

Well Name: RANA SALADA FED COM 0106	Well Location: T23S / R28E / SEC 1 / NWSW /	County or Parish/State:
Well Number: 213H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM091078	Unit or CA Name:	Unit or CA Number:
US Well Number:	Well Status: Approved Application for Permit to Drill	Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Notice of Intent

Type of Submission: Notice of Intent	Type of Action Other
Date Sundry Submitted: 06/14/2021	Time Sundry Submitted: 02:24
Date proposed operation will begin: 06/30/2021	

Procedure Description: Request to move Bottom Hole Location from 1,518' FSL & 130' FEL, Section 6, T-23-S, R-29-E, NESE, to 2,310' FSL & 130' FEL, Section 6, T-23-S, R-29-E, NESE. See attached for detailed changes to BOP/Choke and casing, cement, and mud programs. No changes were made to the surface string.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

RSFC_0106_213H_BHL_Change_of_Plans_Sundry_20210614141747.pdf

Well Name: RANA SALADA FED COM 0106	Well Location: T23S / R28E / SEC 1 / NWSW /	County or Parish/State:
Well Number: 213H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM091078	Unit or CA Name:	Unit or CA Number:
US Well Number:	Well Status: Approved Application for Permit to Drill	Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Conditions of Approval

Additional Reviews

RANA_SALADA_FED_COM_0106_213H_Drilling_COA_20210616101121.pdf

RANA_SALADA_FED_COM_0106_213H_SUNDRY_APD_Calculations_20210616101055.pdf

Operator Certification

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: JUSTIN CARTER	Signed on: JUN 14, 2021 02:24 PM
Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC	
Title: Landman	
Street Address: 1001 West Wilshire Boulevard Suite 206	
City: Oklahoma City	State: OK
Phone: (405) 286-3375	
Email address: JCARTER@NOVOOG.COM	

Field Representative

Representative Name:		
Street Address:		
City:	State:	Zip:
Phone:		
Email address:		

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5752342234	BLM POC Email Address: cwalls@blm.gov
Disposition: Approved	Disposition Date: 06/17/2021
Signature: Chris Walls	

CHANGE TO PLANS

Move Bottom Hole Location

From: 1,518' FSL & 130' FEL, Section 6, T-23-S, R-29-E, NESE

To: 2,310' FSL & 130' FEL, Section 6, T-23-S, R-29-E, NESE

BOP & Choke

From: 10M

To: 5M (see diagrams attached)

Casing Depth Interval Change (TMD)

Surface Casing (13-3/8"): 0' – 401'

Intermediate Casing (8-5/8"): 0' – 9,820'

Production Casing (5-1/2"): 0' – 21,920'

Single Stage Cement Job for 8-5/8" Intermediate Casing String (TOC = Surface)

Tail: 344 Sacks; 556.7 cu. ft.; 100% excess; 1.62 cu. ft./sx; 13.80 ppg; Class C cement + Gel + Accelerator, + LCM; 1200 psi 24-hour comprehensive strength

Single Stage Cement Job for 8-5/8" Intermediate Casing String (TOC = Surface)

Lead: 663 Sacks; 2372.2 cu. ft.; 100% excess; 3.58 cu.ft./sx; 10 ppg; Class C + retarder + LCM + beads; 900 psi 24-hour compressive strength.

Tail: 130 Sacks; 180.7 cu. ft; 50% excess; 1.39 cu.ft./sx; 13.80 ppg; Class C + retarder + LCM; 1200 psi 24-hour compressive strength.

Singe Stage Cement Job for 5-1/2" Production Casing String (TOC = Surface)

Lead: 776 Sacks; 1,646 cu. ft.; 20% excess; 2.12 cu.ft./sx; 12 ppg; Class C + retarder; 1,200 psi 24-hour compressive strength.

Tail: 2,065 Sacks; 3,282.6 cu. ft; 20% excess; 1.59 cu.ft./sx; 13.20 ppg; Class C + retarder; 1,200 psi 24-hour compressive strength.

Drilling Fluid Program Changes

Fresh water spud mud: 0' – 401'; 8.3 ppg

Brine Diesel Emulsion: 401' – 9,820'; 8.8-9.6 ppg

Oil Based Mud: 9,820 – 21,920'; 12-12.5 ppg

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

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office
☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

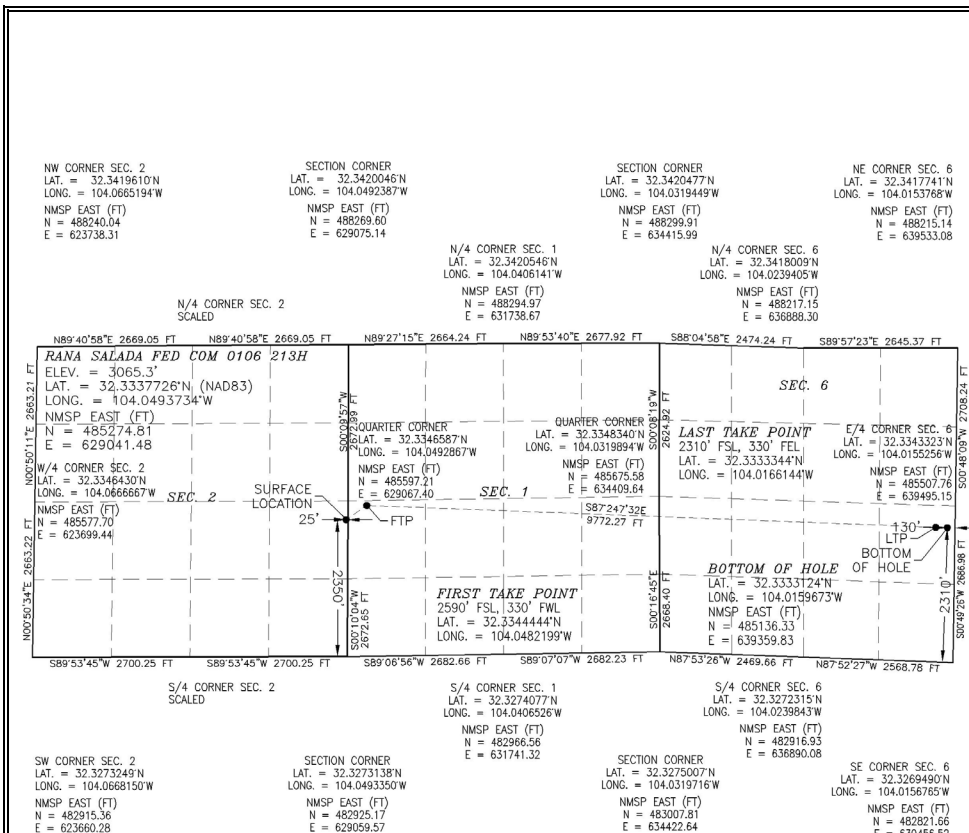
¹ API Number 30-015-48546	² Pool Code 98220	³ Pool Name Purple Sage; Wolfcamp Gas Pool
⁴ Property Code	⁵ Property Name RANA SALADA FED COM 0106	⁶ Well Number 213H
⁷ OGRID No. 372920	⁸ Operator Name NOVO OIL & GAS NORTHERN DELAWARE, LLC	⁹ Elevation 3065.3

