

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.
NMSF078771
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 25 T31N R06W NE/NE (A) 1080 FNL 258 FEL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No.
ROSA UNIT 650H9. API Well No.
30-039-3141210. 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 453' FSL & 17' FWL to **new bottom-hole location 353' FSL & 17' FWL**Original TD @ 16,482' MD 7250' TVD to **new TD @ 16,339' MD 7250' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6826' MD 6668' TVD to **new KOP @ 6911' MD 6733' TVD**Original Landing point @ 7806' MD 7267' TVD to **new Landing point @ 7813' MD 7267' TVD**Original Production 5.5" casing @ 16,482' MD to **new Production casing set depth @ 16,339' MD 7250' TVD**

The 5.5" production casing grade, weight and cement sacks have been update per casing depth changes.

Attached: New C102, Operation and Directional Drill plans.

Accepted for record – NMOCD

JRH

4/3/23

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

Etta Trujillo

Title Regulatory Specialist

Signature *Etta Trujillo*

Date 03/20/2023

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 25 / NENE / 36.874941 / -107.408156	County or Parish/State: RIO ARRIBA / NM
Well Number: 650H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078771	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141200X1	Well Status: Drilling Well	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2721745

Type of Submission: Notice of Intent	Type of Action: Other
Date Sundry Submitted: 03/20/2023	Time Sundry Submitted: 01:08
Date proposed operation will begin: 04/01/2023	

Procedure Description: LOGOS Operating request a change in plans for the following: Original bottom-hole location from 453' FSL & 17' FWL to new bottom-hole location 353' FSL & 17' FWL Original TD @ 16,482' MD 7250' TVD to new TD @ 16,339' MD 7250' TVD. Geology tops have been updated per changes. Original KOP @ 6826' MD 6668' TVD to new KOP @ 6911' MD 6733' TVD Original Landing point @ 7806' MD 7267' TVD to new Landing point @ 7813' MD 7267' TVD Original Production 5.5" casing @ 16,482' MD to new Production casing set depth @ 16,339' MD 7250' TVD The 5.5" production casing grade, weight and cement 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_650H_Plan_10_Change_of_Plans_20230320_20230320130712.pdf

Well Name: ROSA UNIT	Well Location: T31N / R6W / SEC 25 / NENE / 36.874941 / -107.408156	County or Parish/State: RIO ARRIBA / NM
Well Number: 650H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF078771	Unit or CA Name: ROSA UNIT-MANCOS PA	Unit or CA Number: NMNM78407E
US Well Number: 300393141200X1	Well Status: Drilling Well	Operator: LOGOS OPERATING LLC

Operator

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

Operator Electronic Signature: ETTA TRUJILLO

Signed on: MAR 20, 2023 01:07 PM

Name: LOGOS OPERATING LLC

Title: Regulatory Specialist

Street Address: 2010 AFTON PLACE

City: FarmingtonState: 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: 03/24/2023

Signature: Kenneth Rennick

1625 N. French Drive, Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462State of New Mexico
Energy, Minerals & Natural Resources DepartmentForm **Page 4 of 22**
Revised August 1, 2011Submit one copy to
Appropriate District OfficeOIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-039-31412		² Pool Code 97232		³ Pool Name BASIN MANCOS	
⁴ Property Code 320608		⁵ Property Name ROSA UNIT			⁶ Well Number 650H
⁷ GRID No. 289408		⁸ Operator Name LOGOS OPERATING, LLC			⁹ Elevation 6372'

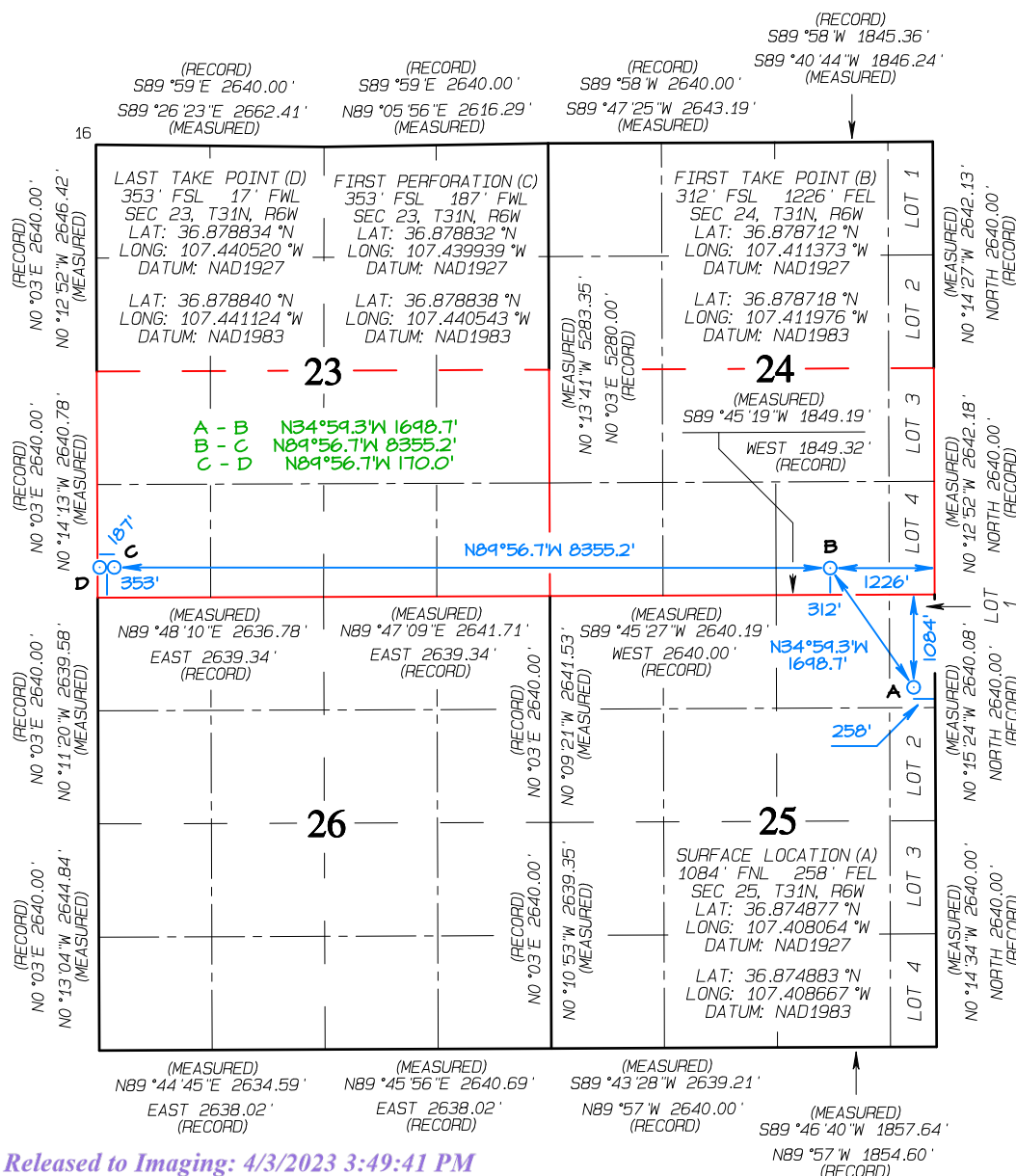
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	25	31N	6W	1	1084	NORTH	258	EAST	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
M	23	31N	6W		353	SOUTH	17	WEST	RIO ARriba

