

Form 3160-5  
(June 2019)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
OMB No. 1004-0137  
Expires: October 31, 2021

**SUNDRY NOTICES AND REPORTS ON WELLS**  
**Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.**

5. Lease Serial No. **NMNM61349**

6. If Indian, Allottee or Tribe Name

**SUBMIT IN TRIPLICATE** - Other instructions on page 2

1. Type of Well  
 Oil Well  Gas Well  Other

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

3a. Address **228 ST. CHARLES AVENUE, SUITE 912, NEW** 3b. Phone No. (include area code)  
**(504) 523-1831**

4. Location of Well (Footage, Sec., T.,R.,M., or Survey Description)  
**SEC 1/T23S/R28E/NMP**

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

8. Well Name and No. **RANA SALADA 0604 FED COM/22C**

9. API Well No.

10. Field and Pool or Exploratory Area  
**PURPLE SAGE/WOLFCAMP**

11. Country or Parish, State  
**EDDY/NM**

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

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

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

APD CHANGE SUNDRY

30-015-54402

SURFACE HOLE LOCATION

FROM: I-1-23S-28E; 1893' FNL, 359' FEL

TO: I-1-23S-28E; 1913' FSL, 359' FEL;

FIRST TAKE POINT

FROM: L-6-23S-29E; 1810' FSL, 330' FWL

TO: L-6-23S-29E; 2310' FSL, 330' FWL

LAST TAKE POINT

FROM: K-4-23S-29E; 1810' FSL, 2310' FWL

TO: K-4-23S-29E; 2310' FSL, 2310' FWL;

BOTTOM HOLE LOCATION

Continued on page 3 additional information

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)  
**JENNIFER ELROD / Ph: (940) 452-6214**

Signature (Electronic Submission)

Title **Senior Regulatory Analyst**

Date **01/19/2024**

**THE SPACE FOR FEDERAL OR STATE OFFICE USE**

Approved by  
**CHRISTOPHER WALLS / Ph: (575) 234-2234 / Approved**

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title **Petroleum Engineer** Date **02/07/2024**

Office **CARLSBAD**

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

## GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law 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, are either shown below, will be issued by or may be obtained from the local Federal office.

## SPECIFIC INSTRUCTIONS

*Item 4* - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

*Item 13*: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. 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 the 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., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

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

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

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 Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

## Additional Information

### Additional Remarks

FROM: K-4-23S-29E; 1810' FSL, 2510' FWL

TO: K-4-23S-29E; 2310' FSL, 2310' FEL;

CASING & DRILLING PLAN SUNDRIES ATTACHED

### Location of Well

0. SHL: NESE / 1893 FSL / 359 FEL / TWSP: 23S / RANGE: 28E / SECTION: 1 / LAT: 32.3326917 / LONG: -104.0331452 ( TVD: 0 feet, MD: 0 feet )

PPP: LOT 6 / 1807 FSL / 230 FEL / TWSP: 23S / RANGE: 29E / SECTION: 6 / LAT: 32.3324433 / LONG: -104.0309154 ( TVD: 10010 feet, MD: 10331 feet )

PPP: NWSW / 1950 FSL / 0 FWL / TWSP: 23S / RANGE: 29E / SECTION: 5 / LAT: 32.3323069 / LONG: -104.015567 ( TVD: 10116 feet, MD: 14975 feet )

BHL: NESW / 1810 FSL / 2510 FWL / TWSP: 23S / RANGE: 29E / SECTION: 4 / LAT: 32.3320868 / LONG: -103.9903137 ( TVD: 10295 feet, MD: 22875 feet )

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
SHL, FTP, LTP, BHL

WELL LOCATION AND ACREAGE DEDICATION PLAT

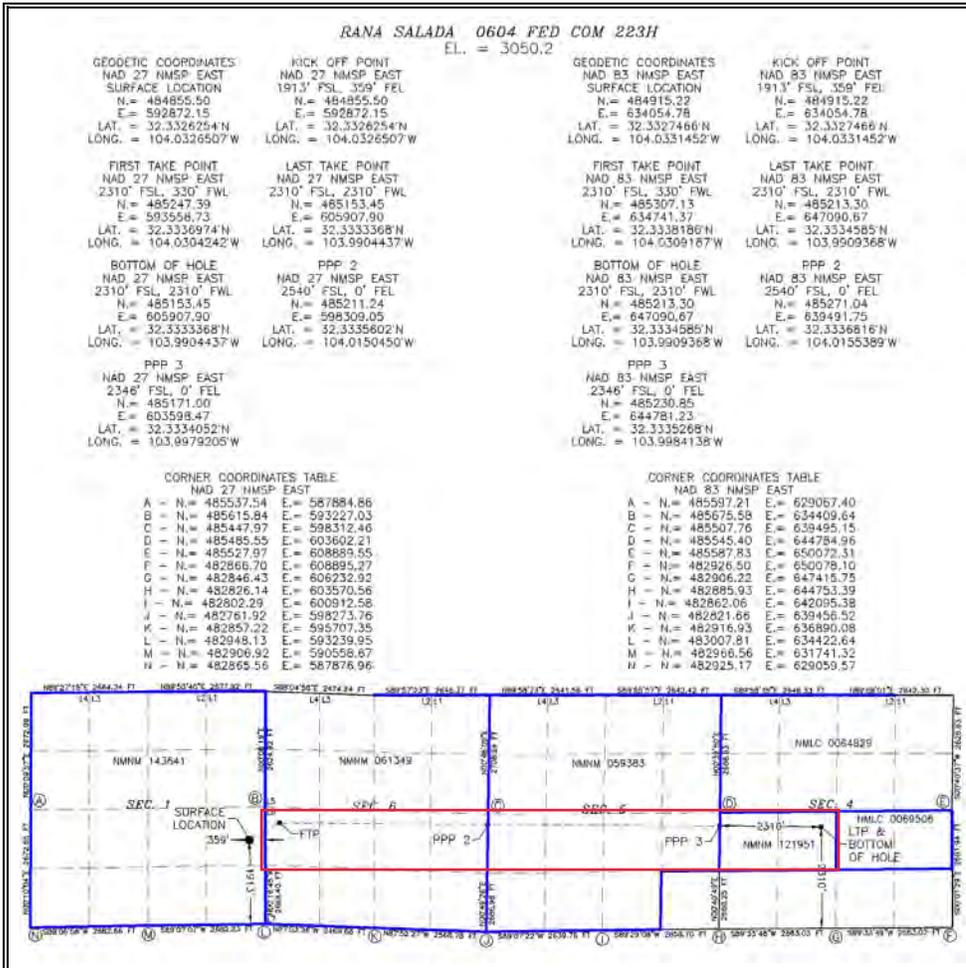
Table with 3 main rows: 1 API Number (30-015-54402), 2 Pool Code (98220), 3 Pool Name (PURPLE SAGE; WOLFCAMP); 4 Property Code (334853), 5 Property Name (RANA SALADA 0604 FED COM), 6 Well Number (223H); 7 OGRID No. (372920), 8 Operator Name (NOVO OIL & GAS NORTHERN DELAWARE, LLC), 9 Elevation (3050.2)

10 Surface Location table with columns: UL or lot no. (I), Section (1), Township (23 S), Range (28 E), Lot Idn, Feet from the (1913), North/South line (SOUTH), Feet from the (359), East/West line (EAST), County (EDDY)

11 Bottom Hole Location If Different From Surface table with columns: UL or lot no. (K), Section (4), Township (23 S), Range (29 E), Lot Idn, Feet from the (2310), North/South line (SOUTH), Feet from the (2310), East/West line (WEST), County (EDDY)

12 Dedicated Acres (396.67), 13 Joint or Infill, 14 Consolidation Code, 15 Order No.

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...
Signature: Jennifer Elrod
Date: 01/19/2024
Printed Name: JENNIFER ELROD
E-mail Address: jennifer.elrod@permres.com

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...
Date of Survey: JANUARY 11, 2024
Signature and Seal of Professional Surveyor: [Seal of Jaramello]
Certificate Number: F. JARAMELLO-PIS 12797
SURVEY NO. 9577B

District I
1625 N. French Dr., Hobbs, NM 88240
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1220 South St. Francis Dr.
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Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
[X] AMENDED REPORT
SHL, FTP, LTP, BHL

WELL LOCATION AND ACREAGE DEDICATION PLAT

Table with 3 columns: API Number (30-015-54402), Pool Code (98220), Pool Name (PURPLE SAGE; WOLFCAMP), Property Code (334853), Property Name (RANA SALADA 0604 FED COM), Well Number (223H), OGRID No. (372920), Operator Name (NOVO OIL & GAS NORTHERN DELAWARE, LLC), Elevation (3050.2)

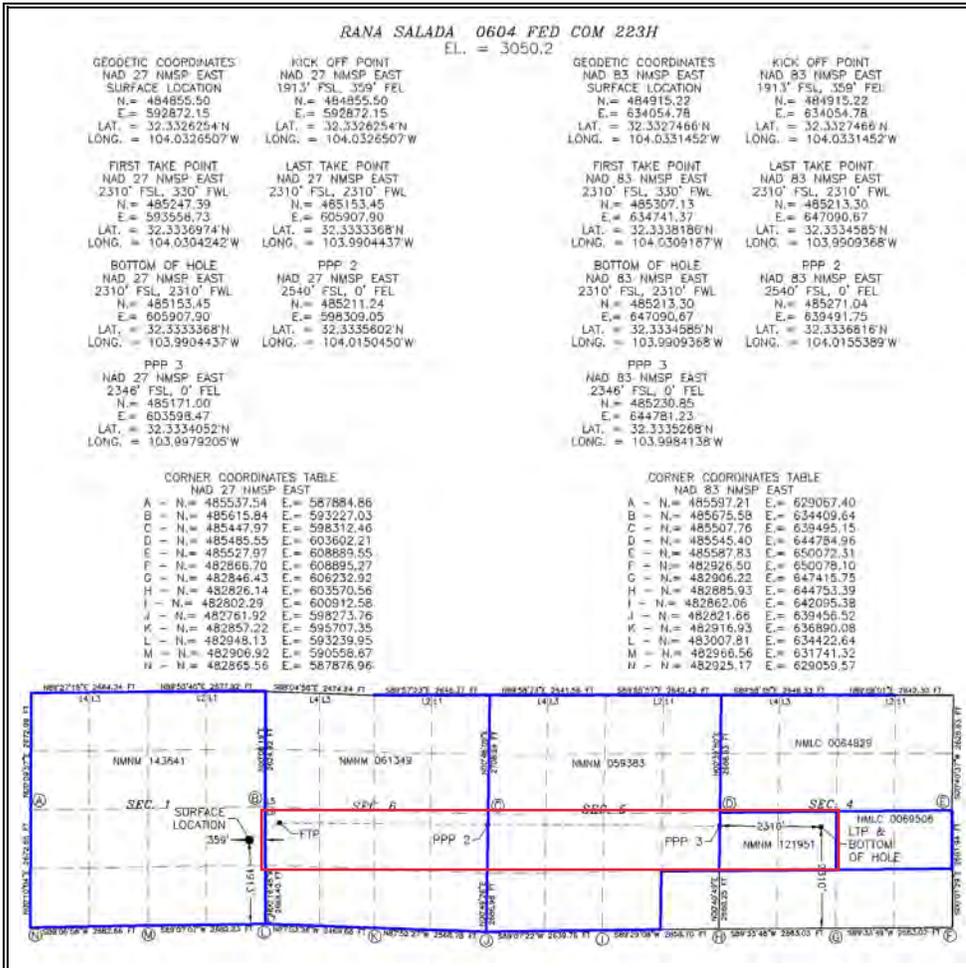
Table with 10 columns: UL or lot no. (I), Section (1), Township (23 S), Range (28 E), Lot Idn, Feet from the (1913), North/South line (SOUTH), Feet from the (359), East/West line (EAST), County (EDDY)

Bottom Hole Location If Different From Surface

Table with 10 columns: UL or lot no. (K), Section (4), Township (23 S), Range (29 E), Lot Idn, Feet from the (2310), North/South line (SOUTH), Feet from the (2310), East/West line (WEST), County (EDDY)

Table with 4 columns: Dedicated Acres (396.67), Joint or Infill, Consolidation Code, Order No.

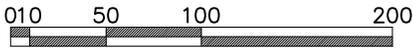
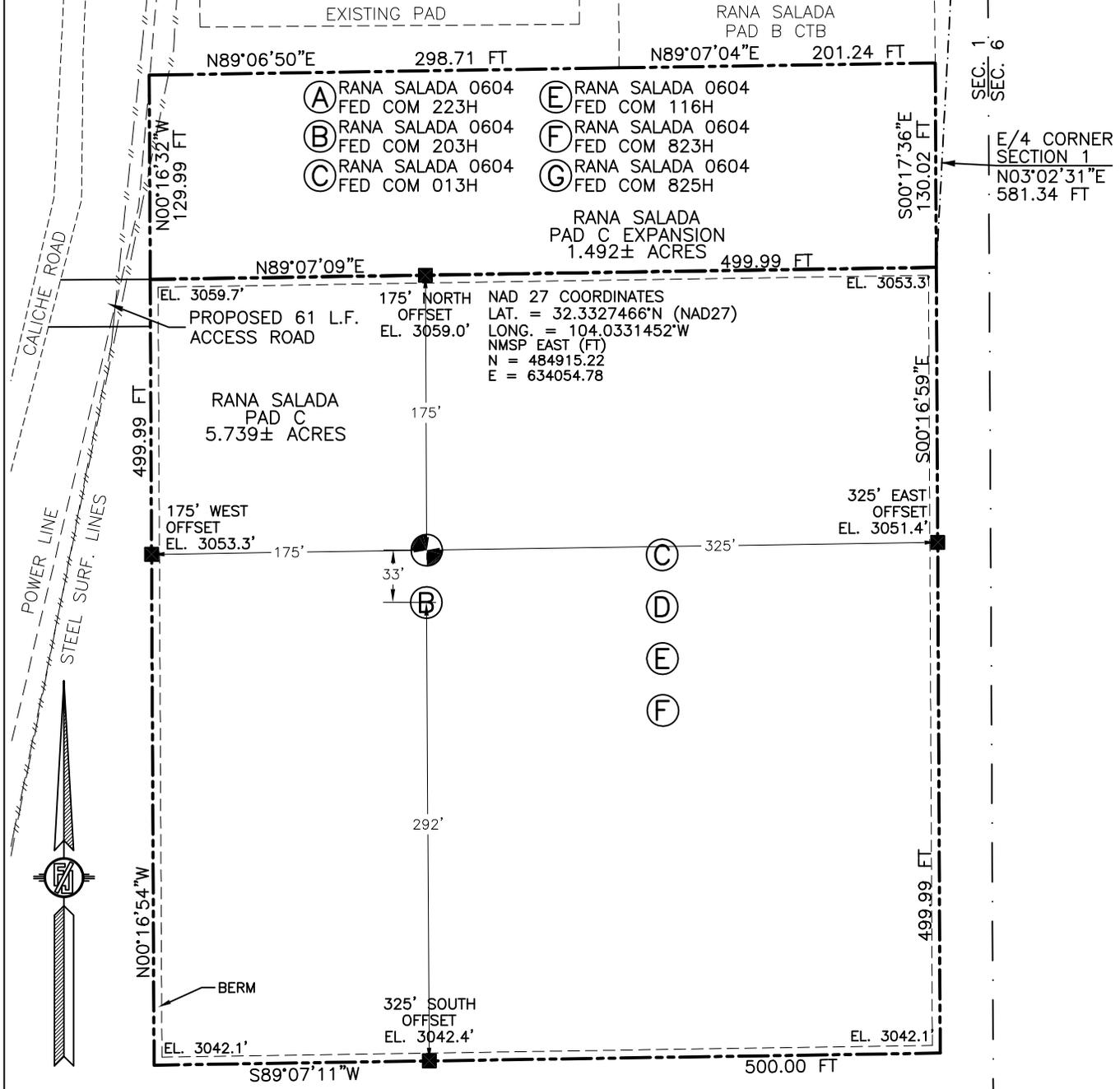
No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



Operator Certification section with signature of Jennifer Elrod, dated 01/19/2024, and printed name and email address.

Surveyor Certification section with signature and seal of F. Byron Jaramele, dated January 11, 2024, and certificate number.

# SECTION 1, TOWNSHIP 23 SOUTH, RANGE 28 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO SITE MAP



SCALE 1" = 100'

**DIRECTIONS TO LOCATION**  
FROM CR 31 (POTASH MINES ROAD) AND CR 605 (REFINERY ROAD) GO NORTH ON CR 605 APPROX. 0.4 OF A MILE, TURN RIGHT (EAST) ON CALICHE ROAD AND GO EAST AND NORTH-EAST APPROX. 0.2 OF A MILE TO A "Y" IN ROAD, TURN LEFT (NORTH) AND GO NORTH APPROX. 0.47 OF A MILE, THEN LEFT 15° TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

I, FILIMON F. JARAMILA, A NEW MEXICO LICENSED PROFESSIONAL SURVEYOR CERTIFY THAT I DEEMED THIS AREA RESPONSIBLE FOR THIS SURVEY AND I BELIEVE I AM BEING FAIR AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I HAVE CONDUCTED THIS SURVEY AND PLAT MEET THE MINIMUM REQUIREMENTS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILA 2797

MADRON PROFESSIONAL SURVEYING, INC.

**NOVO OIL & GAS NORTHERN DELAWARE, LLC**  
**RANA SALADA 0604**  
LOCATED 1913 FT. FROM THE SOUTH LINE  
AND 359 FT. FROM THE EAST LINE OF  
SECTION 1, TOWNSHIP 23 SOUTH,  
RANGE 28 EAST, N.M.P.M.  
EDDY COUNTY, STATE OF NEW MEXICO

JANUARY 11, 2024

SURVEY NO. 9577B

301 SOUTH CANAL CARLSBAD, NEW MEXICO  
(575) 234-3327

**Permian Resources - Rana Salada 0604 Fed Com 223H**

**1. Geologic Formations**

Formation	Lithology	Elevation	TVD	Target
Rustler	Sandstone	2730	350	No
Top of Salt	Salt	2530	550	No
Lamar	Anhydrite/Shale	230	2850	No
Capitan	Limestone	NP	NP	No
Cherry Canyon	Sandstone	-837	3917	No
Brushy Canyon	Sandstone	-2280	5360	No
Bone Spring Lime	Limestone	-3488	6568	No
1st Bone Spring Sand	Sandstone/Limestone/Shale	-4551	7631	No
2nd Bone Spring Sand	Sandstone/Limestone/Shale	-4817	7897	No
3rd Bone Spring Sand	Sandstone/Limestone/Shale	-5630	8710	No
Wolfcamp AXY	Sandstone/Limestone/Shale	-6774	9854	Yes
0	Sandstone/Limestone/Shale	0	0	No

**2. Blowout Prevention**

BOP installed and tested before drilling	Size?	Min. Required WP	Type	x	Tested to:
8.75	13-5/8"	5M	Annular	x	5000 psi
			Blind Ram	x	
			Pipe Ram	x	5000 psi
			Double Ram		
			Other*		
6.75	13-5/8"	10M	Annular	x	50% testing pressure
			Blind Ram	x	5000 psi
			Pipe Ram	x	
			Double Ram		
			Other*		

**Equipment:** BOPE with working pressure ratings in excess of anticipated maximum surface pressure will be utilized for well control from drill out of surface casing to TMD. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested. All BOPE connections shall be flanged, welded or clamped. All choke lines shall be straight unless targeted with running tees or tee blocks are used, and choke lines shall be anchored to prevent whip and reduce vibrations. All valves in the choke line & the choke manifold shall be full opening as to not cause restrictions and to allow for straight fluid paths to minimize potential erosion. All gauges utilized in the well control system shall be of a type designed for drilling fluid service. A top drive inside BOP valve will be utilized at all times. Subs equipped with full opening valves sized to fit the drill pipe and collars will be available on the rig floor in the open position. The key to operate said valve equipped subs will be on the rig floor at all times. The accumulator system will have sufficient capacity to open the HCR and close all three sets of rams plus the annular preventer while retaining at least 300 psi above precharge on the closing manifold (accumulator system shall be capable of doing so without using the closing unit pumps). The fluid reservoir capacity will be double the usable fluid volume of the accumulator system capacity, and the fluid level will be maintained at the manufacturer's recommended level. Prior to connecting the closing unit to the BOP stack, an accumulator precharge pressure test shall be performed to ensure the precharge pressure is within 100 psi of the desired precharge pressure (only nitrogen gas will be used to precharge). Two independent power sources will be made available at all times to power the closing unit pumps so that the pumps can automatically start when the closing valve manifold pressure has decreased to the preset level. Closing unit pumps will be sized to allow opening of HCR and closing of annular preventer on 5" drill pipe achieving at least 200 psi above precharge pressure with the accumulator system isolated from service in less than two minutes. A valve shall be installed in the closing line as close to the annular preventer as possible to act as a locking device; the valve shall be maintained in the open position and shall be closed only when the power source for the accumulator system is inoperative. Remote controls capable of opening and closing all preventers & the HCR shall be readily accessible to the driller; master controls with the same capability will be operable at the accumulator. The wellhead will be a multi-bowl speed head allowing for hangoff of intermediate casing & isolation of the 133/8 x 95/8 annulus without breaking the connection between the BOP & wellhead to install an additional casing head. A wear bushing will be installed & inspected frequently to guard against internal wear to wellhead. VBRs (variablebore rams) will be run in upper rambody of BOP stack to provide redundancy to annular preventer while RIH w/ production casing;

**Requesting Variance?** YES

**Variance request:** Flex hose and offline cement variances, see attachments in section 8.

**Testing Procedure:** The BOP test shall be performed before drilling out of the surface casing shoe and will occur at a minimum: a. when initially installed b. whenever any seal subject to test pressure is broken c. following related repairs d. at 30 day intervals e. checked daily as to mechanical operating conditions. The ram type preventer(s) will be tested using a test plug to 250 psi (low) and 5,000 psi (high) (casinghead WP) with a test plug upon its installation onto the 13 surface casing. If a test plug is not used, the ram type preventer(s) shall be tested to 70% of the minimum internal yield pressure of the casing. The annular type preventer(s) shall be tested to 3500 psi. Pressure will be maintained for at least 10 minutes or until provisions of the test are met, whichever is longer. A Sundry Notice (Form 3160 5), along with a copy of the BOP test report, shall be submitted to the local BLM office within 5 working days following the test. If the bleed line is connected into the buffer tank (header), all BOP equipment including the buffer tank and associated valves will be rated at the required BOP pressure. The BLM office will be provided with a minimum of four (4) hours notice of BOP testing to allow witnessing. The BOP Configuration, choke manifold layout, and accumulator system, will be in compliance with Onshore Order 2 for a 5,000 psi system. A remote accumulator and a multi-bowl system will be used, please see attachment in section 8 for multi-bowl procedure. Pressures, capacities, and specific placement and use of the manual and/or hydraulic controls, accumulator controls, bleed lines, etc., will be identified at the time of the BLM 'witnessed BOP test. Any remote controls will be capable of both opening and closing all preventers and shall be readily accessible.

