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.: NMNM91078

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.:

8. Lease Name and Well No.: RANA SALADA 12 FED COM 221H

2. Name of Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

9. API Well No.: 30-015-54287

3a. Address: 228 ST. CHARLES AVENUE, SUITE 912, NEW ORLEANS

3b. Phone No. *(include area code)*: (504) 523-1831

10. Field and Pool, or Exploratory: PURPLE SAGE/WOLFCAMP

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

At surface: SWNW / 1777 FNL / 362 FWL / LAT 32.3224418 / LONG -104.0482238

At proposed prod. zone: NENE / 843 FNL / 130 FEL / LAT 32.3251791 / LONG -104.0324075

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 12/T23S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*: 4 miles

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 457 feet

16. No of acres in lease:

17. Spacing Unit dedicated to this well: 320.0

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 20 feet

19. Proposed Depth: 9919 feet / 15123 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3006 feet

22. Approximate date work will start*: 10/01/2023

23. Estimated duration: 90 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	BRIAN WOOD / Ph: (405) 404-0414	03/24/2023

Title: President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	CODY LAYTON / Ph: (575) 234-5959	09/13/2023

Title	Office
Assistant Field Manager Lands & Minerals	Carlsbad 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: 09/13/2023

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
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
30-015- 54287	98220	PURPLE SAGE; WOLFCAMP (GAS)

[4] Property Code	[5] Property Name	[6] Well Number
334756	RANA SALADA 12 FED COM	221H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372920	NOVO OIL & GAS NORTHERN DELAWARE, LLC	3006.2

[10] Surface Location

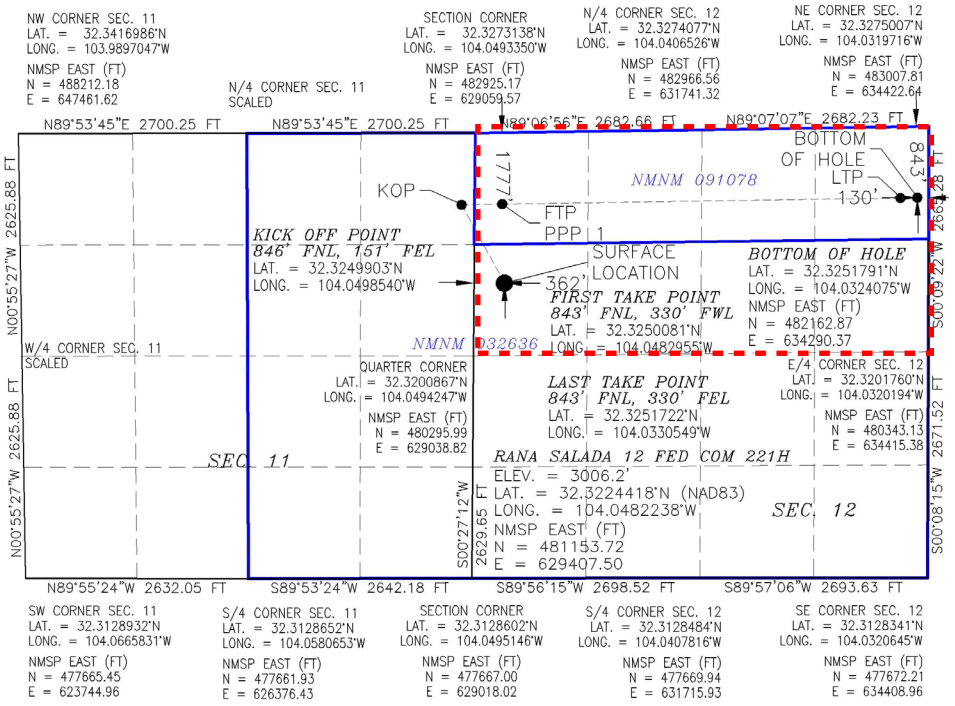
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	12	23 S	28 E		1777	NORTH	362	WEST	EDDY

[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
A	12	23 S	28 E		843	NORTH	130	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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.

Cory Walk — 03-10-2023
Signature — Date

Cory Walk
Printed Name

cory@permitswest.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.

FEBRUARY 21, 2023
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: EDMOND F. JARAMILLO, JR. LS 12797
SURVEY NO. 9646A

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: _Novo Oil & Gas Northern Delaware, LLC_____ **OGRID:** ___372920_____**Date:** __9__/_20___/_23____

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
Rana Salada 12 Fed Com 231H		E-12-23S-28E	1,567’ FNL & 362’ FWL	450	4,600	1,950
Rana Salada 12 Fed Com 232H		E-12-23S-28E	1,587’ FNL & 362’ FWL	450	4,600	1,950
Rana Salada 12 Fed Com 235H		E-12-23S-28E	1,607’ FNL & 362’ FWL	450	4,600	1,950
Rana Salada 12 Fed Com 131H		E-12-23S-28E	1,757’ FNL & 362’ FWL	800	1,100	2,450
Rana Salada 12 Fed Com 221H		E-12-23S-28E	1,777’ FNL & 362’ FWL	800	1,100	2,450
Rana Salada 12 Fed Com 212H		E-12-23S-28E	1,797’ FNL & 362’ FWL	800	1,100	2,450
Rana Salada 12 Fed Com 132H		E-12-23S-28E	1,817’ FNL & 362’ FWL	800	1,100	2,450
Rana Salada 12 Fed Com 125H		E-12-23S-28E	1,837’ FNL & 362’ FWL	550	800	1,100
Rana Salada 12 Fed Com 112H		E-12-23S-28E	1,857’ FNL & 362’ FWL	850	2,850	1,550
Rana Salada 12 Fed Com 012H		E-12-23S-28E	1,877’ FNL & 362’ FWL	275	900	1,150

IV. Central Delivery Point Name: _CTB Name: Rana Salada Pad 12A CTB_____ [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
Rana Salada 12 Fed Com 231H		2/1/2025	2/20/2025	10/1/2023	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 232H		2/5/2025	3/12/2025	10/3/2023	11/7/2025	11/1/2025

Rana Salada 12 Fed Com 235H		2/8/2025	4/2/2025	10/5/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 131H		2/11/2025	4/23/2025	10/7/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 221H		2/15/2025	6/4/2025	10/10/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 212H		2/18/2025	6/25/2025	10/13/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 132H		2/21/2025	7/16/2025	10/16/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 125H		2/25/2025	8/6/2025	10/19/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 112H		2/28/2025	8/27/2025	10/22/2025	11/7/2025	11/1/2025
Rana Salada 12 Fed Com 012H		3/1/2025	9/17/2025	10/25/2025	11/7/2025	11/1/2025

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 well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

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

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

Section 4 - Notices

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

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

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

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

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

Signature:	Justin Carter
Printed Name:	Justin Carter
Title:	Landman
E-mail Address:	jcarter@novoog.com
Date:	9/28/2023
Phone:	405.286.3375

OIL CONSERVATION DIVISION **(Only applicable when submitted as a standalone form)**
Approved By:
Title:
Approval Date:
Conditions of Approval:

APPENDIX A

Separation Equipment

Novo Oil & Gas Northern Delaware, LLC (Novo) has pulled representative pressurized samples from wells in the same producing formation. Novo has utilized these samples in process simulations to determine the amount of gas anticipated in each stage of the process and utilized this information with a safety factor to size the equipment listed below:

- Separation equipment will be set as follows:
  - Individual 3 Phase separators will be set for each individual well.
    - The separators will be sized based on the anticipated volume of the well and the pressure of the lines utilized for oil, gas, and water takeaway.
  - Individual Heater treaters will be set for each individual well.
    - The heater treaters are sized based on the anticipated combined volume of oil and water predicted to come from the initial 3 phase separator.
    - Oil will be separated from the water and water will be sent to its respective tanks
    - The combined oil and natural gas stream is routed to the Vapor Recovery Tower.
  - The oil and water tanks utilize a closed vent capture system to ensure all breathing, working and flashing losses are routed to the Vapor Recovery Tower (VRT) and Vapor Recovery Unit (VRU)
  - The Vapor Recovery Tower has been sized, based on the anticipated volume of gas from the heater treater and oil and water tanks. A VRU is then utilized to push the recovered gas into the sales pipeline.
    - The VRU will be sized based on the anticipated gas volume and the gas pressure for the line utilized for takeaway.

All equipment has been sized based on the modeled projected need and a safety factor of at least 10%. This is ensuring that the capture of methane gas and VOC will minimize flaring below 50mcf/d per facility.

Operational Practices

19.15.27.8 (A) Venting and Flaring of Natural Gas

Novo Oil & Gas Northern Delaware, LLC (Novo) understands the requirements of NMAC 19.15.27.8 which states that the venting and flaring of natural gas during drilling, completion or production that constitutes waste as defined in 19.15.2 are prohibited.

19.15.27.8 (B) Venting and flaring during drilling operations

1. Novo shall capture or combust natural gas if technically feasible during drilling operations using best industry practices.
2. A flare stack with a 100 percent capacity for expected volumes will be set on location of the CTB at least 100 feet from the nearest surface hole location, well heads, and storage tanks.
3. In the event of an emergency, Novo will vent natural gas in order to avoid substantial impact. Novo shall report the vented or flared gas to the NMOCD.

