

Form 3160-5
(June 2019)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021**SUNDRY NOTICES AND REPORTS ON WELLS**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.5. Lease Serial No.
NMSF078764
6. If Indian, Allottee or Tribe Name**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other

2. Name of Operator

LOGOS Operating, LLC

3a. Address

2010 Afton Place, Farmington NM 87401

3b. Phone No. (include area code)

505-419-8420

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Section 30 T31N R05W NESW 2247' FSL & 973' FWL

36.869522, -107.404458

7. If Unit of CA/Agreement, Name and/or No.

NMNM78407E

8. Well Name and No.

Rosa Unit 665H

9. API Well No.

30-039-31358

10. Field and Pool or Exploratory Area

Basin Mancos

11. Country or Parish, State

Rio Arriba, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off	
	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity	
☐ Subsequent Report	☐ Casing Repair	☐ New Construction	☐ Recomplete	☐ Other	
	☒ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon		
☐ Final Abandonment Notice	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

LOGOS Operating request a change in plans to the following: Attached: New C102 Plat, Operation and Directional Drill Plans.

Original Plat: Total of 872.79 Acres to a new Total of 825.11 Acres, (T31N R5W Sect 30 Lot 3&4 SE/4) (T31N R6W Sec. 25 Lot 3&4 W/2 SE/4 SW/4) (T31N R6W Sec 26 S/2).

Original TD @ 18527.45' MD 7264' TVD to new TD @ 18226' MD 6954' TVD.

Geology tops have been updated per changes.

Original KOP @ 6917.24' MD 6658.87' TVD to new KOP @ 6047' MD 5786' TVD.

Original Landing point @ 7967.36' MD 7314' TVD to new Landing point @ 7896' MD 6984' TVD.

Original 9.625" Casing Intermediate @ 6817' MD to new 6650' MD.

Original 5.5" Casing Production Liner @ 6667.24'- 18527.45' MD to new Production string surface - 18226' MD.

Original 9.625" Intermediate & 5.5" Production cementing bbls and sacks did not change.

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

Marie E. Florez

Title Regulatory Specialist

Signature

Marie E. Florez

Date 2/16/2021

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)

From: [AFMSS](#)
To: [Marie Florez](#)
Cc: jkillins@blm.gov; wtambekou@blm.gov
Subject: Well Name: ROSA UT, Well Number: 665H, Notification of Sundry Accepted
Date: Thursday, May 13, 2021 1:03:15 PM

The Bureau of Land Management

Notice of Notice Of Intent Approval

- Operator Name: **LOGOS OPERATING LLC**
- Well Name: **ROSA UT**
- Well Number: **665H**
- US Well Number: **3003931358**
- Sundry ID: **1341658**

The BLM received your Notice Of Intent, Other on 02/16/2021. This is to notify you that we are Accepting your Notice Of Intent Other. Please login to your account in AFMSS II to see the final documents.

If this Notice Of Intent prompted the BLM to create another work task, it will generate in your worklist.

You may contact the field office if you have any questions.

This notification is automatically generated. Please do not reply to this message as this account is not monitored.

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

District II
811 S. First Street, Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720

District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170

District IV
1220 S. St. Francis Drive, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

OIL CONSERVATION DIVISION
1220 South St. Francis Drive
Santa Fe, NM 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

1 API Number 30-039-31358		2 Pool Code 97232		3 Pool Name BASIN MANCOS	
4 Property Code 320608		5 Property Name ROSA UNIT		6 Well Number 665H	
7 UGRID No. 289408		8 Operator Name LOGOS OPERATING, LLC		9 Elevation 6394'	

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
K	30	31N	5W	3	2277	SOUTH	967	WEST	RIO ARriba

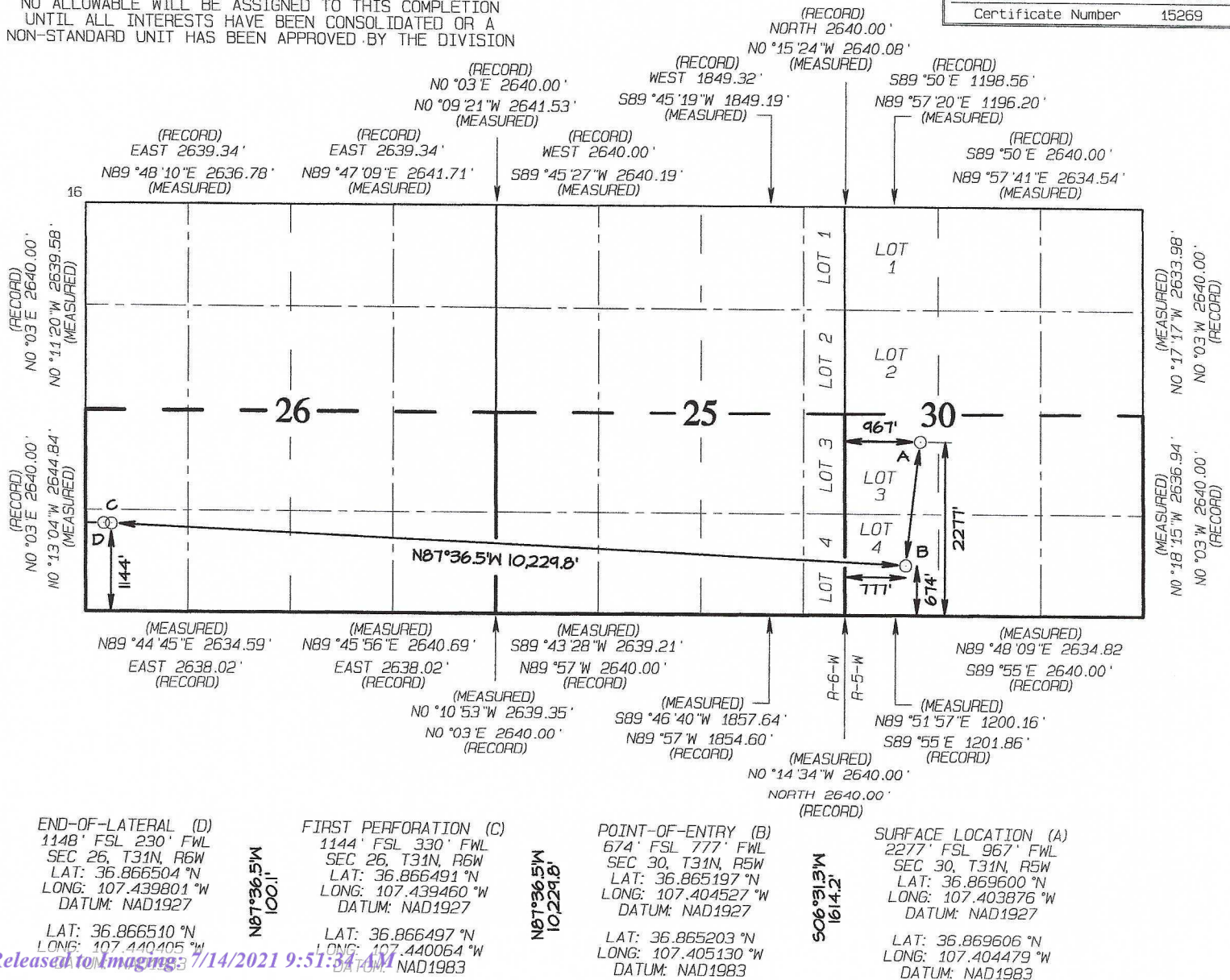
11 Bottom Hole Location If Different From Surface

UL or Lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	26	31N	6W		1148	SOUTH	230	WEST	RIO ARriba

12 Dedicated Acres		13 Joint or Infill		14 Consolidation Code		15 Order No.		APRIDA	
825.11		REFER TO DESCRIPTION BELOW				R-13457			

T31N R5W, Section 30 : Lot 3 & 4, SE/4
T31N R6W, Section 25 : Lot 3 & 4, W/2 SE/4, SW/4
T31N R6W, Section 26 : S/2

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION
UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A
NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



17 OPERATOR CERTIFICATION
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom-hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by this division.
Marie E. Florez 2/15/21

Signature
Marie E. Florez
Date
Printed Name
mflorez@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: JANUARY 13, 2021
Survey Date: SEPTEMBER 3, 2015

Signature and Seal of Professional Surveyor



JASON C. EDWARDS
Certificate Number 15269

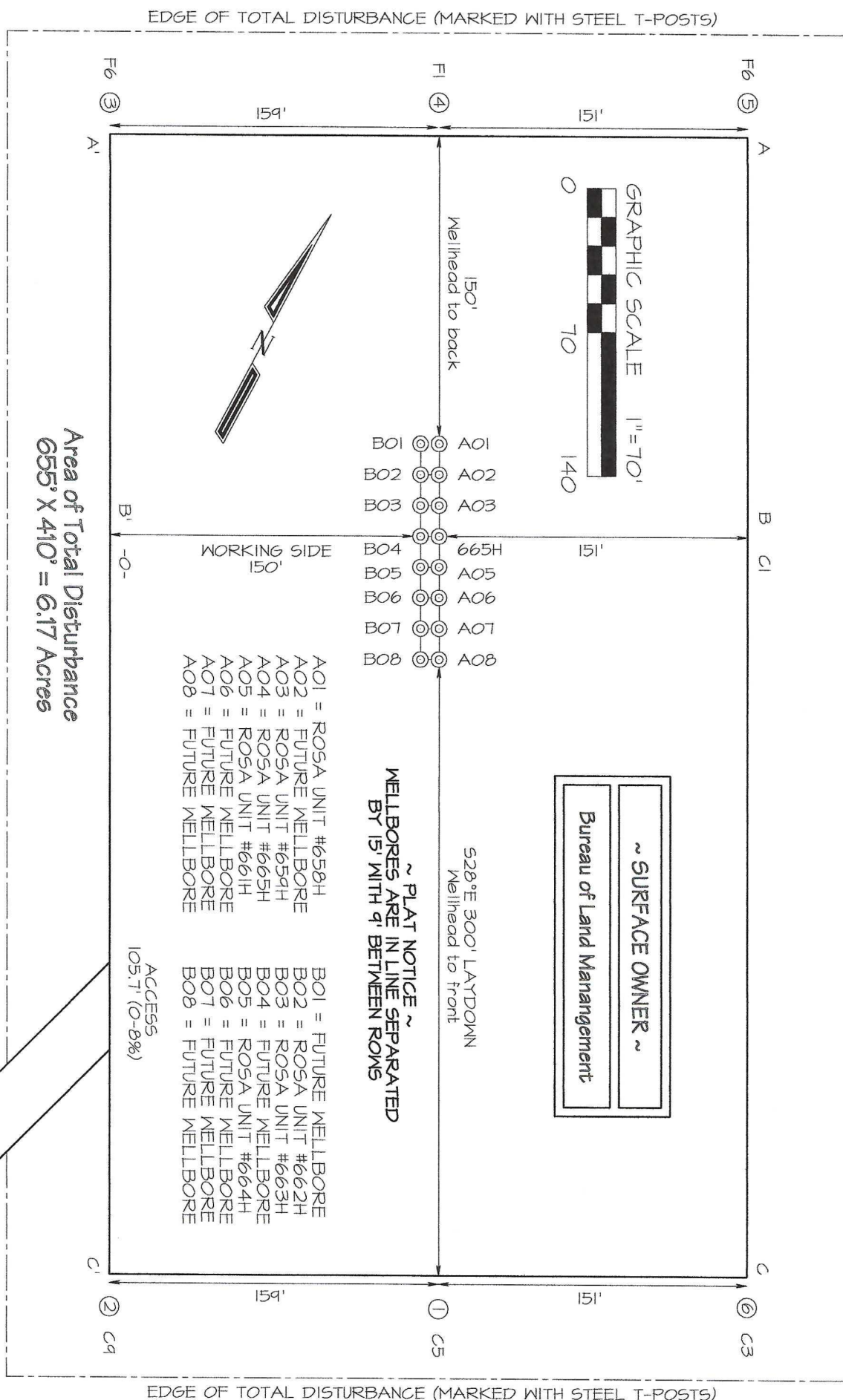
LOGOS OPERATING, LLC ROSA UNIT #665H
2277' FSL & 967' FWL, SECTION 30, T31N, R5W, NMPM
RIO ARriba COUNTY, NEW MEXICO ELEVATION: 6394'
LAT: 36.869606°N LONG: 107.404479°W DATUM: NAD1983

EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)

Area of Total Disturbance
655' X 410' = 6.17 Acres

EDGE OF TOTAL DISTURBANCE (MARKED WITH STEEL T-POSTS)

Steel T-Posts have been set to define the Edge of Disturbance limits which are 50' offset from the edge of the staked wellpad.

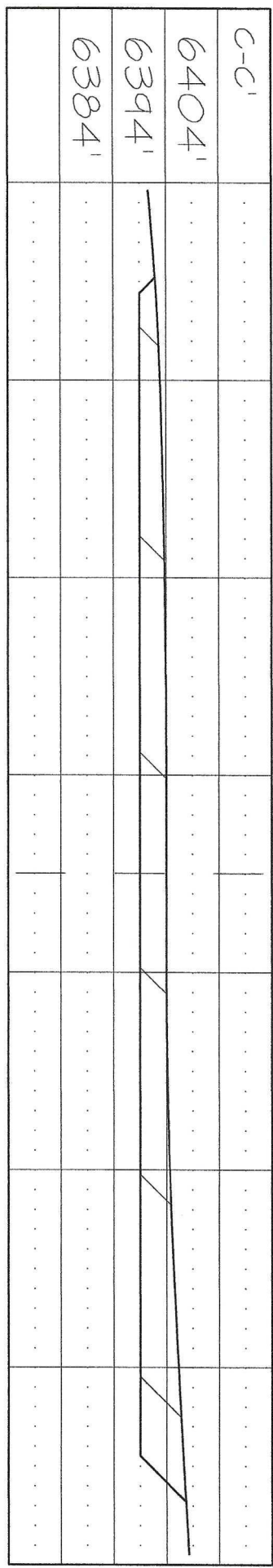
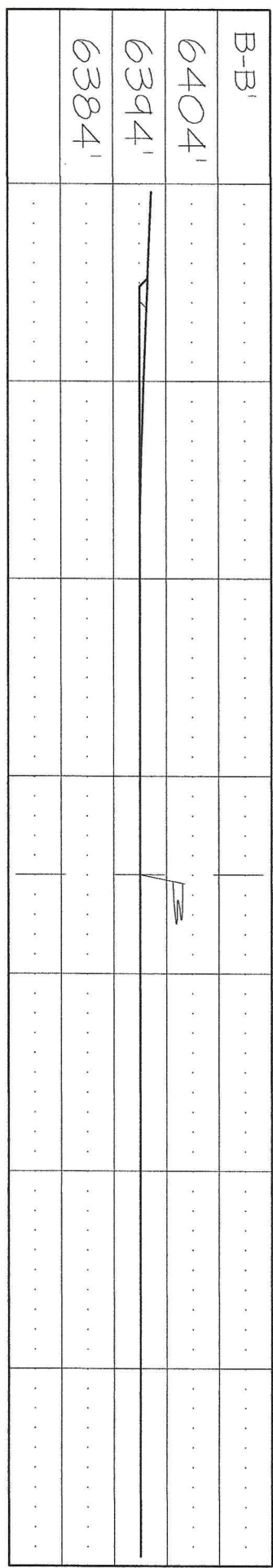
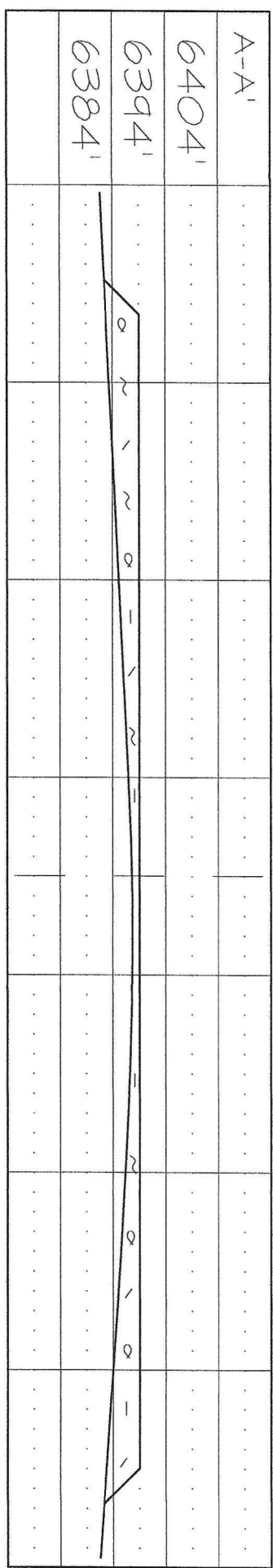


LOGOS OPERATING, LLC ROSA UNIT #665H
2277' FSL & 967' FWL, SECTION 30, T31N, R5W, NMPM
RIO ARriba COUNTY, NEW MEXICO ELEVATION: 6394'

HORIZONTAL SCALE
1"=40'

C/L

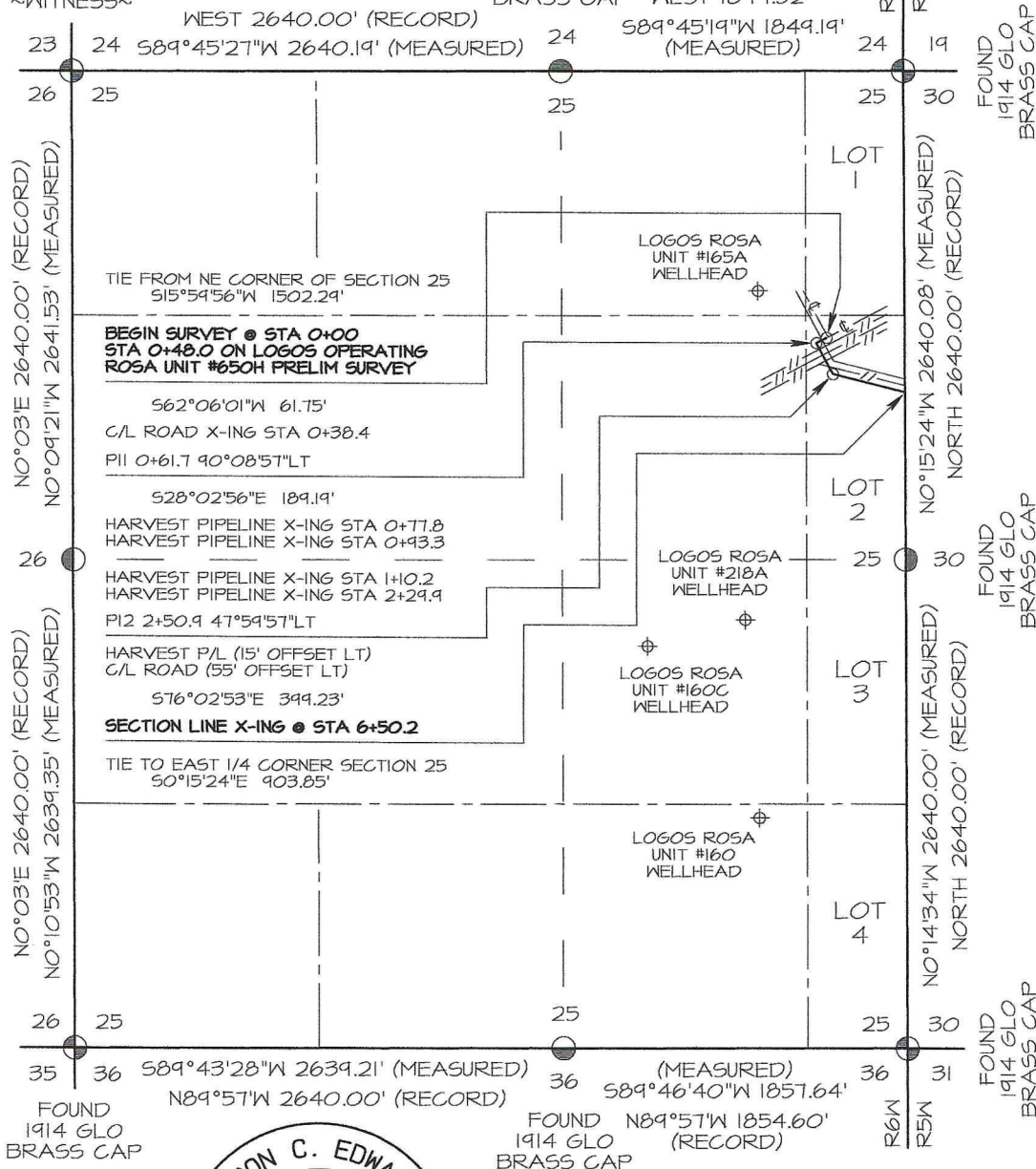
VERTICAL SCALE
1"=30'



CONTRACTOR SHOULD CONTACT ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED UNDERGROUND UTILITIES OR PIPELINES ON WELLPAD AND/OR ACCESS ROAD AT LEAST TWO WORKING DAYS PRIOR TO CONSTRUCTION.

NCE SURVEYS IS NOT LIABLE FOR LOCATION OF UNDERGROUND UTILITIES OR PIPELINES.

BEFORE ANY CONSTRUCTION BEGINS, CONTRACTOR IS ADVISED TO CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED PIPELINES OR CABLES IN THE AREA OF THE PROJECT



~ SURFACE OWNERSHIP ~
Bureau of Land Management

0+00 TO 6+50.2	650.2 FT / 39.4 RODS
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I, Jason C. Edwards, a registered Professional Surveyor under the laws of the State of New Mexico, hereby certify that this plat was prepared from field notes of an actual survey meeting the minimum requirements of the standards for easement surveys and is true and correct to the best of my knowledge and belief.

