

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.
NMSF078773
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 33 T31N R05W, NENW (C) 363' FNL 1685' FWL7. If Unit of CA/Agreement, Name and/or No.
NMNM78407E8. Well Name and No.
ROSA UNIT 746H9 API Well No.
30-039-3141610. 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 1900' FNL & 64' FEL to new **bottom-hole location 2175' FNL & 63' FEL**Original TD @ 20,904' MD 7,107' TVD to new **TD @ 20,954' MD 7,077' TVD.**

Geology tops have been updated per changes.

Original KOP @ 6,647' MD 6,500' TVD to new **KOP @ 6,697' MD 6,482' TVD**Original Landing point @ 7,629' MD 7,102' TVD to **new Landing point @ 7,677 MD 7,077' TVD**Original 13.375" casing Intermediate @ 3,667' MD to **new Intermediate @ 3,687' MD, 3,596' TVD**Original 9.625" casing Intermediate @ 6,495' MD to **new Intermediate @ 6,549 MD, 6,341' TVD**Original 5.5" casing Production @ 20,904' MD to new **Production @ 20,954' MD 7,077' TVD**

The 13.375", 9.625" Intermediate casings & 5.5" production cementing bbls and sacks have been updated per casing depth changes.

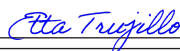
Attached: New C102, Operations plan and Directional Drill plan (based on KB).

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

Etta Trujillo

Title Regulatory Specialist

Signature



Date 6/1/2023

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

Title

Date

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

Office

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

(Instructions on page 2)

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 33 / NENW /	County or Parish/State:
Well Number: 746H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF0078773	Unit or CA Name:	Unit or CA Number: NMNM078407E
US Well Number: 3003931416	Well Status: Approved Application for Permit to Drill	Operator: LOGOS OPERATING LLC

Notice of Intent

Sundry ID: 2733971

Type of Submission: Notice of Intent	Type of Action: Other
Date Sundry Submitted: 06/01/2023	Time Sundry Submitted: 03:04
Date proposed operation will begin: 06/01/2023	

Procedure Description: LOGOS Operating request a change in plans for the following: Original bottom-hole location from 1900' FNL & 64' FEL to new bottom-hole location 2175' FNL & 63' FEL Original TD @ 20,904' MD 7,107' TVD to new TD @ 20,954' MD 7,077' TVD. Geology tops have been updated per changes. Original KOP @ 6,647' MD 6,500' TVD to new KOP @ 6,697' MD 6,482' TVD Original Landing point @ 7,629' MD 7,102' TVD to new Landing point @ 7,677 MD 7,077' TVD Original 13.375" casing Intermediate @ 3,667' MD to new Intermediate @ 3,687' MD, 3,596' TVD Original 9.625" casing Intermediate @ 6,495' MD to new Intermediate @ 6,549 MD, 6,341' TVD Original 5.5" casing Production @ 20,904' MD to new Production @ 20,954' MD 7,077' TVD The 13.375", 9.625" Intermediate casings & 5.5" production cementing bbls and sacks have been updated per casing depth changes. Attached: New C102, Operations plan and Directional Drill plan (based on KB).

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

- Rosa_Unit_746H_C_102_Plat_Plan_9_Revised_20230315_signed_20230601150308.pdf
- Rosa_Unit_746H_Plan_9_AC_Report_Summary_20230601150029.pdf
- Rosa_Unit_746H_Plan_9_20230601150014.pdf
- Rosa_Unit_746H_Operations_Plan___Plan_9_WRR_5.31.23_20230601145834.pdf

Well Name: ROSA UNIT	Well Location: T31N / R5W / SEC 33 / NENW /	County or Parish/State:
Well Number: 746H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMSF0078773	Unit or CA Name:	Unit or CA Number: NMNM078407E
US Well Number: 3003931416	Well Status: Approved Application for Permit to Drill	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: JUN 01, 2023 03:03 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: 06/02/2023

Signature: Kenneth Rennick

1 API Number 30-039-31416		2 Pool Code 97232	3 Pool Name BASIN MANCOS
4 Property Code 320608	5 Property Name ROSA UNIT		6 Well Number 746H
7 OGRID No. 289408	8 Operator Name LOGOS OPERATING, LLC		9 Elevation 6492'

10 Surface Location									
UL or lot no. C	Section 33	Township 31N	Range 5W	Lot Idn	Feet from the 363	North/South line NORTH	Feet from the 1685	East/West line WEST	County RIO ARRIBA

11 Bottom Hole Location If Different From Surface									
UL or lot no. H	Section 35	Township 31N	Range 5W	Lot Idn	Feet from the 2175	North/South line NORTH	Feet from the 63	East/West line EAST	County RIO ARRIBA
12 Dedicated Acres 960.00		N/2 - Sections 33, 34 & 35				13 Joint or Infill	14 Consolidation Code	15 Order No. R-13457	

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.

Dacye Shull

03/15/2023

Signature Date

Dacye Shull

Printed Name

dshull@logosresourcesllc.com

E-mail Address

18 SURVEYOR CERTIFICATION
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.
Date Revised: MARCH 15, 2023
Date of Survey: APRIL 21, 2016
Signature and Seal of Professional Surveyor

JASON C. EDWARDS

NEW MEXICO

15269

REGISTERED PROFESSIONAL SURVEYOR

JASON C. EDWARDS

Certificate Number 15269

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

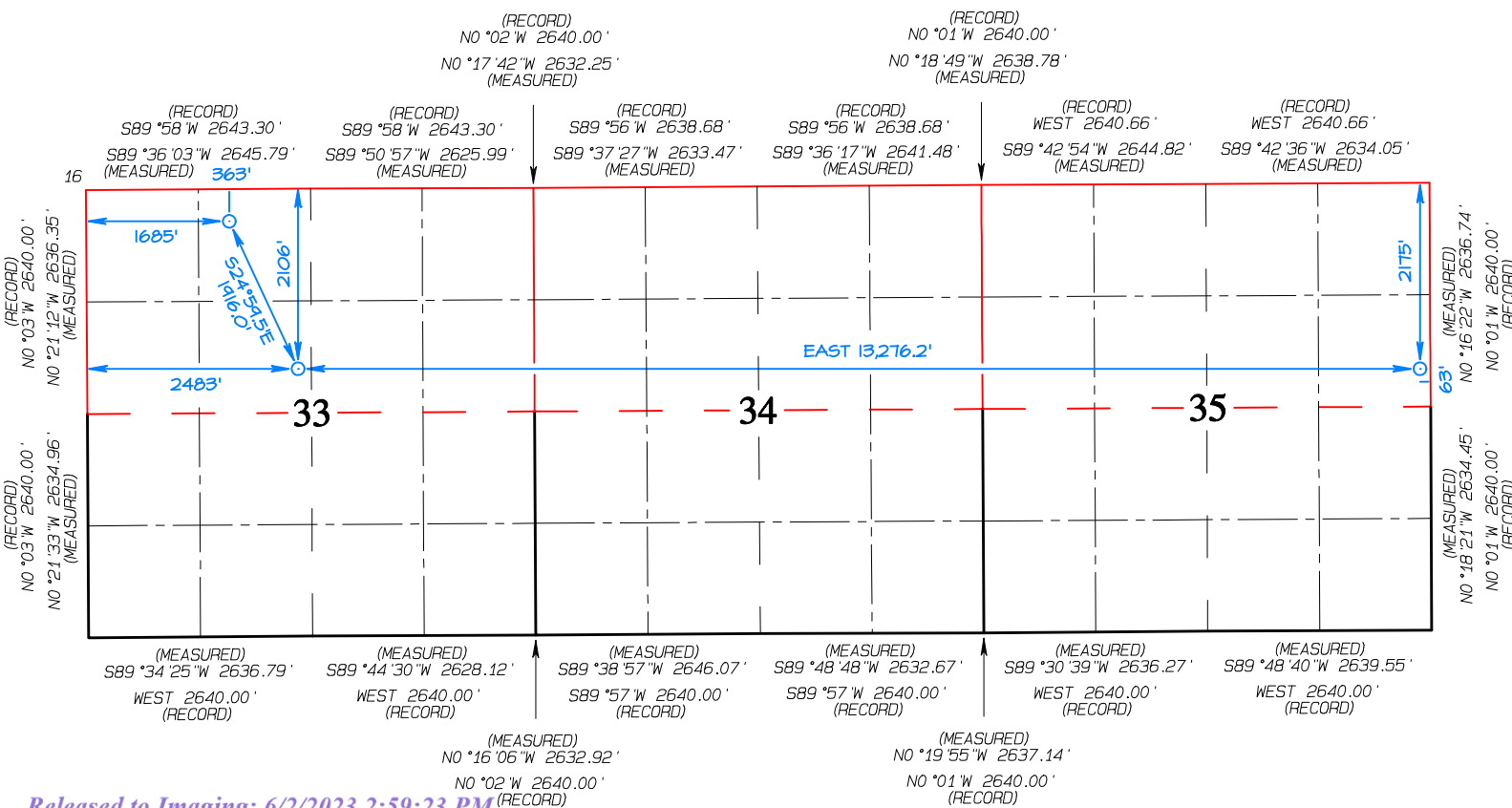
SURFACE LOCATION
363' FNL 1685' FWL
SEC 33, T31N, R5W
LAT: 36.862353°N
LONG: 107.370309°W
DATUM: NAD1927