¹² Dedicated Acres 592.02		S/2 - Section 23 S/2 - Section 24		¹³ Joint or Infill		¹⁴ Consolidation Code		¹⁵ Order No. R-13457	
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NO ALLOWABLE WILL BE ASSIGNED
TO THIS COMPLETION UNTIL ALL
INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS
BEEN APPROVED BY THE DIVISION¹⁷ 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 3/20/2023
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: FEBRUARY 9, 2023
Date of Survey: MARCH 15, 2019

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269



LOGOS Operating, LLC Operations Plan

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

Date:	March 15, 2023	Pool:	Basin Mancos
Well Name:	Rosa Unit 650H	GL Elevation:	6,372'
Surface Location:	Sec 25, T31N, R6W 1084 FNL, 258 FEL (36.874883° N, 107.408667° W – NAD83)	Measured Depth:	16,339' (KB)
Bottom Hole Location:	Sec 23, T31N, R6W 353 FSL, 17 FWL (36.878840° N, 107.441124° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078771, 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	2,534'	2,285'	*POINT LOOKOUT	5,837'	5,686'
KIRTLAND	2,647'	2,594'	*MANCOS	6,343'	6,175'
*FRUITLAND	3,127'	3,057'	KICKOFF POINT	6,911'	6,733'
*PICTURED CLIFFS	3,501'	3,423'	LANDING POINT	7,813'	7,267'
LEWIS	3,606'	3,525'			
CHACRA	4,711'	4,609'			
*CLIFF HOUSE	5,570'	5,432'			
MENEFEE	5,614'	5,474'	TD	16,339'	7,250'

* 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 the Tour book and on morning reports.

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4" directional vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. 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 650H



- 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:** 7,267' TVD x 0.43 = 3125 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)	GL DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	325'	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,393'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	16,339'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

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

ROSA UNIT 650H



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 (ft ³ /ft) Annular Capacity	Excess (30%)	Total (ft ³)	Total (bbl)	Slurry Yield (ft ³ /sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,764	471	0.31318	1.3	209	37	1.15	182	15.8
Stage 1 Lead	4,715	1,049	0.31318	1.3	427	76	2.30	186	12
					636	113		368	
Stage 2 Tail	3,715	1,000	0.31318	1.3	407	72	1.73	235	13.2
Stage 2 Lead	3,180	535	0.31318	1.3	218	39	2.30	95	12
					625	111		330	
Stage 3 Tail	2,530	650	0.31318	1.3	265	47	1.73	153	13.2
Stage 3 Lead	320	2,210	0.31318	1.3	900	160	2.30	391	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.30	50	12
					1,280	228		595	
All Stage Totals					2,542	453		1,292	

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

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

	Top	ft	Cement (ft ³ /ft) Annular Capacity	Excess (15%)	Total (ft ³)	Total (bbl)	Slurry Yield (ft ³ /sk)	Sacks Cement	Density (PPG)
Cased Lead	6,293	100	0.2531	1	25	5	1.56	16	13.2
Open Hole Lead	6,393	9,946	0.2291	1.15	2,631	469	1.56	1,686	13.2
					2,656	473		1,703	

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

ROSA UNIT 650H



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. Install Frac Stacks and pressure test 5-1/2" casing to 1599 psi (0.22 psi/ft * 7267' TVD) for 30 minutes. Increase pressure to Open Toe sleeves.

D. STIMULATION

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

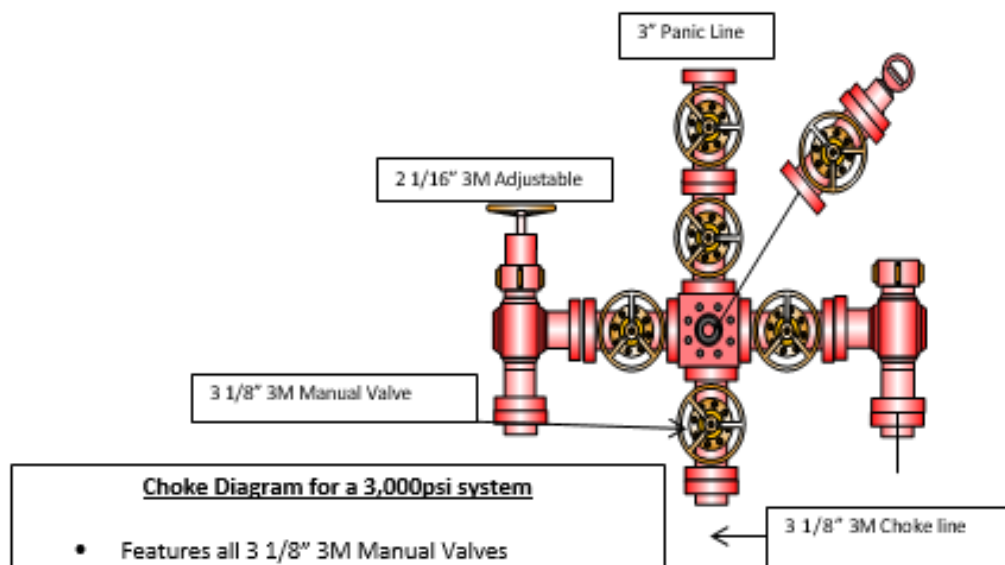
E. PRODUCTION TUBING

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.