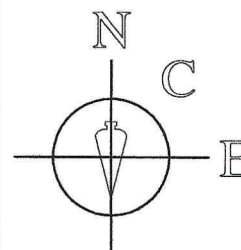
JASON C. EDWARDS

Date: January 13, 2021

Jason C. Edwards
New Mexico LS #15269

Prepared for:

LOGOS OPERATING, LLC
2010 AFTON PLACE
FARMINGTON, NM 87401



Land Surveyor:
Jason C. Edwards

Mailing Address:
Post Office Box 6612
Farmington, NM 87499

Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 486-1695 (Office)
ncsesurveys@comcast.net

SURVEYS, INC.

SHEET 5 OF 8	CHECKED BY: JCE
FILENAME: 316256PI	DRAWN BY: RCE

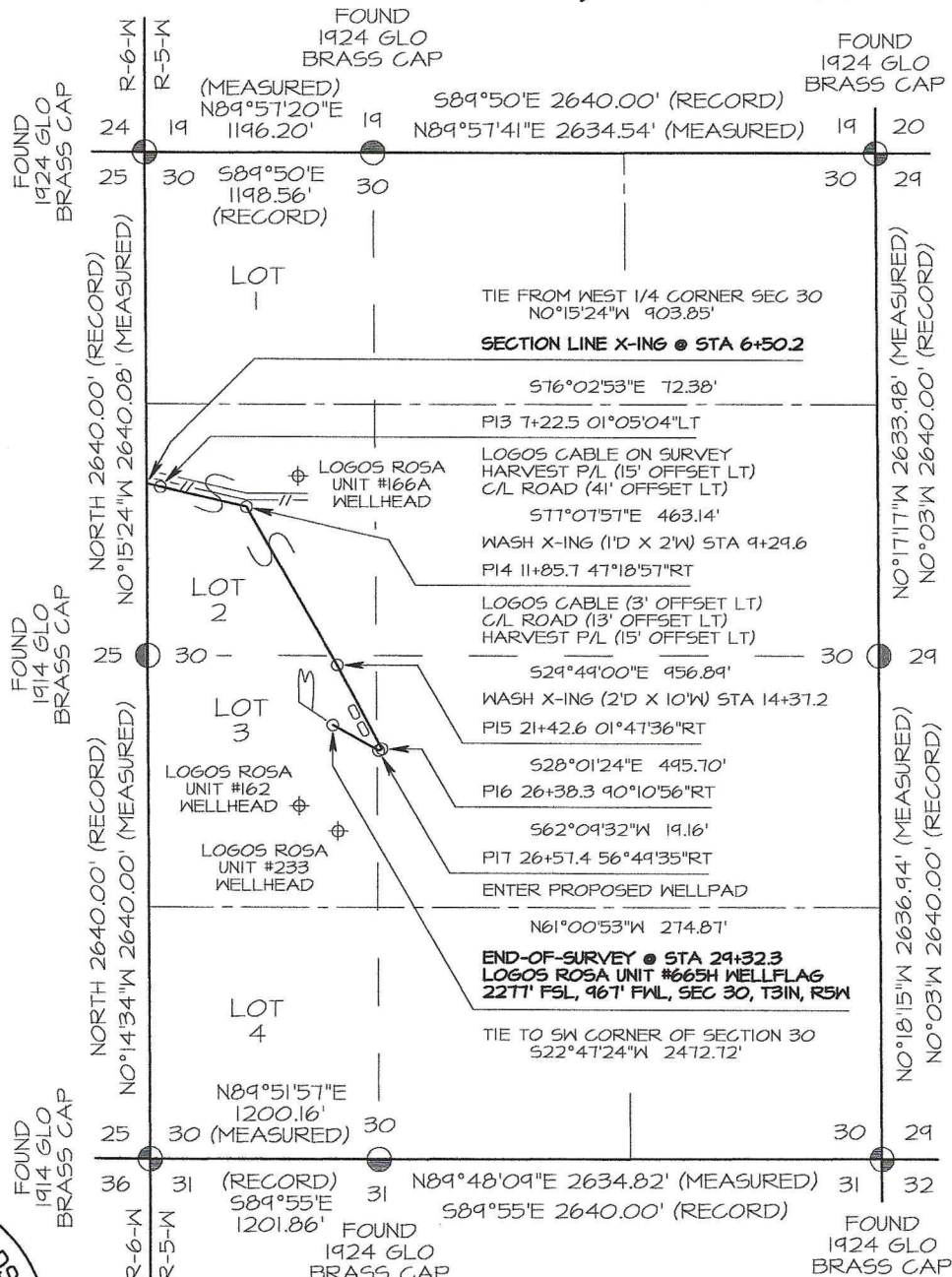
GRAPHIC SCALE 1"=1000'

0 1000 2000



JASON C. EDWARDS

Jason C. Edwards, P.L.S.
New Mexico L.S. #15269



BASIS OF BEARING

PLAT NOTE

REAL-TIME KINEMATIC GPS SURVEY SOLUTION OBTAINED FROM SATELLITES TRACKED ON SEPTEMBER 3, 2015 FROM A REFERENCE STATION POSITIONED IN SW/4 SW/4 OF SECTION 28, T31N, R5W

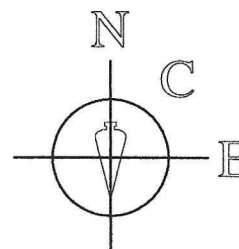
BEFORE ANY CONSTRUCTION BEGINS, CONTRACTOR IS ADVISED TO CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED PIPELINES OR CABLES IN THE AREA OF THE PROJECT

~ SURFACE OWNERSHIP ~
Bureau of Land Management

6+50.2 TO 29+32.3	2282.1 FT / 138.3 RODS
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Prepared for:

LOGOS OPERATING, LLC
2010 AFTON PLACE
EARMINGTON, NM 87401



SURVEYS, INC.

Land Surveyor:
Jason C. Edwards

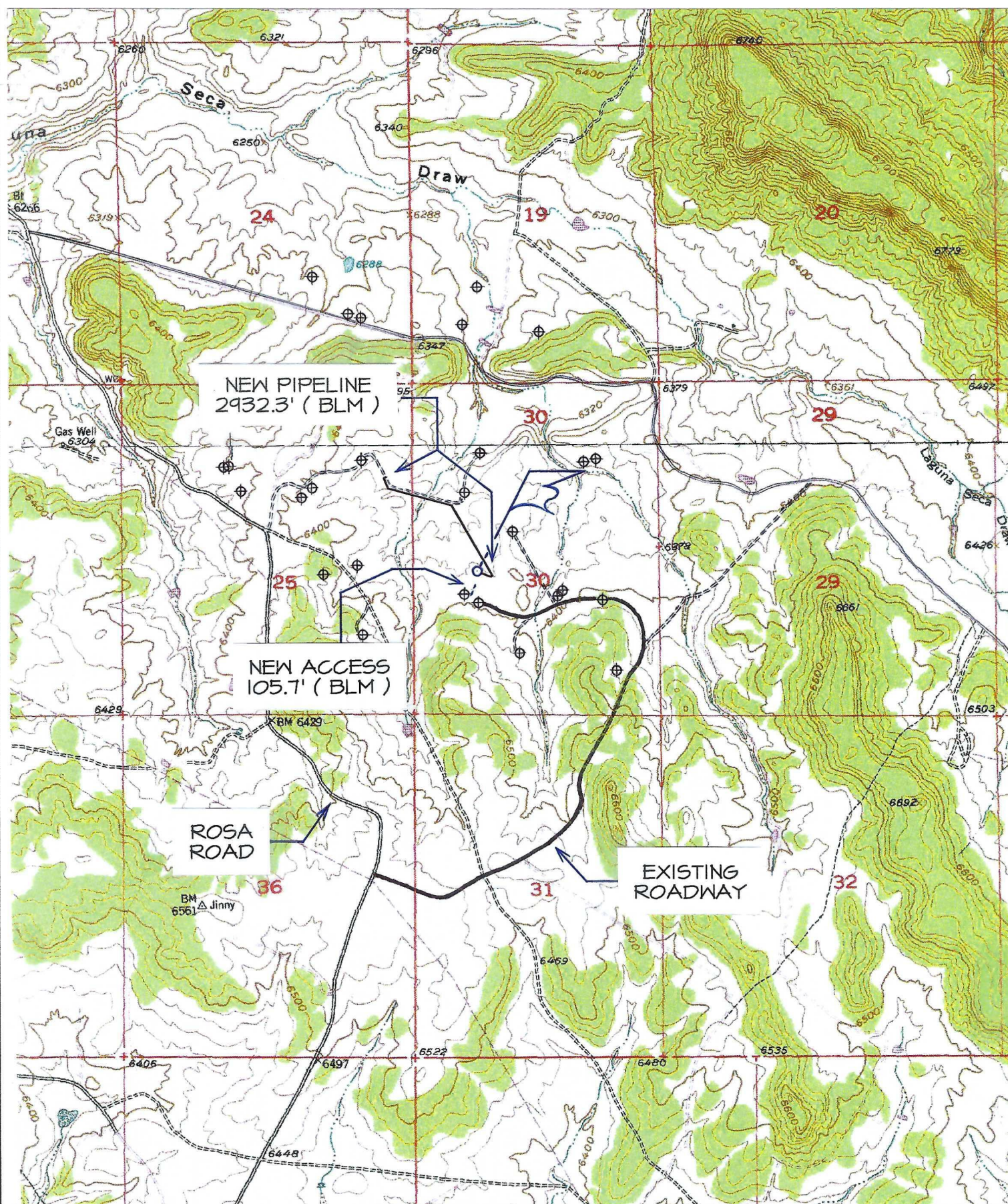
Mailing Address:
Post Office Box 6612
Farmington, NM 87499

Business Address:
111 East Pinon Street
Farmington, NM 87402
(505) 486-1695 (Office)
ncesurveys@comcast.net

SHEET 6 OF 8	CHECKED BY: JCE
FILENAME: 31530GP2	DRAWN BY: RCE

LOGOS OPERATING, LLC ROSA UNIT #665H

2277' FSL 967' FWL, SECTION 30, T31N, R5W, N.M.P.M.
RIO ARriba COUNTY, NEW MEXICO



TOPO NAME : BANCOS MESA NW

⊕ PRODUCING WELL

⊗ PLUGGED & ABANDONED WELL

Directions from the Intersection of US Hwy 550 & US Hwy 64
in Bloomfield, NM to LOGOS Operating, LLC Rosa Unit #665H
2277' FSL & 967' FWL, Section 30, T31N, R5W, N.M.P.M., Rio Arriba County, NM

Latitude: 36.869606°N Longitude: 107.404479°W Datum: NAD1983

From the intersection of US Hwy 550 & US Hwy 64 in Bloomfield, NM, travel Easterly on US Hwy 64 for 38.0 miles to Mile Marker 102.3 to State Hwy 527 (Simms Hwy);

Go Left (North-westerly) on State Hwy 527 (Simms Hwy) for 7.9 miles to Rosa Road @ La Jara Station;

Go Right (Northerly) on Rosa Road for 6.5 miles to fork in roadway;

Go Left (Northerly) which is straight remaining on Rosa Road for 2.4 miles to fork in roadway;

Go Right (Easterly) exiting Rosa Road for 0.2 miles to fork in roadway;

Go Left (North-easterly) for 1.0 miles to fork in roadway;

Go Left (North-westerly) for 0.4 miles to fork in roadway;

Go Left (Westerly) which is straight for 0.3 miles to LOGOS Rosa Unit #162 existing wellpad from which new access continues from North-east corner of pad for 105.7' to LOGOS Rosa Unit #665H proposed wellpad.