19.15.27.8 (C) Venting and flaring during completion or recompletion

During completion operations, Novo utilizes the following:

1. Novo facilities are built and ready from day 1 of flowback
2. Individual well test separators will be set to properly separate gas and liquids. Temporary test separator will be utilized initially to process volumes. In addition, separators will be tied into flowback tanks which will be tied into the gas processing equipment for sales down a pipeline. See **Appendix A** for details on Separation Equipment used by Novo.
3. Should the facility not yet be capable of processing gas, or the gas does not meet quality standards, then storage tanks will be set that are tied into gas busters or a temporary flare to manage all natural gas. This flare would meet the following requirements:
    a) An appropriately sized flare stack with an automatic igniter
    b) Novo analyzes the natural gas samples twice per week

c) Novo routes the natural gas into a gathering pipeline as soon as the pipeline specifications are met
d) Novo provides the NMOCD with pipeline specifications and natural gas data.

19.15.27.8 (D) Venting and flaring during production operations.

Novo will not vent or flare natural gas except under the following circumstances:

1. During an emergency or malfunction
2. To unload or clean-up liquid holdup in a well to atmospheric pressure, provided
   a) Novo does not vent after the well achieves a stabilized rate and pressure
   b) Novo will remain present on-site during liquids unloaded by manual purging and takes all reasonable actions to achieve a stabilized rate and pressure at the earliest practical time
   c) Novo will optimize the system to minimize natural gas venting on any well equipped with a plunger lift or auto control system
   d) Best management practices will be used during downhole well maintenance.
3. During the first year of production from an exploratory well provided
   a) Novo receives approval from the NMOCD
   b) Novo remains in compliance with NM gas capture requirements
   c) Novo submits an updated C-129 from to the NMOCD.
4. During the following activities unless prohibited
   a) Gauging or sampling a storage tank or low-pressure production vessel
   b) Loading out liquids from a storage tank
   c) Repair and maintenance
   d) Normal operation of a gas-activated pneumatic controller or pump
   e) Normal operation of a storage tank but not including venting from a thief hatch
   f) Normal operation of dehydration units
   g) Normal operations of compressors, compressor engines, turbines, valves, flanges, and connectors
   h) During a bradenhead, packer leakage test, or production test lasting less than 24 hours
   i) When natural gas does not meet the gathering pipeline specifications
   j) Commissioning of pipelines, equipment, or facilities only for as long as necessary to purge introduced impurities.

In order to comply with these laws, see **Appendix B** for details on Novo Venting and Flaring.

19.15.27.8 (E) Performance standards

1. Novo has utilized process simulations with a safety factor to design all separation and storage equipment. The equipment is routed to a vapor recovery system and utilizes as a flare as back up for periods of startup, shutdown, maintenance or malfunction of the VRU system.
2. Novo will install a flare that designed to handle the full volume of vapors from the facility in case of VRU failure and it is designed with an auto-ignition system.
3. Flare stacks will be appropriately sized and designed to ensure proper combustion efficiency
    a) Flare stacks installed or replaced will be equipped with an automatic ignitor or continuous pilot
    b) Previously installed flare stacks will be retrofitted with an automatic ignitor, continuous pilot , or technology that alerts Novo of flare malfunction within 18 months after May 25, 2021.
    c) Flare stacks replaced after May 25, 2021 will be equipped with an automatic ignitor or continuous pilot if located at a well or facility with an average daily production of 60,000 cubic feet of natural gas or less.
    d) Flare stacks will be located at least 100 feet from well and storage tanks and securely anchored
4. Novo will conduct an AVO inspection on all components for leaks and defects at least weekly.
5. Novo will make and keep records of AVO inspections available to the NMOCD for at least 5 years.
6. Novo may use a remote or automated monitoring technology to detect leaks and releases in lieu of AVO inspections with prior NMOCD approval.
7. Facilities will be designed to minimize waste.
8. Novo will resolve emergencies as promptly as possible.

19.15.27.8 (F) Measurement or estimation of vented and flared natural gas

1. Novo will have meters on both the low pressure and high pressure sides of the flares and the volumes are recorded in the SCADA system.
2. Novo will install equipment to measure the volume of flared natural gas that has an average daily production of 60,000 cubic feet or greater of natural gas.
3. Novo's measuring equipment will conform to an industry standards.
4. The measurement system is designed such that it cannot be bypassed except for inspections and servicing the meters.
5. Novo will estimate the volume of vented or flared natural gas using a methodology that can be independently verified if metering is not practicable due to low flow rate or pressure.

6. Novo will estimate the volume of vented and flared natural gas based on the results of an annual GOR test for wells that do not require measuring equipment reported on form C-116.
7. Novo will install measuring equipment whenever the NMOCD determines that metering is necessary.

APPENDIX A

Separation Equipment

Novo Oil & Gas Northern Delaware, LLC (Novo) has pulled representative pressurized samples from wells in the same producing formation. Novo has utilized these samples in process simulations to determine the amount of gas anticipated in each stage of the process and utilized this information with a safety factor to size the equipment listed below:

- Separation equipment will be set as follows:
  - Individual 3 Phase separators will be set for each individual well.
    - The separators will be sized based on the anticipated volume of the well and the pressure of the lines utilized for oil, gas, and water takeaway.
  - Individual Heater treaters will be set for each individual well.
    - The heater treaters are sized based on the anticipated combined volume of oil and water predicted to come from the initial 3 phase separator.
    - Oil will be separated from the water and water will be sent to its respective tanks
    - The combined oil and natural gas stream is routed to the Vapor Recovery Tower.
  - The oil and water tanks utilize a closed vent capture system to ensure all breathing, working and flashing losses are routed to the Vapor Recovery Tower (VRT) and Vapor Recovery Unit (VRU)
  - The Vapor Recovery Tower has been sized, based on the anticipated volume of gas from the heater treater and oil and water tanks. A VRU is then utilized to push the recovered gas into the sales pipeline.
    - The VRU will be sized based on the anticipated gas volume and the gas pressure for the line utilized for takeaway.

All equipment has been sized based on the modeled projected need and a safety factor of at least 10%. This is ensuring that the capture of methane gas and VOC will minimize flaring below 50mcf/d per facility.

APPENDIX B

Venting and Flaring

Novo Oil & Gas Northern Delaware, LLC (Novo) has a natural gas system available prior to startup of completion operations. Novo utilizes a VRU system and sells all gas except during periods of startup, shutdown, maintenance, or malfunction for the gas capturing equipment, including the VRT, VRU, storage tanks, and pipelines.

Currently, Novo utilizes the following from list A-I of Section 3 for its operations to minimize flaring:

a) Novo Oil & Gas utilizes Natural Gas (NG) powered generators to power it's leases where grid power isn't available.
b) When electrical grid power is unavailable, NG generators will be used for major equipment onsite.
c) Novo Oil & Gas compression in service will be NG powered.
d) Should liquids removal – such as dehydration – be required, units will be powered by NG.

Additionally, Novo Oil & Gas will only flare gas during the following times:

- Scheduled maintenance for gas capturing equipment including:
  - VRT
  - VRU
  - Storage tanks
  - Pipelines
- Emergency flaring

Best Management Practices

Novo Oil & Gas Northern Delaware, LLC (Novo) utilizes the following best management practices to minimize venting during active and planned maintenance.

Novo has a closed vent capture system to route emissions from the heater treater, tanks and vapor recovery to the VRU with a flare for backup. The system is designed such that if the VRU is taken out of service for any reason, the vapors will be routed to the flare for combustion.

Novo will isolate and attempt to route all vapors to the VRU or flare prior to opening any lines for maintenance to minimize venting from the equipment. Not limited to:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Drilling Plan Data Report

09/13/2023

APD ID: 10400091154 **Submission Date:** 03/24/2023

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

Well Type: CONVENTIONAL GAS WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
12115244	QUATERNARY	3006	0	0	OTHER : None	USEABLE WATER	N
12115245	RUSTLER ANHYDRITE	2696	310	310	ANHYDRITE	NONE	N
12115246	SALADO	2442	564	574	SALT	NONE	N
12115243	LAMAR	126	2880	2900	LIMESTONE	NONE	N
12115247	BELL CANYON	126	2880	2910	SANDSTONE	NATURAL GAS, OIL	N
12115241	CHERRY CANYON	-924	3930	3970	SANDSTONE	NATURAL GAS, OIL	N
12115248	BRUSHY CANYON	-2369	5375	5425	SANDSTONE	NATURAL GAS, OIL	N
12115242	BONE SPRING LIME	-3459	6465	6525	LIMESTONE	NATURAL GAS, OIL	N
12115249	AVALON SAND	-3957	6963	7033	SHALE	NATURAL GAS, OIL	N
12115250	BONE SPRING 1ST	-4194	7200	7280	SANDSTONE	NATURAL GAS, OIL	N
12115252	BONE SPRING 2ND	-4814	7820	7910	OTHER : Carbonate	NATURAL GAS, OIL	N
12115251	BONE SPRING 2ND	-5284	8290	8390	SANDSTONE	NATURAL GAS, OIL	N
12115253	BONE SPRING 3RD	-5649	8655	8765	OTHER : Carbonate	NATURAL GAS, OIL	N
12115240	WOLFCAMP	-6604	9610	9730	OTHER : XY Carbonate	NATURAL GAS, OIL	N
12115239	WOLFCAMP	-6794	9800	9903	OTHER : A Carbonate	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

Pressure Rating (PSI): 5M **Rating Depth:** 15000

Equipment: A 13.625" 5M Blowout Preventer system will be installed on a multi-bowl (speed head) wellhead with a 13.625" flanged casing spool. Top flange of casing spool will be set in a cellar below ground level. BOP system will consist of a single pipe ram on the bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top, and annular preventer. Blowout preventer will be installed on top of the 13.375" surface casing and will remain installed to TD of the well. Wellhead, blowout preventer, and choke manifold diagram are included.