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	2	23 S	28 E		2350	SOUTH	25	EAST	EDDY

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	6	23 S	29 E		2310	SOUTH	130	EAST	EDDY

¹² Dedicated Acres 633.49	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



17 OPERATOR CERTIFICATION

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

Justin Carter 6/2/2021
Signature Date

Justin Carter

Printed Name

jcarter@novoog.com

E-mail Address

18 SURVEYOR CERTIFICATION

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

JUNE 1, 2021

Date of Survey

Justin Carter
Signature and Seal of Professional Surveyor:

Certificate Number: 12797
Surveyor No. 8910C

Intent ☐ As Drilled ☐

API #		
Operator Name: NOVO OIL & GAS NORTHERN DELAWARE, LLC	Property Name: RANA SALADA FED COM 0106	Well Number 213H

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude				NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
L	1	23S	28E		2590	SOUTH	330	WEST	EDDY
Latitude 32.3344444					Longitude 104.0482199				NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
I	6	23S	29E		2310	SOUTH	330	EAST	EDDY
Latitude 32.3333344					Longitude 104.0166144				NAD 83

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018



NOVO OIL & GAS NORTHERN DELAWARE, LLC

Rana Salada Fed Com 0106 213H

SHL: 2350' FNL & 25' FEL Section 02-23S-28E

BHL: 2,310' FSL & 130' FEL Section 06-23S-29E

Eddy County, New Mexico

DRILLING OPERATIONS PLAN

Standard Wolfcamp 3-STRING CASING DESIGN (Not Secretary's Potash or R-111-P)

Estimated Drilling Conditions

Target Formation	Wolfcamp B
Target Depth - TVD (ft)	10520
Planned MD (ft)	21920
Anticipated Bottom-Hole Pressure (psi)	6838
Anticipated Maximum Surface Pressure (psi)	4523.6
Abnormal Pressure (Yes/No)	No
Anticipated Bottom-Hole Temperature (deg F)	215 deg F
H2S Contingency Plan Required (Yes/No)	Yes

Geologic Formations

	GR	KB (25')	
Elevation	3,065	3,090	
Formation Tops	TVDss	TVD - KB	Mineral Resources
Rustler	2,739	351	Water
Bell Canyon (base of salt)	500	2,590	Water
Cherry Canyon	-575	3,665	Water
Brushy Canyon	-1,588	4,678	Oil, Gas, Water
Bone Spring Lime	-3,031	6,121	Oil, Gas, Water
Lower Avalon	-3,539	6,629	Oil, Gas, Water
1st Bone Spring Sand	-3,998	7,088	Oil, Gas, Water
2nd Bone Spring Carbonate	-4,211	7,301	Oil, Gas, Water
2nd Bone Spring Sand	-4,746	7,836	Oil, Gas, Water
3rd Bone Spring Carbonate	-5,043	8,133	Oil, Gas, Water
3rd Bone Spring Sand	-6,090	9,180	Oil, Gas, Water
Wolfcamp XY	-6,370	9,460	Oil, Gas, Water
Wolfcamp A	-6,575	9,665	Oil, Gas, Water
Wolfcamp B	-6,780	9,870	Oil, Gas, Water
Wolfcamp B Flow Unit	-7,400	10,490	Oil, Gas, Water
Wolfcamp C	-7,633	10,723	Oil, Gas, Water

Pressure Control Equipment and Pressure Testing Procedure

A 13-5/8" 5M Blowout Preventer system will be installed on a multi-bowl wellhead with a 13-5/8 flanged casing spool.

The top flange of casing spool will be set in a cellar below ground level. The blowout preventor system will consist of a single pipe ram on bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top and annular preventer. The blowout preventer will be installed on top of the 13-3/8" surface casing and will remain installed to total depth of the well. Wellhead, blowout preventer and choke manifold diagrams have been included. A co-flex line will be used between the BOP system and the choke manifold. A pressure test certification form for the co-flex hose will be available on the location at the time of the BOP testing.

The BOP system will be isolated with a test plug and tested by an independent tester to 250 psi low and 5,000 psi high for 10 minutes.

The Surface Casing will be pressure tested to 250 psi low and 1500 psi high. Intermediate Casing will be pressure tested to 250 psi low and (.22 psi x Shoe TVD, which is equivalent to 2160.4 psi) high for 30 minutes

Drilling Fluid Program

Depth Interval (ft)	Hole Size (in.)	Fluid Type	Mud Weight (ppg)	Funnel Viscosity (sec/qt)	API Fluid Loss (ml/30min)	Total Solids (%)
0 - 401	17-1/2	Water Based Spud Mud	8.3	30-60	N/C	2.0-8.0
401 - 9,820	9-7/8"	Brine Diesel Emulsion or Brine	8.8-9.6	35-45	N/C	1.0-4.0
9,820 - 21,920	7-7/8"	Oil Based Mud	12-12.5	35-65	4-6 cc's	1.0-8.0
Drilling Fluid System A closed loop drilling system will be used.						

