

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.
NMSF078769
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 LLC3a. Address 2010 AFTON PLACE
FARMINGTON, NM 874013b. Phone No. (include area code)
(505) 278-87204. Location of Well (Footage, Sec., T., R., M., or Survey Description)
SEC 19 T31N R05W NE/NW (C) 952 FNL 422 FWL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No.
ROSA UNIT 647H9. API Well No.
30-039-3141110. Field and Pool or Exploratory Area
BASIN MANCOS11. 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	
☐ 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 determined that the site is ready for final inspection.)

LOGOS Operating request a change in plans for the following:

Original bottom-hole location from 2579' FSL & 2304' FWL to new **bottom-hole location 2364' FSL & 177' FEL**Original TD @ 17,779' MD 6821' TVD to new **TD @ 20,552' MD 6968' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6586' MD 6361' TVD to new **KOP @ 6558' MD 6321' TVD**Original Landing point @ 7579' MD 6955' TVD to new **Landing point @ 7555' MD 6942' TVD**Original 5.5" casing Production @ 17,779' MD to **5.5" Production casing, 20,552' MD 6968' TVD**

The 5.5" production cementing bbls and sacks have been update per casing depth changes.

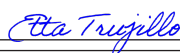
Attached: New C102, Operation and Directional Drill plans.

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

Etta Trujillo

Title Regulatory Specialist

Signature



Date 09/29/2022

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 /	County or Parish/State: RIO ARRIBA / NM
Well Number: 647H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078769	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141100X1	Well Status: Temporarily Abandoned	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2695556

Type of Submission: Notice of Intent

Type of Action: Other

Date Sundry Submitted: 09/29/2022

Time Sundry Submitted: 01:41

Date proposed operation will begin: 09/29/2022

Procedure Description: LOGOS Operating request a change in plans for the following: Original bottom-hole location from 2579' FSL & 2304' FWL to new bottom-hole location 2364' FSL & 177' FEL Original TD @ 17,779' MD 6821' TVD to new TD @ 20,552' MD 6968' TVD. Geology tops have been updated per changes. Original KOP @ 6586' MD 6361' TVD to new KOP @ 6558' MD 6321' TVD Original Landing point @ 7579' MD 6955' TVD to new Landing point @ 7555' MD 6942' TVD Original 5.5" casing Production @ 17,779' MD to 5.5" Production casing, 20,552' MD 6968' TVD The 5.5" production 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

3160_5_Rosa_Unit_647H_Change_in_Plans_BHL_PROD_20220929_20220929133511.pdf

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 19 / NENW /	County or Parish/State: RIO ARRIBA / NM
Well Number: 647H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078769	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141100X1	Well Status: Temporarily Abandoned	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: SEP 29, 2022 01:36 PM
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: 09/30/2022
Signature: Kenneth Rennick

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31411	² Pool Code 97232	³ Pool Name BASIN MANCOS
⁴ Property Code 320608	⁵ Property Name ROSA UNIT	⁶ Well Number 647H
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	952	NORTH	422	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
I	21	31N	5W		2364	SOUTH	177	EAST	RIO ARriba
¹² Dedicated Acres 872.43	S/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.

Etta Trujillo 9/23/2022
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: SEPTEMBER 19, 2022
Date of Survey: JANUARY 2, 2015

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

SURFACE LOCATION
952' FNL 422' FWL
SECTION 19, T31N, R5W
LAT: 36.889709°N
LONG: 107.405733°W
DATUM: NAD1927

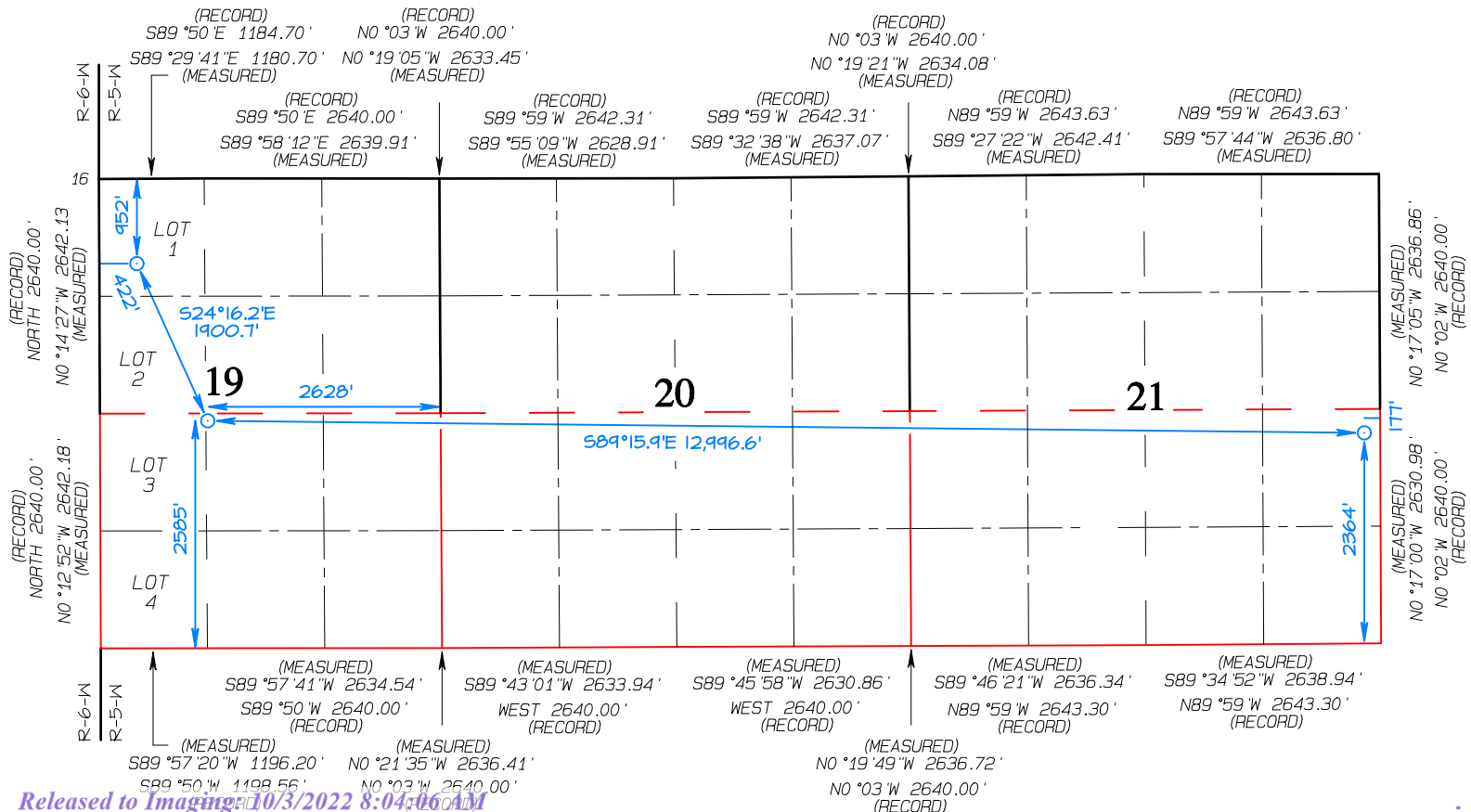
FIRST TAKE POINT
2585' FSL 2628' FEL
SECTION 19, T31N, R5W
LAT: 36.884941°N
LONG: 107.403088°W
DATUM: NAD1927