Choke Diagram Attachemnt: 5 M Choe Manifold  
BOP Diagram Attachment: BOP Schematic

3. Casing

String	Hole Size	Casing Size	Top	Bottom	Top TVD	Bottom TVD	Length	Grade	Weight	Connection	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
Surface	12.25	9.625	0	390	0	390	390	J55	40	BTC	13.34	###	Dry	6.18	Dry	5.45
Intermediate	8.75	7.625	0	9747	0	9747	9747	P110HC	29.7	MOFXL	5.36	2.96	Wet	1.93	Wet	2.75
Production	6.75	5.5	0	9247	0	10297	9247	P110RY	20	GEOCONN	1.88	2.42	Dry	2.10	Dry	2.10
Production	6.75	5.5	9247	22996	10297	10297	13749	P110RY	20	Bushmaster SL	1.88	2.42	Dry	2.10	Dry	2.10
BLM Min Safety Factor											1.125	1	1.6	1.6		

Non API casing spec sheets and casing design assumptions attached.

4. Cement

String	Lead/Tail	Top MD	Bottom MD	Quantity (sx)	Yield	Density	Cu Ft	Excess %	Cement Type	Additives
Surface	Lead	0	310	110	1.88	12.9	200	100%	Class C	EconoCem-HLC + 5% Salt + 5% Kol-Seal
Surface	Tail	310	390	30	1.34	14.8	40	50%	Class C	Accelerator
Intermediate	Lead	0	7790	630	1.88	12.9	1180	50%	Class C	EconoCem-HLC + 5% Salt + 5% Kol-Seal
Intermediate	Tail	7790	9747	230	1.34	14.8	300	50%	Class C	Retarder
Production	Lead	9247	9847	70	2.41	11.5	150	40%	Class H	POZ, Extender, Fluid Loss, Dispersant, Retarder
Production	Tail	9847	22996	800	1.73	12.5	1380	25%	Class H	POZ, Extender, Fluid Loss, Dispersant, Retarder

Permian Resources requests to pump a two stage cement job on the 7-5/8” intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Cherry Canyon and the second stage performed as a bradenhead squeeze with planned cement from the Brushy Canyon to surface. If cement is not visually confirmed to circulate to surface, the final cement top after the second stage job will be verified by Echo-meter. If necessary, a top out consisting of 1,500 sack of Class C cement + 3% Salt + Bentonite Gel (2.30 yld, 12.9 ppg) will be executed as a contingency. If cement is still unable to circulate to surface, another Echo-meter run will be performed for cement top verification.

Permian Resources will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

Permian Resources will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

Permian Resources requests to pump an Optional Lead if well conditions dictate in an attempt to bring cement inside the surface casing. If cement reaches the desired height, the BLM will be notified and the second stage bradenhead squeeze and subsequent TOC verification will be negated.

Permian Resources requests the option to conduct the bradenhead squeeze and TOC verification offline as per standard approval from BLM when unplanned remediation is needed and batch drilling is approved. In the event the bradenhead is conducted, we will ensure the first stage cement job is cemented properly and the well is static with floats holding and no pressure on the csg annulus as with all other casing strings where batch drilling operations occur before moving off the rig. The TA cap will also be installed per Cactus procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.

**5. Circulating Medium**

**Mud System Type:** Closed

**Will an air or gas system be used:** No

**Describe what will be on location to control well or mitigate other conditions:** Sufficient quantities of mud materials will be on the well site at all times for the purpose of assuring well control and maintaining wellbore integrity. Surface interval will employ fresh water mud. The intermediate hole will utilize a saturated brine fluid to inhibit salt washout. The production hole will employ brine based and oil base fluid to inhibit formation reactivity and of the appropriate density to maintain well control.

**Describe the mud monitoring system utilized:** Centrifuge separation system. Open tank monitoring with EDR will be used for drilling fluids and return volumes. Open tank monitoring will be used for cement and cuttings return volumes. Mud properties will be monitored at least every 24 hours using industry accepted mud check practices.

**Cuttings Volume:** 7520 Cu Ft

**Circulating Medium Table**

Top Depth	Bottom Depth	Mud Type	Min Weight	Max Weight
0	390	Spud Mud	8.6	9.5
390	9747	Water Based Mud	10	10
9747	9247	OBM	9	11
9247	22996	OBM	9	11

**6. Test, Logging, Coring**

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

Will utilize MWD/LWD (Gamma Ray logging) from intermediate hole to TD of the well.

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

DIRECTIONAL SURVEY, GAMMA RAY LOG,

**Coring operation description for the well:**

N/A

**7. Pressure**

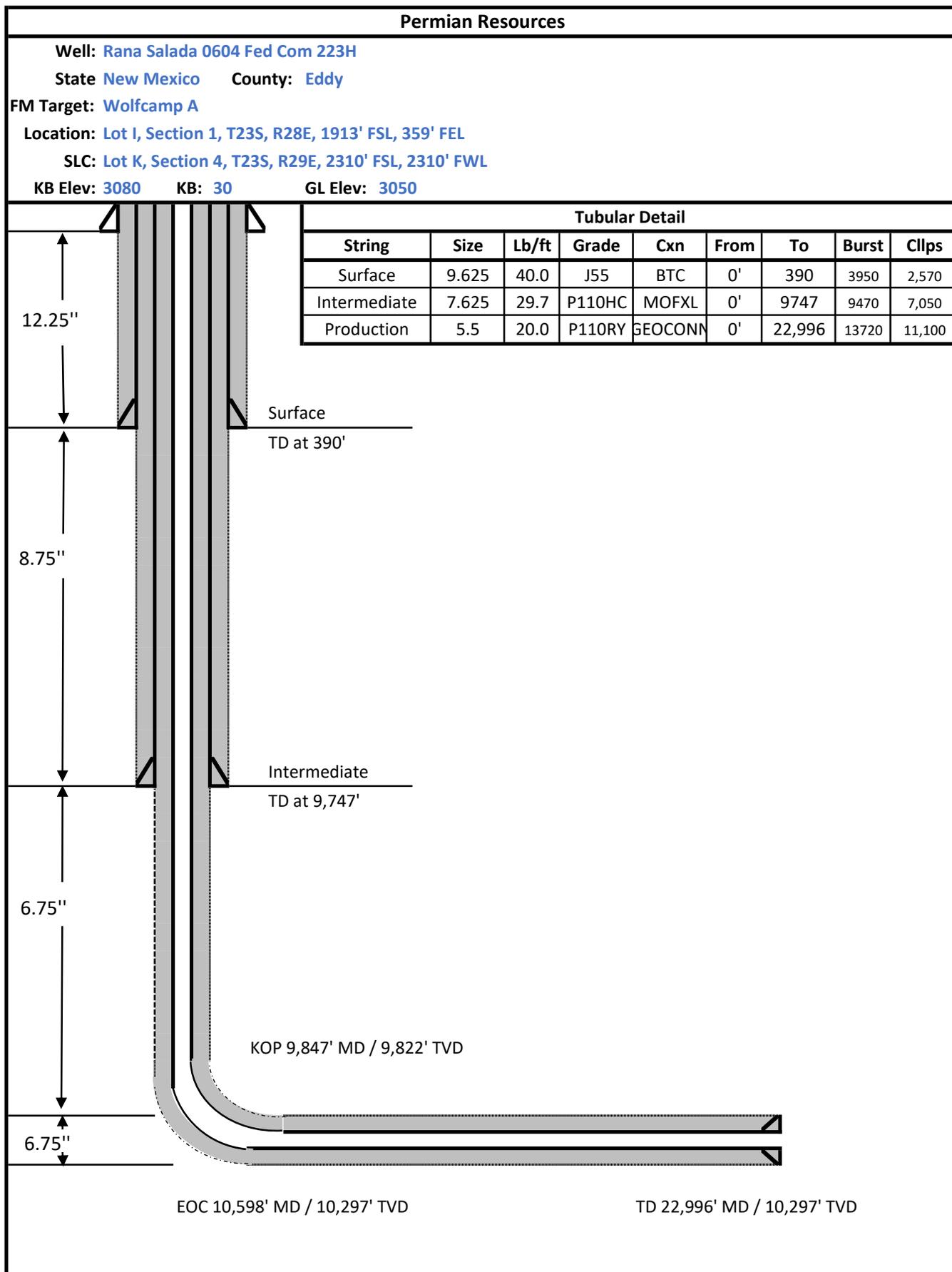
Anticipated Bottom Hole Pressure	5890	psi
Anticipated Surface Pressure	3625	psi
Anticipated Bottom Hole Temperature	158	°F
Anticipated Abnormal pressure, temp, or geo hazards	No	

**8. Waste Management**

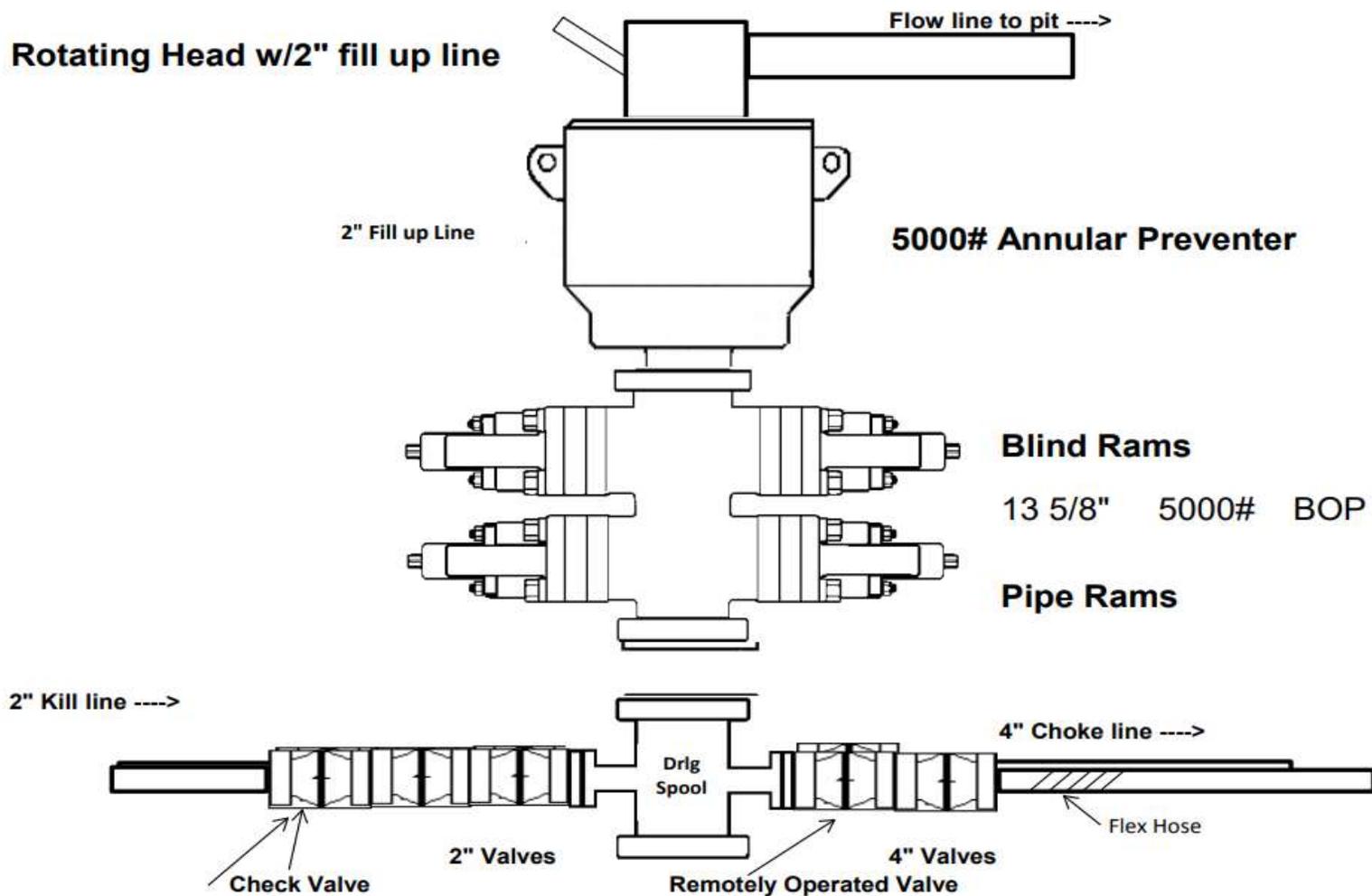
<b>Waste Type:</b>	<b>Drilling</b>
Waste content description:	Fresh water based drilling fluid
Amount of waste:	1500 bbls
Waste disposal frequency:	Weekly (after drilling all surfaces)
Safe containment description:	Steel tanks with plastic-lined containment berms
Waste disposal type:	Haul to commercial facility
Disposal location ownership:	Commercial
<b>Waste Type:</b>	<b>Grey Water &amp; Human Waste</b>
Waste content description:	Grey Water/Human Waste
Amount of waste:	5000 gallons
Waste disposal frequency:	Weekly
Safe containment description:	Approved waste storage tanks with containment
Waste disposal type:	Haul to commercial facility
Disposal location ownership:	Commercial
<b>Waste Type:</b>	<b>Garbage</b>
Waste content description:	General trash/garbage
Amount of waste:	5000 lbs
Waste disposal frequency:	Weekly
Safe containment description:	Enclosed trash trailer
Waste disposal type:	Haul to commercial facility
Disposal location ownership:	Commercial
<b>Waste Type:</b>	<b>Drilling</b>
Waste content description:	Drill Cuttings
Amount of waste:	7520 Cu Ft
Waste disposal frequency:	Per well
Safe containment description:	Steel tanks
Waste disposal type:	Haul to commercial facility
Disposal location ownership:	Commercial
<b>Waste Type:</b>	<b>Drilling</b>
Waste content description:	Brine water based drilling fluid
Amount of waste:	1500 bbls
Waste disposal frequency:	Monthly
Safe containment description:	Steel tanks with plastic-lined containment berms
Waste disposal type:	Haul to commercial facility
Disposal location ownership:	Commercial

**9. Other Information**

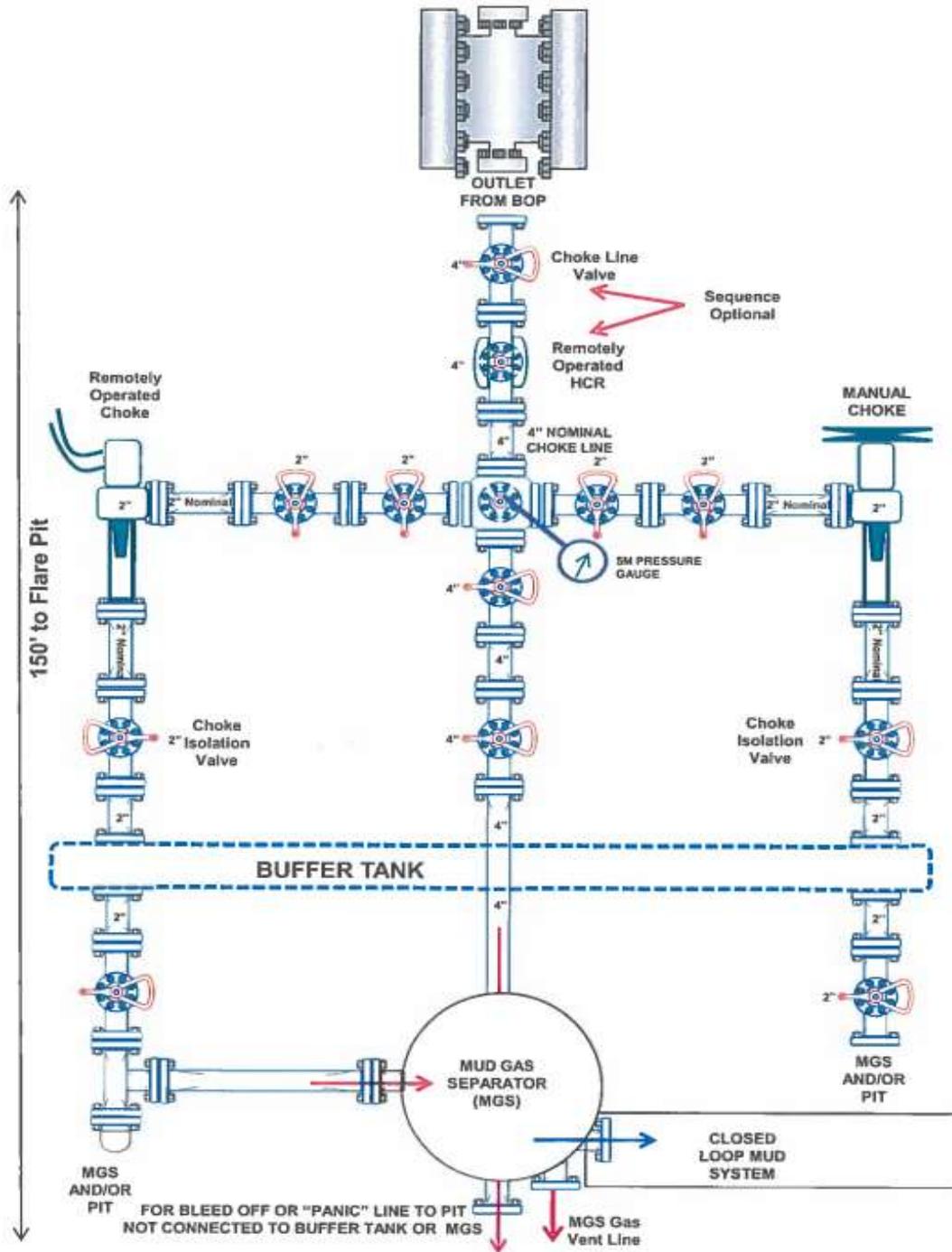
Well Plan and AC Report: attached  
 Batching Drilling Procedure: attached  
 WBD: attached  
 Flex Hose Specs: attached  
 Offline Cementing Procedure Attached:



# 5,000 psi BOP Schematic



### 5M Choke Manifold Equipment (WITH MGS + CLOSED LOOP)





CONTITECH RUBBER Industrial Kft.	No:QC-DB- 210/ 2014 Page: 9 / 113
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QUALITY CONTROL INSPECTION AND TEST CERTIFICATE		CERT. N°:	504
PURCHASER: ContiTech Oil & Marine Corp.		P.O. N°:	4500408659
CONTITECH RUBBER order N°: 538236	HOSE TYPE: 3" ID	Choke and Kill Hose	
HOSE SERIAL N°: 67255	NOMINAL / ACTUAL LENGTH: 10,67 m / 10,77 m.		
W.P.: 68,9 MPa 10000 psi	T.P.: 103,4 MPa 15000 psi	Duration:	60 min.
Pressure test with water at ambient temperature  <p style="text-align: center;">See attachment. ( 1 page )</p>			
↑ 10 mm = 10 Min. → 10 mm = 20 MPa			
COUPLINGS Type	Serial N°	Quality	Heat N°
3" coupling with 4 1/16" 10K API b.w. Flange end	9251	AISI 4130	A0579N
	9254	AISI 4130	035608
<b>Not Designed For Well Testing</b>		<b>API Spec 16 C</b>	
		<b>Temperature rate: "B"</b>	
All metal parts are flawless			
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER INSPECTED AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.			
STATEMENT OF CONFORMITY: We hereby certify that the above items/equipment supplied by us are in conformity with the terms, conditions and specifications of the above Purchaser Order and that these items/equipment were fabricated, inspected and tested in accordance with the referenced standards, codes and specifications and meet the relevant acceptance criteria and design requirements.			
COUNTRY OF ORIGIN HUNGARY/EU			
Date:	Inspector	Quality Control	
20. March 2014.		ContiTech Rubber Industrial Kft. Quality Control Dept. 	