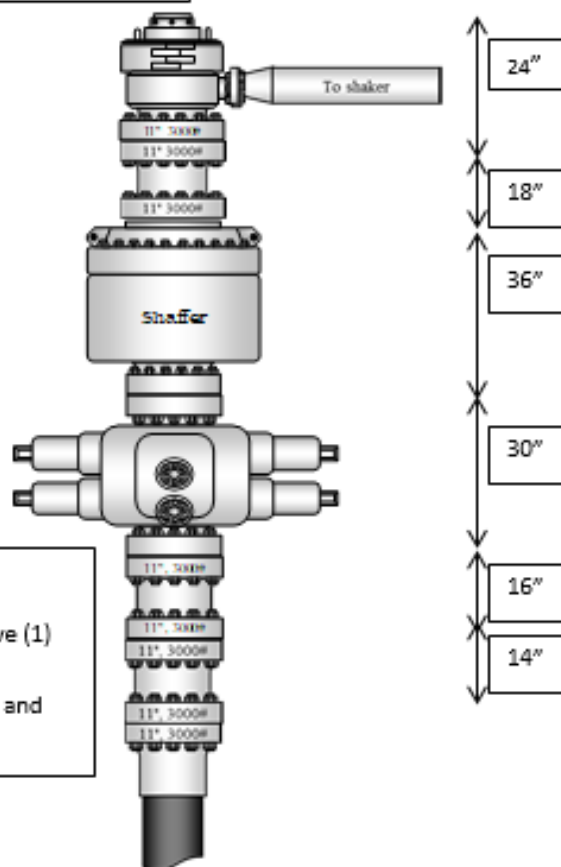


3M 11" B.O.P.E Diagram



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



11" 3,000psi BOP

- Choke Side has (1) manual 3 1/8" Valve (1) HCR
- Kill Side has (2) 2 1/16" Manual Valve and (1) check valve

ROSA UNIT 650H



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 29

Rosa Unit #650H

OH

Plan #10

Anticollision Summary Report

13 February, 2023





Lonestar Consulting, LLC

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #650H	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 #10	Offset TVD Reference:	Offset Datum

Reference	Plan #10		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum centre distance of 15,000.00ft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	2/13/2023		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
399.00	6,353.00	Survey #1 - Surface MWD Survey (OH)	MWD+HDGM	OWSG MWD + HDGM	
6,353.00	16,338.54	Plan #10 (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 29						
Rosa Unit #650H - OH - OH	6,700.00	6,353.00	346.98	335.99	31.584	CC, ES, SF
Rosa Unit #652H - OH - Plan #10	0.00	0.00	9.03			
Rosa Unit #652H - OH - Plan #10	1,122.88	1,121.94	10.25	3.13	1.440	Level 3, ES, SF
Rosa Unit #654H - OH - OH	1,148.36	1,145.88	41.85	35.22	6.316	CC
Rosa Unit #654H - OH - OH	1,149.00	1,146.50	41.85	35.22	6.311	ES
Rosa Unit #654H - OH - OH	1,244.00	1,239.91	43.91	36.60	6.012	SF
Rosa Unit #654H - ST1 - ST1	1,148.36	1,145.88	41.85	35.22	6.316	CC
Rosa Unit #654H - ST1 - ST1	1,149.00	1,146.50	41.85	35.22	6.311	ES
Rosa Unit #654H - ST1 - ST1	1,244.00	1,239.91	43.91	36.60	6.012	SF
Rosa Unit #654H - ST2 - ST2	1,148.36	1,145.88	41.85	35.22	6.316	CC
Rosa Unit #654H - ST2 - ST2	1,149.00	1,146.50	41.85	35.22	6.311	ES
Rosa Unit #654H - ST2 - ST2	7,160.50	7,445.68	158.46	111.43	3.369	SF
Rosa Unit #656H - OH - OH	0.00	0.50	30.00			
Rosa Unit #656H - OH - OH	1,018.30	1,017.77	33.96	28.33	6.027	ES
Rosa Unit #656H - OH - OH	1,055.00	1,053.63	34.51	28.63	5.869	SF
RU 14B - OH - OH	12,884.42	7,145.82	451.49	60.98	1.156	Level 2, CC
RU 14B - OH - OH	12,900.00	7,145.79	451.76	60.59	1.155	Level 2, ES, SF
RU 19D - OH - OH	10,420.40	7,424.56	508.90	382.91	4.039	CC, ES
RU 19D - OH - OH	10,500.00	7,423.94	515.09	386.38	4.002	SF

