Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMSF0078773

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☐ Oil Well ☑ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.: NMNM 078407E

8. Lease Name and Well No.: ROSA UNIT 742H

2. Name of Operator: LOGOS OPERATING LLC

9. API Well No.: 30-039-31419

3a. Address: 2010 AFTON PLACE, FARMINGTON, NM 87401

3b. Phone No. *(include area code)*: (505) 278-8720

10. Field and Pool, or Exploratory: BASIN MANCOS/BASIN MANCOS

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: NENW / 378 FNL / 1695 FWL / LAT 36.862321 / LONG -107.370875

At proposed prod. zone: LOT 2 / 1827 FNL / 230 FWL / LAT 36.858336 / LONG -107.407002

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 33/T31N/R05W/NMP

14. Distance in miles and direction from nearest town or post office*: 38 miles

12. County or Parish: RIO ARRIBA

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 230 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 712.89

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 9 feet

19. Proposed Depth: 7042 feet / 18435 feet

20. BLM/BIA Bond No. in file: FED: NMB001820

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 6492 feet

22. Approximate date work will start*: 11/01/2021

23. Estimated duration: 45 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	ETTA TRUJILLO / Ph: (505) 324-4145	09/30/2021

Title: Regulatory Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	DAVE J MANKIEWICZ / Ph: (505) 564-7761	03/22/2022

Title	Office
AFM-Minerals	Farmington Field Office

Application approval 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.
Conditions of approval, if any, are attached.

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 03/22/2022

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

0. SHL: NENW / 378 FNL / 1695 FWL / TWSP: 31N / RANGE: 05W / SECTION: 33 / LAT: 36.862321 / LONG: -107.370875 (TVD: 0 feet, MD: 0 feet)

PPP: SENE / 0 FNL / 0 FWL / TWSP: 31N / RANGE: 05W / SECTION: 31 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: SENE / 0 FNL / 0 FWL / TWSP: 31N / RANGE: 05W / SECTION: 32 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: SENW / 1910 FNL / 1655 FWL / TWSP: 31N / RANGE: 05W / SECTION: 33 / LAT: 36.85811 / LONG: -107.371006 (TVD: 7069 feet, MD: 7904 feet)

BHL: LOT 2 / 1827 FNL / 230 FWL / TWSP: 31N / RANGE: 05W / SECTION: 31 / LAT: 36.858336 / LONG: -107.407002 (TVD: 7042 feet, MD: 18435 feet)

BLM Point of Contact

Name: RYAN JOYNER
Title: Physical Scientist
Phone: (970) 385-1242
Email: rjoyner@blm.gov

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

OIL CONSERVATION DIVISION

1220 South St. Francis Drive
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011

Submit one copy to
Appropriate District Office

[X] AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-039-31419	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	742H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6492'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	33	31N	5W		378	NORTH	1695	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
F	31	31N	5W	2	1827	NORTH	230	WEST	RIO ARRIBA

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

T31N R5W, Section 31 : Lots 1 & 2, NE/4
T31N R5W, Section 32 : N/2
T31N R5W, Section 33 : NW/4

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

[17] OPERATOR CERTIFICATION

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

Etta Trujillo — 9/13/21
Signature — Date

Etta Trujillo
Printed Name

etrujillo@logosresourcesllc.com
E-mail Address

[18] SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

Date Revised: JANUARY 20, 2021
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

END-OF-LATERAL (D)
1827' FNL 230' FWL
SECTION 31, T31N, R5W
LAT: 36.858330 °N
LONG: 107.406399 °W
DATUM: NAD1927

LAT: 36.858336 °N
LONG: 107.407002 °W
DATUM: NAD1983

N89°49.2'W 100.0'

FIRST PERFORATION (C)
1828' FNL 330' FWL
SECTION 31, T31N, R5W
LAT: 36.858328 °N
LONG: 107.406057 °W
DATUM: NAD1927

LAT: 36.858334 °N
LONG: 107.406660 °W
DATUM: NAD1983

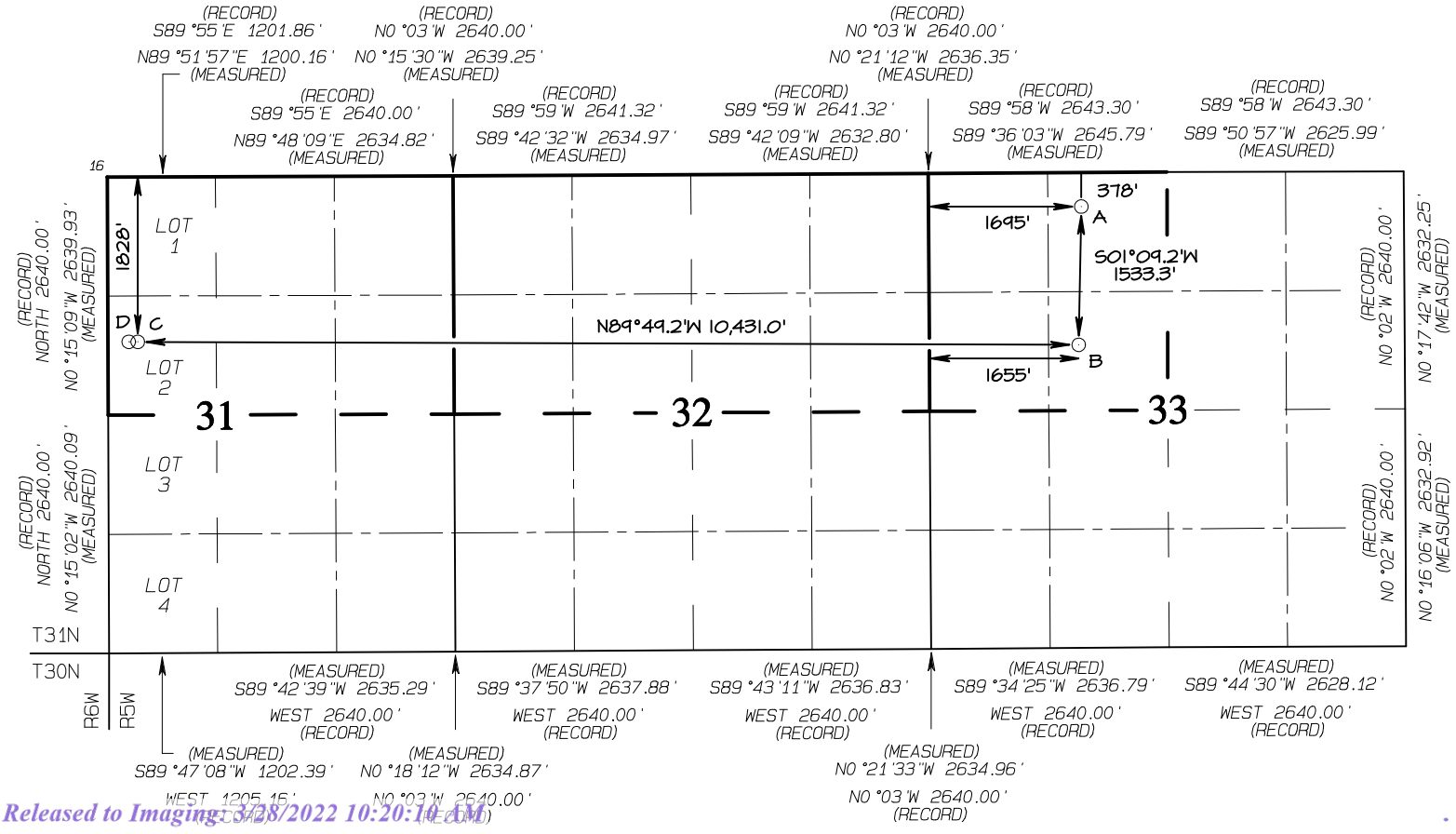
N89°49.2'W 10,431.0'

POINT-OF-ENTRY (B)
1910' FNL 1655' FWL
SECTION 33, T31N, R5W
LAT: 36.858104 °N
LONG: 107.370404 °W
DATUM: NAD1927

LAT: 36.858110 °N
LONG: 107.371006 °W
DATUM: NAD1983

S01°09.2'W 1533.3'

SURFACE LOCATION (A)
378' FNL 1695' FWL
SECTION 33, T31N, R5W
LAT: 36.862321 °N
LONG: 107.370875 °W
DATUM: NAD1983



State of New Mexico
Energy, Minerals and Natural Resources Department

Submit Electronically
Via E-permitting

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

Section 1 – Plan Description
Effective May 25, 2021

I. Operator: LOGOS Operating, LLC **OGRID:** 289408 **Date:** 03/02/ 2022

II. Type: ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: _____

III. Well(s): Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Rosa Unit 740H	30-039-31364	K 33 T31N R5W	319FNL 1681FWL	N/A	12,138	600
Rosa Unit 742H	30-039-31358	K 33 T31N R5W	378FNL 1695FWL	N/A	12,162	600

IV. Central Delivery Point Name: Harvest Gathering System [See 19.15.27.9(D)(1) NMAC]

V. Anticipated Schedule: Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Rosa Unit 740H	30-039-31364	8/25/2021	Pending	Pending	Pending	Pending
Rosa Unit 742H	30-039-31358	Pending	Pending	Pending	Pending	Pending

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

VII. Operational Practices: ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

VIII. Best Management Practices: ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 3 - Certifications

Effective May 25, 2021

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system. ***If Operator checks this box, Operator will select one of the following:***

Well Shut-In. ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

Venting and Flaring Plan. ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- **(a)** power generation on lease;
- **(b)** power generation for grid;
- **(c)** compression on lease;
- **(d)** liquids removal on lease;
- **(e)** reinjection for underground storage;
- **(f)** reinjection for temporary storage;
- **(g)** reinjection for enhanced oil recovery;
- **(h)** fuel cell production; and
- **(i)** other alternative beneficial uses approved by the division.

