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.: NMSF078765

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.: NMNM078407E/ROSA UNIT

8. Lease Name and Well No.: ROSA UNIT 590H

2. Name of Operator: LOGOS OPERATING LLC

9. API Well No.: 30-039-31478

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: NWSE / 1643 FSL / 2124 FEL / LAT 36.896862 / LONG -107.448459

At proposed prod. zone: NWSW / 2596 FSL / 164 FWL / LAT 36.899398 / LONG -107.494721

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 15/T31N/R6W/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): 164 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 1920.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 15 feet

19. Proposed Depth: 6890 feet / 20120 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 6325 feet

22. Approximate date work will start*: 10/09/2023

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: (Electronic Submission)

Name *(Printed/Typed)*: ETTA TRUJILLO / Ph: (505) 324-4145

Date: 08/28/2023

Title: Regulatory Specialist

Approved by *(Signature)*: (Electronic Submission)

Name *(Printed/Typed)*: DAVE J MANKIEWICZ / Ph: (505) 564-7761

Date: 12/03/2024

Title: AFM-Minerals

Office: 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: 12/03/2024

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.

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Additional Operator Remarks

Location of Well

0. SHL: NWSE / 1643 FSL / 2124 FEL / TWSP: 31N / RANGE: 6W / SECTION: 15 / LAT: 36.896862 / LONG: -107.448459 (TVD: 0 feet, MD: 0 feet)

PPP: TR 39 / 0 FSL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 15 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: TR 40 / 0 FSL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 16 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: NESE / 0 FSL / 0 FEL / TWSP: 31N / RANGE: 6W / SECTION: 17 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 0 FSL / 0 FWL / TWSP: 31N / RANGE: 6W / SECTION: 16 / LAT: 0.0 / LONG: 0.0 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 2591 FSL / 330 FWL / TWSP: 31N / RANGE: 6W / SECTION: 17 / LAT: 36.899388 / LONG: -107.494152 (TVD: 0 feet, MD: 0 feet)

PPP: NESW / 2300 FSL / 2375 FWL / TWSP: 31N / RANGE: 6W / SECTION: 15 / LAT: 36.898661 / LONG: -107.451057 (TVD: 6950 feet, MD: 7350 feet)

BHL: NWSW / 2596 FSL / 164 FWL / TWSP: 31N / RANGE: 6W / SECTION: 17 / LAT: 36.899398 / LONG: -107.494721 (TVD: 6890 feet, MD: 20120 feet)

BLM Point of Contact

Name: CHRISTOPHER P WENMAN
Title: Natural Resource Specialist
Phone: (505) 564-7727
Email: cwenman@blm.gov

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

Conditions of Approval

Operator:	LOGOS Operating, LLC (LOGOS)
Well Names:	Rosa Unit Pad 8 590H, 592H, 594H and 596H Natural Gas Wells
Legal Location:	Sections 11, 14, 15, 23 T31N, R6W
NEPA Log Number:	DOI-BLM-NM-F010-2024-0017-EA
Inspection Date:	May 23, 2023
Lease Number:	NMSF78764

The following conditions of approval will apply to LOGOS Rosa Pad 8, and other associated facilities, unless a particular Surface Managing Agency or private surface owner has supplied to Bureau of Land Management and the operator a contradictory environmental stipulation. The failure of the operator to comply with these requirements may result in an assessment or civil penalties pursuant to 43 CFR 3163.1 or 3163.2.

1. **Disclaimers:** BLM's approval of the APD does not relieve the lessee and operator from obtaining any other authorizations that may be required by the BIA, Navajo Tribe, State, or other jurisdictional entities.

2. **Copy of Plans:** A complete copy of the APD package, including Surface Use Plan of Operations, Bare Soil Reclamation Plan, Plan of Development (if required), Conditions of Approval, Cultural Resource Record of Review, Cultural Resources Compliance Form (if required), and Project Stipulations (if required) shall be at the project area at all times and available to all persons.

3. **Review of NEPA documents:** It is the responsibility of the operator to follow all the design features, best management practices, and mitigation measures as contained in the Environmental Assessment DOI-BLM-NM-F010-2024-0017-EA, which contains additional design features and best management practices that must be followed. Copies of the EA, Decision Record, and Finding of No Significant Impact may be obtained from the BLM FFO public room, or online at: eplanning.blm.gov.

4. **Best Management Practices (BMPs):** Farmington Field Office established environmental Best Management Practices (BMP's) will be followed during construction and reclamation of well site pads, access roads, pipeline ties, facility placement or any other surface disturbing activity associated with this project. Bureau wide standard BMP's are found in the Gold Book, Fourth Edition-Revised 2007. Farmington Field Office BMP's are integrated into the Environmental Assessment, Surface Use Plan of Operations, Bare Soil Reclamation Plan, and COAs.

Construction, Production, Facilities, Reclamation & Maintenance

5. **Construction & Reclamation Notification:** The operator or their contractor will contact the Bureau of Land Management, Farmington Field Office Environmental Protection Staff at (505) 564-7600 or by email, at least 48 hours prior to any construction or reclamation on this

project. If applicable, the operator or their contractor will contact the grazing permittee to give notice at least 10 days prior to start of construction operations.

6. **Cutting of Fences:** The proposed pipeline crosses a fence boundary (T31N R06W Sec 23 NW/4). All cut fences are to be tied to H-braces prior to cutting. The opening will be protected as necessary during construction to prevent escape of livestock. A temporary closure will be installed on all cut fences the day the fence is cut. A sixteen-foot gate will be installed adjacent to any cattleguards. The holder shall minimize disturbance to existing fences and other improvements on public land. Holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them.

7. **Production Facilities:** As marked in the APD, design and layout of facilities will be deferred until an onsite with BLM-FFO surface protection staff is conducted to determine the best location. LOGOS or their contractor will contact the Bureau of Land Management, Farmington Field Office, Surface, and Environmental Protection Staff (505) 564-7600 to schedule a facility layout onsite.

8. **Open Trenches:** No more than ½ mile of trench or the amount of trench that can be worked in one day will be open at any given time.

9. **Staking:** The holder shall place slope stakes, culvert location and grade stakes, and other construction control stakes as deemed necessary by the authorized officer to ensure construction in accordance with the plan of development. If stakes are disturbed, they shall be replaced before proceeding with construction.

10. **Weather:** No construction or routine maintenance activities shall be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts more than 6 inches deep, the soil shall be deemed too wet.

11. **Stockpile of Soil:** The top 6 inches of soil material will be stripped and stockpiled in the construction zones around the pad [construction zones may be restricted or deleted to provide resource avoidance]. The stockpiled soil will be free of brush and tree limbs, trunks, and roots. The stockpiled soil material will be spread on the reclaimed portions of the pad [including the reserve pit, cut and fill slopes] prior to re-seeding. Spreading shall not be done when the ground or topsoil is frozen or wet.

12. **Storage Tanks:** All open top permanent production or storage tanks regardless of diameter made of fiberglass, steel, or other material used for the containment of oil, condensate, produced water and or other production waste shall be screened, netted, or otherwise covered to protect migratory birds and other wildlife from access.

13. **Compressors:** Compressor units on this well location not equipped with a drip pan for containment of fluids shall be lined with an impervious material at least 8 mils thick and a 12-inch berm. The compressor will be painted to match the well facilities. Any variance to

this will be approved by the Authorized Officer (AO). Noise mitigation may be required at the time of compressor installation.

14. **Culverts:** No culverts smaller than 18" will be installed. Silt Traps/Bell Holes will be built upstream of all culvert locations. Rip-rap will be placed at the downstream end of all culverts to prevent undercutting.

15. **Berms:** Berms or firewalls will be constructed around all storage facilities sufficient in size to contain the storage capacity of 110% of the largest tank, or 110% of the combined capacity of tanks if a rupture could drain more than one tank. Berm walls will be compacted with appropriate equipment to assure proper construction. Metal containment barriers, used for secondary containment, will be properly installed, per the manufacturer directions.

16. **Temporary Use Area Reclamation:** All temporary use areas indicated on the plats will be reclaimed at the interim reclamation stage to BLM Standards. If any existing locations are utilized for temporary storage areas or staging, a Sundry Notice shall be submitted to the BLM indicating the existing area being utilized, the equipment present, and the expected removal date.

17. **Contouring of Cut and Fill Slopes:** The interim cut and fill slope grade shall be as close to the original contour as possible. To obtain this ratio, pits and slopes shall be back sloped into the pad during interim reclamation. Only subsurface soil and material shall be utilized in the contouring of the cut and fill slopes. Under no circumstances shall topsoil be utilized as substrate material for contouring of cut and fill slopes.

18. **Maintenance:** In order to perform subsequent well operations, right-of-way (ROW) operations, or install new/additional equipment, it may be necessary to drive, park, and operate on restored, interim vegetation within the previously disturbed area. This is generally acceptable provided damage is promptly repaired and reclaimed following use. Where vehicular travel has occurred as a "convenience" and interim reclamation/vegetation has been compromised, immediate remediation of the affected areas is required. Additionally, where erosion has occurred and compromised the reclamation of the well location, the affected area must be promptly remediated so that future erosion is prevented, and the landform is stabilized.

