full or pup joints as necessary, Landing Collar, 5-1/2" full or pup joints as necessary, at least (1) one Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested



during completion operations with frac stack installed.

C. CEMENTING:

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

1. CONDUCTOR: Casing shall be set at ~ 320'(GL) and cemented to surface. TOC at Surface.

Conductor - 20"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Type G	-	320	0.9599	1.3	449	80	1.10	408	15.8
Type III		320	0.9599	1.3	449	80	1.39	323	14.6

24" hole

Set Depth (GL) 320

2. SURFACE: Casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The surface casing will be cemented in 1 stage. If cement does not circulate to the surface, a CBL will be run to determine TOC.

Surface - 13-3/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	2,819	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	320	2,499	0.6947	1.3	2,257	402	1.90	1188	12.4
Stage 2 Lead - Cased	-	320	1.019	1	326	58	1.90	172	12.4
					3,159	563		1883	

Set Depth 3419.42

3. INTERMEDIATE : Casing shall be kept fluid filled while running in to the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 2 or 3 stages using DV/STAGE tools in order to reduce cement losses and maximize cement coverage. Operator proposes optional DV tools and optional ICP's above anticipated loss circulation zones in the Mesaverde and in the Fruitland coal. If losses are not observed during the second stage a cancelation plug will be pumped and the remaining cement will be pumped during stage 2. If cement does not circulate to the DV tool(s) or to surface, a CBL will be run to determine

For Regulatory only

Intermediate - 9-5/8"	Top	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,723	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,665	1,058	0.3132	1.3	431	77	1.90	227	12.4
					651	116		427	
Stage 2 Tail	4,065	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,319	746	0.3132	1.3	304	54	1.90	160	12.4
Stage 2 Lead - Cased	3,219	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					584	104		333	
Int 2 Totals					1,235	220		760	
Contingency									
Stage 3 Tail	3,419	75	0.3132	1.3	31	5	1.58	19	13.2
Stage 3 Tail - Cased	2,919	500	0.3490	1	175	31	1.58	110	13.2
Stage 3 Lead - Cased	-	2,919	0.3490	1	1,019	181	1.90	536	12.4
Contingency Stage 3 Totals					1,224	218		666	

Set Depth 6222.82



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

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

Production - 5-1/2"	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,123	100	0.2531	1	25	5	1.98	13	13.2
Open Hole Lead	6,223	14,275	0.2291	1.15	3,766	671	1.98	1,902	13.2
					3,791	675		1,915	

Set depth 20497.58

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

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

IV. **COMPLETION**

A. **CBL**

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

B. **PRESSURE TEST**

- C. Pressure test 5-1/2" casing to 0.22 psi/ft * 6,958' TVD = 1531 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. **STIMULATION**

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

E. **PRODUCTION TUBING**

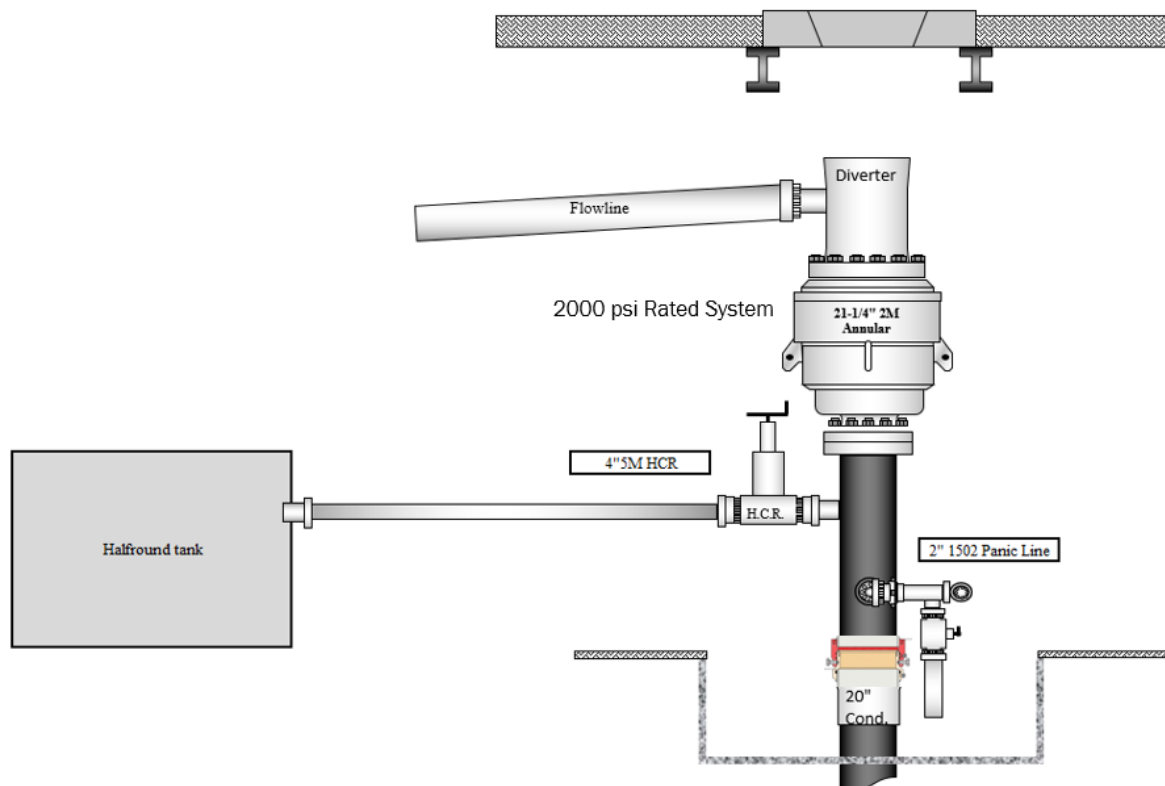
2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