Section 4 - Notices

1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	Etta Trujillo
Printed Name:	Etta Trujillo
Title:	Regulatory Specialist
E-mail Address:	etrujillo@logosresourcesllc.com
Date:	03/02/2022
Phone:	(505) 324-4154

OIL CONSERVATION DIVISION
(Only applicable when submitted as a standalone form)

Approved By:	
Title:	
Approval Date:	
Conditions of Approval:	

LOGOS Operating, LLC

VI. Separation Equipment

The operator will select separation equipment for the maximum anticipated throughput and pressure to optimize gas capture. Separation equipment is sized according to manufacturer's design specifications. Separation vessels are built following the A.S.M.E. section VII division 1 codes for pressure vessel design, fabrication, inspection, testing and certification. Anticipated well pressures and production rates are evaluated to select separation equipment according to the equipment's designed operating pressure and throughput.

After completion, the operator utilizes flowback equipment, including separators, to manage wellbore fluids and solids during the initial separation period. After the initial flowback period is complete the operator utilizes iterative facility separation equipment to ensure that optimal separation is achieved.

VII. Operational Practices 19.15.27.8 NMAC A through F

A. The operator will maximize the recovery of natural gas and minimize the amount of gas vented or flared when technically and safely feasible as further described and detailed within the following subsections (B-F of 19.15.27.8). In all cases where natural gas venting and flaring requires regulatory reporting, reporting will be submitted accurately and within the required time frames.
B. Venting and flaring during drilling operations:
    a. New Drill HZ Gas Wells: The operator drills wells in the area by utilizing a balanced mud to safely drill the wellbore. This technique prevents gas from coming to surface during the drilling process. If there is an emergency or malfunction and natural gas does come to surface the natural gas will be captured and routed to sales if technically and safely feasible.
C. Venting and flaring during completion or recompletion operations:
    a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from the newly drilled and completed wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible. During initial flowback and initial separation flowback the operator will utilize contracted flowback equipment, including separators, to manage wellbore fluids and solids. The initial flowback period will be minimized and flow will be sent to separation equipment as soon as possible to reduce the amount of gas that is vented to atmosphere. The natural gas will be utilized on site as needed for fuel gas and natural gas will be sold.

D. Venting and flaring during production operations:
    a. New Drill HZ Gas Wells: The operator's facilities are designed to handle the maximum throughput and pressures from producing wellbores. The amount of gas vented and flared will be minimized when technically and safely feasible.

    Operations will effectively manage the following scenarios to minimize the quantity of natural gas that is vented or flared:

(a) If there is an emergency or malfunction vented or flared natural gas will be reported, if required, and the emergency or malfunction will be resolved as soon as technically and safely feasible.
(b) If the wellbore needs to be unloaded to atmosphere the operator will not vent the well after the well has achieved a stabilized rate and pressure. The operator will remain on site during unloading. Plunger lift systems will be optimized to reduce the amount of natural gas venting. Downhole maintenance, such as workovers, swabbing, etc. will only be conducted as needed and best management practices will be utilized to reduce venting of natural gas.
(c) The operator will minimize the amount of time that natural gas is vented to atmosphere from gauging and sampling a storage tank or low-pressure vessel, automatic tank gauges will be the primary means of gauging. The formation is only anticipated to produce water and therefore tank emissions are anticipated to be negligible.
(d) The operator will reduce the amount of time needed for loading out liquids from a storage tanks or other low-pressure vessels whenever feasible. Operations will always utilize the water transfer systems when available. Water loading emissions are anticipated to be negligible.
(e) Equipment will be repaired and maintained routinely to minimize the venting or flaring of natural gas. Repairs and maintenance will be conducted in a manner that minimizes the amount of natural gas vented to atmosphere through the isolation of the equipment that is being repaired or maintained.
(f) Electric controllers and pumps will be installed to replace pneumatic controllers whenever feasible. Pneumatic controllers and pumps will be inspected frequently to ensure that no excess gas is vented to atmosphere.
(g) No dehydration or amine units are anticipated to be set on location.
(h) Compressors, compressor engines, turbines, flanges, connectors, valves, storage tanks, and other low-pressure vessels and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operations.
(i) Regulatory required testing, such as bradenhead and packer testing will be performed in a manner that minimizes the amount of natural gas vented to atmosphere.
(j) If natural gas does not meet gathering pipeline specifications gas samples will be collected twice per week to determine when pipeline specification gas content has been achieved. During this time frame gas will be flared and not vented to atmosphere. Natural gas that meets pipeline specifications will be sold via pipeline and natural gas that can be utilized for fuel gas will be used during this time.
(k) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

E. Performance standards:
    a. The production facilities are designed to handle the maximum throughput and pressures from producing wellbores and will be designed to minimize waste. The amount of gas vented and flared will be minimized when technically and safely feasible.
    b. All tanks that are routed to a control device that is installed after 5/25/2021 will have an automatic gauging system to minimize the amount of vented natural gas.
    c. If a flare stack is installed or replaced after 5/25/2021 it will be equipped with an automatic ignitor or continuous pilot. The flare stack will be properly sized and designed to ensure proper combustion efficiency. The flare stack will be located 100 feet away from the nearest wellhead or storage tank.
    d. AVO inspections will be conducted weekly for the year after completion and for all wells producing greater than 60,000 cubic feet of natural gas daily. The AVO inspection will include all components, including flare stacks, thief hatches, closed vent systems, pumps, compressors, pressure relief devices, valves, lines, flanges, connectors, and associated pipeline to identify any leaks and releases by comprehensive auditory, visual, and olfactory inspection. The AVO inspection records will be maintained for 5 years which will be available at the department's request. Identified leaks will be repaired as soon as feasible to minimize the amount of vented natural gas.

F. Measurement or estimation of vented and flared natural gas.
    a. The volume of natural gas that is vented, flared or consumed for beneficial use will be measured when possible, or estimated, during drilling, completions, or production operations.
    b. Equipment will be installed to measure the volume of natural gas flared for all APD's issued after 5/25/2021 on facilities that will have an average daily gas rate greater than 60,000 cubic feet of natural gas. Measurement equipment will conform to API MPMS Chapter 14.10 regulations. The measurement equipment will not have a manifold that allows the diversion of natural gas around the metering element except for the sole purpose of inspecting and servicing the measurement equipment. If metering is not practical then the volume of gas will be estimated.

LOGOS Operating, LLC
Operations Plan

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

Date:	September 3, 2021	Pool:	Basin Mancos
Well Name:	**Rosa Unit 742H**	GL Elevation:	6,492’
Surface Location:	Sec 33, T31N, R5W 378’ FNL, 1695’ FWL (36.862321º N, 107.370875º W – NAD83)	Measured Depth:	18,435’ (GL)
Bottom Hole Location:	Sec 31, T31N, R5W 1827’ FNL, 230’ FWL (36.858336º N, 107.407002º W – NAD83)	County:	Rio Arriba

Lease Serial #NMSF078773, CA Serial #NMNM78407E

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	2,685’	2,633'	*POINT LOOKOUT	5,992'	5,759'
KIRTLAND	2,819'	2,760'	*MANCOS	6,497'	6,240'
*FRUITLAND	3,301'	3,216'	KICKOFF POINT	6,215’	5,969’
*PICTURED CLIFFS	3,612'	3,510'	LANDING POINT	7,904’	7,069’
LEWIS	3,719'	3,611'			
CHACRA	4,869'	4,698'			
*CLIFF HOUSE	5,747'	5,528'			
MENEFEE	5,781'	5,560'	TD	18,435’	7,042’

* 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. Mud weights of 8.8-13 ppg will be used as necessary to maintain sufficient overbalance of reservoir pressure.

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

times.

B. **BOP TESTING:** The BOPE will be tested to **250 psi (Low) for 5 minutes** and **1500 psi (High) for 10 minutes.** Pressure test surface casing to **600 psi for 30 minutes** and intermediate casing to **1500 psi for 30 minutes.** Utilize a BOPE Testing Unit with a recording chart and appropriate test plug for testing. The drum brakes will be inspected and tested each tour. BOP equipment will be tested every 30 days, after any repairs are made to the BOP equipment, and after the BOP equipment is subjected to pressure. Annular preventers will be functionally operated at least once per week. Pipe and blind rams shall be activated each trip or but not more than once a day. The New Mexico Oil & Gas Conservation Commission and the BLM will be notified 24 hours in advance of testing of BOPE. **All tests and inspections will be recorded and logged with time and results.** A full BOP test will be conducted when initially installed for the first well on the pad or if seals subject to test pressure are broken, following related repairs and at a minimum of 30 day intervals. A BOPE Shell Test only will be conducted for subsequent wells on the pad when seals subject to pressure have not been broken or repaired and fall within the 30 day interval of first full test.

C. **GeoHazards:** There are no Geohazards

D. **Maximum Anticipated Pressure:** 7069' TVD x 0.43 = 3040 psi

E. **H2S Concerns:** – There is no record of any naturally occurring H2S in any formation in the Rosa Unit. No H2S is anticipated in this formation or this well.

III. MATERIALS

A. CASING EQUIPMENT:

CASING TYPE	OH SIZE (IN)	DEPTH (MD)	CSG SIZE	WEIGHT	GRADE	CONN
SURFACE	17.5"	320' or greater	13.375"	54.5 LBS	J-55 or equiv	LTC/BTC
INTERMEDIATE	12.25"	6,572'	9.625"	43.5 LBS	N-80, L-80, P-110	LTC/BTC
PRODUCTION	8.5"	18,435'	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' TVD. 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 cancelation 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. 263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 cuf/sk yield, 30% excess.

