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.

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.

2. Name of Operator

9. API Well No. 30 015 48267

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory

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

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

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

Title

Approved by *(Signature)*	Name *(Printed/Typed)*	Date

Title	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)

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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.

Additional Operator Remarks

Location of Well

0. SHL: SENE / 2511 FNL / 25 FEL / TWSP: 23S / RANGE: 28E / SECTION: 2 / LAT: 32.3351034 / LONG: -104.0493647 (TVD: 0 feet, MD: 0 feet)

PPP: NWSW / 1914 FSL / 0 FWL / TWSP: 23S / RANGE: 28E / SECTION: 1 / LAT: 32.332607 / LONG: -104.049182 (TVD: 9980 feet, MD: 10455 feet)

PPP: NESE / 1863 FSL / 399 FEL / TWSP: 23S / RANGE: 28E / SECTION: 2 / LAT: 32.3326227 / LONG: -104.0505751 (TVD: 9820 feet, MD: 9984 feet)

BHL: NESE / 1914 FSL / 130 FEL / TWSP: 23S / RANGE: 29E / SECTION: 6 / LAT: 32.332224 / LONG: -104.0159896 (TVD: 9980 feet, MD: 20713 feet)

BLM Point of Contact

Name: Deborah Ham
Title: Legal Landlaw Examiner
Phone: (575) 234-5965
Email: dham@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.

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**NOVO OIL AND GAS**
LEASE NO.:	**NMNM091078**
WELL NAME & NO.:	**RANA SALADA 0106 FED COM 226H**
SURFACE HOLE FOOTAGE:	**2511'/N & 25'/E**
BOTTOM HOLE FOOTAGE	**1914'/S & 130'/E**
LOCATION:	**Section 1, T.23 S., R.28 E., NMPM**
COUNTY:	**Eddy County, New Mexico**

COA

H2S	○ Yes	◉ No	
Potash	○ None	◉ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Cave/Karst Potential	○ Critical		
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☑ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☑ COM	☐ Unit

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 **279** feet (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.

    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

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24 hours in the Potash Area or 500 pounds compressive strength, whichever is greater. (This is to 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 Collapse Factor.

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. **Excess cement calculates to 19%, additional cement might be required.**

❖ In Medium 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.

❖ In Secretary Potash 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.

Alternate Production casing has been reviewed and approved.

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

- Cement should tie-back at least **500 feet** into previous casing string. Operator shall provide method of verification. **Excess cement calculates to 20%, additional cement might be required.**

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. This assembly will only be tested when installed on the surface casing. 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 OOGO2.III.A.2.i 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.
• 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
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

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 Onshore Oil and Gas Order No. 2 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.

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WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity 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 Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

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 OOGO2.III.A.2.i 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 when specified), 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 plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 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 Onshore Order No. 2.

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.

JJP03262021

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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- 48237	98220	PURPLE SAGE; WOLFCAMP (GAS)

[4] Property Code	[5] Property Name	[6] Well Number
330651	RANA SALADA FED COM 0106	226H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372920	NOVO OIL & GAS NORTHERN DELAWARE, LLC	3077.4

[10] Surface Location

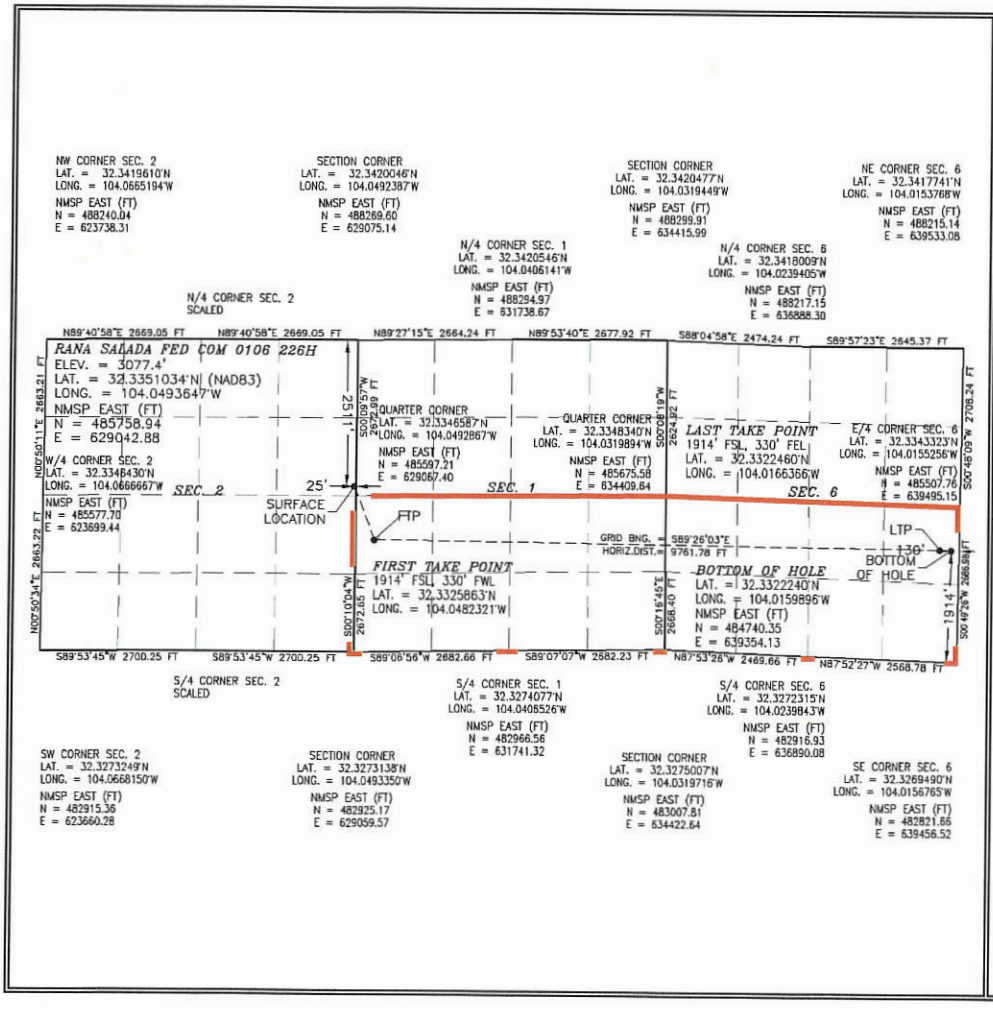
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	2	23 S	28 E		2511	NORTH	25	EAST	EDDY

[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
I	6	23 S	29 E		1914	SOUTH	130	EAST	EDDY

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

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.

Signature — Date: 8-22-20

BRIAN WOOD
Printed Name

brian@permitswest.com
E-mail Address

(505) 466-8120

[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.

MARCH 20, 2020
Date of Survey

Signature and Seal of Professional Surveyor:
EDMUND F. JARAMILLO, PLS 12797
Certificate Number: SURVEY NO. 8113

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 S. First St., Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Submit Original to Appropriate District Office

GAS CAPTURE PLAN

Date: 8/18/2020

X Original Operator & OGRID No.: Novo Oil & Gas Northern Delaware, LLC (372920)
□ Amended - Reason for Amendment: _____
This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomplete to new zone, re-frac) activity.

Note: A C-129 must be submitted and approved prior to exceeding 60 days allowed by Rule 19.15.18.12.A

Well(s)/Production Facility – Name of facility
The well(s) that will be located at the production facility are shown in the table below.

Well	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Rana Salada Fed 01 135H	30-015-	H-2-23S-28E	2451 FNL & 25 FEL	750	30 days	Time depends on well clean up
Rana Salada Fed 01 215H	30-015-	H-2-23S-28E	2431 FNL & 25 FEL	3500	30 days	Time depends on well clean up
Rana Salada Fed 01 225H	30-015-	H-2-23S-28E	2471 sFNL & 25 FEL	3500	30 days	Time depends on well clean up
Rana Salada Fed 01 235H	30-015-	H-2-23S-28E	2281 FNL & 25 FEL	3500	30 days	Time depends on well clean up
Rana Salada Fed Com 0106 136H	30-015-	H-2-23S-28E	2531 FNL & 25 FEL	750	30 days	Time depends on well clean up
Rana Salada Fed Com 0106 216H	30-015-	H-2-23S-28E	2491 FNL & 25 FEL	3500	30 days	Time depends on well clean up
Rana Salada Fed Com 0106 226H	30-015-	H-2-23S-28E	2511 FNL & 25 FEL	3500	30 days	Time depends on well clean up

Gathering System and Pipeline Notification
Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. Gas from the pad will be piped southeast ≈2 miles to an existing Enterprise Field Services L. L. C. (151618) line in SESE 6-23s-29e. Final route depends on archaeology and botany inspection results. Novo Oil & Gas Northern Delaware, LLC will provide (periodically) to its Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Novo Oil & Gas Northern Delaware, LLC and its Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an as yet undetermined Gas Transporter Processing Plant located in Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy
After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on its Gas Transporter system at that time. Based on current information, it is Novo Oil & Gas Northern Delaware, LLC's belief an existing or new system can take this gas upon completion of the well(s). Safety requirements during cleanout operations from using underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

Below are alternatives considered from a conceptual standpoint to reduce the amount of gas flared.