LAST TAKE POINT
2364' FSL 177' FEL
SECTION 21, T31N, R5W
LAT: 36.884313°N
LONG: 107.358656°W
DATUM: NAD1927

LAT: 36.889715°N
LONG: 107.406336°W
DATUM: NAD1983

LAT: 36.884947°N
LONG: 107.403691°W
DATUM: NAD1983

LAT: 36.884319°N
LONG: 107.359258°W
DATUM: NAD1983





LOGOS Operating, LLC Operations Plan

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

Date:	September 29, 2022	Pool:	Basin Mancos
Well Name:	Rosa Unit 647H	GL Elevation:	6,305'
Surface Location:	Sec 19, T31N, R5W 952 FNL, 422 FWL (36.889715° N, 107.406336° W – NAD83)	Measured Depth:	20,552' (KB)
Bottom Hole Location:	Sec 21, T31N, R5W 2364 FSL, 177 FEL (36.884319° N, 107.359258° W – NAD83)	County:	Rio Arriba

Lease Serial # NMSF078769, 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	2503	2429	*POINT LOOKOUT	5842	5621
KIRTLAND	2618	2539	*MANCOS	6365	6131
*FRUITLAND	3113	3014	KICKOFF POINT	6558	6321
*PICTURED CLIFFS	3471	3359	LANDING POINT	7555	6942
LEWIS	3582	3463			
CHACRA	4749	4575			
*CLIFF HOUSE	5578	5366			
MENEFEE	5625	5412	TD	20,552	6968

* 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 8-3/4" 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.

ROSA UNIT 647H



- 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:** 6968' TVD x 0.43 = 2996 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"	338' GL, 363' MD	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,419'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,552'	5.5"	20 LBS	P-110 or equiv	LTC/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.



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 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 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 (ft)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,923	506	0.31318	1.3	206.01	36.7	42	224	40
Stage 1 Lead	4,763	1,161	0.31318	1.3	472.48	84.2	0	472	84
								696	124
Stage 2 Tail	3,629	1,134	0.31318	1.3	461.49	82.2	0	461	82
Stage 2 Lead	3,157	472	0.31318	1.3	192.17	34.2	0	192	34
								654	116
Stage 3 Tail	2,407	750	0.31318	1.3	305.35	54.4	0	305	54
Stage 3 Lead	320	2,087	0.31318	1.3	849.69	151.3	0	850	151
Stage 3 Lead	-	320	0.36268	1	116.06	20.7	0	116	21
								1,271	226
All Stage Totals					2,621	467		1,326	

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)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,319	100	0.2531	1	25	5	1.53	17	13
Open Hole Lead	6,419	14,133	0.2291	1.15	3,734	665	1.53	2,441	13
					3,759	670		2,457	

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

Cement calculations are used for volume estimation. Well conditions will dictate the 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

ROSA UNIT 647H



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.

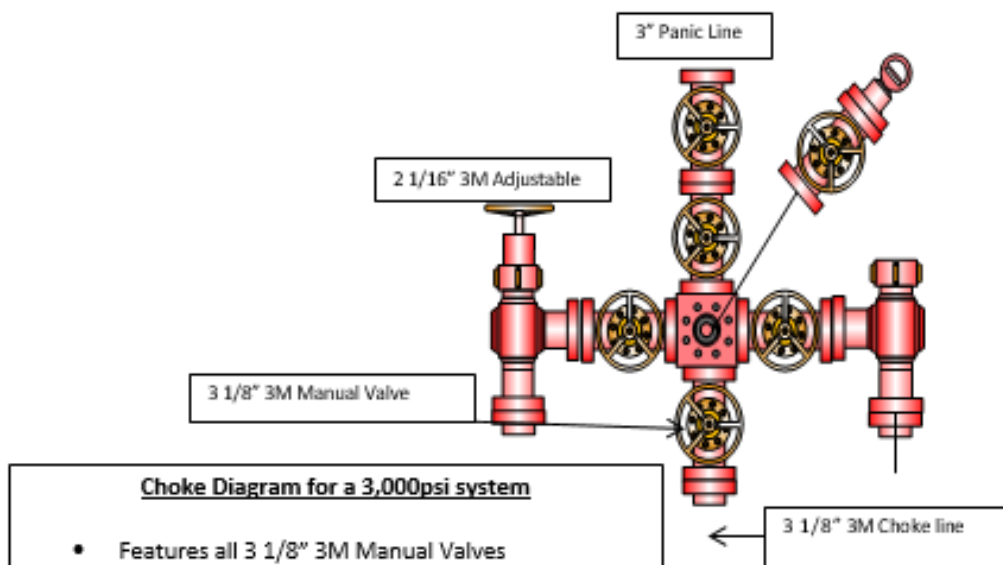
E. PRODUCTION TUBING

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 12-18 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.

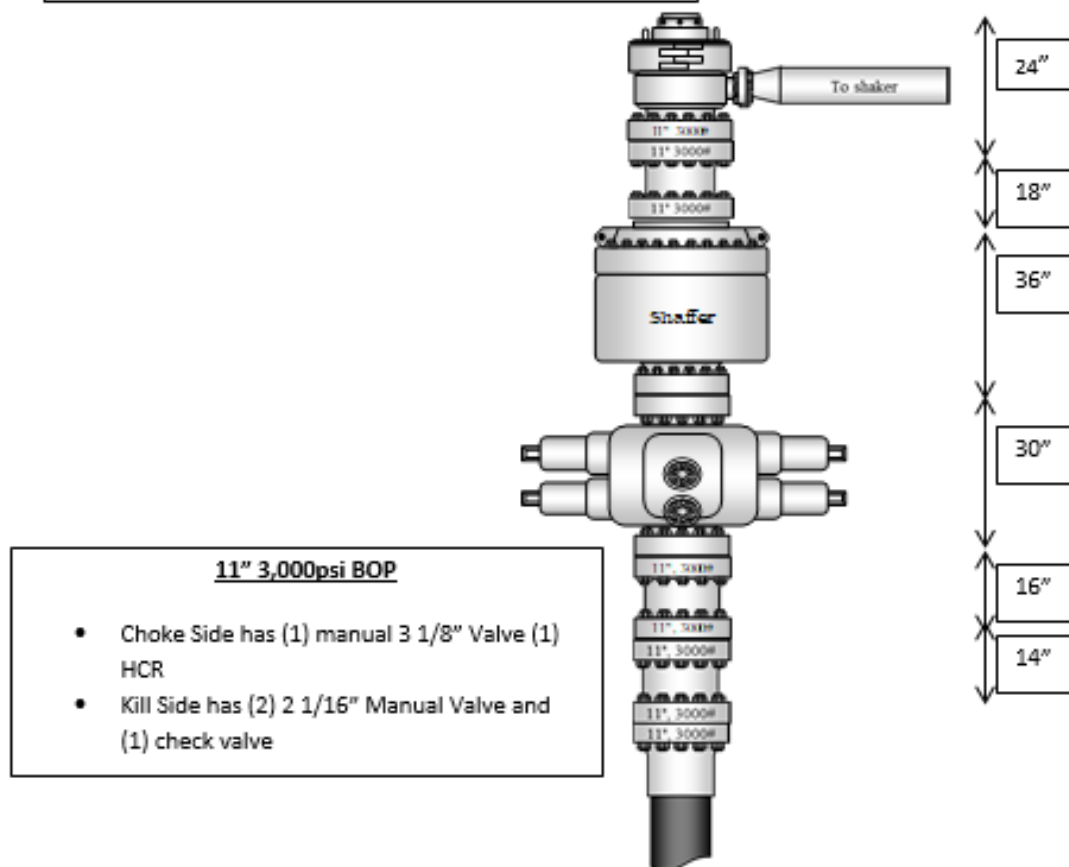


3M 11" B.O.P.E Diagram



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 647H



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 647H

OH

Plan #7

Anticollision Summary Report

16 September, 2022





Lonestar Consulting, LLC

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Reference Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference	Plan #7
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum centre distance of 15,000.00ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Pedal Curve
Casing Method:	Not applied