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

	Top (ft)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	6,092	480	0.31318	1.3	213	38	1.15	185	15.8
Stage 1 Lead	4,922	1,170	0.31318	1.3	476	85	2.30	207	12.3
					689	**123**		**392**	
Stage 2 Tail	3,892	1,030	0.31318	1.3	419	75	1.50	280	13.5
Stage 2 Lead	3,354	538	0.31318	1.3	219	39	2.30	95	12.3
					638	**114**		**375**	
Stage 3 Tail	2,674	680	0.31318	1.3	277	49	1.99	139	12.8
Stage 3 Lead	320	2,354	0.31318	1.3	958	171	2.53	379	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.53	46	12
					1,351	**241**		**564**	
All Stage Totals					**2678**	**478**		**1331**	

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

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

	Top (ft)	Footage (ft)	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	6,472	100	0.2531	1	25	5	1.56	16	13
Open Hole Lead	6,572	11,863	0.2291	1.15	3,136	559	1.56	2,010	13
					3,161	**564**		**2,026**	

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

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

ROSA UNIT 742H

IV. COMPLETION

A. CBL

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

B. PRESSURE TEST

C. With frac stack installed on wellhead, pressure test 5-1/2" casing to 1575 psi (0.22 psi/ft * 7,079' 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 and flowback lateral.

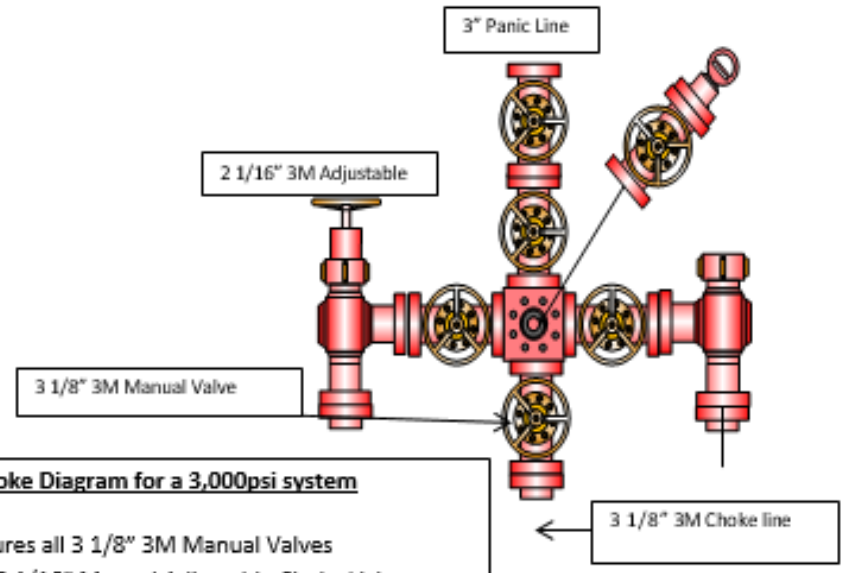
E. PRODUCTION TUBING

2-7/8", 6.5#, J-55, EUE tubing will be run once volumes and pressures dictate which may be up to one year 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.

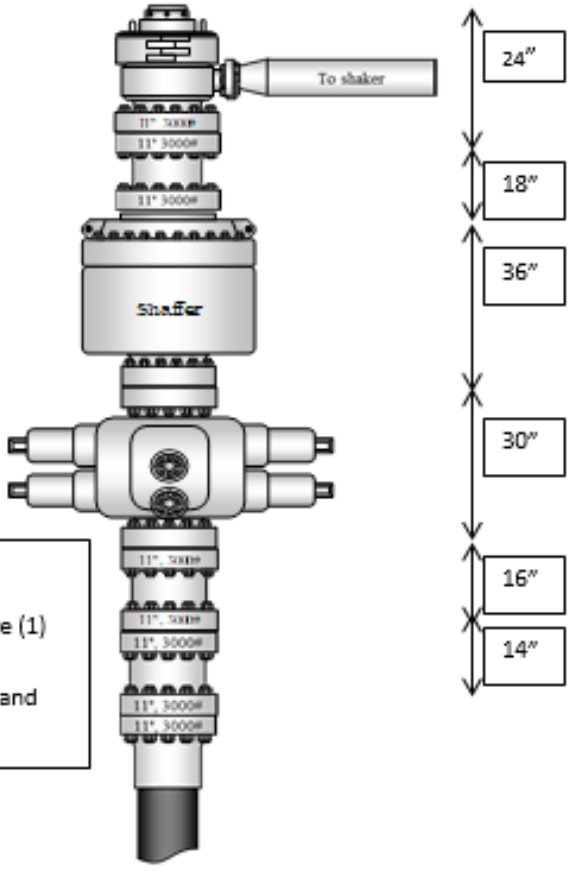
LOGOS RESOURCES II, LLC

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



Choke Diagram for a 3,000psi system

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



11" 3,000psi BOP

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

ROSA UNIT 742H

Surface Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

					1.125	1.000		1.400
	Size	Weight	Grade	Conn	Collapse	Burst	70% Burst	Tension (Body)
Surface	13.375	54.5	J-55	BTC	1,130	2,730	1,911	853,000

Collapse							
	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	
54.5 J-55 BTC	320	0.00	15.80	0	263	4.30	full evacuation with 15.8 ppg m

Burst							
54.5 J-55 BTC	320	15.80	0.00	1763	0	1.55	1500 psi casing test

Tension							
54.5 J-55 BTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	320	9.00	17,440	15,044	115,044	7.41	100k over pull
Tension (Conn)	320	9.00	17,440	15,044	115,044	7.90	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8626					

Intermedate Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

					1.125	1.000		1.400
	Size	Weight	Grade	Conn	Collapse	Burst	80% Burst	Tension (Body)
Intermediate	9.625	43.5	N-80 or L-80	LTC	3,810	6,330	5,064	1,005,000
	9.625	43.5	N-80 or L-80	BTC	3,810	6,330	5,064	1,005,000
	9.625	43.5	P-110	BTC	4,420	8,700	6,960	1,381,000

Collapse							
	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	
43.5 N-80 or L-80 L	6,572	0.00	9.50	0	3247	1.17	full evacuation with 9.5 ppg mu
43.5 N-80 or L-80 E	6,572	0.00	9.50	0	3247	1.17	full evacuation with 9.5 ppg mu

Burst							
43.5 N-80 or L-80 L	6,572	9.50	0.00	4747	0	1.33	1500 psi casing test
43.5 N-80 or L-80 E	6,572	9.50	0.00	4747	0	1.33	1500 psi casing test

Tension							
43.5 N-80 or L-80 LTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	6,572	9.00	285,882	246,601	346,601	2.90	100k over pull
Tension (Conn)	6,572	9.00	285,882	246,601	346,601	2.38	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8626					
43.5 N-80 or L-80 BTC							
Tension (Body)	6,572	9.00	285,882	246,601	346,601	2.90	100k over pull
Tension (Conn)	6,572	9.00	285,882	246,601	346,601	3.10	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8626					

Production Casing Design - Evacuated/Max SICP (collaspe & burst), 100k overpull (tension)

					1.125	1.000		1.400
	Size	Weight	Grade	Conn	Collapse	Burst	80% Burst	Tension (Body)
Production	5.5	20	P110	LTC	11,080	12,630	10,104	641,000
	5.5	20	P110	BTC	11,080	12,360	9,888	641,000

Collapse							
	Casing Depth TVD	MW in	MW out	Pres in	Pres out	SF	
20 P110 LTC	7,042	0.00	13.30	0	4870	2.28	full evacuation with 13.3 ppg m
20 P110 BTC	7,042	0.00	13.30	0	4870	2.28	full evacuation with 13.3 ppg m

Burst							
20 P110 LTC	7,042	13.30	0.00	11370	0	1.11	1500 psi casing test
20 P110 BTC	7,042	13.30	0.00	11370	0	1.09	1501 psi casing test

Tension							
20 P110 LTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	7,042	9.00	140,840	121,488	221,488	2.89	100k over pull
Tension (Conn)	7,042	9.00	140,840	121,488	221,488	2.47	100k over pull
		BF					BF= 1- (MW)/65.5
		0.8626					
20 P110 BTC		Mud Wt	Air Wt	Bouy Wt	BW +100k	SF	
Tension (Body)	7,042	9.00	140,840	121,488	221,488	2.89	100k over pull
Tension (Conn)	7,042	9.00	140,840	121,488	221,488	3.01	100k over pull
		BF					BF= 1- (MW)/65.5

LOGOS RESOURCES II, LLC

Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 31
Well: Rosa Unit #742H
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

LONESTAR CONSULTING

WELL DETAILS: Rosa Unit #742H

GL 6492' @ 6492.00ft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2133536.35	2858376.76	36.8623210	-107.3708750	B5

Plan: Plan #2 (Rosa Unit #742H/OH)

Created By: Janie Collins Date: 11:02, January 26 2021

Azimuths to True North
Magnetic North: 10.78°
Magnetic Field
Strength: 51651.9nT
Dip Angle: 63.22°
Date: 12/31/2004
Model: IGRF2005

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
742H POE	7069.00	-1532.92	-38.38	2132003.27	2858345.81	36.8581105	-107.3710062
742H BHL Rev 1	7042.00	-1448.80	-10569.14	2132036.39	2847814.78	36.8583360	-107.4070020
742H FPerf	7042.00	-1449.57	-10469.09	2132036.11	2847914.84	36.8583340	-107.4066600