19. **Layflat Lines:** Layflat lines used for development of the wells may be on the ground for a maximum of 6 months and shall be retrieved within 30 days of ending completion operations. If the layflat lines are needed for longer than 6 months or cannot be retrieved within 30 days of ending completion operations, a Sundry NOI shall be submitted to the BLM FFO for review and decision that includes a rationale for the time extension.

20. **"Hotwork" and Construction Affecting Fire Safety:** The holder or its contractors will notify the BLM of any fires and comply with all rules and regulations administered by the BLM concerning the use, prevention and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The holder or its contractors may be held liable for the cost of fire suppression, stabilization and

rehabilitation. In the event of a fire, personal safety will be the first priority of the holder or its contractors.

The holder or its contractors shall:

a. Operate all internal and external combustion engines (including off-highway vehicles, chainsaws, generators, heavy equipment, etc.) with a qualified spark arrester. Qualified spark arresters are maintained and not modified, and meet the Society of Automotive Engineers (SAE) Recommended Practices J335 or J350. Refer to 43 CFR §8343.1.
   a. *Refueling of any combustible engine equipment must be minimum of 3 meters away from any ignition source (open flame, smoking, etc.).*
b. Maintain and clean all equipment regularly to remove flammable debris buildup and prevent fluid leaks that can lead to ignitions.
c. Carry at least one shovel or wildland fire hand tool (combi, Pulaski, McLeod) per person working, minimum 5 gallons of water, and a fire extinguisher rated at a minimum as ABC - 10 pound on each piece of equipment and each vehicle.
d. When conducting "hotwork" such as, but not limited to welding, grinding, cutting, spark-producing work with metal, work that creates hot material or slag; choose an area large enough to contain all hot material that is naturally free of all flammable vegetation or remove the flammable vegetation in a manner compliant with the permitted activity. If adequate clearance cannot be made, wet an area large enough to contain all hot material prior to the activity and periodically throughout the activity to reduce the risk of wildfire ignition. Regardless of clearance, maintain readiness to respond to an ignition at all times. In addition, keep one hand tool per person and at least one fire extinguisher ready, minimum, as specified earlier (#3) during this activity.
e. Keep apprised of current and forecasted weather at https://www.weather.gov/abq/forecasts-fireweather-links and fire conditions at www.wfas.net and take additional fire precautions when fire danger is rated High or greater. Red Flag Warnings are issued by the National Weather Service when fire conditions are most dangerous, and ignitions escape control quickly. Extra precautions are required during these warnings such as additional water, designate a fire watch/patrol and tools. If work is being conducted in an area that is not clear of vegetation within 50 feet of work area; then, when fire danger is rated High or greater and 1. There is a predicted Red Flag warning for your area or 2. If winds are predicted to be greater than 10 mph, stop all hotwork activities for the day at 10 am.
f. In the event of an ignition, initiate fire suppression actions in the work area to prevent fire spread to or on federally administered lands. If a fire spreads beyond the capability of workers with the stipulated tools, all will cease fire suppression action and leave the area immediately via pre-identified escape routes.
g. Call 911 or the Taos Interagency Fire Dispatch Center (575-758-6208) immediately of the location and status of any fire.

AND

h. Notify the respective BLM field office for which the permit or contract was issued **immediately** of the incident.
   Farmington Field Office at 505-564-7600
   Taos Field Office at 575-758-8851

21. **Noxious Weeds:** Inventory the proposed site for the presence of noxious and invasive weeds. Noxious weeds are those listed on the New Mexico Noxious Weed List and USDA's Federal Noxious Weed List. The New Mexico Noxious Weed List or USDA's Noxious Weed List can be updated at any time and should be regularly check for any changes. Invasive species may or may not be listed as a noxious weed but have been identified to likely cause economic or environmental harm or harm to human health. The following noxious weeds have been identified as occurring on lands within the boundaries of the Farmington Field Office (FFO). There are numerous invasive species on the FFO such as Russian thistle (*Salsola spp.)* and field bindweed (*Convolvulus arvensis*).

Russian Knapweed (*Centaurea repens*)	Musk Thistle (*Carduss nutans*)
Bull Thistle (*Cirsium vulgare*)	Canada Thistle (*Cirsium arvense*)
Scotch Thistle (*Onopordum acanthium)*	Hoary Cress (*Cardaria draba*)
Perennial Pepperweed (*Lepdium latiofolfium*)	Halogeton (*Halogeton glomeratus*)
Spotted Knapweed (*Centaurea maculosa*)	Dalmation Toadflax (*Linaria genistifolia*)
Yellow Toadflax (*Linaria vulgaris*)	Camelthorn (*Alhagi pseudalhagi*)
African Rue (*Penganum harmala*)	Salt Cedar (*Tamarix spp.*)
Diffuse Knapweed (*Centaurea diffusa*)	Leafy Spurge (*Euphorbia esula*)

a. Identified weeds will be treated prior to new surface disturbance if determined by the FFO Noxious Weed Coordinator. A Pesticide Use Proposal (PUP) must be submitted to and approved by the FFO Noxious Weed Coordinator prior to application of pesticide. The FFO Noxious Weeds Coordinator (505-564-7600) can provide assistance in the development of the PUP.
b. Vehicles and equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
c. Construction equipment should be inspected and cleaned prior to coming onto the work site. This is especially important on vehicles from out of state or if coming from a weed-infested site.
d. Fill dirt or gravel may be needed for excavation, road construction/repair, or for spill remediation. If fill dirt or gravel will be required, the source shall be noxious weed free and approved by the FFO Noxious Weed Coordinator.
e. The site shall be monitored for the life of the project for the presence of noxious weeds (includes maintenance and construction activities). If weeds are found the FFO Coordinator shall be notified at (505) 564-7600 and provided with a Weed Management Plan and if necessary, a Pesticide Use Proposal (PUP) . The FFO Coordinator can provide assistance developing the Weed Management Plan and/or the Pesticide Use Proposal.
f. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. (Company Name)'s weed-control contractor would contact the BLM-FFO prior to using these chemicals.
g. Noxious/invasive weed treatments must be reported to the FFO Noxious Weed Coordinator. A Pesticide Application Record (PAR) is required to report any mechanical, chemical, biological or cultural treatments used to eradicate, and/or control noxious or invasive species.

Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

22. **Bare ground vegetation trim-out:** If bare ground vegetation treatment (trim-out) is desired around facility structures, the operator will submit a bare ground/trim-out design included in their Surface Use Plan of Operations (SUPO) or as a Sundry Notice. The design will address vegetation safety concerns of the operator and BLM while minimizing impacts to interim reclamation efforts. The design must include what structures to be treated and buffer distances of trim-out. Pesticide use for vegetation control around anchor structures is not approved. If pesticides are used for bare ground trim-out, the trim-out will not exceed three feet from the edge of any eligible permanent structure (i.e., well heads, fences, tanks). Additional distance/areas may be requested and must be approved by the FFO authorized officer. The additional information below must also be provided to the FFO:

a. Pesticide use for trim out will require a Pesticide Use Proposal (PUP). A PUP is required ***prior*** to any treatment and must be approved by the FFO Noxious Weed Coordinator. Only pesticides authorized for use on BLM lands would be used and applied by a licensed pesticide applicator. The use of pesticides would comply with federal and state laws and used only in accordance with their registered use and limitations. LOGOS' weed-control contractor would contact the BLM-FFO prior to using these chemicals and provide Pesticide Use Reports (PURs) post treatment.
b. A Pesticide Use Report (PUR) or a Biological Use Report (BUR) is required to report any chemical, or biological treatments used to eradicate, or control vegetation on site. Reporting will be required quarterly and annually or per request from the FFO Noxious Weed Coordinator.

23. **Paleontology:** A permitted paleontological monitor must be present during any surface disturbing activities related to the project. The contracted paleontologist shall be notified at least 48 hours prior to the commencement of any surface disturbing activities. Any paleontological resource discovered by the Operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant scientific values. The Holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the Holder.

Wildlife Resources

24. **Wildlife:** The proposed project is not anticipated to have significant impacts on small or big game species. However, the project is located within the BLM FFO-designated Rosa Mesa Wildlife Area, requiring a closure from December 1st through March 31st of each year. This stipulation applies only to construction, drilling, and completion activities. It does not apply to operation and maintenance of production facilities.

25. **Migratory Bird:** The BLM/FFO migratory bird policy requires a bird nest survey between May 15 - July 31 for any projects that would remove 4.0 or more acres or vegetation. The proposed project is estimated to disturb more than four acres of vegetation, a survey will be required if construction occurs within the specified timeframe.

26. **Threatened, Endangered or Sensitive Species:** If, in operations the operator/holder discovers any Threatened, Endangered, or Sensitive species, work in the vicinity of the discovery will be suspended and the discovery promptly reported to the BLM-FFO T&E specialist at (505) 564-7600. The BLM-FFO will then specify what action is to be taken. Failure to notify the BLM-FFO about a discovery may result in civil or criminal penalties in accordance with The Endangered Species Act (as amended).

Cultural Resources

27. **Discovery of Cultural Resources in the Absence of Monitoring:** If, in its operations, operator/holder discovers any previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the discovery promptly reported to BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed. Failure to notify the BLM about a discovery may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, as amended, and other applicable laws.