LOGOS Operating, LLC Operations Plan

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

Date:	February 5, 2021	Pool:	Basin Mancos
Well Name:	Rosa Unit 665H	GL Elevation:	6,394'
Surface Location:	Sec 30, T31N, R5W 2277 FSL, 967 FWL (36.869606° N, 107.404479° W – NAD83)	Measured Depth:	18,226' (GL)
Bottom Hole Location:	Sec 26, T31N, R6W 1148 FSL, 230 FWL (36.866510° N, 107.440405° W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF-078764, CA Serial #NMNM-78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,540	2,488	*POINT LOOKOUT	5,919	5,665
KIRTLAND	2,674	2,614	*MANCOS	6,431	6,151
*FRUITLAND	3,170	3,080	KICKOFF POINT	6,047	5,786
*PICTURED CLIFFS	3,518	3,407	LANDING POINT	7,896	6,984
LEWIS	3,618	3,501			
CHACRA	4,774	4,588			
*CLIFF HOUSE	5,654	5,415			
MENEFEE	5,704	5,463	TD	18,226	6,954

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

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

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

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

II. DRILLING

A. MUD PROGRAM: LSND mud (WBM) will be used to drill the 17-1/2" surface hole as well as the 12-1/4" directional vertical hole. A LSND (WBM) or (OBM) will be used to drill the 8-3/4" curve and lateral portion of the wellbore. Treat for lost circulation as necessary. Obtain 100% returns prior to cementing. Notify Engineering of any mud losses.

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

ROSA UNIT 665H



- 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.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OHSIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	320' or greater	13.375"	54.5 LBS	J-55 or equiv	BTC
INTERMEDIATE	12.25"	6,650'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.75"	18,226'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

- 1. SURFACE CASING:** 13-3/8" notched regular pattern guide shoe. Run (1) standard centralizer on each of the bottom (3) joints of Surface Casing.
- 2. 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.
- 3. 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 RSI (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

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

- 1. SURFACE:** Casing shall be set at ~ 320' and cemented to surface. TOC at Surface.
- 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 cancellation 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
Stage 1 Tail	6,176	500	0.31318	1.3	221	39	1.15	192
Stage 1 Lead	4,854	1,322	0.31318	1.3	538	96	2.31	233
					759	135		425
Stage 2 Tail	4,754	100	0.31318	1.3	45	8	1.15	39
Stage 2 Lead	3,250	1,504	0.31318	1.3	612	109	2.31	265
					658	117		304
Stage 3 Tail	3,150	100	0.31318	1.3	45	8	1.15	39
Stage 3 Lead	326	2,824	0.31318	1.3	1,150	205	2.31	497
Stage 3 Lead	-	326	0.36268	1	118	21	2.31	51
					1,313	234		587
All Stage Totals					2,730	486		1,316

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 at least 150' of cement overlap above intermediate shoe. A CBL, or alternatively, a Temperature Survey will be used to determine TOC.

	Top (ft)	Footage (ft)	Cement (ft ³ /ft) Annular Capacity	Excess (15%)	Total (ft ³)	Total (bbl)	Slurry Yield (ft ³ /sk)	Sacks Cement
Cased Lead	6,526	150	0.25307	1	38	7	1.56	24
Open Hole Lead	6,676	11,600	0.25259	1.15	3,378	602	1.56	2,166
					3,416	608		2,190

Calculations based on 15% excess for open hole and 150' overlap into intermediate casing. Actual volumes will vary.

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

IV. COMPLETION

A. CBL

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

B. PRESSURE TEST

ROSA UNIT 665H



- C. With frac stack installed on wellhead, pressure test 5-1/2" casing to 1550 psi (0.22 psi/ft * 6,984' TVD) for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

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

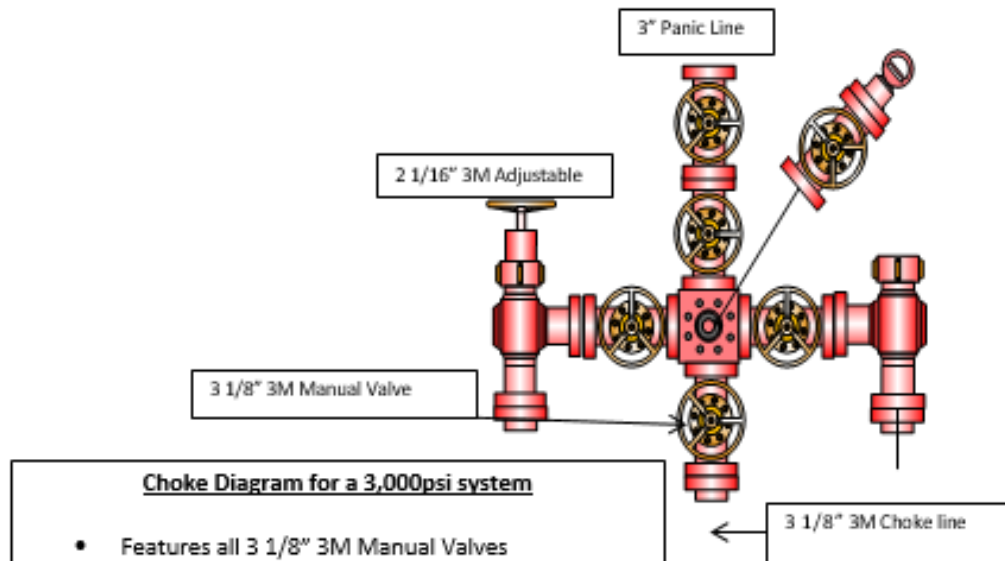
E. PRODUCTION TUBING

2-7/8", 6.5#, J-55, EUE tubing will be run once volumes and pressures dictate.

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

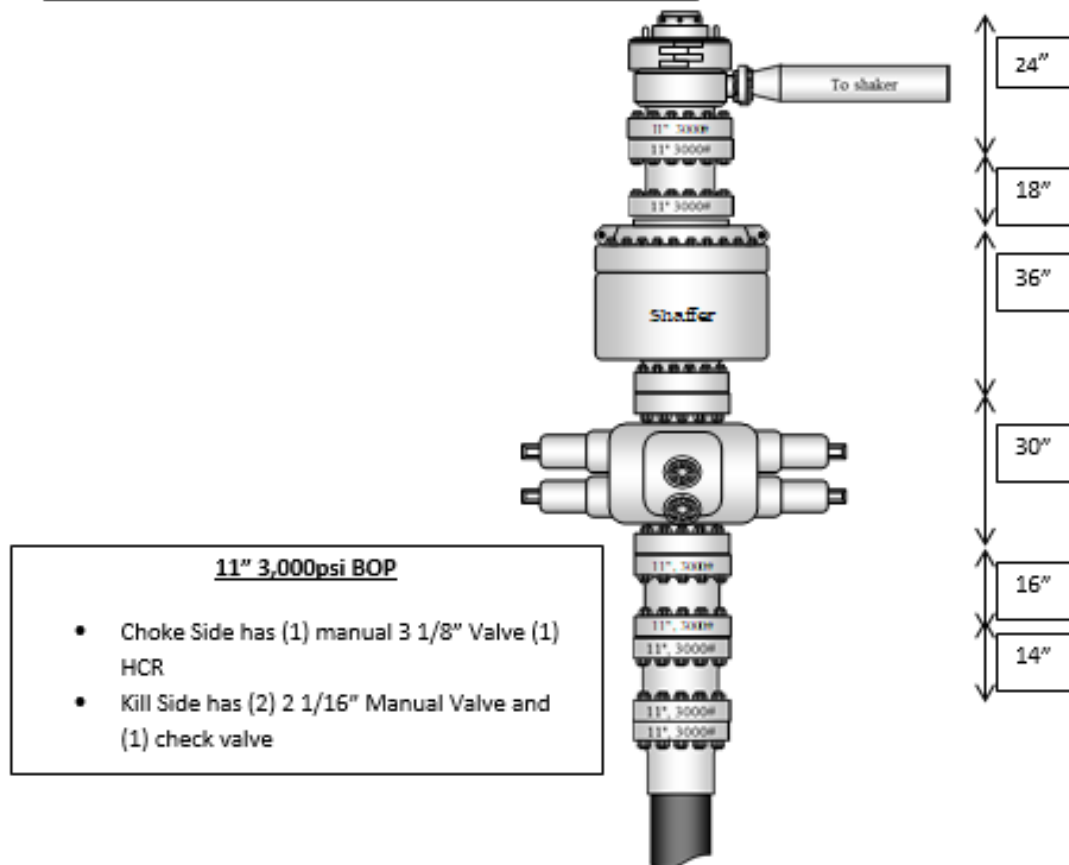


3M 11" B.O.P.E Diagram



Choke Diagram for a 3,000psi system

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



ROSA UNIT 665H



Company: Logos Operating LLC
 Project: Rio Arriba, NM NAD83
 Site: Rosa Unit 30
 Well: Rosa Unit #665H
 Wellbore: OH
 Design: Plan #2

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 #665H

GL 6394' @ 6394.00ft
 +N/-S +E/-W Northing Easting Latitude Longitude
 0.00 0.00 2136142.63 2848534.45 36.8696059 -107.4044791 A4 (660H)

Plan: Plan #2 (Rosa Unit #665H/OH)

Created By: Janie Collins Date: 16:28, January 18 2021



Azimuths to True North
 Magnetic North: 10

Magnetic Field
 Strength: 51652.00
 Dip Angle: 63.00
 Date: 12/31/2020
 Model: IGRF2020

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
665H POE Rev 3	6984.00	-1602.94	-190.42	2134538.86	2848351.23	36.8652030	-107.4051300
665H BHL Rev 3	6954.00	-1125.12	-10509.17	2134970.33	2838030.45	36.8665100	-107.4404050
665H FPerf	6954.00	-1129.89	-10409.42	2134966.01	2838130.22	36.8664970	-107.4400640