FIRST TAKE POINT
2106' FNL 2483' FWL
SEC 33, T31N, R5W
LAT: 36.857572°N
LONG: 107.367571°W
DATUM: NAD1927

LAT: 36.862359°N
LONG: 107.370911°W
DATUM: NAD1983

LAST TAKE POINT
2175' FNL 63' FEL
SEC 35, T31N, R5W
LAT: 36.857386°N
LONG: 107.322193°W
DATUM: NAD1927

LAT: 36.857392°N
LONG: 107.322794°W
DATUM: NAD1983





LOGOS Operating, LLC Operations Plan

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

Date:	May 31, 2023	Pool:	Basin Mancos
Well Name:	Rosa Unit 746H	GL Elevation:	6,492'
Surface Location:	Sec 33, T31N, R5W 363 FNL, 1685 FWL (36.862359° N, 107.370911° W – NAD83)	Measured Depth:	20954' (MD)
Bottom Hole Location:	Sec 35, T31N, R5W 2175 FNL, 63 FEL (36.857392° N, 107.322794° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078773, CA Serial # NMNM78407E

I. GEOLOGY

A. Formation Tops (Based on 30' KB Elevation): Estimated top of important geological markers:
SURFACE FORMATION – NACIMIENTO

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2725	2661	*POINT LOOKOUT	5974	5787
KIRTLAND	2857	2788	*MANCOS	6474	6268
*FRUITLAND	3338	3251	KICKOFF POINT	6697	6482
*PICTURED CLIFFS	3637	3538			
LEWIS	3741	3639	POINT OF ENTRY	7677	7077
CHACRA	4871	4726			
*CLIFF HOUSE	5734	5556			
MENEFEE	5767	5588	TD	20,954	7077

* 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 24" or 26" surface hole, 17-1/2" and 12-1/4" directional / vertical hole. An LSND (WBM) or (OBM) system will be used to drill the 8-1/2" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain returns prior to cementing. Notify Engineering of any mud losses.

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 of. Any leaks, spills, or other undesirable events will be reported in accordance with BLM NTL 3A. Rig crews will monitor the tanks at all

ROSA UNIT 746H



times.

- B. BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes**. Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing strings to one-third of internal yield pressure not to exceed **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 on each tour. BOP equipment will be tested a minimum of 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 but not more than once daily. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of the BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when 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 the first full test.
- C. GeoHazards:** There are no anticipated geohazards
- D. Maximum Anticipated Pressure:** $7077' \text{ TVD} \times 0.43 = 3043 \text{ psi}$
- E. H2S Concerns:** – There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	KB DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	26"	364'	20"	94 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	17.5"	3,687'	13.375"	61 LBS	N-80 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,549'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,954'	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:

- 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:** 13-3/8" 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., 2,000ft., 1,500 ft., 1,000 ft, and 500ft.
The casing will remain fluid filled while running.
- 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 3,600 ft. Run (1) centralizer at 3,000' and 2,500 ft. Optional use of DV Tools will be strategically placed above loss circulation zones anticipated in the Mesaverde. Optional cancellation plugs for DV tools may be used

ROSA UNIT 746H



if losses while cementing are not encountered. The operational use of an external casing packer may be utilized and placed below the DV tool, if a DV tool is utilized.

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. The 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 ~ 330' and cemented to surface. TOC at Surface. 442 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 350 sks of 14.6 ppg Type III with 1.39 cuft/sk yield, 30% excess. (Assuming 24" hole).
2. **INTERMEDIATE 1:** Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 1 stage. If cement does not circulate to surface, a CBL will be run to determine TOC.

Intermediate 1 -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	3,087	600	0.6947	1.3	575	102	1.10	523	15.8
Stage 1 Lead - OH	350	2,737	0.6947	1.3	2,472	440	1.90	1301	12.4
Stage 2 Lead - Cased	-	350	1.019	1	357	64	1.90	188	12.4
					3,404	606		2012	

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

3. **INTERMEDIATE 2:** Intermediate casing shall be kept fluid-filled while running into the hole to meet BLM minimum collapse requirements. The intermediate casing will be cemented in 1 or 2 stages using a DV/STAGE tool to reduce cement losses and maximize cement coverage. The operator proposes optional DV tools above anticipated loss circulation zones in the Mesaverde. If losses are not observed, a cancellation plug will be pumped, and the remaining cement will be pumped during stage 2. Top of cement is planned at 100' above the base of the 13-3/8" casing (100' of overlap). If cement does not circulate to the DV tool or to the 13-3/8" casing, a CBL will be run to determine TOC.

Intermediate 2 -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	6,049	500	0.3132	1.3	220	39	1.10	200	15.8
Stage 1 Lead	4,946	1,103	0.3132	1.3	449	80	1.90	236	12.4
					669	119		436	
Stage 2 Tail	4,346	600	0.3132	1.3	244	44	1.58	155	13.2
Stage 2 Lead	3,587	759	0.3132	1.3	309	55	1.90	163	12.4
Stage 2 Lead - Cased	3,487	100	0.3627	1	36	6	1.90	19	12.4
Stage 2 Totals					590	105		336	
Int 2 Totals					1,259	224		773	

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

4. **PRODUCTION:** Production casing will be cemented in 1 stage with 100' of cement

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overlap above the intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,449	100	0.2531	1	25	5	1.59	16	13.2
Open Hole Lead	6,549	14,405	0.2291	1.15	3,800	677	1.59	2,390	13.2
					3,826	681		2,406	

Calculations based on 15% excess for the 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 the service provider selected. Cement yields may change depending on the 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 the cement top if cement is not circulated.