ContiTech Rubber Industrial Kft. | Budapest | 10. 41-8728 (Sungler) | H-4701 P.O. Box 302 Sungler, Hungary  
 Phone: +36 82 584 727 | Fax: +36 82 584 728 | e-mail: info@rubr.contitech.hu | info@rubr.contitech.hu | www.contitech.hu  
 The Court of Companies of Hungary | Registry Court | Registry Court No: Cg. 95-09-00203 | EU VAT No: HU11637028  
 Belföldi Munkaadó, Zrt. Budapest | 14220160-2083000



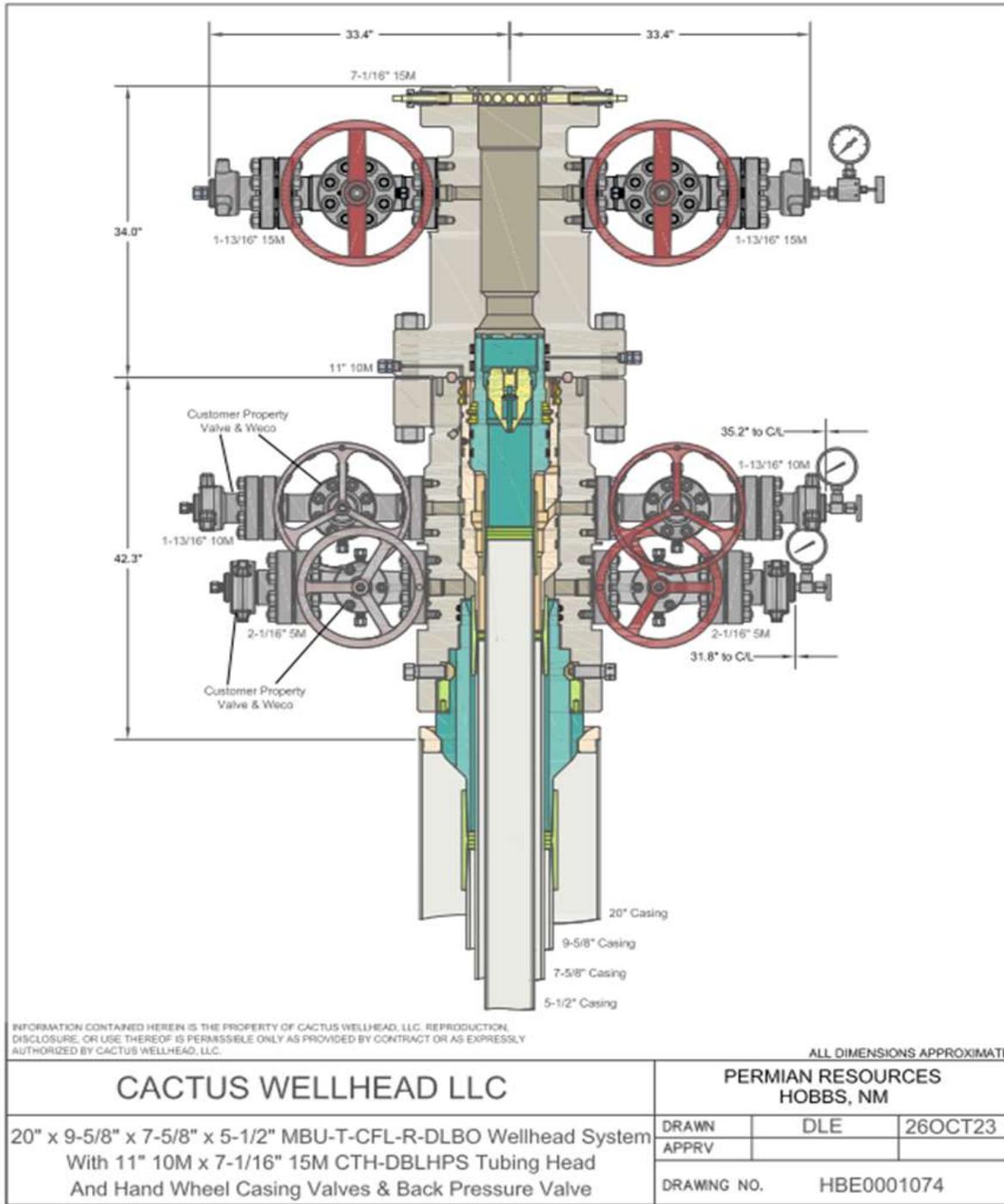


CONTITECH RUBBER Industrial Kft.	No:QC-DB- 210/ 2014 Page: 15 / 113 ContiTech
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### Hose Data Sheet

CRI Order No.	538236
Customer	ContiTech Oil & Marine Corp.
Customer Order No	4500409659
Item No.	1
Hose Type	Flexible Hose
<b>Standard</b>	<b>API SPEC 16 C</b>
Inside dia in inches	3
Length	35 ft
Type of coupling one end	FLANGE 4. 1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
Type of coupling other end	FLANGE 4. 1/16" 10K API SPEC 6A TYPE 6BX FLANGE C/W BX155 R.GR.SOUR
H2S service NACE MR0175	Yes
Working Pressure	10 000 psi
Design Pressure	10 000 psi
Test Pressure	15 000 psi
Safety Factor	2,25
Marking	USUAL PHOENIX
Cover	NOT FIRE RESISTANT
Outside protection	St. steel outer wrap
Internal stripwound tube	No
Lining	OIL + GAS RESISTANT SOUR
Safety clamp	No
Lifting collar	No
Element C	No
Safety chain	No
Safety wire rope	No
Max. design temperature [°C]	100
Min. design temperature [°C]	-20
Min. Bend Radius operating [m]	0,90
Min. Bend Radius storage [m]	0,90
Electrical continuity	The Hose is electrically continuous
Type of packing	WOODEN CRATE ISPM-15

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## Permian Resources Casing Design Criteria

A sundry will be requested if any lesser grade or different size casing is substituted. All casing will be centralized as specified in On Shore Order II. Casing will be tested as specified in On Shore Order II.

### Casing Design Assumptions:

#### Surface

- 1) Burst Design Loads
  - a) Displacement to Gas
    - (1) Internal: Assumes a full column of gas in the casing with a gas gradient of 0.7 psi/ft in the absence of better information. It is limited to the controlling pressure based on the maximum expected pore pressure within the next drilling interval.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
  - b) Casing Pressure Test
    - (1) Internal: Displacement fluid plus surface pressure required to comply with regulatory casing test pressure requirements of Onshore Oil and Gas Order No. 2 and NM NMAC 19.15.16 of NMOCD regulations.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
- 2) Collapse Loads
  - a) Cementing
    - (1) Internal: Displacement fluid density.
    - (2) External: Mud weight from TOC to surface and cement slurry weight from TOC to shoe.
  - b) Lost Returns with Mud Drop
    - (1) Internal: Lost circulation at the TD of the next hole section and the fluid level falls to a depth where the hydrostatic pressure of the mud column equals pore pressure at the depth of the lost circulation zone.
    - (2) External: Mud weight to TOC and cement slurry(s) density below TOC.
- 3) Tension Loads
  - a) Overpull Force
    1. Axial: Buoyant weight of the string plus planned 100,000 lbs applied in stuck pipe situation.
  - b) Green Cement Casing Test
    1. Axial: Buoyant weight of the string plus cement plug bump pressure load.

#### Intermediate I

- 1) Burst Design Loads
  - a) Displacement to Gas
    - (1) Internal: Assumes a full column of gas in the casing with a gas gradient of 0.7 psi/ft in the absence of better information. It is limited to the controlling pressure based on the maximum expected pore pressure within the next drilling interval.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
  - b) Casing Pressure Test
    - (1) Internal: Displacement fluid plus surface pressure required to comply with regulatory casing test pressure requirements of Onshore Oil and Gas Order No. 2 and NM NMAC 19.15.16 of NMOCD regulations.

- (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
- 2) Collapse Loads
  - a) Cementing
    - (1) Internal: Displacement fluid density.
    - (2) External: Mud weight from TOC to surface and cement slurry weight from TOC to shoe.
  - b) Lost Returns with Mud Drop
    - (1) Internal: Lost circulation at the TD of the next hole section and the fluid level falls to a depth where the hydrostatic pressure of the mud column equals pore pressure at the depth of the lost circulation zone.
    - (2) External: Mud weight to TOC and cement slurry(s) density below TOC.
- 3) Tension Loads
  - a) Overpull Force
    - 1. Axial: Buoyant weight of the string plus planned 100,000 lbs applied in stuck pipe situation.
  - b) Green Cement Casing Test
    - 1. Axial: Buoyant weight of the string plus cement plug bump pressure load.

#### Intermediate or Intermediate II

- 1) Burst Design Loads
  - a) Gas Kick Profile
    - (1) Internal: Load profile based on influx encountered in lateral portion of wellbore with a maximum influx volume of 150 bbl and a kick intensity of 1.5 ppg using maximum anticipated MW of 9.9 ppg.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
  - b) Casing Pressure Test
    - (1) Internal: Displacement fluid plus surface pressure required to comply with regulatory casing test pressure requirements of Onshore Oil and Gas Order No. 2 and NM NMAC 19.15.16 of NMOCD regulations.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
- 2) Collapse Loads
  - a) Cementing
    - (1) Internal: Displacement fluid density.
    - (2) External: Mud weight from TOC to surface and cement slurry weight from TOC to shoe.
  - b) Lost Returns with Mud Drop
    - (1) Internal: Lost circulation at the deepest TVD of the next hole section and the fluid level falls to a depth where the hydrostatic pressure of the mud column equals pore pressure at the depth of the lost circulation zone.
    - (2) External: Mud weight to TOC and cement slurry(s) density below TOC.
- 3) Tension Loads
  - a) Overpull Force
    - 1. Axial: Buoyant weight of the string plus planned 100,000 lbs applied in stuck pipe situation.
  - b) Green Cement Casing Test
    - 1. Axial: Buoyant weight of the string plus cement plug bump pressure load.

Production

- 1) Burst Design Loads
  - a) Injection Down Casing
    - (1) Internal: Surface pressure plus injection fluid gradient.
    - (2) External: Mud base-fluid density to top of cement and cement mix water gradient (8.4 ppg) below TOC.
  - b) Casing Pressure Test (Drilling)
    - (1) Internal: Displacement fluid plus surface pressure required to comply with regulatory casing test pressure requirements of Onshore Oil and Gas Order No. 2 and NM NMAC 19.15.16 of NMOCD regulations.
    - (2) External: Mud weight to TOC and cement mix water gradient (8.4 ppg) below TOC.
  - c) Casing Pressure Test (Production)
    - (1) Internal: The design pressure test should be the greater of the planned test pressure prior to simulation down the casing, the regulatory test pressure, and the expected gas lift system pressure. The design test fluid should be the fluid associated with the pressure test having the greatest pressure.
    - (2) External: Mud base-fluid density to top of cement and cement mix water gradient (8.4 ppg) below TOC.
  - d) Tubing Leak
    - (1) Internal: SITP plus a packer fluid gradient to the top of packer.
    - (2) External: Mud base-fluid density to top of cement and cement mix water gradient (8.4 ppg) below TOC.
- 2) Collapse Loads
  - a) Cementing
    - (1) Internal: Displacement fluid density.
    - (2) External: Mud weight to TOC and cement slurry(s) density below TOC.
  - b) Full Evacuation
    - (1) Internal: Full void pipe.
    - (2) External: Mud weight to TOC and cement slurry(s) density below TOC.
- 3) Tension Loads
  - a) Overpull Force
    1. Axial: Buoyant weight of the string plus planned 100,000 lbs applied in stuck pipe situation.
  - b) Green Cement Casing Test
    1. Axial: Buoyant weight of the string plus cement plug bump pressure load.

## Permian Resources Multi-Well Pad Batch Drilling Procedure

Surface Casing - PR intends to Batch set all surface casing to a depth approved in the APD. Surface Holes will be batch drilled by a rig. Appropriate notifications will be made prior to spudding the well, running and cementing casing and prior to skidding to the rig to the next well on pad.

1. Drill Surface hole to Approved Depth with Rig and perform wellbore cleanup cycles. Trip out and rack back drilling BHA.
2. Run and land planned surface casing see Illustration 1-1 Below to depth approved in APD.
3. Set packoff and test to 5k psi
4. Offline Cement
5. Install wellhead with pressure gauge and nightcap. Nightcap is shown on final wellhead Stack up Illustration #2-2.
6. Skid Rig to adjacent well to drill Surface hole.
7. Surface casing test will be performed by the rig in order to allow ample time for Cement to develop 500psi compressive strength. Casing test to 0.22 psi/ft or 1500 psi whichever is greater - not to exceed 70% casing burst.

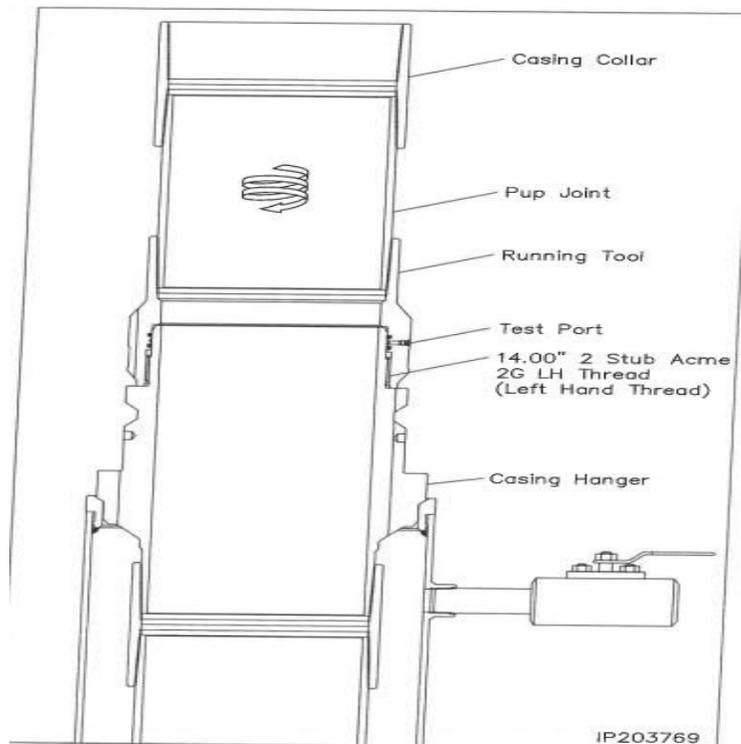


Illustration 1-1

Intermediate Casing – PR intends to Batch set all intermediate casing strings to a depth approved in the APD. Intermediate Holes will be batch drilled by the rig. Appropriate notifications will be made prior to testing BOPE, and prior to running/cementing all casing strings.

1. Rig will remove the nightcap and install and test BOPE.
2. Test Surface casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
3. Install wear bushing then drill out surface casing shoe-track plus 20' and conduct FIT to minimum of the MW equivalent anticipated to control the formation pressure to the next casing point.
4. Drill Intermediate hole to approved casing point. Trip out of hole with BHA to run Casing.
5. Remove wear bushing then run and land Intermediate Casing with mandrel hanger in wellhead.
6. Cement casing to surface with floats holding.
7. Washout stack then run wash tool in wellhead and wash hanger and pack-off setting area.
8. Install pack-off and test void to 5,000 psi for 15 minutes. Nightcap shown on final wellhead stack up illustration 2-2 on page 3.
9. Test casing per COA WOC timing (.22 psi/ft or 1500 psi whichever is greater) - not to exceed 70% casing burst. Cement must have achieved 500psi compressive strength prior to test.
10. Install nightcap – skid rig to adjacent well to drill Intermediate hole.

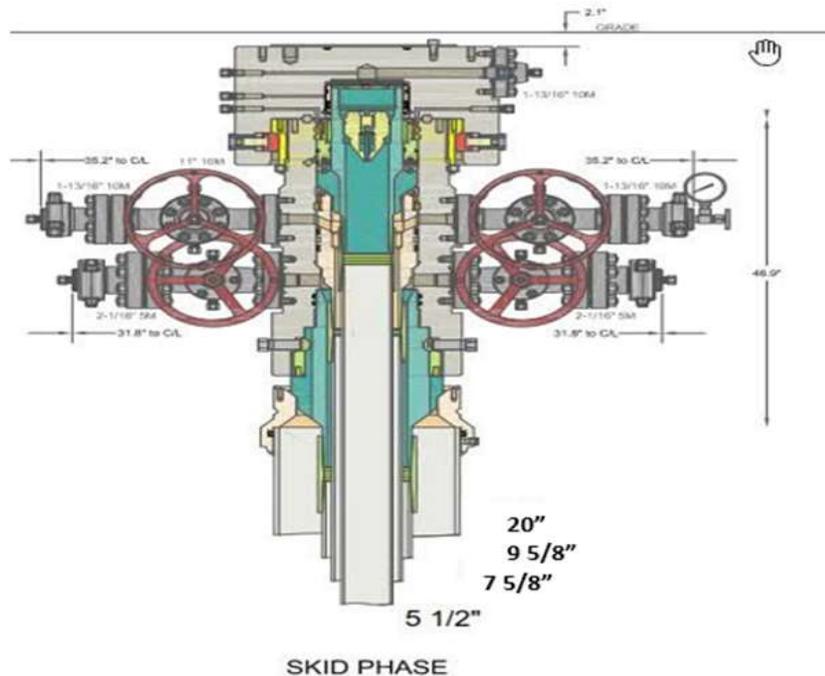


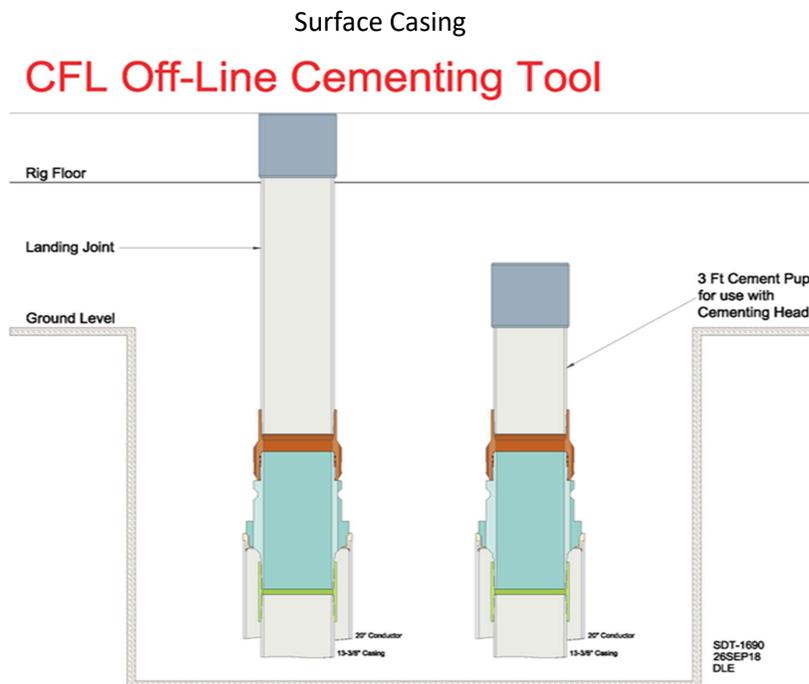
Illustration 2-2

Production Casing – PR intends to Batch set all Production casings with Rig. Appropriate notifications will be made prior Testing BOPE, and prior to running/cementing all casing strings.

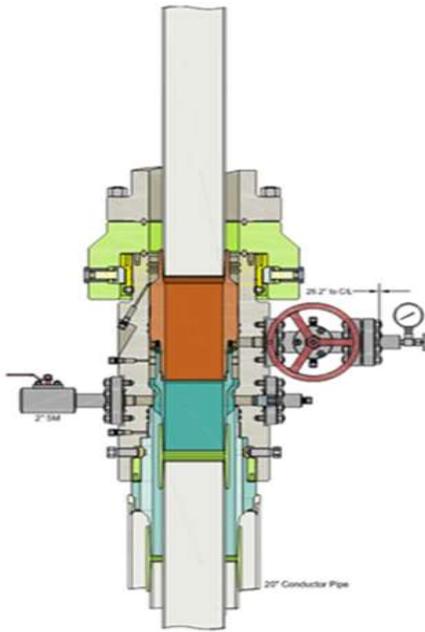
1. Big Rig will remove the nightcap and install and test BOPE.
2. Install wear bushing then drill Intermediate shoe-track plus 20' and conduct FIT to minimum MW equivalent to control the formation pressure to TD of well.
3. Drill Vertical hole to KOP – Trip out for Curve BHA.
4. Drill Curve, landing in production interval – Trip for Lateral BHA.
5. Drill Lateral / Production hole to Permitted BHL, perform cleanup cycles and trip out to run 5-1/2" Production Casing.
6. Remove wear bushing then run 5-1/2" production casing to TD landing casing mandrel in wellhead.
7. Cement 5-1/2" Production string with floats holding.
8. Run in with wash tool and wash wellhead area – install pack-off and test void to 5,000psi for 15 minutes.
9. Install BPV in 5-1/2" mandrel hanger – Nipple down BOPE and install nightcap.
10. Test nightcap void to 5,000psi for 30 minutes per illustration 2-2
11. Skid rig to adjacent well on pad to drill production hole.