- Power Generation – On lease
  - Only a portion of gas is consumed operating the generator, remainder of gas will be flared
- Compressed Natural Gas – On lease
  - Gas flared would be minimal, but might be uneconomical to operate when gas volume declines
- NGL Removal – On lease
  - Plants are expensive, residue gas is still flared, and uneconomical to operate when gas volume declines

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

Drilling Plan Data Report
04/20/2021

APD ID: 10400060807 **Submission Date:** 08/24/2020

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0106 **Well Number:** 226H

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 Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
835487	QUATERNARY	3077	0	0	OTHER : None	USEABLE WATER	N
835488	RUSTLER ANHYDRITE	2852	225	225	ANHYDRITE	NONE	N
835489	CASTILE	1187	1890	1890	SALT	NONE	N
835490	LAMAR	327	2750	2763	LIMESTONE	NONE	N
835491	BELL CANYON	302	2775	2789	SANDSTONE	NATURAL GAS, OIL	N
835492	CHERRY CANYON	-718	3795	3837	SANDSTONE	NATURAL GAS, OIL	N
835493	BRUSHY CANYON	-2168	5245	5326	SANDSTONE	NATURAL GAS, OIL	N
835494	BONE SPRING	-3238	6315	6424	LIMESTONE	NATURAL GAS, OIL	N
835495	AVALON SAND	-3918	6995	7111	SHALE	NATURAL GAS, OIL	N
835496	BONE SPRING 1ST	-4338	7415	7531	SANDSTONE	NATURAL GAS, OIL	N
835497	BONE SPRING 2ND	-4588	7665	7781	OTHER : Carbonate	NATURAL GAS, OIL	N
835498	BONE SPRING 2ND	-5043	8120	8236	SANDSTONE	NATURAL GAS, OIL	N
835499	BONE SPRING 3RD	-5408	8485	8601	OTHER : Carbonate	NATURAL GAS, OIL	N
835500	BONE SPRING 3RD	-6288	9365	9481	SANDSTONE	NATURAL GAS, OIL	N
835501	WOLFCAMP	-6596	9673	9841	OTHER : XY Carbonate	NATURAL GAS, OIL	N
835513	WOLFCAMP	-6743	9820	9984	OTHER : A Carbonate	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0106 **Well Number:** 226H

Pressure Rating (PSI): 5M **Rating Depth:** 10000

Equipment: A 13.625 5,000-psi BOP 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: BOP system will be isolated with a test plug and tested by an independent tester to 250-psi low and 5000-psi high for 10 minutes. 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 (0.22 psi x shoe TVD which is equivalent to 2041.6 psi) high for 30 minutes. All casing strings will be tested in accordance with Onshore Order 2 III.B.1.h.
Choke Diagram Attachment:

RS_0106_226H_Choke_20210113131822.pdf

BOP Diagram Attachment:

RS_0106_226H_BOP_20200824105000.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	400	0	400	3077	2677	400	J-55	54.5	BUTT	1.125	1.125	DRY	1.6	DRY	1.6
2	INTERMEDIATE	9.875	8.625	NEW	API	N	0	9280	0	9164	3079	-6087	9280	OTHER	32	OTHER - TLW	1.125	1.125	DRY	1.6	DRY	1.6
3	PRODUCTION	7.875	5.5	NEW	API	N	0	20713	0	9980	3079	-6903	20713	OTHER	20	OTHER - DWC/C-IS Plus	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 FED COM 0106 **Well Number:** 226H

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0106_226H_Casing_Design_Assumptions_20200824105026.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0106_226H_Casing_Design_Assumptions_20200824105049.pdf

8.625_P_110_HSCY_20200824105055.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

RS_0106_226H_Casing_Design_Assumptions_20200824105118.pdf

5.5in_P_110_EC_20200824105124.pdf

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0106 **Well Number:** 226H

Section 4 - Cement

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	400	343	1.62	13.8	555	100	Class C	Gel + accelerator + LCM
PRODUCTION	Lead		0	0	0	0	0	0	0	None	None
PRODUCTION	Tail		8780	20713	1331	1.89	13	2515	20	Class H	Fluid loss + retarder + LCM
INTERMEDIATE	Lead		0	9280	503	2.69	10.5	1353	20	Class C or H	Fluid loss + retarder + LCM + possibly beads for compressive strength
INTERMEDIATE	Tail		0	9280	130	1.34	14.8	174	20	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	400	OTHER : Fresh water spud	8.3	8.3							

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0106 **Well Number:** 226H

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
400	9280	OTHER : Brine diesel emulsion	8.8	9.4							
9280	20713	OIL-BASED MUD	11	13.5							

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: 6986 **Anticipated Surface Pressure:** 4790

Anticipated Bottom Hole Temperature(F): 165

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

RS_0106_226H_H2S_Plan_20200824105316.pdf

Operator Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Well Name: RANA SALADA FED COM 0106 **Well Number:** 226H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

RS_0106_226H_Horizontal_Plan_20200824105342.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

RS_0106_226H_Drill_Plan_20200824105354.pdf
CoFlex_Certs_20200824105404.pdf
RS_0106_226H_Anti_Collision_Report_20200824105415.pdf
RS_0106_226H_Speedhead_Specs_20200824105424.pdf

Other Variance attachment:

Alternative_Casing__Spec_Request_20200824105434.pdf
RS_0106_226H_Casing_Cement_Variance_20200824105444.pdf

NOVO

Company: Novo Oil & Gas, LLC
Well: Rana Salada Fed Com 0106 226H
County: Eddy County, New Mexico (NAD 83)
Rig: 25' KB
Wellbore: Wellbore #1
Design: Design #1
Created By: MEB
Date: 14:51, April 15 2020

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

T G M

Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.86°

Magnetic Field
Strength: 47836.2nT
Dip Angle: 60.05°
Date: 4/1/2020
Model: HDGM2020

To convert a Magnetic Direction to a Grid Direction, Add 6.865°
To convert a Magnetic Direction to a True Direction, Add 7.017° East
To convert a True Direction to a Grid Direction, Subtract 0.152°

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP - Rana Salada Fed Com 0106 226H	9980.00	-914.78	352.25	484844.16	629395.13	32.332586	-104.048232
LTP - Rana Salada Fed Com 0106 226H	9980.00	-1011.16	10111.38	484747.78	639154.26	32.332246	-104.016637
PBHL - Rana Salada Fed Com 0106 226H	9980.00	-1018.59	10311.25	484740.35	639354.13	32.332224	-104.015990

SURVEY PROGRAM

Depth From	Depth To	Survey/Plan	Tool
0.00	20712.72	Design #1 (Wellbore #1)	MWD+HRGM