B. PRESSURE TEST

C. Pressure test 5-1/2" casing to 1557 psi (0.22 psi/ft * 7,077' 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.

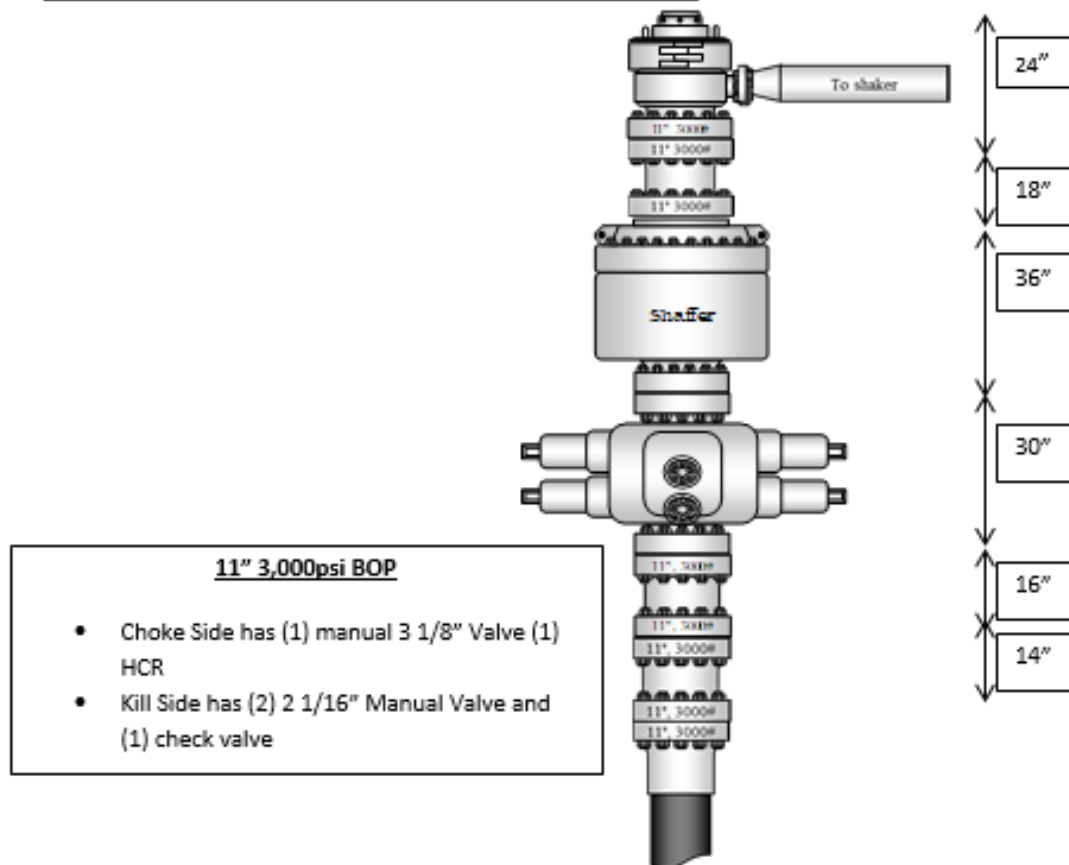
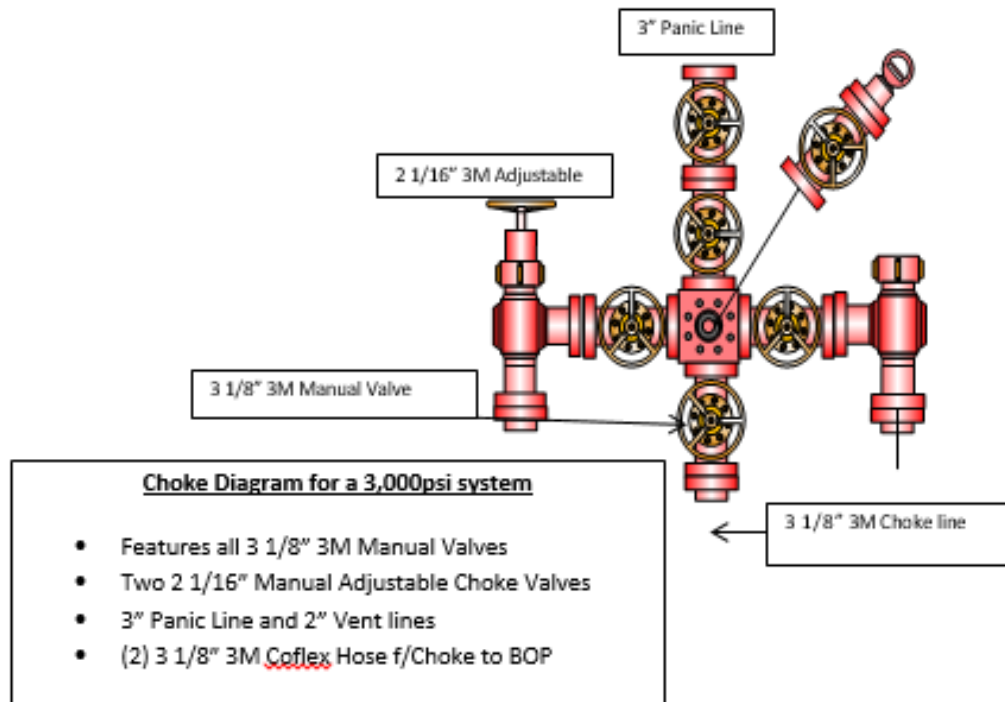
E. PRODUCTION TUBING

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



ROSA UNIT 746H

Released to Imaging: 6/2/2023 2:09:23 PM



Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 31
Well: Rosa Unit #746H
Wellbore: OH
Design: Plan #9

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 #746H

GL 6492' & RKB 30' @ 6522.00ft (H&P 530)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2133550.1375	2858366.1633	36.8623590	-107.3709110	A4

Plan: Plan #9 (Rosa Unit #746H/OH)

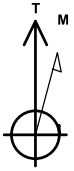
Created By: Janie Collins Date: 14:28, March 10 2023

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
746H POE Rev 4	7077.00	-1740.35	801.14	2131813.6935	2859175.7206	36.8575787	-107.3681726
746H BHL Rev 4	7077.00	-1804.65	14077.19	2131813.6735	2872451.9004	36.8573924	-107.3227937

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
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
1289.26	15.79	173.98	1279.31	-107.44	11.33	2.00	173.98	24.90
6696.26	15.79	173.98	6482.41	-1570.20	165.62	0.00	0.00	363.94
7677.26	90.00	90.28	7077.00	-1740.35	801.14	9.00	-83.94	1015.93
20953.46	90.00	90.28	7077.00	-1804.65	14077.19	0.00	0.00	14192.40



Azimuths to True North
Magnetic North: 8

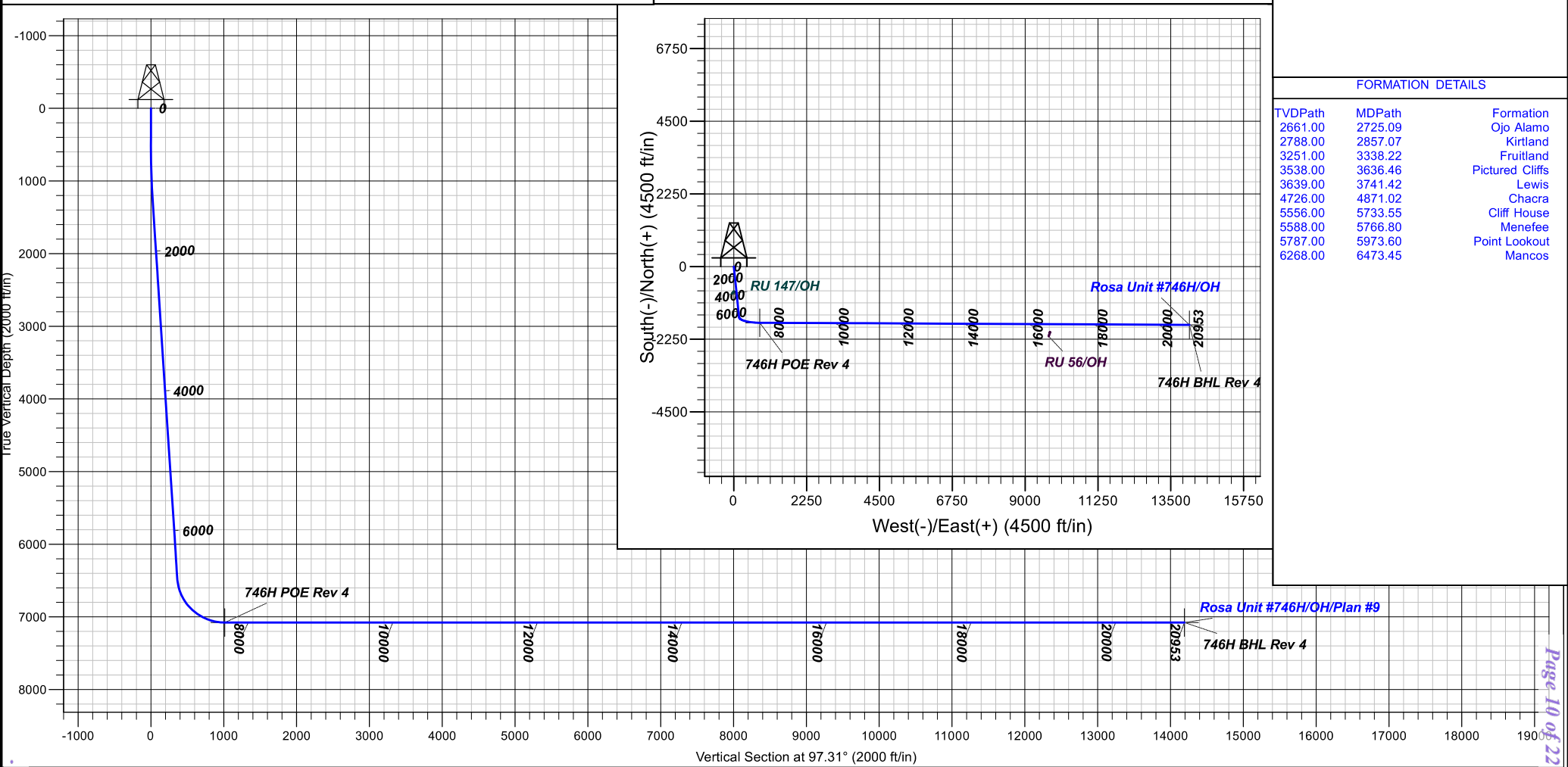
Magnetic Field
Strength: 49534.11T
Dip Angle: 63.30°
Date: 10/19/2022
Model: HDGM2022