Survey Tool Program		Date	9/16/2022		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
392.00	6,430.00	Survey #1 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
6,430.00	20,552.43	Plan #7 (OH)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rosa Unit 27						
Rosa Unit 17C - OH - OH	12,632.96	7,527.47	218.76	-2.20	0.990	Level 1, CC, ES, SF
Rosa Unit 183A - OH - OH	3,200.72	3,068.72	323.87	216.06	3.004	CC
Rosa Unit 183A - OH - OH	3,317.00	3,181.06	325.71	213.92	2.914	ES
Rosa Unit 183A - OH - OH	3,508.00	3,363.01	335.67	217.52	2.841	SF
Rosa Unit 183C - OH - OH	9,873.81	6,944.90	363.76	61.99	1.205	Level 2, CC, ES, SF
Rosa Unit 204A - OH - OH	1,468.52	1,448.24	549.87	500.88	11.222	CC
Rosa Unit 204A - OH - OH	1,602.00	1,574.49	551.73	498.19	10.305	ES
Rosa Unit 204A - OH - OH	3,127.00	3,024.76	771.76	667.16	7.378	SF
Rosa Unit 206A - OH - OH	3,413.00	6,550.00	928.73	817.79	8.372	SF
Rosa Unit 206A - OH - OH	3,491.99	6,550.00	925.15	816.20	8.491	CC, ES
Rosa Unit 640H - OH - OH	0.00	0.51	90.45			
Rosa Unit 640H - OH - OH	503.60	502.81	91.25	89.34	47.537	ES
Rosa Unit 640H - OH - OH	946.00	933.84	116.68	112.39	27.221	SF
Rosa Unit 641H - OH - OH	466.62	465.60	103.45	101.69	58.747	CC
Rosa Unit 641H - OH - OH	482.00	480.53	103.47	101.64	56.522	ES
Rosa Unit 641H - OH - OH	1,126.00	1,111.58	159.00	153.73	30.145	SF
Rosa Unit 642H - OH - OH	0.00	0.51	105.00			
Rosa Unit 642H - OH - OH	482.00	479.85	106.72	104.96	60.584	ES
Rosa Unit 642H - OH - OH	1,507.00	1,487.40	173.14	165.17	21.726	SF
Rosa Unit 643H - OH - OH	464.80	464.03	85.23	83.48	48.732	CC
Rosa Unit 643H - OH - OH	482.00	480.73	85.27	83.44	46.641	ES
Rosa Unit 643H - OH - OH	1,793.00	1,769.87	171.94	160.26	14.721	SF
Rosa Unit 644H - OH - Plan #1	539.65	539.09	71.65	68.78	24.938	CC
Rosa Unit 644H - OH - Plan #1	7,021.55	7,014.78	106.06	53.60	2.022	ES, SF
Rosa Unit 645H - OH - OH	426.29	426.31	8.24	6.74	5.485	CC, ES
Rosa Unit 645H - OH - OH	482.00	481.85	8.92	7.03	4.709	SF
Rosa Unit 646H - OH - Plan #2	886.82	890.82	50.35	44.81	9.091	CC, ES
Rosa Unit 646H - OH - Plan #2	14,300.00	15,003.33	2,107.90	1,652.26	4.626	SF
Rosa Unit 648H - OH - OH	706.98	707.21	3.25	0.34	1.116	Level 2, CC, ES, SF
Rosa Unit 649H - OH - OH	714.36	713.18	57.47	53.88	16.022	CC
Rosa Unit 649H - OH - OH	946.00	943.65	58.94	53.65	11.130	ES
Rosa Unit 649H - OH - OH	1,317.00	1,313.70	67.82	59.58	8.235	SF
Rosa Unit 649H - OH - Plan #6	714.36	713.18	57.47	53.88	16.022	CC
Rosa Unit 649H - OH - Plan #6	946.00	943.65	58.94	53.65	11.130	ES

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



Lonestar Consulting, LLC Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Reference Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Rosa Unit 27						
Rosa Unit 649H - OH - Plan #6	20,500.00	20,307.78	1,284.83	463.01	1.563	SF
Rosa Unit 85C - OH - OH	15,200.00	7,672.22	346.83	69.21	1.249	Level 2, CC, ES, SF