SECTION DETAILS

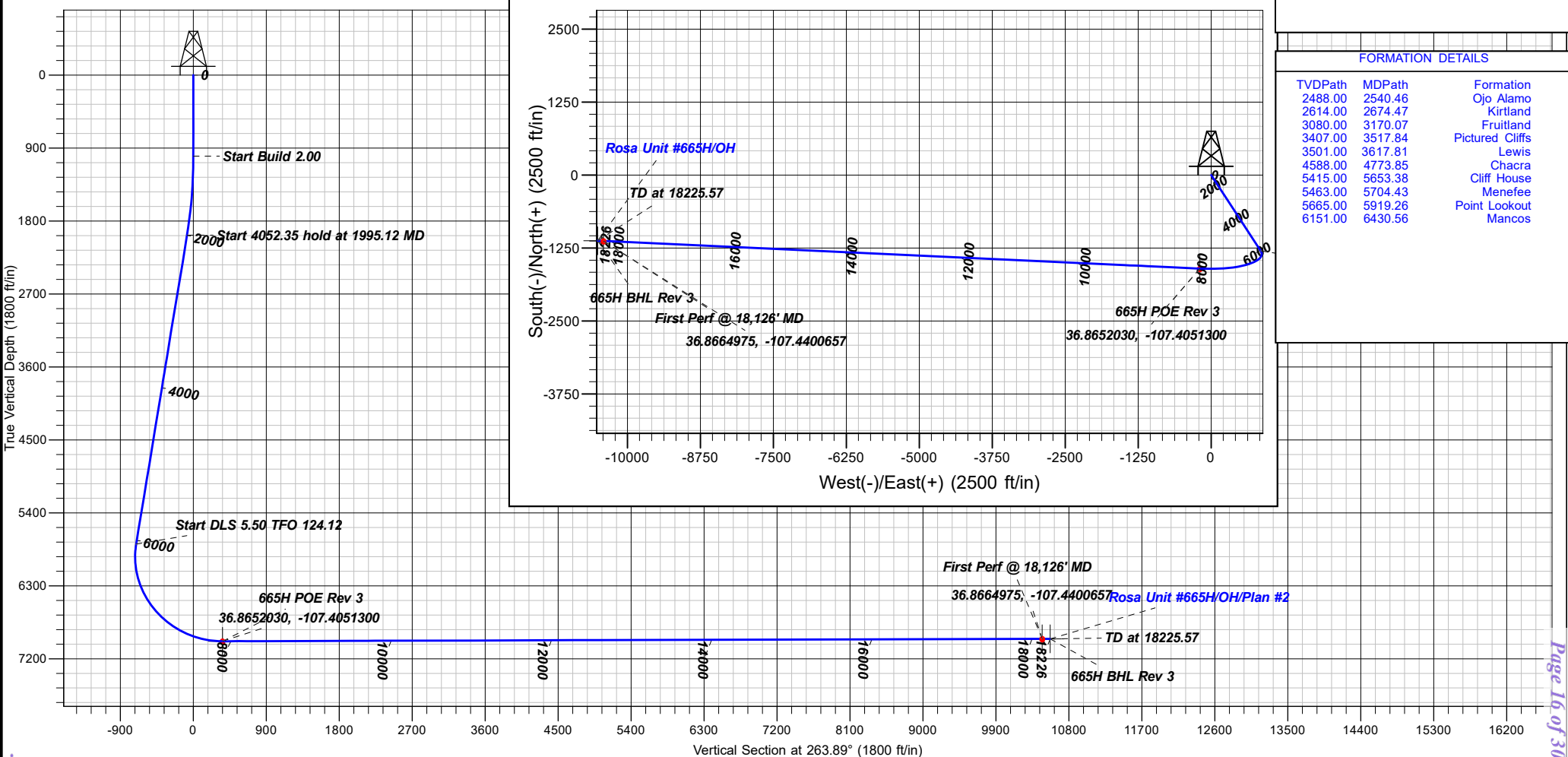
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
1995.12	19.90	146.82	1975.22	-143.21	93.63	2.00	146.82	-77.86	
6047.46	19.90	146.82	5785.54	-1297.80	848.56	0.00	0.00	-705.58	
7895.72	90.17	272.65	6984.00	-1602.94	-190.42	5.50	124.12	359.97	665H POE Rev 3
18225.57	90.17	272.65	6954.00	-1125.12	-10509.17	0.00	0.00	10569.23	665H BHL Rev 3

CASING DETAILS

TVD	MD	Name
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FORMATION DETAILS

TVDPath	MDPath	Formation
2488.00	2540.46	Ojo Alamo
2614.00	2674.47	Kirtland
3080.00	3170.07	Fruitland
3407.00	3517.84	Pictured Cliffs
3501.00	3617.81	Lewis
4588.00	4773.85	Chacra
5415.00	5653.38	Cliff House
5463.00	5704.43	Menefee
5665.00	5919.26	Point Lookout
6151.00	6430.56	Mancos





Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 30

Rosa Unit #665H - Slot A4 (660H)

OH

Plan: Plan #2

Standard Planning Report

18 January, 2021





Lonestar Consulting

Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Project	Rio Arriba, NM NAD83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Western Zone		

Site	Rosa Unit 30			
Site Position:		Northing:	2,136,112.13 usft	Latitude: 36.8695220
From:	Lat/Long	Easting:	2,848,540.75 usft	Longitude: -107.4044580
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	

Well	Rosa Unit #665H - Slot A4 (660H)			
Well Position	+N/-S	0.00 ft	Northing:	2,136,142.63 usft
	+E/-W	0.00 ft	Easting:	2,848,534.45 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level: 6,394.00 ft
Grid Convergence:	0.26 °			

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	10.80	63.86	51,652.02243679

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	263.89

Plan Survey Tool Program	Date	1/18/2021		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,225.57 Plan #2 (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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,995.12	19.90	146.82	1,975.22	-143.21	93.63	2.00	2.00	0.00	146.82	
6,047.46	19.90	146.82	5,785.54	-1,297.80	848.56	0.00	0.00	0.00	0.00	
7,895.72	90.17	272.65	6,984.00	-1,602.94	-190.42	5.50	3.80	6.81	124.12	665H POE Rev 3
18,225.57	90.17	272.65	6,954.00	-1,125.12	-10,509.17	0.00	0.00	0.00	0.00	665H BHL Rev 3



Lonestar Consulting

Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	2.00	146.82	1,099.98	-1.46	0.96	-0.79	2.00	2.00	0.00
1,200.00	4.00	146.82	1,199.84	-5.84	3.82	-3.18	2.00	2.00	0.00
1,300.00	6.00	146.82	1,299.45	-13.14	8.59	-7.14	2.00	2.00	0.00
1,400.00	8.00	146.82	1,398.70	-23.33	15.26	-12.69	2.00	2.00	0.00
1,500.00	10.00	146.82	1,497.47	-36.43	23.82	-19.80	2.00	2.00	0.00
1,600.00	12.00	146.82	1,595.62	-52.40	34.26	-28.49	2.00	2.00	0.00
1,700.00	14.00	146.82	1,693.06	-71.22	46.57	-38.72	2.00	2.00	0.00
1,800.00	16.00	146.82	1,789.64	-92.88	60.73	-50.50	2.00	2.00	0.00
1,900.00	18.00	146.82	1,885.27	-117.35	76.73	-63.80	2.00	2.00	0.00
1,995.12	19.90	146.82	1,975.22	-143.21	93.63	-77.86	2.00	2.00	0.00
2,000.00	19.90	146.82	1,979.82	-144.60	94.54	-78.61	0.00	0.00	0.00
2,100.00	19.90	146.82	2,073.84	-173.09	113.17	-94.11	0.00	0.00	0.00
2,200.00	19.90	146.82	2,167.87	-201.58	131.80	-109.60	0.00	0.00	0.00
2,300.00	19.90	146.82	2,261.90	-230.07	150.43	-125.09	0.00	0.00	0.00
2,400.00	19.90	146.82	2,355.93	-258.57	169.06	-140.58	0.00	0.00	0.00
2,500.00	19.90	146.82	2,449.95	-287.06	187.69	-156.07	0.00	0.00	0.00
2,600.00	19.90	146.82	2,543.98	-315.55	206.32	-171.56	0.00	0.00	0.00
2,700.00	19.90	146.82	2,638.01	-344.04	224.95	-187.05	0.00	0.00	0.00
2,800.00	19.90	146.82	2,732.04	-372.53	243.58	-202.54	0.00	0.00	0.00
2,900.00	19.90	146.82	2,826.06	-401.03	262.21	-218.03	0.00	0.00	0.00
3,000.00	19.90	146.82	2,920.09	-429.52	280.84	-233.52	0.00	0.00	0.00
3,100.00	19.90	146.82	3,014.12	-458.01	299.47	-249.01	0.00	0.00	0.00
3,200.00	19.90	146.82	3,108.15	-486.50	318.10	-264.50	0.00	0.00	0.00
3,300.00	19.90	146.82	3,202.17	-514.99	336.73	-279.99	0.00	0.00	0.00
3,400.00	19.90	146.82	3,296.20	-543.49	355.35	-295.48	0.00	0.00	0.00
3,500.00	19.90	146.82	3,390.23	-571.98	373.98	-310.97	0.00	0.00	0.00
3,600.00	19.90	146.82	3,484.26	-600.47	392.61	-326.46	0.00	0.00	0.00
3,700.00	19.90	146.82	3,578.28	-628.96	411.24	-341.95	0.00	0.00	0.00
3,800.00	19.90	146.82	3,672.31	-657.45	429.87	-357.44	0.00	0.00	0.00
3,900.00	19.90	146.82	3,766.34	-685.95	448.50	-372.93	0.00	0.00	0.00
4,000.00	19.90	146.82	3,860.37	-714.44	467.13	-388.42	0.00	0.00	0.00
4,100.00	19.90	146.82	3,954.39	-742.93	485.76	-403.91	0.00	0.00	0.00
4,200.00	19.90	146.82	4,048.42	-771.42	504.39	-419.40	0.00	0.00	0.00
4,300.00	19.90	146.82	4,142.45	-799.91	523.02	-434.89	0.00	0.00	0.00
4,400.00	19.90	146.82	4,236.48	-828.41	541.65	-450.38	0.00	0.00	0.00
4,500.00	19.90	146.82	4,330.50	-856.90	560.28	-465.87	0.00	0.00	0.00
4,600.00	19.90	146.82	4,424.53	-885.39	578.91	-481.36	0.00	0.00	0.00
4,700.00	19.90	146.82	4,518.56	-913.88	597.54	-496.86	0.00	0.00	0.00
4,800.00	19.90	146.82	4,612.59	-942.37	616.16	-512.35	0.00	0.00	0.00
4,900.00	19.90	146.82	4,706.61	-970.87	634.79	-527.84	0.00	0.00	0.00
5,000.00	19.90	146.82	4,800.64	-999.36	653.42	-543.33	0.00	0.00	0.00
5,100.00	19.90	146.82	4,894.67	-1,027.85	672.05	-558.82	0.00	0.00	0.00
5,200.00	19.90	146.82	4,988.69	-1,056.34	690.68	-574.31	0.00	0.00	0.00