CASING DETAILS

No casing data is available

FORMATION DETAILS

TVDPath	MDPath	Formation
2661.00	2725.09	Ojo Alamo
2788.00	2857.07	Kirtland
3251.00	3338.22	Fruitland
3538.00	3636.46	Pictured Cliffs
3639.00	3741.42	Lewis
4726.00	4871.02	Chacra
5556.00	5733.55	Cliff House
5588.00	5766.80	Menefee
5787.00	5973.60	Point Lookout
6268.00	6473.45	Mancos



Received by OCB: 6/2/2023 2:09:23 PM

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Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 31

Rosa Unit #746H - Slot A4

OH

Plan: Plan #9

Standard Planning Report

10 March, 2023





Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

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 31			
Site Position:		Northing:	2,133,595.0680 usft	Latitude: 36.8624824
From: Map		Easting:	2,858,361.8390 usft	Longitude: -107.3709251
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	

Well	Rosa Unit #746H - Slot A4			
Well Position	+N/-S	0.00 ft	Northing:	2,133,550.1375 usft
	+E/-W	0.00 ft	Easting:	2,858,366.1633 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft
Grid Convergence:		0.28 °	Ground Level:	6,492.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2022	10/19/2022	8.53	63.30	49,534.10000000

Design	Plan #9			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	97.31

Plan Survey Tool Program	Date	3/10/2023		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,953.46 Plan #9 (OH)	MWD+HDGM	
			OWSG MWD + HDGM	

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
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	
1,289.26	15.79	173.98	1,279.31	-107.44	11.33	2.00	2.00	0.00	173.98	
6,696.26	15.79	173.98	6,482.41	-1,570.20	165.62	0.00	0.00	0.00	0.00	
7,677.26	90.00	90.28	7,077.00	-1,740.35	801.14	9.00	7.57	-8.53	-83.94	746H POE Rev 4
20,953.46	90.00	90.28	7,077.00	-1,804.65	14,077.19	0.00	0.00	0.00	0.00	746H BHL Rev 4



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

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)
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
600.00	2.00	173.98	599.98	-1.74	0.18	0.40	2.00	2.00	0.00
700.00	4.00	173.98	699.84	-6.94	0.73	1.61	2.00	2.00	0.00
800.00	6.00	173.98	799.45	-15.61	1.65	3.62	2.00	2.00	0.00
900.00	8.00	173.98	898.70	-27.73	2.92	6.43	2.00	2.00	0.00
1,000.00	10.00	173.98	997.47	-43.28	4.57	10.03	2.00	2.00	0.00
1,100.00	12.00	173.98	1,095.62	-62.26	6.57	14.43	2.00	2.00	0.00
1,200.00	14.00	173.98	1,193.06	-84.63	8.93	19.61	2.00	2.00	0.00
1,289.26	15.79	173.98	1,279.31	-107.44	11.33	24.90	2.00	2.00	0.00
1,300.00	15.79	173.98	1,289.65	-110.35	11.64	25.58	0.00	0.00	0.00
1,400.00	15.79	173.98	1,385.88	-137.40	14.49	31.85	0.00	0.00	0.00
1,500.00	15.79	173.98	1,482.11	-164.45	17.35	38.12	0.00	0.00	0.00
1,600.00	15.79	173.98	1,578.33	-191.50	20.20	44.39	0.00	0.00	0.00
1,700.00	15.79	173.98	1,674.56	-218.56	23.05	50.66	0.00	0.00	0.00
1,800.00	15.79	173.98	1,770.79	-245.61	25.91	56.93	0.00	0.00	0.00
1,900.00	15.79	173.98	1,867.02	-272.66	28.76	63.20	0.00	0.00	0.00
2,000.00	15.79	173.98	1,963.25	-299.72	31.61	69.47	0.00	0.00	0.00
2,100.00	15.79	173.98	2,059.48	-326.77	34.47	75.74	0.00	0.00	0.00
2,200.00	15.79	173.98	2,155.71	-353.82	37.32	82.01	0.00	0.00	0.00
2,300.00	15.79	173.98	2,251.94	-380.88	40.17	88.28	0.00	0.00	0.00
2,400.00	15.79	173.98	2,348.17	-407.93	43.03	94.55	0.00	0.00	0.00
2,500.00	15.79	173.98	2,444.39	-434.98	45.88	100.82	0.00	0.00	0.00
2,600.00	15.79	173.98	2,540.62	-462.03	48.73	107.09	0.00	0.00	0.00
2,700.00	15.79	173.98	2,636.85	-489.09	51.59	113.36	0.00	0.00	0.00
2,800.00	15.79	173.98	2,733.08	-516.14	54.44	119.63	0.00	0.00	0.00
2,900.00	15.79	173.98	2,829.31	-543.19	57.30	125.90	0.00	0.00	0.00
3,000.00	15.79	173.98	2,925.54	-570.25	60.15	132.17	0.00	0.00	0.00
3,100.00	15.79	173.98	3,021.77	-597.30	63.00	138.44	0.00	0.00	0.00
3,200.00	15.79	173.98	3,118.00	-624.35	65.86	144.71	0.00	0.00	0.00
3,300.00	15.79	173.98	3,214.23	-651.41	68.71	150.98	0.00	0.00	0.00
3,400.00	15.79	173.98	3,310.45	-678.46	71.56	157.25	0.00	0.00	0.00
3,500.00	15.79	173.98	3,406.68	-705.51	74.42	163.52	0.00	0.00	0.00
3,600.00	15.79	173.98	3,502.91	-732.56	77.27	169.79	0.00	0.00	0.00
3,700.00	15.79	173.98	3,599.14	-759.62	80.12	176.06	0.00	0.00	0.00
3,800.00	15.79	173.98	3,695.37	-786.67	82.98	182.33	0.00	0.00	0.00
3,900.00	15.79	173.98	3,791.60	-813.72	85.83	188.60	0.00	0.00	0.00
4,000.00	15.79	173.98	3,887.83	-840.78	88.68	194.87	0.00	0.00	0.00
4,100.00	15.79	173.98	3,984.06	-867.83	91.54	201.14	0.00	0.00	0.00
4,200.00	15.79	173.98	4,080.29	-894.88	94.39	207.41	0.00	0.00	0.00
4,300.00	15.79	173.98	4,176.51	-921.94	97.24	213.68	0.00	0.00	0.00
4,400.00	15.79	173.98	4,272.74	-948.99	100.10	219.96	0.00	0.00	0.00
4,500.00	15.79	173.98	4,368.97	-976.04	102.95	226.23	0.00	0.00	0.00
4,600.00	15.79	173.98	4,465.20	-1,003.09	105.81	232.50	0.00	0.00	0.00
4,700.00	15.79	173.98	4,561.43	-1,030.15	108.66	238.77	0.00	0.00	0.00
4,800.00	15.79	173.98	4,657.66	-1,057.20	111.51	245.04	0.00	0.00	0.00
4,900.00	15.79	173.98	4,753.89	-1,084.25	114.37	251.31	0.00	0.00	0.00
5,000.00	15.79	173.98	4,850.12	-1,111.31	117.22	257.58	0.00	0.00	0.00
5,100.00	15.79	173.98	4,946.35	-1,138.36	120.07	263.85	0.00	0.00	0.00
5,200.00	15.79	173.98	5,042.57	-1,165.41	122.93	270.12	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