### Permian Resources Offline Cementing Procedure Surface & Intermediate Casing

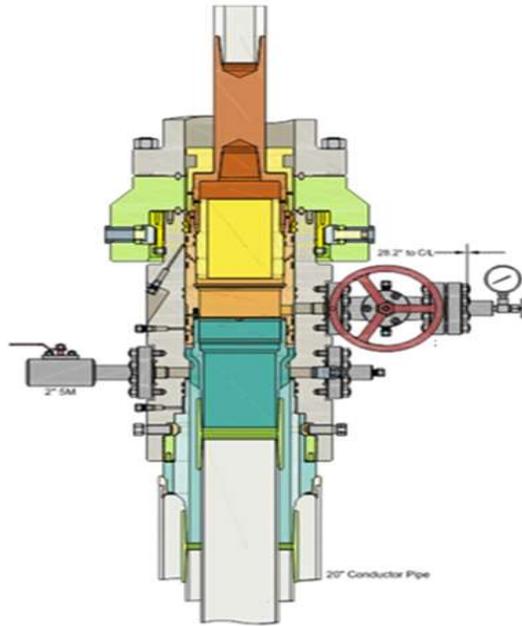
1. Drill hole to Total Depth with Rig and perform wellbore cleanup cycles.
2. Run and casing to Depth.
3. Land casing with mandrel.
4. Circulate 1.5 csg capacity.
5. Flow test – Confirm well is static and floats are holding.
6. Set Annular packoff and pressure test. Test to 5k.
7. Nipple down BOP and install cap flange.
8. Skid rig to next well on pad
9. Remove cap flange (confirm well is static before removal)
  - a) If well is not static use the casing outlet valves to kill well
  - b) Drillers method will be used in well control event
  - c) High pressure return line will be rigged up to lower casing valve and run to choke manifold to control annular pressure
  - d) Kill mud will be circulated once influx is circulated out of hole
  - e) Confirm well is static and remove cap flange to start offline cement operations
10. Install offline cement tool.
11. Rig up cementers.
12. Circulate bottoms up with cement truck
13. Commence planned cement job, take returns through the annulus wellhead valve
14. After plug is bumped confirm floats hold and well is static
15. Rig down cementers and equipment
16. Install night cap with pressure gauge to monitor.



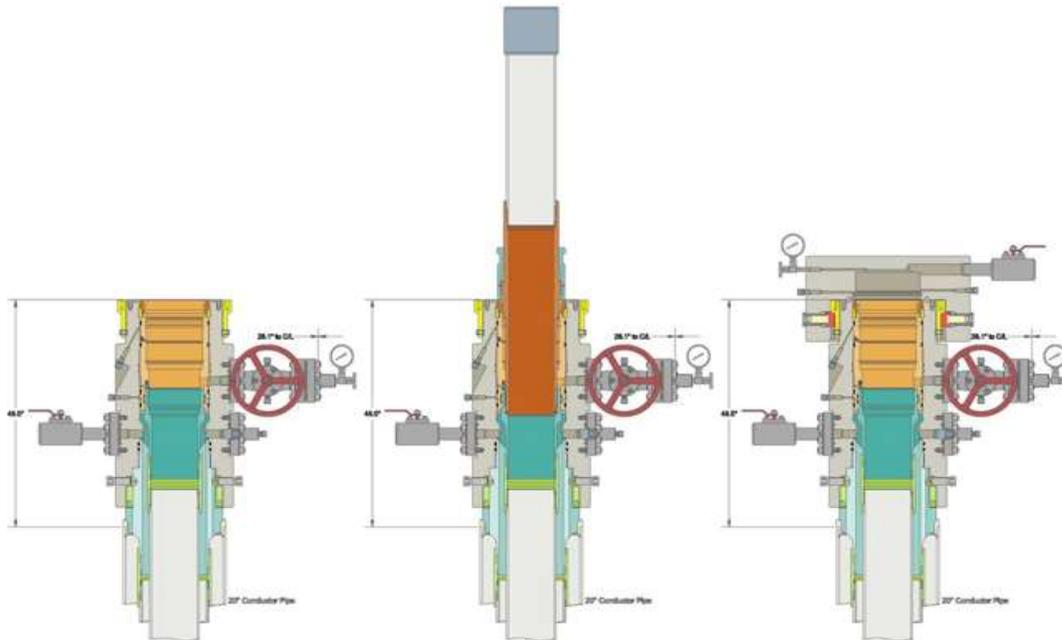
Intermediate



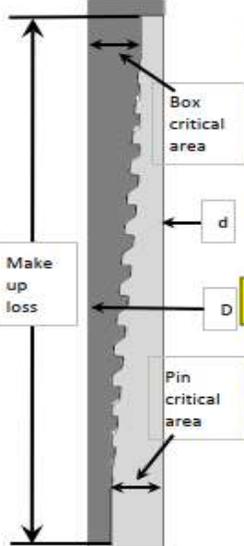
Run 7 5/8" Casing  
Land Casing on 7 5/8" Mandrel Hanger  
Cement 7 5/8" Casing  
Retrieve Running Tool



Run 9 5/8" Packoff  
Test Upper and Lower Seals  
Engage Lockring  
Retrieve Running Tool

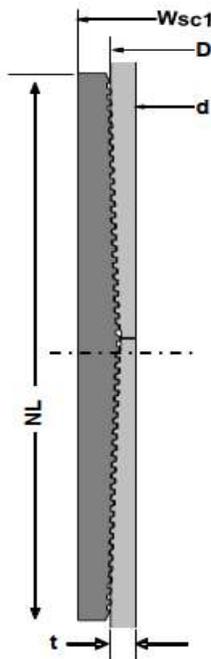


<b>Metal One Corp.</b>  	<b>MO-FXL</b>			CDS# Date	MO-FXL 7-5/8 29.7	
	Pipe Body: <b>BMP P110HC MinYS110ksi</b>				P110HC	
	<b>Connection Data Sheet</b>				MinYS110ksi	
					10-Mar-21	
<b>MO-FXL</b>	<b>Geometry</b>		<u>Imperial</u>	<u>S.I.</u>		
	<b>Pipe Body</b>					
	<b>Grade *</b>		P110HC		P110HC	
	Pipe OD ( D )		7 5/8	in	193.68	mm
	Weight		29.70	lb/ft	44.25	kg/m
	Actual weight		29.04		43.26	kg/m
	Wall Thickness ( t )		0.375	in	9.53	mm
	Pipe ID ( d )		6.875	in	174.63	mm
	Pipe body cross section		8.537	in <sup>2</sup>	5,508	mm <sup>2</sup>
	Drift Dia.		6.750	in	171.45	mm
	<b>Connection</b>					
	Box OD ( W )		7.625	in	193.68	mm
	PIN ID		6.875	in	174.63	mm
	Make up Loss		4.219	in	107.16	mm
	Box Critical Area		5.714	in <sup>2</sup>	3686	mm <sup>2</sup>
Joint load efficiency		70	%	70	%	
Thread Taper		1 / 10 ( 1.2" per ft )				
Number of Threads		5 TPI				
<b>Performance</b>						
<b>Performance Properties for Pipe Body</b>						
S.M.Y.S. *		939	kips	4,177	kN	
M.I.Y.P. *		9,470	psi	65.31	MPa	
Collapse Strength *		7,050	psi	48.62	MPa	
Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body						
* BMP P110HC: MinYS110ksi, Collapse 7,050psi Performance Data Sheet: SOP-12-F05 Rev.1, dated 9/6/2018						
<b>Performance Properties for Connection</b>						
Tensile Yield load		657 kips ( 70% of S.M.Y.S. )				
Min. Compression Yield		657 kips ( 70% of S.M.Y.S. )				
Internal Pressure		7,580 psi ( 80% of M.I.Y.P. )				
External Pressure		100% of Collapse Strength				
Max. DLS ( deg./100ft)		27				
<b>Recommended Torque</b>						
Min.		15,500	ft-lb	21,000	N-m	
Opti.		17,200	ft-lb	23,300	N-m	
Max.		18,900	ft-lb	25,600	N-m	
Operational Max.		23,600	ft-lb	32,000	N-m	
Note : Operational Max. torque can be applied for high torque application						
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<b>Metal One Corp.</b>  	<b>GEOCONN-SC</b> Pipe Body: SeAH P110RY(SMYS110ksi) & 95%RBW *1 Coupling: P110CY (SMYS110ksi) <b>Connection Data Sheet</b>	Page	MAI GC 5.5 20 SeAH PRY 95%RW
		Date	29-Sep-21
		Rev.	0

GEOCONN-SC



**Geometry**

Imperial

S.I.

**Pipe Body**

Grade *1	SeAH P110RY	-	SeAH P110RY	
SMYS	110	ksi	110	ksi
Pipe OD ( D )	5.500	in	139.70	mm
Weight	20.00	lb/ft	29.80	kg/m
Wall Thickness ( t )	0.361	in	9.17	mm
Pipe ID ( d )	4.778	in	121.36	mm
Drift Dia.	4.653	in	118.19	mm

**Connection**

Coupling SMYS	110	ksi	110	ksi
Coupling OD ( Wsc1 )	6.050	in	153.67	mm
Coupling Length ( NL )	8.350	in	212.09	mm
Make up Loss	4.125	in	104.78	mm
Pipe Critical Area	5.83	in <sup>2</sup>	3,760	mm <sup>2</sup>
Box Critical Area	6.00	in <sup>2</sup>	3,874	mm <sup>2</sup>
Thread Taper	1 / 16 ( 3/4" per ft )			
Number of Threads	5 TPI			

**Performance**

Imperial

S.I.

**Performance Properties for Pipe Body**

S.M.Y.S.	641	kips	2,852	kN
M.I.Y.P. *1	13,720	psi	94.62	MPa
Collapse Strength	11,100	psi	76.55	MPa

Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body  
M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body

\*1 Pipe: SeAH P110RY (SMYS110ksi), Min Wall Thickness of Pipe Body: 95% of Nom wall

**Performance Properties for Connection**

Min. Connection Joint Strength	100%	of S.M.Y.S.
Min. Compression Yield	100%	of S.M.Y.S.
Internal Pressure	100%	of M.I.Y.P.
External Pressure	100%	of Collapse Strength
Max. DLS ( deg. /100ft)	>90	

**Recommended Torque**

Min.	14,600	ft-lb	19,700	N-m
Opti.	16,200	ft-lb	21,900	N-m
Max.	17,800	ft-lb	24,100	N-m
Operational Max.	19,500	ft-lb	26,400	N-m

Note : Operational Max. torque can be applied for high torque application

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Statements regarding the suitability of products for certain types of applications are based on Metal One's knowledge of typical requirements that are often placed on Metal One products in standard well configurations. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application.

The products described in this Connection Data Sheet are not recommended for use in deep water offshore applications. For more information, please refer to [http://www.mlo.co.jp/mo-cms/\\_images/top/WebsiteTerms\\_Active\\_20332287\\_1.pdf](http://www.mlo.co.jp/mo-cms/_images/top/WebsiteTerms_Active_20332287_1.pdf) the contents of which are incorporated by reference into this Connection Data Sheet.



**5.5" 20# .361" P-110 Restricted Yield (RY)**

**Dimensions (Nominal)**

Outside Diameter	5.500	in.
Wall	0.361	in.
Inside Diameter	4.778	in.
Drift	4.653	in.
Weight, T&C	20.000	lbs/ft
Weight, PE	19.830	lbs/ft

**Performance Properties (Minimum)**

Minimum Yield Strength	110000	psi
Maximum Yield Strength	125000	psi
Collapse, PE	11100	psi
Internal Yield Pressure		
PE	12630	psi
LTC	12360	psi
BTC	12360	psi
Yield Strength, Pipe Body	641	1000 lbs
Joint Strength		
LTC	548	1000 lbs
BTC	667	1000 lbs

Note: SeAH Steel has produced this specification sheet for general information only. SeAH does not assume liability or responsibility for any loss or injury resulting from the use of information or data contained herein. All applications for the material described are at the customer's own risk and responsibility.



**5.500 x 20.00# P-110 RY Bushmaster® SL (95% RBW)**

**Pipe Body Data**

Nominal OD	5.500	Inches
Wall Thickness	0.361	Inches
Weight	20.00	lb/ft
PE Weight	19.83	lb/ft
Nominal ID	4.778	Inches
Drift	4.653	Inches
Minimum Yield Strength	110,000	PSI
Minimum Tensile Strength	125,000	PSI
RBW	95.0%	Rating

**Connection Data**

Connection OD	5.900	Inches
Connection ID	4.778	Inches
Make-Up Loss	4.892	Inches
Tension Efficiency	100%	Rating
Compression Efficiency	100%	Rating
Yield Strength in Tension	641,000	LBS.
Yield Strength in Compression	641,000	LBS.
MIYP (Burst)	13,720	PSI
Collapse*	11,110	PSI
Uniaxial Bending	92	°/100 FT

**Make-Up Torque**

Yield Torque	41,000	FT-LBS.
Max Operating Torque	32,800	FT-LBS.
Max Make-Up	22,000	FT-LBS.
Optimum Make-Up	20,000	FT-LBS.
Minimum Make-Up	18,000	FT-LBS.



For Technical Support please email [support@fermata-tech.com](mailto:support@fermata-tech.com) or call (281) 941-5257.

9/21/2023

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\*Collapse value based on API collapse +10-15% depending on D/t ratio and is used for example only. The actual collapse rating is 100% of pipe body and will vary depending on the mill. Verify the collapse rating of the pipe body with the manufacturer.

# **NEW MEXICO**

**(SP) EDDY**

**RANA SALADA PROJECT**

**RANA SALADA 0604 FED COM 223H**

**OWB**

**PWP0**

## **Anticollision Report**

**18 January, 2024**

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PWP0		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum centre distance of 800.0usft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	Date	1/18/2024		
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	22,993.3	PWP0 (OWB)	MWD	OWSG_Rev2_ MWD - Standard

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
<b>Summary</b>						
RANA SALADA PROJECT						
RANA SALADA 0604 FED COM 203H - OWB - PWP0	2,000.0	1,999.0	33.3	19.1	2.355	CC, ES
RANA SALADA 0604 FED COM 203H - OWB - PWP0	22,993.3	22,970.0	660.0	34.0	1.054	Level 3, SF
RANA SALADA 0605 FED COM 201H - OWB - PWP0						Out of range
RANA SALADA 0605 FED COM 221H - OWB - PWP0						Out of range

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD													Offset Well Error:		0.0 usft	
Reference Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning			
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)						
0.0	0.0	0.0	0.0	0.0	0.0	-179.66	-33.2	-0.2	33.3							
100.0	100.0	99.0	99.0	0.3	0.2	-179.66	-33.2	-0.2	33.3	32.8	0.50	66.588				
200.0	200.0	199.0	199.0	0.6	0.6	-179.66	-33.2	-0.2	33.3	32.0	1.22	27.362				
300.0	300.0	299.0	299.0	1.0	1.0	-179.66	-33.2	-0.2	33.3	31.3	1.93	17.209				
400.0	400.0	399.0	399.0	1.3	1.3	-179.66	-33.2	-0.2	33.3	30.6	2.65	12.552				
500.0	500.0	499.0	499.0	1.7	1.7	-179.66	-33.2	-0.2	33.3	29.9	3.37	9.878				
600.0	600.0	599.0	599.0	2.0	2.0	-179.66	-33.2	-0.2	33.3	29.2	4.08	8.144				
700.0	700.0	699.0	699.0	2.4	2.4	-179.66	-33.2	-0.2	33.3	28.5	4.80	6.927				
800.0	800.0	799.0	799.0	2.8	2.8	-179.66	-33.2	-0.2	33.3	27.7	5.52	6.027				
900.0	900.0	899.0	899.0	3.1	3.1	-179.66	-33.2	-0.2	33.3	27.0	6.23	5.334				
1,000.0	1,000.0	999.0	999.0	3.5	3.5	-179.66	-33.2	-0.2	33.3	26.3	6.95	4.784				
1,100.0	1,100.0	1,099.0	1,099.0	3.8	3.8	-179.66	-33.2	-0.2	33.3	25.6	7.67	4.336				
1,200.0	1,200.0	1,199.0	1,199.0	4.2	4.2	-179.66	-33.2	-0.2	33.3	24.9	8.38	3.966				
1,300.0	1,300.0	1,299.0	1,299.0	4.6	4.5	-179.66	-33.2	-0.2	33.3	24.1	9.10	3.653				
1,400.0	1,400.0	1,399.0	1,399.0	4.9	4.9	-179.66	-33.2	-0.2	33.3	23.4	9.82	3.387				
1,500.0	1,500.0	1,499.0	1,499.0	5.3	5.3	-179.66	-33.2	-0.2	33.3	22.7	10.54	3.156				
1,600.0	1,600.0	1,599.0	1,599.0	5.6	5.6	-179.66	-33.2	-0.2	33.3	22.0	11.25	2.955				
1,700.0	1,700.0	1,699.0	1,699.0	6.0	6.0	-179.66	-33.2	-0.2	33.3	21.3	11.97	2.778				
1,800.0	1,800.0	1,799.0	1,799.0	6.3	6.3	-179.66	-33.2	-0.2	33.3	20.6	12.69	2.621				
1,900.0	1,900.0	1,899.0	1,899.0	6.7	6.7	-179.66	-33.2	-0.2	33.3	19.8	13.40	2.481				
2,000.0	2,000.0	1,999.0	1,999.0	7.1	7.1	-179.66	-33.2	-0.2	33.3	19.1	14.12	2.355	CC, ES			
2,100.0	2,100.0	2,098.0	2,098.0	7.4	7.4	157.58	-34.6	0.8	36.2	21.4	14.81	2.446				
2,200.0	2,199.8	2,196.4	2,196.3	7.8	7.7	156.22	-38.7	3.8	45.2	29.7	15.48	2.921				

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

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD													Rule Assigned:		Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Distance Between Centres (usft)		Minimum Separation (usft)	Separation Factor	Warning			
							+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Ellipses (usft)						
2,300.0	2,299.5	2,294.6	2,294.1	8.1	8.0	154.98	-45.2	8.6	59.9	43.8	16.15	3.710				
2,350.0	2,349.1	2,343.8	2,343.2	8.3	8.2	154.89	-48.6	11.1	68.6	52.1	16.49	4.162				
2,400.0	2,398.8	2,393.0	2,392.1	8.5	8.4	155.01	-52.1	13.7	77.8	60.9	16.83	4.619				
2,500.0	2,498.0	2,491.3	2,490.1	8.9	8.7	155.19	-59.0	18.7	96.0	78.5	17.52	5.479				
2,600.0	2,597.3	2,589.6	2,588.0	9.2	9.1	155.31	-65.9	23.8	114.2	96.0	18.21	6.274				
2,700.0	2,696.5	2,688.0	2,686.0	9.6	9.4	155.40	-72.8	28.9	132.5	113.6	18.90	7.009				
2,800.0	2,795.8	2,786.3	2,783.9	10.0	9.7	155.46	-79.7	34.0	150.7	131.1	19.59	7.691				
2,900.0	2,895.0	2,884.6	2,881.9	10.3	10.1	155.51	-86.6	39.1	168.9	148.6	20.29	8.325				
3,000.0	2,994.3	2,982.9	2,979.8	10.7	10.4	155.55	-93.5	44.2	187.2	166.2	20.99	8.916				
3,100.0	3,093.5	3,081.2	3,077.8	11.1	10.8	155.59	-100.3	49.2	205.4	183.7	21.70	9.468				
3,200.0	3,192.8	3,179.6	3,175.7	11.5	11.1	155.62	-107.2	54.3	223.6	201.2	22.40	9.984				
3,300.0	3,292.0	3,277.9	3,273.7	11.9	11.5	155.64	-114.1	59.4	241.9	218.8	23.11	10.468				
3,400.0	3,391.3	3,376.2	3,371.6	12.2	11.8	155.66	-121.0	64.5	260.1	236.3	23.82	10.923				
3,500.0	3,490.6	3,474.5	3,469.6	12.6	12.2	155.68	-127.9	69.6	278.4	253.8	24.53	11.350				
3,600.0	3,589.8	3,572.9	3,567.5	13.0	12.6	155.70	-134.8	74.7	296.6	271.4	25.24	11.753				
3,700.0	3,689.1	3,671.2	3,665.5	13.4	12.9	155.71	-141.7	79.7	314.8	288.9	25.95	12.133				
3,800.0	3,788.3	3,769.5	3,763.4	13.8	13.3	155.72	-148.6	84.8	333.1	306.4	26.66	12.493				
3,900.0	3,887.6	3,867.8	3,861.4	14.2	13.6	155.73	-155.5	89.9	351.3	323.9	27.38	12.833				
4,000.0	3,986.8	3,966.2	3,959.3	14.6	14.0	155.74	-162.4	95.0	369.6	341.5	28.09	13.155				
4,100.0	4,086.1	4,064.5	4,057.3	14.9	14.4	155.75	-169.3	100.1	387.8	359.0	28.81	13.461				
4,200.0	4,185.3	4,162.8	4,155.2	15.3	14.7	155.76	-176.2	105.2	406.0	376.5	29.53	13.751				
4,300.0	4,284.6	4,261.1	4,253.2	15.7	15.1	155.77	-183.1	110.2	424.3	394.0	30.24	14.028				
4,400.0	4,383.8	4,359.4	4,351.1	16.1	15.5	155.78	-190.0	115.3	442.5	411.5	30.96	14.291				
4,500.0	4,483.1	4,457.8	4,449.1	16.5	15.8	155.78	-196.9	120.4	460.7	429.1	31.68	14.542				
4,600.0	4,582.4	4,556.1	4,547.0	16.9	16.2	155.79	-203.8	125.5	479.0	446.6	32.40	14.782				
4,700.0	4,681.6	4,654.4	4,644.9	17.3	16.6	155.80	-210.7	130.6	497.2	464.1	33.12	15.011				
4,800.0	4,780.9	4,752.7	4,742.9	17.7	16.9	155.80	-217.6	135.7	515.5	481.6	33.85	15.229				
4,900.0	4,880.1	4,851.1	4,840.8	18.1	17.3	155.80	-224.5	140.7	533.7	499.1	34.57	15.439				
5,000.0	4,979.4	4,949.4	4,938.8	18.5	17.7	155.81	-231.4	145.8	551.9	516.6	35.29	15.640				
5,100.0	5,078.6	5,047.7	5,036.7	18.9	18.0	155.81	-238.3	150.9	570.2	534.2	36.01	15.832				
5,200.0	5,177.9	5,146.0	5,134.7	19.3	18.4	155.82	-245.2	156.0	588.4	551.7	36.74	16.017				
5,300.0	5,277.1	5,263.7	5,252.1	19.7	18.9	155.94	-251.7	160.8	605.2	567.6	37.60	16.097				
5,400.0	5,376.4	5,383.8	5,372.1	20.1	19.3	156.32	-254.4	162.8	618.6	580.2	38.42	16.098				
5,479.1	5,454.9	5,465.5	5,453.9	20.4	19.6	156.69	-254.4	162.8	627.5	588.5	39.00	16.089				
5,500.0	5,475.7	5,486.3	5,474.7	20.5	19.6	156.79	-254.4	162.8	629.7	590.6	39.15	16.086				
5,600.0	5,575.2	5,585.9	5,574.2	20.8	20.0	157.21	-254.4	162.8	638.7	598.9	39.85	16.026				
5,700.0	5,675.0	5,685.7	5,674.0	21.2	20.3	157.47	-254.4	162.8	644.5	603.9	40.56	15.891				
5,800.0	5,774.9	5,785.6	5,773.9	21.6	20.6	157.58	-254.4	162.8	647.0	605.8	41.26	15.683				
5,829.1	5,804.0	5,814.7	5,803.0	21.7	20.7	179.75	-254.4	162.8	647.2	605.7	41.46	15.610				
5,900.0	5,874.9	5,885.6	5,873.9	21.9	21.0	179.75	-254.4	162.8	647.2	605.2	41.95	15.427				
6,000.0	5,974.9	5,985.6	5,973.9	22.2	21.3	179.75	-254.4	162.8	647.2	604.5	42.65	15.175				
6,100.0	6,074.9	6,085.6	6,073.9	22.6	21.7	179.75	-254.4	162.8	647.2	603.8	43.34	14.931				
6,200.0	6,174.9	6,185.6	6,173.9	22.9	22.0	179.75	-254.4	162.8	647.2	603.1	44.04	14.695				
6,300.0	6,274.9	6,285.6	6,273.9	23.3	22.3	179.75	-254.4	162.8	647.2	602.4	44.74	14.466				
6,400.0	6,374.9	6,385.6	6,373.9	23.6	22.7	179.75	-254.4	162.8	647.2	601.7	45.44	14.243				
6,500.0	6,474.9	6,485.6	6,473.9	24.0	23.0	179.75	-254.4	162.8	647.2	601.0	46.13	14.028				
6,600.0	6,574.9	6,585.6	6,573.9	24.3	23.4	179.75	-254.4	162.8	647.2	600.3	46.83	13.818				
6,700.0	6,674.9	6,685.6	6,673.9	24.6	23.7	179.75	-254.4	162.8	647.2	599.6	47.53	13.615				
6,800.0	6,774.9	6,785.6	6,773.9	25.0	24.0	179.75	-254.4	162.8	647.2	598.9	48.23	13.417				
6,900.0	6,874.9	6,885.6	6,873.9	25.3	24.4	179.75	-254.4	162.8	647.2	598.2	48.94	13.225				
7,000.0	6,974.9	6,985.6	6,973.9	25.7	24.7	179.75	-254.4	162.8	647.2	597.5	49.64	13.038				
7,100.0	7,074.9	7,085.6	7,073.9	26.0	25.1	179.75	-254.4	162.8	647.2	596.8	50.34	12.856				