28. **Discovery of Cultural Resources during Monitoring:** If monitoring confirms the presence of previously unidentified historic or prehistoric cultural resources, then work in the vicinity of the discovery will be suspended and the monitor will promptly report the discovery to the BLM Field Manager. BLM will then specify what action is to be taken. If there is an approved "discovery plan" in place for the project, then the plan will be executed. In the absence of an approved plan, the BLM will evaluate the significance of the discovery in accordance with 36 CFR Section 800.13, in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property, or in accordance with an approved program alternative. Minor recordation, stabilization, or data recovery may be performed by BLM or a third party acting on its behalf, such as a permitted cultural resources consultant. If warranted, more extensive archaeological or alternative mitigation, likely implemented by a permitted cultural

resources consultant, may be required of the operator/holder prior to allowing the project to proceed. Further damage to significant cultural resources will not be allowed until any mitigations determined appropriate through the agency's Section 106 consultation are completed.

29. **Damage to Sites:** If, in its operations, operator/holder damages, or is found to have damaged any previously documented or undocumented historic or prehistoric cultural resources, excluding "discoveries" as noted above, the operator/holder agrees at his/her expense to have a permitted cultural resources consultant prepare a BLM approved damage assessment and/or data recovery plan. The operator/holder agrees at his/her expense to implement a mitigation that the agency finds appropriate given the significance of the site, which the agency determines in consultation with the appropriate State or Tribal Historic Preservation Officer(s) and Indian tribe(s) that might attach religious and cultural significance to the affected property. This mitigation may entail execution of the data recovery plan by a permitted cultural resources consultant and/or alternative mitigations. Damage to cultural resources may result in civil or criminal penalties in accordance with the Archeological Resources Protection Act (ARPA) of 1979, as amended, the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, as amended, and other applicable laws.

30. **Employee Education:** All employees of the project, including the Project Sponsor and its contractors and sub-contractors will be informed and educated that cultural sites are to be avoided by all personnel, personal vehicles and company equipment. This includes personnel associated with construction, use, maintenance and abandonment of the well pad, well facilities, access and pipeline. They will also be notified that it is illegal to collect, damage, or disturb historic or prehistoric cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the ARPA (16 U.S.C. 470aa-mm), NAGPRA (25 U.S.C. 3001-3013), and other laws, as applicable (for example, NM Stat. § 18-6-9 through § 18-6-11.2, as amended, and NM Stat. § 30-12-12, as amended).

See below additional cultural stipulations.

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

#590H ROSA UNIT

Lease: NMSF078765 Unit: NMNM78407E
SH: NWSE Section 15, T.31 N., R.6 W.
Rio Arriba County, New Mexico
BH: NWSW Section 17, T.31 N., R.6 W.
San Juan 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 all casing strings below the conductor 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. If pressure declines more than 10 percent in 30 minutes, corrective action shall be taken.

D. ☐ Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the Bureau of Land Management, New Mexico State Office, Reservoir Management Group, 301 Dinosaur Trail, Santa Fe, New Mexico 87508.
The effective date of the agreement must be **prior** to any sales.

E. ☐ 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 and regulations, 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 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. BOP equipment (except the annular preventer) shall be tested utilizing a test plug to full working pressure for 10 minutes. No bleed-off of pressure is acceptable. (See 43 CFR 3172.6(b)(9)(ii)).

G. The operator shall have sufficient weighting materials and lost circulation materials on location in the event of a pressure kick or in the event of lost circulation. (See 43 CFR 3172.8(a)).

H. The flare line(s) discharge shall be located not less than 100 feet from the well head, having straight lines unless turns are targeted with running tees, and shall be positioned downwind of the prevailing wind direction and shall be anchored. The flare system shall have an effective method for ignition. Where noncombustible gas is likely or expected to be vented, the system shall be provided supplemental fuel for ignition and to maintain a continuous flare. (See 43 CFR 3172.8(b)(7)).

I. 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 sundry within three business days. **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 Virgil Lucero at 505-793-1836.**

J. 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.

K. Unless drilling operations are commenced within three years according to 43 CFR 3171.14, approval of the Application for Permit to Drill will expire. No extensions will be granted.

L. 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 times, unless the well is secured with blowout preventers or cement plugs.

M. 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.

N. **Commingling**: No production (oil, gas, and water) from the subject well should start until Sundry Notices (if necessary) granting variances from applicable regulations as related to commingling and off-lease measurement are approved by this office. (See 43 CFR 3173.14)

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 online through AFMSS 2 within 30 days after the work is completed.

1. Provide 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 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 way 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 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.

C. Production Startup Notification is required no later than the 5th business day after any well begins production on which royalty is due anywhere on a lease site or allocated to a lease site or resumes production in the case of a well which has been off production for more than 90 days. The operator shall notify the Authorized Officer by letter or Sundry Notice, Form 3160-5, or orally to be followed by a letter or Sundry Notice, of the date on which such production has begun or resumed. CFR 43 3162.4-1(c).

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, 20 MMCF following its (completion)(recompletion), or flowback has been routed to the production separator, whichever first occurs, without the prior, written approval of the authorized officer in accordance with 43 CFR 3179.81. 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 beginning of flowback following completion or recompletion.

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 to mitigate unanticipated conditions encountered during drilling operations, will require approval as set forth in Section 1.I.

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.I. 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.

Approval Date: 12/03/2024

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
	97232	BASIN MANCOS

[4] Property Code	[5] Property Name	[6] Well Number
320608	ROSA UNIT	590H

[7] OGRID No.	[8] Operator Name	[9] Elevation
289408	LOGOS OPERATING, LLC	6325'

[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
J	15	31N	6W		1643	SOUTH	2124	EAST	RIO ARRIBA

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	17	31N	6W		2596	SOUTH	164	WEST	SAN JUAN

[12] Dedicated Acres		[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
1920.00	Entire Section 15, T31N, R6W Entire Section 16, T31N, R6W Entire Section 17, T31N, R6W			R-13457

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

[17] OPERATOR CERTIFICATION

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

Etta Trujillo — 1/16/2024
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: JULY 7, 2023
Survey Date: SEPTEMBER 2, 2022

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)
2596' FSL 164' FWL
SEC 17, T31N, R6W
LAT 36.899392 °N
LONG -107.494116 °W
DATUM: NAD1927

LAT 36.899398 °N
LONG -107.494721 °W
DATUM: NAD1983

LAST TAKE POINT (C)
2591' FSL 330' FWL
SEC 17, T31N, R6W
LAT 36.899383 °N
LONG -107.493547 °W
DATUM: NAD1927

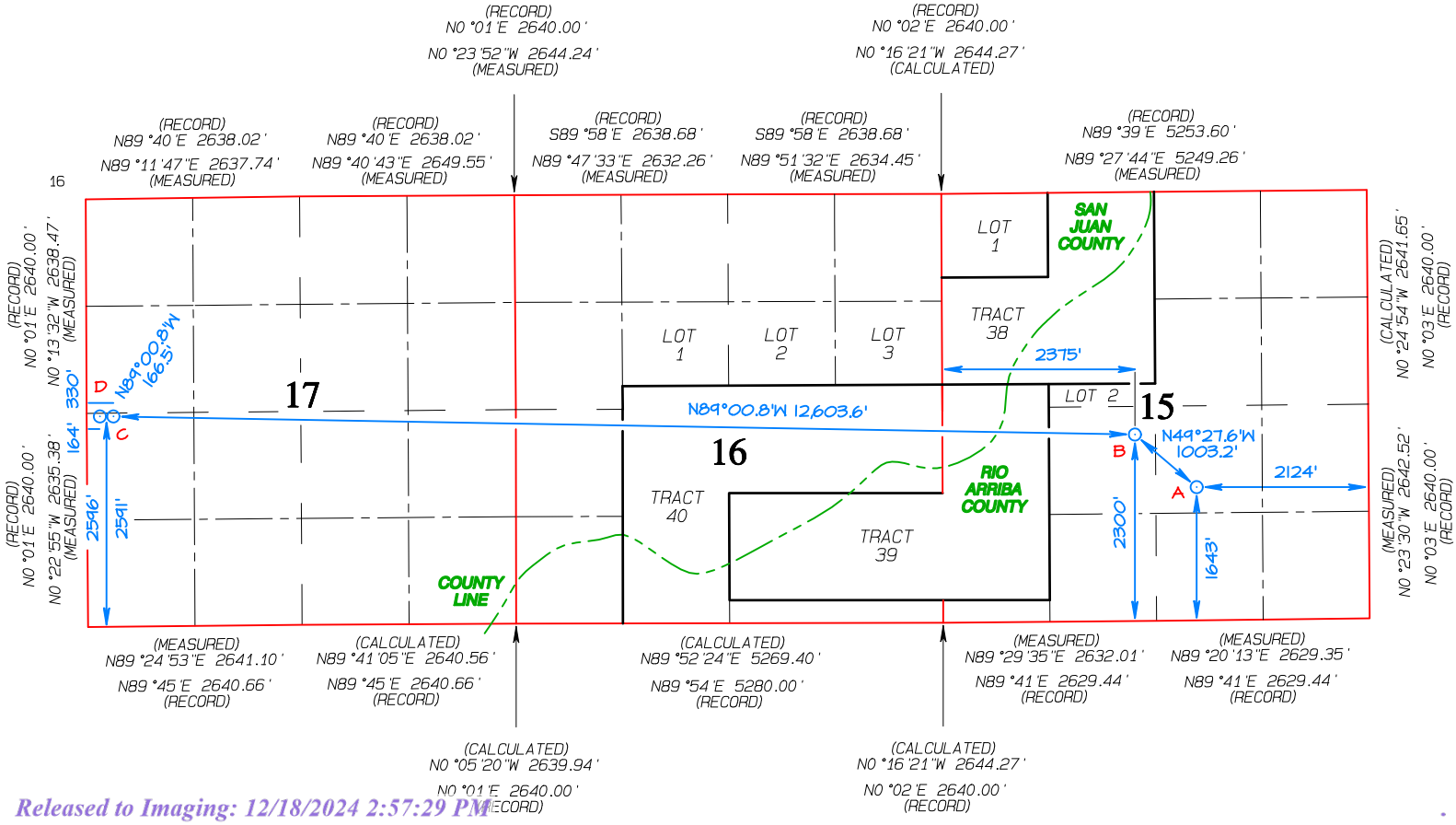
LAT 36.899388 °N
LONG -107.494152 °W
DATUM: NAD1983