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



Lonestar Consulting, LLC

Anticollision Summary Report

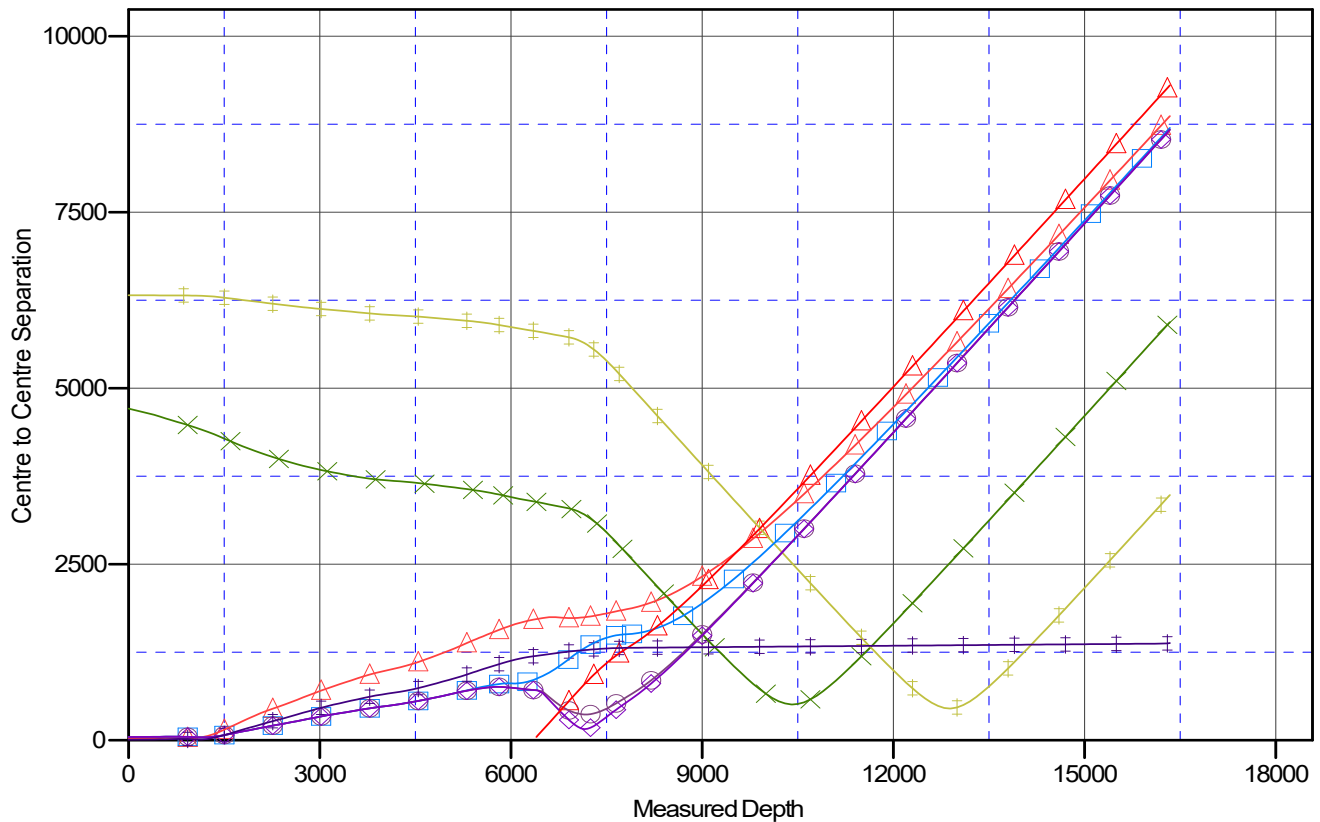


Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #650H	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 #10	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6372' & RKB 24.5' @ 6396.50ft (E)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #650H - Slot B10
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.25°

Ladder Plot



LEGEND



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



Lonestar Consulting, LLC

Anticollision Summary Report

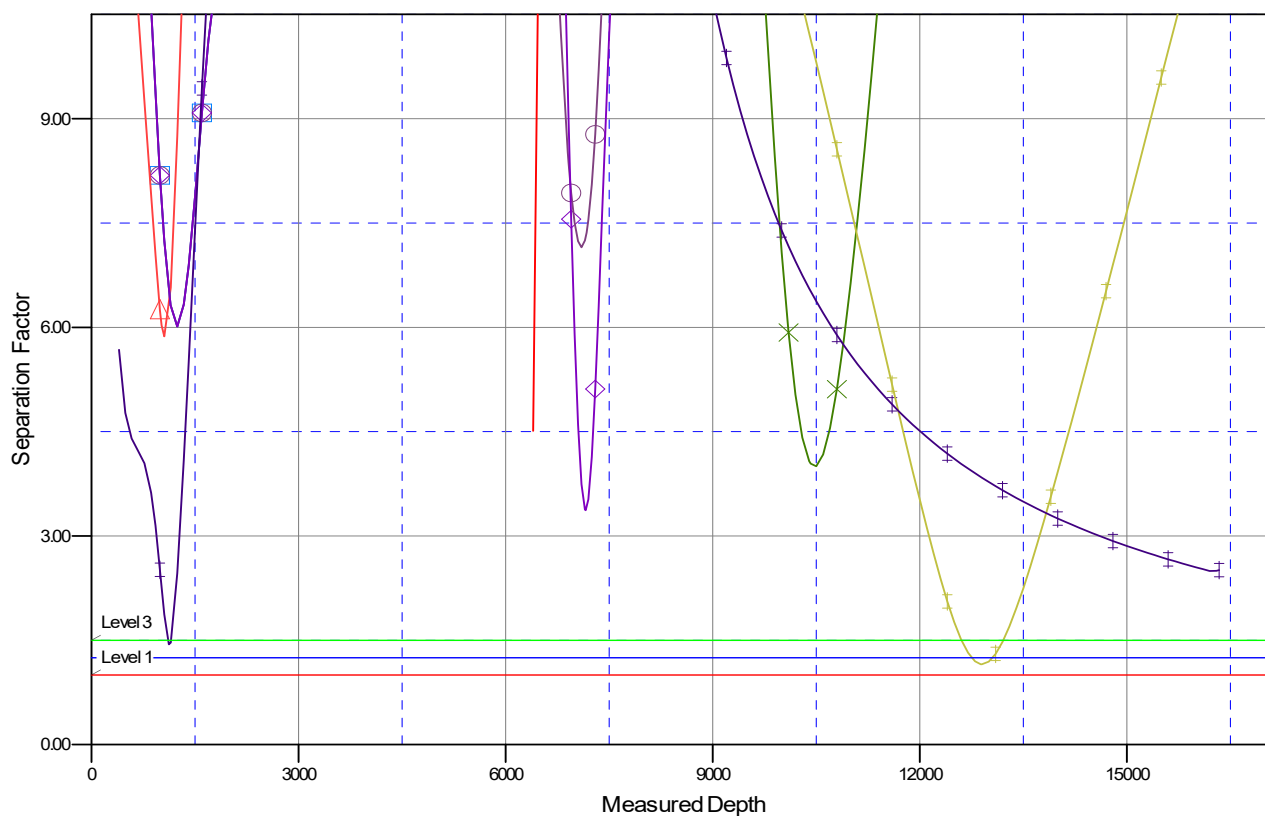


Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Reference Site:	Rosa Unit 29	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #650H	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 #10	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6372' & RKB 24.5' @ 6396.50ft (E)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #650H - Slot B10
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.25°