Casing Program

Depth Interval	Length (ft)	Hole Size	Casing Size	Weight (ppf)	Grade	Coupling	Notes
0' - 401'	401	17-1/2	13-3/8"	54.50	J-55	BTC	
0' - 9,820'	9,820	9-7/8"	8-5/8"	32.00	P-110	TLW	
0' - 21,920'	21,920	7-7/8"	5-1/2"	20.00	P-110	DWC/C IS+	

Note: 8-5/8" 32# P110 USS Talon HTQ has the same specs as the 8-5/8" TLW casing, and may be substituted if inventory issues occur.

Casing Centralizers

Surface Casing: Centralizers will be run on the bottom 3 joints of casing and then 1 centralizer per joint to surface.

Casing Performance Properties and Design Criteria

Depth Interval	Collapse (psi)	Burst (psi)	Joint Strength (1000 lbs)	Actual Design Safety Factors			Notes
				Collapse	Burst	Tension	
0' - 401'	1,130	2,730	853	6.51	1.82	7.16	
0' - 9,820'	4,230	8,930	1144	1.34	5.95	3.14	Collapse: 1/3 fluid filled at all times
0' - 21,920'	12,090	14,360	729	2.74	1.25	2.62	
Design Safety Factors Design safety factors will meet or exceed as shown.							

Surface Casing

Collapse: $DF_C = 1.125$

- Full Internal Evacuation: Collapse force is equal to mud gradient (0.433 psi/ft) in which the casing will be run and internal evacuation of casing.
- Cementing: Collapse force is equal net force of the planned cement slurry gradient (0.718 psi/ft) in which the casing will be run and internal force equivalent to fresh water displacement gradient (0.433 psi/ft).

Burst: $DF_B = 1.125$

- Casing Pressure Test: According to BLM Onshore Order No. 2 with 0.22 psi/ft or 1500 psi, whichever is greater but not to exceed 70 percent of the minimum internal yield.

Tensile: $DF_T = 1.60$

- Overpull: A tensile force of 100,000 lbs over string weight with a bouyancy factor of 0.8727 in water (8.33 ppg).

Intermediate Casing

Collapse: $DF_C = 1.125$

- Partial (2/3rd) Internal Evacuation: Casing will remain greater than 1/3 fluid filled at all times with a mud weight greather than 11 ppg**
- Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run.
- Cementing: Collapse force is equal net force of the planned cement slurry gradient (0.626 psi/ft) in which the casing will be run and internal force equivalent to the displacement fluid gradient.

Burst: $DF_B = 1.125$

- Casing Pressure Test: According to BLM Onshore Order No. 2 with 0.22 psi/ft or 1500 psi, whichever is greater but not to exceed 70 percent of the minimum internal yield.
- Gas Kick: Internal burst load of a 50 bbl gas kick at the casing with drillpipe in the hole. External force will be 10.2 ppg brine water gradient (0.531 psi/ft) and intrenal force will be with 10.0 ppg brine water gradient (0.521 psi/ft) with gas kick.

Tensile: $DF_T = 1.60$

- Overpull: A tensile force of 100,000 lbs over string weight with a bouyancy factor of 0.8441 in brine water (10.2 ppg).

Production CasingCollapse: $DF_C = 1.125$

- a. Full Internal Evacuation: Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run and internal evacuation of casing.
- b. Cementing: Collapse force is equal net force of the planned cement slurry gradient (0.688 psi/ft) in which the casing will be run and internal force equivalent to fresh water displacement gradient (0.433 psi/ft).

Burst: $DF_B = 1.125$

- a. Pressure Test: Pressure test will be to 80% of Internal Yield Pressure of casing intended for fracture stimulation.

Tensile: $DF_T = 1.60$

- a. Overpull: A tensile force of 100,000 lbs over string weight with a bouyancy factor of 0.8472 in oil-based mud (10.0 ppg).

Cementing Program**Surface Casing Cement:**

0' - 401'

Top of Cement: Surface

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead								
Tail	344	556.7	99.2	13.80	1.62	7.67	1,200	100.0%

Lead: N/A

Tail: Class C Cement with Gel, Accelerator, LCM

Intermediate Casing Cement:

Top of Lead 0

Top of Tail 8,820

Surface Shoe Depth 401

Intermediate Shoe Depth 9,820

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead	663	2372.3	422.5	10.00	3.58	19.15	900	100.0%
Tail	130.0	180.7	32.2	13.80	1.39	6.57	1,200	50.0%

Lead: Class C or H Cement with Fluid Loss, Retarder, LCM, Possibly beaded for desired compressive strength

Tail: Class C or H Cement with Fluid Loss, Retarder, LCM

Production Casing Cement:

0' - 21,920'

Top of Cement/Lead: 0'

Top of Tail: 7,820'

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead	776	1646.2	293.2	12.00	2.12	11.91	1,200	20.0%
Tail	2065	3282.6	584.6	13.20	1.59	7.98	1,200	20.0%

Lead: Class H Cement with Fluid Loss, Retarder, LCM

Tail: Class H Cement with Fluid Loss, Retarder, LCM

Logging, Testing & Coring Program

A gamma ray log will be acquired by directional drilling Measure While Drilling tools from the intermediate casing to Total Depth.