FIRST TAKE POINT (B)
2300' FSL 2375' FWL
SEC 15, T31N, R6W
LAT 36.898656 °N
LONG -107.450453 °W
DATUM: NAD1927

LAT 36.898661 °N
LONG -107.451057 °W
DATUM: NAD1983

SURFACE LOCATION (A)
1643' FSL 2124' FEL
SEC 15, T31N, R6W
LAT 36.896856 °N
LONG -107.447855 °W
DATUM: NAD1927

LAT 36.896862 °N
LONG -107.448459 °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:** 8/24/2023

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 590H	30-039-pending	J-15-T31N-R6W	1643FSL, 2124FEL	N/A	16,431	585
Rosa Unit 592H	30-039-pending	J-15-T31N-R6W	1643FSL, 2109FEL	N/A	18,531	590
Rosa Unit 594H	30-039-pending	J-15-T31N-R6W	1643FSL, 2139FEL	N/A	10,095	327
Rosa Unit 596H	30-039-pending	J-15-T31N-R6W	1643FSL, 2154FEL	N/A	9,145	321

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 590H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 592H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 594H	30-039-pending	Pending	Pending	Pending	Pending	Pending
Rosa Unit 596H	30-039-pending	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 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

IX. Anticipated Natural Gas Production:

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

X. Natural Gas Gathering System (NGGS):

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

XI. Map. ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

XII. Line Capacity. The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

XIII. Line Pressure. Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

XIV. Confidentiality: ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

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 wll 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:	8/24/2023
Phone:	505-324-4154

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

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

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 Oil 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 or combusted, with an appropriately sized and located flare stack, if technically and safely feasible.
    b. New Drill HZ Gas Wells: The operator drills wells in the area by balancing the mud weight to safely drill the wellbore with as minimal flaring as possible. When gas kicks enter the wellbore, sometimes it is necessary to circulate it out of the wellbore to an appropriately sized and located flare stack. The operator will estimate the volume flared and appropriately report.
C. Venting and flaring during completion or recompletion operations:
    a. New Drill HZ Oil 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. During the separation flowback period natural gas will be routed to a properly sized and located flare until the natural gas is of pipeline quality (less than 60 days). The natural gas will also be utilized on site as needed for fuel gas or injection gas.

    b. 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 Oil 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. This facility will operate under a notice of intent (NOI) from the New Mexico Environment Department (NMED).

   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 requires liquids 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 with minor exceptions.
   (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 utilize a LACT system when available to minimize gas vented during oil tank loading.
   (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) Storage tanks and other low-pressure vessel normal operational venting will be minimized during the early life of the well with the installation of a vapor recovery unit to limit the flash and working and breathing emissions to atmosphere.
   (h) No dehydration or amine units are anticipated to be set on location.
   (i) Compressors, compressor engines, turbines, flanges, connectors, valves, and flanges will be routinely inspected to ensure that no excess venting occurs outside of normal operation.
   (j) 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.
   (k) When natural gas does not meet gathering pipeline specifications, for example high nitrogen content after a nearby frac, 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.
   (l) If pipeline, equipment, or facilities need purged of impurities gas losses will be minimized as much as technically and safely feasible.

b. 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, or instrument air, 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:	July 24, 2023	Pool:	Basin Mancos
Well Name:	**Rosa Unit 590H**	GL Elevation:	6,325’
Surface Location:	Sec 15, T31N, R6W 1643 FSL, 2124 FEL (36.896862º N, 107.448459º W – NAD83)	Measured Depth:	20,120’ (KB)
Bottom Hole Location:	Sec 17, T31N, R6W 2596 FSL, 164 FWL (36.899398º N, 107.494721º W – NAD83)	County:	Rio Arriba/San Juan

Lease Serial #NMSF78765 CA Serial #NMNM78407E

I. GEOLOGY

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

NAME	MD	TVD	NAME	MD	TVD
OJO ALAMO	2,401'	2,392'	*POINT LOOKOUT	5,682'	5,655'
KIRTLAND	2,516'	2,506'	*MANCOS	6,167'	6,138'
*FRUITLAND	2,979'	2,967'	KICKOFF POINT	6,362'	6,332'
*PICTURED CLIFFS	3,375'	3,361'	LANDING POINT	7,350'	6,950'
LEWIS	3,476'	3,461'			
CHACRA	4,602'	4,581'			
*CLIFF HOUSE	5,405'	5,380'			
MENEFEE	5,440'	5,414'	TD	20,120'	6,890'

* 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 8-1/2” 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.

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:** 6950' TVD x 0.43 = 2989 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"	6,242'	9.625"	43.5 LBS	N-80 or equiv	LTC/BTC
PRODUCTION	8.5"	20,120'	5.5"	20 LBS	P-110 or equiv	LTC/BTC

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

B. FLOAT EQUIPMENT:

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 Toe Sleeve (Sliding Sleeve) positioned inside the applicable production area. Centralizer program will be determined by wellbore conditions. Production casing to be pressure tested during completion operations with frac stack installed.

C. CEMENTING:

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

1. SURFACE: Casing shall be set at ~ 320' and cemented to surface. TOC at Surface. 263 sks of 15.8 ppg Type Neat G, 1.18 cuft/sk yield or equivalent 223 sks of 14.6 ppg Type III with 1.39 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	Footage	Cement (ft3/ft) Annular Capacity	Excess (30%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Stage 1 Tail	5,132	1,110	0.3132	1.3	470	84	1.15	408	15.8
Stage 1 Lead	4,652	480	0.31318	1.3	195	35	2.30	85	12.3
					665	**118**		**493**	
Stage 2 Tail	3,477	1,175	0.31318	1.3	478	85	1.50	319	13.5
Stage 2 Lead	3,009	468	0.31318	1.3	191	34	2.30	83	12.3
					669	**119**		**402**	
Stage 3 Tail	2,359	650	0.31318	1.3	265	47	1.99	133	12.8
Stage 3 Lead	320	2,039	0.31318	1.3	830	148	2.53	328	12
Stage 3 Lead	-	320	0.36268	1	116	21	2.53	46	12
					1,211	**216**		**507**	
All Stage Totals					**2,545**	**453**		**1,402**	

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

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

	Top	ft	Cement (ft3/ft) Annular Capacity	Excess (15%)	Total (ft3)	Total (bbl)	Slurry Yield (ft3/sk)	Sacks Cement	Density (PPG)
Cased Lead	**5,242**	**100**	**0.2531**	**1**	**25**	**5**	**1.56**	**16**	13
Open Hole Lead	**6,242**	**13,878**	**0.2291**	**1.15**	**3,667**	**653**	**1.56**	**2,351**	13
					3,692	**658**		**2,367**	

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 590H

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. Pressure test 5-1/2" casing to 0.22 psi/ft *6890'TVD=1516 psi for 30 minutes. Increase pressure to Open RSI sleeves.

D. STIMULATION

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

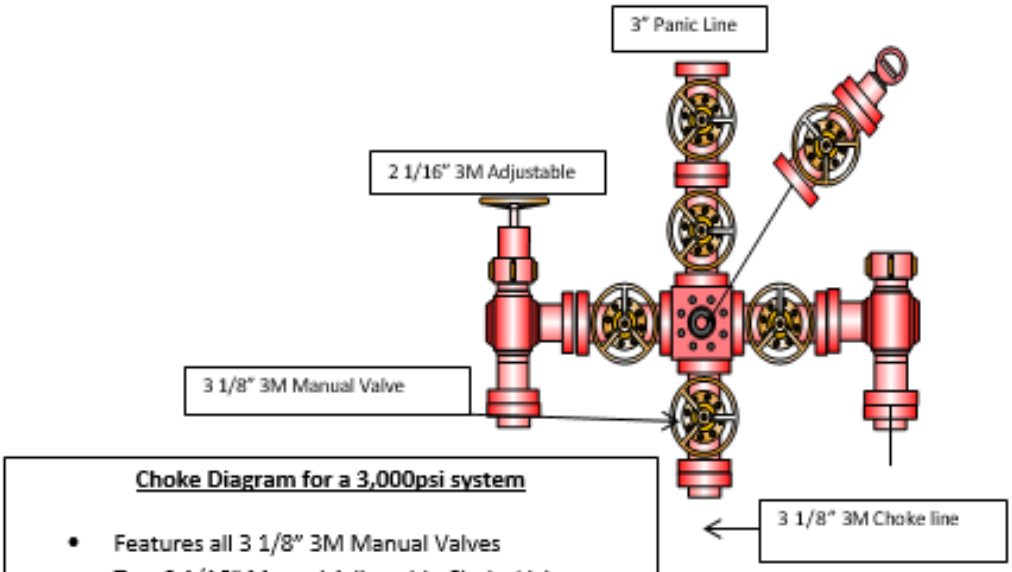
E. PRODUCTION TUBING

2-7/8", 6.5#, J-55 or L-80, EUE tubing will be run once volumes and pressures dictate. Due to the extremely high initial flow rates and pressures seen in offset wells, tubing will be installed once it is safe to do so, typically 12-36 months after completion.