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



BOP Equipment

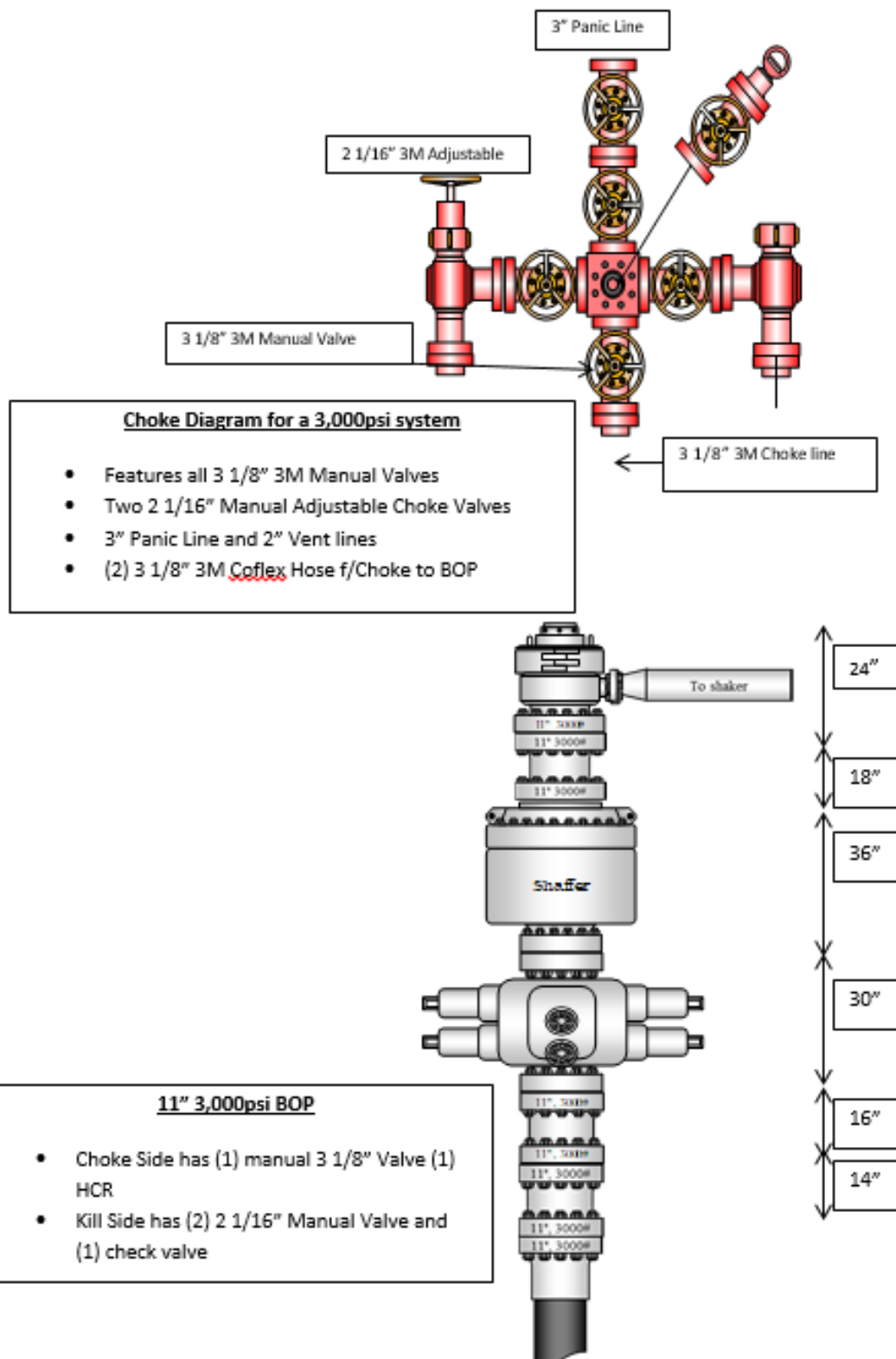
Surface Hole Diverter:





BOP:

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



Logos Operating LLC

Rio Arriba, NM (NAD83)

Rosa Unit 8

Rosa Unit 590H

API:

OH

Plan: Prelim #2

Standard Planning Report

09 December, 2024

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

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 8				
Site Position:		Northing:	2,146,072.18 usft	Latitude:	36.897027
From:	Lat/Long	Easting:	2,835,953.40 usft	Longitude:	-107.447352
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "		

Well	Rosa Unit 590H					
Well Position	+N/-S	0.00 usft	Northing:	2,146,072.18 usft	Latitude:	36.897027
	+E/-W	0.00 usft	Easting:	2,835,953.40 usft	Longitude:	-107.447352
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	6,335.00 usft
Grid Convergence:		0.23 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/9/2024	8.47	63.43	49,449.61559776

Design	Prelim #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	270.99

Plan Survey Tool Program			Date	12/9/2024	
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	20,497.58 Prelim #2 (OH)	MWD+HRGM+MS		
			MWD + HRGM + Multi-Station		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
591.02	1.82	341.15	591.01	1.37	-0.47	2.00	2.00	0.00	341.15	
6,331.71	1.82	341.15	6,328.80	173.95	-59.39	0.00	0.00	0.00	0.00	
7,327.38	90.25	271.80	6,958.00	212.79	-697.87	9.00	8.88	-6.97	-69.35	RU 590H POE
20,319.01	90.25	271.80	6,900.79	620.19	-13,682.98	0.00	0.00	0.00	0.00	RU 590H FPP
20,497.58	90.25	271.80	6,900.00	625.78	-13,861.47	0.00	0.00	0.00	0.00	RU 590H PBHL