Lonestar Consulting, LLC

Anticollision Summary Report

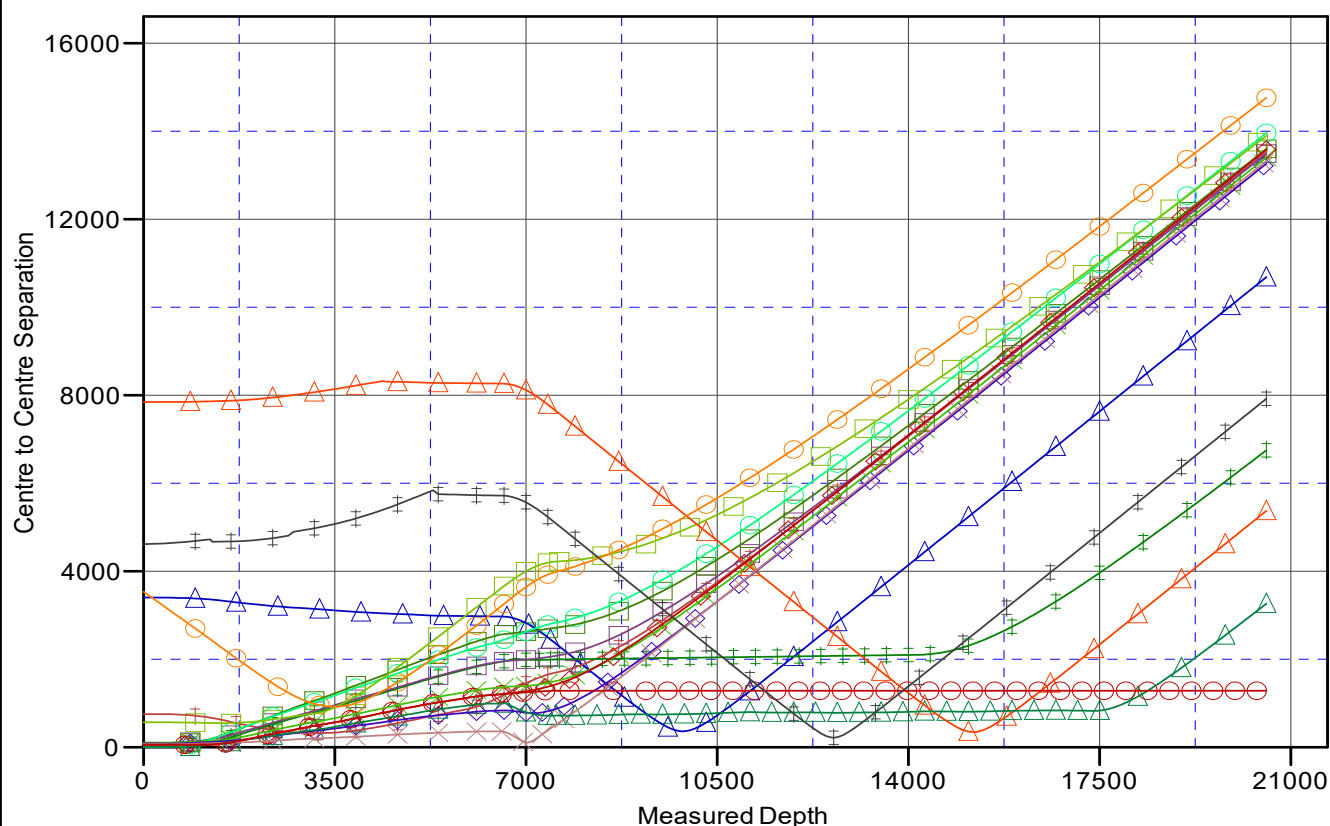


Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Reference Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6305' & RKB 24.5' @ 6329.50ft (E)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit 647H - Slot A8
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.26°

Ladder Plot



LEGEND

Rosa Unit 183C, OH OH V0	Rosa Unit 204A, OH OH V0	Rosa Unit 648H, OH OH V0
Rosa Unit 183A, OH OH V0	Rosa Unit 642H, OH OH V0	Rosa Unit 649H, OH Plan #6 V0
Rosa Unit 646H, OH Plan #2 V0	Rosa Unit 85C, OH OH V0	Rosa Unit 649H, OH OH V0
Rosa Unit 641H, OH OH V0	Rosa Unit 206A, OH OH V0	Rosa Unit 17C, OH OH V0
Rosa Unit 640H, OH OH V0	Rosa Unit 643H, OH OH V0	
Rosa Unit 645H, OH OH V0	Rosa Unit 644H, OH Plan #1 V0	

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



Lonestar Consulting, LLC

Anticollision Summary Report

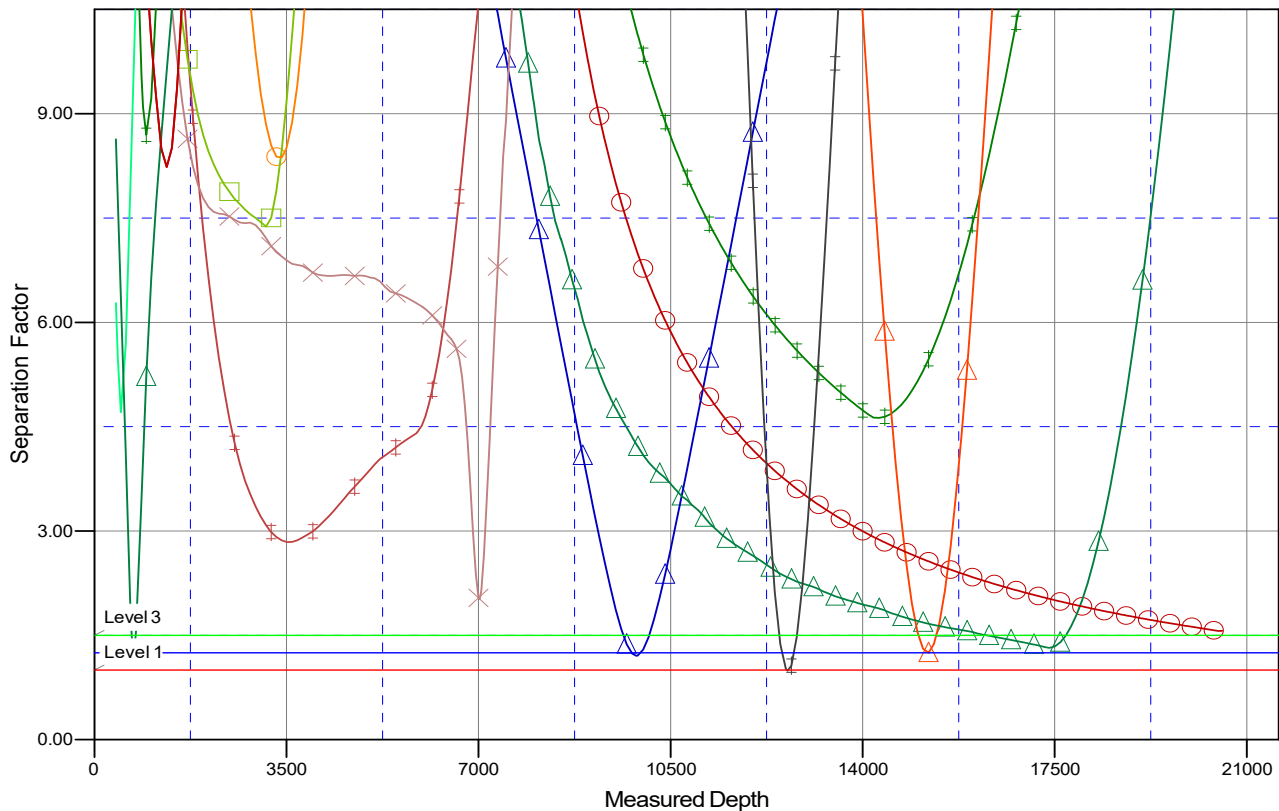


Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Reference Site:	Rosa Unit 27	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	Grand Junction
Reference Design:	Plan #7	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6305' & RKB 24.5' @ 6329.50ft (E)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.833334

Coordinates are relative to: Rosa Unit 647H - Slot A8
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.26°

Separation Factor Plot



LEGEND

Rosa Unit 183C, OH, OH V0	Rosa Unit 204A, OH, OH V0	Rosa Unit 648H, OH, OH V0
Rosa Unit 183A, OH, OH V0	Rosa Unit 642H, OH, OH V0	Rosa Unit 649H, OH, Plan #6 V0
Rosa Unit 646H, OH, Plan #2 V0	Rosa Unit 65C, OH, OH V0	Rosa Unit 649H, OH, OH V0
Rosa Unit 641H, OH, OH V0	Rosa Unit 206A, OH, OH V0	Rosa Unit 17C, OH, OH V0
Rosa Unit 640H, OH, OH V0	Rosa Unit 643H, OH, OH V0	
Rosa Unit 645H, OH, OH V0	Rosa Unit 644H, OH, Plan #1 V0	

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

Released to Imaging: 10/3/2022 8:04:06 AM



Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 27
Well: Rosa Unit 647H
Wellbore: OH
Design: Plan #7

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



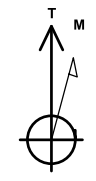
WELL DETAILS: Rosa Unit 647H

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

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2143461.40	2847958.58	36.8897155	-107.4063358	A8

Plan: Plan #7 (Rosa Unit 647H/OH)

Created By: Janie Collins Date: 12:37, September 16 2022



Azimuths to True North
Magnetic North: 8.58°

Magnetic Field
Strength: 49566.01
Dip Angle: 63.83°
Date: 8/15/2022
Model: HDGM2022