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

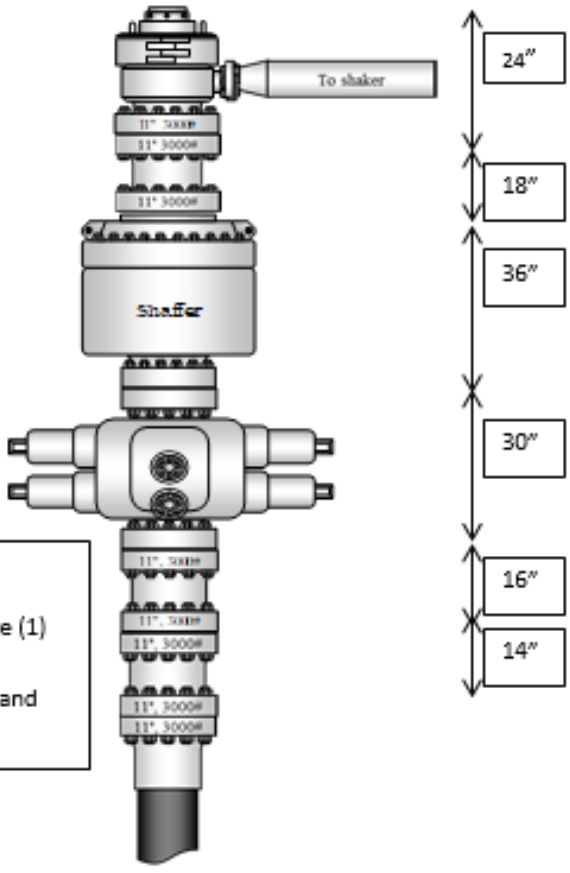
LOGOS RESOURCES II, LLC

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 590H

LOGOS RESOURCES II, LLC

Company: Logos Operating LLC
Project: Rio Arriba, NM NAD83
Site: Rosa Unit 8
Well: Rosa Unit #590H
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 #590H

GL 6325' & RKB 30' @ 6355.00ft

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	2146010.8002	2835629.9508	36.8968620	-107.4484590	B2

Plan: Plan #2 (Rosa Unit #590H/OH)

Created By: Janie Collins Date: 10:35, July 21 2023

Azimuths to True North
Magnetic North: 8.67°
Magnetic Field
Strength: 49625.6nT
Dip Angle: 63.7°
Date: 12/31/2021
Model: HDGM2021_FILE

DESIGN TARGET DETAILS

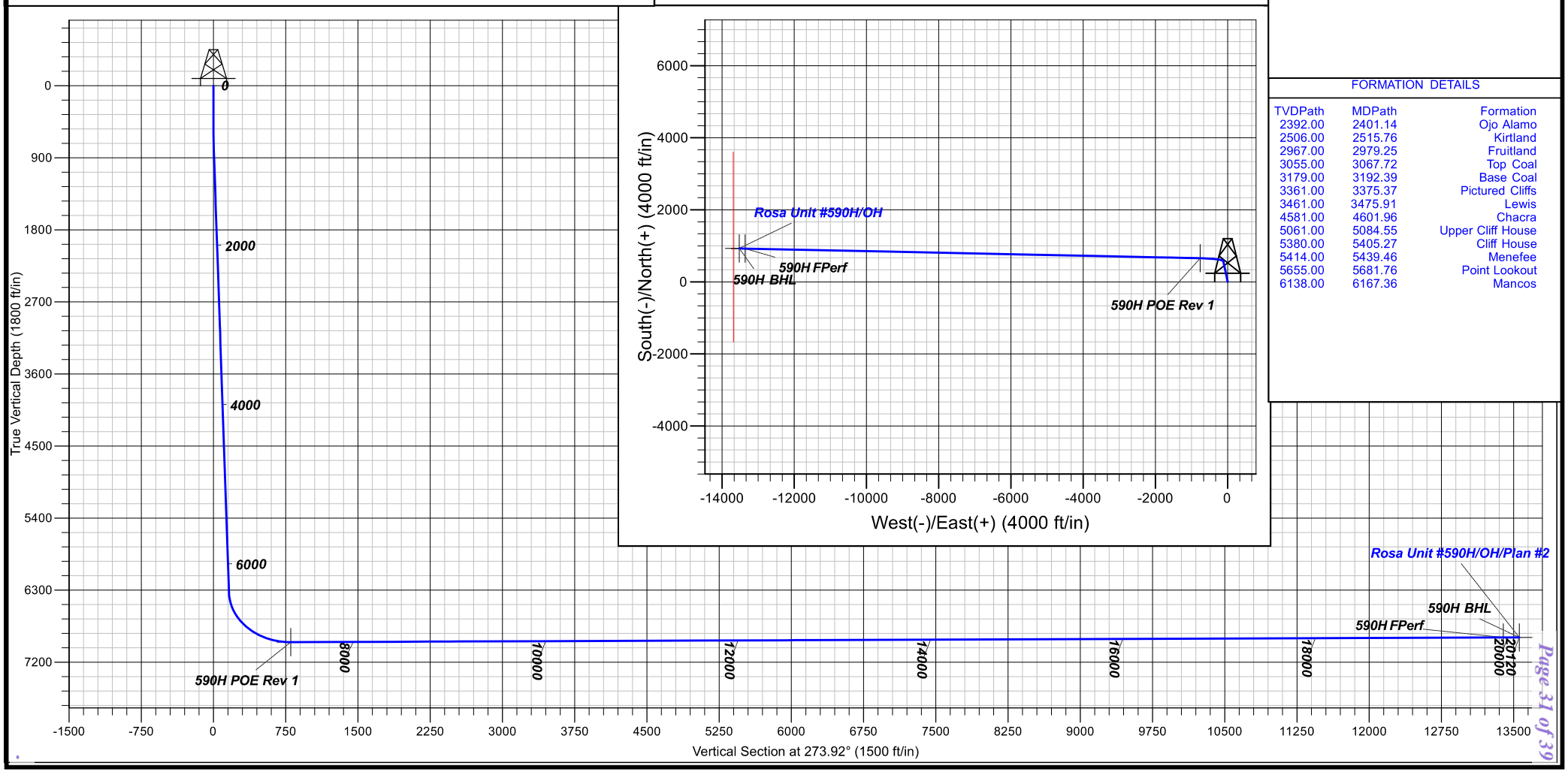
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
590H POE Rev 1	6950.00	655.14	-759.68	2146662.8696	2834867.6374	36.8986615	-107.4510571
590H BHL	6890.00	926.48	-13526.89	2146882.7184	2822099.4659	36.8993978	-107.4947211
590H FPerf	6890.00	922.84	-13360.48	2146879.7415	2822265.8799	36.8993880	-107.4941520

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00
796.99	5.94	348.12	796.46	15.05	-3.17	2.00	348.12	4.19
6361.93	5.94	348.12	6331.52	578.60	-121.74	0.00	0.00	160.99
7349.97	90.27	271.22	6950.00	655.14	-759.68	9.00	-76.94	802.67
20120.20	90.27	271.22	6890.00	926.48	-13526.89	0.00	0.00	13558.58

CASING DETAILS

No casing data is available



FORMATION DETAILS

TVDPath	MDPath	Formation
2392.00	2401.14	Ojo Alamo
2506.00	2515.76	Kirtland
2967.00	2979.25	Fruitland
3055.00	3067.72	Top Coal
3179.00	3192.39	Base Coal
3361.00	3375.37	Pictured Cliffs
3461.00	3475.91	Lewis
4581.00	4601.96	Chacra
5061.00	5084.55	Upper Cliff House
5380.00	5405.27	Cliff House
5414.00	5439.46	Menefee
5655.00	5681.76	Point Lookout
6138.00	6167.36	Mancos

Logos Operating LLC

Rio Arriba, NM NAD83
Rosa Unit 8
Rosa Unit #590H - Slot B2

OH

Plan: Plan #2

Standard Planning Report

21 July, 2023

LOGOS RESOURCES II, LLC

Lonestar Consulting, LLC

Planning Report

LONESTAR CONSULTING

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**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 8

Site Position:		**Northing:**	2,146,011.2244 usft	**Latitude:**	36.8968630
From:	Lat/Long	**Easting:**	2,835,644.8620 usft	**Longitude:**	-107.4484080
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in		

Well Rosa Unit #590H - Slot B2

Well Position	**+N/-S**	0.00 ft	**Northing:**	2,146,010.8002 usft	**Latitude:**	36.8968620
	+E/-W	0.00 ft	**Easting:**	2,835,629.9508 usft	**Longitude:**	-107.4484590
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,325.00 ft
Grid Convergence:		0.23 °				