Separation Factor Plot



LEGEND

Rosa Unit#656H.OH.OH.V0	Rosa Unit#654H.OH.OH.V0	Rosa Unit#650H.OH.OH.V0
RU19D.OH.OH.V0	Rosa Unit#654H.ST1.ST1.V0	Rosa Unit#652H.OH.OH.V0
RU14B.OH.OH.V0	Rosa Unit#654H.ST2.ST2.V0	

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



Company: Logos Operating LLC
 Project: Rio Arriba, NM NAD83
 Site: Rosa Unit 29
 Well: Rosa Unit #650H
 Wellbore: OH
 Design: Plan #10

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 #650H

GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)

+N-S	+E-W	North	East	Latitude	Longitude
0.00	0.00	2138058.4900	2847301.0090	36.8748833	-107.4086666

Plan: Plan #10 (Rosa Unit #650H/OH)

Created By: Janie Collins Date: 13:15, February 13 2023

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	North	East	Latitude	Longitude
Rosa 650H POE Rev 5	7267.00	1396.04	-967.85	2139450.2085	2846326.9610	36.8787178	-107.4119758
Rosa 650H BHL Rev 4	7250.00	1442.20	-9492.95	2139458.4488	2837801.7564	36.8788402	-107.4411238
Rosa 650H FPerf	7250.00	1441.33	-9323.09	2139458.3357	2837971.6232	36.8788380	-107.4405430

SECTION DETAILS

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VFace
6353.00	8.77	311.48	6185.60	1259.69	-253.16	0.00	0.00	451.94
6418.57	11.33	308.19	6250.16	1266.99	-261.97	4.00	-14.27	461.80
6911.16	11.33	308.19	6733.14	1326.82	-338.04	0.00	0.00	546.48
7613.30	90.11	270.31	7267.00	1396.04	-967.85	9.00	-38.41	1179.24
16338.54	90.11	270.31	7250.00	1442.20	-9492.95	0.00	0.00	9601.37



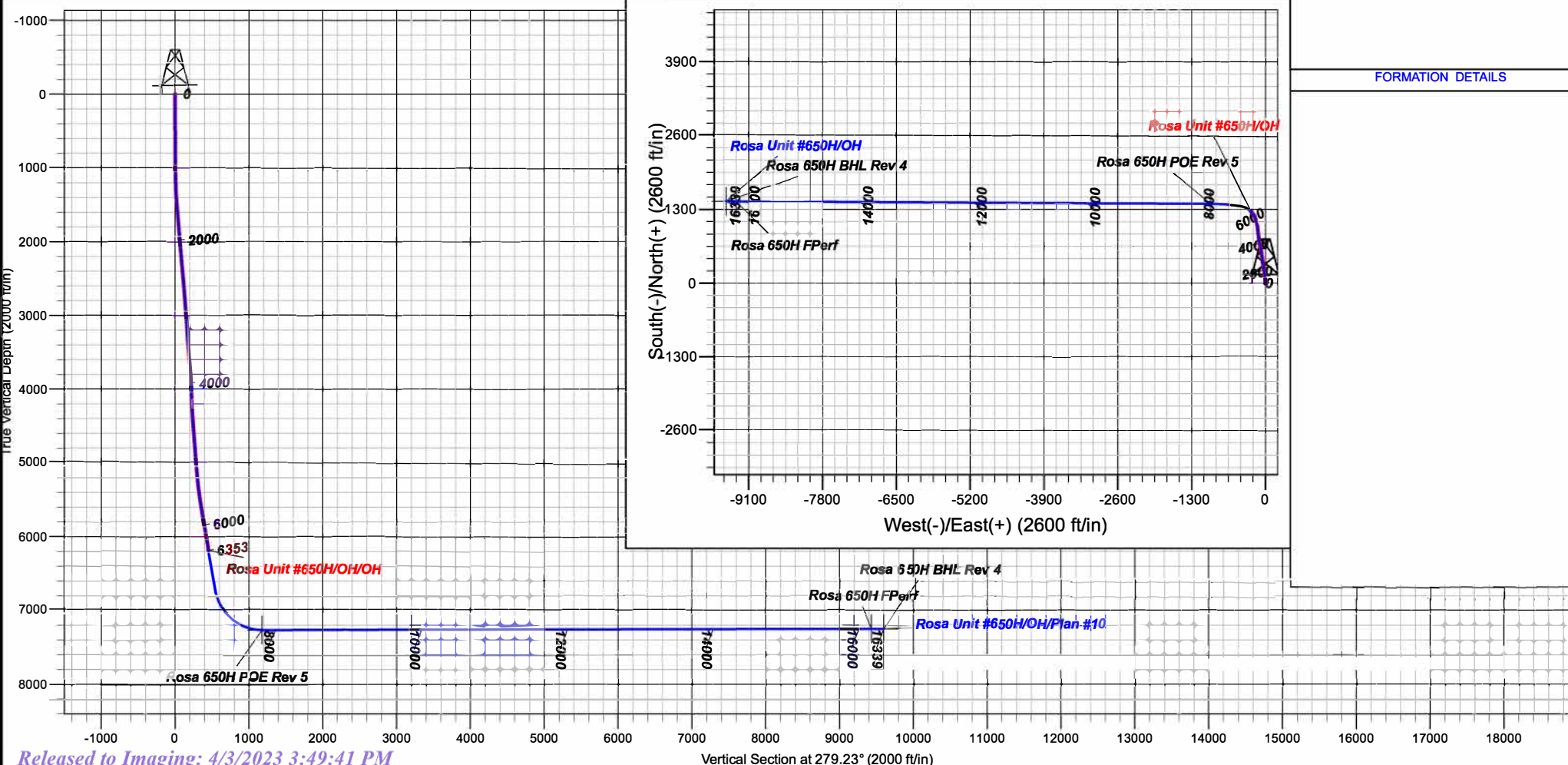
Azimuths to True North
 Magnetic North: 8.57°