Requesting Variance? YES

Variance request: Variance is requested to use a co-flex hose between the BOP system and choke manifold. A typical co-flex pressure test certificate is attached. An equipment specific co-flex pressure test certificate will be on site when testing the BOP.
Testing Procedure: All casing strings will be tested in accordance with Onshore Order 2 III.B.1.h. The BOP system will be isolated with a test plug and tested by an independent tester to 250 psi low and 5,000 psi high for 10 minutes. The Surface Casing will be pressure tested to 250 psi low and 1500 psi high. Intermediate Casing will be pressure tested to 250 psi low and (.22 psi x Shoe TVD, which is equivalent to 2024.44 psi) high for 30 minutes.

Choke Diagram Attachment:

Choke_5M_20230315112259.pdf

BOP Diagram Attachment:

BOP_5M_20230315112314.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	390	0	390	3006	2616	390	J-55	54.5	BUTT	1.125	1.125	DRY	1.6	DRY	1.6
2	INTERMEDIATE	9.875	8.625	NEW	NON API	N	0	9352	0	9202	3006	-6196	9352	OTHER	32	OTHER - Talon HTQ	1.125	1.125	DRY	1.6	DRY	1.6
3	PRODUCTION	7.875	5.5	NEW	NON API	N	0	16052	0	9902	3006	-6896	16052	OTHER	20	OTHER - DWC/C IS+	1.125	1.125	DRY	1.6	DRY	1.6

Casing Attachments

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Assumptions_3string_20230315112406.pdf

Casing ID: 2 **String** INTERMEDIATE

Inspection Document:

Spec Document:

8.625_P110HP_TALON_HTQ_Casing_Spec_20230315112434.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Assumptions_3string_20230315112446.pdf

Casing ID: 3 **String** PRODUCTION

Inspection Document:

Spec Document:

5.5in_P110_EC_Casing_Spec_20230315112512.pdf

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Casing_Design_Assumptions_3string_20230315112523.pdf

Section 4 - Cement

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	0	0	0	0	0	0	None	None
SURFACE	Tail		0	390	334	1.62	13.8	542	100	Class C	Gel, Accelerator, LCM
PRODUCTION	Lead		0	7202	715	2.12	12	1516	20	Class H	Fluid Loss, Retarder, LCM
PRODUCTION	Tail		7202	16052	1378	1.59	13.2	2191	20	Class H	Fluid Loss, Retarder, LCM
INTERMEDIATE	Lead		0	8202	619	3.58	10	2214	100	Class C or H	Fluid Loss, Retarder, LCM, Possibly Beads
INTERMEDIATE	Tail		8202	9352	130	1.39	13.8	181	50	Class C or H	Fluid Loss, Retarder, LCM

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (barite, bentonite, LCM) to control weight and fluid loss will be on site at all times. Mud program may change due to hole conditions.

Describe the mud monitoring system utilized: An electronic PVT mud system will monitor flow rate, pump pressure, stroke rate, and volume.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	390	OTHER : Water Based Spud Mud	8.3	8.3							
390	9202	OTHER : Brine Diesel Emulstion	8.8	9.6							

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
9202	16052	OIL-BASED MUD	11	12.5							

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A 2-person mud logging program will be used from 3000' to TD. GR log will be acquired by MWD tools from the intermediate casing to TD.

List of open and cased hole logs run in the well:

GAMMA RAY LOG,MUD LOG/GEOLOGICAL LITHOLOGY LOG,

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 5679 **Anticipated Surface Pressure:** 3496

Anticipated Bottom Hole Temperature(F): 215

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

RS12_H2S_Plan_20230315112708.pdf

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA 12 FED COM **Well Number:** 221H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RS12_221H_Directional_Plan_20230315112822.pdf

Other proposed operations facets description:

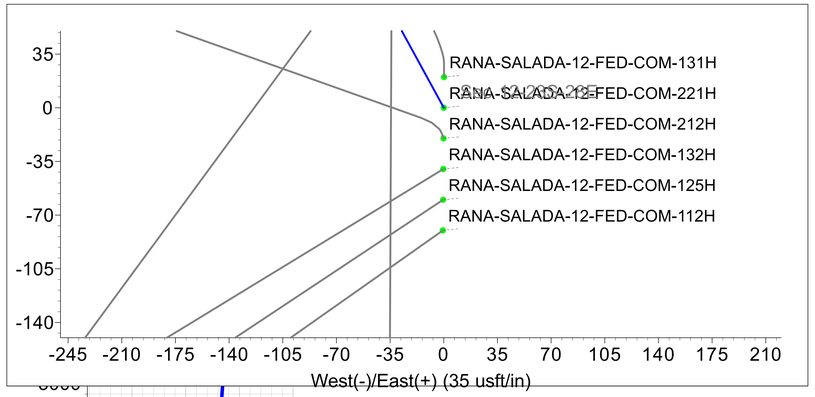
Other proposed operations facets attachment:

RS12_221H_Drill_Plan_20230315112832.pdf
CoFlex_Certs_RDC_20230315112847.pdf
RS12_221H_Anticollision_Report_RDC_20230315112900.pdf
Speedhead_Specs_3string_20230315112912.pdf
Alternative_Casing_Spec_Request_20230315112929.pdf

Other Variance attachment:

Casing_Cement_Variance_20230315112939.pdf

RANA-SALADA-12-FED-COM-221H



WELL DETAILS: RANA-SALADA-12-FED-COM-221H
Plan 1

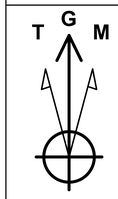
GL Elev (ft).: 3006.20

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	481153.72	629407.50	32.32244182	-104.04822385

SECTION DETAILS

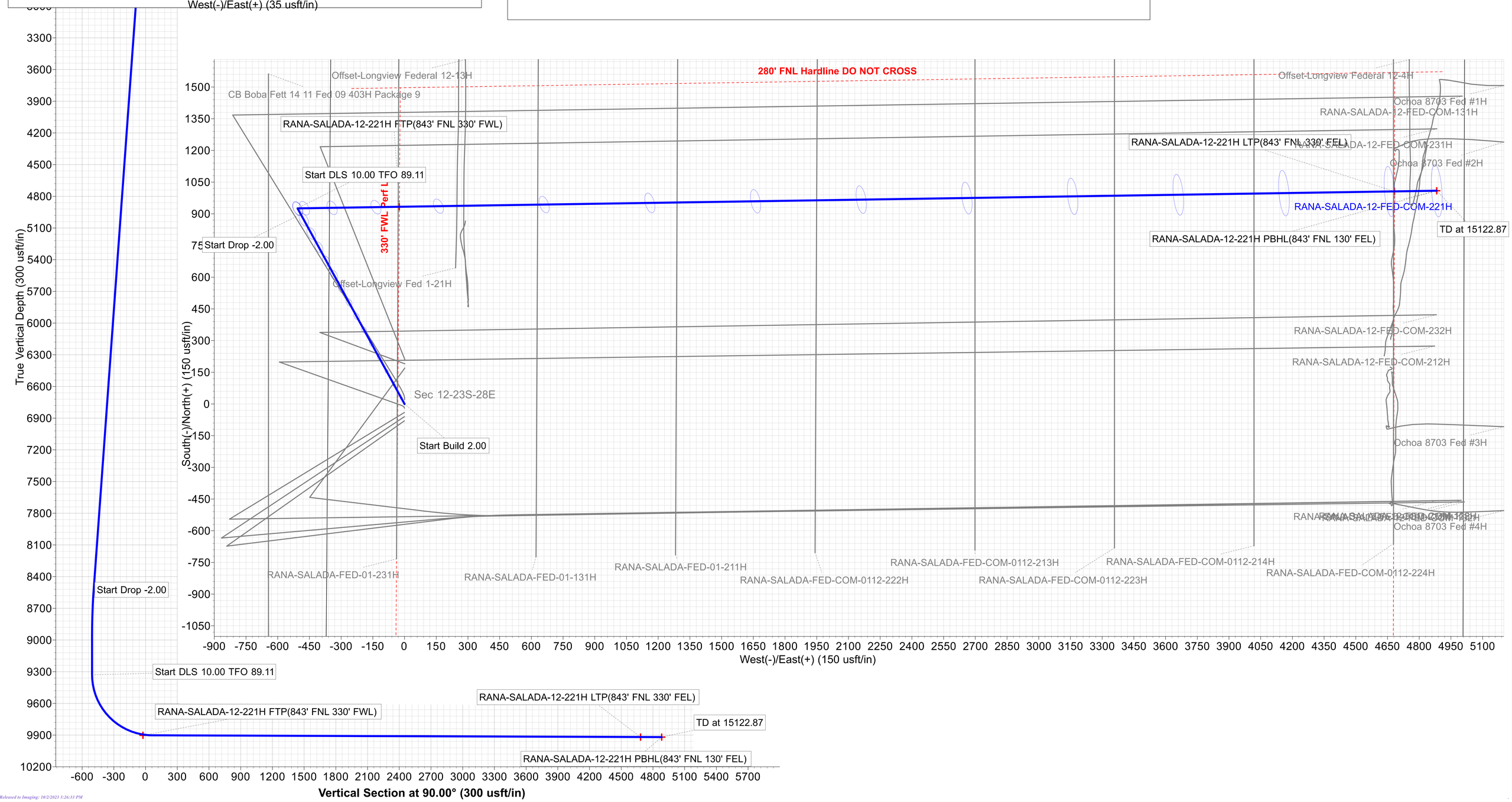
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
1927.23	8.54	331.34	1925.65	27.90	-15.25	2.00	331.34	-15.25	
8600.00	8.54	331.34	8524.35	897.88	-490.75	0.00	0.00	-490.75	
9027.23	0.00	0.00	8950.00	925.78	-506.00	2.00	180.00	-506.00	
9406.28	0.00	0.00	9329.05	925.78	-506.00	0.00	0.00	-506.00	
10304.27	89.80	89.11	9902.00	934.61	64.88	10.00	89.11	64.88	
15122.87	89.80	89.11	9918.90	1009.15	4882.87	0.00	0.00	4882.87	