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2021_FILE	12/31/2021	8.67	63.37	49,625.80000000

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	273.92

Plan Survey Tool Program **Date** 7/20/2023

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,120.20	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	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
796.99	5.94	348.12	796.46	15.05	-3.17	2.00	2.00	0.00	348.12	
6,361.93	5.94	348.12	6,331.52	578.60	-121.74	0.00	0.00	0.00	0.00	
7,349.97	90.27	271.22	6,950.00	655.14	-759.68	9.00	8.53	-7.78	-76.94	590H POE Rev 1
20,120.20	90.27	271.22	6,890.00	926.48	-13,526.89	0.00	0.00	0.00	0.00	590H BHL

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**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
Start Build 2.00									
600.00	2.00	348.12	599.98	1.71	-0.36	0.48	2.00	2.00	0.00
700.00	4.00	348.12	699.84	6.83	-1.44	1.90	2.00	2.00	0.00
796.99	5.94	348.12	796.46	15.05	-3.17	4.19	2.00	2.00	0.00
Start 5564.93 hold at 796.99 MD									
800.00	5.94	348.12	799.45	15.36	-3.23	4.27	0.00	0.00	0.00
900.00	5.94	348.12	898.92	25.48	-5.36	7.09	0.00	0.00	0.00
1,000.00	5.94	348.12	998.38	35.61	-7.49	9.91	0.00	0.00	0.00
1,100.00	5.94	348.12	1,097.84	45.74	-9.62	12.73	0.00	0.00	0.00
1,200.00	5.94	348.12	1,197.30	55.86	-11.75	15.54	0.00	0.00	0.00
1,300.00	5.94	348.12	1,296.77	65.99	-13.88	18.36	0.00	0.00	0.00
1,400.00	5.94	348.12	1,396.23	76.12	-16.02	21.18	0.00	0.00	0.00
1,500.00	5.94	348.12	1,495.69	86.24	-18.15	24.00	0.00	0.00	0.00
1,600.00	5.94	348.12	1,595.16	96.37	-20.28	26.81	0.00	0.00	0.00
1,700.00	5.94	348.12	1,694.62	106.50	-22.41	29.63	0.00	0.00	0.00
1,800.00	5.94	348.12	1,794.08	116.62	-24.54	32.45	0.00	0.00	0.00
1,900.00	5.94	348.12	1,893.55	126.75	-26.67	35.27	0.00	0.00	0.00
2,000.00	5.94	348.12	1,993.01	136.88	-28.80	38.09	0.00	0.00	0.00
2,100.00	5.94	348.12	2,092.47	147.00	-30.93	40.90	0.00	0.00	0.00
2,200.00	5.94	348.12	2,191.94	157.13	-33.06	43.72	0.00	0.00	0.00
2,300.00	5.94	348.12	2,291.40	167.26	-35.19	46.54	0.00	0.00	0.00
2,400.00	5.94	348.12	2,390.86	177.38	-37.32	49.36	0.00	0.00	0.00
2,500.00	5.94	348.12	2,490.33	187.51	-39.45	52.17	0.00	0.00	0.00
2,600.00	5.94	348.12	2,589.79	197.64	-41.58	54.99	0.00	0.00	0.00
2,700.00	5.94	348.12	2,689.25	207.76	-43.71	57.81	0.00	0.00	0.00
2,800.00	5.94	348.12	2,788.71	217.89	-45.85	60.63	0.00	0.00	0.00
2,900.00	5.94	348.12	2,888.18	228.02	-47.98	63.45	0.00	0.00	0.00
3,000.00	5.94	348.12	2,987.64	238.14	-50.11	66.26	0.00	0.00	0.00
3,100.00	5.94	348.12	3,087.10	248.27	-52.24	69.08	0.00	0.00	0.00
3,200.00	5.94	348.12	3,186.57	258.40	-54.37	71.90	0.00	0.00	0.00
3,300.00	5.94	348.12	3,286.03	268.52	-56.50	74.72	0.00	0.00	0.00
3,400.00	5.94	348.12	3,385.49	278.65	-58.63	77.53	0.00	0.00	0.00
3,500.00	5.94	348.12	3,484.96	288.78	-60.76	80.35	0.00	0.00	0.00
3,600.00	5.94	348.12	3,584.42	298.90	-62.89	83.17	0.00	0.00	0.00
3,700.00	5.94	348.12	3,683.88	309.03	-65.02	85.99	0.00	0.00	0.00
3,800.00	5.94	348.12	3,783.35	319.16	-67.15	88.80	0.00	0.00	0.00
3,900.00	5.94	348.12	3,882.81	329.28	-69.28	91.62	0.00	0.00	0.00
4,000.00	5.94	348.12	3,982.27	339.41	-71.41	94.44	0.00	0.00	0.00
4,100.00	5.94	348.12	4,081.73	349.54	-73.55	97.26	0.00	0.00	0.00
4,200.00	5.94	348.12	4,181.20	359.66	-75.68	100.08	0.00	0.00	0.00
4,300.00	5.94	348.12	4,280.66	369.79	-77.81	102.89	0.00	0.00	0.00
4,400.00	5.94	348.12	4,380.12	379.92	-79.94	105.71	0.00	0.00	0.00
4,500.00	5.94	348.12	4,479.59	390.04	-82.07	108.53	0.00	0.00	0.00
4,600.00	5.94	348.12	4,579.05	400.17	-84.20	111.35	0.00	0.00	0.00
4,700.00	5.94	348.12	4,678.51	410.30	-86.33	114.16	0.00	0.00	0.00
4,800.00	5.94	348.12	4,777.98	420.42	-88.46	116.98	0.00	0.00	0.00
4,900.00	5.94	348.12	4,877.44	430.55	-90.59	119.80	0.00	0.00	0.00

LOGOS RESOURCES II, LLC

Lonestar Consulting, LLC

Planning Report

LONESTAR CONSULTING

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**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)
5,000.00	5.94	348.12	4,976.90	440.68	-92.72	122.62	0.00	0.00	0.00
5,100.00	5.94	348.12	5,076.37	450.80	-94.85	125.44	0.00	0.00	0.00
5,200.00	5.94	348.12	5,175.83	460.93	-96.98	128.25	0.00	0.00	0.00
5,300.00	5.94	348.12	5,275.29	471.06	-99.11	131.07	0.00	0.00	0.00
5,400.00	5.94	348.12	5,374.76	481.18	-101.24	133.89	0.00	0.00	0.00
5,500.00	5.94	348.12	5,474.22	491.31	-103.38	136.71	0.00	0.00	0.00
5,600.00	5.94	348.12	5,573.68	501.44	-105.51	139.52	0.00	0.00	0.00
5,700.00	5.94	348.12	5,673.14	511.56	-107.64	142.34	0.00	0.00	0.00
5,800.00	5.94	348.12	5,772.61	521.69	-109.77	145.16	0.00	0.00	0.00
5,900.00	5.94	348.12	5,872.07	531.82	-111.90	147.98	0.00	0.00	0.00
6,000.00	5.94	348.12	5,971.53	541.94	-114.03	150.79	0.00	0.00	0.00
6,100.00	5.94	348.12	6,071.00	552.07	-116.16	153.61	0.00	0.00	0.00
6,200.00	5.94	348.12	6,170.46	562.20	-118.29	156.43	0.00	0.00	0.00
6,300.00	5.94	348.12	6,269.92	572.32	-120.42	159.25	0.00	0.00	0.00
6,361.93	5.94	348.12	6,331.52	578.60	-121.74	160.99	0.00	0.00	0.00
Start DLS 9.00 TFO -76.94									
6,400.00	7.50	321.61	6,369.34	582.47	-123.69	163.20	9.00	4.09	-69.63
6,500.00	14.92	293.60	6,467.43	592.76	-139.57	179.75	9.00	7.42	-28.01
6,600.00	23.46	284.75	6,561.80	603.00	-170.68	211.48	9.00	8.54	-8.85
6,700.00	32.24	280.49	6,650.14	612.94	-216.25	257.62	9.00	8.78	-4.26
6,800.00	41.11	277.91	6,730.27	622.34	-275.16	317.04	9.00	8.87	-2.58
6,900.00	50.02	276.12	6,800.21	630.97	-345.96	388.27	9.00	8.91	-1.79
7,000.00	58.95	274.74	6,858.25	638.61	-426.91	469.55	9.00	8.93	-1.38
7,100.00	67.89	273.60	6,902.94	645.08	-516.02	558.89	9.00	8.94	-1.14
7,200.00	76.84	272.60	6,933.21	650.21	-611.08	654.09	9.00	8.95	-1.00
7,300.00	85.79	271.67	6,948.28	653.88	-709.77	752.79	9.00	8.95	-0.93
7,349.97	90.27	271.22	6,950.00	655.14	-759.68	802.67	9.00	8.95	-0.91
POE @ 7349' MD - 36.8986615 / -107.4510571									
7,400.00	90.27	271.22	6,949.77	656.20	-809.70	852.65	0.00	0.00	0.00
7,500.00	90.27	271.22	6,949.30	658.33	-909.67	952.53	0.00	0.00	0.00
7,600.00	90.27	271.22	6,948.83	660.45	-1,009.65	1,052.42	0.00	0.00	0.00
7,700.00	90.27	271.22	6,948.36	662.58	-1,109.63	1,152.31	0.00	0.00	0.00
7,800.00	90.27	271.22	6,947.89	664.70	-1,209.60	1,252.20	0.00	0.00	0.00
7,900.00	90.27	271.22	6,947.42	666.83	-1,309.58	1,352.08	0.00	0.00	0.00
8,000.00	90.27	271.22	6,946.95	668.95	-1,409.56	1,451.97	0.00	0.00	0.00
8,100.00	90.27	271.22	6,946.48	671.08	-1,509.53	1,551.86	0.00	0.00	0.00
8,200.00	90.27	271.22	6,946.01	673.20	-1,609.51	1,651.75	0.00	0.00	0.00
8,300.00	90.27	271.22	6,945.54	675.33	-1,709.49	1,751.64	0.00	0.00	0.00
8,400.00	90.27	271.22	6,945.07	677.45	-1,809.46	1,851.52	0.00	0.00	0.00
8,500.00	90.27	271.22	6,944.60	679.58	-1,909.44	1,951.41	0.00	0.00	0.00
8,600.00	90.27	271.22	6,944.13	681.70	-2,009.41	2,051.30	0.00	0.00	0.00
8,700.00	90.27	271.22	6,943.66	683.83	-2,109.39	2,151.19	0.00	0.00	0.00
8,800.00	90.27	271.22	6,943.19	685.95	-2,209.37	2,251.08	0.00	0.00	0.00
8,900.00	90.27	271.22	6,942.72	688.08	-2,309.34	2,350.96	0.00	0.00	0.00
9,000.00	90.27	271.22	6,942.25	690.20	-2,409.32	2,450.85	0.00	0.00	0.00
9,100.00	90.27	271.22	6,941.78	692.33	-2,509.30	2,550.74	0.00	0.00	0.00
9,200.00	90.27	271.22	6,941.31	694.45	-2,609.27	2,650.63	0.00	0.00	0.00
9,300.00	90.27	271.22	6,940.84	696.57	-2,709.25	2,750.51	0.00	0.00	0.00
9,400.00	90.27	271.22	6,940.37	698.70	-2,809.22	2,850.40	0.00	0.00	0.00
9,500.00	90.27	271.22	6,939.90	700.82	-2,909.20	2,950.29	0.00	0.00	0.00
9,600.00	90.27	271.22	6,939.43	702.95	-3,009.18	3,050.18	0.00	0.00	0.00
9,700.00	90.27	271.22	6,938.96	705.07	-3,109.15	3,150.07	0.00	0.00	0.00
9,800.00	90.27	271.22	6,938.49	707.20	-3,209.13	3,249.95	0.00	0.00	0.00
9,900.00	90.27	271.22	6,938.02	709.32	-3,309.11	3,349.84	0.00	0.00	0.00