SDT Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
591.02	1.82	341.15	591.01	1.37	-0.47	0.49	2.00	2.00	0.00
Start 5740.69 hold at 591.02 MD									
600.00	1.82	341.15	599.98	1.64	-0.56	0.59	0.00	0.00	0.00
700.00	1.82	341.15	699.93	4.64	-1.59	1.67	0.00	0.00	0.00
800.00	1.82	341.15	799.88	7.65	-2.61	2.74	0.00	0.00	0.00
900.00	1.82	341.15	899.83	10.66	-3.64	3.82	0.00	0.00	0.00
1,000.00	1.82	341.15	999.78	13.66	-4.66	4.90	0.00	0.00	0.00
1,100.00	1.82	341.15	1,099.73	16.67	-5.69	5.98	0.00	0.00	0.00
1,200.00	1.82	341.15	1,199.68	19.68	-6.72	7.06	0.00	0.00	0.00
1,300.00	1.82	341.15	1,299.63	22.68	-7.74	8.13	0.00	0.00	0.00
1,400.00	1.82	341.15	1,399.58	25.69	-8.77	9.21	0.00	0.00	0.00
1,500.00	1.82	341.15	1,499.53	28.70	-9.80	10.29	0.00	0.00	0.00
1,600.00	1.82	341.15	1,599.48	31.70	-10.82	11.37	0.00	0.00	0.00
1,700.00	1.82	341.15	1,699.43	34.71	-11.85	12.45	0.00	0.00	0.00
1,800.00	1.82	341.15	1,799.37	37.71	-12.88	13.53	0.00	0.00	0.00
1,900.00	1.82	341.15	1,899.32	40.72	-13.90	14.60	0.00	0.00	0.00
2,000.00	1.82	341.15	1,999.27	43.73	-14.93	15.68	0.00	0.00	0.00
2,100.00	1.82	341.15	2,099.22	46.73	-15.96	16.76	0.00	0.00	0.00
2,200.00	1.82	341.15	2,199.17	49.74	-16.98	17.84	0.00	0.00	0.00
2,300.00	1.82	341.15	2,299.12	52.75	-18.01	18.92	0.00	0.00	0.00
2,399.93	1.82	341.15	2,399.00	55.75	-19.03	19.99	0.00	0.00	0.00
Ojo Alamo									
2,400.00	1.82	341.15	2,399.07	55.75	-19.03	20.00	0.00	0.00	0.00
2,500.00	1.82	341.15	2,499.02	58.76	-20.06	21.07	0.00	0.00	0.00
2,513.99	1.82	341.15	2,513.00	59.18	-20.20	21.22	0.00	0.00	0.00
Kirtland									
2,600.00	1.82	341.15	2,598.97	61.76	-21.09	22.15	0.00	0.00	0.00
2,700.00	1.82	341.15	2,698.92	64.77	-22.11	23.23	0.00	0.00	0.00
2,800.00	1.82	341.15	2,798.87	67.78	-23.14	24.31	0.00	0.00	0.00
2,900.00	1.82	341.15	2,898.82	70.78	-24.17	25.39	0.00	0.00	0.00
2,975.22	1.82	341.15	2,974.00	73.04	-24.94	26.20	0.00	0.00	0.00
Fruitland									
3,000.00	1.82	341.15	2,998.77	73.79	-25.19	26.46	0.00	0.00	0.00
3,063.26	1.82	341.15	3,062.00	75.69	-25.84	27.15	0.00	0.00	0.00
Top of Coals									
3,100.00	1.82	341.15	3,098.72	76.80	-26.22	27.54	0.00	0.00	0.00
3,187.33	1.82	341.15	3,186.00	79.42	-27.12	28.48	0.00	0.00	0.00
Base of Coals									
3,200.00	1.82	341.15	3,198.67	79.80	-27.25	28.62	0.00	0.00	0.00
3,300.00	1.82	341.15	3,298.62	82.81	-28.27	29.70	0.00	0.00	0.00
3,369.42	1.82	341.15	3,368.00	84.90	-28.98	30.45	0.00	0.00	0.00
Pictured Cliffs									
3,400.00	1.82	341.15	3,398.57	85.82	-29.30	30.78	0.00	0.00	0.00
3,469.47	1.82	341.15	3,468.00	87.90	-30.01	31.53	0.00	0.00	0.00
Lewis									
3,500.00	1.82	341.15	3,498.52	88.82	-30.33	31.86	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
3,600.00	1.82	341.15	3,598.47	91.83	-31.35	32.93	0.00	0.00	0.00	
3,700.00	1.82	341.15	3,698.42	94.83	-32.38	34.01	0.00	0.00	0.00	
3,800.00	1.82	341.15	3,798.37	97.84	-33.40	35.09	0.00	0.00	0.00	
3,900.00	1.82	341.15	3,898.31	100.85	-34.43	36.17	0.00	0.00	0.00	
4,000.00	1.82	341.15	3,998.26	103.85	-35.46	37.25	0.00	0.00	0.00	
4,100.00	1.82	341.15	4,098.21	106.86	-36.48	38.32	0.00	0.00	0.00	
4,200.00	1.82	341.15	4,198.16	109.87	-37.51	39.40	0.00	0.00	0.00	
4,300.00	1.82	341.15	4,298.11	112.87	-38.54	40.48	0.00	0.00	0.00	
4,400.00	1.82	341.15	4,398.06	115.88	-39.56	41.56	0.00	0.00	0.00	
4,500.00	1.82	341.15	4,498.01	118.88	-40.59	42.64	0.00	0.00	0.00	
4,590.03	1.82	341.15	4,588.00	121.59	-41.51	43.61	0.00	0.00	0.00	
Chacra										
4,600.00	1.82	341.15	4,597.96	121.89	-41.62	43.72	0.00	0.00	0.00	
4,700.00	1.82	341.15	4,697.91	124.90	-42.64	44.79	0.00	0.00	0.00	
4,800.00	1.82	341.15	4,797.86	127.90	-43.67	45.87	0.00	0.00	0.00	
4,900.00	1.82	341.15	4,897.81	130.91	-44.69	46.95	0.00	0.00	0.00	
5,000.00	1.82	341.15	4,997.76	133.92	-45.72	48.03	0.00	0.00	0.00	
5,070.28	1.82	341.15	5,068.00	136.03	-46.44	48.79	0.00	0.00	0.00	
Upper Cliff House										
5,100.00	1.82	341.15	5,097.71	136.92	-46.75	49.11	0.00	0.00	0.00	
5,200.00	1.82	341.15	5,197.66	139.93	-47.77	50.18	0.00	0.00	0.00	
5,300.00	1.82	341.15	5,297.61	142.94	-48.80	51.26	0.00	0.00	0.00	
5,389.44	1.82	341.15	5,387.00	145.62	-49.72	52.23	0.00	0.00	0.00	
Cliff House										
5,400.00	1.82	341.15	5,397.56	145.94	-49.83	52.34	0.00	0.00	0.00	
5,423.45	1.82	341.15	5,421.00	146.65	-50.07	52.59	0.00	0.00	0.00	
Menefee										
5,500.00	1.82	341.15	5,497.51	148.95	-50.85	53.42	0.00	0.00	0.00	
5,600.00	1.82	341.15	5,597.46	151.95	-51.88	54.50	0.00	0.00	0.00	
5,664.58	1.82	341.15	5,662.00	153.90	-52.54	55.19	0.00	0.00	0.00	
Point Lookout										
5,700.00	1.82	341.15	5,697.41	154.96	-52.91	55.58	0.00	0.00	0.00	
5,800.00	1.82	341.15	5,797.36	157.97	-53.93	56.65	0.00	0.00	0.00	
5,900.00	1.82	341.15	5,897.31	160.97	-54.96	57.73	0.00	0.00	0.00	
6,000.00	1.82	341.15	5,997.25	163.98	-55.99	58.81	0.00	0.00	0.00	
6,100.00	1.82	341.15	6,097.20	166.99	-57.01	59.89	0.00	0.00	0.00	
6,147.82	1.82	341.15	6,145.00	168.42	-57.50	60.40	0.00	0.00	0.00	
Mancos										
6,200.00	1.82	341.15	6,197.15	169.99	-58.04	60.97	0.00	0.00	0.00	
6,300.00	1.82	341.15	6,297.10	173.00	-59.06	62.04	0.00	0.00	0.00	
6,331.71	1.82	341.15	6,328.80	173.95	-59.39	62.39	0.00	0.00	0.00	
Start DLS 9.00 TFO -69.35										
6,350.00	2.85	308.45	6,347.07	174.51	-59.84	62.85	9.00	5.64	-178.77	
6,400.00	7.00	285.83	6,396.88	176.11	-63.75	66.78	9.00	8.29	-45.25	
6,450.00	11.41	280.28	6,446.23	177.83	-71.55	74.61	9.00	8.83	-11.10	
6,500.00	15.88	277.81	6,494.80	179.64	-83.20	86.29	9.00	8.93	-4.94	
6,550.00	20.36	276.40	6,542.31	181.54	-98.63	101.75	9.00	8.96	-2.81	
6,600.00	24.84	275.49	6,588.46	183.52	-117.73	120.89	9.00	8.97	-1.83	
6,650.00	29.33	274.84	6,632.97	185.55	-140.40	143.59	9.00	8.98	-1.30	
6,700.00	33.83	274.35	6,675.55	187.64	-166.50	169.71	9.00	8.99	-0.98	
6,750.00	38.32	273.96	6,715.95	189.77	-195.85	199.10	9.00	8.99	-0.77	
6,800.00	42.82	273.64	6,753.93	191.92	-228.29	231.57	9.00	8.99	-0.63	
6,822.28	44.82	273.52	6,770.00	192.89	-243.69	246.98	9.00	8.99	-0.56	