Magnetic Field
 Strength: 49535.3nT
 Dip Angle: 63.32°
 Date: 11/6/2022
 Model: HDGM2022

CASING DETAILS

No casing data is available

FORMATION DETAILS





Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 29

Rosa Unit #650H - Slot B10

OH

Plan: Plan #10

Standard Planning Report

13 February, 2023





Lonestar Consulting, LLC Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #10		

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 29				
Site Position:		Northing:	2,138,126.5360 usft	Latitude:	36.8750715
From:	Map	Easting:	2,847,195.5760 usft	Longitude:	-107.4090261
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in		

Well	Rosa Unit #650H - Slot B10					
Well Position	+N/-S	0.00 ft	Northing:	2,138,058.4900 usft	Latitude:	36.8748833
	+E/-W	0.00 ft	Easting:	2,847,301.0090 usft	Longitude:	-107.4086666
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	6,372.00 ft
Grid Convergence:		0.25 °				

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2022	11/6/2022	8.57	63.32	49,535.30000000

Design	Plan #10			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	6,353.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	279.23

Plan Survey Tool Program	Date	2/13/2023		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	399.00	6,353.00	Survey #1 - Surface MWD Surve	MWD+HDGM OWSG MWD + HDGM
2	6,353.00	16,338.54	Plan #10 (OH)	MWD+HDGM OWSG MWD + HDGM



Lonestar Consulting, LLC
Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #10		

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
6,353.00	8.77	311.48	6,185.60	1,259.69	-253.16	0.00	0.00	0.00	0.00	
6,418.57	11.33	308.19	6,250.16	1,266.99	-261.97	4.00	3.90	-5.02	-14.27	
6,911.16	11.33	308.19	6,733.14	1,326.82	-338.04	0.00	0.00	0.00	0.00	
7,813.30	90.11	270.31	7,267.00	1,396.04	-967.85	9.00	8.73	-4.20	-38.41	Rosa 650H POE Rev
16,338.54	90.11	270.31	7,250.00	1,442.20	-9,492.95	0.00	0.00	0.00	0.00	Rosa 650H BHL Rev



Lonestar Consulting, LLC

Planning Report



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Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #10		

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)
6,353.00	8.77	311.48	6,185.60	1,259.69	-253.16	451.94	0.00	0.00	0.00
6,400.00	10.60	308.96	6,231.93	1,264.78	-259.21	458.72	4.00	3.90	-5.36
6,418.57	11.33	308.19	6,250.16	1,266.99	-261.97	461.80	4.00	3.92	-4.16
6,500.00	11.33	308.19	6,330.00	1,276.88	-274.55	475.80	0.00	0.00	0.00
6,600.00	11.33	308.19	6,428.05	1,289.02	-289.99	492.99	0.00	0.00	0.00
6,700.00	11.33	308.19	6,526.10	1,301.17	-305.43	510.18	0.00	0.00	0.00
6,800.00	11.33	308.19	6,624.15	1,313.32	-320.87	527.37	0.00	0.00	0.00
6,900.00	11.33	308.19	6,722.20	1,325.46	-336.31	544.56	0.00	0.00	0.00
6,911.16	11.33	308.19	6,733.14	1,326.82	-338.04	546.48	0.00	0.00	0.00
7,000.00	18.27	292.19	6,819.02	1,337.49	-357.83	567.72	9.00	7.82	-18.01
7,100.00	26.79	284.42	6,911.32	1,349.05	-394.24	605.52	9.00	8.51	-7.77
7,200.00	35.53	280.24	6,996.82	1,359.85	-444.76	657.12	9.00	8.74	-4.18
7,300.00	44.36	277.55	7,073.42	1,369.63	-508.14	721.25	9.00	8.83	-2.69
7,400.00	53.24	275.60	7,139.23	1,378.15	-582.82	796.32	9.00	8.88	-1.95
7,500.00	62.15	274.05	7,192.62	1,385.19	-666.95	880.50	9.00	8.91	-1.54
7,600.00	71.07	272.74	7,232.28	1,390.59	-758.48	971.71	9.00	8.92	-1.31
7,700.00	79.99	271.57	7,257.25	1,394.20	-855.14	1,067.69	9.00	8.93	-1.17
7,800.00	88.93	270.46	7,266.89	1,395.95	-954.55	1,166.10	9.00	8.93	-1.11
7,813.30	90.11	270.31	7,267.00	1,396.04	-967.85	1,179.24	9.00	8.93	-1.10
7,900.00	90.11	270.31	7,266.83	1,396.51	-1,054.55	1,264.90	0.00	0.00	0.00
8,000.00	90.11	270.31	7,266.63	1,397.05	-1,154.55	1,363.69	0.00	0.00	0.00
8,100.00	90.11	270.31	7,266.43	1,397.59	-1,254.55	1,462.48	0.00	0.00	0.00
8,200.00	90.11	270.31	7,266.23	1,398.13	-1,354.55	1,561.27	0.00	0.00	0.00
8,300.00	90.11	270.31	7,266.03	1,398.68	-1,454.55	1,660.06	0.00	0.00	0.00
8,400.00	90.11	270.31	7,265.83	1,399.22	-1,554.54	1,758.85	0.00	0.00	0.00
8,500.00	90.11	270.31	7,265.63	1,399.76	-1,654.54	1,857.64	0.00	0.00	0.00
8,600.00	90.11	270.31	7,265.43	1,400.30	-1,754.54	1,956.43	0.00	0.00	0.00
8,700.00	90.11	270.31	7,265.23	1,400.84	-1,854.54	2,055.22	0.00	0.00	0.00
8,800.00	90.11	270.31	7,265.03	1,401.38	-1,954.54	2,154.01	0.00	0.00	0.00
8,900.00	90.11	270.31	7,264.83	1,401.92	-2,054.54	2,252.80	0.00	0.00	0.00
9,000.00	90.11	270.31	7,264.63	1,402.47	-2,154.53	2,351.59	0.00	0.00	0.00
9,100.00	90.11	270.31	7,264.43	1,403.01	-2,254.53	2,450.38	0.00	0.00	0.00
9,200.00	90.11	270.31	7,264.23	1,403.55	-2,354.53	2,549.17	0.00	0.00	0.00
9,300.00	90.11	270.31	7,264.04	1,404.09	-2,454.53	2,647.96	0.00	0.00	0.00
9,400.00	90.11	270.31	7,263.84	1,404.63	-2,554.53	2,746.75	0.00	0.00	0.00
9,500.00	90.11	270.31	7,263.64	1,405.17	-2,654.53	2,845.54	0.00	0.00	0.00
9,600.00	90.11	270.31	7,263.44	1,405.71	-2,754.52	2,944.33	0.00	0.00	0.00
9,700.00	90.11	270.31	7,263.24	1,406.26	-2,854.52	3,043.12	0.00	0.00	0.00
9,800.00	90.11	270.31	7,263.04	1,406.80	-2,954.52	3,141.91	0.00	0.00	0.00
9,900.00	90.11	270.31	7,262.84	1,407.34	-3,054.52	3,240.70	0.00	0.00	0.00
10,000.00	90.11	270.31	7,262.64	1,407.88	-3,154.52	3,339.50	0.00	0.00	0.00
10,100.00	90.11	270.31	7,262.44	1,408.42	-3,254.52	3,438.29	0.00	0.00	0.00
10,200.00	90.11	270.31	7,262.24	1,408.96	-3,354.51	3,537.08	0.00	0.00	0.00
10,300.00	90.11	270.31	7,262.04	1,409.50	-3,454.51	3,635.87	0.00	0.00	0.00
10,400.00	90.11	270.31	7,261.84	1,410.05	-3,554.51	3,734.66	0.00	0.00	0.00
10,500.00	90.11	270.31	7,261.64	1,410.59	-3,654.51	3,833.45	0.00	0.00	0.00
10,600.00	90.11	270.31	7,261.44	1,411.13	-3,754.51	3,932.24	0.00	0.00	0.00
10,700.00	90.11	270.31	7,261.24	1,411.67	-3,854.51	4,031.03	0.00	0.00	0.00
10,800.00	90.11	270.31	7,261.04	1,412.21	-3,954.50	4,129.82	0.00	0.00	0.00
10,900.00	90.11	270.31	7,260.85	1,412.75	-4,054.50	4,228.61	0.00	0.00	0.00
11,000.00	90.11	270.31	7,260.65	1,413.29	-4,154.50	4,327.40	0.00	0.00	0.00
11,100.00	90.11	270.31	7,260.45	1,413.84	-4,254.50	4,426.19	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #10		