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**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)
10,000.00	90.27	271.22	6,937.55	711.45	-3,409.08	3,449.73	0.00	0.00	0.00
10,100.00	90.27	271.22	6,937.08	713.57	-3,509.06	3,549.62	0.00	0.00	0.00
10,200.00	90.27	271.22	6,936.61	715.70	-3,609.04	3,649.50	0.00	0.00	0.00
10,300.00	90.27	271.22	6,936.14	717.82	-3,709.01	3,749.39	0.00	0.00	0.00
10,400.00	90.27	271.22	6,935.67	719.95	-3,808.99	3,849.28	0.00	0.00	0.00
10,500.00	90.27	271.22	6,935.20	722.07	-3,908.96	3,949.17	0.00	0.00	0.00
10,600.00	90.27	271.22	6,934.73	724.20	-4,008.94	4,049.06	0.00	0.00	0.00
10,700.00	90.27	271.22	6,934.26	726.32	-4,108.92	4,148.94	0.00	0.00	0.00
10,800.00	90.27	271.22	6,933.79	728.45	-4,208.89	4,248.83	0.00	0.00	0.00
10,900.00	90.27	271.22	6,933.32	730.57	-4,308.87	4,348.72	0.00	0.00	0.00
11,000.00	90.27	271.22	6,932.85	732.70	-4,408.85	4,448.61	0.00	0.00	0.00
11,100.00	90.27	271.22	6,932.38	734.82	-4,508.82	4,548.50	0.00	0.00	0.00
11,200.00	90.27	271.22	6,931.91	736.95	-4,608.80	4,648.38	0.00	0.00	0.00
11,300.00	90.27	271.22	6,931.44	739.07	-4,708.78	4,748.27	0.00	0.00	0.00
11,400.00	90.27	271.22	6,930.97	741.20	-4,808.75	4,848.16	0.00	0.00	0.00
11,500.00	90.27	271.22	6,930.50	743.32	-4,908.73	4,948.05	0.00	0.00	0.00
11,600.00	90.27	271.22	6,930.03	745.45	-5,008.70	5,047.93	0.00	0.00	0.00
11,700.00	90.27	271.22	6,929.56	747.57	-5,108.68	5,147.82	0.00	0.00	0.00
11,800.00	90.27	271.22	6,929.09	749.70	-5,208.66	5,247.71	0.00	0.00	0.00
11,900.00	90.27	271.22	6,928.62	751.82	-5,308.63	5,347.60	0.00	0.00	0.00
12,000.00	90.27	271.22	6,928.15	753.94	-5,408.61	5,447.49	0.00	0.00	0.00
12,100.00	90.27	271.22	6,927.68	756.07	-5,508.59	5,547.37	0.00	0.00	0.00
12,200.00	90.27	271.22	6,927.21	758.19	-5,608.56	5,647.26	0.00	0.00	0.00
12,300.00	90.27	271.22	6,926.74	760.32	-5,708.54	5,747.15	0.00	0.00	0.00
12,400.00	90.27	271.22	6,926.27	762.44	-5,808.51	5,847.04	0.00	0.00	0.00
12,500.00	90.27	271.22	6,925.80	764.57	-5,908.49	5,946.93	0.00	0.00	0.00
12,600.00	90.27	271.22	6,925.33	766.69	-6,008.47	6,046.81	0.00	0.00	0.00
12,700.00	90.27	271.22	6,924.86	768.82	-6,108.44	6,146.70	0.00	0.00	0.00
12,800.00	90.27	271.22	6,924.39	770.94	-6,208.42	6,246.59	0.00	0.00	0.00
12,900.00	90.27	271.22	6,923.92	773.07	-6,308.40	6,346.48	0.00	0.00	0.00
13,000.00	90.27	271.22	6,923.45	775.19	-6,408.37	6,446.36	0.00	0.00	0.00
13,100.00	90.27	271.22	6,922.98	777.32	-6,508.35	6,546.25	0.00	0.00	0.00
13,200.00	90.27	271.22	6,922.51	779.44	-6,608.33	6,646.14	0.00	0.00	0.00
13,300.00	90.27	271.22	6,922.04	781.57	-6,708.30	6,746.03	0.00	0.00	0.00
13,400.00	90.27	271.22	6,921.57	783.69	-6,808.28	6,845.92	0.00	0.00	0.00
13,500.00	90.27	271.22	6,921.10	785.82	-6,908.25	6,945.80	0.00	0.00	0.00
13,600.00	90.27	271.22	6,920.63	787.94	-7,008.23	7,045.69	0.00	0.00	0.00
13,700.00	90.27	271.22	6,920.16	790.07	-7,108.21	7,145.58	0.00	0.00	0.00
13,800.00	90.27	271.22	6,919.70	792.19	-7,208.18	7,245.47	0.00	0.00	0.00
13,900.00	90.27	271.22	6,919.23	794.32	-7,308.16	7,345.35	0.00	0.00	0.00
14,000.00	90.27	271.22	6,918.76	796.44	-7,408.14	7,445.24	0.00	0.00	0.00
14,100.00	90.27	271.22	6,918.29	798.57	-7,508.11	7,545.13	0.00	0.00	0.00
14,200.00	90.27	271.22	6,917.82	800.69	-7,608.09	7,645.02	0.00	0.00	0.00
14,300.00	90.27	271.22	6,917.35	802.82	-7,708.06	7,744.91	0.00	0.00	0.00
14,400.00	90.27	271.22	6,916.88	804.94	-7,808.04	7,844.79	0.00	0.00	0.00
14,500.00	90.27	271.22	6,916.41	807.07	-7,908.02	7,944.68	0.00	0.00	0.00
14,600.00	90.27	271.22	6,915.94	809.19	-8,007.99	8,044.57	0.00	0.00	0.00
14,700.00	90.27	271.22	6,915.47	811.31	-8,107.97	8,144.46	0.00	0.00	0.00
14,800.00	90.27	271.22	6,915.00	813.44	-8,207.95	8,244.35	0.00	0.00	0.00
14,900.00	90.27	271.22	6,914.53	815.56	-8,307.92	8,344.23	0.00	0.00	0.00
15,000.00	90.27	271.22	6,914.06	817.69	-8,407.90	8,444.12	0.00	0.00	0.00
15,100.00	90.27	271.22	6,913.59	819.81	-8,507.88	8,544.01	0.00	0.00	0.00
15,200.00	90.27	271.22	6,913.12	821.94	-8,607.85	8,643.90	0.00	0.00	0.00
15,300.00	90.27	271.22	6,912.65	824.06	-8,707.83	8,743.78	0.00	0.00	0.00