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)
5,300.00	15.79	173.98	5,138.80	-1,192.47	125.78	276.39	0.00	0.00	0.00
5,400.00	15.79	173.98	5,235.03	-1,219.52	128.63	282.66	0.00	0.00	0.00
5,500.00	15.79	173.98	5,331.26	-1,246.57	131.49	288.93	0.00	0.00	0.00
5,600.00	15.79	173.98	5,427.49	-1,273.62	134.34	295.20	0.00	0.00	0.00
5,700.00	15.79	173.98	5,523.72	-1,300.68	137.19	301.47	0.00	0.00	0.00
5,800.00	15.79	173.98	5,619.95	-1,327.73	140.05	307.74	0.00	0.00	0.00
5,900.00	15.79	173.98	5,716.18	-1,354.78	142.90	314.01	0.00	0.00	0.00
6,000.00	15.79	173.98	5,812.40	-1,381.84	145.75	320.28	0.00	0.00	0.00
6,100.00	15.79	173.98	5,908.63	-1,408.89	148.61	326.55	0.00	0.00	0.00
6,200.00	15.79	173.98	6,004.86	-1,435.94	151.46	332.82	0.00	0.00	0.00
6,300.00	15.79	173.98	6,101.09	-1,463.00	154.31	339.09	0.00	0.00	0.00
6,400.00	15.79	173.98	6,197.32	-1,490.05	157.17	345.36	0.00	0.00	0.00
6,500.00	15.79	173.98	6,293.55	-1,517.10	160.02	351.63	0.00	0.00	0.00
6,600.00	15.79	173.98	6,389.78	-1,544.15	162.88	357.90	0.00	0.00	0.00
6,696.26	15.79	173.98	6,482.41	-1,570.20	165.62	363.94	0.00	0.00	0.00
6,700.00	15.82	172.75	6,486.01	-1,571.21	165.74	364.18	9.00	1.04	-32.82
6,800.00	19.11	144.46	6,581.55	-1,598.11	177.00	378.77	9.00	3.29	-28.29
6,900.00	25.26	126.83	6,674.21	-1,624.27	203.65	408.53	9.00	6.15	-17.63
7,000.00	32.69	116.25	6,761.69	-1,649.05	245.03	452.73	9.00	7.43	-10.58
7,100.00	40.70	109.35	6,841.84	-1,671.84	300.13	510.27	9.00	8.01	-6.90
7,200.00	49.00	104.41	6,912.69	-1,692.08	367.58	579.75	9.00	8.31	-4.93
7,300.00	57.47	100.60	6,972.50	-1,709.26	445.73	659.45	9.00	8.47	-3.81
7,400.00	66.04	97.45	7,019.79	-1,722.97	532.65	747.41	9.00	8.56	-3.15
7,500.00	74.66	94.70	7,053.40	-1,732.87	626.20	841.46	9.00	8.62	-2.75
7,600.00	83.31	92.17	7,072.49	-1,738.71	724.08	939.29	9.00	8.65	-2.53
7,677.26	90.00	90.28	7,077.00	-1,740.35	801.14	1,015.93	9.00	8.66	-2.45
7,700.00	90.00	90.28	7,077.00	-1,740.46	823.89	1,038.51	0.00	0.00	0.00
7,800.00	90.00	90.28	7,077.00	-1,740.94	923.88	1,137.76	0.00	0.00	0.00
7,900.00	90.00	90.28	7,077.00	-1,741.43	1,023.88	1,237.00	0.00	0.00	0.00
8,000.00	90.00	90.28	7,077.00	-1,741.91	1,123.88	1,336.25	0.00	0.00	0.00
8,100.00	90.00	90.28	7,077.00	-1,742.39	1,223.88	1,435.50	0.00	0.00	0.00
8,200.00	90.00	90.28	7,077.00	-1,742.88	1,323.88	1,534.75	0.00	0.00	0.00
8,300.00	90.00	90.28	7,077.00	-1,743.36	1,423.88	1,634.00	0.00	0.00	0.00
8,400.00	90.00	90.28	7,077.00	-1,743.85	1,523.88	1,733.25	0.00	0.00	0.00
8,500.00	90.00	90.28	7,077.00	-1,744.33	1,623.88	1,832.50	0.00	0.00	0.00
8,600.00	90.00	90.28	7,077.00	-1,744.82	1,723.87	1,931.75	0.00	0.00	0.00
8,700.00	90.00	90.28	7,077.00	-1,745.30	1,823.87	2,030.99	0.00	0.00	0.00
8,800.00	90.00	90.28	7,077.00	-1,745.79	1,923.87	2,130.24	0.00	0.00	0.00
8,900.00	90.00	90.28	7,077.00	-1,746.27	2,023.87	2,229.49	0.00	0.00	0.00
9,000.00	90.00	90.28	7,077.00	-1,746.75	2,123.87	2,328.74	0.00	0.00	0.00
9,100.00	90.00	90.28	7,077.00	-1,747.24	2,223.87	2,427.99	0.00	0.00	0.00
9,200.00	90.00	90.28	7,077.00	-1,747.72	2,323.87	2,527.24	0.00	0.00	0.00
9,300.00	90.00	90.28	7,077.00	-1,748.21	2,423.87	2,626.49	0.00	0.00	0.00
9,400.00	90.00	90.28	7,077.00	-1,748.69	2,523.87	2,725.74	0.00	0.00	0.00
9,500.00	90.00	90.28	7,077.00	-1,749.18	2,623.86	2,824.98	0.00	0.00	0.00
9,600.00	90.00	90.28	7,077.00	-1,749.66	2,723.86	2,924.23	0.00	0.00	0.00
9,700.00	90.00	90.28	7,077.00	-1,750.14	2,823.86	3,023.48	0.00	0.00	0.00
9,800.00	90.00	90.28	7,077.00	-1,750.63	2,923.86	3,122.73	0.00	0.00	0.00
9,900.00	90.00	90.28	7,077.00	-1,751.11	3,023.86	3,221.98	0.00	0.00	0.00
10,000.00	90.00	90.28	7,077.00	-1,751.60	3,123.86	3,321.23	0.00	0.00	0.00
10,100.00	90.00	90.28	7,077.00	-1,752.08	3,223.86	3,420.48	0.00	0.00	0.00
10,200.00	90.00	90.28	7,077.00	-1,752.57	3,323.86	3,519.72	0.00	0.00	0.00
10,300.00	90.00	90.28	7,077.00	-1,753.05	3,423.85	3,618.97	0.00	0.00	0.00
10,400.00	90.00	90.28	7,077.00	-1,753.53	3,523.85	3,718.22	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