SECTION DETAILS

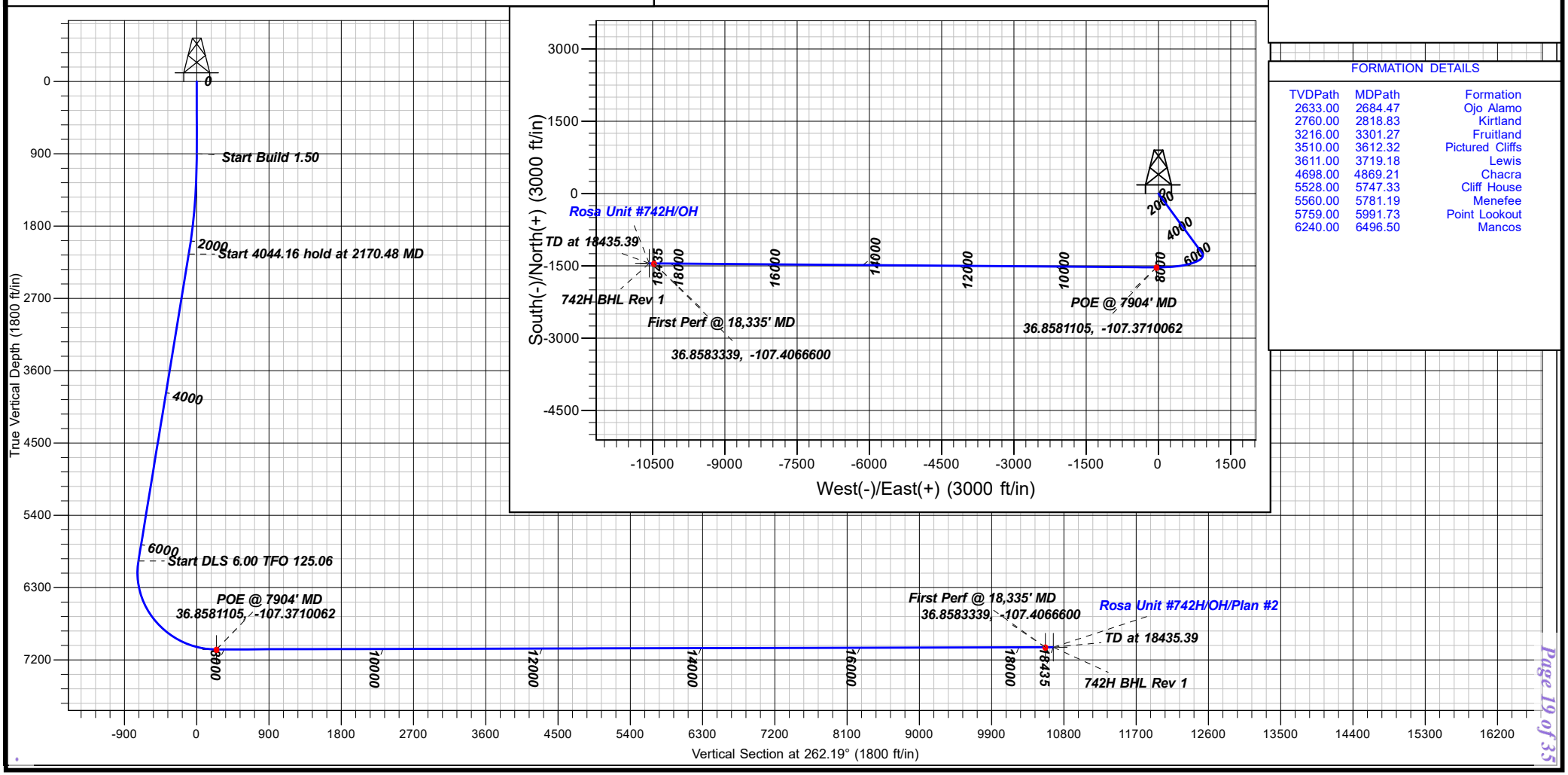
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	
2170.48	19.06	143.82	2147.19	-168.99	123.57	1.50	143.82	-99.48	
6214.64	19.06	143.82	5969.70	-1234.86	903.02	0.00	0.00	-726.95	
7904.25	90.15	270.46	7069.00	-1532.92	-38.38	6.00	125.06	246.20	742H POE
18435.39	90.15	270.46	7042.00	-1448.80	-10569.14	0.00	0.00	10667.98	742H BHL Rev 1

CASING DETAILS

TVD	MD	Name

FORMATION DETAILS

TVDPath	MDPath	Formation
2633.00	2684.47	Ojo Alamo
2760.00	2818.83	Kirtland
3216.00	3301.27	Fruitland
3510.00	3612.32	Pictured Cliffs
3611.00	3719.18	Lewis
4698.00	4869.21	Chacra
5528.00	5747.33	Cliff House
5560.00	5781.19	Menefee
5759.00	5991.73	Point Lookout
6240.00	6496.50	Mancos



Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 31
Rosa Unit #742H - Slot B5

OH

Plan: Plan #2

Standard Planning Report

26 January, 2021

Lonestar Consulting
Planning Report

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**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 31

Site Position:		**Northing:**	2,133,595.07 usft	**Latitude:**	36.8624824
From:	Map	**Easting:**	2,858,361.84 usft	**Longitude:**	-107.3709251
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in		

Well Rosa Unit #742H - Slot B5

Well Position	**+N/-S**	0.00 ft	**Northing:**	2,133,536.35 usft	**Latitude:**	36.8623210
	+E/-W	0.00 ft	**Easting:**	2,858,376.76 usft	**Longitude:**	-107.3708751
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,492.00 ft
Grid Convergence:		0.28 °				

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2000	12/31/2004	10.79	63.87	51,651.91913015

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	262.19

Plan Survey Tool Program **Date** 1/26/2021

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,435.39	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	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,170.48	19.06	143.82	2,147.19	-168.99	123.57	1.50	1.50	0.00	143.82	
6,214.64	19.06	143.82	5,969.70	-1,234.86	903.02	0.00	0.00	0.00	0.00	
7,904.25	90.15	270.46	7,069.00	-1,532.92	-38.38	6.00	4.21	7.49	125.06	742H POE
18,435.39	90.15	270.46	7,042.00	-1,448.80	-10,569.14	0.00	0.00	0.00	0.00	742H BHL Rev 1

LOGOS RESOURCES II, LLC

Lonestar Consulting

Planning Report

LONESTAR CONSULTING

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**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	1.50	143.82	999.99	-1.06	0.77	-0.62	1.50	1.50	0.00
1,100.00	3.00	143.82	1,099.91	-4.23	3.09	-2.49	1.50	1.50	0.00
1,200.00	4.50	143.82	1,199.69	-9.50	6.95	-5.60	1.50	1.50	0.00
1,300.00	6.00	143.82	1,299.27	-16.89	12.35	-9.94	1.50	1.50	0.00
1,400.00	7.50	143.82	1,398.57	-26.38	19.29	-15.53	1.50	1.50	0.00
1,500.00	9.00	143.82	1,497.54	-37.96	27.76	-22.35	1.50	1.50	0.00
1,600.00	10.50	143.82	1,596.09	-51.63	37.76	-30.39	1.50	1.50	0.00
1,700.00	12.00	143.82	1,694.16	-67.38	49.27	-39.66	1.50	1.50	0.00
1,800.00	13.50	143.82	1,791.70	-85.19	62.30	-50.15	1.50	1.50	0.00
1,900.00	15.00	143.82	1,888.62	-105.06	76.83	-61.85	1.50	1.50	0.00
2,000.00	16.50	143.82	1,984.86	-126.97	92.85	-74.75	1.50	1.50	0.00
2,100.00	18.00	143.82	2,080.36	-150.91	110.35	-88.84	1.50	1.50	0.00
2,170.48	19.06	143.82	2,147.19	-168.99	123.57	-99.48	1.50	1.50	0.00
2,200.00	19.06	143.82	2,175.09	-176.76	129.26	-104.06	0.00	0.00	0.00
2,300.00	19.06	143.82	2,269.61	-203.12	148.54	-119.58	0.00	0.00	0.00
2,400.00	19.06	143.82	2,364.12	-229.48	167.81	-135.09	0.00	0.00	0.00
2,500.00	19.06	143.82	2,458.64	-255.83	187.08	-150.61	0.00	0.00	0.00
2,600.00	19.06	143.82	2,553.16	-282.19	206.36	-166.12	0.00	0.00	0.00
2,700.00	19.06	143.82	2,647.68	-308.54	225.63	-181.64	0.00	0.00	0.00
2,800.00	19.06	143.82	2,742.20	-334.90	244.90	-197.15	0.00	0.00	0.00
2,900.00	19.06	143.82	2,836.72	-361.26	264.18	-212.67	0.00	0.00	0.00
3,000.00	19.06	143.82	2,931.24	-387.61	283.45	-228.18	0.00	0.00	0.00
3,100.00	19.06	143.82	3,025.76	-413.97	302.72	-243.70	0.00	0.00	0.00
3,200.00	19.06	143.82	3,120.28	-440.32	322.00	-259.21	0.00	0.00	0.00
3,300.00	19.06	143.82	3,214.80	-466.68	341.27	-274.73	0.00	0.00	0.00
3,400.00	19.06	143.82	3,309.32	-493.04	360.54	-290.25	0.00	0.00	0.00
3,500.00	19.06	143.82	3,403.84	-519.39	379.82	-305.76	0.00	0.00	0.00
3,600.00	19.06	143.82	3,498.36	-545.75	399.09	-321.28	0.00	0.00	0.00
3,700.00	19.06	143.82	3,592.88	-572.10	418.37	-336.79	0.00	0.00	0.00
3,800.00	19.06	143.82	3,687.39	-598.46	437.64	-352.31	0.00	0.00	0.00
3,900.00	19.06	143.82	3,781.91	-624.82	456.91	-367.82	0.00	0.00	0.00
4,000.00	19.06	143.82	3,876.43	-651.17	476.19	-383.34	0.00	0.00	0.00
4,100.00	19.06	143.82	3,970.95	-677.53	495.46	-398.85	0.00	0.00	0.00
4,200.00	19.06	143.82	4,065.47	-703.88	514.73	-414.37	0.00	0.00	0.00
4,300.00	19.06	143.82	4,159.99	-730.24	534.01	-429.89	0.00	0.00	0.00
4,400.00	19.06	143.82	4,254.51	-756.60	553.28	-445.40	0.00	0.00	0.00
4,500.00	19.06	143.82	4,349.03	-782.95	572.55	-460.92	0.00	0.00	0.00
4,600.00	19.06	143.82	4,443.55	-809.31	591.83	-476.43	0.00	0.00	0.00
4,700.00	19.06	143.82	4,538.07	-835.66	611.10	-491.95	0.00	0.00	0.00
4,800.00	19.06	143.82	4,632.59	-862.02	630.37	-507.46	0.00	0.00	0.00
4,900.00	19.06	143.82	4,727.11	-888.38	649.65	-522.98	0.00	0.00	0.00
5,000.00	19.06	143.82	4,821.63	-914.73	668.92	-538.49	0.00	0.00	0.00
5,100.00	19.06	143.82	4,916.15	-941.09	688.19	-554.01	0.00	0.00	0.00
5,200.00	19.06	143.82	5,010.66	-967.44	707.47	-569.52	0.00	0.00	0.00