MS Directional

SECTION DETAILS

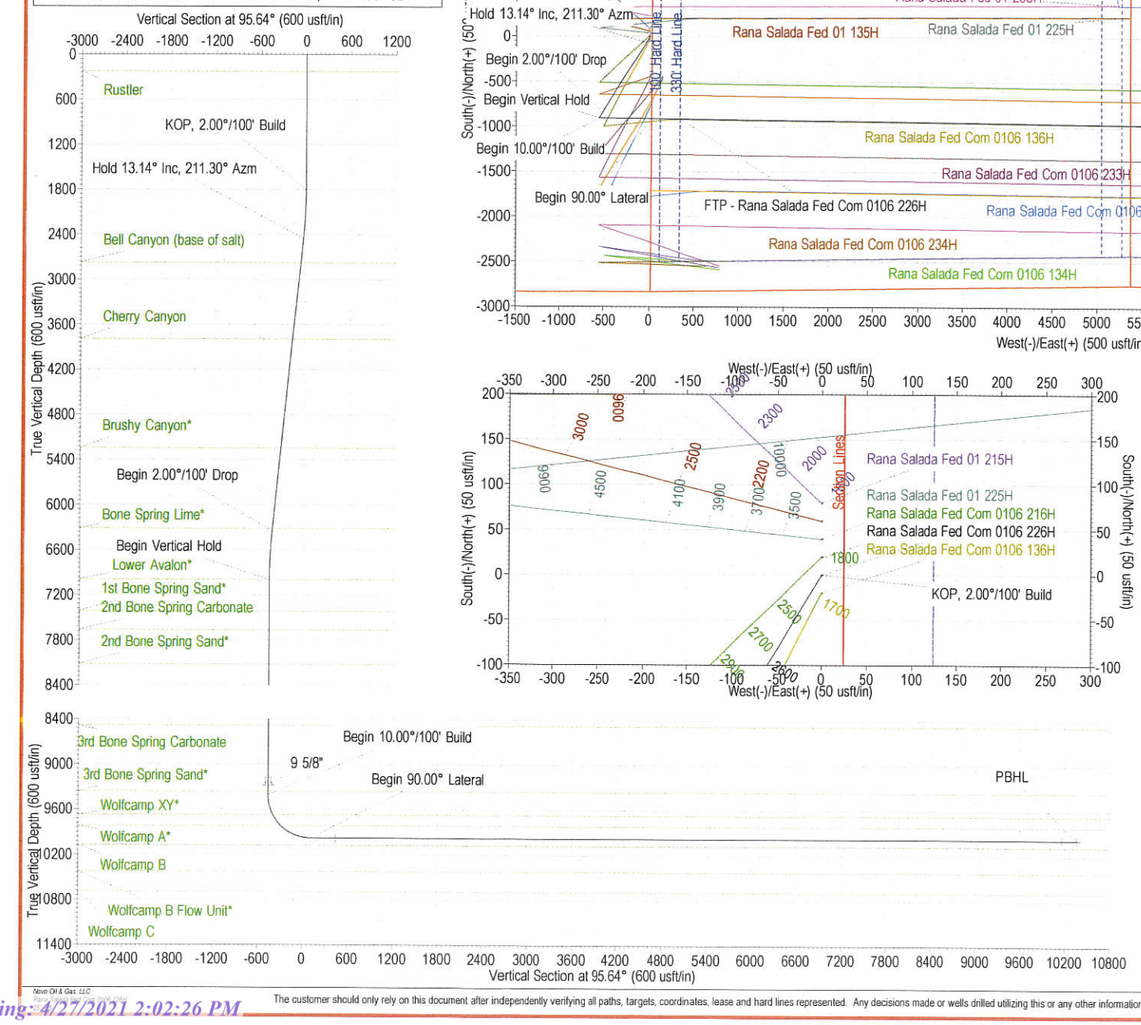
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.00	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.000	0.00	KOP, 2.00°/100' Build
2456.85	13.14	211.30	2451.11	-64.06	-38.95	2.00	211.304	-32.47	Hold 13.14° Inc, 211.30° Azm
6459.38	13.14	211.30	6348.89	-841.32	-511.61	0.00	0.000	-426.43	Begin 2.00°/100' Drop
7116.23	0.00	0.00	7000.00	-905.38	-550.57	2.00	180.000	-458.90	Begin Vertical Hold
9523.27	0.00	0.00	9407.04	-905.38	-550.57	0.00	0.000	-458.90	Begin 10.00°/100' Build
10423.27	90.00	90.60	9980.00	-911.35	22.36	10.00	90.597	111.84	Begin 90.00° Lateral
20712.72	90.00	90.60	9980.00	-1018.59	10311.25	0.00	0.000	10361.44	PBHL

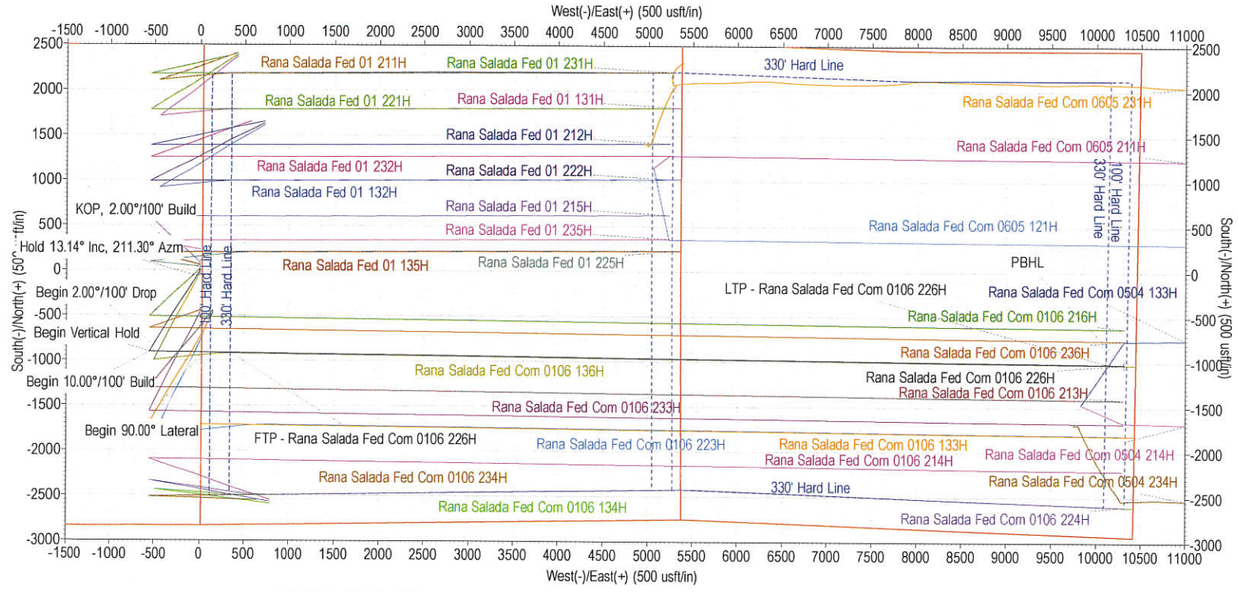
WELL DETAILS: Rana Salada Fed Com 0106 226H

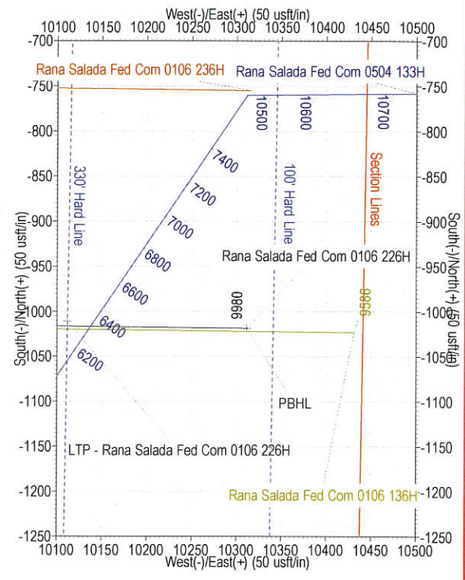
+N/-S	+E/-W	GL @ 3077.40 Northing	WELL @ 3102.40usft (25' KB) Easting	Latitude	Longitude
0.00	0.00	485758.94	629042.88	32.335103	-104.049365

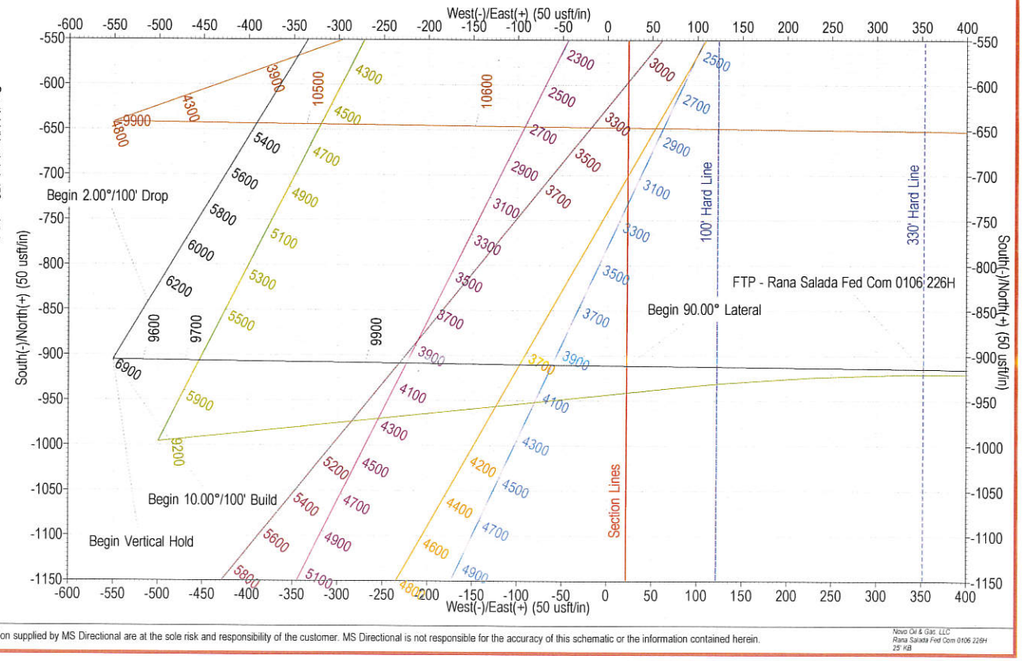
CASING DETAILS

TVD	MD	Name
9280.00	9396.23	9 5/8"









NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project Eddy County, New Mexico (NAD 83)