NOVO OIL & GAS, LLC

Date

2/21/2019

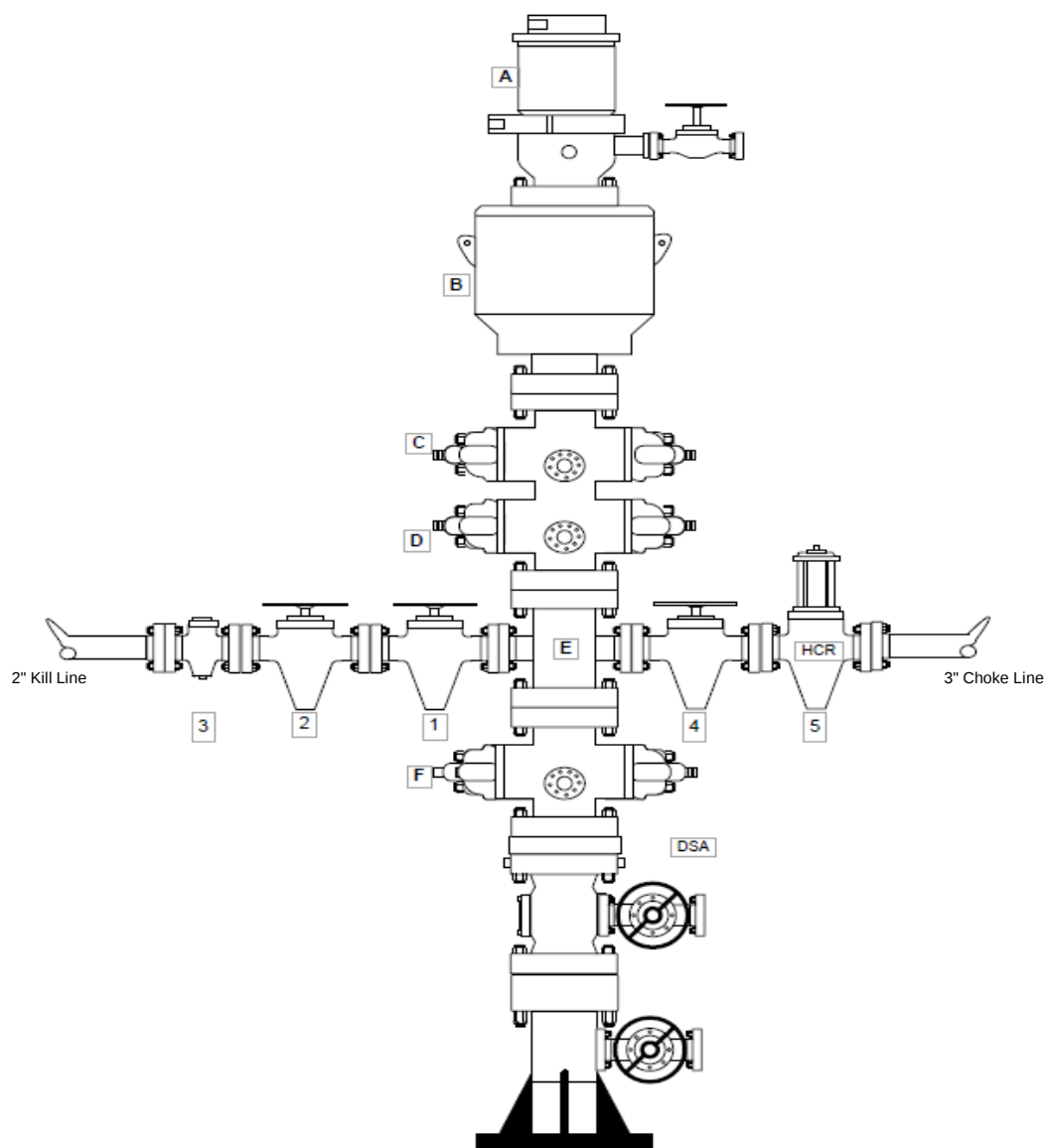
1001 West Wilshire Boulevard, Suite 206
Oklahoma City, Oklahoma 73116

Page No.

1 of 1

5M BLOWOUT PREVENTER SCHEMATIC

BLOWOUT PREVENTOR COMPONENTS			
ITEM	SIZE	PRESSURE	DESCRIPTION
A	13-5/8"	1,500 psi	Rotating Head + Valve
B	13-5/8"	5,000 psi	Annular Preventer
C	13-5/8"	5,000 psi	Pipe Rams
D	13-5/8"	5,000 psi	Blind Rams
E	13-5/8"	5,000 psi	Mud Cross
F	13-5/8"	5,000 psi	Pipe Rams



KILL LINE			
ITEM	SIZE	PRESSURE	DESCRIPTION
1	2"	5,000 psi	Gate Valve
2	2"	5,000 psi	Gate Valve
3	2"	5,000 psi	Check Valve

CHOKE LINE			
ITEM	SIZE	PRESSURE	DESCRIPTION
4	3"	5,000 psi	Gate Valve
5	3"	5,000 psi	HCR Valve



NOVO OIL & GAS, LLC

Date

7/15/2019

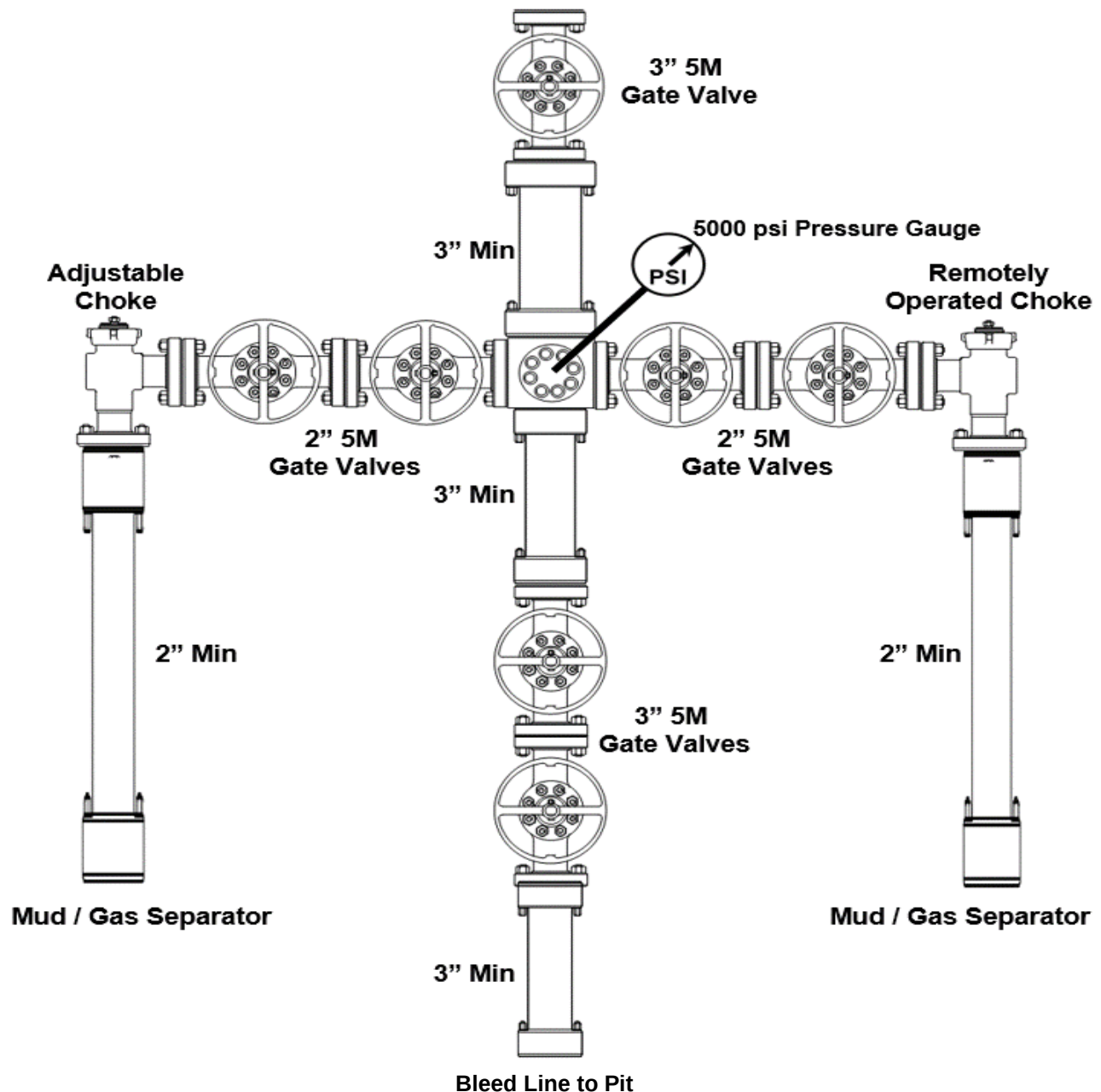
1001 West Wilshire Boulevard, Suite 206
Oklahoma City, Oklahoma 73116