Project: EDDY CO., NM (NAD83)
Site: Sec 12-23S-28E
Well: RANA-SALADA-12-FED-COM-221H
Wellbore: Wellbore #1
Design: Plan 1



Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.43°

Magnetic Field
Strength: 47334.0nT
Dip Angle: 59.87°
Date: 2/8/2023
Model: IGRF2020



NOVO Oil & Gas

EDDY CO., NM (NAD83)
Sec 12-23S-28E
RANA-SALADA-12-FED-COM-221H

Wellbore #1

Plan: Plan 1

Standard Planning Report

15 February, 2023

Planning Report

Database:	1 - EDM Production	**Local Co-ordinate Reference:**	Well RANA-SALADA-12-FED-COM-221H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Site:	Sec 12-23S-28E	**North Reference:**	Grid
Well:	RANA-SALADA-12-FED-COM-221H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Project EDDY CO., NM (NAD83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Sec 12-23S-28E

Site Position:		**Northing:**	481,073.72 usft	**Latitude:**	32.32222191
From:	Map	**Easting:**	629,406.90 usft	**Longitude:**	-104.04822648
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "		

Well RANA-SALADA-12-FED-COM-221H

Well Position	**+N/-S**	0.00 usft	**Northing:**	481,153.72 usft	**Latitude:**	32.32244181
	+E/-W	0.00 usft	**Easting:**	629,407.50 usft	**Longitude:**	-104.04822385
Position Uncertainty		0.50 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,006.20 usft
Grid Convergence:		0.15 °				

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2/8/2023	6.58	59.87	47,333.97755887

Design Plan 1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	90.00

Plan Survey Tool Program **Date** 2/14/2023

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	15,122.87	Plan 1 (Wellbore #1)	MWD+HRGM	
				OWSG MWD + HRGM	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,927.23	8.54	331.34	1,925.65	27.90	-15.25	2.00	2.00	0.00	331.34	
8,600.00	8.54	331.34	8,524.35	897.88	-490.75	0.00	0.00	0.00	0.00	
9,027.23	0.00	0.00	8,950.00	925.78	-506.00	2.00	-2.00	0.00	180.00	
9,406.28	0.00	0.00	9,329.05	925.78	-506.00	0.00	0.00	0.00	0.00	
10,304.27	89.80	89.11	9,902.00	934.61	64.88	10.00	10.00	9.92	89.11	
15,122.87	89.80	89.11	9,918.90	1,009.15	4,882.87	0.00	0.00	0.00	0.00	

SB DIRECTIONAL

Planning Report

NOVO

Database:	1 - EDM Production	**Local Co-ordinate Reference:**	Well RANA-SALADA-12-FED-COM-221H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Site:	Sec 12-23S-28E	**North Reference:**	Grid
Well:	RANA-SALADA-12-FED-COM-221H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	2.00	331.34	1,599.98	1.53	-0.84	-0.84	2.00	2.00	0.00
1,700.00	4.00	331.34	1,699.84	6.12	-3.35	-3.35	2.00	2.00	0.00
1,800.00	6.00	331.34	1,799.45	13.77	-7.53	-7.53	2.00	2.00	0.00
1,900.00	8.00	331.34	1,898.70	24.46	-13.37	-13.37	2.00	2.00	0.00
1,927.23	8.54	331.34	1,925.65	27.90	-15.25	-15.25	2.00	2.00	0.00
2,000.00	8.54	331.34	1,997.61	37.39	-20.44	-20.44	0.00	0.00	0.00
2,100.00	8.54	331.34	2,096.50	50.43	-27.56	-27.56	0.00	0.00	0.00
2,200.00	8.54	331.34	2,195.39	63.46	-34.69	-34.69	0.00	0.00	0.00
2,300.00	8.54	331.34	2,294.28	76.50	-41.81	-41.81	0.00	0.00	0.00
2,400.00	8.54	331.34	2,393.17	89.54	-48.94	-48.94	0.00	0.00	0.00
2,500.00	8.54	331.34	2,492.06	102.58	-56.07	-56.07	0.00	0.00	0.00
2,600.00	8.54	331.34	2,590.95	115.62	-63.19	-63.19	0.00	0.00	0.00
2,700.00	8.54	331.34	2,689.84	128.65	-70.32	-70.32	0.00	0.00	0.00
2,800.00	8.54	331.34	2,788.73	141.69	-77.44	-77.44	0.00	0.00	0.00
2,900.00	8.54	331.34	2,887.62	154.73	-84.57	-84.57	0.00	0.00	0.00
3,000.00	8.54	331.34	2,986.51	167.77	-91.70	-91.70	0.00	0.00	0.00
3,100.00	8.54	331.34	3,085.40	180.80	-98.82	-98.82	0.00	0.00	0.00
3,200.00	8.54	331.34	3,184.29	193.84	-105.95	-105.95	0.00	0.00	0.00
3,300.00	8.54	331.34	3,283.18	206.88	-113.07	-113.07	0.00	0.00	0.00
3,400.00	8.54	331.34	3,382.07	219.92	-120.20	-120.20	0.00	0.00	0.00
3,500.00	8.54	331.34	3,480.96	232.96	-127.33	-127.33	0.00	0.00	0.00
3,600.00	8.54	331.34	3,579.85	245.99	-134.45	-134.45	0.00	0.00	0.00
3,700.00	8.54	331.34	3,678.74	259.03	-141.58	-141.58	0.00	0.00	0.00
3,800.00	8.54	331.34	3,777.63	272.07	-148.70	-148.70	0.00	0.00	0.00
3,900.00	8.54	331.34	3,876.52	285.11	-155.83	-155.83	0.00	0.00	0.00
4,000.00	8.54	331.34	3,975.41	298.14	-162.96	-162.96	0.00	0.00	0.00
4,100.00	8.54	331.34	4,074.30	311.18	-170.08	-170.08	0.00	0.00	0.00
4,200.00	8.54	331.34	4,173.19	324.22	-177.21	-177.21	0.00	0.00	0.00
4,300.00	8.54	331.34	4,272.08	337.26	-184.33	-184.33	0.00	0.00	0.00
4,400.00	8.54	331.34	4,370.97	350.29	-191.46	-191.46	0.00	0.00	0.00
4,500.00	8.54	331.34	4,469.86	363.33	-198.59	-198.59	0.00	0.00	0.00
4,600.00	8.54	331.34	4,568.75	376.37	-205.71	-205.71	0.00	0.00	0.00
4,700.00	8.54	331.34	4,667.64	389.41	-212.84	-212.84	0.00	0.00	0.00
4,800.00	8.54	331.34	4,766.53	402.45	-219.96	-219.96	0.00	0.00	0.00
4,900.00	8.54	331.34	4,865.42	415.48	-227.09	-227.09	0.00	0.00	0.00
5,000.00	8.54	331.34	4,964.31	428.52	-234.21	-234.21	0.00	0.00	0.00
5,100.00	8.54	331.34	5,063.20	441.56	-241.34	-241.34	0.00	0.00	0.00
5,200.00	8.54	331.34	5,162.09	454.60	-248.47	-248.47	0.00	0.00	0.00