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

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0													Offset Site Error:	0.0 usft		
Survey Program: 0-MWD													Rule Assigned:		Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Distance Between Centres (usft)	Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning			
7,200.0	7,174.9	7,185.6	7,173.9	26.4	25.4	179.75	-254.4	162.8	647.2	596.1	51.04	12.679				
7,300.0	7,274.9	7,285.6	7,273.9	26.7	25.8	179.75	-254.4	162.8	647.2	595.4	51.74	12.507				
7,400.0	7,374.9	7,385.6	7,373.9	27.1	26.1	179.75	-254.4	162.8	647.2	594.7	52.45	12.339				
7,500.0	7,474.9	7,485.6	7,473.9	27.4	26.5	179.75	-254.4	162.8	647.2	594.0	53.15	12.176				
7,600.0	7,574.9	7,585.6	7,573.9	27.8	26.8	179.75	-254.4	162.8	647.2	593.3	53.85	12.017				
7,700.0	7,674.9	7,685.6	7,673.9	28.1	27.2	179.75	-254.4	162.8	647.2	592.6	54.56	11.862				
7,800.0	7,774.9	7,785.6	7,773.9	28.5	27.5	179.75	-254.4	162.8	647.2	591.9	55.26	11.711				
7,900.0	7,874.9	7,885.6	7,873.9	28.8	27.8	179.75	-254.4	162.8	647.2	591.2	55.97	11.563				
8,000.0	7,974.9	7,985.6	7,973.9	29.1	28.2	179.75	-254.4	162.8	647.2	590.5	56.67	11.419				
8,100.0	8,074.9	8,085.6	8,073.9	29.5	28.5	179.75	-254.4	162.8	647.2	589.8	57.38	11.279				
8,200.0	8,174.9	8,185.6	8,173.9	29.8	28.9	179.75	-254.4	162.8	647.2	589.1	58.08	11.142				
8,300.0	8,274.9	8,285.6	8,273.9	30.2	29.2	179.75	-254.4	162.8	647.2	588.4	58.79	11.008				
8,400.0	8,374.9	8,385.6	8,373.9	30.5	29.6	179.75	-254.4	162.8	647.2	587.7	59.50	10.877				
8,500.0	8,474.9	8,485.6	8,473.9	30.9	29.9	179.75	-254.4	162.8	647.2	587.0	60.20	10.750				
8,600.0	8,574.9	8,585.6	8,573.9	31.2	30.3	179.75	-254.4	162.8	647.2	586.2	60.91	10.625				
8,700.0	8,674.9	8,685.6	8,673.9	31.6	30.6	179.75	-254.4	162.8	647.2	585.5	61.62	10.503				
8,800.0	8,774.9	8,785.6	8,773.9	31.9	31.0	179.75	-254.4	162.8	647.2	584.8	62.32	10.384				
8,900.0	8,874.9	8,885.6	8,873.9	32.3	31.3	179.75	-254.4	162.8	647.2	584.1	63.03	10.267				
9,000.0	8,974.9	8,985.6	8,973.9	32.6	31.7	179.75	-254.4	162.8	647.2	583.4	63.74	10.153				
9,100.0	9,074.9	9,085.6	9,073.9	33.0	32.0	179.75	-254.4	162.8	647.2	582.7	64.45	10.042				
9,200.0	9,174.9	9,185.6	9,173.9	33.3	32.4	179.75	-254.4	162.8	647.2	582.0	65.15	9.933				
9,300.0	9,274.9	9,285.6	9,273.9	33.7	32.7	179.75	-254.4	162.8	647.2	581.3	65.86	9.826				
9,400.0	9,374.9	9,385.6	9,373.9	34.0	33.1	179.75	-254.4	162.8	647.2	580.6	66.57	9.721				
9,500.0	9,474.9	9,485.6	9,473.9	34.4	33.4	179.75	-254.4	162.8	647.2	579.9	67.28	9.619				
9,600.0	9,574.9	9,585.6	9,573.9	34.7	33.8	179.75	-254.4	162.8	647.2	579.2	67.99	9.519				
9,700.0	9,674.9	9,685.6	9,673.9	35.1	34.1	179.75	-254.4	162.8	647.2	578.5	68.70	9.420				
9,800.0	9,774.9	9,785.6	9,773.9	35.5	34.5	179.75	-254.4	162.8	647.2	577.8	69.41	9.324				
9,844.6	9,819.5	9,830.2	9,818.5	35.6	34.7	179.75	-254.4	162.8	647.2	577.4	69.72	9.282				
9,850.0	9,824.9	9,835.5	9,823.9	35.6	34.7	89.33	-254.5	162.8	647.2	577.4	69.76	9.277				
9,860.3	9,835.3	9,845.7	9,834.0	35.7	34.7	89.33	-254.5	163.0	647.2	577.3	69.83	9.267				
9,875.0	9,849.9	9,860.1	9,848.4	35.7	34.8	89.34	-254.5	163.7	647.2	577.2	69.93	9.254				
9,900.0	9,874.8	9,884.7	9,872.9	35.8	34.8	89.35	-254.5	165.8	647.2	577.0	70.11	9.231				
9,925.0	9,899.6	9,909.3	9,897.3	35.9	34.9	89.35	-254.5	169.2	647.2	576.9	70.29	9.207				
9,950.0	9,924.1	9,933.9	9,921.4	36.0	35.0	89.37	-254.5	173.8	647.2	576.7	70.47	9.184				
9,975.0	9,948.3	9,958.5	9,945.3	36.1	35.1	89.38	-254.6	179.7	647.2	576.5	70.65	9.160				
10,000.0	9,972.2	9,983.1	9,968.9	36.2	35.2	89.39	-254.7	186.8	647.2	576.3	70.83	9.136				
10,025.0	9,995.7	10,007.7	9,992.0	36.2	35.3	89.41	-254.7	195.1	647.2	576.2	71.02	9.112				
10,050.0	10,018.7	10,032.3	10,014.8	36.3	35.4	89.43	-254.8	204.6	647.2	576.0	71.21	9.088				
10,075.0	10,041.1	10,057.0	10,037.0	36.4	35.5	89.45	-254.9	215.2	647.2	575.8	71.40	9.064				
10,100.0	10,062.9	10,081.6	10,058.6	36.5	35.6	89.47	-255.0	227.0	647.2	575.6	71.59	9.040				
10,125.0	10,084.1	10,106.3	10,079.7	36.6	35.7	89.49	-255.1	239.9	647.2	575.4	71.79	9.015				
10,150.0	10,104.5	10,131.0	10,100.0	36.7	35.8	89.51	-255.2	253.9	647.2	575.2	71.99	8.991				
10,175.0	10,124.2	10,155.7	10,119.6	36.8	35.9	89.54	-255.3	268.9	647.2	575.0	72.19	8.965				
10,200.0	10,143.0	10,180.4	10,138.4	36.9	36.0	89.56	-255.5	284.9	647.3	574.9	72.40	8.940				
10,225.0	10,160.9	10,205.1	10,156.4	37.0	36.1	89.59	-255.6	301.9	647.3	574.7	72.61	8.914				
10,250.0	10,177.9	10,229.9	10,173.4	37.1	36.2	89.62	-255.8	319.8	647.3	574.4	72.84	8.887				
10,275.0	10,194.0	10,254.6	10,189.6	37.2	36.3	89.65	-255.9	338.6	647.3	574.2	73.06	8.860				
10,300.0	10,208.9	10,279.4	10,204.7	37.3	36.4	89.68	-256.1	358.2	647.3	574.0	73.30	8.831				
10,325.0	10,222.9	10,304.2	10,218.9	37.4	36.5	89.71	-256.3	378.6	647.3	573.8	73.54	8.802				
10,350.0	10,235.7	10,329.0	10,231.9	37.5	36.6	89.74	-256.4	399.7	647.4	573.6	73.80	8.772				
10,375.0	10,247.4	10,353.9	10,243.9	37.6	36.8	89.78	-256.6	421.4	647.4	573.3	74.06	8.741				
10,400.0	10,257.9	10,378.7	10,254.7	37.8	36.9	89.81	-256.8	443.8	647.4	573.1	74.34	8.709				

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

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0														Offset Site Error:	0.0 usft
Survey Program: 0-MWD														Offset Well Error:	0.0 usft
Survey Program Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance		Minimum Separation (usft)	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
10,425.0	10,267.2	10,403.6	10,264.3	37.9	37.1	89.84	-257.0	466.8	647.4	572.8	74.63	8.675			
10,450.0	10,275.2	10,428.5	10,272.8	38.1	37.2	89.88	-257.2	490.2	647.4	572.5	74.93	8.641			
10,475.0	10,282.1	10,453.4	10,280.0	38.2	37.4	89.91	-257.4	514.0	647.5	572.2	75.24	8.606			
10,500.0	10,287.6	10,478.4	10,285.9	38.4	37.5	89.95	-257.6	538.3	647.5	571.9	75.56	8.569			
10,525.0	10,291.9	10,503.4	10,290.6	38.5	37.7	89.98	-257.8	562.8	647.5	571.6	75.89	8.532			
10,550.0	10,294.9	10,528.4	10,294.0	38.7	37.9	90.02	-258.0	587.5	647.5	571.3	76.24	8.493			
10,575.0	10,296.6	10,553.4	10,296.2	38.9	38.0	90.05	-258.2	612.5	647.6	571.0	76.59	8.455			
10,594.6	10,297.0	10,573.0	10,296.9	39.0	38.2	90.08	-258.4	632.0	647.6	570.7	76.88	8.424			
10,600.0	10,297.0	10,578.4	10,297.0	39.0	38.2	90.09	-258.4	637.5	647.6	570.6	76.95	8.415			
10,700.0	10,297.0	10,678.4	10,297.0	39.8	39.0	90.09	-259.2	737.5	647.7	569.1	78.57	8.244			
10,800.0	10,297.0	10,778.4	10,297.0	40.8	40.0	90.09	-260.1	837.5	647.8	567.4	80.43	8.054			
10,900.0	10,297.0	10,878.4	10,297.0	41.8	41.0	90.09	-260.9	937.5	647.9	565.4	82.53	7.850			
11,000.0	10,297.0	10,978.4	10,297.0	42.9	42.2	90.09	-261.8	1,037.5	648.0	563.1	84.85	7.637			
11,100.0	10,297.0	11,078.4	10,297.0	44.2	43.4	90.09	-262.6	1,137.5	648.1	560.7	87.38	7.417			
11,200.0	10,297.0	11,178.4	10,297.0	45.5	44.8	90.09	-263.4	1,237.5	648.2	558.1	90.10	7.194			
11,300.0	10,297.0	11,278.4	10,297.0	47.0	46.2	90.09	-264.3	1,337.5	648.3	555.3	92.99	6.972			
11,400.0	10,297.0	11,378.4	10,297.0	48.5	47.8	90.09	-265.1	1,437.5	648.4	552.4	96.03	6.752			
11,500.0	10,297.0	11,478.4	10,297.0	50.1	49.4	90.09	-265.9	1,537.5	648.5	549.3	99.22	6.536			
11,600.0	10,297.0	11,578.4	10,297.0	51.7	51.0	90.09	-266.8	1,637.4	648.6	546.1	102.53	6.326			
11,700.0	10,297.0	11,678.4	10,297.0	53.4	52.7	90.09	-267.6	1,737.4	648.7	542.7	105.97	6.122			
11,800.0	10,297.0	11,778.4	10,297.0	55.2	54.5	90.09	-268.4	1,837.4	648.8	539.3	109.50	5.925			
11,900.0	10,297.0	11,878.4	10,297.0	57.0	56.3	90.09	-269.3	1,937.4	648.9	535.8	113.13	5.736			
12,000.0	10,297.0	11,978.4	10,297.0	58.8	58.2	90.09	-270.1	2,037.4	649.0	532.1	116.85	5.554			
12,100.0	10,297.0	12,078.4	10,297.0	60.7	60.1	90.09	-270.9	2,137.4	649.1	528.4	120.65	5.380			
12,200.0	10,297.0	12,178.4	10,297.0	62.6	62.0	90.09	-271.8	2,237.4	649.2	524.7	124.52	5.214			
12,300.0	10,297.0	12,278.4	10,297.0	64.6	64.0	90.09	-272.6	2,337.4	649.3	520.8	128.45	5.055			
12,400.0	10,297.0	12,378.4	10,297.0	66.6	66.0	90.09	-273.4	2,437.4	649.4	516.9	132.45	4.903			
12,500.0	10,297.0	12,478.4	10,297.0	68.6	68.0	90.09	-274.3	2,537.4	649.5	513.0	136.49	4.758			
12,600.0	10,297.0	12,578.4	10,297.0	70.6	70.1	90.09	-275.1	2,637.4	649.6	509.0	140.59	4.620			
12,700.0	10,297.0	12,678.4	10,297.0	72.7	72.2	90.09	-275.9	2,737.4	649.7	505.0	144.73	4.489			
12,800.0	10,297.0	12,778.4	10,297.0	74.8	74.3	90.09	-276.8	2,837.4	649.8	500.9	148.91	4.364			
12,900.0	10,297.0	12,878.4	10,297.0	76.9	76.4	90.09	-277.6	2,937.4	649.9	496.8	153.13	4.244			
13,000.0	10,297.0	12,978.4	10,297.0	79.0	78.5	90.09	-278.4	3,037.4	650.0	492.6	157.39	4.130			
13,100.0	10,297.0	13,078.4	10,297.0	81.1	80.7	90.09	-279.3	3,137.4	650.1	488.4	161.68	4.021			
13,200.0	10,297.0	13,178.4	10,297.0	83.3	82.8	90.09	-280.1	3,237.4	650.2	484.2	166.00	3.917			
13,300.0	10,297.0	13,278.4	10,297.0	85.5	85.0	90.09	-281.0	3,337.4	650.3	479.9	170.34	3.818			
13,400.0	10,297.0	13,378.4	10,297.0	87.6	87.2	90.09	-281.8	3,437.4	650.4	475.7	174.71	3.723			
13,500.0	10,297.0	13,478.4	10,297.0	89.8	89.4	90.09	-282.6	3,537.4	650.5	471.4	179.10	3.632			
13,600.0	10,297.0	13,578.4	10,297.0	92.0	91.6	90.09	-283.5	3,637.4	650.6	467.1	183.52	3.545			
13,700.0	10,297.0	13,678.4	10,297.0	94.3	93.8	90.09	-284.3	3,737.4	650.7	462.7	187.96	3.462			
13,800.0	10,297.0	13,778.4	10,297.0	96.5	96.0	90.09	-285.1	3,837.4	650.8	458.4	192.41	3.382			
13,900.0	10,297.0	13,878.4	10,297.0	98.7	98.3	90.09	-286.0	3,937.4	650.9	454.0	196.88	3.306			
14,000.0	10,297.0	13,978.4	10,297.0	100.9	100.5	90.09	-286.8	4,037.4	651.0	449.6	201.37	3.233			
14,100.0	10,297.0	14,078.4	10,297.0	103.2	102.8	90.09	-287.6	4,137.4	651.1	445.2	205.88	3.162			
14,200.0	10,297.0	14,178.4	10,297.0	105.5	105.0	90.09	-288.5	4,237.4	651.2	440.8	210.40	3.095			
14,300.0	10,297.0	14,278.4	10,297.0	107.7	107.3	90.09	-289.3	4,337.4	651.3	436.4	214.93	3.030			
14,400.0	10,297.0	14,378.4	10,297.0	110.0	109.6	90.09	-290.1	4,437.3	651.4	431.9	219.47	2.968			
14,500.0	10,297.0	14,478.4	10,297.0	112.3	111.9	90.09	-291.0	4,537.3	651.5	427.5	224.03	2.908			
14,600.0	10,297.0	14,578.4	10,297.0	114.5	114.1	90.09	-291.8	4,637.3	651.6	423.0	228.60	2.850			
14,700.0	10,297.0	14,678.4	10,297.0	116.8	116.4	90.09	-292.6	4,737.3	651.7	418.5	233.18	2.795			
14,800.0	10,297.0	14,778.4	10,297.0	119.1	118.7	90.09	-293.5	4,837.3	651.8	414.0	237.76	2.741			
14,900.0	10,297.0	14,878.4	10,297.0	121.4	121.0	90.09	-294.3	4,937.3	651.9	409.5	242.36	2.690			