DESIGN TARGET DETAILS

SECTION DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
647H POE Rev 3	6942.00	-1736.22	773.50	2141728.66	2848739.84	36.8849465	-107.4036910
647H BHL Rev 3	6968.00	-1961.28	13768.22	2141561.74	2861735.40	36.8843191	-107.3592580

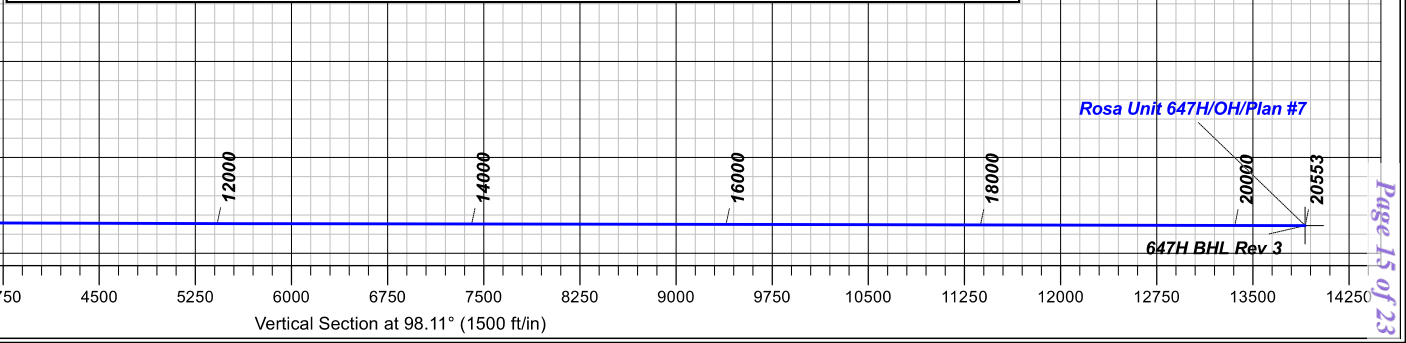
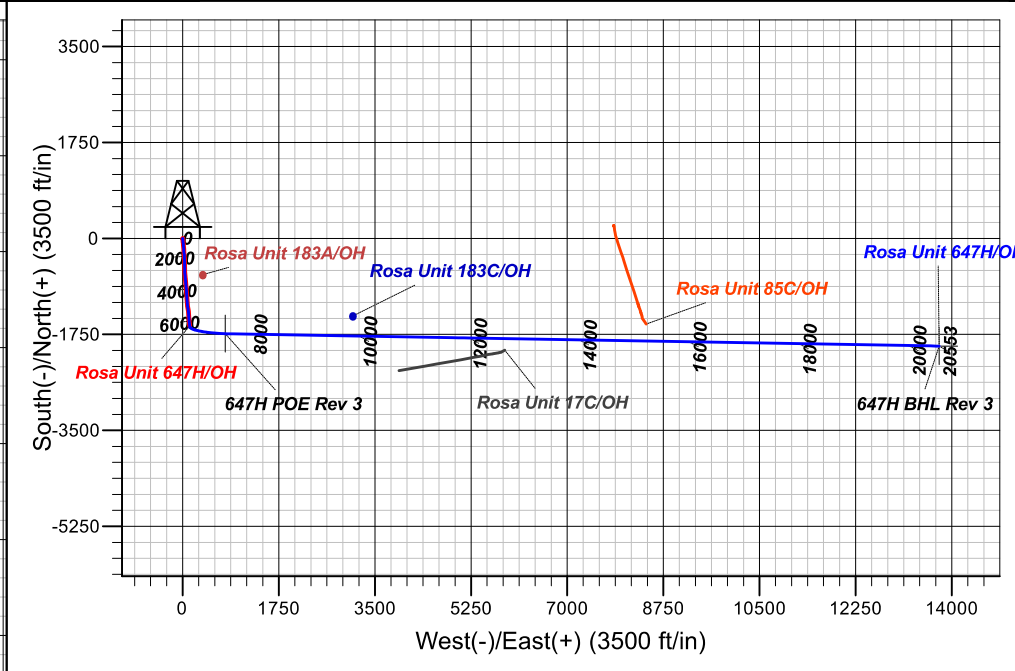
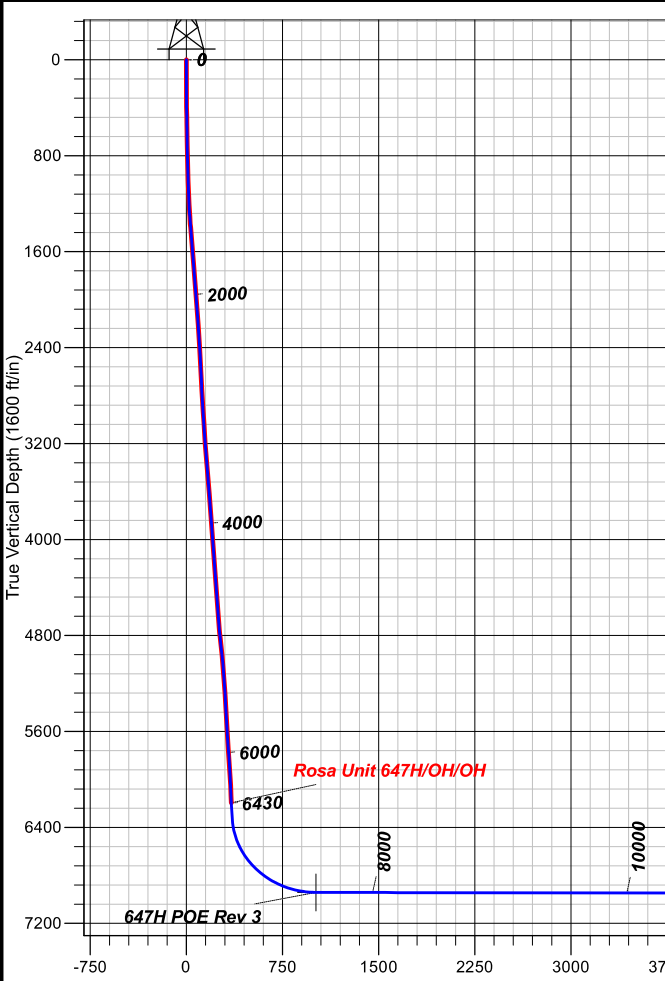
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec
6430.00	9.24	171.73	6195.06	-1593.37	127.81	0.00	0.00	351.23
6558.00	9.24	171.73	6321.39	-1613.71	130.77	0.00	0.00	357.03
7555.74	89.99	92.06	6942.00	-1736.22	773.50	8.85	-79.80	1010.61
7609.62	89.89	90.99	6942.06	-1737.66	827.36	2.00	-95.43	1064.14
20552.43	89.89	90.99	6968.00	-1961.28	13768.22	0.00	0.00	13907.21

CASING DETAILS

TVD	MD	Name
-----	----	------

FORMATION DETAILS

TVDPATH	MDPATH	FORMATION
2380.00	2450.75	Ojo Alamo
2525.00	2602.79	Kirtland
3030.00	3129.18	Fruitland
3344.00	3456.07	Pictured Cliffs
3458.00	3575.97	Lewis
4563.00	4737.17	Chacra
5362.00	5573.44	Cliff House
5409.00	5622.16	Menefee
5637.00	5858.19	Point Lookout
6134.00	6368.14	Mancos



Received by OCB: 9/16/2022 5:33:33 AM

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Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 27