Lonestar Consulting

Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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	19.90	146.82	5,082.72	-1,084.83	709.31	-589.80	0.00	0.00	0.00
5,400.00	19.90	146.82	5,176.75	-1,113.33	727.94	-605.29	0.00	0.00	0.00
5,500.00	19.90	146.82	5,270.78	-1,141.82	746.57	-620.78	0.00	0.00	0.00
5,600.00	19.90	146.82	5,364.80	-1,170.31	765.20	-636.27	0.00	0.00	0.00
5,700.00	19.90	146.82	5,458.83	-1,198.80	783.83	-651.76	0.00	0.00	0.00
5,800.00	19.90	146.82	5,552.86	-1,227.29	802.46	-667.25	0.00	0.00	0.00
5,900.00	19.90	146.82	5,646.89	-1,255.78	821.09	-682.74	0.00	0.00	0.00
6,000.00	19.90	146.82	5,740.91	-1,284.28	839.72	-698.23	0.00	0.00	0.00
6,047.46	19.90	146.82	5,785.54	-1,297.80	848.56	-705.58	0.00	0.00	0.00
6,100.00	18.43	154.41	5,835.17	-1,312.78	857.04	-712.42	5.50	-2.80	14.44
6,200.00	16.65	171.75	5,930.59	-1,341.23	865.93	-718.23	5.50	-1.78	17.35
6,300.00	16.54	191.09	6,026.49	-1,369.40	865.25	-714.55	5.50	-0.11	19.34
6,400.00	18.13	208.84	6,122.02	-1,397.02	854.99	-701.42	5.50	1.59	17.75
6,500.00	21.04	222.83	6,216.27	-1,423.84	835.27	-678.95	5.50	2.91	13.99
6,600.00	24.81	233.16	6,308.39	-1,449.60	806.25	-647.35	5.50	3.77	10.33
6,700.00	29.11	240.76	6,397.53	-1,474.08	768.20	-606.92	5.50	4.30	7.60
6,800.00	33.73	246.50	6,482.87	-1,497.05	721.48	-558.02	5.50	4.62	5.74
6,900.00	38.56	250.98	6,563.61	-1,518.29	666.52	-501.11	5.50	4.83	4.48
7,000.00	43.52	254.59	6,639.03	-1,537.61	603.82	-436.70	5.50	4.97	3.61
7,100.00	48.58	257.58	6,708.42	-1,554.84	533.95	-365.40	5.50	5.06	3.00
7,200.00	53.71	260.15	6,771.14	-1,569.81	457.57	-287.86	5.50	5.13	2.56
7,300.00	58.88	262.39	6,826.62	-1,582.38	375.37	-204.79	5.50	5.17	2.24
7,400.00	64.09	264.40	6,874.34	-1,592.45	288.12	-116.96	5.50	5.21	2.01
7,500.00	69.33	266.24	6,913.87	-1,599.91	196.61	-25.18	5.50	5.23	1.84
7,600.00	74.58	267.95	6,944.85	-1,604.70	101.69	69.71	5.50	5.25	1.72
7,700.00	79.84	269.59	6,966.98	-1,606.78	4.23	166.84	5.50	5.27	1.63
7,800.00	85.12	271.16	6,980.06	-1,606.12	-94.87	265.31	5.50	5.27	1.58
7,895.72	90.17	272.65	6,984.00	-1,602.94	-190.42	359.97	5.50	5.28	1.55
7,900.00	90.17	272.65	6,983.99	-1,602.74	-194.70	364.21	0.00	0.00	0.00
8,000.00	90.17	272.65	6,983.70	-1,598.11	-294.59	463.04	0.00	0.00	0.00
8,100.00	90.17	272.65	6,983.41	-1,593.49	-394.48	561.87	0.00	0.00	0.00
8,200.00	90.17	272.65	6,983.12	-1,588.86	-494.37	660.70	0.00	0.00	0.00
8,300.00	90.17	272.65	6,982.83	-1,584.24	-594.27	759.54	0.00	0.00	0.00
8,400.00	90.17	272.65	6,982.54	-1,579.61	-694.16	858.37	0.00	0.00	0.00
8,500.00	90.17	272.65	6,982.25	-1,574.99	-794.05	957.20	0.00	0.00	0.00
8,600.00	90.17	272.65	6,981.95	-1,570.36	-893.94	1,056.03	0.00	0.00	0.00
8,700.00	90.17	272.65	6,981.66	-1,565.74	-993.84	1,154.87	0.00	0.00	0.00
8,800.00	90.17	272.65	6,981.37	-1,561.11	-1,093.73	1,253.70	0.00	0.00	0.00
8,900.00	90.17	272.65	6,981.08	-1,556.48	-1,193.62	1,352.53	0.00	0.00	0.00
9,000.00	90.17	272.65	6,980.79	-1,551.86	-1,293.52	1,451.36	0.00	0.00	0.00
9,100.00	90.17	272.65	6,980.50	-1,547.23	-1,393.41	1,550.20	0.00	0.00	0.00
9,200.00	90.17	272.65	6,980.21	-1,542.61	-1,493.30	1,649.03	0.00	0.00	0.00
9,300.00	90.17	272.65	6,979.92	-1,537.98	-1,593.19	1,747.86	0.00	0.00	0.00
9,400.00	90.17	272.65	6,979.63	-1,533.36	-1,693.09	1,846.69	0.00	0.00	0.00
9,500.00	90.17	272.65	6,979.34	-1,528.73	-1,792.98	1,945.53	0.00	0.00	0.00
9,600.00	90.17	272.65	6,979.05	-1,524.11	-1,892.87	2,044.36	0.00	0.00	0.00
9,700.00	90.17	272.65	6,978.76	-1,519.48	-1,992.76	2,143.19	0.00	0.00	0.00
9,800.00	90.17	272.65	6,978.47	-1,514.85	-2,092.66	2,242.02	0.00	0.00	0.00
9,900.00	90.17	272.65	6,978.18	-1,510.23	-2,192.55	2,340.86	0.00	0.00	0.00
10,000.00	90.17	272.65	6,977.89	-1,505.60	-2,292.44	2,439.69	0.00	0.00	0.00
10,100.00	90.17	272.65	6,977.60	-1,500.98	-2,392.33	2,538.52	0.00	0.00	0.00
10,200.00	90.17	272.65	6,977.31	-1,496.35	-2,492.23	2,637.35	0.00	0.00	0.00
10,300.00	90.17	272.65	6,977.02	-1,491.73	-2,592.12	2,736.19	0.00	0.00	0.00
10,400.00	90.17	272.65	6,976.73	-1,487.10	-2,692.01	2,835.02	0.00	0.00	0.00



Lonestar Consulting

Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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	90.17	272.65	6,976.44	-1,482.47	-2,791.90	2,933.85	0.00	0.00	0.00	
10,600.00	90.17	272.65	6,976.15	-1,477.85	-2,891.80	3,032.68	0.00	0.00	0.00	
10,700.00	90.17	272.65	6,975.86	-1,473.22	-2,991.69	3,131.52	0.00	0.00	0.00	
10,800.00	90.17	272.65	6,975.57	-1,468.60	-3,091.58	3,230.35	0.00	0.00	0.00	
10,900.00	90.17	272.65	6,975.28	-1,463.97	-3,191.47	3,329.18	0.00	0.00	0.00	
11,000.00	90.17	272.65	6,974.98	-1,459.35	-3,291.37	3,428.01	0.00	0.00	0.00	
11,100.00	90.17	272.65	6,974.69	-1,454.72	-3,391.26	3,526.85	0.00	0.00	0.00	
11,200.00	90.17	272.65	6,974.40	-1,450.10	-3,491.15	3,625.68	0.00	0.00	0.00	
11,300.00	90.17	272.65	6,974.11	-1,445.47	-3,591.04	3,724.51	0.00	0.00	0.00	
11,400.00	90.17	272.65	6,973.82	-1,440.84	-3,690.94	3,823.34	0.00	0.00	0.00	
11,500.00	90.17	272.65	6,973.53	-1,436.22	-3,790.83	3,922.18	0.00	0.00	0.00	
11,600.00	90.17	272.65	6,973.24	-1,431.59	-3,890.72	4,021.01	0.00	0.00	0.00	
11,700.00	90.17	272.65	6,972.95	-1,426.97	-3,990.61	4,119.84	0.00	0.00	0.00	
11,800.00	90.17	272.65	6,972.66	-1,422.34	-4,090.51	4,218.67	0.00	0.00	0.00	
11,900.00	90.17	272.65	6,972.37	-1,417.72	-4,190.40	4,317.51	0.00	0.00	0.00	
12,000.00	90.17	272.65	6,972.08	-1,413.09	-4,290.29	4,416.34	0.00	0.00	0.00	
12,100.00	90.17	272.65	6,971.79	-1,408.46	-4,390.18	4,515.17	0.00	0.00	0.00	
12,200.00	90.17	272.65	6,971.50	-1,403.84	-4,490.08	4,614.00	0.00	0.00	0.00	
12,300.00	90.17	272.65	6,971.21	-1,399.21	-4,589.97	4,712.84	0.00	0.00	0.00	
12,400.00	90.17	272.65	6,970.92	-1,394.59	-4,689.86	4,811.67	0.00	0.00	0.00	
12,500.00	90.17	272.65	6,970.63	-1,389.96	-4,789.75	4,910.50	0.00	0.00	0.00	
12,600.00	90.17	272.65	6,970.34	-1,385.34	-4,889.65	5,009.33	0.00	0.00	0.00	
12,700.00	90.17	272.65	6,970.05	-1,380.71	-4,989.54	5,108.17	0.00	0.00	0.00	
12,800.00	90.17	272.65	6,969.76	-1,376.09	-5,089.43	5,207.00	0.00	0.00	0.00	
12,900.00	90.17	272.65	6,969.47	-1,371.46	-5,189.32	5,305.83	0.00	0.00	0.00	
13,000.00	90.17	272.65	6,969.18	-1,366.83	-5,289.22	5,404.67	0.00	0.00	0.00	
13,100.00	90.17	272.65	6,968.89	-1,362.21	-5,389.11	5,503.50	0.00	0.00	0.00	
13,200.00	90.17	272.65	6,968.60	-1,357.58	-5,489.00	5,602.33	0.00	0.00	0.00	
13,300.00	90.17	272.65	6,968.31	-1,352.96	-5,588.89	5,701.16	0.00	0.00	0.00	
13,400.00	90.17	272.65	6,968.01	-1,348.33	-5,688.79	5,800.00	0.00	0.00	0.00	
13,500.00	90.17	272.65	6,967.72	-1,343.71	-5,788.68	5,898.83	0.00	0.00	0.00	
13,600.00	90.17	272.65	6,967.43	-1,339.08	-5,888.57	5,997.66	0.00	0.00	0.00	
13,700.00	90.17	272.65	6,967.14	-1,334.45	-5,988.46	6,096.49	0.00	0.00	0.00	
13,800.00	90.17	272.65	6,966.85	-1,329.83	-6,088.36	6,195.33	0.00	0.00	0.00	
13,900.00	90.17	272.65	6,966.56	-1,325.20	-6,188.25	6,294.16	0.00	0.00	0.00	
14,000.00	90.17	272.65	6,966.27	-1,320.58	-6,288.14	6,392.99	0.00	0.00	0.00	
14,100.00	90.17	272.65	6,965.98	-1,315.95	-6,388.03	6,491.82	0.00	0.00	0.00	
14,200.00	90.17	272.65	6,965.69	-1,311.33	-6,487.93	6,590.66	0.00	0.00	0.00	
14,300.00	90.17	272.65	6,965.40	-1,306.70	-6,587.82	6,689.49	0.00	0.00	0.00	
14,400.00	90.17	272.65	6,965.11	-1,302.08	-6,687.71	6,788.32	0.00	0.00	0.00	
14,500.00	90.17	272.65	6,964.82	-1,297.45	-6,787.60	6,887.15	0.00	0.00	0.00	
14,600.00	90.17	272.65	6,964.53	-1,292.82	-6,887.50	6,985.99	0.00	0.00	0.00	
14,700.00	90.17	272.65	6,964.24	-1,288.20	-6,987.39	7,084.82	0.00	0.00	0.00	
14,800.00	90.17	272.65	6,963.95	-1,283.57	-7,087.28	7,183.65	0.00	0.00	0.00	
14,900.00	90.17	272.65	6,963.66	-1,278.95	-7,187.17	7,282.48	0.00	0.00	0.00	
15,000.00	90.17	272.65	6,963.37	-1,274.32	-7,287.07	7,381.32	0.00	0.00	0.00	
15,100.00	90.17	272.65	6,963.08	-1,269.70	-7,386.96	7,480.15	0.00	0.00	0.00	
15,200.00	90.17	272.65	6,962.79	-1,265.07	-7,486.85	7,578.98	0.00	0.00	0.00	
15,300.00	90.17	272.65	6,962.50	-1,260.45	-7,586.75	7,677.81	0.00	0.00	0.00	
15,400.00	90.17	272.65	6,962.21	-1,255.82	-7,686.64	7,776.65	0.00	0.00	0.00	
15,500.00	90.17	272.65	6,961.92	-1,251.19	-7,786.53	7,875.48	0.00	0.00	0.00	
15,600.00	90.17	272.65	6,961.63	-1,246.57	-7,886.42	7,974.31	0.00	0.00	0.00	
15,700.00	90.17	272.65	6,961.33	-1,241.94	-7,986.32	8,073.14	0.00	0.00	0.00	
15,800.00	90.17	272.65	6,961.04	-1,237.32	-8,086.21	8,171.98	0.00	0.00	0.00	