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)	
10,500.00	90.00	90.28	7,077.00	-1,754.02	3,623.85	3,817.47	0.00	0.00	0.00	
10,600.00	90.00	90.28	7,077.00	-1,754.50	3,723.85	3,916.72	0.00	0.00	0.00	
10,700.00	90.00	90.28	7,077.00	-1,754.99	3,823.85	4,015.97	0.00	0.00	0.00	
10,800.00	90.00	90.28	7,077.00	-1,755.47	3,923.85	4,115.22	0.00	0.00	0.00	
10,900.00	90.00	90.28	7,077.00	-1,755.96	4,023.85	4,214.47	0.00	0.00	0.00	
11,000.00	90.00	90.28	7,077.00	-1,756.44	4,123.85	4,313.71	0.00	0.00	0.00	
11,100.00	90.00	90.28	7,077.00	-1,756.93	4,223.85	4,412.96	0.00	0.00	0.00	
11,200.00	90.00	90.28	7,077.00	-1,757.41	4,323.84	4,512.21	0.00	0.00	0.00	
11,300.00	90.00	90.28	7,077.00	-1,757.89	4,423.84	4,611.46	0.00	0.00	0.00	
11,400.00	90.00	90.28	7,077.00	-1,758.38	4,523.84	4,710.71	0.00	0.00	0.00	
11,500.00	90.00	90.28	7,077.00	-1,758.86	4,623.84	4,809.96	0.00	0.00	0.00	
11,600.00	90.00	90.28	7,077.00	-1,759.35	4,723.84	4,909.21	0.00	0.00	0.00	
11,700.00	90.00	90.28	7,077.00	-1,759.83	4,823.84	5,008.46	0.00	0.00	0.00	
11,800.00	90.00	90.28	7,077.00	-1,760.32	4,923.84	5,107.70	0.00	0.00	0.00	
11,900.00	90.00	90.28	7,077.00	-1,760.80	5,023.84	5,206.95	0.00	0.00	0.00	
12,000.00	90.00	90.28	7,077.00	-1,761.28	5,123.83	5,306.20	0.00	0.00	0.00	
12,100.00	90.00	90.28	7,077.00	-1,761.77	5,223.83	5,405.45	0.00	0.00	0.00	
12,200.00	90.00	90.28	7,077.00	-1,762.25	5,323.83	5,504.70	0.00	0.00	0.00	
12,300.00	90.00	90.28	7,077.00	-1,762.74	5,423.83	5,603.95	0.00	0.00	0.00	
12,400.00	90.00	90.28	7,077.00	-1,763.22	5,523.83	5,703.20	0.00	0.00	0.00	
12,500.00	90.00	90.28	7,077.00	-1,763.71	5,623.83	5,802.44	0.00	0.00	0.00	
12,600.00	90.00	90.28	7,077.00	-1,764.19	5,723.83	5,901.69	0.00	0.00	0.00	
12,700.00	90.00	90.28	7,077.00	-1,764.67	5,823.83	6,000.94	0.00	0.00	0.00	
12,800.00	90.00	90.28	7,077.00	-1,765.16	5,923.83	6,100.19	0.00	0.00	0.00	
12,900.00	90.00	90.28	7,077.00	-1,765.64	6,023.82	6,199.44	0.00	0.00	0.00	
13,000.00	90.00	90.28	7,077.00	-1,766.13	6,123.82	6,298.69	0.00	0.00	0.00	
13,100.00	90.00	90.28	7,077.00	-1,766.61	6,223.82	6,397.94	0.00	0.00	0.00	
13,200.00	90.00	90.28	7,077.00	-1,767.10	6,323.82	6,497.19	0.00	0.00	0.00	
13,300.00	90.00	90.28	7,077.00	-1,767.58	6,423.82	6,596.43	0.00	0.00	0.00	
13,400.00	90.00	90.28	7,077.00	-1,768.07	6,523.82	6,695.68	0.00	0.00	0.00	
13,500.00	90.00	90.28	7,077.00	-1,768.55	6,623.82	6,794.93	0.00	0.00	0.00	
13,600.00	90.00	90.28	7,077.00	-1,769.03	6,723.82	6,894.18	0.00	0.00	0.00	
13,700.00	90.00	90.28	7,077.00	-1,769.52	6,823.81	6,993.43	0.00	0.00	0.00	
13,800.00	90.00	90.28	7,077.00	-1,770.00	6,923.81	7,092.68	0.00	0.00	0.00	
13,900.00	90.00	90.28	7,077.00	-1,770.49	7,023.81	7,191.93	0.00	0.00	0.00	
14,000.00	90.00	90.28	7,077.00	-1,770.97	7,123.81	7,291.18	0.00	0.00	0.00	
14,100.00	90.00	90.28	7,077.00	-1,771.46	7,223.81	7,390.42	0.00	0.00	0.00	
14,200.00	90.00	90.28	7,077.00	-1,771.94	7,323.81	7,489.67	0.00	0.00	0.00	
14,300.00	90.00	90.28	7,077.00	-1,772.42	7,423.81	7,588.92	0.00	0.00	0.00	
14,400.00	90.00	90.28	7,077.00	-1,772.91	7,523.81	7,688.17	0.00	0.00	0.00	
14,500.00	90.00	90.28	7,077.00	-1,773.39	7,623.81	7,787.42	0.00	0.00	0.00	
14,600.00	90.00	90.28	7,077.00	-1,773.88	7,723.80	7,886.67	0.00	0.00	0.00	
14,700.00	90.00	90.28	7,077.00	-1,774.36	7,823.80	7,985.92	0.00	0.00	0.00	
14,800.00	90.00	90.28	7,077.00	-1,774.85	7,923.80	8,085.16	0.00	0.00	0.00	
14,900.00	90.00	90.28	7,077.00	-1,775.33	8,023.80	8,184.41	0.00	0.00	0.00	
15,000.00	90.00	90.28	7,077.00	-1,775.81	8,123.80	8,283.66	0.00	0.00	0.00	
15,100.00	90.00	90.28	7,077.00	-1,776.30	8,223.80	8,382.91	0.00	0.00	0.00	
15,200.00	90.00	90.28	7,077.00	-1,776.78	8,323.80	8,482.16	0.00	0.00	0.00	
15,300.00	90.00	90.28	7,077.00	-1,777.27	8,423.80	8,581.41	0.00	0.00	0.00	
15,400.00	90.00	90.28	7,077.00	-1,777.75	8,523.80	8,680.66	0.00	0.00	0.00	
15,500.00	90.00	90.28	7,077.00	-1,778.24	8,623.79	8,779.91	0.00	0.00	0.00	
15,600.00	90.00	90.28	7,077.00	-1,778.72	8,723.79	8,879.15	0.00	0.00	0.00	
15,700.00	90.00	90.28	7,077.00	-1,779.21	8,823.79	8,978.40	0.00	0.00	0.00	
15,800.00	90.00	90.28	7,077.00	-1,779.69	8,923.79	9,077.65	0.00	0.00	0.00	