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Black Top									
6,850.00	47.31	273.38	6,789.23	194.09	-263.61	266.92	9.00	8.99	-0.52
6,900.00	51.81	273.15	6,821.66	196.25	-301.59	304.94	9.00	8.99	-0.46
6,950.00	56.30	272.94	6,851.00	198.39	-342.01	345.38	9.00	8.99	-0.41
7,000.00	60.80	272.76	6,877.08	200.51	-384.60	388.00	9.00	8.99	-0.37
7,050.00	65.30	272.59	6,899.73	202.59	-429.11	432.54	9.00	8.99	-0.34
7,100.00	69.80	272.43	6,918.82	204.61	-475.26	478.73	9.00	9.00	-0.31
7,150.00	74.30	272.28	6,934.23	206.57	-522.78	526.27	9.00	9.00	-0.30
7,200.00	78.79	272.14	6,945.86	208.44	-571.35	574.87	9.00	9.00	-0.28
7,250.00	83.29	272.00	6,953.65	210.23	-620.70	624.24	9.00	9.00	-0.27
7,300.00	87.79	271.87	6,957.53	211.91	-670.51	674.07	9.00	9.00	-0.27
7,327.38	90.25	271.80	6,958.00	212.79	-697.87	701.44	9.00	9.00	-0.27
Start 12991.63 hold at 7327.38 MD									
7,400.00	90.25	271.80	6,957.68	215.07	-770.45	774.05	0.00	0.00	0.00
7,500.00	90.25	271.80	6,957.24	218.20	-870.40	874.04	0.00	0.00	0.00
7,600.00	90.25	271.80	6,956.80	221.34	-970.35	974.03	0.00	0.00	0.00
7,700.00	90.25	271.80	6,956.36	224.47	-1,070.30	1,074.02	0.00	0.00	0.00
7,800.00	90.25	271.80	6,955.92	227.61	-1,170.25	1,174.01	0.00	0.00	0.00
7,900.00	90.25	271.80	6,955.48	230.75	-1,270.20	1,274.00	0.00	0.00	0.00
8,000.00	90.25	271.80	6,955.04	233.88	-1,370.15	1,373.99	0.00	0.00	0.00
8,100.00	90.25	271.80	6,954.60	237.02	-1,470.10	1,473.97	0.00	0.00	0.00
8,200.00	90.25	271.80	6,954.16	240.15	-1,570.05	1,573.96	0.00	0.00	0.00
8,300.00	90.25	271.80	6,953.72	243.29	-1,670.00	1,673.95	0.00	0.00	0.00
8,400.00	90.25	271.80	6,953.28	246.42	-1,769.95	1,773.94	0.00	0.00	0.00
8,500.00	90.25	271.80	6,952.84	249.56	-1,869.90	1,873.93	0.00	0.00	0.00
8,600.00	90.25	271.80	6,952.40	252.70	-1,969.85	1,973.92	0.00	0.00	0.00
8,700.00	90.25	271.80	6,951.96	255.83	-2,069.80	2,073.91	0.00	0.00	0.00
8,800.00	90.25	271.80	6,951.51	258.97	-2,169.75	2,173.90	0.00	0.00	0.00
8,900.00	90.25	271.80	6,951.07	262.10	-2,269.70	2,273.89	0.00	0.00	0.00
9,000.00	90.25	271.80	6,950.63	265.24	-2,369.65	2,373.88	0.00	0.00	0.00
9,100.00	90.25	271.80	6,950.19	268.38	-2,469.60	2,473.87	0.00	0.00	0.00
9,200.00	90.25	271.80	6,949.75	271.51	-2,569.55	2,573.85	0.00	0.00	0.00
9,300.00	90.25	271.80	6,949.31	274.65	-2,669.50	2,673.84	0.00	0.00	0.00
9,400.00	90.25	271.80	6,948.87	277.78	-2,769.45	2,773.83	0.00	0.00	0.00
9,500.00	90.25	271.80	6,948.43	280.92	-2,869.40	2,873.82	0.00	0.00	0.00
9,600.00	90.25	271.80	6,947.99	284.05	-2,969.35	2,973.81	0.00	0.00	0.00
9,700.00	90.25	271.80	6,947.55	287.19	-3,069.30	3,073.80	0.00	0.00	0.00
9,800.00	90.25	271.80	6,947.11	290.33	-3,169.25	3,173.79	0.00	0.00	0.00
9,900.00	90.25	271.80	6,946.67	293.46	-3,269.20	3,273.78	0.00	0.00	0.00
10,000.00	90.25	271.80	6,946.23	296.60	-3,369.15	3,373.77	0.00	0.00	0.00
10,100.00	90.25	271.80	6,945.79	299.73	-3,469.10	3,473.76	0.00	0.00	0.00
10,200.00	90.25	271.80	6,945.35	302.87	-3,569.05	3,573.75	0.00	0.00	0.00
10,300.00	90.25	271.80	6,944.91	306.01	-3,669.00	3,673.74	0.00	0.00	0.00
10,400.00	90.25	271.80	6,944.47	309.14	-3,768.95	3,773.72	0.00	0.00	0.00
10,500.00	90.25	271.80	6,944.03	312.28	-3,868.90	3,873.71	0.00	0.00	0.00
10,600.00	90.25	271.80	6,943.59	315.41	-3,968.85	3,973.70	0.00	0.00	0.00
10,700.00	90.25	271.80	6,943.15	318.55	-4,068.80	4,073.69	0.00	0.00	0.00
10,800.00	90.25	271.80	6,942.71	321.68	-4,168.75	4,173.68	0.00	0.00	0.00
10,900.00	90.25	271.80	6,942.27	324.82	-4,268.69	4,273.67	0.00	0.00	0.00
11,000.00	90.25	271.80	6,941.83	327.96	-4,368.64	4,373.66	0.00	0.00	0.00
11,100.00	90.25	271.80	6,941.39	331.09	-4,468.59	4,473.65	0.00	0.00	0.00
11,200.00	90.25	271.80	6,940.95	334.23	-4,568.54	4,573.64	0.00	0.00	0.00
11,300.00	90.25	271.80	6,940.51	337.36	-4,668.49	4,673.63	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,400.00	90.25	271.80	6,940.06	340.50	-4,768.44	4,773.62	0.00	0.00	0.00