Lonestar Consulting

Planning Report

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**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	19.06	143.82	5,105.18	-993.80	726.74	-585.04	0.00	0.00	0.00
5,400.00	19.06	143.82	5,199.70	-1,020.16	746.01	-600.56	0.00	0.00	0.00
5,500.00	19.06	143.82	5,294.22	-1,046.51	765.29	-616.07	0.00	0.00	0.00
5,600.00	19.06	143.82	5,388.74	-1,072.87	784.56	-631.59	0.00	0.00	0.00
5,700.00	19.06	143.82	5,483.26	-1,099.22	803.83	-647.10	0.00	0.00	0.00
5,800.00	19.06	143.82	5,577.78	-1,125.58	823.11	-662.62	0.00	0.00	0.00
5,900.00	19.06	143.82	5,672.30	-1,151.94	842.38	-678.13	0.00	0.00	0.00
6,000.00	19.06	143.82	5,766.82	-1,178.29	861.65	-693.65	0.00	0.00	0.00
6,100.00	19.06	143.82	5,861.34	-1,204.65	880.93	-709.16	0.00	0.00	0.00
6,200.00	19.06	143.82	5,955.86	-1,231.00	900.20	-724.68	0.00	0.00	0.00
6,214.64	19.06	143.82	5,969.70	-1,234.86	903.02	-726.95	0.00	0.00	0.00
6,300.00	16.63	158.61	6,050.98	-1,257.50	915.71	-736.45	6.00	-2.84	17.33
6,400.00	15.50	180.03	6,147.16	-1,284.22	920.93	-737.99	6.00	-1.13	21.42
6,500.00	16.56	201.55	6,243.36	-1,310.86	915.68	-729.17	6.00	1.06	21.51
6,600.00	19.45	218.67	6,338.52	-1,337.14	900.03	-710.10	6.00	2.89	17.12
6,700.00	23.51	230.81	6,431.60	-1,362.77	874.15	-680.97	6.00	4.06	12.14
6,800.00	28.23	239.32	6,521.58	-1,387.46	838.31	-642.12	6.00	4.73	8.51
6,900.00	33.34	245.49	6,607.48	-1,410.96	792.92	-593.96	6.00	5.11	6.17
7,000.00	38.68	250.15	6,688.35	-1,432.99	738.47	-537.02	6.00	5.34	4.66
7,100.00	44.17	253.83	6,763.31	-1,453.33	675.56	-471.92	6.00	5.49	3.68
7,200.00	49.75	256.84	6,831.54	-1,471.74	604.87	-399.39	6.00	5.58	3.01
7,300.00	55.40	259.39	6,892.29	-1,488.02	527.18	-320.21	6.00	5.65	2.55
7,400.00	61.10	261.61	6,944.90	-1,502.00	443.35	-235.26	6.00	5.70	2.22
7,500.00	66.83	263.60	6,988.78	-1,513.52	354.28	-145.45	6.00	5.73	1.99
7,600.00	72.58	265.42	7,023.45	-1,522.46	260.97	-51.78	6.00	5.75	1.83
7,700.00	78.34	267.14	7,048.55	-1,528.72	164.42	44.72	6.00	5.77	1.71
7,800.00	84.12	268.78	7,063.79	-1,532.23	65.69	143.01	6.00	5.78	1.64
7,900.00	89.90	270.39	7,069.00	-1,532.95	-34.12	242.00	6.00	5.78	1.61
7,904.25	90.15	270.46	7,069.00	-1,532.92	-38.38	246.20	6.00	5.78	1.60
8,000.00	90.15	270.46	7,068.75	-1,532.15	-134.12	340.96	0.00	0.00	0.00
8,100.00	90.15	270.46	7,068.50	-1,531.35	-234.12	439.92	0.00	0.00	0.00
8,200.00	90.15	270.46	7,068.24	-1,530.55	-334.11	538.88	0.00	0.00	0.00
8,300.00	90.15	270.46	7,067.99	-1,529.76	-434.11	637.84	0.00	0.00	0.00
8,400.00	90.15	270.46	7,067.73	-1,528.96	-534.11	736.80	0.00	0.00	0.00
8,500.00	90.15	270.46	7,067.47	-1,528.16	-634.10	835.76	0.00	0.00	0.00
8,600.00	90.15	270.46	7,067.22	-1,527.36	-734.10	934.73	0.00	0.00	0.00
8,700.00	90.15	270.46	7,066.96	-1,526.56	-834.10	1,033.69	0.00	0.00	0.00
8,800.00	90.15	270.46	7,066.70	-1,525.76	-934.09	1,132.65	0.00	0.00	0.00
8,900.00	90.15	270.46	7,066.45	-1,524.96	-1,034.09	1,231.61	0.00	0.00	0.00
9,000.00	90.15	270.46	7,066.19	-1,524.16	-1,134.09	1,330.57	0.00	0.00	0.00
9,100.00	90.15	270.46	7,065.93	-1,523.37	-1,234.08	1,429.53	0.00	0.00	0.00
9,200.00	90.15	270.46	7,065.68	-1,522.57	-1,334.08	1,528.50	0.00	0.00	0.00
9,300.00	90.15	270.46	7,065.42	-1,521.77	-1,434.07	1,627.46	0.00	0.00	0.00
9,400.00	90.15	270.46	7,065.17	-1,520.97	-1,534.07	1,726.42	0.00	0.00	0.00
9,500.00	90.15	270.46	7,064.91	-1,520.17	-1,634.07	1,825.38	0.00	0.00	0.00
9,600.00	90.15	270.46	7,064.65	-1,519.37	-1,734.06	1,924.34	0.00	0.00	0.00
9,700.00	90.15	270.46	7,064.40	-1,518.57	-1,834.06	2,023.30	0.00	0.00	0.00
9,800.00	90.15	270.46	7,064.14	-1,517.77	-1,934.06	2,122.26	0.00	0.00	0.00
9,900.00	90.15	270.46	7,063.88	-1,516.98	-2,034.05	2,221.23	0.00	0.00	0.00
10,000.00	90.15	270.46	7,063.63	-1,516.18	-2,134.05	2,320.19	0.00	0.00	0.00
10,100.00	90.15	270.46	7,063.37	-1,515.38	-2,234.05	2,419.15	0.00	0.00	0.00
10,200.00	90.15	270.46	7,063.11	-1,514.58	-2,334.04	2,518.11	0.00	0.00	0.00
10,300.00	90.15	270.46	7,062.86	-1,513.78	-2,434.04	2,617.07	0.00	0.00	0.00
10,400.00	90.15	270.46	7,062.60	-1,512.98	-2,534.04	2,716.03	0.00	0.00	0.00