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

Site Rana Salada Fed Com 01 - K Pad

Site Position:		**Northing:**	485,838.92 usft	**Latitude:**	32.335323
From:	Map	**Easting:**	629,043.11 usft	**Longitude:**	-104.049364
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.152 °

Well Rana Salada Fed Com 0106 226H

Well Position	**+N/-S**	-80.53 usft	**Northing:**	485,758.39 usft	**Latitude:**	32.335102
	+E/-W	-0.30 usft	**Easting:**	629,042.81 usft	**Longitude:**	-104.049365
Position Uncertainty		0.00 usft	**Wellhead Elevation:**		**Ground Level:**	3,080.00 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM2020	4/1/2020	7.017	60.050	47,836.20

Design Design #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	95.64

Plan Survey Tool Program **Date** 4/7/2020

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	20,712.52	Design #1 (Wellbore #1)	MWD+HRGM OWSG MWD + HRGM	

NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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	0.000	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,456.25	13.12	211.33	2,450.52	-63.92	-38.91	2.00	2.00	0.00	211.329	
6,459.79	13.12	211.33	6,349.48	-840.47	-511.61	0.00	0.00	0.00	0.000	
7,116.03	0.00	0.00	7,000.00	-904.40	-550.52	2.00	-2.00	0.00	180.000	
9,523.07	0.00	0.00	9,407.04	-904.40	-550.52	0.00	0.00	0.00	0.000	
10,423.07	90.00	90.60	9,980.00	-910.37	22.41	10.00	10.00	0.00	90.597	
20,712.52	90.00	90.60	9,980.00	-1,017.61	10,311.30	0.00	0.00	0.00	0.000	PBHL - Rana Salad

NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 2.00°/100' Build									
1,900.00	2.00	211.33	1,899.98	-1.49	-0.91	-0.76	2.00	2.00	0.00
2,000.00	4.00	211.33	1,999.84	-5.96	-3.63	-3.03	2.00	2.00	0.00
2,100.00	6.00	211.33	2,099.45	-13.41	-8.16	-6.80	2.00	2.00	0.00
2,200.00	8.00	211.33	2,198.70	-23.81	-14.50	-12.09	2.00	2.00	0.00
2,300.00	10.00	211.33	2,297.47	-37.18	-22.63	-18.87	2.00	2.00	0.00
2,400.00	12.00	211.33	2,395.62	-53.47	-32.55	-27.14	2.00	2.00	0.00
2,456.25	13.12	211.33	2,450.52	-63.92	-38.91	-32.45	2.00	2.00	0.00
Hold 13.12° Inc, 211.33° Azm									
2,500.00	13.12	211.33	2,493.13	-72.41	-44.08	-36.75	0.00	0.00	0.00
2,600.00	13.12	211.33	2,590.52	-91.81	-55.88	-46.60	0.00	0.00	0.00
2,700.00	13.12	211.33	2,687.91	-111.20	-67.69	-56.44	0.00	0.00	0.00
2,789.43	13.12	211.33	2,775.00	-128.55	-78.25	-65.25	0.00	0.00	0.00
Bell Canyon (base of salt)									
2,800.00	13.12	211.33	2,785.30	-130.60	-79.50	-66.29	0.00	0.00	0.00
2,900.00	13.12	211.33	2,882.68	-150.00	-91.31	-76.13	0.00	0.00	0.00
3,000.00	13.12	211.33	2,980.07	-169.39	-103.11	-85.98	0.00	0.00	0.00
3,100.00	13.12	211.33	3,077.46	-188.79	-114.92	-95.82	0.00	0.00	0.00
3,200.00	13.12	211.33	3,174.85	-208.19	-126.73	-105.67	0.00	0.00	0.00
3,300.00	13.12	211.33	3,272.23	-227.58	-138.53	-115.51	0.00	0.00	0.00
3,400.00	13.12	211.33	3,369.62	-246.98	-150.34	-125.36	0.00	0.00	0.00
3,500.00	13.12	211.33	3,467.01	-266.38	-162.15	-135.20	0.00	0.00	0.00
3,600.00	13.12	211.33	3,564.40	-285.77	-173.95	-145.05	0.00	0.00	0.00
3,700.00	13.12	211.33	3,661.79	-305.17	-185.76	-154.89	0.00	0.00	0.00
3,800.00	13.12	211.33	3,759.17	-324.57	-197.57	-164.74	0.00	0.00	0.00
3,836.79	13.12	211.33	3,795.00	-331.70	-201.91	-168.36	0.00	0.00	0.00
Cherry Canyon									
3,900.00	13.12	211.33	3,856.56	-343.96	-209.37	-174.58	0.00	0.00	0.00
4,000.00	13.12	211.33	3,953.95	-363.36	-221.18	-184.43	0.00	0.00	0.00
4,100.00	13.12	211.33	4,051.34	-382.76	-232.99	-194.27	0.00	0.00	0.00

NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)
4,200.00	13.12	211.33	4,148.72	-402.15	-244.80	-204.12	0.00	0.00	0.00
4,300.00	13.12	211.33	4,246.11	-421.55	-256.60	-213.96	0.00	0.00	0.00
4,400.00	13.12	211.33	4,343.50	-440.95	-268.41	-223.81	0.00	0.00	0.00
4,500.00	13.12	211.33	4,440.89	-460.34	-280.22	-233.65	0.00	0.00	0.00
4,600.00	13.12	211.33	4,538.27	-479.74	-292.02	-243.50	0.00	0.00	0.00
4,700.00	13.12	211.33	4,635.66	-499.14	-303.83	-253.34	0.00	0.00	0.00
4,800.00	13.12	211.33	4,733.05	-518.53	-315.64	-263.18	0.00	0.00	0.00
4,900.00	13.12	211.33	4,830.44	-537.93	-327.44	-273.03	0.00	0.00	0.00
5,000.00	13.12	211.33	4,927.83	-557.33	-339.25	-282.87	0.00	0.00	0.00
5,100.00	13.12	211.33	5,025.21	-576.72	-351.06	-292.72	0.00	0.00	0.00
5,200.00	13.12	211.33	5,122.60	-596.12	-362.86	-302.56	0.00	0.00	0.00
5,300.00	13.12	211.33	5,219.99	-615.52	-374.67	-312.41	0.00	0.00	0.00
5,325.68	13.12	211.33	5,245.00	-620.50	-377.70	-314.94	0.00	0.00	0.00
Brushy Canyon*									
5,400.00	13.12	211.33	5,317.38	-634.91	-386.48	-322.25	0.00	0.00	0.00
5,500.00	13.12	211.33	5,414.76	-654.31	-398.29	-332.10	0.00	0.00	0.00
5,600.00	13.12	211.33	5,512.15	-673.71	-410.09	-341.94	0.00	0.00	0.00
5,700.00	13.12	211.33	5,609.54	-693.10	-421.90	-351.79	0.00	0.00	0.00
5,800.00	13.12	211.33	5,706.93	-712.50	-433.71	-361.63	0.00	0.00	0.00
5,900.00	13.12	211.33	5,804.32	-731.90	-445.51	-371.48	0.00	0.00	0.00
6,000.00	13.12	211.33	5,901.70	-751.29	-457.32	-381.32	0.00	0.00	0.00
6,100.00	13.12	211.33	5,999.09	-770.69	-469.13	-391.17	0.00	0.00	0.00
6,200.00	13.12	211.33	6,096.48	-790.09	-480.93	-401.01	0.00	0.00	0.00
6,300.00	13.12	211.33	6,193.87	-809.48	-492.74	-410.86	0.00	0.00	0.00
6,400.00	13.12	211.33	6,291.25	-828.88	-504.55	-420.70	0.00	0.00	0.00
6,424.38	13.12	211.33	6,315.00	-833.61	-507.43	-423.10	0.00	0.00	0.00
Bone Spring Lime*									
6,459.79	13.12	211.33	6,349.48	-840.47	-511.61	-426.59	0.00	0.00	0.00
Begin 2.00°/100' Drop									
6,500.00	12.32	211.33	6,388.70	-848.04	-516.21	-430.43	2.00	-2.00	0.00
6,600.00	10.32	211.33	6,486.75	-864.81	-526.42	-438.94	2.00	-2.00	0.00
6,700.00	8.32	211.33	6,585.43	-878.64	-534.84	-445.96	2.00	-2.00	0.00
6,800.00	6.32	211.33	6,684.61	-889.52	-541.46	-451.48	2.00	-2.00	0.00
6,900.00	4.32	211.33	6,784.17	-897.44	-546.28	-455.50	2.00	-2.00	0.00
7,000.00	2.32	211.33	6,884.00	-902.39	-549.30	-458.02	2.00	-2.00	0.00
7,100.00	0.32	211.33	6,983.97	-904.36	-550.49	-459.01	2.00	-2.00	0.00
7,111.03	0.10	211.33	6,995.00	-904.40	-550.52	-459.03	2.00	-2.00	0.00
Lower Avalon*									
7,116.03	0.00	0.00	7,000.00	-904.40	-550.52	-459.03	2.00	-2.00	0.00
Begin Vertical Hold									
7,200.00	0.00	0.00	7,083.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,300.00	0.00	0.00	7,183.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,400.00	0.00	0.00	7,283.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,500.00	0.00	0.00	7,383.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,531.03	0.00	0.00	7,415.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
1st Bone Spring Sand*									
7,600.00	0.00	0.00	7,483.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,700.00	0.00	0.00	7,583.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
7,781.03	0.00	0.00	7,665.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
2nd Bone Spring Carbonate									
7,800.00	0.00	0.00	7,683.97	-904.40	-550.52	-459.03	0.00	0.00	0.00

NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)
7,900.00	0.00	0.00	7,783.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,000.00	0.00	0.00	7,883.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,100.00	0.00	0.00	7,983.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,200.00	0.00	0.00	8,083.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,236.03	0.00	0.00	8,120.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
2nd Bone Spring Sand*									
8,300.00	0.00	0.00	8,183.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,400.00	0.00	0.00	8,283.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,500.00	0.00	0.00	8,383.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,600.00	0.00	0.00	8,483.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,601.03	0.00	0.00	8,485.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
3rd Bone Spring Carbonate									
8,700.00	0.00	0.00	8,583.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,800.00	0.00	0.00	8,683.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
8,900.00	0.00	0.00	8,783.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,000.00	0.00	0.00	8,883.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,100.00	0.00	0.00	8,983.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,200.00	0.00	0.00	9,083.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,300.00	0.00	0.00	9,183.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,396.03	0.00	0.00	9,280.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
9 5/8"									
9,400.00	0.00	0.00	9,283.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,481.03	0.00	0.00	9,365.00	-904.40	-550.52	-459.03	0.00	0.00	0.00
3rd Bone Spring Sand*									
9,500.00	0.00	0.00	9,383.97	-904.40	-550.52	-459.03	0.00	0.00	0.00
9,523.07	0.00	0.00	9,407.04	-904.40	-550.52	-459.03	0.00	0.00	0.00
Begin 10.00°/100' Build									
9,550.00	2.69	90.60	9,433.96	-904.41	-549.89	-458.40	10.00	10.00	0.00
9,600.00	7.69	90.60	9,483.74	-904.45	-545.36	-453.90	10.00	10.00	0.00
9,650.00	12.69	90.60	9,532.93	-904.55	-536.52	-445.09	10.00	10.00	0.00
9,700.00	17.69	90.60	9,581.17	-904.68	-523.42	-432.04	10.00	10.00	0.00
9,750.00	22.69	90.60	9,628.08	-904.86	-506.17	-414.85	10.00	10.00	0.00
9,800.00	27.69	90.60	9,673.31	-905.08	-484.89	-393.66	10.00	10.00	0.00
9,801.91	27.88	90.60	9,675.00	-905.09	-484.00	-392.77	10.00	10.00	0.00
Wolfcamp XY*									
9,850.00	32.69	90.60	9,716.51	-905.35	-459.76	-368.62	10.00	10.00	0.00
9,900.00	37.69	90.60	9,757.36	-905.65	-430.95	-339.92	10.00	10.00	0.00
9,950.00	42.69	90.60	9,795.54	-905.98	-398.69	-307.79	10.00	10.00	0.00
9,984.24	46.12	90.60	9,820.00	-906.23	-374.74	-283.93	10.00	10.00	0.00
Wolfcamp A*									
10,000.00	47.69	90.60	9,830.77	-906.35	-363.23	-272.46	10.00	10.00	0.00
10,050.00	52.69	90.60	9,862.77	-906.75	-324.84	-234.21	10.00	10.00	0.00
10,100.00	57.69	90.60	9,891.30	-907.18	-283.80	-193.33	10.00	10.00	0.00
10,150.00	62.69	90.60	9,916.15	-907.63	-240.43	-150.13	10.00	10.00	0.00
10,200.00	67.69	90.60	9,937.12	-908.10	-195.06	-104.93	10.00	10.00	0.00
10,250.00	72.69	90.60	9,954.06	-908.59	-148.04	-58.09	10.00	10.00	0.00
10,300.00	77.69	90.60	9,966.83	-909.10	-99.71	-9.95	10.00	10.00	0.00
10,350.00	82.69	90.60	9,975.35	-909.61	-50.46	39.11	10.00	10.00	0.00
10,400.00	87.69	90.60	9,979.54	-910.13	-0.66	88.73	10.00	10.00	0.00
10,423.07	90.00	90.60	9,980.00	-910.37	22.41	111.71	10.00	10.00	0.00
Begin 90.00° Lateral									

NOVO

MS Directional
Planning Report

MS Directional

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Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)
10,500.00	90.00	90.60	9,980.00	-911.17	99.33	188.34	0.00	0.00	0.00
10,600.00	90.00	90.60	9,980.00	-912.21	199.32	287.95	0.00	0.00	0.00
10,700.00	90.00	90.60	9,980.00	-913.26	299.32	387.56	0.00	0.00	0.00
10,800.00	90.00	90.60	9,980.00	-914.30	399.31	487.18	0.00	0.00	0.00
10,900.00	90.00	90.60	9,980.00	-915.34	499.31	586.79	0.00	0.00	0.00
11,000.00	90.00	90.60	9,980.00	-916.38	599.30	686.41	0.00	0.00	0.00
11,100.00	90.00	90.60	9,980.00	-917.43	699.30	786.02	0.00	0.00	0.00
11,200.00	90.00	90.60	9,980.00	-918.47	799.29	885.63	0.00	0.00	0.00
11,300.00	90.00	90.60	9,980.00	-919.51	899.29	985.25	0.00	0.00	0.00
11,400.00	90.00	90.60	9,980.00	-920.55	999.28	1,084.86	0.00	0.00	0.00
11,500.00	90.00	90.60	9,980.00	-921.59	1,099.28	1,184.47	0.00	0.00	0.00
11,600.00	90.00	90.60	9,980.00	-922.64	1,199.27	1,284.09	0.00	0.00	0.00
11,700.00	90.00	90.60	9,980.00	-923.68	1,299.26	1,383.70	0.00	0.00	0.00
11,800.00	90.00	90.60	9,980.00	-924.72	1,399.26	1,483.31	0.00	0.00	0.00
11,900.00	90.00	90.60	9,980.00	-925.76	1,499.25	1,582.93	0.00	0.00	0.00
12,000.00	90.00	90.60	9,980.00	-926.81	1,599.25	1,682.54	0.00	0.00	0.00
12,100.00	90.00	90.60	9,980.00	-927.85	1,699.24	1,782.15	0.00	0.00	0.00
12,200.00	90.00	90.60	9,980.00	-928.89	1,799.24	1,881.77	0.00	0.00	0.00
12,300.00	90.00	90.60	9,980.00	-929.93	1,899.23	1,981.38	0.00	0.00	0.00
12,400.00	90.00	90.60	9,980.00	-930.97	1,999.23	2,080.99	0.00	0.00	0.00
12,500.00	90.00	90.60	9,980.00	-932.02	2,099.22	2,180.61	0.00	0.00	0.00
12,600.00	90.00	90.60	9,980.00	-933.06	2,199.22	2,280.22	0.00	0.00	0.00
12,700.00	90.00	90.60	9,980.00	-934.10	2,299.21	2,379.83	0.00	0.00	0.00
12,800.00	90.00	90.60	9,980.00	-935.14	2,399.21	2,479.45	0.00	0.00	0.00
12,900.00	90.00	90.60	9,980.00	-936.19	2,499.20	2,579.06	0.00	0.00	0.00
13,000.00	90.00	90.60	9,980.00	-937.23	2,599.19	2,678.68	0.00	0.00	0.00
13,100.00	90.00	90.60	9,980.00	-938.27	2,699.19	2,778.29	0.00	0.00	0.00
13,200.00	90.00	90.60	9,980.00	-939.31	2,799.18	2,877.90	0.00	0.00	0.00
13,300.00	90.00	90.60	9,980.00	-940.35	2,899.18	2,977.52	0.00	0.00	0.00
13,400.00	90.00	90.60	9,980.00	-941.40	2,999.17	3,077.13	0.00	0.00	0.00
13,500.00	90.00	90.60	9,980.00	-942.44	3,099.17	3,176.74	0.00	0.00	0.00
13,600.00	90.00	90.60	9,980.00	-943.48	3,199.16	3,276.36	0.00	0.00	0.00
13,700.00	90.00	90.60	9,980.00	-944.52	3,299.16	3,375.97	0.00	0.00	0.00
13,800.00	90.00	90.60	9,980.00	-945.57	3,399.15	3,475.58	0.00	0.00	0.00
13,900.00	90.00	90.60	9,980.00	-946.61	3,499.15	3,575.20	0.00	0.00	0.00
14,000.00	90.00	90.60	9,980.00	-947.65	3,599.14	3,674.81	0.00	0.00	0.00
14,100.00	90.00	90.60	9,980.00	-948.69	3,699.13	3,774.42	0.00	0.00	0.00
14,200.00	90.00	90.60	9,980.00	-949.73	3,799.13	3,874.04	0.00	0.00	0.00
14,300.00	90.00	90.60	9,980.00	-950.78	3,899.12	3,973.65	0.00	0.00	0.00
14,400.00	90.00	90.60	9,980.00	-951.82	3,999.12	4,073.26	0.00	0.00	0.00
14,500.00	90.00	90.60	9,980.00	-952.86	4,099.11	4,172.88	0.00	0.00	0.00
14,600.00	90.00	90.60	9,980.00	-953.90	4,199.11	4,272.49	0.00	0.00	0.00
14,700.00	90.00	90.60	9,980.00	-954.95	4,299.10	4,372.10	0.00	0.00	0.00
14,800.00	90.00	90.60	9,980.00	-955.99	4,399.10	4,471.72	0.00	0.00	0.00
14,900.00	90.00	90.60	9,980.00	-957.03	4,499.09	4,571.33	0.00	0.00	0.00
15,000.00	90.00	90.60	9,980.00	-958.07	4,599.09	4,670.95	0.00	0.00	0.00
15,100.00	90.00	90.60	9,980.00	-959.11	4,699.08	4,770.56	0.00	0.00	0.00
15,200.00	90.00	90.60	9,980.00	-960.16	4,799.07	4,870.17	0.00	0.00	0.00
15,300.00	90.00	90.60	9,980.00	-961.20	4,899.07	4,969.79	0.00	0.00	0.00
15,400.00	90.00	90.60	9,980.00	-962.24	4,999.06	5,069.40	0.00	0.00	0.00
15,500.00	90.00	90.60	9,980.00	-963.28	5,099.06	5,169.01	0.00	0.00	0.00
15,600.00	90.00	90.60	9,980.00	-964.32	5,199.05	5,268.63	0.00	0.00	0.00