Rosa Unit 647H - Slot A8

OH

Plan: Plan #7

Standard Planning Report

16 September, 2022





Lonestar Consulting, LLC Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

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:	13.200 in		

Well	Rosa Unit 647H - Slot A8					
Well Position	+N/-S	0.00 ft	Northing:	2,143,461.40 usft	Latitude:	36.8897155
	+E/-W	0.00 ft	Easting:	2,847,958.58 usft	Longitude:	-107.4063359
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	8/15/2022	8.58	63.33	49,566.00000000

Design	Plan #7				
Audit Notes:					
Version:		Phase:	PLAN	Tie On Depth:	6,430.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	98.11	

Plan Survey Tool Program	Date	9/16/2022			
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks	
1	392.00	6,430.00	Survey #1 - Surface MWD Survey	MWD+HDGM OWSG MWD + HDGM	
2	6,430.00	20,552.43	Plan #7 (OH)	MWD+HDGM OWSG MWD + HDGM	



Lonestar Consulting, LLC
Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
6,430.00	9.24	171.73	6,195.06	-1,593.37	127.81	0.00	0.00	0.00	0.00	
6,558.00	9.24	171.73	6,321.40	-1,613.71	130.77	0.00	0.00	0.00	0.00	
7,555.74	89.99	92.06	6,942.00	-1,736.22	773.50	8.85	8.09	-7.98	-79.80	647H POE Rev 3
7,609.62	89.89	90.99	6,942.06	-1,737.66	827.36	2.00	-0.19	-1.99	-95.43	
20,552.43	89.89	90.99	6,968.00	-1,961.28	13,768.22	0.00	0.00	0.00	0.00	647H BHL Rev 3