Lonestar Consulting

Planning Report

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**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	90.15	270.46	7,062.35	-1,512.18	-2,634.03	2,815.00	0.00	0.00	0.00
10,600.00	90.15	270.46	7,062.09	-1,511.38	-2,734.03	2,913.96	0.00	0.00	0.00
10,700.00	90.15	270.46	7,061.83	-1,510.59	-2,834.03	3,012.92	0.00	0.00	0.00
10,800.00	90.15	270.46	7,061.58	-1,509.79	-2,934.02	3,111.88	0.00	0.00	0.00
10,900.00	90.15	270.46	7,061.32	-1,508.99	-3,034.02	3,210.84	0.00	0.00	0.00
11,000.00	90.15	270.46	7,061.06	-1,508.19	-3,134.01	3,309.80	0.00	0.00	0.00
11,100.00	90.15	270.46	7,060.81	-1,507.39	-3,234.01	3,408.77	0.00	0.00	0.00
11,200.00	90.15	270.46	7,060.55	-1,506.59	-3,334.01	3,507.73	0.00	0.00	0.00
11,300.00	90.15	270.46	7,060.29	-1,505.79	-3,434.00	3,606.69	0.00	0.00	0.00
11,400.00	90.15	270.46	7,060.04	-1,505.00	-3,534.00	3,705.65	0.00	0.00	0.00
11,500.00	90.15	270.46	7,059.78	-1,504.20	-3,634.00	3,804.61	0.00	0.00	0.00
11,600.00	90.15	270.46	7,059.52	-1,503.40	-3,733.99	3,903.57	0.00	0.00	0.00
11,700.00	90.15	270.46	7,059.27	-1,502.60	-3,833.99	4,002.53	0.00	0.00	0.00
11,800.00	90.15	270.46	7,059.01	-1,501.80	-3,933.99	4,101.50	0.00	0.00	0.00
11,900.00	90.15	270.46	7,058.76	-1,501.00	-4,033.98	4,200.46	0.00	0.00	0.00
12,000.00	90.15	270.46	7,058.50	-1,500.20	-4,133.98	4,299.42	0.00	0.00	0.00
12,100.00	90.15	270.46	7,058.24	-1,499.40	-4,233.98	4,398.38	0.00	0.00	0.00
12,200.00	90.15	270.46	7,057.99	-1,498.61	-4,333.97	4,497.34	0.00	0.00	0.00
12,300.00	90.15	270.46	7,057.73	-1,497.81	-4,433.97	4,596.30	0.00	0.00	0.00
12,400.00	90.15	270.46	7,057.47	-1,497.01	-4,533.97	4,695.27	0.00	0.00	0.00
12,500.00	90.15	270.46	7,057.22	-1,496.21	-4,633.96	4,794.23	0.00	0.00	0.00
12,600.00	90.15	270.46	7,056.96	-1,495.41	-4,733.96	4,893.19	0.00	0.00	0.00
12,700.00	90.15	270.46	7,056.70	-1,494.61	-4,833.95	4,992.15	0.00	0.00	0.00
12,800.00	90.15	270.46	7,056.45	-1,493.81	-4,933.95	5,091.11	0.00	0.00	0.00
12,900.00	90.15	270.46	7,056.19	-1,493.01	-5,033.95	5,190.07	0.00	0.00	0.00
13,000.00	90.15	270.46	7,055.94	-1,492.22	-5,133.94	5,289.03	0.00	0.00	0.00
13,100.00	90.15	270.46	7,055.68	-1,491.42	-5,233.94	5,388.00	0.00	0.00	0.00
13,200.00	90.15	270.46	7,055.42	-1,490.62	-5,333.94	5,486.96	0.00	0.00	0.00
13,300.00	90.15	270.46	7,055.17	-1,489.82	-5,433.93	5,585.92	0.00	0.00	0.00
13,400.00	90.15	270.46	7,054.91	-1,489.02	-5,533.93	5,684.88	0.00	0.00	0.00
13,500.00	90.15	270.46	7,054.65	-1,488.22	-5,633.93	5,783.84	0.00	0.00	0.00
13,600.00	90.15	270.46	7,054.40	-1,487.42	-5,733.92	5,882.80	0.00	0.00	0.00
13,700.00	90.15	270.46	7,054.14	-1,486.62	-5,833.92	5,981.77	0.00	0.00	0.00
13,800.00	90.15	270.46	7,053.88	-1,485.83	-5,933.92	6,080.73	0.00	0.00	0.00
13,900.00	90.15	270.46	7,053.63	-1,485.03	-6,033.91	6,179.69	0.00	0.00	0.00
14,000.00	90.15	270.46	7,053.37	-1,484.23	-6,133.91	6,278.65	0.00	0.00	0.00
14,100.00	90.15	270.46	7,053.12	-1,483.43	-6,233.91	6,377.61	0.00	0.00	0.00
14,200.00	90.15	270.46	7,052.86	-1,482.63	-6,333.90	6,476.57	0.00	0.00	0.00
14,300.00	90.15	270.46	7,052.60	-1,481.83	-6,433.90	6,575.53	0.00	0.00	0.00
14,400.00	90.15	270.46	7,052.35	-1,481.03	-6,533.90	6,674.50	0.00	0.00	0.00
14,500.00	90.15	270.46	7,052.09	-1,480.24	-6,633.89	6,773.46	0.00	0.00	0.00
14,600.00	90.15	270.46	7,051.83	-1,479.44	-6,733.89	6,872.42	0.00	0.00	0.00
14,700.00	90.15	270.46	7,051.58	-1,478.64	-6,833.88	6,971.38	0.00	0.00	0.00
14,800.00	90.15	270.46	7,051.32	-1,477.84	-6,933.88	7,070.34	0.00	0.00	0.00
14,900.00	90.15	270.46	7,051.06	-1,477.04	-7,033.88	7,169.30	0.00	0.00	0.00
15,000.00	90.15	270.46	7,050.81	-1,476.24	-7,133.87	7,268.27	0.00	0.00	0.00
15,100.00	90.15	270.46	7,050.55	-1,475.44	-7,233.87	7,367.23	0.00	0.00	0.00
15,200.00	90.15	270.46	7,050.30	-1,474.64	-7,333.87	7,466.19	0.00	0.00	0.00
15,300.00	90.15	270.46	7,050.04	-1,473.85	-7,433.86	7,565.15	0.00	0.00	0.00
15,400.00	90.15	270.46	7,049.78	-1,473.05	-7,533.86	7,664.11	0.00	0.00	0.00
15,500.00	90.15	270.46	7,049.53	-1,472.25	-7,633.86	7,763.07	0.00	0.00	0.00
15,600.00	90.15	270.46	7,049.27	-1,471.45	-7,733.85	7,862.04	0.00	0.00	0.00
15,700.00	90.15	270.46	7,049.01	-1,470.65	-7,833.85	7,961.00	0.00	0.00	0.00
15,800.00	90.15	270.46	7,048.76	-1,469.85	-7,933.85	8,059.96	0.00	0.00	0.00

LOGOS RESOURCES II, LLC

Lonestar Consulting

Planning Report

LONESTAR CONSULTING

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**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	90.15	270.46	7,048.50	-1,469.05	-8,033.84	8,158.92	0.00	0.00	0.00
16,000.00	90.15	270.46	7,048.24	-1,468.25	-8,133.84	8,257.88	0.00	0.00	0.00
16,100.00	90.15	270.46	7,047.99	-1,467.46	-8,233.84	8,356.84	0.00	0.00	0.00
16,200.00	90.15	270.46	7,047.73	-1,466.66	-8,333.83	8,455.80	0.00	0.00	0.00
16,300.00	90.15	270.46	7,047.47	-1,465.86	-8,433.83	8,554.77	0.00	0.00	0.00
16,400.00	90.15	270.46	7,047.22	-1,465.06	-8,533.82	8,653.73	0.00	0.00	0.00
16,500.00	90.15	270.46	7,046.96	-1,464.26	-8,633.82	8,752.69	0.00	0.00	0.00
16,600.00	90.15	270.46	7,046.71	-1,463.46	-8,733.82	8,851.65	0.00	0.00	0.00
16,700.00	90.15	270.46	7,046.45	-1,462.66	-8,833.81	8,950.61	0.00	0.00	0.00
16,800.00	90.15	270.46	7,046.19	-1,461.87	-8,933.81	9,049.57	0.00	0.00	0.00
16,900.00	90.15	270.46	7,045.94	-1,461.07	-9,033.81	9,148.54	0.00	0.00	0.00
17,000.00	90.15	270.46	7,045.68	-1,460.27	-9,133.80	9,247.50	0.00	0.00	0.00
17,100.00	90.15	270.46	7,045.42	-1,459.47	-9,233.80	9,346.46	0.00	0.00	0.00
17,200.00	90.15	270.46	7,045.17	-1,458.67	-9,333.80	9,445.42	0.00	0.00	0.00
17,300.00	90.15	270.46	7,044.91	-1,457.87	-9,433.79	9,544.38	0.00	0.00	0.00
17,400.00	90.15	270.46	7,044.65	-1,457.07	-9,533.79	9,643.34	0.00	0.00	0.00
17,500.00	90.15	270.46	7,044.40	-1,456.27	-9,633.79	9,742.30	0.00	0.00	0.00
17,600.00	90.15	270.46	7,044.14	-1,455.48	-9,733.78	9,841.27	0.00	0.00	0.00
17,700.00	90.15	270.46	7,043.89	-1,454.68	-9,833.78	9,940.23	0.00	0.00	0.00
17,800.00	90.15	270.46	7,043.63	-1,453.88	-9,933.78	10,039.19	0.00	0.00	0.00
17,900.00	90.15	270.46	7,043.37	-1,453.08	-10,033.77	10,138.15	0.00	0.00	0.00
18,000.00	90.15	270.46	7,043.12	-1,452.28	-10,133.77	10,237.11	0.00	0.00	0.00
18,100.00	90.15	270.46	7,042.86	-1,451.48	-10,233.77	10,336.07	0.00	0.00	0.00
18,200.00	90.15	270.46	7,042.60	-1,450.68	-10,333.76	10,435.04	0.00	0.00	0.00
18,300.00	90.15	270.46	7,042.35	-1,449.88	-10,433.76	10,534.00	0.00	0.00	0.00
18,400.00	90.15	270.46	7,042.09	-1,449.09	-10,533.75	10,632.96	0.00	0.00	0.00
18,435.39	90.15	270.46	7,042.00	-1,448.80	-10,569.14	10,667.98	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
742H FPerf	0.00	0.00	7,042.00	-1,449.57	-10,469.09	2,132,036.10	2,847,914.84	36.8583340	-107.4066600
- plan misses target center by 0.26ft at 18335.33ft MD (7042.26 TVD, -1449.60 N, -10469.09 E)									
- Point									
742H BHL Rev 1	0.00	0.00	7,042.00	-1,448.80	-10,569.14	2,132,036.38	2,847,814.78	36.8583360	-107.4070020
- plan hits target center									
- Point									
742H POE	0.00	0.00	7,069.00	-1,532.92	-38.38	2,132,003.27	2,858,345.81	36.8581104	-107.3710062
- plan hits target center									
- Point									

LOGOS RESOURCES II, LLC

Lonestar Consulting

Planning Report

LONESTAR CONSULTING

Database:	EDM _16.0	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Company:	Logos Operating LLC	**TVD Reference:**	GL 6492' @ 6492.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6492' @ 6492.00ft
Site:	Rosa Unit 31	**North Reference:**	True
Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,684.47	2,633.00	Ojo Alamo		0.00	0.00
2,818.83	2,760.00	Kirtland		0.00	0.00
3,301.27	3,216.00	Fruitland		0.00	0.00
3,612.32	3,510.00	Pictured Cliffs		0.00	0.00
3,719.18	3,611.00	Lewis		0.00	0.00
4,869.21	4,698.00	Chacra		0.00	0.00
5,747.33	5,528.00	Cliff House		0.00	0.00
5,781.19	5,560.00	Menefee		0.00	0.00
5,991.73	5,759.00	Point Lookout		0.00	0.00
6,496.50	6,240.00	Mancos		0.00	0.00

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
900.00	900.00	0.00	0.00	Start Build 1.50
2,170.48	2,147.19	-168.99	123.57	Start 4044.16 hold at 2170.48 MD
6,214.64	5,969.70	-1,234.86	903.02	Start DLS 6.00 TFO 125.06
7,904.25	7,069.00	-1,532.92	-38.37	36.8581105, -107.3710062
7,904.25	7,069.00	-1,532.92	-38.38	POE @ 7904' MD
18,335.33	7,042.26	-1,449.60	-10,469.09	First Perf @ 18,335' MD
18,335.33	7,042.26	-1,449.60	-10,469.09	36.8583339, -107.4066600
18,435.39	7,042.00	-1,448.80	-10,569.14	TD at 18435.39

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 31
Rosa Unit #742H

OH
Plan #2

Anticollision Summary Report

26 January, 2021

Lonestar Consulting

Anticollision Summary Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**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	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 10,000.00ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 1/26/2021