Page No.

1 of 1

5M CHOKE MANIFOLD SCHEMATIC

ITEM	SIZE	PRESSURE	DESCRIPTION



WELL DETAILS: Rana Salada Fed Com 0106 213H Plan 1

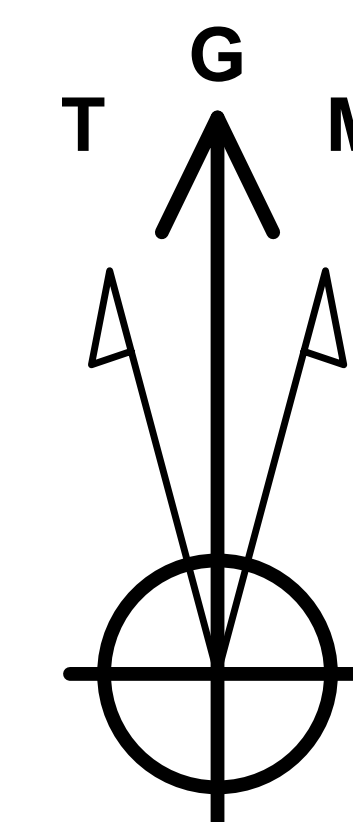
GL Elev (ft.): 3065.3

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	485274.81	629041.48	32° 20' 1.582 N	104° 2' 57.744 W

SECTION DETAILS

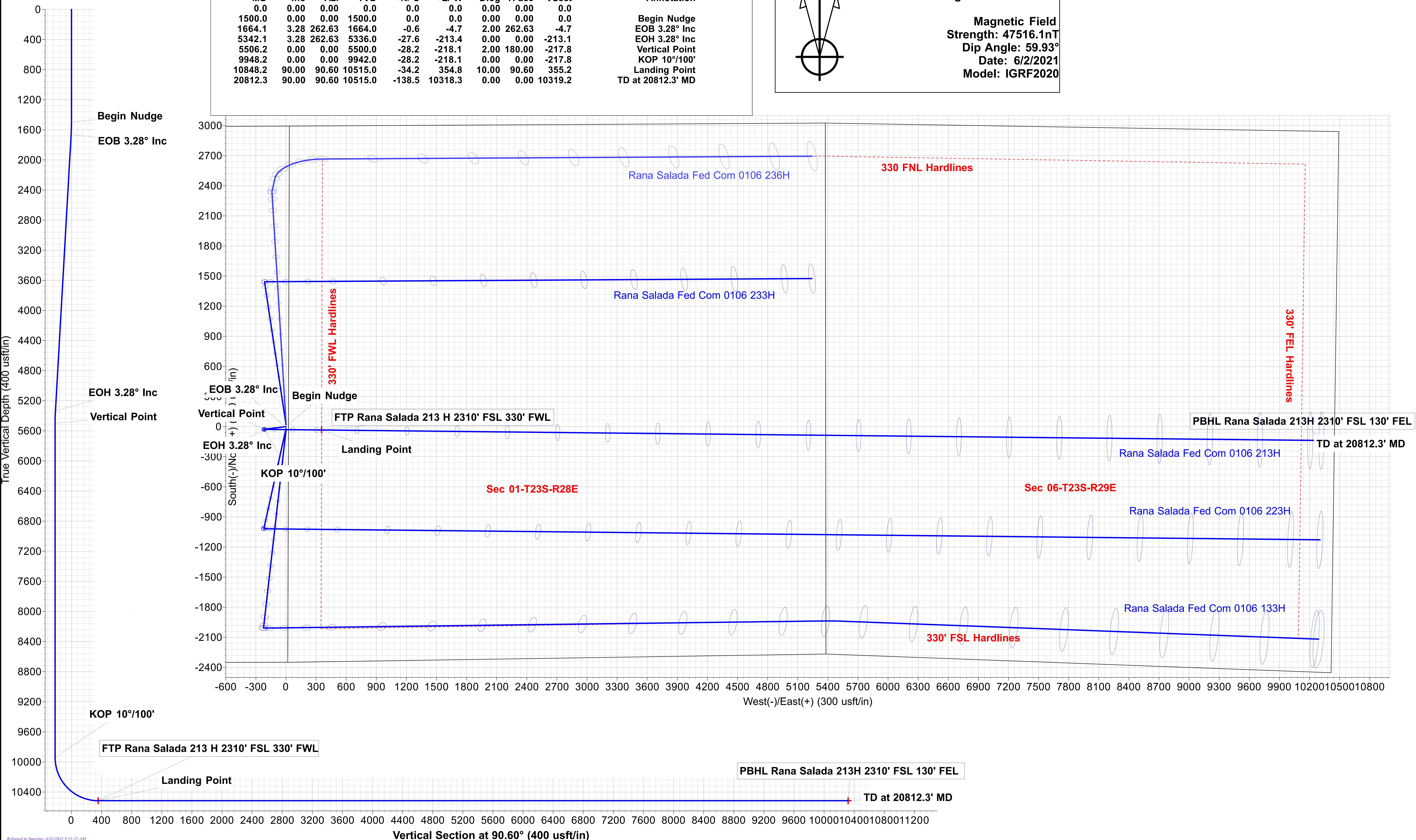
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	Begin Nudge
1664.1	3.28	262.63	1664.0	-0.6	-4.7	2.00	262.63	-4.7	EOB 3.28° Inc
5342.1	3.28	262.63	5336.0	-27.6	-213.4	0.00	0.00	-213.1	EOH 3.28° Inc
5506.2	0.00	0.00	5500.0	-28.2	-218.1	2.00	180.00	-217.8	Vertical Point
9948.2	0.00	0.00	9942.0	-28.2	-218.1	0.00	0.00	-217.8	KOP 10°/100'
10848.2	90.00	90.60	10515.0	-34.2	354.8	10.00	90.60	355.2	Landing Point
20812.3	90.00	90.60	10515.0	-138.5	10318.3	0.00	0.00	10319.2	TD at 20812.3' MD