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**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)
15,400.00	90.27	271.22	6,912.18	826.19	-8,807.80	8,843.67	0.00	0.00	0.00
15,500.00	90.27	271.22	6,911.71	828.31	-8,907.78	8,943.56	0.00	0.00	0.00
15,600.00	90.27	271.22	6,911.24	830.44	-9,007.76	9,043.45	0.00	0.00	0.00
15,700.00	90.27	271.22	6,910.77	832.56	-9,107.73	9,143.34	0.00	0.00	0.00
15,800.00	90.27	271.22	6,910.30	834.69	-9,207.71	9,243.22	0.00	0.00	0.00
15,900.00	90.27	271.22	6,909.83	836.81	-9,307.69	9,343.11	0.00	0.00	0.00
16,000.00	90.27	271.22	6,909.36	838.94	-9,407.66	9,443.00	0.00	0.00	0.00
16,100.00	90.27	271.22	6,908.89	841.06	-9,507.64	9,542.89	0.00	0.00	0.00
16,200.00	90.27	271.22	6,908.42	843.19	-9,607.61	9,642.77	0.00	0.00	0.00
16,300.00	90.27	271.22	6,907.95	845.31	-9,707.59	9,742.66	0.00	0.00	0.00
16,400.00	90.27	271.22	6,907.48	847.44	-9,807.57	9,842.55	0.00	0.00	0.00
16,500.00	90.27	271.22	6,907.01	849.56	-9,907.54	9,942.44	0.00	0.00	0.00
16,600.00	90.27	271.22	6,906.54	851.69	-10,007.52	10,042.33	0.00	0.00	0.00
16,700.00	90.27	271.22	6,906.07	853.81	-10,107.50	10,142.21	0.00	0.00	0.00
16,800.00	90.27	271.22	6,905.60	855.94	-10,207.47	10,242.10	0.00	0.00	0.00
16,900.00	90.27	271.22	6,905.13	858.06	-10,307.45	10,341.99	0.00	0.00	0.00
17,000.00	90.27	271.22	6,904.66	860.19	-10,407.43	10,441.88	0.00	0.00	0.00
17,100.00	90.27	271.22	6,904.19	862.31	-10,507.40	10,541.77	0.00	0.00	0.00
17,200.00	90.27	271.22	6,903.72	864.44	-10,607.38	10,641.65	0.00	0.00	0.00
17,300.00	90.27	271.22	6,903.25	866.56	-10,707.35	10,741.54	0.00	0.00	0.00
17,400.00	90.27	271.22	6,902.78	868.69	-10,807.33	10,841.43	0.00	0.00	0.00
17,500.00	90.27	271.22	6,902.31	870.81	-10,907.31	10,941.32	0.00	0.00	0.00
17,600.00	90.27	271.22	6,901.84	872.93	-11,007.28	11,041.20	0.00	0.00	0.00
17,700.00	90.27	271.22	6,901.37	875.06	-11,107.26	11,141.09	0.00	0.00	0.00
17,800.00	90.27	271.22	6,900.90	877.18	-11,207.24	11,240.98	0.00	0.00	0.00
17,900.00	90.27	271.22	6,900.43	879.31	-11,307.21	11,340.87	0.00	0.00	0.00
18,000.00	90.27	271.22	6,899.96	881.43	-11,407.19	11,440.76	0.00	0.00	0.00
18,100.00	90.27	271.22	6,899.49	883.56	-11,507.16	11,540.64	0.00	0.00	0.00
18,200.00	90.27	271.22	6,899.02	885.68	-11,607.14	11,640.53	0.00	0.00	0.00
18,300.00	90.27	271.22	6,898.55	887.81	-11,707.12	11,740.42	0.00	0.00	0.00
18,400.00	90.27	271.22	6,898.08	889.93	-11,807.09	11,840.31	0.00	0.00	0.00
18,500.00	90.27	271.22	6,897.61	892.06	-11,907.07	11,940.20	0.00	0.00	0.00
18,600.00	90.27	271.22	6,897.14	894.18	-12,007.05	12,040.08	0.00	0.00	0.00
18,700.00	90.27	271.22	6,896.67	896.31	-12,107.02	12,139.97	0.00	0.00	0.00
18,800.00	90.27	271.22	6,896.20	898.43	-12,207.00	12,239.86	0.00	0.00	0.00
18,900.00	90.27	271.22	6,895.73	900.56	-12,306.98	12,339.75	0.00	0.00	0.00
19,000.00	90.27	271.22	6,895.26	902.68	-12,406.95	12,439.63	0.00	0.00	0.00
19,100.00	90.27	271.22	6,894.79	904.81	-12,506.93	12,539.52	0.00	0.00	0.00
19,200.00	90.27	271.22	6,894.32	906.93	-12,606.90	12,639.41	0.00	0.00	0.00
19,300.00	90.27	271.22	6,893.85	909.06	-12,706.88	12,739.30	0.00	0.00	0.00
19,400.00	90.27	271.22	6,893.38	911.18	-12,806.86	12,839.19	0.00	0.00	0.00
19,500.00	90.27	271.22	6,892.91	913.31	-12,906.83	12,939.07	0.00	0.00	0.00
19,600.00	90.27	271.22	6,892.44	915.43	-13,006.81	13,038.96	0.00	0.00	0.00
19,700.00	90.27	271.22	6,891.97	917.56	-13,106.79	13,138.85	0.00	0.00	0.00
19,800.00	90.27	271.22	6,891.50	919.68	-13,206.76	13,238.74	0.00	0.00	0.00
19,900.00	90.27	271.22	6,891.03	921.81	-13,306.74	13,338.62	0.00	0.00	0.00
19,953.75	90.27	271.22	6,890.78	922.95	-13,360.48	13,392.31	0.00	0.00	0.00
36.8993883 / -107.4941520 - First Perf @ 19,953' MD									
20,000.00	90.27	271.22	6,890.56	923.93	-13,406.71	13,438.51	0.00	0.00	0.00
20,100.00	90.27	271.22	6,890.10	926.06	-13,506.69	13,538.40	0.00	0.00	0.00
20,120.20	90.27	271.22	6,890.00	926.48	-13,526.89	13,558.58	0.00	0.00	0.00
TD at 20120.20									

Lonestar Consulting, LLC

Planning Report

Database:	Grand Junction	**Local Co-ordinate Reference:**	Well Rosa Unit #590H - Slot B2
Company:	Logos Operating LLC	**TVD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Project:	Rio Arriba, NM NAD83	**MD Reference:**	GL 6325' & RKB 30' @ 6355.00ft
Site:	Rosa Unit 8	**North Reference:**	True
Well:	Rosa Unit #590H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2		

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
590H FPerf - plan misses target center by 0.79ft at 19953.76ft MD (6890.78 TVD, 922.95 N, -13360.49 E) - Point	0.00	0.00	6,890.00	922.84	-13,360.48	2,146,879.7415	2,822,265.8799	36.8993880	-107.4941520
590H BHL - plan hits target center - Point	0.00	0.00	6,890.00	926.48	-13,526.89	2,146,882.7184	2,822,099.4659	36.8993978	-107.4947211
590H POE Rev 1 - plan hits target center - Point	0.00	0.00	6,950.00	655.14	-759.68	2,146,662.8696	2,834,867.6374	36.8986614	-107.4510571

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,401.14	2,392.00	Ojo Alamo		0.00	0.00
2,515.76	2,506.00	Kirtland		0.00	0.00
2,979.25	2,967.00	Fruitland		0.00	0.00
3,067.72	3,055.00	Top Coal		0.00	0.00
3,192.39	3,179.00	Base Coal		0.00	0.00
3,375.37	3,361.00	Pictured Cliffs		0.00	0.00
3,475.91	3,461.00	Lewis		0.00	0.00
4,601.96	4,581.00	Chacra		0.00	0.00
5,084.55	5,061.00	Upper Cliff House		0.00	0.00
5,405.27	5,380.00	Cliff House		0.00	0.00
5,439.46	5,414.00	Menefee		0.00	0.00
5,681.76	5,655.00	Point Lookout		0.00	0.00
6,167.36	6,138.00	Mancos		0.00	0.00

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
500.00	500.00	0.00	0.00	Start Build 2.00
796.99	796.46	15.05	-3.17	Start 5564.93 hold at 796.99 MD
6,361.93	6,331.52	578.60	-121.74	Start DLS 9.00 TFO -76.94
7,349.97	6,950.00	655.14	-759.68	POE @ 7349' MD
7,349.97	6,950.00	655.14	-759.68	36.8986615 / -107.4510571
19,953.75	6,890.78	922.95	-13,360.48	36.8993883 / -107.4941520
19,953.75	6,890.78	922.95	-13,360.48	First Perf @ 19,953' MD
20,120.20	6,890.00	926.48	-13,526.89	TD at 20120.20

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 407966
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
etta trujillo	Cement is required to circulate on both surface and intermediate1 strings of casing.	12/3/2024
etta trujillo	If cement does not circulate on any string, a Cement Bond Log (CBL) is required for that string of casing.	12/3/2024
ward.rikala	Notify the OCD 24 hours prior to casing & cement.	12/18/2024
ward.rikala	File As Drilled C-102 and a directional Survey with C-104 completion packet.	12/18/2024
ward.rikala	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.	12/18/2024
ward.rikala	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.	12/18/2024