Planning Report

Database:	1 - EDM Production	**Local Co-ordinate Reference:**	Well RANA-SALADA-12-FED-COM-221H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Site:	Sec 12-23S-28E	**North Reference:**	Grid
Well:	RANA-SALADA-12-FED-COM-221H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,300.00	8.54	331.34	5,260.98	467.63	-255.59	-255.59	0.00	0.00	0.00
5,400.00	8.54	331.34	5,359.87	480.67	-262.72	-262.72	0.00	0.00	0.00
5,500.00	8.54	331.34	5,458.76	493.71	-269.84	-269.84	0.00	0.00	0.00
5,600.00	8.54	331.34	5,557.65	506.75	-276.97	-276.97	0.00	0.00	0.00
5,700.00	8.54	331.34	5,656.54	519.78	-284.10	-284.10	0.00	0.00	0.00
5,800.00	8.54	331.34	5,755.43	532.82	-291.22	-291.22	0.00	0.00	0.00
5,900.00	8.54	331.34	5,854.32	545.86	-298.35	-298.35	0.00	0.00	0.00
6,000.00	8.54	331.34	5,953.21	558.90	-305.47	-305.47	0.00	0.00	0.00
6,100.00	8.54	331.34	6,052.10	571.94	-312.60	-312.60	0.00	0.00	0.00
6,200.00	8.54	331.34	6,150.99	584.97	-319.73	-319.73	0.00	0.00	0.00
6,300.00	8.54	331.34	6,249.88	598.01	-326.85	-326.85	0.00	0.00	0.00
6,400.00	8.54	331.34	6,348.77	611.05	-333.98	-333.98	0.00	0.00	0.00
6,500.00	8.54	331.34	6,447.66	624.09	-341.10	-341.10	0.00	0.00	0.00
6,600.00	8.54	331.34	6,546.55	637.12	-348.23	-348.23	0.00	0.00	0.00
6,700.00	8.54	331.34	6,645.44	650.16	-355.36	-355.36	0.00	0.00	0.00
6,800.00	8.54	331.34	6,744.33	663.20	-362.48	-362.48	0.00	0.00	0.00
6,900.00	8.54	331.34	6,843.22	676.24	-369.61	-369.61	0.00	0.00	0.00
7,000.00	8.54	331.34	6,942.11	689.27	-376.73	-376.73	0.00	0.00	0.00
7,100.00	8.54	331.34	7,041.00	702.31	-383.86	-383.86	0.00	0.00	0.00
7,200.00	8.54	331.34	7,139.89	715.35	-390.99	-390.99	0.00	0.00	0.00
7,300.00	8.54	331.34	7,238.78	728.39	-398.11	-398.11	0.00	0.00	0.00
7,400.00	8.54	331.34	7,337.67	741.43	-405.24	-405.24	0.00	0.00	0.00
7,500.00	8.54	331.34	7,436.56	754.46	-412.36	-412.36	0.00	0.00	0.00
7,600.00	8.54	331.34	7,535.45	767.50	-419.49	-419.49	0.00	0.00	0.00
7,700.00	8.54	331.34	7,634.34	780.54	-426.62	-426.62	0.00	0.00	0.00
7,800.00	8.54	331.34	7,733.23	793.58	-433.74	-433.74	0.00	0.00	0.00
7,900.00	8.54	331.34	7,832.12	806.61	-440.87	-440.87	0.00	0.00	0.00
8,000.00	8.54	331.34	7,931.01	819.65	-447.99	-447.99	0.00	0.00	0.00
8,100.00	8.54	331.34	8,029.90	832.69	-455.12	-455.12	0.00	0.00	0.00
8,200.00	8.54	331.34	8,128.79	845.73	-462.25	-462.25	0.00	0.00	0.00
8,300.00	8.54	331.34	8,227.68	858.76	-469.37	-469.37	0.00	0.00	0.00
8,400.00	8.54	331.34	8,326.57	871.80	-476.50	-476.50	0.00	0.00	0.00
8,500.00	8.54	331.34	8,425.46	884.84	-483.62	-483.62	0.00	0.00	0.00
8,600.00	8.54	331.34	8,524.35	897.88	-490.75	-490.75	0.00	0.00	0.00
8,700.00	6.54	331.34	8,623.48	909.40	-497.05	-497.05	2.00	-2.00	0.00
8,800.00	4.54	331.34	8,723.01	917.88	-501.68	-501.68	2.00	-2.00	0.00
8,900.00	2.54	331.34	8,822.81	923.30	-504.65	-504.65	2.00	-2.00	0.00
9,000.00	0.54	331.34	8,922.77	925.67	-505.94	-505.94	2.00	-2.00	0.00
9,027.23	0.00	0.00	8,950.00	925.78	-506.00	-506.00	2.00	-2.00	0.00
9,100.00	0.00	0.00	9,022.77	925.78	-506.00	-506.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,122.77	925.78	-506.00	-506.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,222.77	925.78	-506.00	-506.00	0.00	0.00	0.00
9,406.28	0.00	0.00	9,329.05	925.78	-506.00	-506.00	0.00	0.00	0.00
9,450.00	4.37	89.11	9,372.73	925.81	-504.33	-504.33	10.00	10.00	0.00
9,500.00	9.37	89.11	9,422.35	925.90	-498.35	-498.35	10.00	10.00	0.00
9,550.00	14.37	89.11	9,471.27	926.06	-488.07	-488.07	10.00	10.00	0.00
9,600.00	19.37	89.11	9,519.10	926.28	-473.57	-473.57	10.00	10.00	0.00
9,650.00	24.37	89.11	9,565.49	926.57	-454.95	-454.95	10.00	10.00	0.00
9,700.00	29.37	89.11	9,610.07	926.92	-432.36	-432.36	10.00	10.00	0.00
9,750.00	34.37	89.11	9,652.52	927.33	-405.97	-405.97	10.00	10.00	0.00
9,800.00	39.37	89.11	9,692.51	927.79	-375.98	-375.98	10.00	10.00	0.00
9,850.00	44.37	89.11	9,729.73	928.31	-342.62	-342.62	10.00	10.00	0.00
9,900.00	49.37	89.11	9,763.90	928.87	-306.14	-306.14	10.00	10.00	0.00
9,950.00	54.37	89.11	9,794.76	929.48	-266.83	-266.83	10.00	10.00	0.00