11,500.00	90.25	271.80	6,939.62	343.64	-4,868.39	4,873.60	0.00	0.00	0.00
11,600.00	90.25	271.80	6,939.18	346.77	-4,968.34	4,973.59	0.00	0.00	0.00
11,700.00	90.25	271.80	6,938.74	349.91	-5,068.29	5,073.58	0.00	0.00	0.00
11,800.00	90.25	271.80	6,938.30	353.04	-5,168.24	5,173.57	0.00	0.00	0.00
11,900.00	90.25	271.80	6,937.86	356.18	-5,268.19	5,273.56	0.00	0.00	0.00
12,000.00	90.25	271.80	6,937.42	359.31	-5,368.14	5,373.55	0.00	0.00	0.00
12,100.00	90.25	271.80	6,936.98	362.45	-5,468.09	5,473.54	0.00	0.00	0.00
12,200.00	90.25	271.80	6,936.54	365.59	-5,568.04	5,573.53	0.00	0.00	0.00
12,300.00	90.25	271.80	6,936.10	368.72	-5,667.99	5,673.52	0.00	0.00	0.00
12,400.00	90.25	271.80	6,935.66	371.86	-5,767.94	5,773.51	0.00	0.00	0.00
12,500.00	90.25	271.80	6,935.22	374.99	-5,867.89	5,873.50	0.00	0.00	0.00
12,600.00	90.25	271.80	6,934.78	378.13	-5,967.84	5,973.48	0.00	0.00	0.00
12,700.00	90.25	271.80	6,934.34	381.27	-6,067.79	6,073.47	0.00	0.00	0.00
12,800.00	90.25	271.80	6,933.90	384.40	-6,167.74	6,173.46	0.00	0.00	0.00
12,900.00	90.25	271.80	6,933.46	387.54	-6,267.69	6,273.45	0.00	0.00	0.00
13,000.00	90.25	271.80	6,933.02	390.67	-6,367.64	6,373.44	0.00	0.00	0.00
13,100.00	90.25	271.80	6,932.58	393.81	-6,467.59	6,473.43	0.00	0.00	0.00
13,200.00	90.25	271.80	6,932.14	396.94	-6,567.54	6,573.42	0.00	0.00	0.00
13,300.00	90.25	271.80	6,931.70	400.08	-6,667.49	6,673.41	0.00	0.00	0.00
13,400.00	90.25	271.80	6,931.26	403.22	-6,767.44	6,773.40	0.00	0.00	0.00
13,500.00	90.25	271.80	6,930.82	406.35	-6,867.39	6,873.39	0.00	0.00	0.00
13,600.00	90.25	271.80	6,930.38	409.49	-6,967.34	6,973.38	0.00	0.00	0.00
13,700.00	90.25	271.80	6,929.94	412.62	-7,067.29	7,073.37	0.00	0.00	0.00
13,800.00	90.25	271.80	6,929.50	415.76	-7,167.24	7,173.35	0.00	0.00	0.00
13,900.00	90.25	271.80	6,929.06	418.90	-7,267.19	7,273.34	0.00	0.00	0.00
14,000.00	90.25	271.80	6,928.61	422.03	-7,367.14	7,373.33	0.00	0.00	0.00
14,100.00	90.25	271.80	6,928.17	425.17	-7,467.09	7,473.32	0.00	0.00	0.00
14,200.00	90.25	271.80	6,927.73	428.30	-7,567.04	7,573.31	0.00	0.00	0.00
14,300.00	90.25	271.80	6,927.29	431.44	-7,666.99	7,673.30	0.00	0.00	0.00
14,400.00	90.25	271.80	6,926.85	434.57	-7,766.94	7,773.29	0.00	0.00	0.00
14,500.00	90.25	271.80	6,926.41	437.71	-7,866.89	7,873.28	0.00	0.00	0.00
14,600.00	90.25	271.80	6,925.97	440.85	-7,966.84	7,973.27	0.00	0.00	0.00
14,700.00	90.25	271.80	6,925.53	443.98	-8,066.79	8,073.26	0.00	0.00	0.00
14,800.00	90.25	271.80	6,925.09	447.12	-8,166.74	8,173.25	0.00	0.00	0.00
14,900.00	90.25	271.80	6,924.65	450.25	-8,266.69	8,273.23	0.00	0.00	0.00
15,000.00	90.25	271.80	6,924.21	453.39	-8,366.64	8,373.22	0.00	0.00	0.00
15,100.00	90.25	271.80	6,923.77	456.53	-8,466.59	8,473.21	0.00	0.00	0.00
15,200.00	90.25	271.80	6,923.33	459.66	-8,566.54	8,573.20	0.00	0.00	0.00
15,300.00	90.25	271.80	6,922.89	462.80	-8,666.49	8,673.19	0.00	0.00	0.00
15,400.00	90.25	271.80	6,922.45	465.93	-8,766.44	8,773.18	0.00	0.00	0.00
15,500.00	90.25	271.80	6,922.01	469.07	-8,866.39	8,873.17	0.00	0.00	0.00
15,600.00	90.25	271.80	6,921.57	472.20	-8,966.34	8,973.16	0.00	0.00	0.00
15,700.00	90.25	271.80	6,921.13	475.34	-9,066.29	9,073.15	0.00	0.00	0.00
15,800.00	90.25	271.80	6,920.69	478.48	-9,166.24	9,173.14	0.00	0.00	0.00
15,900.00	90.25	271.80	6,920.25	481.61	-9,266.19	9,273.13	0.00	0.00	0.00
16,000.00	90.25	271.80	6,919.81	484.75	-9,366.14	9,373.11	0.00	0.00	0.00
16,100.00	90.25	271.80	6,919.37	487.88	-9,466.09	9,473.10	0.00	0.00	0.00
16,200.00	90.25	271.80	6,918.93	491.02	-9,566.04	9,573.09	0.00	0.00	0.00
16,300.00	90.25	271.80	6,918.49	494.16	-9,665.99	9,673.08	0.00	0.00	0.00
16,400.00	90.25	271.80	6,918.05	497.29	-9,765.94	9,773.07	0.00	0.00	0.00
16,500.00	90.25	271.80	6,917.61	500.43	-9,865.89	9,873.06	0.00	0.00	0.00
16,600.00	90.25	271.80	6,917.16	503.56	-9,965.84	9,973.05	0.00	0.00	0.00
16,700.00	90.25	271.80	6,916.72	506.70	-10,065.79	10,073.04	0.00	0.00	0.00