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)
11,200.00	90.11	270.31	7,260.25	1,414.38	-4,354.50	4,524.98	0.00	0.00	0.00
11,300.00	90.11	270.31	7,260.05	1,414.92	-4,454.50	4,623.77	0.00	0.00	0.00
11,400.00	90.11	270.31	7,259.85	1,415.46	-4,554.49	4,722.56	0.00	0.00	0.00
11,500.00	90.11	270.31	7,259.65	1,416.00	-4,654.49	4,821.35	0.00	0.00	0.00
11,600.00	90.11	270.31	7,259.45	1,416.54	-4,754.49	4,920.14	0.00	0.00	0.00
11,700.00	90.11	270.31	7,259.25	1,417.08	-4,854.49	5,018.93	0.00	0.00	0.00
11,800.00	90.11	270.31	7,259.05	1,417.63	-4,954.49	5,117.72	0.00	0.00	0.00
11,900.00	90.11	270.31	7,258.85	1,418.17	-5,054.49	5,216.51	0.00	0.00	0.00
12,000.00	90.11	270.31	7,258.65	1,418.71	-5,154.48	5,315.30	0.00	0.00	0.00
12,100.00	90.11	270.31	7,258.45	1,419.25	-5,254.48	5,414.09	0.00	0.00	0.00
12,200.00	90.11	270.31	7,258.25	1,419.79	-5,354.48	5,512.89	0.00	0.00	0.00
12,300.00	90.11	270.31	7,258.05	1,420.33	-5,454.48	5,611.68	0.00	0.00	0.00
12,400.00	90.11	270.31	7,257.85	1,420.87	-5,554.48	5,710.47	0.00	0.00	0.00
12,500.00	90.11	270.31	7,257.65	1,421.42	-5,654.48	5,809.26	0.00	0.00	0.00
12,600.00	90.11	270.31	7,257.46	1,421.96	-5,754.47	5,908.05	0.00	0.00	0.00
12,700.00	90.11	270.31	7,257.26	1,422.50	-5,854.47	6,006.84	0.00	0.00	0.00
12,800.00	90.11	270.31	7,257.06	1,423.04	-5,954.47	6,105.63	0.00	0.00	0.00
12,900.00	90.11	270.31	7,256.86	1,423.58	-6,054.47	6,204.42	0.00	0.00	0.00
13,000.00	90.11	270.31	7,256.66	1,424.12	-6,154.47	6,303.21	0.00	0.00	0.00
13,100.00	90.11	270.31	7,256.46	1,424.66	-6,254.47	6,402.00	0.00	0.00	0.00
13,200.00	90.11	270.31	7,256.26	1,425.21	-6,354.46	6,500.79	0.00	0.00	0.00
13,300.00	90.11	270.31	7,256.06	1,425.75	-6,454.46	6,599.58	0.00	0.00	0.00
13,400.00	90.11	270.31	7,255.86	1,426.29	-6,554.46	6,698.37	0.00	0.00	0.00
13,500.00	90.11	270.31	7,255.66	1,426.83	-6,654.46	6,797.16	0.00	0.00	0.00
13,600.00	90.11	270.31	7,255.46	1,427.37	-6,754.46	6,895.95	0.00	0.00	0.00
13,700.00	90.11	270.31	7,255.26	1,427.91	-6,854.46	6,994.74	0.00	0.00	0.00
13,800.00	90.11	270.31	7,255.06	1,428.46	-6,954.45	7,093.53	0.00	0.00	0.00
13,900.00	90.11	270.31	7,254.86	1,429.00	-7,054.45	7,192.32	0.00	0.00	0.00
14,000.00	90.11	270.31	7,254.66	1,429.54	-7,154.45	7,291.11	0.00	0.00	0.00
14,100.00	90.11	270.31	7,254.46	1,430.08	-7,254.45	7,389.90	0.00	0.00	0.00
14,200.00	90.11	270.31	7,254.26	1,430.62	-7,354.45	7,488.69	0.00	0.00	0.00
14,300.00	90.11	270.31	7,254.07	1,431.16	-7,454.45	7,587.48	0.00	0.00	0.00
14,400.00	90.11	270.31	7,253.87	1,431.70	-7,554.44	7,686.28	0.00	0.00	0.00
14,500.00	90.11	270.31	7,253.67	1,432.25	-7,654.44	7,785.07	0.00	0.00	0.00
14,600.00	90.11	270.31	7,253.47	1,432.79	-7,754.44	7,883.86	0.00	0.00	0.00
14,700.00	90.11	270.31	7,253.27	1,433.33	-7,854.44	7,982.65	0.00	0.00	0.00
14,800.00	90.11	270.31	7,253.07	1,433.87	-7,954.44	8,081.44	0.00	0.00	0.00
14,900.00	90.11	270.31	7,252.87	1,434.41	-8,054.44	8,180.23	0.00	0.00	0.00
15,000.00	90.11	270.31	7,252.67	1,434.95	-8,154.43	8,279.02	0.00	0.00	0.00
15,100.00	90.11	270.31	7,252.47	1,435.49	-8,254.43	8,377.81	0.00	0.00	0.00
15,200.00	90.11	270.31	7,252.27	1,436.04	-8,354.43	8,476.60	0.00	0.00	0.00
15,300.00	90.11	270.31	7,252.07	1,436.58	-8,454.43	8,575.39	0.00	0.00	0.00
15,400.00	90.11	270.31	7,251.87	1,437.12	-8,554.43	8,674.18	0.00	0.00	0.00
15,500.00	90.11	270.31	7,251.67	1,437.66	-8,654.43	8,772.97	0.00	0.00	0.00
15,600.00	90.11	270.31	7,251.47	1,438.20	-8,754.42	8,871.76	0.00	0.00	0.00
15,700.00	90.11	270.31	7,251.27	1,438.74	-8,854.42	8,970.55	0.00	0.00	0.00
15,800.00	90.11	270.31	7,251.07	1,439.28	-8,954.42	9,069.34	0.00	0.00	0.00
15,900.00	90.11	270.31	7,250.87	1,439.83	-9,054.42	9,168.13	0.00	0.00	0.00
16,000.00	90.11	270.31	7,250.68	1,440.37	-9,154.42	9,266.92	0.00	0.00	0.00
16,100.00	90.11	270.31	7,250.48	1,440.91	-9,254.42	9,365.71	0.00	0.00	0.00
16,200.00	90.11	270.31	7,250.28	1,441.45	-9,354.41	9,464.50	0.00	0.00	0.00
16,300.00	90.11	270.31	7,250.08	1,441.99	-9,454.41	9,563.29	0.00	0.00	0.00