Project: EDDY CO., NM (NAD83)
Site: SEC 02-T23S-R28E
Well: Rana Salada Fed Com 0106 213H
Wellbore: Wellbore #1
Design: Plan 1



Azimuths to Grid North
True North: -0.15°
Magnetic North: 6.63°

Magnetic Field
Strength: 47516.1nT
Dip Angle: 59.93°
Date: 6/2/2021
Model: IGRF2020





NOVO Oil & Gas

EDDY CO., NM (NAD83)

SEC 02-T23S-R28E

Rana Salada Fed Com 0106 213H

Wellbore #1

Plan 1

Anticollision Report

08 June, 2021





SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference	Plan 1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum centre distance of 738.7usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	6/8/2021		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	20,812.3	Plan 1 (Wellbore #1)	MWD	MWD - Standard	

Summary						
	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Site Name Offset Well - Wellbore - Design						
SEC 02-T23S-R28E						
Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1	800.0	799.0	40.0	36.4	11.042	CC, ES
Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1	900.0	897.6	41.7	37.7	10.350	SF
Rana Salada Fed Com 0106 223H - Wellbore #1 - Plan 1	1,500.0	1,499.5	20.0	13.3	2.983	CC, ES, SF
Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1	1,416.5	1,417.0	20.0	13.7	3.157	CC
Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1	1,500.0	1,500.5	20.0	13.3	2.982	ES, SF
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	616.3	617.3	40.0	37.1	14.070	CC
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	700.0	701.0	40.0	36.8	12.509	ES
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	800.0	800.0	41.7	38.1	11.516	SF

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1													Offset Site Error:	0.0 usft
Survey Program:		0-MWD						Rule Assigned:					Offset Well Error:	0.5 usft
Reference	Offset	Semi Major Axis		Offset Wellbore Centre			Distance		Minimum Separation (usft)	Separation Factor	Warning			
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	+N/-S (usft)	+E/-W (usft)				Between Centres (usft)	Between Ellipses (usft)	
0.0	0.0	0.0	0.0	0.5	0.5	-179.83	-40.0	-0.1	40.0					
100.0	100.0	99.0	99.0	0.5	0.5	-179.83	-40.0	-0.1	40.0	38.9	1.05	37.923		
200.0	200.0	199.0	199.0	0.6	0.6	-179.83	-40.0	-0.1	40.0	38.7	1.27	31.472		
300.0	300.0	299.0	299.0	0.8	0.8	-179.83	-40.0	-0.1	40.0	38.4	1.59	25.184		
400.0	400.0	399.0	399.0	1.0	1.0	-179.83	-40.0	-0.1	40.0	38.0	1.96	20.428		
500.0	500.0	499.0	499.0	1.2	1.2	-179.83	-40.0	-0.1	40.0	37.6	2.36	16.979		
600.0	600.0	599.0	599.0	1.4	1.4	-179.83	-40.0	-0.1	40.0	37.2	2.77	14.444		
700.0	700.0	699.0	699.0	1.6	1.6	-179.83	-40.0	-0.1	40.0	36.8	3.19	12.528		
800.0	800.0	799.0	799.0	1.8	1.8	-179.83	-40.0	-0.1	40.0	36.4	3.62	11.042 CC, ES		
900.0	900.0	897.6	897.6	2.0	2.0	-179.58	-41.7	-0.3	41.7	37.7	4.03	10.350 SF		
1,000.0	1,000.0	996.0	995.8	2.2	2.2	-178.92	-46.7	-0.9	46.8	42.4	4.41	10.599		
1,100.0	1,100.0	1,093.9	1,093.4	2.5	2.4	-178.10	-55.0	-1.8	55.3	50.5	4.80	11.506		
1,200.0	1,200.0	1,191.1	1,189.9	2.7	2.6	-177.30	-66.5	-3.1	67.2	62.0	5.20	12.920		
1,300.0	1,300.0	1,287.4	1,285.1	2.9	2.8	-176.62	-81.1	-4.8	82.4	76.8	5.60	14.730		
1,400.0	1,400.0	1,382.6	1,378.6	3.1	3.1	-176.07	-98.7	-6.8	101.0	95.0	5.99	16.848		
1,500.0	1,500.0	1,476.6	1,470.3	3.4	3.4	-175.63	-119.0	-9.1	122.8	116.4	6.39	19.211		
1,600.0	1,600.0	1,570.1	1,560.9	3.6	3.8	-78.09	-142.2	-11.7	147.3	140.5	6.78	21.728		
1,700.0	1,699.9	1,666.9	1,654.4	3.8	4.2	-79.08	-167.0	-14.6	172.2	165.0	7.20	23.910		
1,800.0	1,799.7	1,763.7	1,747.9	4.0	4.6	-80.28	-191.9	-17.4	197.1	189.4	7.64	25.792		
1,900.0	1,899.5	1,860.5	1,841.4	4.2	5.0	-81.20	-216.8	-20.2	222.0	213.9	8.09	27.446		