SDT

Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
16,800.00	90.25	271.80	6,916.28	509.83	-10,165.74	10,173.03	0.00	0.00	0.00
16,900.00	90.25	271.80	6,915.84	512.97	-10,265.69	10,273.02	0.00	0.00	0.00
17,000.00	90.25	271.80	6,915.40	516.11	-10,365.64	10,373.01	0.00	0.00	0.00
17,100.00	90.25	271.80	6,914.96	519.24	-10,465.59	10,472.99	0.00	0.00	0.00
17,200.00	90.25	271.80	6,914.52	522.38	-10,565.54	10,572.98	0.00	0.00	0.00
17,300.00	90.25	271.80	6,914.08	525.51	-10,665.49	10,672.97	0.00	0.00	0.00
17,400.00	90.25	271.80	6,913.64	528.65	-10,765.44	10,772.96	0.00	0.00	0.00
17,500.00	90.25	271.80	6,913.20	531.79	-10,865.39	10,872.95	0.00	0.00	0.00
17,600.00	90.25	271.80	6,912.76	534.92	-10,965.34	10,972.94	0.00	0.00	0.00
17,700.00	90.25	271.80	6,912.32	538.06	-11,065.28	11,072.93	0.00	0.00	0.00
17,800.00	90.25	271.80	6,911.88	541.19	-11,165.23	11,172.92	0.00	0.00	0.00
17,900.00	90.25	271.80	6,911.44	544.33	-11,265.18	11,272.91	0.00	0.00	0.00
18,000.00	90.25	271.80	6,911.00	547.46	-11,365.13	11,372.90	0.00	0.00	0.00
18,100.00	90.25	271.80	6,910.56	550.60	-11,465.08	11,472.89	0.00	0.00	0.00
18,200.00	90.25	271.80	6,910.12	553.74	-11,565.03	11,572.88	0.00	0.00	0.00
18,300.00	90.25	271.80	6,909.68	556.87	-11,664.98	11,672.86	0.00	0.00	0.00
18,400.00	90.25	271.80	6,909.24	560.01	-11,764.93	11,772.85	0.00	0.00	0.00
18,500.00	90.25	271.80	6,908.80	563.14	-11,864.88	11,872.84	0.00	0.00	0.00
18,600.00	90.25	271.80	6,908.36	566.28	-11,964.83	11,972.83	0.00	0.00	0.00
18,700.00	90.25	271.80	6,907.92	569.42	-12,064.78	12,072.82	0.00	0.00	0.00
18,800.00	90.25	271.80	6,907.48	572.55	-12,164.73	12,172.81	0.00	0.00	0.00
18,900.00	90.25	271.80	6,907.04	575.69	-12,264.68	12,272.80	0.00	0.00	0.00
19,000.00	90.25	271.80	6,906.60	578.82	-12,364.63	12,372.79	0.00	0.00	0.00
19,100.00	90.25	271.80	6,906.15	581.96	-12,464.58	12,472.78	0.00	0.00	0.00
19,200.00	90.25	271.80	6,905.71	585.09	-12,564.53	12,572.77	0.00	0.00	0.00
19,300.00	90.25	271.80	6,905.27	588.23	-12,664.48	12,672.76	0.00	0.00	0.00
19,400.00	90.25	271.80	6,904.83	591.37	-12,764.43	12,772.74	0.00	0.00	0.00
19,500.00	90.25	271.80	6,904.39	594.50	-12,864.38	12,872.73	0.00	0.00	0.00
19,600.00	90.25	271.80	6,903.95	597.64	-12,964.33	12,972.72	0.00	0.00	0.00
19,700.00	90.25	271.80	6,903.51	600.77	-13,064.28	13,072.71	0.00	0.00	0.00
19,800.00	90.25	271.80	6,903.07	603.91	-13,164.23	13,172.70	0.00	0.00	0.00
19,900.00	90.25	271.80	6,902.63	607.05	-13,264.18	13,272.69	0.00	0.00	0.00
20,000.00	90.25	271.80	6,902.19	610.18	-13,364.13	13,372.68	0.00	0.00	0.00
20,100.00	90.25	271.80	6,901.75	613.32	-13,464.08	13,472.67	0.00	0.00	0.00
20,200.00	90.25	271.80	6,901.31	616.45	-13,564.03	13,572.66	0.00	0.00	0.00
20,300.00	90.25	271.80	6,900.87	619.59	-13,663.98	13,672.65	0.00	0.00	0.00
20,319.01	90.25	271.80	6,900.79	620.19	-13,682.98	13,691.65	0.00	0.00	0.00
Start 178.57 hold at 20319.01 MD									
20,400.00	90.25	271.80	6,900.43	622.72	-13,763.93	13,772.64	0.00	0.00	0.00
20,497.58	90.25	271.80	6,900.00	625.78	-13,861.47	13,870.21	0.00	0.00	0.00
TD at 20497.58									