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	18,435.39	Plan #2 (OH)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Rosa Unit 31						
Rosa Unit #740H - OH - Plan #2	900.00	900.00	60.58	54.13	9.389	CC, ES
Rosa Unit #740H - OH - Plan #2	18,435.39	18,251.50	1,455.66	784.00	2.167	SF
Rosa Unit #741H - OH - Plan #1	882.14	883.29	15.24	8.96	2.427	CC
Rosa Unit #741H - OH - Plan #1	2,187.16	2,182.04	17.15	0.46	1.027	Level 2, ES, SF
Rosa Unit #743H - OH - Plan #1	500.00	500.00	45.76	42.18	12.766	CC
Rosa Unit #743H - OH - Plan #1	600.00	599.61	46.18	41.88	10.759	ES
Rosa Unit #743H - OH - Plan #1	900.00	898.31	54.94	48.52	8.564	SF
Rosa Unit #744H - OH - Plan #1	821.54	822.22	25.53	19.70	4.373	CC, ES
Rosa Unit #744H - OH - Plan #1	900.00	900.00	27.34	20.95	4.277	SF
Rosa Unit #745H - OH - Plan #1	500.00	500.00	9.48	5.90	2.645	CC, ES
Rosa Unit #745H - OH - Plan #1	7,700.00	7,574.68	100.91	35.35	1.539	SF
Sec 31 T31N R5W Offsets						
Rosa Unit #13 - OH - OH	16,683.89	5,977.00	1,112.79	984.93	8.703	CC
Rosa Unit #13 - OH - OH	16,800.00	5,977.00	1,118.83	982.50	8.207	ES
Rosa Unit #13 - OH - OH	17,500.00	5,977.00	1,379.98	1,151.88	6.050	SF
Rosa Unit #13A - OH - OH	17,860.38	6,229.00	880.23	684.30	4.493	CC
Rosa Unit #13A - OH - OH	17,900.00	6,229.00	881.12	684.22	4.475	ES
Rosa Unit #13A - OH - OH	18,200.00	6,229.00	943.47	724.42	4.307	SF
Rosa Unit #230A - OH - OH	17,902.18	3,157.00	3,927.10	3,830.12	40.491	CC, ES
Rosa Unit #230A - OH - OH	18,435.39	3,157.00	3,963.14	3,861.80	39.109	SF
Sec 32 T31N R5W Offsets						
Rosa Unit #24A - OH - OH	13,667.54	7,076.25	155.38	-255.06	0.379	Level 1, CC, ES, SF
Rosa Unit #26B - OH - OH	12,007.22	7,107.26	479.30	116.25	1.320	Level 3, CC, ES, SF
Sec 33 T31N R5W Offsets						
Rosa Unit #147 - OH - OH	3,361.90	3,262.44	453.49	339.54	3.980	CC
Rosa Unit #147 - OH - OH	3,500.00	3,392.19	455.83	337.15	3.841	ES
Rosa Unit #147 - OH - OH	3,900.00	3,771.18	486.19	354.01	3.678	SF
Rosa Unit #268A - OH - OH	3,283.24	3,238.41	1,969.51	1,856.76	17.468	CC
Rosa Unit #268A - OH - OH	3,300.00	3,240.00	1,969.57	1,856.68	17.446	ES
Rosa Unit #268A - OH - OH	3,400.00	3,240.00	1,972.88	1,859.56	17.411	SF

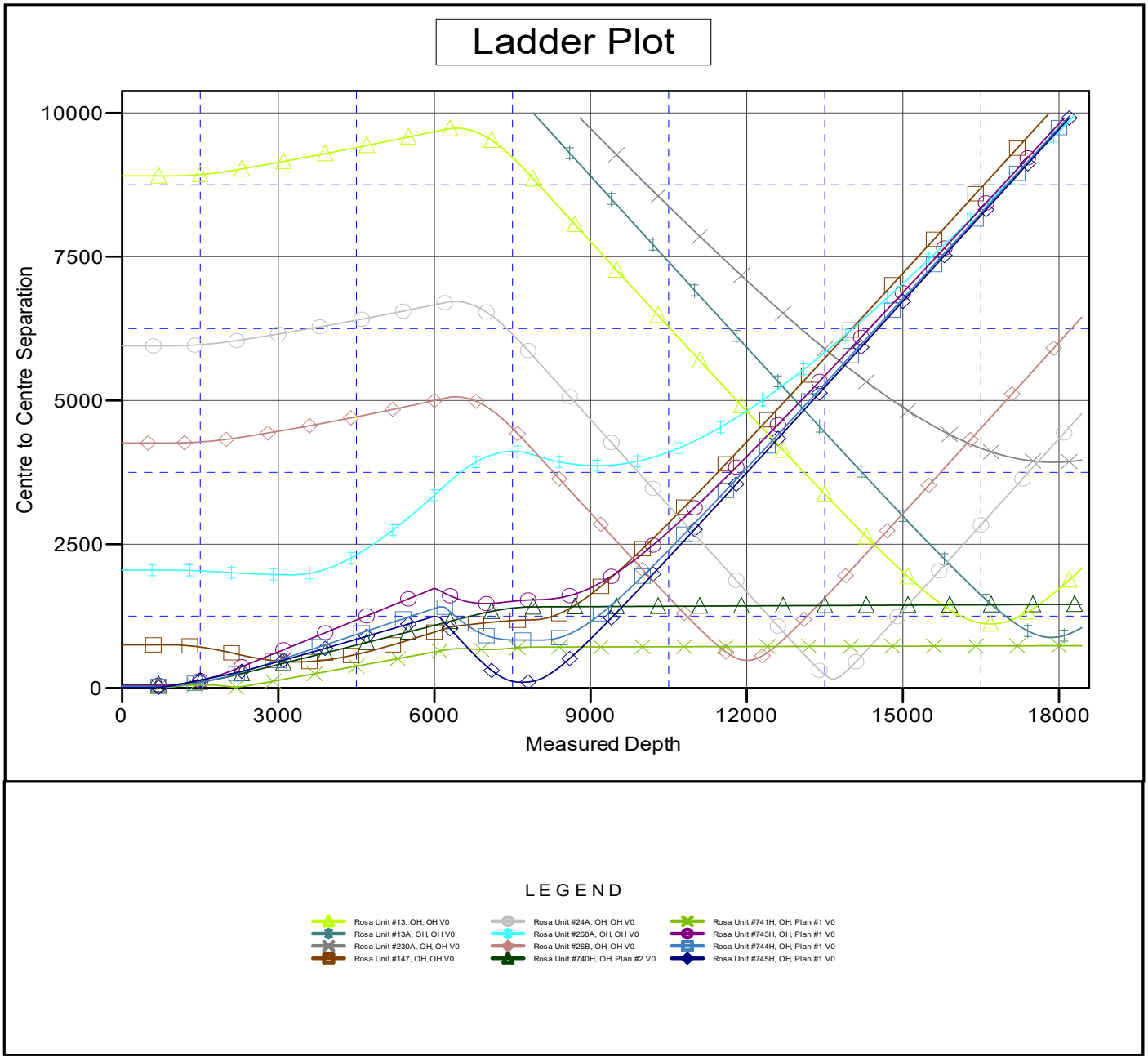
CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Lonestar Consulting
Anticollision Summary Report

Company:	Logos Operating LLC	**Local Co-ordinate Reference:**	Well Rosa Unit #742H - Slot B5
Project:	Rio Arriba, NM NAD83	**TVD Reference:**	GL 6492' @ 6492.00ft
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**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 6492' @ 6492.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #742H - Slot B5
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°



CC - Min centre to center distance or covergent 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 #742H - Slot B5
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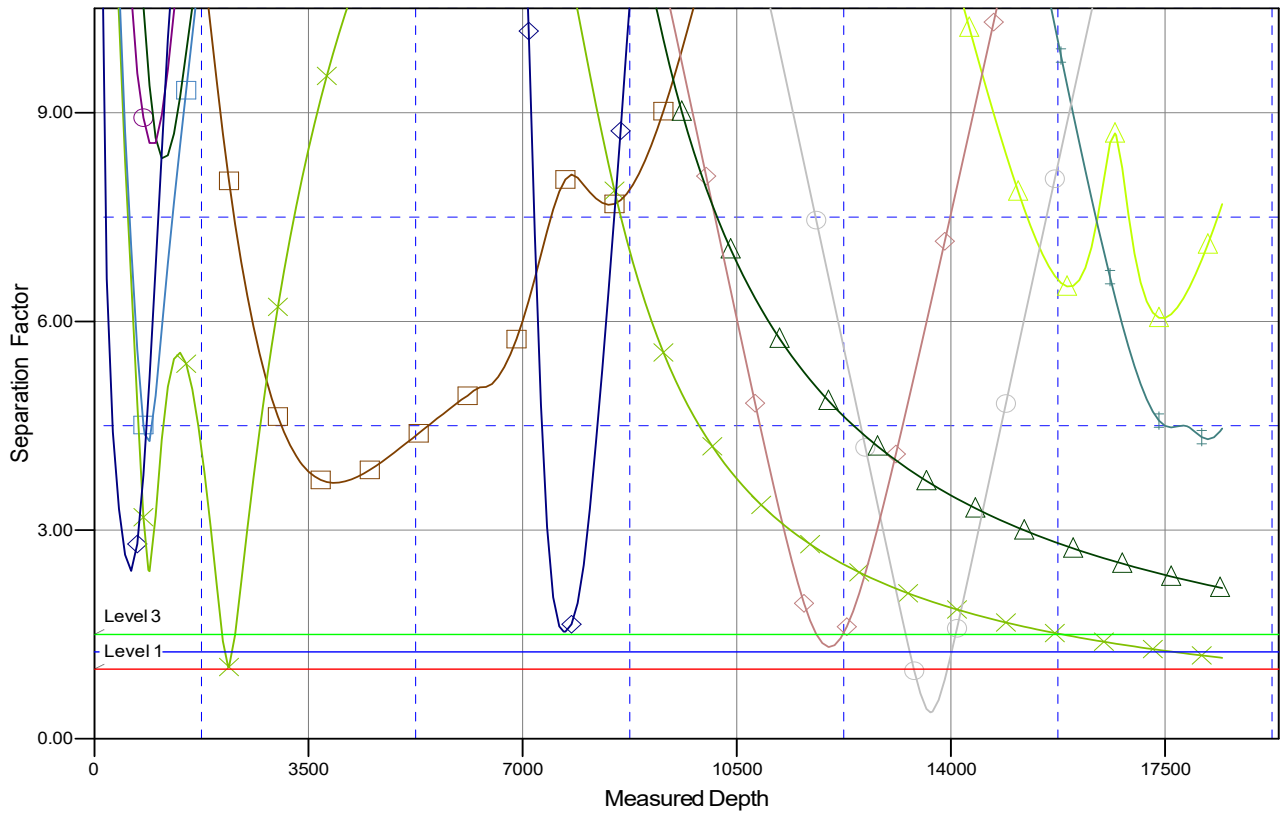
Reference Site:	Rosa Unit 31	**MD Reference:**	GL 6492' @ 6492.00ft
Site Error:	0.00 ft	**North Reference:**	True
Reference Well:	Rosa Unit #742H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	EDM _16.0
Reference Design:	Plan #2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to GL 6492' @ 6492.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -107.8333334