NOVO

MS Directional
Planning Report

MS Directional

Database:	5000.1 Conroe DB	**Local Co-ordinate Reference:**	Well Rana Salada Fed Com 0106 226H
Company:	Novo Oil & Gas, LLC	**TVD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)
15,700.00	90.00	90.60	9,980.00	-965.37	5,299.05	5,368.24	0.00	0.00	0.00
15,800.00	90.00	90.60	9,980.00	-966.41	5,399.04	5,467.85	0.00	0.00	0.00
15,900.00	90.00	90.60	9,980.00	-967.45	5,499.04	5,567.47	0.00	0.00	0.00
16,000.00	90.00	90.60	9,980.00	-968.49	5,599.03	5,667.08	0.00	0.00	0.00
16,100.00	90.00	90.60	9,980.00	-969.54	5,699.03	5,766.69	0.00	0.00	0.00
16,200.00	90.00	90.60	9,980.00	-970.58	5,799.02	5,866.31	0.00	0.00	0.00
16,300.00	90.00	90.60	9,980.00	-971.62	5,899.02	5,965.92	0.00	0.00	0.00
16,400.00	90.00	90.60	9,980.00	-972.66	5,999.01	6,065.53	0.00	0.00	0.00
16,500.00	90.00	90.60	9,980.00	-973.70	6,099.00	6,165.15	0.00	0.00	0.00
16,600.00	90.00	90.60	9,980.00	-974.75	6,199.00	6,264.76	0.00	0.00	0.00
16,700.00	90.00	90.60	9,980.00	-975.79	6,298.99	6,364.38	0.00	0.00	0.00
16,800.00	90.00	90.60	9,980.00	-976.83	6,398.99	6,463.99	0.00	0.00	0.00
16,900.00	90.00	90.60	9,980.00	-977.87	6,498.98	6,563.60	0.00	0.00	0.00
17,000.00	90.00	90.60	9,980.00	-978.92	6,598.98	6,663.22	0.00	0.00	0.00
17,100.00	90.00	90.60	9,980.00	-979.96	6,698.97	6,762.83	0.00	0.00	0.00
17,200.00	90.00	90.60	9,980.00	-981.00	6,798.97	6,862.44	0.00	0.00	0.00
17,300.00	90.00	90.60	9,980.00	-982.04	6,898.96	6,962.06	0.00	0.00	0.00
17,400.00	90.00	90.60	9,980.00	-983.08	6,998.96	7,061.67	0.00	0.00	0.00
17,500.00	90.00	90.60	9,980.00	-984.13	7,098.95	7,161.28	0.00	0.00	0.00
17,600.00	90.00	90.60	9,980.00	-985.17	7,198.94	7,260.90	0.00	0.00	0.00
17,700.00	90.00	90.60	9,980.00	-986.21	7,298.94	7,360.51	0.00	0.00	0.00
17,800.00	90.00	90.60	9,980.00	-987.25	7,398.93	7,460.12	0.00	0.00	0.00
17,900.00	90.00	90.60	9,980.00	-988.30	7,498.93	7,559.74	0.00	0.00	0.00
18,000.00	90.00	90.60	9,980.00	-989.34	7,598.92	7,659.35	0.00	0.00	0.00
18,100.00	90.00	90.60	9,980.00	-990.38	7,698.92	7,758.96	0.00	0.00	0.00
18,200.00	90.00	90.60	9,980.00	-991.42	7,798.91	7,858.58	0.00	0.00	0.00
18,300.00	90.00	90.60	9,980.00	-992.46	7,898.91	7,958.19	0.00	0.00	0.00
18,400.00	90.00	90.60	9,980.00	-993.51	7,998.90	8,057.80	0.00	0.00	0.00
18,500.00	90.00	90.60	9,980.00	-994.55	8,098.90	8,157.42	0.00	0.00	0.00
18,600.00	90.00	90.60	9,980.00	-995.59	8,198.89	8,257.03	0.00	0.00	0.00
18,700.00	90.00	90.60	9,980.00	-996.63	8,298.88	8,356.65	0.00	0.00	0.00
18,800.00	90.00	90.60	9,980.00	-997.68	8,398.88	8,456.26	0.00	0.00	0.00
18,900.00	90.00	90.60	9,980.00	-998.72	8,498.87	8,555.87	0.00	0.00	0.00
19,000.00	90.00	90.60	9,980.00	-999.76	8,598.87	8,655.49	0.00	0.00	0.00
19,100.00	90.00	90.60	9,980.00	-1,000.80	8,698.86	8,755.10	0.00	0.00	0.00
19,200.00	90.00	90.60	9,980.00	-1,001.84	8,798.86	8,854.71	0.00	0.00	0.00
19,300.00	90.00	90.60	9,980.00	-1,002.89	8,898.85	8,954.33	0.00	0.00	0.00
19,400.00	90.00	90.60	9,980.00	-1,003.93	8,998.85	9,053.94	0.00	0.00	0.00
19,500.00	90.00	90.60	9,980.00	-1,004.97	9,098.84	9,153.55	0.00	0.00	0.00
19,600.00	90.00	90.60	9,980.00	-1,006.01	9,198.84	9,253.17	0.00	0.00	0.00
19,700.00	90.00	90.60	9,980.00	-1,007.06	9,298.83	9,352.78	0.00	0.00	0.00
19,800.00	90.00	90.60	9,980.00	-1,008.10	9,398.83	9,452.39	0.00	0.00	0.00
19,900.00	90.00	90.60	9,980.00	-1,009.14	9,498.82	9,552.01	0.00	0.00	0.00
20,000.00	90.00	90.60	9,980.00	-1,010.18	9,598.81	9,651.62	0.00	0.00	0.00
20,100.00	90.00	90.60	9,980.00	-1,011.22	9,698.81	9,751.23	0.00	0.00	0.00
20,200.00	90.00	90.60	9,980.00	-1,012.27	9,798.80	9,850.85	0.00	0.00	0.00
20,300.00	90.00	90.60	9,980.00	-1,013.31	9,898.80	9,950.46	0.00	0.00	0.00
20,400.00	90.00	90.60	9,980.00	-1,014.35	9,998.79	10,050.08	0.00	0.00	0.00
20,500.00	90.00	90.60	9,980.00	-1,015.39	10,098.79	10,149.69	0.00	0.00	0.00
20,600.00	90.00	90.60	9,980.00	-1,016.44	10,198.78	10,249.30	0.00	0.00	0.00
20,700.00	90.00	90.60	9,980.00	-1,017.48	10,298.78	10,348.92	0.00	0.00	0.00
20,712.52	90.00	90.60	9,980.00	-1,017.61	10,311.30	10,361.39	0.00	0.00	0.00