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

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)
15,900.00	90.00	90.28	7,077.00	-1,780.17	9,023.79	9,176.90	0.00	0.00	0.00
16,000.00	90.00	90.28	7,077.00	-1,780.66	9,123.79	9,276.15	0.00	0.00	0.00
16,100.00	90.00	90.28	7,077.00	-1,781.14	9,223.79	9,375.40	0.00	0.00	0.00
16,200.00	90.00	90.28	7,077.00	-1,781.63	9,323.79	9,474.65	0.00	0.00	0.00
16,300.00	90.00	90.28	7,077.00	-1,782.11	9,423.78	9,573.90	0.00	0.00	0.00
16,400.00	90.00	90.28	7,077.00	-1,782.60	9,523.78	9,673.14	0.00	0.00	0.00
16,500.00	90.00	90.28	7,077.00	-1,783.08	9,623.78	9,772.39	0.00	0.00	0.00
16,600.00	90.00	90.28	7,077.00	-1,783.56	9,723.78	9,871.64	0.00	0.00	0.00
16,700.00	90.00	90.28	7,077.00	-1,784.05	9,823.78	9,970.89	0.00	0.00	0.00
16,800.00	90.00	90.28	7,077.00	-1,784.53	9,923.78	10,070.14	0.00	0.00	0.00
16,900.00	90.00	90.28	7,077.00	-1,785.02	10,023.78	10,169.39	0.00	0.00	0.00
17,000.00	90.00	90.28	7,077.00	-1,785.50	10,123.78	10,268.64	0.00	0.00	0.00
17,100.00	90.00	90.28	7,077.00	-1,785.99	10,223.78	10,367.88	0.00	0.00	0.00
17,200.00	90.00	90.28	7,077.00	-1,786.47	10,323.77	10,467.13	0.00	0.00	0.00
17,300.00	90.00	90.28	7,077.00	-1,786.95	10,423.77	10,566.38	0.00	0.00	0.00
17,400.00	90.00	90.28	7,077.00	-1,787.44	10,523.77	10,665.63	0.00	0.00	0.00
17,500.00	90.00	90.28	7,077.00	-1,787.92	10,623.77	10,764.88	0.00	0.00	0.00
17,600.00	90.00	90.28	7,077.00	-1,788.41	10,723.77	10,864.13	0.00	0.00	0.00
17,700.00	90.00	90.28	7,077.00	-1,788.89	10,823.77	10,963.38	0.00	0.00	0.00
17,800.00	90.00	90.28	7,077.00	-1,789.38	10,923.77	11,062.63	0.00	0.00	0.00
17,900.00	90.00	90.28	7,077.00	-1,789.86	11,023.77	11,161.87	0.00	0.00	0.00
18,000.00	90.00	90.28	7,077.00	-1,790.35	11,123.76	11,261.12	0.00	0.00	0.00
18,100.00	90.00	90.28	7,077.00	-1,790.83	11,223.76	11,360.37	0.00	0.00	0.00
18,200.00	90.00	90.28	7,077.00	-1,791.31	11,323.76	11,459.62	0.00	0.00	0.00
18,300.00	90.00	90.28	7,077.00	-1,791.80	11,423.76	11,558.87	0.00	0.00	0.00
18,400.00	90.00	90.28	7,077.00	-1,792.28	11,523.76	11,658.12	0.00	0.00	0.00
18,500.00	90.00	90.28	7,077.00	-1,792.77	11,623.76	11,757.37	0.00	0.00	0.00
18,600.00	90.00	90.28	7,077.00	-1,793.25	11,723.76	11,856.62	0.00	0.00	0.00
18,700.00	90.00	90.28	7,077.00	-1,793.74	11,823.76	11,955.86	0.00	0.00	0.00
18,800.00	90.00	90.28	7,077.00	-1,794.22	11,923.76	12,055.11	0.00	0.00	0.00
18,900.00	90.00	90.28	7,077.00	-1,794.70	12,023.75	12,154.36	0.00	0.00	0.00
19,000.00	90.00	90.28	7,077.00	-1,795.19	12,123.75	12,253.61	0.00	0.00	0.00
19,100.00	90.00	90.28	7,077.00	-1,795.67	12,223.75	12,352.86	0.00	0.00	0.00
19,200.00	90.00	90.28	7,077.00	-1,796.16	12,323.75	12,452.11	0.00	0.00	0.00
19,300.00	90.00	90.28	7,077.00	-1,796.64	12,423.75	12,551.36	0.00	0.00	0.00
19,400.00	90.00	90.28	7,077.00	-1,797.13	12,523.75	12,650.61	0.00	0.00	0.00
19,500.00	90.00	90.28	7,077.00	-1,797.61	12,623.75	12,749.85	0.00	0.00	0.00
19,600.00	90.00	90.28	7,077.00	-1,798.09	12,723.75	12,849.10	0.00	0.00	0.00
19,700.00	90.00	90.28	7,077.00	-1,798.58	12,823.74	12,948.35	0.00	0.00	0.00
19,800.00	90.00	90.28	7,077.00	-1,799.06	12,923.74	13,047.60	0.00	0.00	0.00
19,900.00	90.00	90.28	7,077.00	-1,799.55	13,023.74	13,146.85	0.00	0.00	0.00
20,000.00	90.00	90.28	7,077.00	-1,800.03	13,123.74	13,246.10	0.00	0.00	0.00
20,100.00	90.00	90.28	7,077.00	-1,800.52	13,223.74	13,345.35	0.00	0.00	0.00
20,200.00	90.00	90.28	7,077.00	-1,801.00	13,323.74	13,444.59	0.00	0.00	0.00
20,300.00	90.00	90.28	7,077.00	-1,801.49	13,423.74	13,543.84	0.00	0.00	0.00
20,400.00	90.00	90.28	7,077.00	-1,801.97	13,523.74	13,643.09	0.00	0.00	0.00
20,500.00	90.00	90.28	7,077.00	-1,802.45	13,623.74	13,742.34	0.00	0.00	0.00
20,600.00	90.00	90.28	7,077.00	-1,802.94	13,723.73	13,841.59	0.00	0.00	0.00
20,700.00	90.00	90.28	7,077.00	-1,803.42	13,823.73	13,940.84	0.00	0.00	0.00
20,800.00	90.00	90.28	7,077.00	-1,803.91	13,923.73	14,040.09	0.00	0.00	0.00
20,900.00	90.00	90.28	7,077.00	-1,804.39	14,023.73	14,139.34	0.00	0.00	0.00
20,953.46	90.00	90.28	7,077.00	-1,804.65	14,077.19	14,192.40	0.00	0.00	0.00



Lonestar Consulting, LLC

Planning Report



Database:	Grand Junction	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Company:	Logos Operating LLC	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site:	Rosa Unit 31	North Reference:	True
Well:	Rosa Unit #746H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #9		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(usft)	(usft)		
746H BHL Rev 4	0.00	0.00	7,077.00	-1,804.65	14,077.19	2,131,813.6734	2,872,451.9004	36.8573924	-107.3227937
- plan hits target center									
- Point									
746H POE Rev 4	0.00	0.00	7,077.00	-1,740.35	801.14	2,131,813.6935	2,859,175.7207	36.8575787	-107.3681726
- plan hits target center									
- Point									

Formations					
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction
(ft)	(ft)			(°)	(°)
2,725.09	2,661.00	Ojo Alamo		0.00	0.00
2,857.07	2,788.00	Kirtland		0.00	0.00
3,338.22	3,251.00	Fruitland		0.00	0.00
3,636.46	3,538.00	Pictured Cliffs		0.00	0.00
3,741.42	3,639.00	Lewis		0.00	0.00
4,871.02	4,726.00	Chacra		0.00	0.00
5,733.55	5,556.00	Cliff House		0.00	0.00
5,766.80	5,588.00	Menefee		0.00	0.00
5,973.60	5,787.00	Point Lookout		0.00	0.00
6,473.45	6,268.00	Mancos		0.00	0.00

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
500.00	500.00	0.00	0.00	Start Build 2.00
1,289.26	1,279.31	-107.44	11.33	Start 5407.00 hold at 1289.26 MD
6,696.26	6,482.41	-1,570.20	165.62	Start DLS 9.00 TFO -83.94
7,677.26	7,077.00	-1,740.35	801.14	POE @ 7677' MD
7,677.26	7,077.00	-1,740.35	801.15	36.8575787 / -107.3681726
20,953.46	7,077.00	-1,804.65	14,077.19	TD at 20953.46



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 31

Rosa Unit #746H

OH

Plan #9

Anticollision Summary Report

10 March, 2023





Lonestar Consulting, LLC

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Reference Site:	Rosa Unit 31	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #746H	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 #9	Offset TVD Reference:	Offset Datum

Reference	Plan #9
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	3/10/2023		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	20,953.46	Plan #9 (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 31						
Rosa Unit #740H - OH - Plan #9	500.00	500.00	45.14	41.77	13.396	CC, ES
Rosa Unit #740H - OH - Plan #9	800.00	801.09	59.34	53.89	10.891	SF
Rosa Unit #742H - OH - Plan #9	784.34	787.23	26.87	21.58	5.083	CC
Rosa Unit #742H - OH - Plan #9	800.00	803.00	26.88	21.49	4.984	ES
Rosa Unit #742H - OH - Plan #9	1,000.00	1,003.99	30.56	23.70	4.456	SF
Rosa Unit #744H - OH - Plan #8	310.00	310.00	15.33	13.33	7.639	CC
Rosa Unit #744H - OH - Plan #8	400.00	399.78	15.69	13.04	5.918	ES
Rosa Unit #744H - OH - Plan #8	20,953.46	20,770.76	1,998.18	1,157.03	2.376	SF
Rosa Unit #745H - OH - Plan #4	1,148.42	1,145.50	11.27	3.26	1.407	Level 3, CC, ES
Rosa Unit #745H - OH - Plan #4	20,953.46	21,257.95	1,025.85	220.17	1.273	Level 3, SF
Rosa Unit #746H - OH - Plan #8	504.45	504.45	0.00	-3.40	0.000	Level 1, CC, SF
Rosa Unit #746H - OH - Plan #8	20,953.46	20,908.03	277.97	-557.18	0.333	Level 1, ES
RU 147 - OH - OH	3,773.84	3,628.95	84.79	64.87	4.257	CC, ES
RU 147 - OH - OH	3,800.00	3,654.13	85.08	65.01	4.240	SF
RU 56 - OH - OH	16,616.57	7,264.10	350.13	52.97	1.178	Level 2, CC, ES, SF