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Planned 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)
6,430.00	9.24	171.73	6,195.06	-1,593.37	127.81	351.23	0.00	0.00	0.00
6,500.00	9.24	171.73	6,264.15	-1,604.49	129.43	354.40	0.00	0.00	0.00
6,558.00	9.24	171.73	6,321.40	-1,613.71	130.77	357.03	0.00	0.00	0.00
6,600.00	10.55	151.32	6,362.78	-1,620.42	133.10	360.28	8.85	3.11	-48.59
6,700.00	16.83	124.00	6,459.99	-1,636.58	149.52	378.82	8.85	6.28	-27.32
6,800.00	24.71	112.41	6,553.46	-1,652.68	180.91	412.16	8.85	7.88	-11.59
6,900.00	33.07	106.29	6,640.95	-1,668.33	226.51	459.52	8.85	8.36	-6.12
7,000.00	41.61	102.44	6,720.40	-1,683.17	285.24	519.75	8.85	8.54	-3.85
7,100.00	50.25	99.71	6,789.89	-1,696.83	355.69	591.42	8.85	8.64	-2.73
7,200.00	58.93	97.59	6,847.78	-1,709.00	436.19	672.84	8.85	8.68	-2.12
7,300.00	67.64	95.83	6,892.69	-1,719.38	524.82	762.05	8.85	8.71	-1.76
7,400.00	76.38	94.28	6,923.55	-1,727.73	619.47	856.93	8.85	8.73	-1.55
7,500.00	85.11	92.84	6,939.62	-1,733.84	717.88	955.21	8.85	8.74	-1.44
7,555.74	89.99	92.06	6,942.00	-1,736.22	773.50	1,010.61	8.85	8.74	-1.40
7,600.00	89.90	91.18	6,942.04	-1,737.48	817.75	1,054.59	2.00	-0.19	-1.99
7,609.62	89.89	90.99	6,942.06	-1,737.66	827.36	1,064.14	2.00	-0.19	-1.99
7,700.00	89.89	90.99	6,942.24	-1,739.22	917.73	1,153.82	0.00	0.00	0.00
7,800.00	89.89	90.99	6,942.44	-1,740.95	1,017.71	1,253.05	0.00	0.00	0.00
7,900.00	89.89	90.99	6,942.64	-1,742.68	1,117.70	1,352.28	0.00	0.00	0.00
8,000.00	89.89	90.99	6,942.84	-1,744.41	1,217.68	1,451.51	0.00	0.00	0.00
8,100.00	89.89	90.99	6,943.04	-1,746.13	1,317.67	1,550.74	0.00	0.00	0.00
8,200.00	89.89	90.99	6,943.24	-1,747.86	1,417.65	1,649.97	0.00	0.00	0.00
8,300.00	89.89	90.99	6,943.44	-1,749.59	1,517.64	1,749.20	0.00	0.00	0.00
8,400.00	89.89	90.99	6,943.64	-1,751.32	1,617.62	1,848.43	0.00	0.00	0.00
8,500.00	89.89	90.99	6,943.84	-1,753.04	1,717.61	1,947.66	0.00	0.00	0.00
8,600.00	89.89	90.99	6,944.05	-1,754.77	1,817.59	2,046.89	0.00	0.00	0.00
8,700.00	89.89	90.99	6,944.25	-1,756.50	1,917.58	2,146.12	0.00	0.00	0.00
8,800.00	89.89	90.99	6,944.45	-1,758.23	2,017.56	2,245.35	0.00	0.00	0.00
8,900.00	89.89	90.99	6,944.65	-1,759.95	2,117.55	2,344.58	0.00	0.00	0.00
9,000.00	89.89	90.99	6,944.85	-1,761.68	2,217.53	2,443.80	0.00	0.00	0.00
9,100.00	89.89	90.99	6,945.05	-1,763.41	2,317.52	2,543.03	0.00	0.00	0.00
9,200.00	89.89	90.99	6,945.25	-1,765.14	2,417.50	2,642.26	0.00	0.00	0.00
9,300.00	89.89	90.99	6,945.45	-1,766.87	2,517.49	2,741.49	0.00	0.00	0.00
9,400.00	89.89	90.99	6,945.65	-1,768.59	2,617.47	2,840.72	0.00	0.00	0.00
9,500.00	89.89	90.99	6,945.85	-1,770.32	2,717.46	2,939.95	0.00	0.00	0.00
9,600.00	89.89	90.99	6,946.05	-1,772.05	2,817.44	3,039.18	0.00	0.00	0.00
9,700.00	89.89	90.99	6,946.25	-1,773.78	2,917.43	3,138.41	0.00	0.00	0.00
9,800.00	89.89	90.99	6,946.45	-1,775.50	3,017.41	3,237.64	0.00	0.00	0.00
9,900.00	89.89	90.99	6,946.65	-1,777.23	3,117.40	3,336.87	0.00	0.00	0.00
10,000.00	89.89	90.99	6,946.85	-1,778.96	3,217.38	3,436.10	0.00	0.00	0.00
10,100.00	89.89	90.99	6,947.05	-1,780.69	3,317.37	3,535.33	0.00	0.00	0.00
10,200.00	89.89	90.99	6,947.25	-1,782.42	3,417.35	3,634.56	0.00	0.00	0.00
10,300.00	89.89	90.99	6,947.45	-1,784.14	3,517.34	3,733.79	0.00	0.00	0.00
10,400.00	89.89	90.99	6,947.65	-1,785.87	3,617.32	3,833.02	0.00	0.00	0.00
10,500.00	89.89	90.99	6,947.85	-1,787.60	3,717.31	3,932.24	0.00	0.00	0.00
10,600.00	89.89	90.99	6,948.05	-1,789.33	3,817.29	4,031.47	0.00	0.00	0.00
10,700.00	89.89	90.99	6,948.25	-1,791.05	3,917.28	4,130.70	0.00	0.00	0.00
10,800.00	89.89	90.99	6,948.45	-1,792.78	4,017.26	4,229.93	0.00	0.00	0.00
10,900.00	89.89	90.99	6,948.65	-1,794.51	4,117.25	4,329.16	0.00	0.00	0.00
11,000.00	89.89	90.99	6,948.86	-1,796.24	4,217.23	4,428.39	0.00	0.00	0.00
11,100.00	89.89	90.99	6,949.06	-1,797.97	4,317.22	4,527.62	0.00	0.00	0.00
11,200.00	89.89	90.99	6,949.26	-1,799.69	4,417.20	4,626.85	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Planned 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)
11,300.00	89.89	90.99	6,949.46	-1,801.42	4,517.19	4,726.08	0.00	0.00	0.00
11,400.00	89.89	90.99	6,949.66	-1,803.15	4,617.17	4,825.31	0.00	0.00	0.00
11,500.00	89.89	90.99	6,949.86	-1,804.88	4,717.16	4,924.54	0.00	0.00	0.00
11,600.00	89.89	90.99	6,950.06	-1,806.60	4,817.14	5,023.77	0.00	0.00	0.00
11,700.00	89.89	90.99	6,950.26	-1,808.33	4,917.12	5,123.00	0.00	0.00	0.00
11,800.00	89.89	90.99	6,950.46	-1,810.06	5,017.11	5,222.23	0.00	0.00	0.00
11,900.00	89.89	90.99	6,950.66	-1,811.79	5,117.09	5,321.46	0.00	0.00	0.00
12,000.00	89.89	90.99	6,950.86	-1,813.52	5,217.08	5,420.69	0.00	0.00	0.00
12,100.00	89.89	90.99	6,951.06	-1,815.24	5,317.06	5,519.91	0.00	0.00	0.00
12,200.00	89.89	90.99	6,951.26	-1,816.97	5,417.05	5,619.14	0.00	0.00	0.00
12,300.00	89.89	90.99	6,951.46	-1,818.70	5,517.03	5,718.37	0.00	0.00	0.00
12,400.00	89.89	90.99	6,951.66	-1,820.43	5,617.02	5,817.60	0.00	0.00	0.00
12,500.00	89.89	90.99	6,951.86	-1,822.15	5,717.00	5,916.83	0.00	0.00	0.00
12,600.00	89.89	90.99	6,952.06	-1,823.88	5,816.99	6,016.06	0.00	0.00	0.00
12,700.00	89.89	90.99	6,952.26	-1,825.61	5,916.97	6,115.29	0.00	0.00	0.00
12,800.00	89.89	90.99	6,952.46	-1,827.34	6,016.96	6,214.52	0.00	0.00	0.00
12,900.00	89.89	90.99	6,952.66	-1,829.06	6,116.94	6,313.75	0.00	0.00	0.00
13,000.00	89.89	90.99	6,952.86	-1,830.79	6,216.93	6,412.98	0.00	0.00	0.00
13,100.00	89.89	90.99	6,953.06	-1,832.52	6,316.91	6,512.21	0.00	0.00	0.00
13,200.00	89.89	90.99	6,953.26	-1,834.25	6,416.90	6,611.44	0.00	0.00	0.00
13,300.00	89.89	90.99	6,953.46	-1,835.98	6,516.88	6,710.67	0.00	0.00	0.00
13,400.00	89.89	90.99	6,953.67	-1,837.70	6,616.87	6,809.90	0.00	0.00	0.00
13,500.00	89.89	90.99	6,953.87	-1,839.43	6,716.85	6,909.13	0.00	0.00	0.00
13,600.00	89.89	90.99	6,954.07	-1,841.16	6,816.84	7,008.35	0.00	0.00	0.00
13,700.00	89.89	90.99	6,954.27	-1,842.89	6,916.82	7,107.58	0.00	0.00	0.00
13,800.00	89.89	90.99	6,954.47	-1,844.61	7,016.81	7,206.81	0.00	0.00	0.00
13,900.00	89.89	90.99	6,954.67	-1,846.34	7,116.79	7,306.04	0.00	0.00	0.00
14,000.00	89.89	90.99	6,954.87	-1,848.07	7,216.78	7,405.27	0.00	0.00	0.00
14,100.00	89.89	90.99	6,955.07	-1,849.80	7,316.76	7,504.50	0.00	0.00	0.00
14,200.00	89.89	90.99	6,955.27	-1,851.53	7,416.75	7,603.73	0.00	0.00	0.00
14,300.00	89.89	90.99	6,955.47	-1,853.25	7,516.73	7,702.96	0.00	0.00	0.00
14,400.00	89.89	90.99	6,955.67	-1,854.98	7,616.72	7,802.19	0.00	0.00	0.00
14,500.00	89.89	90.99	6,955.87	-1,856.71	7,716.70	7,901.42	0.00	0.00	0.00
14,600.00	89.89	90.99	6,956.07	-1,858.44	7,816.69	8,000.65	0.00	0.00	0.00
14,700.00	89.89	90.99	6,956.27	-1,860.16	7,916.67	8,099.88	0.00	0.00	0.00
14,800.00	89.89	90.99	6,956.47	-1,861.89	8,016.66	8,199.11	0.00	0.00	0.00
14,900.00	89.89	90.99	6,956.67	-1,863.62	8,116.64	8,298.34	0.00	0.00	0.00
15,000.00	89.89	90.99	6,956.87	-1,865.35	8,216.63	8,397.57	0.00	0.00	0.00
15,100.00	89.89	90.99	6,957.07	-1,867.08	8,316.61	8,496.80	0.00	0.00	0.00
15,200.00	89.89	90.99	6,957.27	-1,868.80	8,416.60	8,596.02	0.00	0.00	0.00
15,300.00	89.89	90.99	6,957.47	-1,870.53	8,516.58	8,695.25	0.00	0.00	0.00
15,400.00	89.89	90.99	6,957.67	-1,872.26	8,616.57	8,794.48	0.00	0.00	0.00
15,500.00	89.89	90.99	6,957.87	-1,873.99	8,716.55	8,893.71	0.00	0.00	0.00
15,600.00	89.89	90.99	6,958.07	-1,875.71	8,816.54	8,992.94	0.00	0.00	0.00
15,700.00	89.89	90.99	6,958.27	-1,877.44	8,916.52	9,092.17	0.00	0.00	0.00
15,800.00	89.89	90.99	6,958.48	-1,879.17	9,016.50	9,191.40	0.00	0.00	0.00
15,900.00	89.89	90.99	6,958.68	-1,880.90	9,116.49	9,290.63	0.00	0.00	0.00
16,000.00	89.89	90.99	6,958.88	-1,882.63	9,216.47	9,389.86	0.00	0.00	0.00
16,100.00	89.89	90.99	6,959.08	-1,884.35	9,316.46	9,489.09	0.00	0.00	0.00
16,200.00	89.89	90.99	6,959.28	-1,886.08	9,416.44	9,588.32	0.00	0.00	0.00
16,300.00	89.89	90.99	6,959.48	-1,887.81	9,516.43	9,687.55	0.00	0.00	0.00
16,400.00	89.89	90.99	6,959.68	-1,889.54	9,616.41	9,786.78	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Planned 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)
16,500.00	89.89	90.99	6,959.88	-1,891.26	9,716.40	9,886.01	0.00	0.00	0.00
16,600.00	89.89	90.99	6,960.08	-1,892.99	9,816.38	9,985.24	0.00	0.00	0.00
16,700.00	89.89	90.99	6,960.28	-1,894.72	9,916.37	10,084.46	0.00	0.00	0.00
16,800.00	89.89	90.99	6,960.48	-1,896.45	10,016.35	10,183.69	0.00	0.00	0.00
16,900.00	89.89	90.99	6,960.68	-1,898.18	10,116.34	10,282.92	0.00	0.00	0.00
17,000.00	89.89	90.99	6,960.88	-1,899.90	10,216.32	10,382.15	0.00	0.00	0.00
17,100.00	89.89	90.99	6,961.08	-1,901.63	10,316.31	10,481.38	0.00	0.00	0.00
17,200.00	89.89	90.99	6,961.28	-1,903.36	10,416.29	10,580.61	0.00	0.00	0.00
17,300.00	89.89	90.99	6,961.48	-1,905.09	10,516.28	10,679.84	0.00	0.00	0.00
17,400.00	89.89	90.99	6,961.68	-1,906.81	10,616.26	10,779.07	0.00	0.00	0.00
17,500.00	89.89	90.99	6,961.88	-1,908.54	10,716.25	10,878.30	0.00	0.00	0.00
17,600.00	89.89	90.99	6,962.08	-1,910.27	10,816.23	10,977.53	0.00	0.00	0.00
17,700.00	89.89	90.99	6,962.28	-1,912.00	10,916.22	11,076.76	0.00	0.00	0.00
17,800.00	89.89	90.99	6,962.48	-1,913.72	11,016.20	11,175.99	0.00	0.00	0.00
17,900.00	89.89	90.99	6,962.68	-1,915.45	11,116.19	11,275.22	0.00	0.00	0.00
18,000.00	89.89	90.99	6,962.88	-1,917.18	11,216.17	11,374.45	0.00	0.00	0.00
18,100.00	89.89	90.99	6,963.08	-1,918.91	11,316.16	11,473.68	0.00	0.00	0.00
18,200.00	89.89	90.99	6,963.29	-1,920.64	11,416.14	11,572.91	0.00	0.00	0.00
18,300.00	89.89	90.99	6,963.49	-1,922.36	11,516.13	11,672.13	0.00	0.00	0.00
18,400.00	89.89	90.99	6,963.69	-1,924.09	11,616.11	11,771.36	0.00	0.00	0.00
18,500.00	89.89	90.99	6,963.89	-1,925.82	11,716.10	11,870.59	0.00	0.00	0.00
18,600.00	89.89	90.99	6,964.09	-1,927.55	11,816.08	11,969.82	0.00	0.00	0.00
18,700.00	89.89	90.99	6,964.29	-1,929.27	11,916.07	12,069.05	0.00	0.00	0.00
18,800.00	89.89	90.99	6,964.49	-1,931.00	12,016.05	12,168.28	0.00	0.00	0.00
18,900.00	89.89	90.99	6,964.69	-1,932.73	12,116.04	12,267.51	0.00	0.00	0.00
19,000.00	89.89	90.99	6,964.89	-1,934.46	12,216.02	12,366.74	0.00	0.00	0.00
19,100.00	89.89	90.99	6,965.09	-1,936.19	12,316.01	12,465.97	0.00	0.00	0.00
19,200.00	89.89	90.99	6,965.29	-1,937.91	12,415.99	12,565.20	0.00	0.00	0.00
19,300.00	89.89	90.99	6,965.49	-1,939.64	12,515.98	12,664.43	0.00	0.00	0.00
19,400.00	89.89	90.99	6,965.69	-1,941.37	12,615.96	12,763.66	0.00	0.00	0.00
19,500.00	89.89	90.99	6,965.89	-1,943.10	12,715.95	12,862.89	0.00	0.00	0.00
19,600.00	89.89	90.99	6,966.09	-1,944.82	12,815.93	12,962.12	0.00	0.00	0.00
19,700.00	89.89	90.99	6,966.29	-1,946.55	12,915.91	13,061.35	0.00	0.00	0.00
19,800.00	89.89	90.99	6,966.49	-1,948.28	13,015.90	13,160.57	0.00	0.00	0.00
19,900.00	89.89	90.99	6,966.69	-1,950.01	13,115.88	13,259.80	0.00	0.00	0.00
20,000.00	89.89	90.99	6,966.89	-1,951.74	13,215.87	13,359.03	0.00	0.00	0.00
20,100.00	89.89	90.99	6,967.09	-1,953.46	13,315.85	13,458.26	0.00	0.00	0.00
20,200.00	89.89	90.99	6,967.29	-1,955.19	13,415.84	13,557.49	0.00	0.00	0.00
20,300.00	89.89	90.99	6,967.49	-1,956.92	13,515.82	13,656.72	0.00	0.00	0.00
20,400.00	89.89	90.99	6,967.69	-1,958.65	13,615.81	13,755.95	0.00	0.00	0.00
20,500.00	89.89	90.99	6,967.90	-1,960.37	13,715.79	13,855.18	0.00	0.00	0.00
20,552.43	89.89	90.99	6,968.00	-1,961.28	13,768.22	13,907.21	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit 647H - Slot A8
Company:	Logos Operating LLC	TVD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6305' & RKB 24.5' @ 6329.50ft (Ensign T223)
Site:	Rosa Unit 27	North Reference:	True
Well:	Rosa Unit 647H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #7		