Lonestar Consulting

Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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	90.17	272.65	6,960.75	-1,232.69	-8,186.10	8,270.81	0.00	0.00	0.00	
16,000.00	90.17	272.65	6,960.46	-1,228.07	-8,285.99	8,369.64	0.00	0.00	0.00	
16,100.00	90.17	272.65	6,960.17	-1,223.44	-8,385.89	8,468.47	0.00	0.00	0.00	
16,200.00	90.17	272.65	6,959.88	-1,218.81	-8,485.78	8,567.31	0.00	0.00	0.00	
16,300.00	90.17	272.65	6,959.59	-1,214.19	-8,585.67	8,666.14	0.00	0.00	0.00	
16,400.00	90.17	272.65	6,959.30	-1,209.56	-8,685.56	8,764.97	0.00	0.00	0.00	
16,500.00	90.17	272.65	6,959.01	-1,204.94	-8,785.46	8,863.80	0.00	0.00	0.00	
16,600.00	90.17	272.65	6,958.72	-1,200.31	-8,885.35	8,962.64	0.00	0.00	0.00	
16,700.00	90.17	272.65	6,958.43	-1,195.69	-8,985.24	9,061.47	0.00	0.00	0.00	
16,800.00	90.17	272.65	6,958.14	-1,191.06	-9,085.13	9,160.30	0.00	0.00	0.00	
16,900.00	90.17	272.65	6,957.85	-1,186.44	-9,185.03	9,259.13	0.00	0.00	0.00	
17,000.00	90.17	272.65	6,957.56	-1,181.81	-9,284.92	9,357.97	0.00	0.00	0.00	
17,100.00	90.17	272.65	6,957.27	-1,177.18	-9,384.81	9,456.80	0.00	0.00	0.00	
17,200.00	90.17	272.65	6,956.98	-1,172.56	-9,484.70	9,555.63	0.00	0.00	0.00	
17,300.00	90.17	272.65	6,956.69	-1,167.93	-9,584.60	9,654.46	0.00	0.00	0.00	
17,400.00	90.17	272.65	6,956.40	-1,163.31	-9,684.49	9,753.30	0.00	0.00	0.00	
17,500.00	90.17	272.65	6,956.11	-1,158.68	-9,784.38	9,852.13	0.00	0.00	0.00	
17,600.00	90.17	272.65	6,955.82	-1,154.06	-9,884.27	9,950.96	0.00	0.00	0.00	
17,700.00	90.17	272.65	6,955.53	-1,149.43	-9,984.17	10,049.79	0.00	0.00	0.00	
17,800.00	90.17	272.65	6,955.24	-1,144.80	-10,084.06	10,148.63	0.00	0.00	0.00	
17,900.00	90.17	272.65	6,954.95	-1,140.18	-10,183.95	10,247.46	0.00	0.00	0.00	
18,000.00	90.17	272.65	6,954.66	-1,135.55	-10,283.84	10,346.29	0.00	0.00	0.00	
18,100.00	90.17	272.65	6,954.36	-1,130.93	-10,383.74	10,445.12	0.00	0.00	0.00	
18,200.00	90.17	272.65	6,954.07	-1,126.30	-10,483.63	10,543.96	0.00	0.00	0.00	
18,225.57	90.17	272.65	6,954.00	-1,125.12	-10,509.17	10,569.23	0.00	0.00	0.00	

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
665H BHL Rev 3 - plan hits target center - Point	0.00	0.00	6,954.00	-1,125.12	-10,509.17	2,134,970.33	2,838,030.46	36.8665100	-107.4404050
665H FPerf - plan misses target center by 0.33ft at 18125.71ft MD (6954.29 TVD, -1129.74 N, -10409.42 E) - Point	0.00	0.00	6,954.00	-1,129.89	-10,409.42	2,134,966.00	2,838,130.23	36.8664970	-107.4400640
665H POE Rev 3 - plan hits target center - Point	0.00	0.00	6,984.00	-1,602.94	-190.42	2,134,538.86	2,848,351.23	36.8652030	-107.4051300

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
17,925.68	6,954.87	20" Casing	20.000	24.000	



Lonestar Consulting Planning Report



Database:	EDM _16.0	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Company:	Logos Operating LLC	TVD Reference:	GL 6394' @ 6394.00ft
Project:	Rio Arriba, NM NAD83	MD Reference:	GL 6394' @ 6394.00ft
Site:	Rosa Unit 30	North Reference:	True
Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,540.46	2,488.00	Ojo Alamo		0.00	0.00	
2,674.47	2,614.00	Kirtland		0.00	0.00	
3,170.07	3,080.00	Fruitland		0.00	0.00	
3,517.84	3,407.00	Pictured Cliffs		0.00	0.00	
3,617.81	3,501.00	Lewis		0.00	0.00	
4,773.85	4,588.00	Chacra		0.00	0.00	
5,653.38	5,415.00	Cliff House		0.00	0.00	
5,704.43	5,463.00	Menefee		0.00	0.00	
5,919.26	5,665.00	Point Lookout		0.00	0.00	
6,430.56	6,151.00	Mancos		0.00	0.00	



Logos Operating LLC

Rio Arriba, NM NAD83

Rosa Unit 30

Rosa Unit #665H

OH

Plan #2

Anticollision Summary Report

18 January, 2021





Lonestar Consulting

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6394' @ 6394.00ft
Reference Site:	Rosa Unit 30	MD Reference:	GL 6394' @ 6394.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM _16.0
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference	Plan #2
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.00ft
Depth Range:	Unlimited
Results Limited by:	Maximum centre distance of 10,000.00ft
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	1/18/2021		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	18,225.57	Plan #2 (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 30						
Rosa Unit #658H - OH - Plan #2	1,000.00	1,000.00	45.13	37.96	6.294	CC, ES
Rosa Unit #658H - OH - Plan #2	18,225.57	18,209.89	1,489.86	817.34	2.215	SF
Sec 25 T31N R6W Offsets						
Rosa Unit #160 - OH - OH	9,497.63	5,573.00	1,535.15	1,447.15	17.445	CC
Rosa Unit #160 - OH - OH	9,500.00	5,573.00	1,535.15	1,447.12	17.438	ES
Rosa Unit #160 - OH - OH	10,700.00	5,573.00	1,949.97	1,793.53	12.464	SF
Rosa Unit #160A - OH - OH	11,744.54	6,109.00	923.99	795.98	7.218	CC, ES
Rosa Unit #160A - OH - OH	12,300.00	6,109.00	1,078.10	904.73	6.218	SF
Rosa Unit #160B - OH - OH	13,161.18	3,697.00	3,328.47	3,251.55	43.275	CC
Rosa Unit #160B - OH - OH	13,200.00	3,697.00	3,328.69	3,251.33	43.029	ES
Rosa Unit #160B - OH - OH	15,400.00	3,697.00	4,011.36	3,877.01	29.858	SF
Rosa Unit #160D - OH - OH	12,478.57	7,116.84	229.95	38.33	1.200	Level 2, CC, ES, SF
Rosa Unit #59 - OH - OH	11,630.26	6,981.43	277.24	-74.10	0.789	Level 1, CC, ES, SF
Sec 26 T31N R6W Offsets						
Rosa Unit #211A - OH - OH	13,264.80	3,055.00	3,959.52	3,900.24	66.791	CC
Rosa Unit #211A - OH - OH	13,300.00	3,055.00	3,959.68	3,900.07	66.428	ES
Rosa Unit #211A - OH - OH	14,700.00	3,055.00	4,211.60	4,141.12	59.757	SF
Rosa Unit #215 - OH - OH	16,900.22	2,505.00	4,480.33	4,392.90	51.247	CC
Rosa Unit #215 - OH - OH	17,000.00	2,505.00	4,481.44	4,392.72	50.512	ES
Rosa Unit #215 - OH - OH	18,225.57	2,505.00	4,672.25	4,558.21	40.972	SF
Rosa Unit #5A - OH - OH	14,307.16	6,031.00	973.87	881.96	10.596	CC
Rosa Unit #5A - OH - OH	14,400.00	6,031.00	978.29	879.27	9.880	ES
Rosa Unit #5A - OH - OH	15,000.00	6,031.00	1,195.18	1,019.67	6.810	SF
Rosa Unit #8 - OH - OH	17,561.02	5,865.00	1,125.96	1,036.39	12.571	CC
Rosa Unit #8 - OH - OH	17,800.00	5,865.00	1,151.04	1,012.44	8.305	ES
Rosa Unit #8 - OH - OH	18,225.57	5,865.00	1,307.45	1,102.71	6.386	SF
Rosa Unit #8C - OH - OH	16,416.49	6,100.00	978.63	766.69	4.617	CC, ES
Rosa Unit #8C - OH - OH	16,700.00	6,100.00	1,018.87	792.71	4.505	SF
Rosa Unit #99Y - OH - OH	16,656.98	7,000.56	210.69	-356.45	0.371	Level 1, CC, ES, SF