Lonestar Consulting, LLC

Anticollision Summary Report

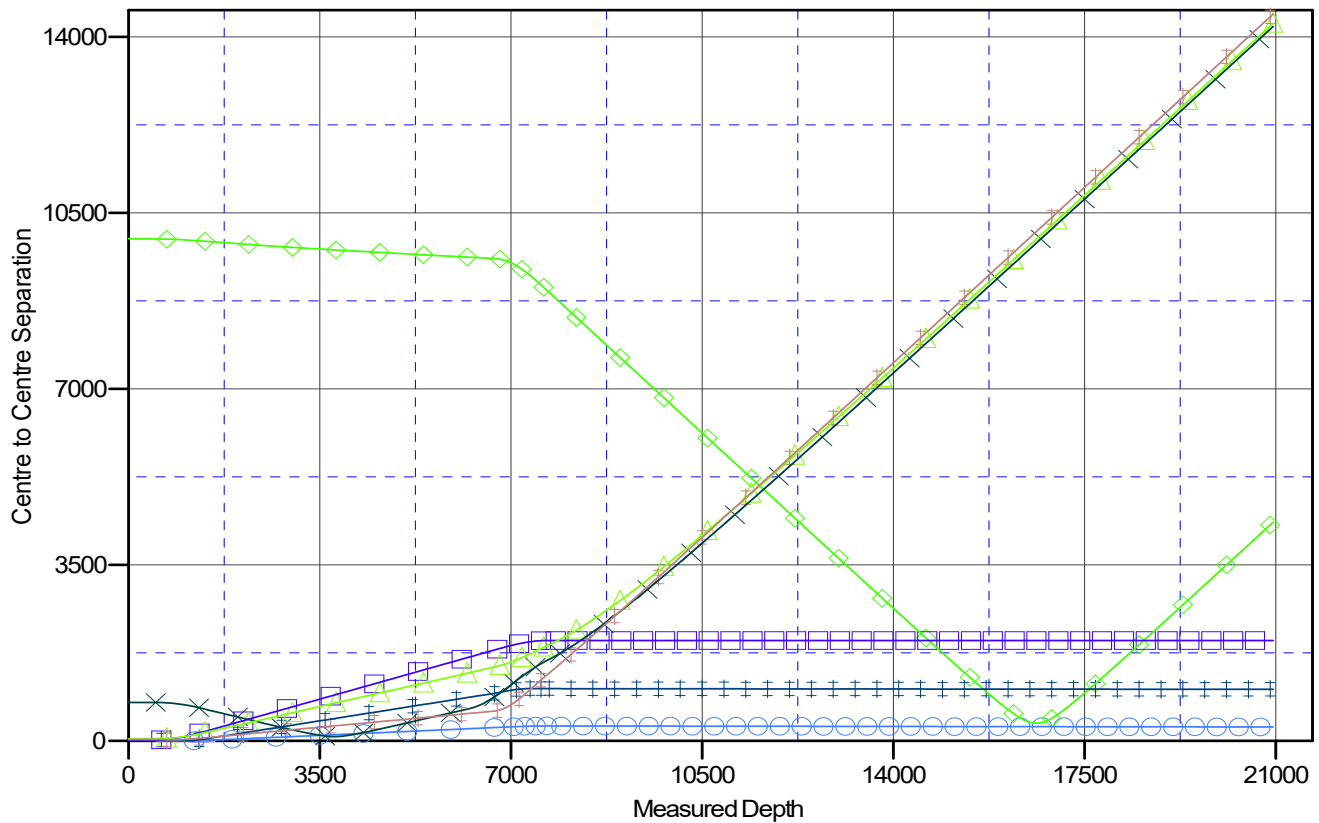


Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #746H - Slot A4
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Reference Site:	Rosa Unit 31	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #746H	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 #9	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
 Offset Depths are relative to Offset Datum
 Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #746H - Slot A4
 Coordinate System is US State Plane 1983, New Mexico Western Zone
 Grid Convergence at Surface is: 0.28°

Ladder Plot



LEGEND

Rosa Unit#746H(OH)Plan#8 VO	Rosa Unit#745H(OH)Plan#4 VO	Rosa Unit#742H(OH)Plan#9 VO
RU56_OH(OH)VO	Rosa Unit#744H(OH)Plan#8 VO	
RU147_OH(OH)VO	Rosa Unit#740H(OH)Plan#9 VO	

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 #746H - Slot A4
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Reference Site:	Rosa Unit 31	MD Reference:	GL 6492' & RKB 30' @ 6522.00ft (H&P 530)
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #746H	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 #9	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6492' & RKB 30' @ 6522.00ft (H&

Offset Depths are relative to Offset Datum

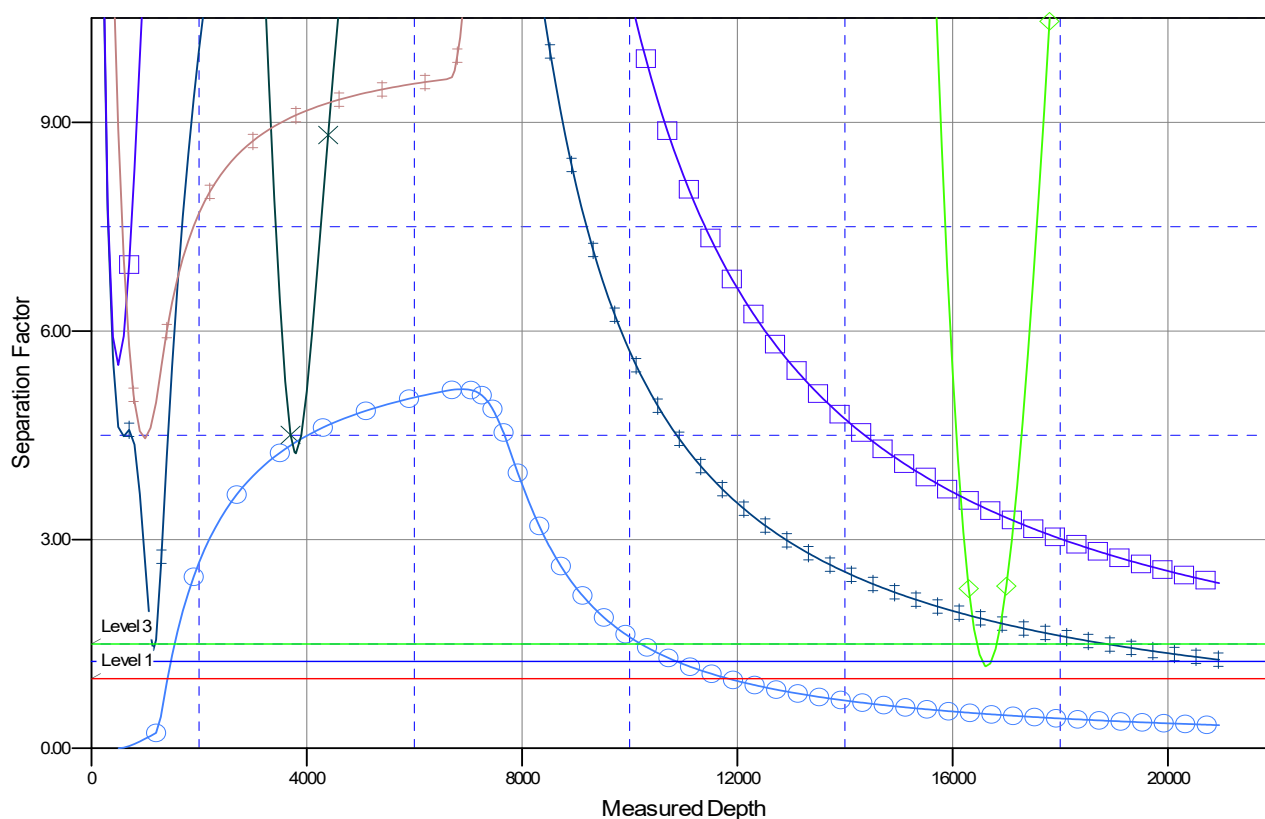
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #746H - Slot A4

Coordinate System is US State Plane 1983, New Mexico Western Zone

Grid Convergence at Surface is: 0.28°

Separation Factor Plot



LEGEND



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 223383

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 223383
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
john.harrison	None	6/2/2023