Coordinates are relative to: Rosa Unit #742H - Slot B5
Coordinate System is US State Plane 1983, New Mexico Western Zone
Grid Convergence at Surface is: 0.28°

Separation Factor Plot



LEGEND

Rosa Unit #13, OH, OH V0
Rosa Unit #13A, OH, OH V0
Rosa Unit #230A, OH, OH V0
Rosa Unit #147, OH, OH V0
Rosa Unit #24A, OH, OH V0
Rosa Unit #268A, OH, OH V0
Rosa Unit #26B, OH, OH V0
Rosa Unit #740H, OH, Plan #2 V0
Rosa Unit #741H, OH, Plan #1 V0
Rosa Unit #743H, OH, Plan #1 V0
Rosa Unit #744H, OH, Plan #1 V0
Rosa Unit #745H, OH, Plan #1 V0

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington District Office
6251 College Blvd, Suite A
Farmington, New Mexico 87402

In Reply Refer To:
3162.3-1(NMF0110)

* LOGOS OPERATING LLC

#742H ROSA UNIT

Lease: NMSF07876473
SH: NE¼NW¼ Section 33, T.31 N., R.5W.
Rio Arriba County, New Mexico
BH: LOT 2 Section 31, T.31 N., R5 W.
Rio Arriba County, New Mexico
***Above Data Required on Well Sign**

GENERAL REQUIREMENTS FOR OIL AND GAS OPERATIONS ON FEDERAL AND INDIAN LEASES

The following special requirements apply and are effective when **checked**:

A. ☒ Note all surface/drilling conditions of approval attached.

B. ☒ The required wait on cement (WOC) time will be a minimum of 500 psi compressive strength at 60 degrees. Blowout preventor (BOP) nipple-up operations may then be initiated

C. ☐ Test the surface casing to a minimum of _____ psi for 30 minutes.

D. ☐ Test all casing strings below the surface casing to .22 psi/ft. of casing string length or 1500 psi, whichever is greater, but not to exceed 70% of the minimum internal yield burst) for a minimum of 30 minutes.

E. ☐ Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the Bureau of Land Management, Farmington District Office, Branch of Reservoir Management, 6251 College Blvd. Suite A, Farmington, New Mexico 87402. The effective date of the agreement must be **prior** to any sales.

F. ☒ The use of co-flex hose is authorized contingent upon the following:
1. From the BOP to the choke manifold: the co-flex hose must be hobbled on both ends and saddle to prevent whip.
2. From the choke manifold to the discharge tank: the co-flex hoses must be as straight as practical, hobbled on both ends and anchored to prevent whip.
3. The co-flex hose pressure rating must be at least commensurate with approved BOPE.

I. GENERAL

A. Full compliance with all applicable laws, regulations, and Onshore Orders, with the approved Permit to drill, and with the approved Surface Use and Operations Plan is required. Lessees and/or operators are fully accountable for the actions of their contractors and subcontractors. Failure to comply with these requirements and the filing of required reports will result in strict enforcement pursuant to 43 CFR 3163.1 or 3163.2.

B. Each well shall have a well sign in legible condition from spud date to final abandonment. The sign should show the operator's name, lease serial number, or unit name, well number, location of the well, and whether lease is Tribal or Allotted, (See 43 CFR 3162.6(b)).

C. A complete copy of the approved Application for Permit to Drill, along with any conditions of approval, shall be available to authorized personnel at the drill site whenever active drilling operations are under way.

D. For Wildcat wells only, a drilling operations progress report is to be submitted, to the BLM-Field Office, weekly from the spud date until the well is completed and the Well Completion Report (Form 3160-4) is filed. The report should be on 8-1/2 x 11 inch paper, and each page should identify the well by; operator's name, well number, location and lease number.

E. As soon as practical, notice is required of all blowouts, fires and accidents involving life-threatening injuries or loss of life. (See NTL-3A).

F. Prior approval by the BLM-Authorized Office (Drilling and Production Section) is required for variance from the approved drilling program and before commencing plugging operations, plug back work casing repair work, corrective cementing operations, or suspending drilling operations indefinitely. Emergency approval may be obtained orally, but such approval is contingent upon filing of a notice of intent (on a Sundry Notice, Form 3160-5) within three business days (original and three copies of Federal leases and an original and four copies on Indian leases). **Any changes to the approved plan or any questions regarding drilling operations should be directed to BLM during regular business hours at 505-564-7600. Emergency program changes after hours should be directed to at Virgil Lucero at 505-793-1836.**

G. The Inspection and Enforcement Section (I&E), phone number (505-564-7750) is to be notified at least 24 hours in advance of BOP test, spudding, cementing, or plugging operations so that a BLM representative may witness the operations.

H. Unless drilling operations are commenced within two years, approval of the Application for Permit to Drill will expire. A written request for a two years extension may be granted if submitted prior to expiration.

I. From the time drilling operations are initiated and until drilling operations are completed, a member of the drilling crew or the tool pusher shall maintain rig surveillance at all time, unless the well is secured with blowout preventers or cement plugs.

J. If for any reason, drilling operations are suspended for more than 90 days, a written notice must be provided to this office outlining your plans for this well.

II. REPORTING REQUIREMENTS

A. For reporting purposes, all well Sundry notices, well completion and other well actions shall be referenced by the appropriate lease, communitization agreement and/or unit agreement numbers.

B. The following reports shall be filed with the BLM-Authorized Officer within 30 days after the work is completed.

1 .Original and three copies on Federal and an Original and five copies on Indian leases of Sundry Notice (Form 3150-5), giving complete information concerning.

a. Setting of each string of casing. Show size and depth of hole, grade and weight of casing, depth set, depth of any and all cementing tools that are used, amount (in cubic feet) and types of cement used, whether cement circulated to surface and all cement tops in the casing annulus, casing test method and results, and the date work was done. Show spud date on first report submitted.

b. Intervals tested, perforated (include; size, number and location of perforations), acidized, or fractured; and results obtained. Provide date work was done on well completion report and completion sundry notice.

c. Subsequent Report of Abandonment, show the manner in which the well was plugged, including depths where casing was cut and pulled, intervals (by depths) where cement plugs were replaced, and dates of the operations.

2. Well Completion Report (Form 3160-4) will be submitted with 30 days after well has been completed.

a. Initial Bottom Hole Pressure (BHP) for the producing formations. Show the BHP on the completion report. The pressure may be: 1) measured with a bottom hole bomb, or; 2) calculated based on shut in surface pressures (minimum seven day buildup) and fluid level shot.

3. Submit a cement evaluation log, if cement is not circulated to surface.

III. DRILLER'S LOG

The following shall be entered in the daily driller's log: 1) Blowout preventer pressures tests, including test pressures and results. 2) Blowout preventer tests for proper functioning, 3) Blowout prevention drills conducted, 4) Casing run, including size, grade, weight, and depth set, 5) How pipe was cemented, including amount of cement, type, whether cement circulated to surface, location of cementing tools, etc., 6) Waiting on cement time for each casing string, 7) Casing pressure tests after cementing, including test pressure and results and 8) Estimated amounts of oil and gas recovered and/or produced during drill stem test.

IV. GAS FLARING

Gas produced from this well may not be vented or flared beyond an initial, authorized test period of * Days or 50 MMCF following its (completion)(recompletion), whichever first occurs, without the prior, written approval of the authorized officer. Should gas be vented or flared without approval beyond the test period authorized above, you may be directed to shut-in the well until the gas can be captured or approval to continue venting or flaring as uneconomic is granted. You shall be required to compensate the lessor for the portion of the gas vented or flared without approval which is determined to have been avoidably lost.

*30 days, unless a longer test period is specifically approved by the authorized officer. The 30-day period will commence upon the first gas to surface.

V. SAFETY

A. All rig heating stoves are to be of the explosion-proof type.

B. Rig safety lines are to be installed.

C. Hard hats and other Personal Protective Equipment (PPE) must be utilized.

VI. CHANGE OF PLANS OR ABANDONMENT

A. Any changes of plans required in order to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.F.

B. If the well is dry, it is to be plugged in accordance with 43 CFR 3162.3-4, approval of the proposed plugging program is required as set forth in Section 1.F. The report should show the total depth reached, the reason for plugging, and the proposed intervals, by depths, where cement plugs are to be placed, type of plugging mud, etc. A Subsequent Report of Abandonment is required as set forth in Section II.B.1c.

C. Unless a well has been properly cased and cemented, or properly plugged, the drilling rig must not be moved from the drill site without prior approval from the BLM-Authorized Officer.

VII. PHONE NUMBERS

A. For BOPE tests, cementing, and plugging operations the phone number is 505-564-7750 and must be called 24 hours in advance in order that a BLM representative may witness the operations.

B. Emergency program changes after hours contact:

Virgil Lucero (505) 793-1836
Joe Killins (505) 564-7736

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 92931

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 92931
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	3/28/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	3/28/2022
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	3/28/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	3/28/2022
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	3/28/2022