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 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)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,000.0	1,999.4	1,957.3	1,934.9	4.4	5.5	-81.94	-241.7	-23.0	246.9	238.4	8.55	28.886	
2,100.0	2,099.2	2,054.1	2,028.4	4.6	5.9	-82.55	-266.6	-25.9	271.9	262.9	9.02	30.157	
2,200.0	2,199.0	2,150.9	2,121.9	4.8	6.4	-83.05	-291.5	-28.7	296.9	287.4	9.49	31.282	
2,300.0	2,298.9	2,247.6	2,215.3	5.0	6.9	-83.48	-316.4	-31.5	322.0	312.0	9.97	32.282	
2,400.0	2,398.7	2,344.4	2,308.8	5.3	7.4	-83.84	-341.2	-34.4	347.0	336.6	10.46	33.174	
2,500.0	2,498.5	2,441.2	2,402.3	5.5	7.8	-84.16	-366.1	-37.2	372.1	361.1	10.95	33.973	
2,600.0	2,598.4	2,538.0	2,495.8	5.7	8.3	-84.43	-391.0	-40.0	397.1	385.7	11.45	34.693	
2,700.0	2,698.2	2,634.8	2,589.3	5.9	8.8	-84.67	-415.9	-42.8	422.2	410.3	11.95	35.342	
2,800.0	2,798.0	2,731.6	2,682.8	6.2	9.3	-84.89	-440.8	-45.7	447.3	434.9	12.45	35.931	
2,900.0	2,897.9	2,828.4	2,776.3	6.4	9.8	-85.08	-465.7	-48.5	472.4	459.4	12.95	36.467	
3,000.0	2,997.7	2,925.2	2,869.8	6.6	10.3	-85.25	-490.5	-51.3	497.5	484.0	13.46	36.956	
3,100.0	3,097.6	3,022.0	2,963.3	6.9	10.8	-85.41	-515.4	-54.1	522.6	508.6	13.97	37.404	
3,200.0	3,197.4	3,118.8	3,056.8	7.1	11.3	-85.55	-540.3	-57.0	547.7	533.2	14.48	37.815	
3,300.0	3,297.2	3,215.6	3,150.3	7.3	11.8	-85.68	-565.2	-59.8	572.8	557.8	15.00	38.194	
3,400.0	3,397.1	3,312.3	3,243.8	7.6	12.3	-85.80	-590.1	-62.6	597.9	582.4	15.51	38.544	
3,500.0	3,496.9	3,409.1	3,337.3	7.8	12.7	-85.91	-615.0	-65.5	623.0	607.0	16.03	38.867	
3,600.0	3,596.7	3,505.9	3,430.8	8.1	13.2	-86.01	-639.9	-68.3	648.1	631.6	16.55	39.168	
3,700.0	3,696.6	3,602.7	3,524.3	8.3	13.7	-86.10	-664.7	-71.1	673.2	656.1	17.07	39.447	
3,800.0	3,796.4	3,699.5	3,617.8	8.5	14.2	-86.19	-689.6	-73.9	698.3	680.7	17.59	39.708	
3,900.0	3,896.2	3,796.3	3,711.3	8.8	14.7	-86.27	-714.5	-76.8	723.4	705.3	18.11	39.951	