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

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0														Offset Site Error:	0.0 usft		
Survey Program: 0-MWD														Rule Assigned:		Offset Well Error:	0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre (+N/-S (usft) +E/-W (usft))		Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning				
15,000.0	10,297.0	14,978.4	10,297.0	123.7	123.3	90.09	-295.1	5,037.3	652.0	405.0	246.97	2.640					
15,100.0	10,297.0	15,078.4	10,297.0	126.0	125.6	90.09	-296.0	5,137.3	652.1	400.5	251.58	2.592					
15,200.0	10,297.0	15,178.4	10,297.0	128.3	128.0	90.09	-296.8	5,237.3	652.2	396.0	256.20	2.546					
15,300.0	10,297.0	15,278.4	10,297.0	130.6	130.3	90.09	-297.6	5,337.3	652.3	391.4	260.83	2.501					
15,400.0	10,297.0	15,378.4	10,297.0	132.9	132.6	90.09	-298.5	5,437.3	652.4	386.9	265.47	2.457					
15,500.0	10,297.0	15,478.4	10,297.0	135.3	134.9	90.09	-299.3	5,537.3	652.5	382.4	270.12	2.416					
15,600.0	10,297.0	15,578.4	10,297.0	137.6	137.2	90.09	-300.2	5,637.3	652.6	377.8	274.77	2.375					
15,700.0	10,297.0	15,678.4	10,297.0	139.9	139.6	90.09	-301.0	5,737.3	652.7	373.3	279.42	2.336					
15,800.0	10,297.0	15,778.4	10,297.0	142.2	141.9	90.09	-301.8	5,837.3	652.8	368.7	284.08	2.298					
15,900.0	10,297.0	15,878.4	10,297.0	144.6	144.2	90.09	-302.7	5,937.3	652.9	364.1	288.75	2.261					
16,000.0	10,297.0	15,978.4	10,297.0	146.9	146.6	90.09	-303.5	6,037.3	653.0	359.6	293.42	2.225					
16,100.0	10,297.0	16,078.4	10,297.0	149.2	148.9	90.09	-304.3	6,137.3	653.1	355.0	298.10	2.191					
16,200.0	10,297.0	16,178.4	10,297.0	151.6	151.3	90.09	-305.2	6,237.3	653.2	350.4	302.78	2.157					
16,300.0	10,297.0	16,278.4	10,297.0	153.9	153.6	90.09	-306.0	6,337.3	653.3	345.8	307.47	2.125					
16,400.0	10,297.0	16,378.4	10,297.0	156.3	156.0	90.09	-306.8	6,437.3	653.4	341.2	312.16	2.093					
16,500.0	10,297.0	16,478.4	10,297.0	158.6	158.3	90.09	-307.7	6,537.3	653.5	336.6	316.86	2.062					
16,600.0	10,297.0	16,578.4	10,297.0	161.0	160.7	90.09	-308.5	6,637.3	653.6	332.0	321.56	2.033					
16,700.0	10,297.0	16,678.4	10,297.0	163.3	163.0	90.09	-309.3	6,737.3	653.7	327.4	326.26	2.004					
16,800.0	10,297.0	16,778.4	10,297.0	165.7	165.4	90.09	-310.2	6,837.3	653.8	322.8	330.96	1.975					
16,900.0	10,297.0	16,878.4	10,297.0	168.0	167.7	90.09	-311.0	6,937.3	653.9	318.2	335.67	1.948					
17,000.0	10,297.0	16,978.4	10,297.0	170.4	170.1	90.09	-311.8	7,037.3	654.0	313.6	340.39	1.921					
17,100.0	10,297.0	17,078.4	10,297.0	172.7	172.4	90.09	-312.7	7,137.3	654.1	309.0	345.10	1.895					
17,200.0	10,297.0	17,178.4	10,297.0	175.1	174.8	90.09	-313.5	7,237.2	654.2	304.4	349.82	1.870					
17,300.0	10,297.0	17,278.4	10,297.0	177.4	177.2	90.09	-314.3	7,337.2	654.3	299.7	354.55	1.845					
17,400.0	10,297.0	17,378.4	10,297.0	179.8	179.5	90.09	-315.2	7,437.2	654.4	295.1	359.27	1.821					
17,500.0	10,297.0	17,478.4	10,297.0	182.2	181.9	90.09	-316.0	7,537.2	654.5	290.5	364.00	1.798					
17,600.0	10,297.0	17,578.4	10,297.0	184.5	184.2	90.09	-316.8	7,637.2	654.6	285.9	368.73	1.775					
17,700.0	10,297.0	17,678.4	10,297.0	186.9	186.6	90.09	-317.7	7,737.2	654.7	281.2	373.46	1.753					
17,800.0	10,297.0	17,778.4	10,297.0	189.3	189.0	90.09	-318.5	7,837.2	654.8	276.6	378.20	1.731					
17,900.0	10,297.0	17,878.4	10,297.0	191.6	191.4	90.09	-319.4	7,937.2	654.9	271.9	382.94	1.710					
18,000.0	10,297.0	17,978.4	10,297.0	194.0	193.7	90.09	-320.2	8,037.2	655.0	267.3	387.68	1.690					
18,100.0	10,297.0	18,078.4	10,297.0	196.4	196.1	90.09	-321.0	8,137.2	655.1	262.7	392.42	1.669					
18,200.0	10,297.0	18,178.4	10,297.0	198.7	198.5	90.09	-321.9	8,237.2	655.2	258.0	397.16	1.650					
18,300.0	10,297.0	18,278.4	10,297.0	201.1	200.8	90.09	-322.7	8,337.2	655.3	253.4	401.91	1.630					
18,400.0	10,297.0	18,378.4	10,297.0	203.5	203.2	90.09	-323.5	8,437.2	655.4	248.7	406.66	1.612					
18,500.0	10,297.0	18,478.4	10,297.0	205.9	205.6	90.09	-324.4	8,537.2	655.5	244.1	411.41	1.593					
18,600.0	10,297.0	18,578.4	10,297.0	208.2	208.0	90.09	-325.2	8,637.2	655.6	239.4	416.16	1.575					
18,700.0	10,297.0	18,678.4	10,297.0	210.6	210.3	90.09	-326.0	8,737.2	655.7	234.8	420.91	1.558					
18,800.0	10,297.0	18,778.4	10,297.0	213.0	212.7	90.09	-326.9	8,837.2	655.8	230.1	425.67	1.541					
18,900.0	10,297.0	18,878.4	10,297.0	215.4	215.1	90.09	-327.7	8,937.2	655.9	225.5	430.42	1.524					
19,000.0	10,297.0	18,978.4	10,297.0	217.7	217.5	90.09	-328.5	9,037.2	656.0	220.8	435.18	1.507					
19,100.0	10,297.0	19,078.4	10,297.0	220.1	219.9	90.09	-329.4	9,137.2	656.1	216.1	439.94	1.491 Level 3					
19,200.0	10,297.0	19,178.4	10,297.0	222.5	222.2	90.09	-330.2	9,237.2	656.2	211.5	444.70	1.476 Level 3					
19,300.0	10,297.0	19,278.4	10,297.0	224.9	224.6	90.09	-331.0	9,337.2	656.3	206.8	449.47	1.460 Level 3					
19,400.0	10,297.0	19,378.4	10,297.0	227.3	227.0	90.09	-331.9	9,437.2	656.4	202.2	454.23	1.445 Level 3					
19,500.0	10,297.0	19,478.4	10,297.0	229.6	229.4	90.09	-332.7	9,537.2	656.5	197.5	459.00	1.430 Level 3					
19,600.0	10,297.0	19,578.4	10,297.0	232.0	231.8	90.09	-333.5	9,637.2	656.6	192.8	463.76	1.416 Level 3					
19,700.0	10,297.0	19,678.4	10,297.0	234.4	234.2	90.09	-334.4	9,737.2	656.7	188.2	468.53	1.402 Level 3					
19,800.0	10,297.0	19,778.4	10,297.0	236.8	236.5	90.09	-335.2	9,837.2	656.8	183.5	473.30	1.388 Level 3					
19,900.0	10,297.0	19,878.4	10,297.0	239.2	238.9	90.09	-336.0	9,937.2	656.9	178.8	478.07	1.374 Level 3					
20,000.0	10,297.0	19,978.4	10,297.0	241.6	241.3	90.09	-336.9	10,037.1	657.0	174.1	482.84	1.361 Level 3					
20,100.0	10,297.0	20,078.4	10,297.0	244.0	243.7	90.09	-337.7	10,137.1	657.1	169.5	487.62	1.348 Level 3					

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

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWP0	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design: RANA SALADA PROJECT - RANA SALADA 0604 FED COM 203H - OWB - PWP0													Offset Site Error:	0.0 usft	
Survey Program: 0-MWD													Offset Well Error:		0.0 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre		Rule Assigned: Distance		Minimum Separation (usft)	Separation Factor	Warning		
							+N-S (usft)	+E-W (usft)	Between Centres (usft)	Between Ellipses (usft)					
20,200.0	10,297.0	20,178.4	10,297.0	246.3	246.1	90.09	-338.6	10,237.1	657.2	164.8	492.39	1.335	Level 3		
20,300.0	10,297.0	20,278.4	10,297.0	248.7	248.5	90.09	-339.4	10,337.1	657.3	160.1	497.16	1.322	Level 3		
20,400.0	10,297.0	20,378.4	10,297.0	251.1	250.9	90.09	-340.2	10,437.1	657.4	155.4	501.94	1.310	Level 3		
20,500.0	10,297.0	20,478.4	10,297.0	253.5	253.3	90.09	-341.1	10,537.1	657.5	150.8	506.72	1.298	Level 3		
20,600.0	10,297.0	20,578.4	10,297.0	255.9	255.6	90.09	-341.9	10,637.1	657.6	146.1	511.50	1.286	Level 3		
20,700.0	10,297.0	20,678.4	10,297.0	258.3	258.0	90.09	-342.7	10,737.1	657.7	141.4	516.27	1.274	Level 3		
20,800.0	10,297.0	20,778.4	10,297.0	260.7	260.4	90.09	-343.6	10,837.1	657.8	136.7	521.05	1.262	Level 3		
20,900.0	10,297.0	20,878.4	10,297.0	263.1	262.8	90.09	-344.4	10,937.1	657.9	132.0	525.83	1.251	Level 3		
21,000.0	10,297.0	20,978.4	10,297.0	265.4	265.2	90.09	-345.2	11,037.1	658.0	127.4	530.62	1.240	Level 3		
21,100.0	10,297.0	21,078.4	10,297.0	267.8	267.6	90.09	-346.1	11,137.1	658.1	122.7	535.40	1.229	Level 3		
21,200.0	10,297.0	21,178.4	10,297.0	270.2	270.0	90.09	-346.9	11,237.1	658.2	118.0	540.18	1.218	Level 3		
21,300.0	10,297.0	21,278.4	10,297.0	272.6	272.4	90.09	-347.7	11,337.1	658.3	113.3	544.97	1.208	Level 3		
21,400.0	10,297.0	21,378.4	10,297.0	275.0	274.8	90.09	-348.6	11,437.1	658.4	108.6	549.75	1.198	Level 3		
21,500.0	10,297.0	21,478.4	10,297.0	277.4	277.2	90.09	-349.4	11,537.1	658.5	103.9	554.54	1.187	Level 3		
21,600.0	10,297.0	21,578.4	10,297.0	279.8	279.6	90.09	-350.2	11,637.1	658.6	99.3	559.32	1.177	Level 3		
21,700.0	10,297.0	21,678.4	10,297.0	282.2	282.0	90.09	-351.1	11,737.1	658.7	94.6	564.11	1.168	Level 3		
21,800.0	10,297.0	21,778.4	10,297.0	284.6	284.4	90.09	-351.9	11,837.1	658.8	89.9	568.90	1.158	Level 3		
21,900.0	10,297.0	21,878.4	10,297.0	287.0	286.7	90.09	-352.7	11,937.1	658.9	85.2	573.68	1.149	Level 3		
22,000.0	10,297.0	21,978.4	10,297.0	289.4	289.1	90.09	-353.6	12,037.1	659.0	80.5	578.47	1.139	Level 3		
22,100.0	10,297.0	22,078.4	10,297.0	291.8	291.5	90.09	-354.4	12,137.1	659.1	75.8	583.26	1.130	Level 3		
22,200.0	10,297.0	22,178.4	10,297.0	294.2	293.9	90.09	-355.2	12,237.1	659.2	71.1	588.05	1.121	Level 3		
22,300.0	10,297.0	22,278.4	10,297.0	296.5	296.3	90.09	-356.1	12,337.1	659.3	66.4	592.84	1.112	Level 3		
22,400.0	10,297.0	22,378.4	10,297.0	298.9	298.7	90.09	-356.9	12,437.1	659.4	61.7	597.64	1.103	Level 3		
22,500.0	10,297.0	22,478.4	10,297.0	301.3	301.1	90.09	-357.8	12,537.1	659.5	57.1	602.43	1.095	Level 3		
22,600.0	10,297.0	22,578.4	10,297.0	303.7	303.5	90.09	-358.6	12,637.1	659.6	52.4	607.22	1.086	Level 3		
22,700.0	10,297.0	22,678.4	10,297.0	306.1	305.9	90.09	-359.4	12,737.1	659.7	47.7	612.01	1.078	Level 3		
22,800.0	10,297.0	22,778.4	10,297.0	308.5	308.3	90.09	-360.3	12,837.1	659.8	43.0	616.81	1.070	Level 3		
22,900.0	10,297.0	22,878.4	10,297.0	310.9	310.7	90.09	-361.1	12,937.0	659.9	38.3	621.60	1.062	Level 3		
22,993.3	10,297.0	22,970.0	10,297.0	313.2	312.9	90.09	-361.9	13,028.7	660.0	34.0	626.02	1.054	Level 3, SF		

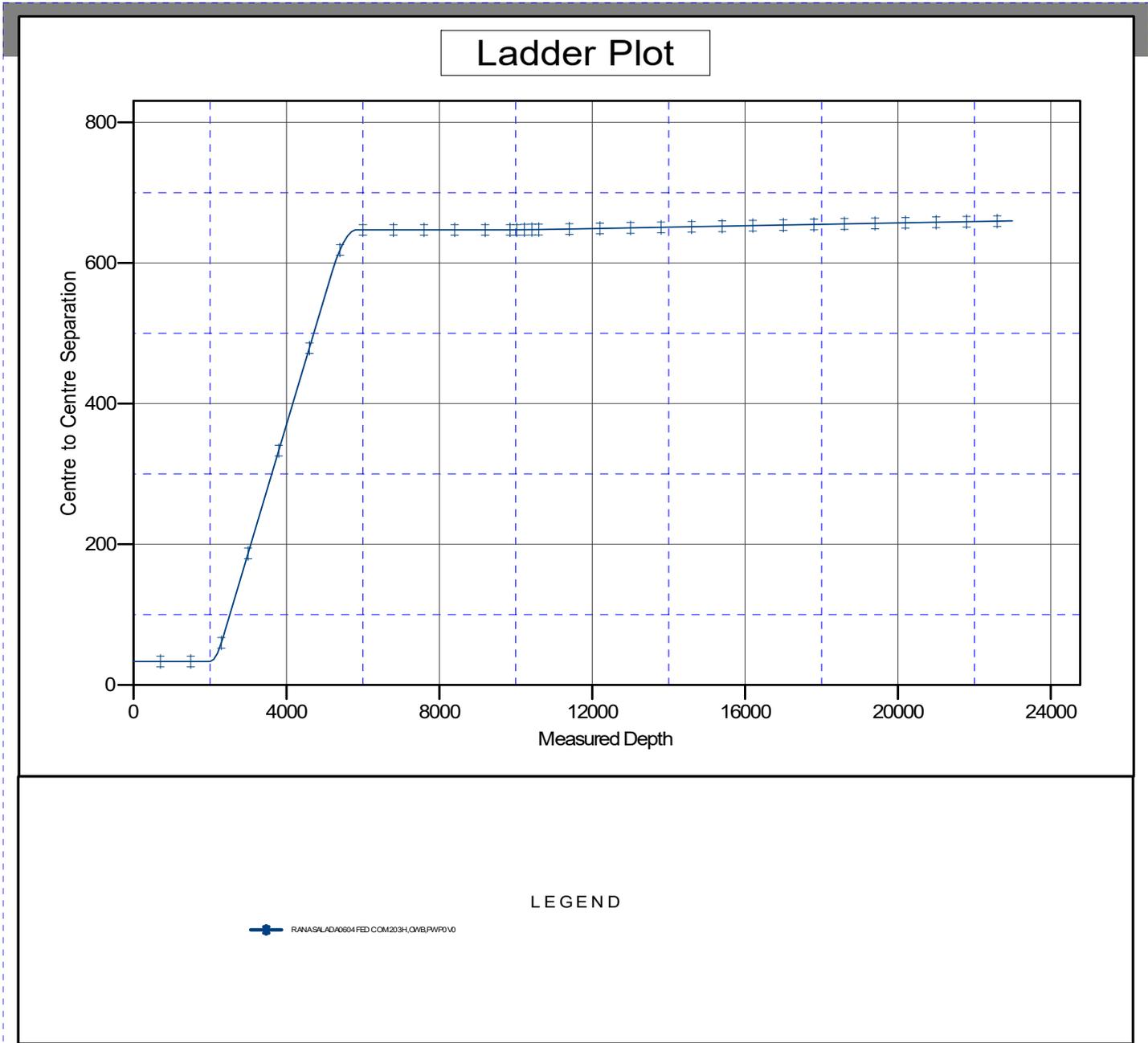
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWPO	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 3080.0usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: RANA SALADA 0604 FED COM 223H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: 0.16°



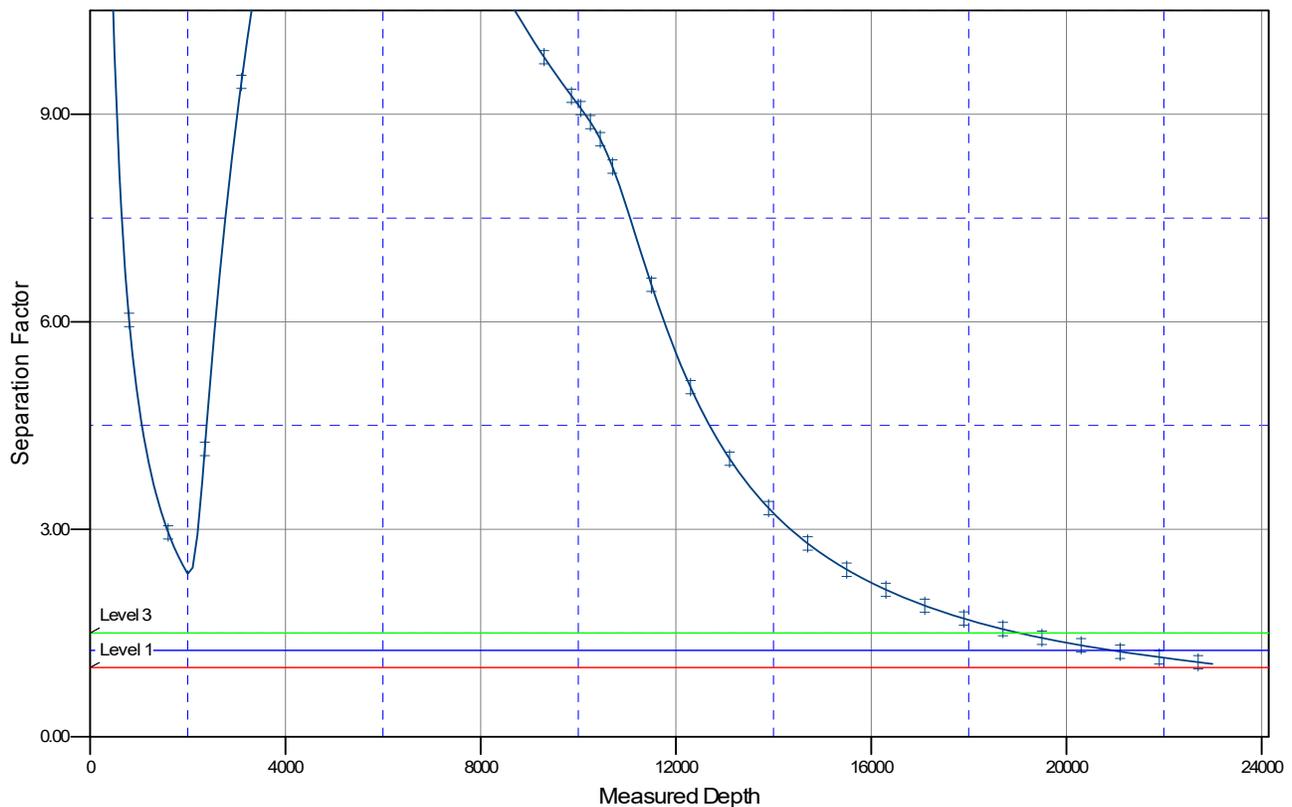
## Permian Resources Anticollision Report

<b>Company:</b>	NEW MEXICO	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Project:</b>	(SP) EDDY	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Reference Site:</b>	RANA SALADA PROJECT	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site Error:</b>	0.0 usft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OWB	<b>Database:</b>	Compass
<b>Reference Design:</b>	PWPO	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 3080.0usft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: RANA SALADA 0604 FED COM 223H  
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone  
 Grid Convergence at Surface is: 0.16°

### Separation Factor Plot



#### LEGEND

—●— RANASALADA0604 FED COM223H,OWB,PWPO

# **NEW MEXICO**

**(SP) EDDY**

**RANA SALADA PROJECT**

**RANA SALADA 0604 FED COM 223H**

**OWB**

**Plan: PWP0**

## **Standard Planning Report - Geographic**

**18 January, 2024**

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWP0		

<b>Project</b>	(SP) EDDY		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	New Mexico Eastern Zone		

<b>Site</b>	RANA SALADA PROJECT				
<b>Site Position:</b>	<b>Northing:</b>	484,881.97 usft	<b>Latitude:</b>	32° 19' 57.559 N	
<b>From:</b>	Map	<b>Easting:</b>	634,054.58 usft	<b>Longitude:</b>	104° 1' 59.326 W
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	13-3/16 "		

<b>Well</b>	RANA SALADA 0604 FED COM 223H					
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	484,915.22 usft	<b>Latitude:</b>	32° 19' 57.888 N
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	634,054.78 usft	<b>Longitude:</b>	104° 1' 59.323 W
<b>Position Uncertainty</b>	0.0 usft		<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	3,050.0 usft
<b>Grid Convergence:</b>	0.16 °					

<b>Wellbore</b>	OWB				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/31/2009	7.97	60.26	48,809.84525478

<b>Design</b>	PWP0			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	88.69

<b>Plan Survey Tool Program</b>	Date 1/18/2024			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>
1	0.0	22,993.3 PWP0 (OWB)	MWD	OWSG_Rev2_ MWD - Star

<b>Plan Sections</b>										
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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,350.0	7.00	22.17	2,349.1	19.8	8.1	2.00	2.00	0.00	22.17	
5,479.1	7.00	22.17	5,454.9	372.9	151.9	0.00	0.00	0.00	0.00	
5,829.1	0.00	0.00	5,804.0	392.7	160.0	2.00	-2.00	0.00	180.00	
9,844.6	0.00	0.00	9,819.5	392.7	160.0	0.00	0.00	0.00	0.00	
10,594.6	90.00	90.42	10,297.0	389.2	637.5	12.00	12.00	12.06	90.42	
22,993.3	90.00	90.42	10,297.0	298.1	13,035.9	0.00	0.00	0.00	0.00	BHL-RS 0604 FED