NOVO

MS Directional
Planning Report

MS Directional

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Project:	Eddy County, New Mexico (NAD 83)	**MD Reference:**	WELL @ 3105.00usft (Est. 3080' GE + 25' KB)
Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #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)
PBHL									

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
PBHL - Rana Salada I - plan hits target center - Point	0.00	0.00	9,980.00	-1,017.61	10,311.30	484,740.78	639,354.11	32.332225	-104.015990
LTP - Rana Salada Fe - plan hits target center - Point	0.00	0.00	9,980.00	-1,015.52	10,111.31	484,742.87	639,154.12	32.332233	-104.016637
FTP - Rana Salada Fe - plan hits target center - Point	0.00	0.00	9,980.00	-913.81	352.39	484,844.58	629,395.20	32.332588	-104.048232

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
9,396.03	9,280.00	9 5/8"	9-5/8	12-1/4

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
225.00	225.00	Rustler			
2,789.43	2,775.00	Bell Canyon (base of salt)			
3,836.79	3,795.00	Cherry Canyon			
5,325.68	5,245.00	Brushy Canyon*			
6,424.38	6,315.00	Bone Spring Lime*			
7,111.03	6,995.00	Lower Avalon*			
7,531.03	7,415.00	1st Bone Spring Sand*			
7,781.03	7,665.00	2nd Bone Spring Carbonate			
8,236.03	8,120.00	2nd Bone Spring Sand*			
8,601.03	8,485.00	3rd Bone Spring Carbonate			
9,481.03	9,365.00	3rd Bone Spring Sand*			
9,801.91	9,675.00	Wolfcamp XY*			
9,984.24	9,820.00	Wolfcamp A*			

NOVO

MS Directional
Planning Report

MS Directional

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Site:	Rana Salada Fed Com 01 - K Pad	**North Reference:**	Grid
Well:	Rana Salada Fed Com 0106 226H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,800.00	1,800.00	0.00	0.00	KOP, 2.00°/100' Build
2,456.25	2,450.52	-63.92	-38.91	Hold 13.12° Inc, 211.33° Azm
6,459.79	6,349.48	-840.47	-511.61	Begin 2.00°/100' Drop
7,116.03	7,000.00	-904.40	-550.52	Begin Vertical Hold
9,523.07	9,407.04	-904.40	-550.52	Begin 10.00°/100' Build
10,423.07	9,980.00	-910.37	22.41	Begin 90.00° Lateral
20,712.52	9,980.00	-1,017.61	10,311.30	PBHL

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 3/4 mile

none

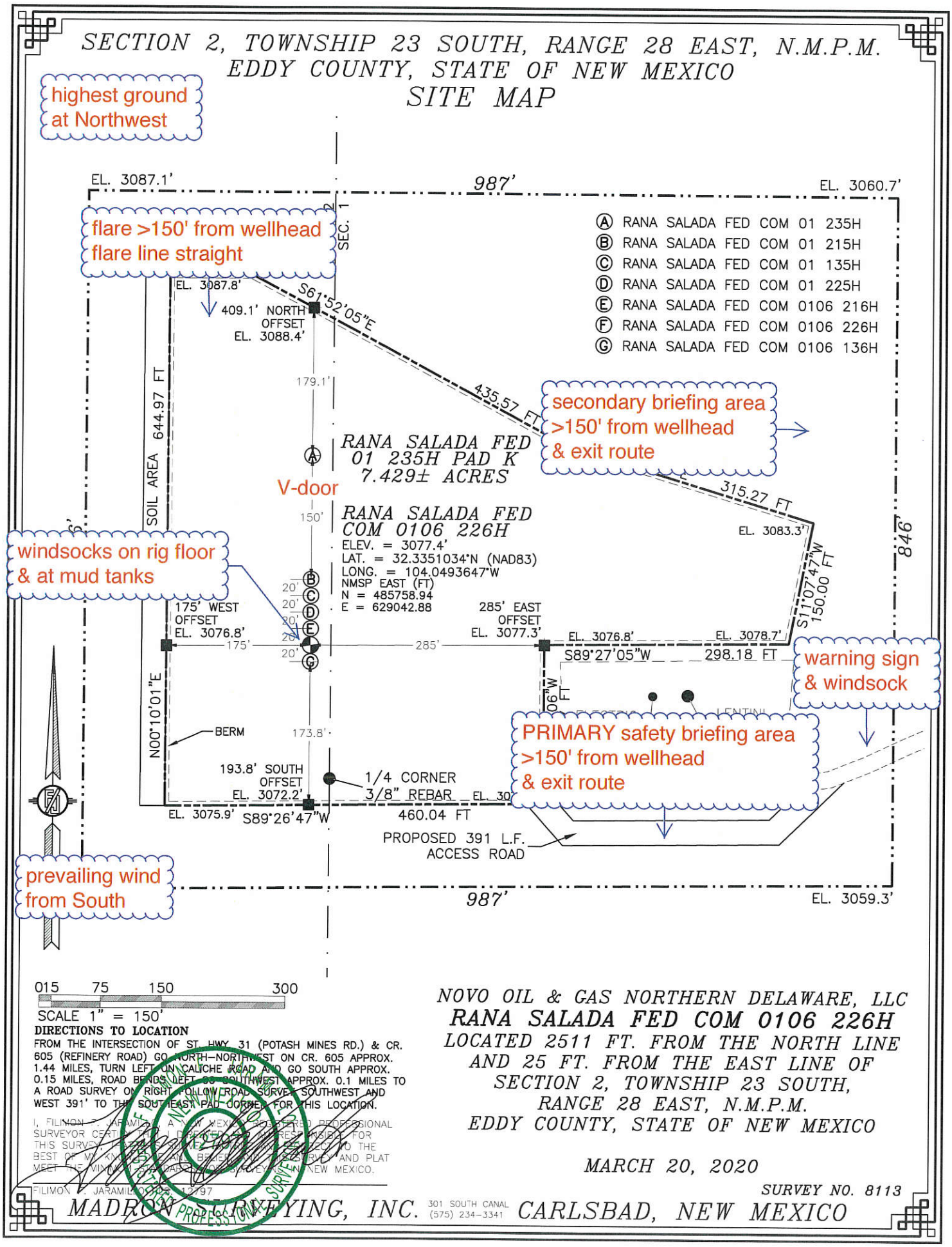
Air Evacuation

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



015 75 150 300
SCALE 1" = 150'

DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF ST. HWY. 31 (POTASH MINES RD.) & CR. 605 (REFINERY ROAD) GO NORTH-NORTHWEST ON CR. 605 APPROX. 1.44 MILES, TURN LEFT ON CALICHE ROAD AND GO SOUTH APPROX. 0.15 MILES, ROAD BENDS LEFT GO SOUTHWEST APPROX. 0.1 MILES TO A ROAD SURVEY ON RIGHT FOLLOW ROAD SURVEY SOUTHWEST AND WEST 391' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, A NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I PREPARED THE PLAT SHOWN HEREON FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILLO NO. 12797

NEW MEXICO PROFESSIONAL SURVEYOR

NOVO OIL & GAS NORTHERN DELAWARE, LLC
RANA SALADA FED COM 0106 226H
LOCATED 2511 FT. FROM THE NORTH LINE AND 25 FT. FROM THE EAST LINE OF SECTION 2, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