SDT
Planning Report

Database:	EDM 5000 Multi User Db	Local Co-ordinate Reference:	Well Rosa Unit 590H
Company:	Logos Operating LLC	TVD Reference:	6335+30 @ 6365.00usft (H&P 530)
Project:	Rio Arriba, NM (NAD83)	MD Reference:	6335+30 @ 6365.00usft (H&P 530)
Site:	Rosa Unit 8	North Reference:	Grid
Well:	Rosa Unit 590H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Prelim #2		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
RU 590H SHL	0.00	0.00	0.00	0.00	0.00	2,146,072.18	2,835,953.40	36.897027	-107.447352
- plan hits target center									
- Point									
RU 590H PBHL	0.00	0.00	6,900.00	625.78	-13,861.47	2,146,697.96	2,822,091.94	36.898890	-107.494749
- plan hits target center									
- Point									
RU 590H FPP	0.00	0.00	6,900.79	620.19	-13,682.98	2,146,692.36	2,822,270.42	36.898873	-107.494139
- plan hits target center									
- Point									
RU 590H POE	0.00	0.00	6,958.00	212.79	-697.87	2,146,284.96	2,835,255.53	36.897619	-107.449736
- plan hits target center									
- Point									

Formations						
Measured Depth	Vertical Depth					
(usft)	(usft)	Name	Lithology	Dip	Dip Direction	
				(°)	(°)	
2,399.93	2,399.00	Ojo Alamo		0.00		
2,513.99	2,513.00	Kirtland		0.00		
2,975.22	2,974.00	Fruitland		0.00		
3,063.26	3,062.00	Top of Coals		0.00		
3,187.33	3,186.00	Base of Coals		0.00		
3,369.42	3,368.00	Pictured Cliffs		0.00		
3,469.47	3,468.00	Lewis		0.00		
4,590.03	4,588.00	Chacra		0.00		
5,070.28	5,068.00	Upper Cliff House		0.00		
5,389.44	5,387.00	Cliff House		0.00		
5,423.45	5,421.00	Menefee		0.00		
5,664.58	5,662.00	Point Lookout		0.00		
6,147.82	6,145.00	Mancos		0.00		
6,822.28	6,770.00	Black Top		0.00		

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W		
		(usft)	(usft)	Comment	
500.00	500.00	0.00	0.00	Start Build 2.00	
591.02	591.01	1.37	-0.47	Start 5740.69 hold at 591.02 MD	
6,331.71	6,328.80	173.95	-59.39	Start DLS 9.00 TFO -69.35	
7,327.38	6,958.00	212.79	-697.87	Start 12991.63 hold at 7327.38 MD	
20,319.01	6,900.79	620.19	-13,682.98	Start 178.57 hold at 20319.01 MD	
20,497.58	6,900.00	625.78	-13,861.47	TD at 20497.58	

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

WELL LOCATION INFORMATION

API Number 3003931478	Pool Code 97232	Pool Name BASIN MANCOS
Property Code 320608	Property Name ROSA UNIT	Well Number 590H
OGRID No. 289408	Operator Name LOGOS OPERATING, LLC	Ground Level Elevation 6325'
Surface Owner: ☐ State ☐ Fee ☐ Tribal ☒ Federal		Mineral Owner: ☒ State ☒ Fee ☐ Tribal ☒ Federal

Surface Location (SHL)

UL	Section	Township	Range	Lot	Ft from the N/S	Ft from the E/W	Latitude	Longitude	County
J	15	31N	6W		1701' NORTH	1801' EAST	36.897027° N	107.447352° W	RIO ARRIBA

Bottom Hole Location (BHL)

UL	Section	Township	Range	Lot	Ft from the N/S	Ft from the E/W	Latitude	Longitude	County
L	17	31N	6W		2410' SOUTH	155' WEST	36.898890° N	107.494749° W	SAN JUAN

Dedicated Acres ALL SECTION 15 = 640 ACRES ALL SECTION 16 = 640 ACRES ALL SECTION 17 = 640 ACRES 1920 ACRES TOTAL	PENETRATED SPACING UNIT; Infill	Infill or Defining Well Defining Well API	Overlapping Spacing Unit (Y/N) N	Consolidation Code Unitization
Order Numbers: R-13457		Well Setbacks are under Common Ownership: ☐ Yes ☒ No		

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Ft from the N/S	Ft from the E/W	Latitude	Longitude	County
J	15	31N	6W		1922' SOUTH	2498' EAST	36.897619° N	107.449736° W	RIO ARRIBA

First Take Point (FTP)

UL	Section	Township	Range	Lot	Ft from the N/S	Ft from the E/W	Latitude	Longitude	County
J	15	31N	6W		1922' SOUTH	2498' EAST	36.897619° N	107.449736° W	RIO ARRIBA

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Ft from the N/S	Ft from the E/W	Latitude	Longitude	County
L	17	31N	6W		2404' SOUTH	334' WEST	36.898873° N	107.494139° W	SAN JUAN

Unitized Area or Area of Uniform Interest ROSA Unit	Spacing Unit Type ☒ Horizontal ☐ Vertical	Ground Floor Elevation
--	--	------------------------

OPERATOR CERTIFICATIONS

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

If this well is a horizontal well, I further certify that this organization has received the consent of at least one lessee or owner of a working interest or unleased mineral interest in each tract (in the target pool or formation) in which any part of the well's completed interval will be located or obtained a compulsory pooling order from the division.

Etta Trujillo

Signature

1/3/2025

Date

Etta Trujillo

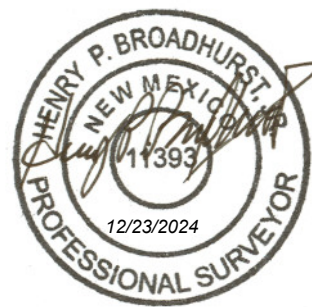
Printed Name

etrujillo@logosresourcesllc.com

E-mail Address

SURVEYOR CERTIFICATIONS

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.