SB DIRECTIONAL

Planning Report

NOVO

Database:	1 - EDM Production	**Local Co-ordinate Reference:**	Well RANA-SALADA-12-FED-COM-221H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Site:	Sec 12-23S-28E	**North Reference:**	Grid
Well:	RANA-SALADA-12-FED-COM-221H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,000.00	59.37	89.11	9,822.08	930.13	-224.98	-224.98	10.00	10.00	0.00
10,050.00	64.37	89.11	9,845.64	930.81	-180.90	-180.90	10.00	10.00	0.00
10,100.00	69.37	89.11	9,865.27	931.52	-134.94	-134.94	10.00	10.00	0.00
10,150.00	74.37	89.11	9,880.83	932.26	-87.44	-87.44	10.00	10.00	0.00
10,200.00	79.37	89.11	9,892.18	933.01	-38.77	-38.77	10.00	10.00	0.00
10,250.00	84.37	89.11	9,899.25	933.77	10.71	10.71	10.00	10.00	0.00
10,304.27	89.80	89.11	9,902.00	934.61	64.88	64.88	10.00	10.00	0.00
10,400.00	89.80	89.11	9,902.34	936.09	160.60	160.60	0.00	0.00	0.00
10,500.00	89.80	89.11	9,902.69	937.64	260.59	260.59	0.00	0.00	0.00
10,600.00	89.80	89.11	9,903.04	939.19	360.57	360.57	0.00	0.00	0.00
10,700.00	89.80	89.11	9,903.39	940.73	460.56	460.56	0.00	0.00	0.00
10,800.00	89.80	89.11	9,903.74	942.28	560.55	560.55	0.00	0.00	0.00
10,900.00	89.80	89.11	9,904.09	943.83	660.54	660.54	0.00	0.00	0.00
11,000.00	89.80	89.11	9,904.44	945.37	760.52	760.52	0.00	0.00	0.00
11,100.00	89.80	89.11	9,904.79	946.92	860.51	860.51	0.00	0.00	0.00
11,200.00	89.80	89.11	9,905.15	948.47	960.50	960.50	0.00	0.00	0.00
11,300.00	89.80	89.11	9,905.50	950.01	1,060.49	1,060.49	0.00	0.00	0.00
11,400.00	89.80	89.11	9,905.85	951.56	1,160.47	1,160.47	0.00	0.00	0.00
11,500.00	89.80	89.11	9,906.20	953.11	1,260.46	1,260.46	0.00	0.00	0.00
11,600.00	89.80	89.11	9,906.55	954.66	1,360.45	1,360.45	0.00	0.00	0.00
11,700.00	89.80	89.11	9,906.90	956.20	1,460.43	1,460.43	0.00	0.00	0.00
11,800.00	89.80	89.11	9,907.25	957.75	1,560.42	1,560.42	0.00	0.00	0.00
11,900.00	89.80	89.11	9,907.60	959.30	1,660.41	1,660.41	0.00	0.00	0.00
12,000.00	89.80	89.11	9,907.95	960.84	1,760.40	1,760.40	0.00	0.00	0.00
12,100.00	89.80	89.11	9,908.30	962.39	1,860.38	1,860.38	0.00	0.00	0.00
12,200.00	89.80	89.11	9,908.65	963.94	1,960.37	1,960.37	0.00	0.00	0.00
12,300.00	89.80	89.11	9,909.00	965.48	2,060.36	2,060.36	0.00	0.00	0.00
12,400.00	89.80	89.11	9,909.35	967.03	2,160.35	2,160.35	0.00	0.00	0.00
12,500.00	89.80	89.11	9,909.70	968.58	2,260.33	2,260.33	0.00	0.00	0.00
12,600.00	89.80	89.11	9,910.05	970.12	2,360.32	2,360.32	0.00	0.00	0.00
12,700.00	89.80	89.11	9,910.40	971.67	2,460.31	2,460.31	0.00	0.00	0.00
12,800.00	89.80	89.11	9,910.76	973.22	2,560.30	2,560.30	0.00	0.00	0.00
12,900.00	89.80	89.11	9,911.11	974.76	2,660.28	2,660.28	0.00	0.00	0.00
13,000.00	89.80	89.11	9,911.46	976.31	2,760.27	2,760.27	0.00	0.00	0.00
13,100.00	89.80	89.11	9,911.81	977.86	2,860.26	2,860.26	0.00	0.00	0.00
13,200.00	89.80	89.11	9,912.16	979.41	2,960.25	2,960.25	0.00	0.00	0.00
13,300.00	89.80	89.11	9,912.51	980.95	3,060.23	3,060.23	0.00	0.00	0.00
13,400.00	89.80	89.11	9,912.86	982.50	3,160.22	3,160.22	0.00	0.00	0.00
13,500.00	89.80	89.11	9,913.21	984.05	3,260.21	3,260.21	0.00	0.00	0.00
13,600.00	89.80	89.11	9,913.56	985.59	3,360.20	3,360.20	0.00	0.00	0.00
13,700.00	89.80	89.11	9,913.91	987.14	3,460.18	3,460.18	0.00	0.00	0.00
13,800.00	89.80	89.11	9,914.26	988.69	3,560.17	3,560.17	0.00	0.00	0.00
13,900.00	89.80	89.11	9,914.61	990.23	3,660.16	3,660.16	0.00	0.00	0.00
14,000.00	89.80	89.11	9,914.96	991.78	3,760.15	3,760.15	0.00	0.00	0.00
14,100.00	89.80	89.11	9,915.31	993.33	3,860.13	3,860.13	0.00	0.00	0.00
14,200.00	89.80	89.11	9,915.66	994.87	3,960.12	3,960.12	0.00	0.00	0.00
14,300.00	89.80	89.11	9,916.01	996.42	4,060.11	4,060.11	0.00	0.00	0.00
14,400.00	89.80	89.11	9,916.37	997.97	4,160.10	4,160.10	0.00	0.00	0.00
14,500.00	89.80	89.11	9,916.72	999.52	4,260.08	4,260.08	0.00	0.00	0.00
14,600.00	89.80	89.11	9,917.07	1,001.06	4,360.07	4,360.07	0.00	0.00	0.00
14,700.00	89.80	89.11	9,917.42	1,002.61	4,460.06	4,460.06	0.00	0.00	0.00
14,800.00	89.80	89.11	9,917.77	1,004.16	4,560.04	4,560.04	0.00	0.00	0.00
14,900.00	89.80	89.11	9,918.12	1,005.70	4,660.03	4,660.03	0.00	0.00	0.00
15,000.00	89.80	89.11	9,918.47	1,007.25	4,760.02	4,760.02	0.00	0.00	0.00

Planning Report

Database:	1 - EDM Production	**Local Co-ordinate Reference:**	Well RANA-SALADA-12-FED-COM-221H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 27' + GL 3006.20 @ 3033.20usft
Site:	Sec 12-23S-28E	**North Reference:**	Grid
Well:	RANA-SALADA-12-FED-COM-221H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,100.00	89.80	89.11	9,918.82	1,008.80	4,860.01	4,860.01	0.00	0.00	0.00
15,122.87	89.80	89.11	9,918.90	1,009.15	4,882.87	4,882.87	0.00	0.00	0.00

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
RANA-SALADA-12-221H	0.00	0.00	9,902.00	933.53	-24.62	482,087.25	629,382.89	32.32500810	-104.04829550
- plan misses target center by 7.26usft at 10215.41usft MD (9894.82 TVD, 933.24 N, -23.59 E)									
- Point									
RANA-SALADA-12-221H	0.00	0.00	9,918.90	1,009.15	4,882.87	482,162.87	634,290.37	32.32517909	-104.03240752
- plan hits target center									
- Point									
RANA-SALADA-12-221H	0.00	0.00	9,919.00	1,006.08	4,682.91	482,159.80	634,090.41	32.32517220	-104.03305490
- plan misses target center by 0.80usft at 14922.88usft MD (9918.20 TVD, 1006.06 N, 4682.91 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
15,239.93		20" Casing	20	24

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	NOVO Oil & Gas Northern Delaware LLC
WELL NAME & NO.:	Rana Salada 12 Fed Com 221H
LOCATION:	Sec 12-23S-28E-NMP
COUNTY:	Eddy County, New Mexico

COA

H_2S	○ No	○ Yes		
Potash / WIPP	◉ None	○ Secretary	○ R-111-P	☐ WIPP
Cave / Karst	○ Low	○ Medium	◉ High	○ Critical
Wellhead	○ Conventional	◉ Multibowl	○ Both	○ Diverter
Cementing	☐ Primary Squeeze	☐ Cont. Squeeze	☐ EchoMeter	☑ DV Tool
Special Req	☐ Break Testing	☐ Water Disposal	☑ COM	☐ Unit
Variance	☑ Flex Hose	☐ Casing Clearance	☐ Pilot Hole	☐ Capitan Reef
Variance	☐ Four-String	☐ Offline Cementing	☑ Fluid-Filled	☐ Open Annulus
☐ **Batch APD / Sundry**				

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **300** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite, above the salt, and below usable fresh water) and cemented to the surface. ***Set depth adjusted per BLM geologist.***

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

Approval Date: 09/13/2023

include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept fluid-filled to meet BLM's minimum collapse requirement.

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst, Capitan Reef, or potash.**

❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'

2. Operator has proposed a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172 must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in 43 CFR 3171 and 3172.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Eddy County
Email **or** call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, **BLM_NM_CFO_DrillingNotifications@BLM.GOV**
(575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure

rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).

b. When the operator proposes to set surface casing with Spudder Rig
   - Notify the BLM when moving in and removing the Spudder Rig.
   - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
   - BOP/BOPE test to be conducted per **43 CFR part 3170 Subpart 3172** as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR part 3170 Subpart 3172** and **API STD 53 Sec. 5.3**.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. Whenever any seal subject to test pressure is broken, all the tests in **43 CFR part 3170 Subpart 3172** must be followed.
e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead cement), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR part 3170 Subpart 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE.

If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR part 3170 Subpart 3172**.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Approval Date: 09/13/2023

NOVO

H_2S Drilling Operations Plan

a. All personnel will be trained in H_2S working conditions as required by Onshore Order 6 before drilling out of the surface casing.

b. Two briefing areas will be established. Each will be at least 150' from the wellhead, perpendicular from one another, and easily entered and exited. See H_2S page 5 for more details.

c. H_2S Safety Equipment/Systems:

i. Well Control Equipment

- Flare line will be ≥150' from the wellhead and ignited by a pilot light.
- Beware of SO_2 created by flaring.
- Choke manifold will include a remotely operated choke.
- Mud gas separator

ii. Protective Equipment for Essential Personnel

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- One self-contained breathing apparatus (SCBA) 30-minute rescue pack will be at each briefing area. Two 30-minute SCBA packs will be stored in the safety trailer.
- Four work/escape packs will be on the rig floor. Each pack will have a long enough hose to allow unimpaired work activity.
- Four emergency escape packs will be in the doghouse for emergency evacuation.
- Hand signals will be used when wearing protective breathing apparatus.
- Stokes litter or stretcher
- Two full OSHA compliant body harnesses
- A 100-foot long x 5/8" OSHA compliant rope
- One 20-pound ABC fire extinguisher

iii. H_2S Detection & Monitoring Equipment

- Every person on site will be required to wear a personal H_2S and SO_2 monitor at all times while on site. Monitors will not be worn on hard hats. Monitors will be worn on the front of the chest.
- A stationary detector with three sensors will be in the doghouse.
- Sensors will be installed on the rig floor, bell nipple, and at the end of the flow line or where drilling fluids are discharged.
- Visual alarm will be triggered at 10 ppm.
- Audible alarm will be triggered at 10 ppm.
- Calibration will occur at least every 30 days. Gas sample tubes will be kept in the safety trailer.

iv. Visual Warning System

- Color-coded H_2S condition sign will be set at the entrance to the pad.
- Color-coded condition flag will be installed to indicate current H_2S conditions.
- Two wind socks will be installed that will be visible from all sides.

v. Mud Program

- A water based mud with a pH of $\geq$10 will be maintained to control corrosion, H_2S gas returns to the surface, and minimize sulfide stress cracking and embrittlement.
- Drilling mud containing H_2S gas will be degassed at an optimum location for the rig configuration.
- This gas will be piped into the flare system.
- Enough mud additives will be on location to scavenge and/or neutralize H_2S where formation pressures are unknown.

vi. Metallurgy

- All equipment that has the potential to be exposed to H_2S will be suitable for H_2S service.
- Equipment that will meet these metallurgical standards include the drill string, casing, wellhead, BOP assembly, casing head and spool, rotating head, kill lines, choke, choke manifold and lines, valves, mud-gas separators, DST tools, test units, tubing, flanges, and other related equipment (elastomer packings and seals).

vii. Communication from well site

- Cell phones and/or two-way radios will be used to communicate from the well site.

d. A remote-controlled choke, mud-gas separator, and a rotating head will be installed before drilling or testing any formation expected to contain H_2S.