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
0.0	0.00	0.00	0.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
100.0	0.00	0.00	100.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
200.0	0.00	0.00	200.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
300.0	0.00	0.00	300.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
400.0	0.00	0.00	400.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
500.0	0.00	0.00	500.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
600.0	0.00	0.00	600.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
700.0	0.00	0.00	700.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
800.0	0.00	0.00	800.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
900.0	0.00	0.00	900.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	484,915.22	634,054.78	32° 19' 57.888 N	104° 1' 59.323 W	
<b>Start Build 2.00</b>										
2,100.0	2.00	22.17	2,100.0	1.6	0.7	484,916.84	634,055.44	32° 19' 57.904 N	104° 1' 59.315 W	
2,200.0	4.00	22.17	2,199.8	6.5	2.6	484,921.68	634,057.42	32° 19' 57.952 N	104° 1' 59.292 W	
2,300.0	6.00	22.17	2,299.5	14.5	5.9	484,929.75	634,060.71	32° 19' 58.032 N	104° 1' 59.323 W	
2,350.0	7.00	22.17	2,349.1	19.8	8.1	484,935.00	634,062.84	32° 19' 58.083 N	104° 1' 59.228 W	
<b>Start 3129.1 hold at 2350.0 MD</b>										
2,400.0	7.00	22.17	2,398.8	25.4	10.4	484,940.64	634,065.14	32° 19' 58.139 N	104° 1' 59.201 W	
2,500.0	7.00	22.17	2,498.0	36.7	15.0	484,951.93	634,069.74	32° 19' 58.251 N	104° 1' 59.147 W	
2,600.0	7.00	22.17	2,597.3	48.0	19.6	484,963.21	634,074.34	32° 19' 58.362 N	104° 1' 59.093 W	
2,700.0	7.00	22.17	2,696.5	59.3	24.2	484,974.50	634,078.94	32° 19' 58.474 N	104° 1' 59.039 W	
2,800.0	7.00	22.17	2,795.8	70.6	28.7	484,985.78	634,083.53	32° 19' 58.585 N	104° 1' 58.985 W	
2,900.0	7.00	22.17	2,895.0	81.8	33.3	484,997.07	634,088.13	32° 19' 58.697 N	104° 1' 58.931 W	
3,000.0	7.00	22.17	2,994.3	93.1	37.9	485,008.36	634,092.73	32° 19' 58.808 N	104° 1' 58.878 W	
3,100.0	7.00	22.17	3,093.5	104.4	42.5	485,019.64	634,097.33	32° 19' 58.920 N	104° 1' 58.824 W	
3,200.0	7.00	22.17	3,192.8	115.7	47.1	485,030.93	634,101.93	32° 19' 59.032 N	104° 1' 58.770 W	
3,300.0	7.00	22.17	3,292.0	127.0	51.7	485,042.21	634,106.53	32° 19' 59.143 N	104° 1' 58.716 W	
3,400.0	7.00	22.17	3,391.3	138.3	56.3	485,053.50	634,111.12	32° 19' 59.255 N	104° 1' 58.662 W	
3,500.0	7.00	22.17	3,490.6	149.6	60.9	485,064.79	634,115.72	32° 19' 59.366 N	104° 1' 58.608 W	
3,600.0	7.00	22.17	3,589.8	160.9	65.5	485,076.07	634,120.32	32° 19' 59.478 N	104° 1' 58.554 W	
3,700.0	7.00	22.17	3,689.1	172.1	70.1	485,087.36	634,124.92	32° 19' 59.589 N	104° 1' 58.500 W	
3,800.0	7.00	22.17	3,788.3	183.4	74.7	485,098.64	634,129.52	32° 19' 59.701 N	104° 1' 58.446 W	
3,900.0	7.00	22.17	3,887.6	194.7	79.3	485,109.93	634,134.12	32° 19' 59.812 N	104° 1' 58.392 W	
4,000.0	7.00	22.17	3,986.8	206.0	83.9	485,121.22	634,138.71	32° 19' 59.924 N	104° 1' 58.338 W	
4,100.0	7.00	22.17	4,086.1	217.3	88.5	485,132.50	634,143.31	32° 20' 0.036 N	104° 1' 58.284 W	
4,200.0	7.00	22.17	4,185.3	228.6	93.1	485,143.79	634,147.91	32° 20' 0.147 N	104° 1' 58.230 W	
4,300.0	7.00	22.17	4,284.6	239.9	97.7	485,155.08	634,152.51	32° 20' 0.259 N	104° 1' 58.176 W	
4,400.0	7.00	22.17	4,383.8	251.1	102.3	485,166.36	634,157.11	32° 20' 0.370 N	104° 1' 58.122 W	
4,500.0	7.00	22.17	4,483.1	262.4	106.9	485,177.65	634,161.71	32° 20' 0.482 N	104° 1' 58.068 W	
4,600.0	7.00	22.17	4,582.4	273.7	111.5	485,188.93	634,166.30	32° 20' 0.593 N	104° 1' 58.014 W	
4,700.0	7.00	22.17	4,681.6	285.0	116.1	485,200.22	634,170.90	32° 20' 0.705 N	104° 1' 57.960 W	
4,800.0	7.00	22.17	4,780.9	296.3	120.7	485,211.51	634,175.50	32° 20' 0.816 N	104° 1' 57.906 W	
4,900.0	7.00	22.17	4,880.1	307.6	125.3	485,222.79	634,180.10	32° 20' 0.928 N	104° 1' 57.852 W	
5,000.0	7.00	22.17	4,979.4	318.9	129.9	485,234.08	634,184.70	32° 20' 1.040 N	104° 1' 57.798 W	

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,100.0	7.00	22.17	5,078.6	330.1	134.5	485,245.36	634,189.30	32° 20' 1.151 N	104° 1' 57.744 W	
5,200.0	7.00	22.17	5,177.9	341.4	139.1	485,256.65	634,193.89	32° 20' 1.263 N	104° 1' 57.690 W	
5,300.0	7.00	22.17	5,277.1	352.7	143.7	485,267.94	634,198.49	32° 20' 1.374 N	104° 1' 57.636 W	
5,400.0	7.00	22.17	5,376.4	364.0	148.3	485,279.22	634,203.09	32° 20' 1.486 N	104° 1' 57.582 W	
5,479.1	7.00	22.17	5,454.9	372.9	151.9	485,288.15	634,206.73	32° 20' 1.574 N	104° 1' 57.540 W	
<b>Start Drop -2.00</b>										
5,500.0	6.58	22.17	5,475.7	375.2	152.9	485,290.44	634,207.66	32° 20' 1.597 N	104° 1' 57.529 W	
5,600.0	4.58	22.17	5,575.2	384.2	156.5	485,299.44	634,211.33	32° 20' 1.686 N	104° 1' 57.486 W	
5,700.0	2.58	22.17	5,675.0	390.0	158.9	485,305.23	634,213.69	32° 20' 1.743 N	104° 1' 57.458 W	
5,800.0	0.58	22.17	5,774.9	392.6	159.9	485,307.78	634,214.73	32° 20' 1.768 N	104° 1' 57.446 W	
5,829.1	0.00	0.00	5,804.0	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
<b>Start 4015.5 hold at 5829.1 MD</b>										
5,900.0	0.00	0.00	5,874.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,000.0	0.00	0.00	5,974.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,100.0	0.00	0.00	6,074.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,200.0	0.00	0.00	6,174.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,300.0	0.00	0.00	6,274.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,400.0	0.00	0.00	6,374.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,500.0	0.00	0.00	6,474.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,600.0	0.00	0.00	6,574.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,700.0	0.00	0.00	6,674.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,800.0	0.00	0.00	6,774.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
6,900.0	0.00	0.00	6,874.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,000.0	0.00	0.00	6,974.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,100.0	0.00	0.00	7,074.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,200.0	0.00	0.00	7,174.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,300.0	0.00	0.00	7,274.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,400.0	0.00	0.00	7,374.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,500.0	0.00	0.00	7,474.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,600.0	0.00	0.00	7,574.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,700.0	0.00	0.00	7,674.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,800.0	0.00	0.00	7,774.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
7,900.0	0.00	0.00	7,874.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,000.0	0.00	0.00	7,974.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,100.0	0.00	0.00	8,074.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,200.0	0.00	0.00	8,174.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,300.0	0.00	0.00	8,274.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,400.0	0.00	0.00	8,374.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,500.0	0.00	0.00	8,474.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,600.0	0.00	0.00	8,574.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,700.0	0.00	0.00	8,674.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,800.0	0.00	0.00	8,774.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
8,900.0	0.00	0.00	8,874.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,000.0	0.00	0.00	8,974.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,100.0	0.00	0.00	9,074.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,200.0	0.00	0.00	9,174.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,300.0	0.00	0.00	9,274.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,400.0	0.00	0.00	9,374.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,500.0	0.00	0.00	9,474.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,600.0	0.00	0.00	9,574.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,700.0	0.00	0.00	9,674.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,800.0	0.00	0.00	9,774.9	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
9,844.6	0.00	0.00	9,819.5	392.7	160.0	485,307.92	634,214.78	32° 20' 1.770 N	104° 1' 57.445 W	
<b>Start DLS 12.00 TFO 90.42</b>										

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,850.0	0.65	90.42	9,824.9	392.7	160.0	485,307.92	634,214.82	32° 20' 1.770 N	104° 1' 57.445 W	
9,875.0	3.65	90.42	9,849.9	392.7	161.0	485,307.91	634,215.75	32° 20' 1.769 N	104° 1' 57.434 W	
9,900.0	6.65	90.42	9,874.8	392.7	163.2	485,307.90	634,218.00	32° 20' 1.769 N	104° 1' 57.408 W	
9,925.0	9.65	90.42	9,899.6	392.7	166.8	485,307.87	634,221.54	32° 20' 1.769 N	104° 1' 57.366 W	
9,950.0	12.65	90.42	9,924.1	392.6	171.6	485,307.84	634,226.38	32° 20' 1.768 N	104° 1' 57.310 W	
9,975.0	15.65	90.42	9,948.3	392.6	177.7	485,307.79	634,232.49	32° 20' 1.768 N	104° 1' 57.239 W	
10,000.0	18.65	90.42	9,972.2	392.5	185.1	485,307.74	634,239.86	32° 20' 1.767 N	104° 1' 57.153 W	
10,025.0	21.65	90.42	9,995.7	392.5	193.7	485,307.67	634,248.47	32° 20' 1.766 N	104° 1' 57.052 W	
10,050.0	24.65	90.42	10,018.7	392.4	203.5	485,307.60	634,258.30	32° 20' 1.765 N	104° 1' 56.938 W	
10,075.0	27.65	90.42	10,041.1	392.3	214.5	485,307.52	634,269.32	32° 20' 1.764 N	104° 1' 56.810 W	
10,100.0	30.65	90.42	10,062.9	392.2	226.7	485,307.43	634,281.50	32° 20' 1.763 N	104° 1' 56.668 W	
10,125.0	33.65	90.42	10,084.1	392.1	240.0	485,307.33	634,294.80	32° 20' 1.761 N	104° 1' 56.513 W	
10,150.0	36.65	90.42	10,104.5	392.0	254.4	485,307.23	634,309.19	32° 20' 1.760 N	104° 1' 56.345 W	
10,175.0	39.65	90.42	10,124.2	391.9	269.8	485,307.11	634,324.63	32° 20' 1.758 N	104° 1' 56.165 W	
10,200.0	42.65	90.42	10,143.0	391.8	286.3	485,306.99	634,341.08	32° 20' 1.757 N	104° 1' 55.973 W	
10,225.0	45.65	90.42	10,160.9	391.6	303.7	485,306.86	634,358.49	32° 20' 1.755 N	104° 1' 55.770 W	
10,250.0	48.65	90.42	10,177.9	391.5	322.0	485,306.73	634,376.82	32° 20' 1.753 N	104° 1' 55.557 W	
10,275.0	51.65	90.42	10,194.0	391.4	341.2	485,306.59	634,396.01	32° 20' 1.751 N	104° 1' 55.333 W	
10,300.0	54.65	90.42	10,208.9	391.2	361.2	485,306.44	634,416.01	32° 20' 1.749 N	104° 1' 55.100 W	
10,305.0	55.25	90.42	10,211.8	391.2	365.3	485,306.41	634,420.09	32° 20' 1.749 N	104° 1' 55.052 W	
<b>SEC 1 Exit at 10305.0 MD</b>										
10,325.0	57.65	90.42	10,222.9	391.1	382.0	485,306.29	634,436.77	32° 20' 1.747 N	104° 1' 54.858 W	
10,350.0	60.65	90.42	10,235.7	390.9	403.4	485,306.13	634,458.23	32° 20' 1.745 N	104° 1' 54.608 W	
10,375.0	63.65	90.42	10,247.4	390.7	425.6	485,305.97	634,480.34	32° 20' 1.743 N	104° 1' 54.350 W	
10,400.0	66.65	90.42	10,257.9	390.6	448.2	485,305.80	634,503.02	32° 20' 1.741 N	104° 1' 54.086 W	
10,425.0	69.65	90.42	10,267.2	390.4	471.4	485,305.63	634,526.22	32° 20' 1.738 N	104° 1' 53.815 W	
10,450.0	72.65	90.42	10,275.2	390.2	495.1	485,305.46	634,549.87	32° 20' 1.736 N	104° 1' 53.540 W	
10,475.0	75.65	90.42	10,282.1	390.1	519.1	485,305.28	634,573.92	32° 20' 1.733 N	104° 1' 53.259 W	
10,500.0	78.65	90.42	10,287.6	389.9	543.5	485,305.10	634,598.29	32° 20' 1.731 N	104° 1' 52.975 W	
10,525.0	81.65	90.42	10,291.9	389.7	568.1	485,304.92	634,622.92	32° 20' 1.728 N	104° 1' 52.688 W	
10,550.0	84.65	90.42	10,294.9	389.5	593.0	485,304.74	634,647.74	32° 20' 1.726 N	104° 1' 52.399 W	
10,575.0	87.65	90.42	10,296.6	389.3	617.9	485,304.56	634,672.68	32° 20' 1.723 N	104° 1' 52.108 W	
10,594.6	90.00	90.42	10,297.0	389.2	637.5	485,304.41	634,692.23	32° 20' 1.721 N	104° 1' 51.880 W	
<b>Start 12398.8 hold at 10594.6 MD</b>										
10,600.0	90.00	90.42	10,297.0	389.2	642.9	485,304.37	634,697.67	32° 20' 1.721 N	104° 1' 51.817 W	
10,700.0	90.00	90.42	10,297.0	388.4	742.9	485,303.64	634,797.67	32° 20' 1.711 N	104° 1' 50.651 W	
10,800.0	90.00	90.42	10,297.0	387.7	842.9	485,302.90	634,897.67	32° 20' 1.701 N	104° 1' 49.486 W	
10,900.0	90.00	90.42	10,297.0	386.9	942.9	485,302.17	634,997.66	32° 20' 1.691 N	104° 1' 48.320 W	
11,000.0	90.00	90.42	10,297.0	386.2	1,042.9	485,301.43	635,097.66	32° 20' 1.681 N	104° 1' 47.155 W	
11,100.0	90.00	90.42	10,297.0	385.5	1,142.9	485,300.70	635,197.66	32° 20' 1.671 N	104° 1' 45.989 W	
11,200.0	90.00	90.42	10,297.0	384.7	1,242.9	485,299.96	635,297.66	32° 20' 1.661 N	104° 1' 44.824 W	
11,300.0	90.00	90.42	10,297.0	384.0	1,342.9	485,299.23	635,397.65	32° 20' 1.650 N	104° 1' 43.658 W	
11,400.0	90.00	90.42	10,297.0	383.3	1,442.9	485,298.49	635,497.65	32° 20' 1.640 N	104° 1' 42.493 W	
11,500.0	90.00	90.42	10,297.0	382.5	1,542.9	485,297.76	635,597.65	32° 20' 1.630 N	104° 1' 41.327 W	
11,600.0	90.00	90.42	10,297.0	381.8	1,642.9	485,297.02	635,697.65	32° 20' 1.620 N	104° 1' 40.162 W	
11,700.0	90.00	90.42	10,297.0	381.1	1,742.9	485,296.29	635,797.64	32° 20' 1.610 N	104° 1' 38.996 W	
11,800.0	90.00	90.42	10,297.0	380.3	1,842.9	485,295.55	635,897.64	32° 20' 1.600 N	104° 1' 37.831 W	
11,900.0	90.00	90.42	10,297.0	379.6	1,942.9	485,294.82	635,997.64	32° 20' 1.590 N	104° 1' 36.665 W	
12,000.0	90.00	90.42	10,297.0	378.9	2,042.9	485,294.08	636,097.63	32° 20' 1.580 N	104° 1' 35.500 W	
12,100.0	90.00	90.42	10,297.0	378.1	2,142.8	485,293.35	636,197.63	32° 20' 1.570 N	104° 1' 34.334 W	
12,200.0	90.00	90.42	10,297.0	377.4	2,242.8	485,292.61	636,297.63	32° 20' 1.560 N	104° 1' 33.169 W	
12,300.0	90.00	90.42	10,297.0	376.7	2,342.8	485,291.88	636,397.63	32° 20' 1.549 N	104° 1' 32.003 W	
12,400.0	90.00	90.42	10,297.0	375.9	2,442.8	485,291.15	636,497.62	32° 20' 1.539 N	104° 1' 30.838 W	
12,500.0	90.00	90.42	10,297.0	375.2	2,542.8	485,290.41	636,597.62	32° 20' 1.529 N	104° 1' 29.672 W	

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
12,600.0	90.00	90.42	10,297.0	374.5	2,642.8	485,289.68	636,697.62	32° 20' 1.519 N	104° 1' 28.507 W	
12,700.0	90.00	90.42	10,297.0	373.7	2,742.8	485,288.94	636,797.62	32° 20' 1.509 N	104° 1' 27.341 W	
12,800.0	90.00	90.42	10,297.0	373.0	2,842.8	485,288.21	636,897.61	32° 20' 1.499 N	104° 1' 26.176 W	
12,900.0	90.00	90.42	10,297.0	372.3	2,942.8	485,287.47	636,997.61	32° 20' 1.489 N	104° 1' 25.010 W	
13,000.0	90.00	90.42	10,297.0	371.5	3,042.8	485,286.74	637,097.61	32° 20' 1.479 N	104° 1' 23.845 W	
13,100.0	90.00	90.42	10,297.0	370.8	3,142.8	485,286.00	637,197.60	32° 20' 1.468 N	104° 1' 22.679 W	
13,200.0	90.00	90.42	10,297.0	370.0	3,242.8	485,285.27	637,297.60	32° 20' 1.458 N	104° 1' 21.514 W	
13,300.0	90.00	90.42	10,297.0	369.3	3,342.8	485,284.53	637,397.60	32° 20' 1.448 N	104° 1' 20.348 W	
13,400.0	90.00	90.42	10,297.0	368.6	3,442.8	485,283.80	637,497.60	32° 20' 1.438 N	104° 1' 19.183 W	
13,500.0	90.00	90.42	10,297.0	367.8	3,542.8	485,283.06	637,597.59	32° 20' 1.428 N	104° 1' 18.017 W	
13,600.0	90.00	90.42	10,297.0	367.1	3,642.8	485,282.33	637,697.59	32° 20' 1.418 N	104° 1' 16.852 W	
13,700.0	90.00	90.42	10,297.0	366.4	3,742.8	485,281.59	637,797.59	32° 20' 1.408 N	104° 1' 15.686 W	
13,800.0	90.00	90.42	10,297.0	365.6	3,842.8	485,280.86	637,897.59	32° 20' 1.397 N	104° 1' 14.521 W	
13,900.0	90.00	90.42	10,297.0	364.9	3,942.8	485,280.12	637,997.58	32° 20' 1.387 N	104° 1' 13.355 W	
14,000.0	90.00	90.42	10,297.0	364.2	4,042.8	485,279.39	638,097.58	32° 20' 1.377 N	104° 1' 12.190 W	
14,100.0	90.00	90.42	10,297.0	363.4	4,142.8	485,278.65	638,197.58	32° 20' 1.367 N	104° 1' 11.024 W	
14,200.0	90.00	90.42	10,297.0	362.7	4,242.8	485,277.92	638,297.58	32° 20' 1.357 N	104° 1' 9.859 W	
14,300.0	90.00	90.42	10,297.0	362.0	4,342.8	485,277.18	638,397.57	32° 20' 1.347 N	104° 1' 8.693 W	
14,400.0	90.00	90.42	10,297.0	361.2	4,442.8	485,276.45	638,497.57	32° 20' 1.336 N	104° 1' 7.528 W	
14,500.0	90.00	90.42	10,297.0	360.5	4,542.8	485,275.71	638,597.57	32° 20' 1.326 N	104° 1' 6.362 W	
14,600.0	90.00	90.42	10,297.0	359.8	4,642.8	485,274.98	638,697.56	32° 20' 1.316 N	104° 1' 5.197 W	
14,700.0	90.00	90.42	10,297.0	359.0	4,742.8	485,274.24	638,797.56	32° 20' 1.306 N	104° 1' 4.031 W	
14,800.0	90.00	90.42	10,297.0	358.3	4,842.8	485,273.51	638,897.56	32° 20' 1.296 N	104° 1' 2.866 W	
14,900.0	90.00	90.42	10,297.0	357.6	4,942.8	485,272.77	638,997.56	32° 20' 1.285 N	104° 1' 1.700 W	
15,000.0	90.00	90.42	10,297.0	356.8	5,042.8	485,272.04	639,097.55	32° 20' 1.275 N	104° 1' 0.535 W	
15,100.0	90.00	90.42	10,297.0	356.1	5,142.8	485,271.30	639,197.55	32° 20' 1.265 N	104° 0' 59.369 W	
15,200.0	90.00	90.42	10,297.0	355.3	5,242.8	485,270.57	639,297.55	32° 20' 1.255 N	104° 0' 58.204 W	
15,300.0	90.00	90.42	10,297.0	354.6	5,342.8	485,269.83	639,397.55	32° 20' 1.245 N	104° 0' 57.038 W	
15,394.0	90.00	90.42	10,297.0	353.9	5,436.7	485,269.14	639,491.51	32° 20' 1.235 N	104° 0' 55.943 W	
<b>SEC 5 Entry at 15394.0 MD</b>										
15,400.0	90.00	90.42	10,297.0	353.9	5,442.8	485,269.10	639,497.54	32° 20' 1.234 N	104° 0' 55.873 W	
15,500.0	90.00	90.42	10,297.0	353.1	5,542.8	485,268.37	639,597.54	32° 20' 1.224 N	104° 0' 54.707 W	
15,600.0	90.00	90.42	10,297.0	352.4	5,642.8	485,267.63	639,697.54	32° 20' 1.214 N	104° 0' 53.542 W	
15,700.0	90.00	90.42	10,297.0	351.7	5,742.8	485,266.90	639,797.53	32° 20' 1.204 N	104° 0' 52.376 W	
15,800.0	90.00	90.42	10,297.0	350.9	5,842.7	485,266.16	639,897.53	32° 20' 1.194 N	104° 0' 51.211 W	
15,900.0	90.00	90.42	10,297.0	350.2	5,942.7	485,265.43	639,997.53	32° 20' 1.183 N	104° 0' 50.045 W	
16,000.0	90.00	90.42	10,297.0	349.5	6,042.7	485,264.69	640,097.53	32° 20' 1.173 N	104° 0' 48.880 W	
16,100.0	90.00	90.42	10,297.0	348.7	6,142.7	485,263.96	640,197.52	32° 20' 1.163 N	104° 0' 47.714 W	
16,200.0	90.00	90.42	10,297.0	348.0	6,242.7	485,263.22	640,297.52	32° 20' 1.153 N	104° 0' 46.549 W	
16,300.0	90.00	90.42	10,297.0	347.3	6,342.7	485,262.49	640,397.52	32° 20' 1.142 N	104° 0' 45.383 W	
16,400.0	90.00	90.42	10,297.0	346.5	6,442.7	485,261.75	640,497.52	32° 20' 1.132 N	104° 0' 44.218 W	
16,500.0	90.00	90.42	10,297.0	345.8	6,542.7	485,261.02	640,597.51	32° 20' 1.122 N	104° 0' 43.052 W	
16,600.0	90.00	90.42	10,297.0	345.1	6,642.7	485,260.28	640,697.51	32° 20' 1.112 N	104° 0' 41.887 W	
16,700.0	90.00	90.42	10,297.0	344.3	6,742.7	485,259.55	640,797.51	32° 20' 1.101 N	104° 0' 40.721 W	
16,800.0	90.00	90.42	10,297.0	343.6	6,842.7	485,258.81	640,897.51	32° 20' 1.091 N	104° 0' 39.556 W	
16,900.0	90.00	90.42	10,297.0	342.9	6,942.7	485,258.08	640,997.50	32° 20' 1.081 N	104° 0' 38.390 W	
17,000.0	90.00	90.42	10,297.0	342.1	7,042.7	485,257.34	641,097.50	32° 20' 1.071 N	104° 0' 37.225 W	
17,100.0	90.00	90.42	10,297.0	341.4	7,142.7	485,256.61	641,197.50	32° 20' 1.060 N	104° 0' 36.059 W	
17,200.0	90.00	90.42	10,297.0	340.7	7,242.7	485,255.87	641,297.49	32° 20' 1.050 N	104° 0' 34.894 W	
17,300.0	90.00	90.42	10,297.0	339.9	7,342.7	485,255.14	641,397.49	32° 20' 1.040 N	104° 0' 33.728 W	
17,400.0	90.00	90.42	10,297.0	339.2	7,442.7	485,254.40	641,497.49	32° 20' 1.030 N	104° 0' 32.563 W	
17,500.0	90.00	90.42	10,297.0	338.4	7,542.7	485,253.67	641,597.49	32° 20' 1.019 N	104° 0' 31.397 W	
17,600.0	90.00	90.42	10,297.0	337.7	7,642.7	485,252.93	641,697.48	32° 20' 1.009 N	104° 0' 30.232 W	
17,700.0	90.00	90.42	10,297.0	337.0	7,742.7	485,252.20	641,797.48	32° 20' 0.999 N	104° 0' 29.066 W	