MARCH 20, 2020

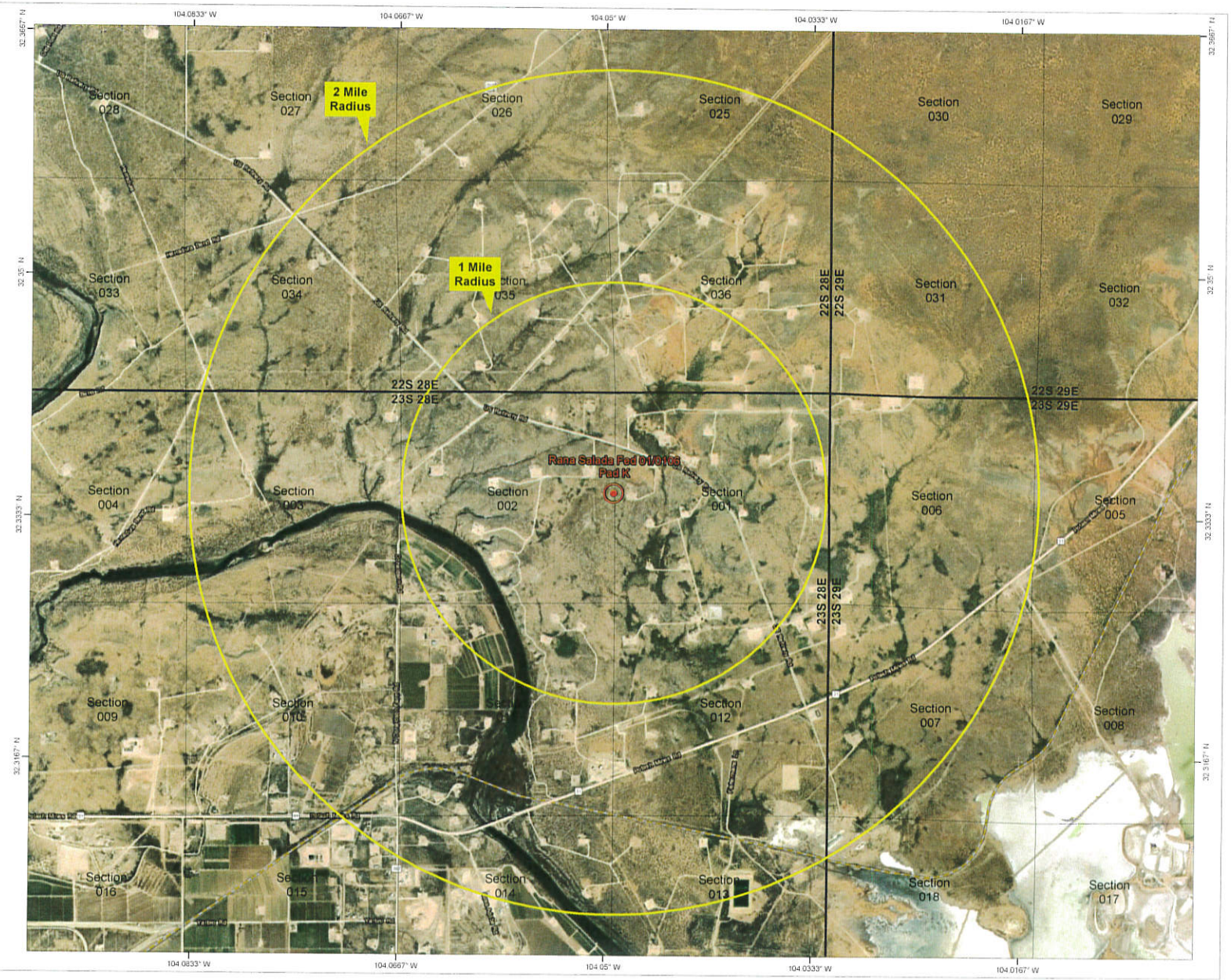
SURVEY NO. 8113

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

Novo Oil and Gas Northern Delaware

Rana Salada Fed 01/0106
Pad K
H_2S Contingency Plan:
Radius Map

Section 2, Township 23S, Range 28E
Eddy County, New Mexico



1:27,000

0 0.25 0.5 1

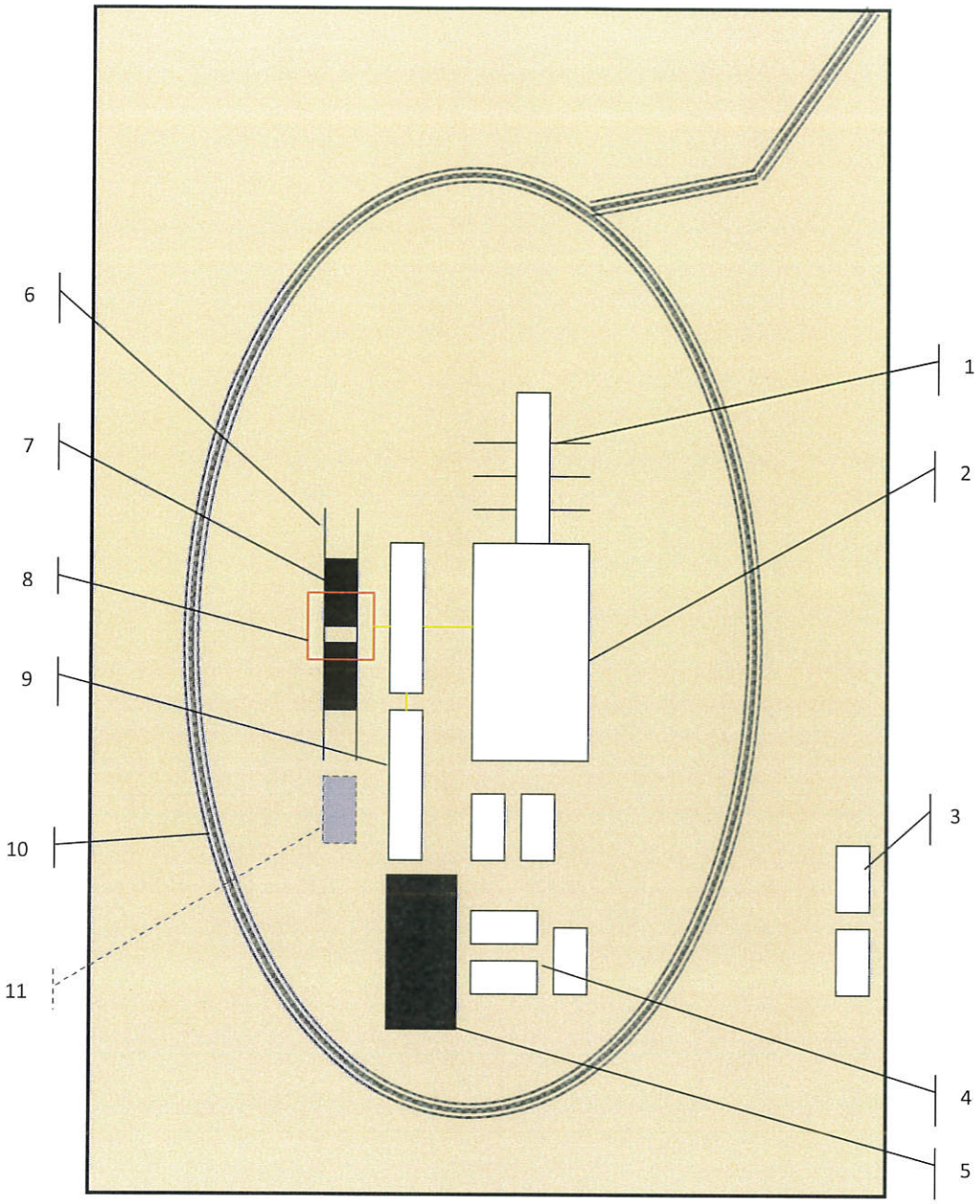
Miles

N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., July 20, 2020
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)

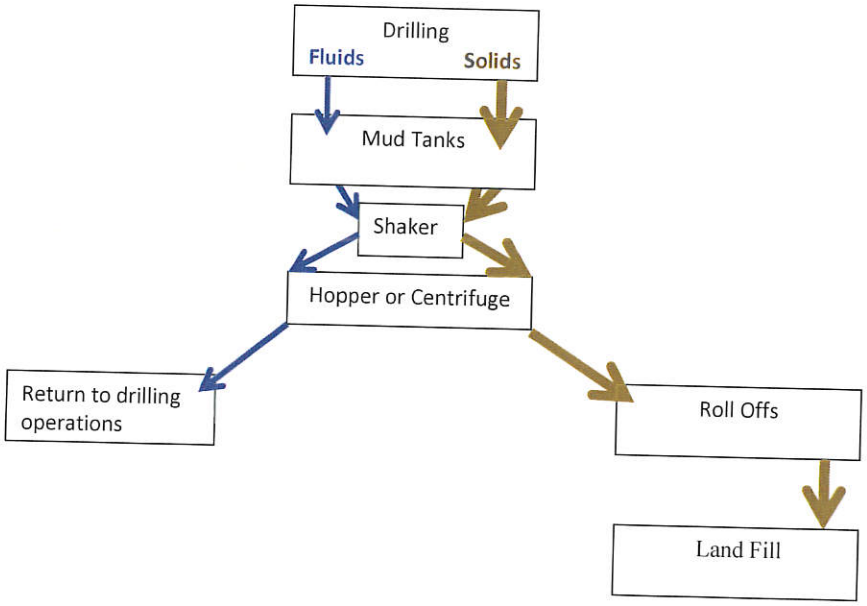
*Not drawn to scale: Closed loop system requires at least 30 feet beyond mud tanks. Ideally 60 feet would be available

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

COMMENTS

Action 24910

COMMENTS

Operator:	OGRID:	Action Number:	Action Type:
NOVO OIL & GAS NORTHERN DELAWA 1001 West Wilshire Blvd Suite 206 Oklahoma City, OK73116	372920	24910	FORM 3160-3

Created By	Comment	Comment Date
kpickford	KP GEO Review 4/22/2021	04/22/2021

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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District IV
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Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 24910

CONDITIONS OF APPROVAL

Operator:	OGRID:	Action Number:	Action Type:
NOVO OIL & GAS NORTHERN DELAWA 1001 West Wilshire Blvd Suite 206 Oklahoma City, OK73116	372920	24910	FORM 3160-3

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