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
647H POE Rev 3 - plan hits target center - Point	0.00	0.00	6,942.00	-1,736.22	773.50	2,141,728.66	2,848,739.84	36.8849465	-107.4036910
647H BHL Rev 3 - plan hits target center - Point	0.00	0.00	6,968.00	-1,961.28	13,768.22	2,141,561.74	2,861,735.41	36.8843191	-107.3592580

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,450.75	2,380.00	Ojo Alamo		0.00	0.00	
2,602.79	2,525.00	Kirtland		0.00	0.00	
3,129.18	3,030.00	Fruitland		0.00	0.00	
3,456.07	3,344.00	Pictured Cliffs		0.00	0.00	
3,575.97	3,458.00	Lewis		0.00	0.00	
4,737.17	4,563.00	Chacra		0.00	0.00	
5,573.44	5,362.00	Cliff House		0.00	0.00	
5,622.16	5,409.00	Menefee		0.00	0.00	
5,858.19	5,637.00	Point Lookout		0.00	0.00	
6,368.14	6,134.00	Mancos		0.00	0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
800.00				Start Build 2.00	
1,675.00				Start 3725.00 hold at 1675.00 MD	
5,400.00				Start Drop -1.00	
6,350.00				Start 203.00 hold at 6350.00 MD	
6,553.00	6,316.46	-1,612.92	130.65	Start DLS 9.00 TFO -70.26	
7,520.32	6,941.04	-1,734.80	738.13	Start 50.65 hold at 7520.32 MD	
7,570.98	6,942.01	-1,736.73	788.73	Start DLS 2.50 TFO -89.73	
8,179.05	6,943.20	-1,747.50	1,396.70	Start 9597.73 hold at 8179.05 MD	
17,776.77	6,962.44	-1,913.32	10,992.98	TD at 17776.77	

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 147744

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 147744
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	10/3/2022