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



Lonestar Consulting Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6394' @ 6394.00ft
Reference Site:	Rosa Unit 30	MD Reference:	GL 6394' @ 6394.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM _16.0
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

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						
Sec 30 T31N R5W Offsets						
Rosa Unit #162 - OH - OH	2,269.91	2,241.79	392.01	315.11	5.097	CC
Rosa Unit #162 - OH - OH	2,400.00	2,364.12	394.50	313.18	4.851	ES
Rosa Unit #162 - OH - OH	2,800.00	2,739.87	431.53	336.78	4.554	SF
Rosa Unit #162C - OH - OH	6,786.40	6,510.48	155.00	-68.24	0.694	Level 1, CC
Rosa Unit #162C - OH - OH	6,800.00	6,521.84	155.13	-68.60	0.693	Level 1, ES, SF
Rosa Unit #233 - OH - OH	2,626.73	2,540.00	313.09	225.78	3.586	CC, ES, SF



Lonestar Consulting

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6394' @ 6394.00ft
Reference Site:	Rosa Unit 30	MD Reference:	GL 6394' @ 6394.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM_16.0
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6394' @ 6394.00ft

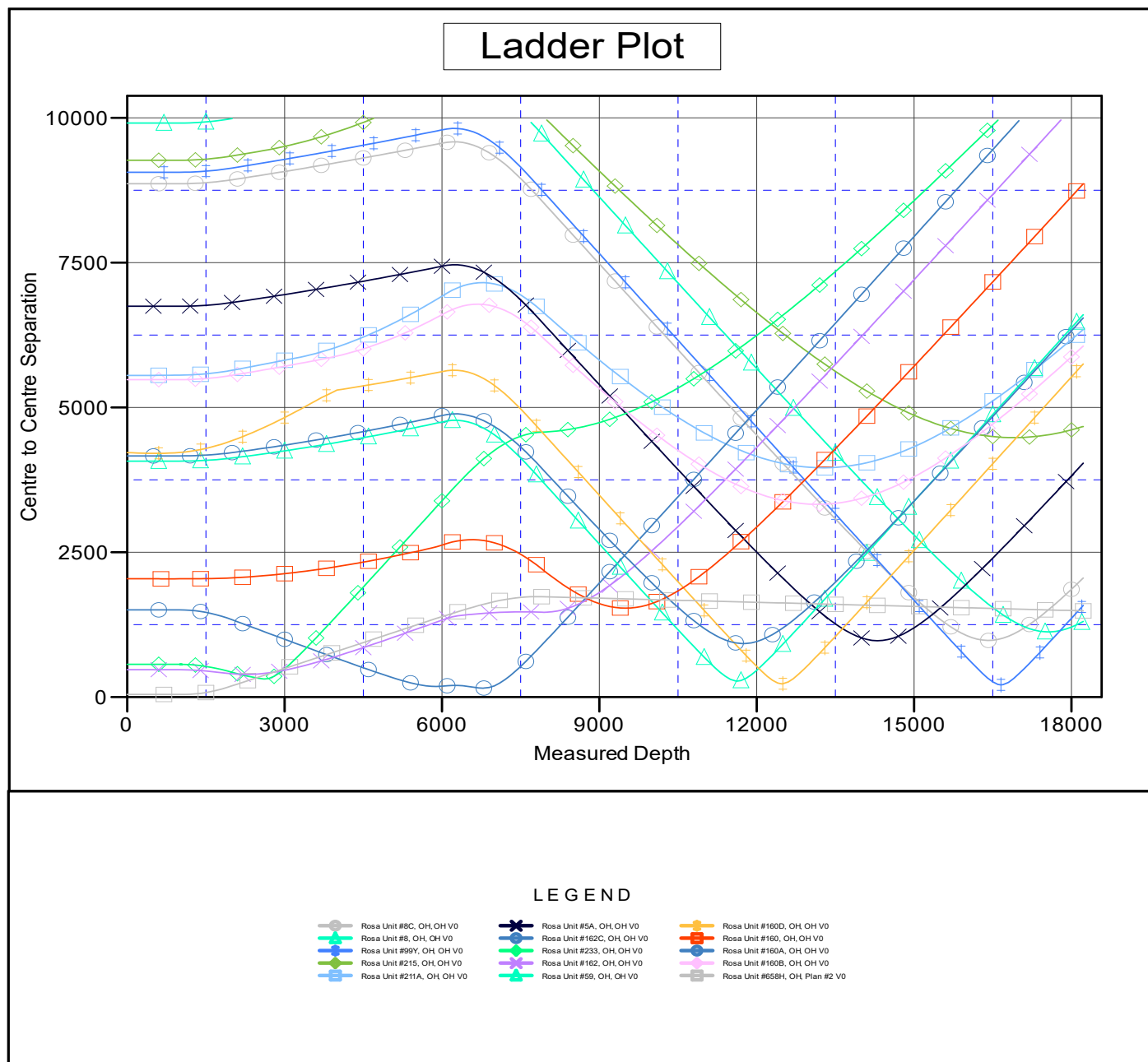
Offset Depths are relative to Offset Datum

Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #665H - Slot A4 (660H)

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

Grid Convergence at Surface is: 0.26°



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



Lonestar Consulting

Anticollision Summary Report



Company:	Logos Operating LLC	Local Co-ordinate Reference:	Well Rosa Unit #665H - Slot A4 (660H)
Project:	Rio Arriba, NM NAD83	TVD Reference:	GL 6394' @ 6394.00ft
Reference Site:	Rosa Unit 30	MD Reference:	GL 6394' @ 6394.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	Rosa Unit #665H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM_16.0
Reference Design:	Plan #2	Offset TVD Reference:	Offset Datum

Reference Depths are relative to GL 6394' @ 6394.00ft

Offset Depths are relative to Offset Datum

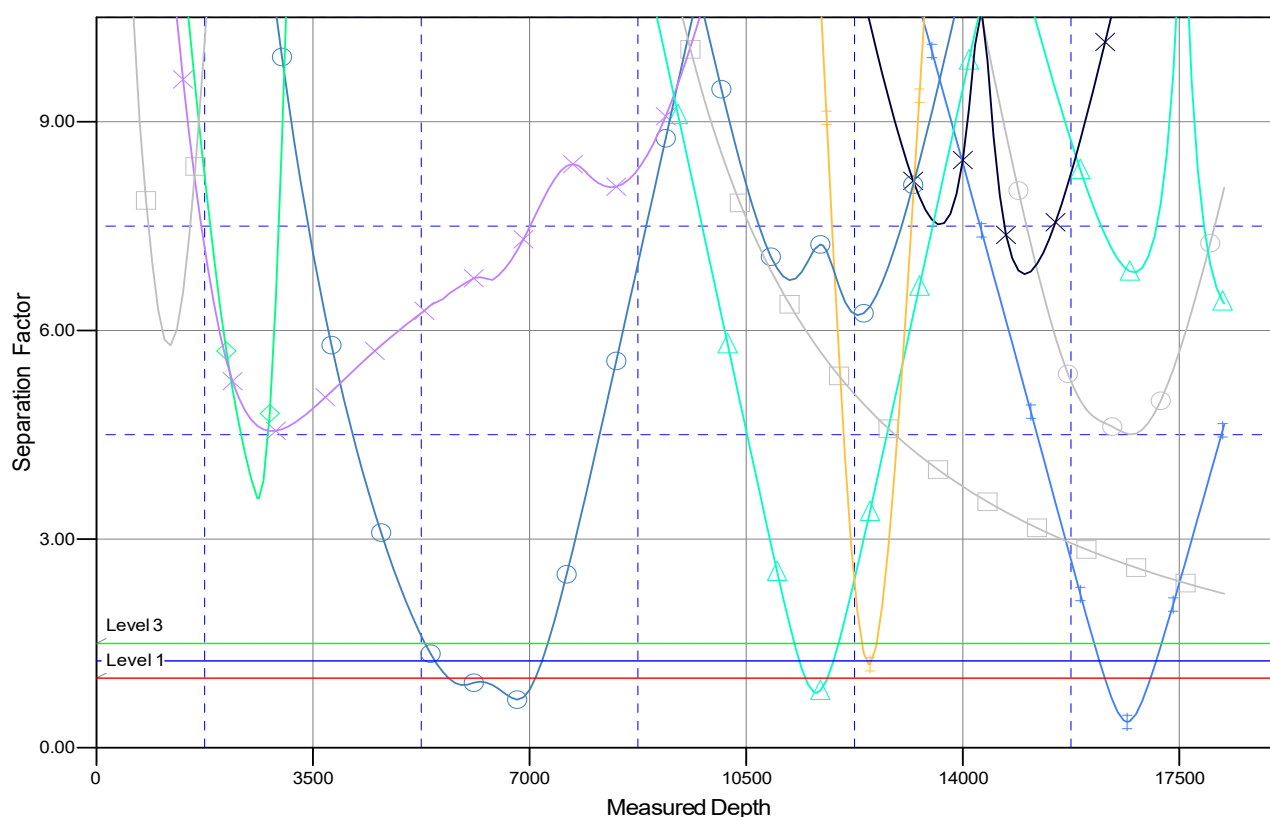
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #665H - Slot A4 (660H)

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

Grid Convergence at Surface is: 0.26°

Separation Factor Plot



LEGEND

Rosa Unit #8C, OH, OH V0	Rosa Unit #5A, OH, OH V0	Rosa Unit #160D, OH, OH V0
Rosa Unit #8, OH, OH V0	Rosa Unit #162C, OH, OH V0	Rosa Unit #160, OH, OH V0
Rosa Unit #99Y, OH, OH V0	Rosa Unit #233, OH, OH V0	Rosa Unit #160A, OH, OH V0
Rosa Unit #215, OH, OH V0	Rosa Unit #162, OH, OH V0	Rosa Unit #160B, OH, OH V0
Rosa Unit #211A, OH, OH V0	Rosa Unit #59, OH, OH V0	Rosa Unit #658H, OH, Plan #2 V0

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

District I
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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

COMMENTS

Action 33476

COMMENTS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 33476
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO Review 6/29/2021	6/29/2021

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CONDITIONS

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	Action Number: 33476
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	6/29/2021
kpickford	No NSL required.	6/29/2021