Signature and Seal of Professional Surveyor:

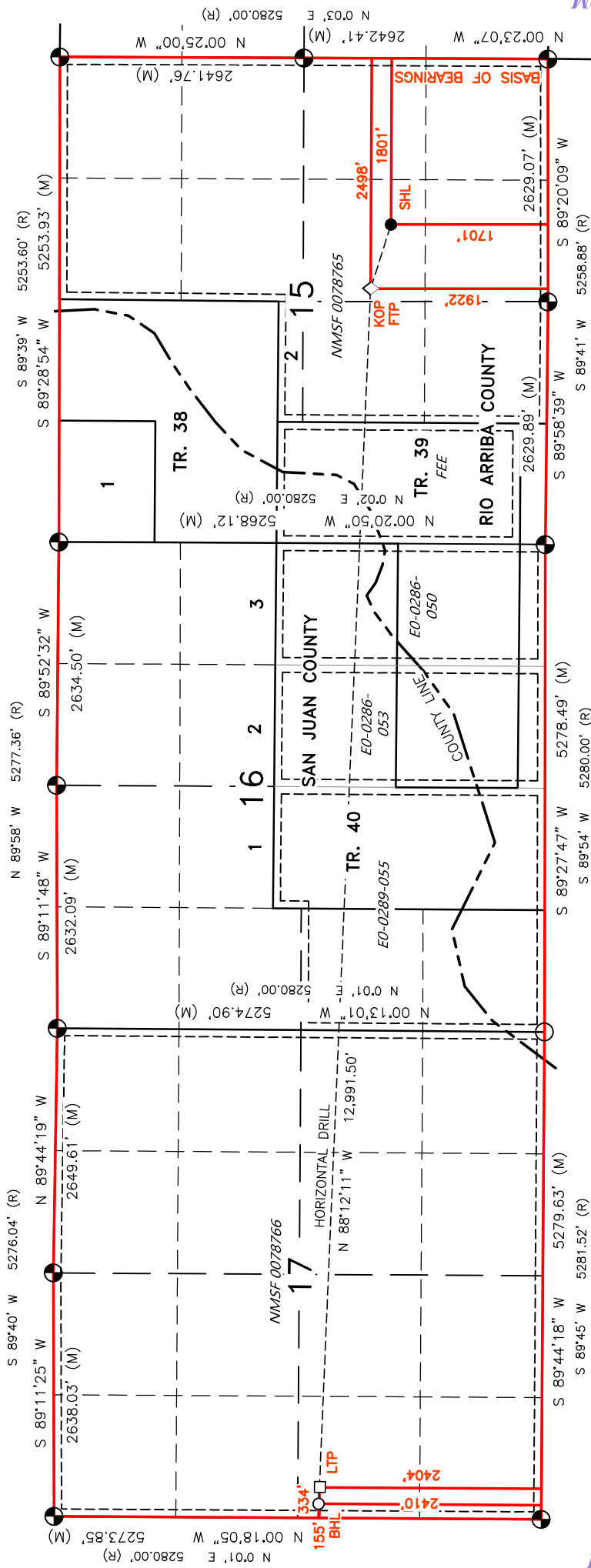
Certificate Number

11393

Date of Survey

DECEMBER 12, 2024

Note: 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.



- SURFACE LOCATION (SHL)**
1701' FSL 1801' FEL
SEC. 15, T31N, R6W
LAT. 36.897027° N (NAD83)
LONG. 107.447352° W (NAD83)
- KICK OFF POINT (KOP)**
1922' FSL 2498' FEL
SEC. 15, T31N, R6W
LAT. 36.897619° N (NAD83)
LONG. 107.449736° W (NAD83)
- FIRST TAKE POINT (FTP)**
1922' FSL 2498' FEL
SEC. 15, T31N, R6W
LAT. 36.897619° N (NAD83)
LONG. 107.449736° W (NAD83)
- LAST TAKE POINT (LTP)**
2404' FSL 334' FWL
SEC. 17, T31N, R6W
LAT. 36.898873° N (NAD83)
LONG. 107.494139° W (NAD83)
- BOTTOM HOLE LOCATION (BHL)**
2410' FSL 155' FWL
SEC. 17, T31N, R6W
LAT. 36.898890° N (NAD83)
LONG. 107.494749° W (NAD83)

ROSA UNIT #590H

SURFACE HOLE LOCATION NMSF 0078765
1701' FSL, 1801' FEL
LOCATED IN THE NW/SE OF SECTION 15,
T31N, R6W, N.M.P.M., RIO ARriba COUNTY, NEW MEXICO
LATITUDE: 36.897027°N LONGITUDE: 107.447352°W (NAD83)

PPP-1 (FIRST TAKE POINT) NMSF 0078765
1922' FSL, 2498' FEL
LOCATED IN THE NW/SE OF SECTION 15,
T31N, R6W, N.M.P.M., RIO ARriba COUNTY, NEW MEXICO
LATITUDE: 36.897619°N LONGITUDE: 107.449736°W (NAD83)

PPP-2 FEE
1969' FSL, 1311' FWL
LOCATED IN TRACT 39 OF SECTION 15,
T31N, R6W, N.M.P.M., RIO ARriba COUNTY, NEW MEXICO
LATITUDE: 36.897760°N LONGITUDE: 107.454691°W (NAD83)

PPP-3 E0-0289-050
2011' FSL, 1' FEL
LOCATED IN TRACT 40 OF SECTION 16,
T31N, R6W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO
LATITUDE: 36.897887°N LONGITUDE: 107.459175°W (NAD83)

PPP-4 E0-0289-053
2065' FSL, 1319' FWL
LOCATED IN TRACT 40 OF SECTION 16,
T31N, R6W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO
LATITUDE: 36.898015°N LONGITUDE: 107.463685°W (NAD83)

PPP-5 E0-0289-055
2118' FSL, 2636' FWL
LOCATED IN TRACT 40 OF SECTION 16,
T31N, R6W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO
LATITUDE: 36.898143°N LONGITUDE: 107.468195°W (NAD83)

PPP-6 NMSF 0078766
2226' FSL, 1' FEL
LOCATED IN THE NE/SE OF SECTION 17,
T31N, R6W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO
LATITUDE: 36.898397°N LONGITUDE: 107.477211°W (NAD83)

PPP-7 (LAST TAKE POINT) NMSF 0078766
2404' FSL, 334' FWL
LOCATED IN THE NW/SW OF SECTION 17,
T31N, R6W, N.M.P.M., SAN JUAN COUNTY, NEW MEXICO
LATITUDE: 36.898873°N LONGITUDE: 107.494139°W (NAD83)

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

General Information
Phone: (505) 629-6116

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

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

CONDITIONS

Action 432689

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 432689
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Any previous COA's not addressed within the updated COA's still apply.	3/28/2025