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #650H - Slot B10
Company:	Logos Operating LLC	TVD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6372' & RKB 24.5' @ 6396.50ft (Ensign 223)
Site:	Rosa Unit 29	North Reference:	True
Well:	Rosa Unit #650H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #10		

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)	
16,338.54	90.11	270.31	7,250.00	1,442.20	-9,492.95	9,601.37	0.00	0.00	0.00	

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)	Latitude	Longitude
Rosa 650H BHL Rev 4 - plan hits target center - Point	0.00	0.00	7,250.00	1,442.20	-9,492.95	2,139,458.4488	2,837,801.7564	36.8788402	-107.4411238
Rosa 650H FPerf - plan misses target center by 0.34ft at 16168.67ft MD (7250.34 TVD, 1441.28 N, -9323.09 E) - Point	0.00	0.00	7,250.00	1,441.33	-9,323.09	2,139,458.3358	2,837,971.6232	36.8788380	-107.4405430
Rosa 650H POE Rev 5 - plan hits target center - Point	0.00	0.00	7,267.00	1,396.04	-967.85	2,139,450.2085	2,846,326.9610	36.8787178	-107.4119758

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
6,353.00	6,185.60	1,259.69	-253.16	Start DLS 4.00 TFO -14.27	
6,418.57	6,250.16	1,266.99	-261.97	Start 492.59 hold at 6418.57 MD	
6,911.16	6,733.14	1,326.82	-338.04	Start DLS 9.00 TFO -38.41	
7,813.30	7,267.00	1,396.04	-967.85	POE @ 7813' MD	
7,813.30	7,267.00	1,396.04	-967.85	36.8787178 / -107.4119758	
16,168.68	7,250.34	1,441.28	-9,323.10	First Perf @ 16,168' MD	
16,168.68	7,250.34	1,441.28	-9,323.10	36.8788379 / -107.4405430	
16,338.54	7,250.00	1,442.20	-9,492.95	TD at 16338.54	

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District II
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Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
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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

COMMENTS

Action 200578

COMMENTS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 200578
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
john.harrison	Accepted for record - NMOCD JRH 4/3/23 BLM approved 3/24/23	4/3/2023

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CONDITIONS

Action 200578

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	Action Number: 200578
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CONDITIONS

Created By	Condition	Condition Date
john.harrison	None	4/3/2023