Company Personnel to be Notified

Kurt Shipley, Vice-President - Operations	Office: (405) 609-1596

Local & County Agencies

Loving Fire Department	911 or (575) 745-3600
Eddy County Sheriff (Carlsbad)	911 (575) 887-7551
Eddy County Emergency Management (Carlsbad)	(575) 887-9511
Carlsbad Medical Center Hospital	(575) 887-4100
Eddy County South Road Department (Carlsbad)	(575) 885-4835

State Agencies

NM State Police (Carlsbad)	(575) 885-3138
NM Oil Conservation (Artesia)	(575) 748-1283
NM Oil Conservation (Santa Fe)	(505) 476-3440
NM Dept. of Transportation (Roswell)	(575) 637-7201

Federal Agencies

BLM Carlsbad Field Office	(575) 234-5972
National Response Center	(800) 424-8802
US EPA Region 6 (Dallas)	(800) 887-6063
	(214) 665-6444

Residents within 2 miles

none

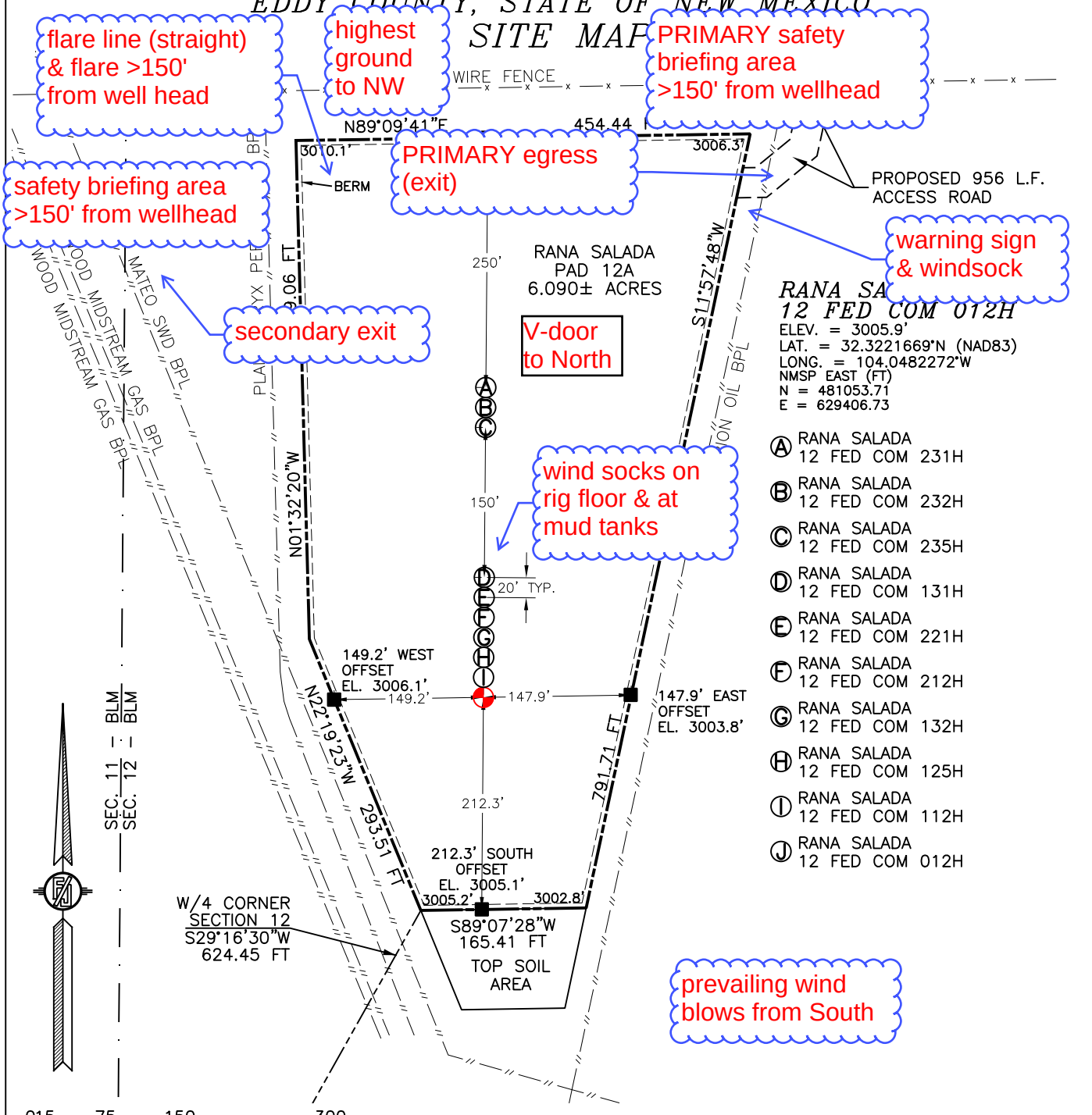
Air Evacuation

Med Flight Air Ambulance (Albuquerque)	(800) 842-4431
Lifeguard (Albuquerque)	(888) 866-7256

Veterinarians

Desert Willow Veterinary Services (Carlsbad)	(575) 885-3399
Animal Care Center (Carlsbad)	(575) 885-5352

SECTION 12, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP



DIRECTIONS TO LOCATION
FROM THE INTERSECTION OF STATE ROAD 31 (POTASH MINES) AND COUNTY ROAD 605 (REFINERY RD.), GO NORTH ON REFINERY RD. APPROX. 1.15 MILES, TURN LEFT (SOUTHWEST) ON CALICHE ROAD AND GO APPROX. 0.21 MILES, TURN LEFT AND GO SOUTH-SOUTHEAST APPROX. 0.5 MILES, BEND RIGHT AND GO WEST APPROX. 0.27 MILES TO A ROAD SURVEY ON LEFT (SOUTH), FOLLOW ROAD SURVEY SOUTH APPROX. 0.18 MILES TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I PREPARED AND AM RESPONSIBLE FOR THIS SURVEY, IT REPRESENTS SURVEY FACTUAL AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILLO NO. 12797

NEW MEXICO FILIMON F. JARAMILLO 12797 PROFESSIONAL SURVEYOR

NOVO OIL & GAS NORTHERN DELAWARE, LLC
RANA SALADA 12 FED COM 012H
LOCATED 1877 FT. FROM THE NORTH LINE AND 362 FT. FROM THE WEST LINE OF SECTION 12, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

FEBRUARY 22, 2023

SURVEY NO. 9651A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3327 CARLSBAD, NEW MEXICO