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
17,800.0	90.00	90.42	10,297.0	336.2	7,842.7	485,251.46	641,897.48	32° 20' 0.989 N	104° 0' 27.901 W	
17,900.0	90.00	90.42	10,297.0	335.5	7,942.7	485,250.73	641,997.48	32° 20' 0.978 N	104° 0' 26.735 W	
18,000.0	90.00	90.42	10,297.0	334.8	8,042.7	485,249.99	642,097.47	32° 20' 0.968 N	104° 0' 25.570 W	
18,100.0	90.00	90.42	10,297.0	334.0	8,142.7	485,249.26	642,197.47	32° 20' 0.958 N	104° 0' 24.404 W	
18,200.0	90.00	90.42	10,297.0	333.3	8,242.7	485,248.52	642,297.47	32° 20' 0.947 N	104° 0' 23.239 W	
18,300.0	90.00	90.42	10,297.0	332.6	8,342.7	485,247.79	642,397.46	32° 20' 0.937 N	104° 0' 22.073 W	
18,400.0	90.00	90.42	10,297.0	331.8	8,442.7	485,247.05	642,497.46	32° 20' 0.927 N	104° 0' 20.908 W	
18,500.0	90.00	90.42	10,297.0	331.1	8,542.7	485,246.32	642,597.46	32° 20' 0.917 N	104° 0' 19.742 W	
18,600.0	90.00	90.42	10,297.0	330.4	8,642.7	485,245.58	642,697.46	32° 20' 0.906 N	104° 0' 18.577 W	
18,700.0	90.00	90.42	10,297.0	329.6	8,742.7	485,244.85	642,797.45	32° 20' 0.896 N	104° 0' 17.411 W	
18,800.0	90.00	90.42	10,297.0	328.9	8,842.7	485,244.12	642,897.45	32° 20' 0.886 N	104° 0' 16.246 W	
18,900.0	90.00	90.42	10,297.0	328.2	8,942.7	485,243.38	642,997.45	32° 20' 0.875 N	104° 0' 15.080 W	
19,000.0	90.00	90.42	10,297.0	327.4	9,042.7	485,242.65	643,097.45	32° 20' 0.865 N	104° 0' 13.915 W	
19,100.0	90.00	90.42	10,297.0	326.7	9,142.7	485,241.91	643,197.44	32° 20' 0.855 N	104° 0' 12.749 W	
19,200.0	90.00	90.42	10,297.0	326.0	9,242.7	485,241.18	643,297.44	32° 20' 0.844 N	104° 0' 11.584 W	
19,300.0	90.00	90.42	10,297.0	325.2	9,342.7	485,240.44	643,397.44	32° 20' 0.834 N	104° 0' 10.418 W	
19,400.0	90.00	90.42	10,297.0	324.5	9,442.7	485,239.71	643,497.43	32° 20' 0.824 N	104° 0' 9.253 W	
19,500.0	90.00	90.42	10,297.0	323.8	9,542.6	485,238.97	643,597.43	32° 20' 0.813 N	104° 0' 8.087 W	
19,600.0	90.00	90.42	10,297.0	323.0	9,642.6	485,238.24	643,697.43	32° 20' 0.803 N	104° 0' 6.922 W	
19,700.0	90.00	90.42	10,297.0	322.3	9,742.6	485,237.50	643,797.43	32° 20' 0.793 N	104° 0' 5.756 W	
19,800.0	90.00	90.42	10,297.0	321.5	9,842.6	485,236.77	643,897.42	32° 20' 0.782 N	104° 0' 4.591 W	
19,900.0	90.00	90.42	10,297.0	320.8	9,942.6	485,236.03	643,997.42	32° 20' 0.772 N	104° 0' 3.425 W	
20,000.0	90.00	90.42	10,297.0	320.1	10,042.6	485,235.30	644,097.42	32° 20' 0.762 N	104° 0' 2.260 W	
20,100.0	90.00	90.42	10,297.0	319.3	10,142.6	485,234.56	644,197.42	32° 20' 0.751 N	104° 0' 1.094 W	
20,200.0	90.00	90.42	10,297.0	318.6	10,242.6	485,233.83	644,297.41	32° 20' 0.741 N	103° 59' 59.929 W	
20,300.0	90.00	90.42	10,297.0	317.9	10,342.6	485,233.09	644,397.41	32° 20' 0.731 N	103° 59' 58.763 W	
20,400.0	90.00	90.42	10,297.0	317.1	10,442.6	485,232.36	644,497.41	32° 20' 0.720 N	103° 59' 57.598 W	
20,500.0	90.00	90.42	10,297.0	316.4	10,542.6	485,231.62	644,597.41	32° 20' 0.710 N	103° 59' 56.432 W	
20,600.0	90.00	90.42	10,297.0	315.7	10,642.6	485,230.89	644,697.40	32° 20' 0.700 N	103° 59' 55.267 W	
20,684.0	90.00	90.42	10,297.0	315.1	10,726.6	485,230.27	644,781.36	32° 20' 0.691 N	103° 59' 54.288 W	
<b>SEC 4 Entry at 20684.0 MD</b>										
20,700.0	90.00	90.42	10,297.0	314.9	10,742.6	485,230.15	644,797.40	32° 20' 0.689 N	103° 59' 54.101 W	
20,800.0	90.00	90.42	10,297.0	314.2	10,842.6	485,229.42	644,897.40	32° 20' 0.679 N	103° 59' 52.936 W	
20,900.0	90.00	90.42	10,297.0	313.5	10,942.6	485,228.68	644,997.39	32° 20' 0.668 N	103° 59' 51.770 W	
21,000.0	90.00	90.42	10,297.0	312.7	11,042.6	485,227.95	645,097.39	32° 20' 0.658 N	103° 59' 50.605 W	
21,100.0	90.00	90.42	10,297.0	312.0	11,142.6	485,227.21	645,197.39	32° 20' 0.648 N	103° 59' 49.439 W	
21,200.0	90.00	90.42	10,297.0	311.3	11,242.6	485,226.48	645,297.39	32° 20' 0.637 N	103° 59' 48.274 W	
21,300.0	90.00	90.42	10,297.0	310.5	11,342.6	485,225.74	645,397.38	32° 20' 0.627 N	103° 59' 47.108 W	
21,400.0	90.00	90.42	10,297.0	309.8	11,442.6	485,225.01	645,497.38	32° 20' 0.617 N	103° 59' 45.943 W	
21,500.0	90.00	90.42	10,297.0	309.1	11,542.6	485,224.27	645,597.38	32° 20' 0.606 N	103° 59' 44.777 W	
21,600.0	90.00	90.42	10,297.0	308.3	11,642.6	485,223.54	645,697.38	32° 20' 0.596 N	103° 59' 43.612 W	
21,700.0	90.00	90.42	10,297.0	307.6	11,742.6	485,222.80	645,797.37	32° 20' 0.585 N	103° 59' 42.446 W	
21,800.0	90.00	90.42	10,297.0	306.8	11,842.6	485,222.07	645,897.37	32° 20' 0.575 N	103° 59' 41.281 W	
21,900.0	90.00	90.42	10,297.0	306.1	11,942.6	485,221.34	645,997.37	32° 20' 0.565 N	103° 59' 40.115 W	
22,000.0	90.00	90.42	10,297.0	305.4	12,042.6	485,220.60	646,097.36	32° 20' 0.554 N	103° 59' 38.950 W	
22,100.0	90.00	90.42	10,297.0	304.6	12,142.6	485,219.87	646,197.36	32° 20' 0.544 N	103° 59' 37.784 W	
22,200.0	90.00	90.42	10,297.0	303.9	12,242.6	485,219.13	646,297.36	32° 20' 0.533 N	103° 59' 36.619 W	
22,300.0	90.00	90.42	10,297.0	303.2	12,342.6	485,218.40	646,397.36	32° 20' 0.523 N	103° 59' 35.453 W	
22,400.0	90.00	90.42	10,297.0	302.4	12,442.6	485,217.66	646,497.35	32° 20' 0.513 N	103° 59' 34.288 W	
22,500.0	90.00	90.42	10,297.0	301.7	12,542.6	485,216.93	646,597.35	32° 20' 0.502 N	103° 59' 33.122 W	
22,600.0	90.00	90.42	10,297.0	301.0	12,642.6	485,216.19	646,697.35	32° 20' 0.492 N	103° 59' 31.957 W	
22,700.0	90.00	90.42	10,297.0	300.2	12,742.6	485,215.46	646,797.35	32° 20' 0.481 N	103° 59' 30.791 W	
22,800.0	90.00	90.42	10,297.0	299.5	12,842.6	485,214.72	646,897.34	32° 20' 0.471 N	103° 59' 29.626 W	
22,900.0	90.00	90.42	10,297.0	298.8	12,942.6	485,213.99	646,997.34	32° 20' 0.460 N	103° 59' 28.460 W	

## Permian Resources Planning Report - Geographic

<b>Database:</b>	Compass	<b>Local Co-ordinate Reference:</b>	Well RANA SALADA 0604 FED COM 223H
<b>Company:</b>	NEW MEXICO	<b>TVD Reference:</b>	KB @ 3080.0usft
<b>Project:</b>	(SP) EDDY	<b>MD Reference:</b>	KB @ 3080.0usft
<b>Site:</b>	RANA SALADA PROJECT	<b>North Reference:</b>	Grid
<b>Well:</b>	RANA SALADA 0604 FED COM 223H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OWB		
<b>Design:</b>	PWPO		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
22,993.3	90.00	90.42	10,297.0	298.1	13,035.9	485,213.30	647,090.67	32° 20' 0.451 N	103° 59' 27.373 W
<b>TD at 22993.3</b>									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BHL-RS 0604 FED C(	0.00	0.00	10,297.0	298.1	13,035.9	485,213.30	647,090.67	32° 20' 0.451 N	103° 59' 27.373 W
- hit/miss target									
- plan hits target center									
- Point									
FTP-RS 0604 FED C(	0.00	0.00	10,297.0	391.9	686.6	485,307.13	634,741.37	32° 20' 1.747 N	104° 1' 51.307 W
- plan misses target center by 3.1usft at 10643.7usft MD (10297.0 TVD, 388.8 N, 686.6 E)									
- Point									

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
2,000.0	2,000.0	0.0	0.0	Start Build 2.00	
2,350.0	2,349.1	19.8	8.1	Start 3129.1 hold at 2350.0 MD	
5,479.1	5,454.9	372.9	151.9	Start Drop -2.00	
5,829.1	5,804.0	392.7	160.0	Start 4015.5 hold at 5829.1 MD	
9,844.6	9,819.5	392.7	160.0	Start DLS 12.00 TFO 90.42	
10,305.0	10,211.8	391.2	365.3	SEC 1 Exit at 10305.0 MD	
10,594.6	10,297.0	389.2	637.5	Start 12398.8 hold at 10594.6 MD	
15,394.0	10,297.0	353.9	5,436.7	SEC 5 Entry at 15394.0 MD	
20,684.0	10,297.0	315.1	10,726.6	SEC 4 Entry at 20684.0 MD	
22,993.3	10,297.0	298.1	13,035.9	TD at 22993.3	

Sec1-T23SR28E\_RANA SALADA 0605 FED COM 201H\_Eddy\_NMNM61349\_Permian Resources\_2-6-2024\_JS

RANA SALADA 0605 FED COM 201H

9 5/8		surface csg in a		12 1/4		inch hole.		Design Factors				Surface	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	B@s	a-B	a-C	Weight		
"A"	40.00	J 55	btc	40.38	13.35	0.77	390	23	1.33	24.09	15,600		
"B"			btc				0				0		
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500							Tail Cmt	does not	circ to sfc.	Totals:	390		15,600
<b>Comparison of Proposed to Minimum Required Cement Volumes</b>													
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE			Min Dist Hole-Cplg		
12 1/4	0.3132	140	247	122	102	9.50	2975	3M			0.81		

Burst Frac Gradient(s) for Segment(s) A, B = , b All > 0.70, OK. Site plat (pipe racks S or E) as per O.O. 1 III D.4.I. not found.

7 5/8		casing inside the		9 5/8		Design Factors				Int 1			
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	B@s	a-B	a-C	Weight		
"A"	29.70	P 110	mo-fxl	2.23	1.37	1.27	9,935	1	2.06	2.37	295,070		
"B"							0				0		
w/8.4#/g mud, 30min Sfc Csg Test psig: 971							Totals:	9,935			295,070		
The cement volume(s) are intended to achieve a top of							0	ft from surface or a	390		overlap.		
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE			Min Dist Hole-Cplg		
8 3/4	0.1005	880	1525	1001	52	10.00	3678	5M			0.56		
D V Tool(s):							sum of sx	Σ CuFt			Σ%excess		
t by stage % :							#VALUE!	#VALUE!	880	1525	52		

Class 'H' tail cmt yld > 1.20

5 1/2		casing inside the		7 5/8		Design Factors				Prod 1			
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	B@s	a-B	a-C	Weight		
"A"	20.00	P 110	geoconn	3.06	2.06	2.29	9,435	2	3.73	3.35	188,700		
"B"	20.00	P 110	bushmaster sl	6.18	1.67	2.29	11,130	2	3.73	3.02	222,600		
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,076							Totals:	20,565			411,300		
The cement volume(s) are intended to achieve a top of							9735	ft from surface or a	200		overlap.		
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE			Min Dist Hole-Cplg		
6 3/4	0.0835	710	1276	906	41	11.00					0.35		

Class 'C' tail cmt yld > 1.35

#N/A		5 1/2		Design Factors				<Choose Casing>					
Segment	#/ft	Grade	Coupling	#N/A	Collapse	Burst	Length	B@s	a-B	a-C	Weight		
"A"			0.00				0				0		
"B"			0.00				0				0		
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	0			0		
Cmt vol calc below includes this csg, TOC intended							#N/A	ft from surface or a	#N/A		overlap.		
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE			Min Dist Hole-Cplg		
0		#N/A	#N/A	0	#N/A								

#N/A Capitan Reef est top XXXX.

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	NOVO OIL & GAS NORTHERN DELAWARE, LLC
WELL NAME & NO.:	RANA SALADA 0604 FED COM 223H
SURFACE HOLE FOOTAGE:	1913'S & 359'E
BOTTOM HOLE FOOTAGE:	2310'S & 2310'W
LOCATION:	Section 1, T.23 S., R.28 E., NMP
COUNTY:	Eddy County, New Mexico

COA

H2S	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Potash	<input type="radio"/> None	<input checked="" type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input checked="" type="radio"/> Medium	<input type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Wellhead Variance	<input type="radio"/> Diverter		
Other	<input type="checkbox"/> 4 String	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Pilot Hole	<input type="checkbox"/> Open Annulus
Cementing	<input type="checkbox"/> Contingency Cement Squeeze	<input type="checkbox"/> EchoMeter	<input type="checkbox"/> Primary Cement Squeeze
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit
Special Requirements	<input type="checkbox"/> Batch Sundry		
Special Requirements Variance	<input checked="" type="checkbox"/> Break Testing	<input checked="" type="checkbox"/> Offline Cementing	<input checked="" type="checkbox"/> Casing Clearance

### A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated AT SPUD. As a result, the Hydrogen Sulfide area must meet 43 CFR part 3170 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

### B. CASING

#### Primary Casing Design:

1. Th **9-5/8** inch surface casing shall be set at approximately 390 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. The surface hole shall be **12 ¼** inch in diameter.

- 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 **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.
2. The minimum required fill of cement behind the **7-5/8** 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 or potash.**
  - ❖ 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.
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.  
**Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.**

### 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 **9-5/8** inch 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.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in Onshore Order 1 and 2.
- 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.

##### **(Note: For a minimum 5M BOPE or less (Utilizing a 10M BOPE system)**

##### **BOPE Break Testing Variance**

- BOPE Break Testing is ONLY permitted for 5M BOPE or less. (**Annular preventer must be tested to a minimum of 70% of BOPE working pressure and shall be higher than the MASP**)
- BOPE Break Testing is NOT permitted to drilling the production hole section.
- Variance only pertains to the intermediate hole-sections and no deeper than the Bone Springs formation.
- While in transfer between wells, the BOPE shall be secured by the hydraulic carrier or cradle.
- Any well control event while drilling require notification to the BLM Petroleum Engineer (**575-706-2779**) prior to the commencement of any BOPE Break Testing operations.

- A full BOPE test is required prior to drilling the first deep intermediate hole section. If any subsequent hole interval is deeper than the first, a full BOPE test will be required. (200' TVD tolerance between intermediate shoes is allowable).
- The BLM is to be contacted (575-361-2822 Eddy County) 4 hours prior to BOPE tests.
- As a minimum, a full BOPE test shall be performed at 21-day intervals.
- In the event any repairs or replacement of the BOPE is required, the BOPE shall test as per Onshore Oil and Gas Order No. 2.
- If in the event break testing is not utilized, then a full BOPE test would be conducted.

**Offline Cementing**

Contact the BLM prior to the commencement of any offline cementing procedure.

**Casing Clearance:**

Operator casing variance is approved for the utilization of 9-5/8 inch surface casing in a 12 ¼ inch surface hole.

Operator shall clean up cycles until wellbore is clear of cuttings and any large debris, ensure cutting sizes are adequate “coffee ground or less” before cementing.

**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](mailto: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 2<sup>nd</sup> 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 integrity 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 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 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.

JS 2/6/2024

**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  
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**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
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**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
 Action 312702

**CONDITIONS**

Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 300 N. Marienfeld St Ste 1000 Midland, TX 79701	OGRID: 372920
	Action Number: 312702
	Action Type: [C-103] NOI Change of Plans (C-103A)

**CONDITIONS**

Created By	Condition	Condition Date
ward.rikala	All original COA's still apply. Additionally, if cement is not circulated to surface during cementing operations, then a CBL is required.	4/18/2024