Novo Oil and Gas Northern Delaware

Rana Salada Pad 12A
H_2S Contingency Plan:
Radius Map

Section 12, Township 23S, Range 28E
Eddy County, New Mexico

Well Pad Location

1:27,000

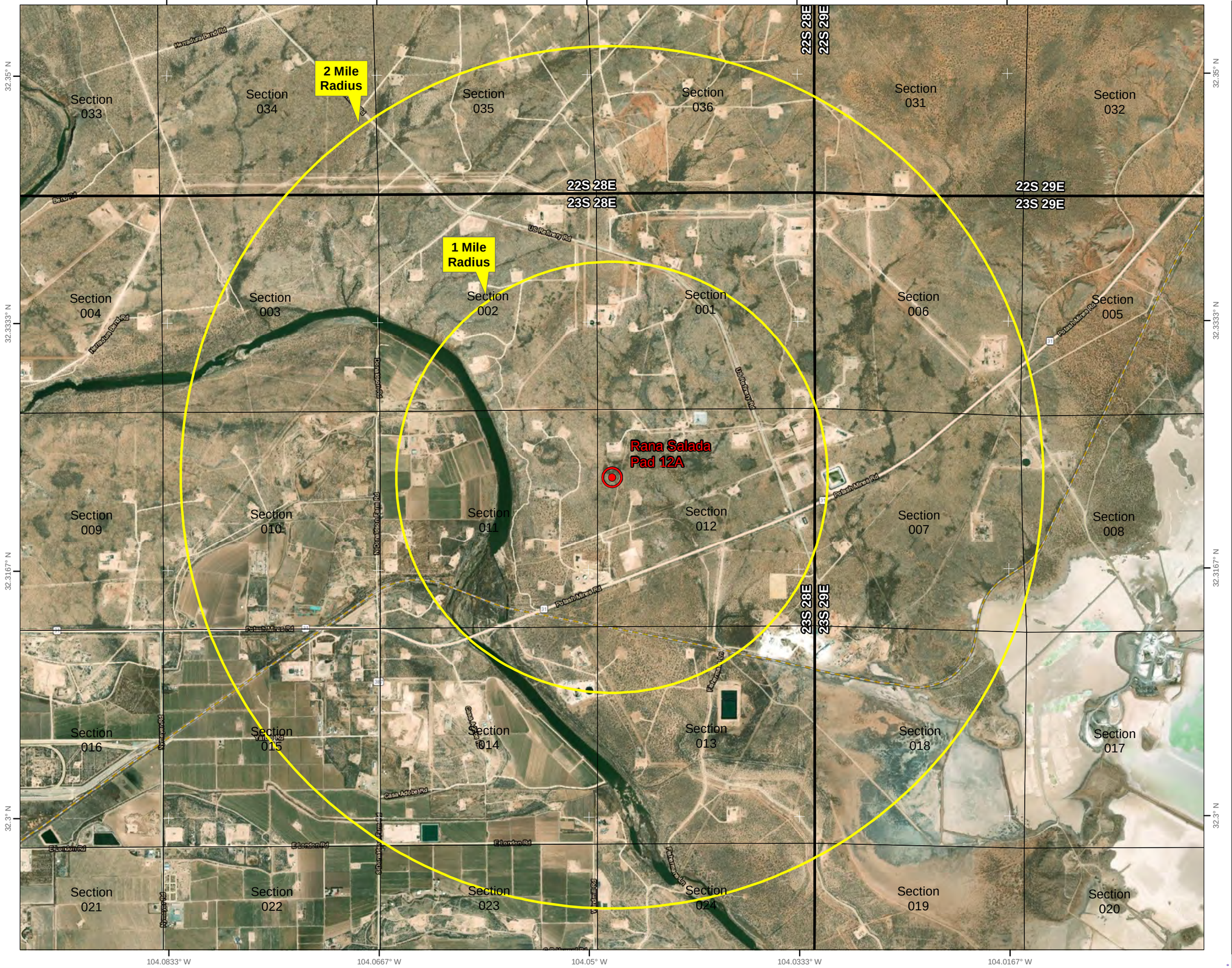
0 0.25 0.5 1

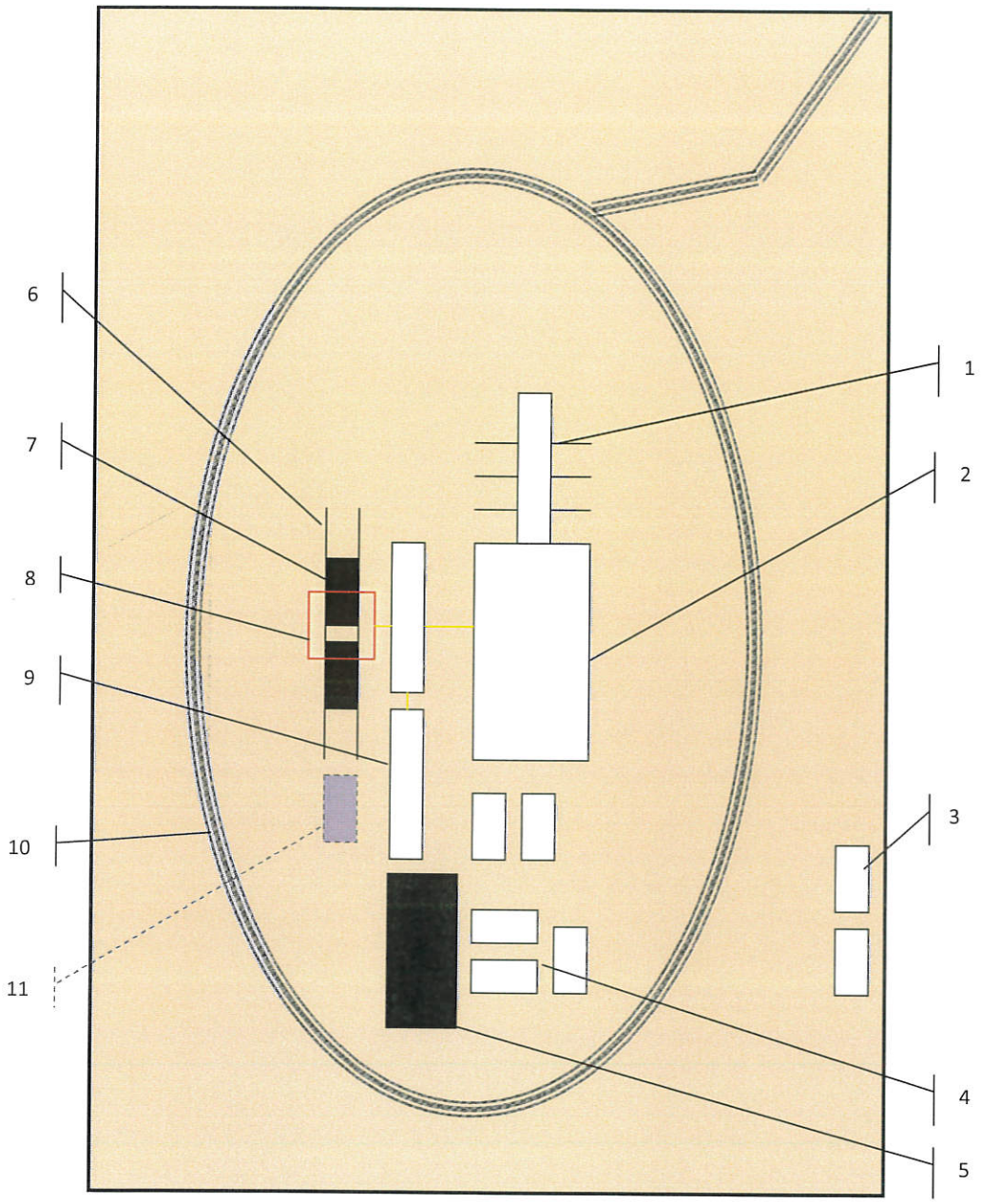
Miles

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., March 9, 2023
for Novo Oil and Gas Northern Delaware, LLC





Schematic Closed Loop Drilling Rig*

1. Pipe Rack
2. Drill Rig
3. House Trailers/ Offices
4. Generator/Fuel/Storage
5. Overflow-Frac Tank
6. Skids
7. Roll Offs
8. Hopper or Centrifuge
9. Mud Tanks
10. Loop Drive
11. Generator (only for use with centrifuge)

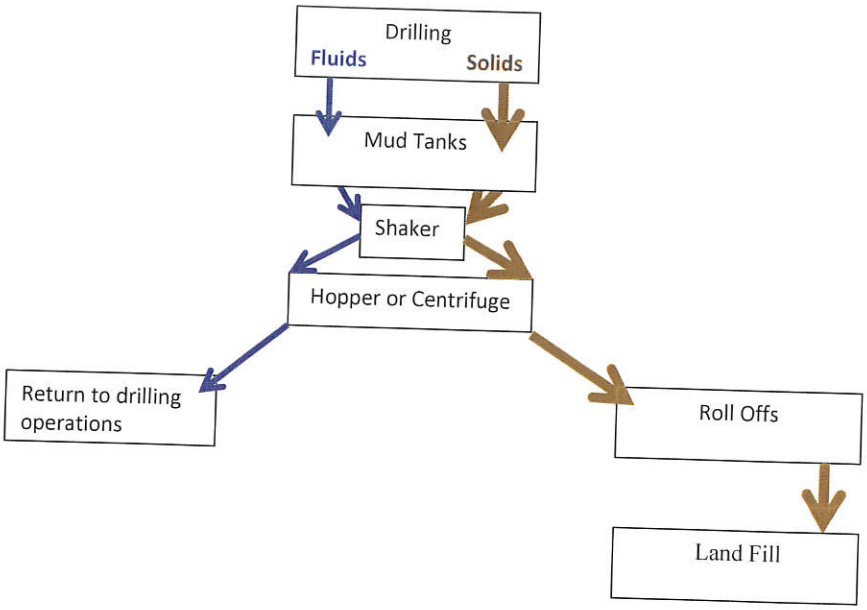
*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

Above: Centrifugal Closed Loop System

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

Closed Loop Drilling System: Mud tanks to right (1)
Hopper in air to settle out solids (2)
Water return pipe (3)
Shaker between hopper and mud tanks (4)
Roll offs on skids (5)

Flow Chart for Drilling Fluids and Solids



Photos Courtesy of Gandy Corporation Oil Field Service

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Operator:	OGRID:
NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	372920
	Action Number: 270437
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	10/2/2023
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	10/2/2023
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	10/2/2023
ward.rikala	Cement is required to circulate on both surface and intermediate1 strings of casing	10/2/2023
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	10/2/2023
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	10/2/2023