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 223H - Wellbore #1 - Plan 1													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.5 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.5	0.5	-179.83	-20.0	-0.1	20.0				
100.0	100.0	99.5	99.5	0.5	0.5	-179.83	-20.0	-0.1	20.0	18.9	1.06	18.957	
200.0	200.0	199.5	199.5	0.6	0.6	-179.83	-20.0	-0.1	20.0	18.7	1.27	15.728	
300.0	300.0	299.5	299.5	0.8	0.8	-179.83	-20.0	-0.1	20.0	18.4	1.59	12.585	
400.0	400.0	399.5	399.5	1.0	1.0	-179.83	-20.0	-0.1	20.0	18.0	1.96	10.209	
500.0	500.0	499.5	499.5	1.2	1.2	-179.83	-20.0	-0.1	20.0	17.6	2.36	8.486	
600.0	600.0	599.5	599.5	1.4	1.4	-179.83	-20.0	-0.1	20.0	17.2	2.77	7.219	
700.0	700.0	699.5	699.5	1.6	1.6	-179.83	-20.0	-0.1	20.0	16.8	3.19	6.262	
800.0	800.0	799.5	799.5	1.8	1.8	-179.83	-20.0	-0.1	20.0	16.4	3.62	5.520	
900.0	900.0	899.5	899.5	2.0	2.0	-179.83	-20.0	-0.1	20.0	15.9	4.06	4.929	
1,000.0	1,000.0	999.5	999.5	2.2	2.2	-179.83	-20.0	-0.1	20.0	15.5	4.49	4.450	
1,100.0	1,100.0	1,099.5	1,099.5	2.5	2.5	-179.83	-20.0	-0.1	20.0	15.1	4.93	4.054	
1,200.0	1,200.0	1,199.5	1,199.5	2.7	2.7	-179.83	-20.0	-0.1	20.0	14.6	5.37	3.721	
1,300.0	1,300.0	1,299.5	1,299.5	2.9	2.9	-179.83	-20.0	-0.1	20.0	14.2	5.82	3.438	
1,400.0	1,400.0	1,399.5	1,399.5	3.1	3.1	-179.83	-20.0	-0.1	20.0	13.7	6.26	3.195	
1,500.0	1,500.0	1,499.5	1,499.5	3.4	3.4	-179.83	-20.0	-0.1	20.0	13.3	6.70	2.983 CC, ES, SF	
1,600.0	1,600.0	1,598.8	1,598.8	3.6	3.5	-86.05	-21.7	-0.4	21.5	14.4	7.10	3.026	
1,700.0	1,699.9	1,697.8	1,697.7	3.8	3.7	-93.73	-26.7	-1.5	26.4	18.9	7.46	3.533	
1,800.0	1,799.7	1,796.5	1,796.0	4.0	3.9	-97.42	-35.0	-3.4	34.7	26.9	7.83	4.434	
1,900.0	1,899.5	1,894.7	1,893.4	4.2	4.1	-97.57	-46.5	-5.9	46.1	37.9	8.20	5.628	
2,000.0	1,999.4	1,992.0	1,989.6	4.4	4.3	-96.19	-61.1	-9.2	60.6	52.0	8.57	7.069	
2,100.0	2,099.2	2,088.3	2,084.2	4.6	4.5	-94.30	-78.8	-13.1	78.1	69.1	8.94	8.731	
2,200.0	2,199.0	2,184.1	2,177.6	4.8	4.8	-92.36	-99.3	-17.6	98.6	89.3	9.33	10.573	
2,300.0	2,298.9	2,281.7	2,272.6	5.0	5.1	-90.88	-121.2	-22.4	120.1	110.4	9.76	12.313	
2,400.0	2,398.7	2,379.3	2,367.6	5.3	5.5	-89.86	-143.1	-27.3	141.7	131.5	10.20	13.900	
2,500.0	2,498.5	2,476.9	2,462.6	5.5	5.8	-89.10	-165.0	-32.1	163.4	152.7	10.65	15.343	
2,600.0	2,598.4	2,574.5	2,557.6	5.7	6.2	-88.52	-186.8	-37.0	185.0	173.9	11.10	16.661	
2,700.0	2,698.2	2,672.1	2,652.6	5.9	6.5	-88.06	-208.7	-41.8	206.7	195.1	11.57	17.866	
2,800.0	2,798.0	2,769.7	2,747.6	6.2	6.9	-87.69	-230.6	-46.7	228.3	216.3	12.04	18.970	
2,900.0	2,897.9	2,867.4	2,842.6	6.4	7.3	-87.38	-252.5	-51.5	250.0	237.5	12.51	19.983	
3,000.0	2,997.7	2,965.0	2,937.6	6.6	7.7	-87.12	-274.4	-56.4	271.7	258.7	12.99	20.917	
3,100.0	3,097.6	3,062.6	3,032.6	6.9	8.1	-86.90	-296.3	-61.2	293.4	279.9	13.47	21.777	
3,200.0	3,197.4	3,160.2	3,127.6	7.1	8.6	-86.72	-318.2	-66.0	315.1	301.1	13.96	22.573	
3,300.0	3,297.2	3,257.8	3,222.6	7.3	9.0	-86.55	-340.1	-70.9	336.8	322.3	14.45	23.310	
3,400.0	3,397.1	3,355.4	3,317.7	7.6	9.4	-86.40	-361.9	-75.7	358.5	343.5	14.94	23.995	
3,500.0	3,496.9	3,453.0	3,412.7	7.8	9.8	-86.28	-383.8	-80.6	380.2	364.7	15.43	24.632	
3,600.0	3,596.7	3,550.7	3,507.7	8.1	10.3	-86.16	-405.7	-85.4	401.9	385.9	15.93	25.226	
3,700.0	3,696.6	3,648.3	3,602.7	8.3	10.7	-86.06	-427.6	-90.3	423.6	407.2	16.43	25.780	
3,800.0	3,796.4	3,745.9	3,697.7	8.5	11.1	-85.97	-449.5	-95.1	445.3	428.4	16.93	26.299	
3,900.0	3,896.2	3,843.5	3,792.7	8.8	11.6	-85.88	-471.4	-99.9	467.0	449.6	17.43	26.786	
4,000.0	3,996.1	3,941.1	3,887.7	9.0	12.0	-85.80	-493.3	-104.8	488.7	470.8	17.94	27.243	
4,100.0	4,095.9	4,038.7	3,982.7	9.3	12.5	-85.73	-515.2	-109.6	510.4	492.0	18.44	27.672	
4,200.0	4,195.8	4,136.3	4,077.7	9.5	12.9	-85.67	-537.0	-114.5	532.1	513.2	18.95	28.077	
4,300.0	4,295.6	4,233.9	4,172.7	9.7	13.4	-85.61	-558.9	-119.3	553.8	534.4	19.46	28.459	
4,400.0	4,395.4	4,331.6	4,267.7	10.0	13.8	-85.55	-580.8	-124.2	575.5	555.6	19.97	28.819	
4,500.0	4,495.3	4,429.2	4,362.7	10.2	14.3	-85.50	-602.7	-129.0	597.2	576.8	20.48	29.161	
4,600.0	4,595.1	4,526.8	4,457.7	10.5	14.7	-85.46	-624.6	-133.8	618.9	597.9	20.99	29.484	
4,700.0	4,694.9	4,624.4	4,552.7	10.7	15.2	-85.41	-646.5	-138.7	640.6	619.1	21.51	29.791	
4,800.0	4,794.8	4,722.0	4,647.7	11.0	15.6	-85.37	-668.4	-143.5	662.4	640.3	22.02	30.082	
4,900.0	4,894.6	4,819.6	4,742.7	11.2	16.1	-85.33	-690.3	-148.4	684.1	661.5	22.53	30.358	
5,000.0	4,994.4	4,917.2	4,837.7	11.4	16.5	-85.30	-712.2	-153.2	705.8	682.7	23.05	30.622	
5,100.0	5,094.3	5,014.9	4,932.7	11.7	17.0	-85.26	-734.0	-158.1	727.5	703.9	23.56	30.873	

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.5	0.5	0.5	0.5	0.17	20.0	0.1	20.0				
100.0	100.0	100.5	100.5	0.5	0.5	0.17	20.0	0.1	20.0	18.9	1.06	18.945	
200.0	200.0	200.5	200.5	0.6	0.6	0.17	20.0	0.1	20.0	18.7	1.27	15.710	
300.0	300.0	300.5	300.5	0.8	0.8	0.17	20.0	0.1	20.0	18.4	1.59	12.571	
400.0	400.0	400.5	400.5	1.0	1.0	0.17	20.0	0.1	20.0	18.0	1.96	10.199	
500.0	500.0	500.5	500.5	1.2	1.2	0.17	20.0	0.1	20.0	17.6	2.36	8.479	
600.0	600.0	600.5	600.5	1.4	1.4	0.17	20.0	0.1	20.0	17.2	2.77	7.214	
700.0	700.0	700.5	700.5	1.6	1.6	0.17	20.0	0.1	20.0	16.8	3.20	6.258	
800.0	800.0	800.5	800.5	1.8	1.8	0.17	20.0	0.1	20.0	16.4	3.63	5.516	
900.0	900.0	900.5	900.5	2.0	2.0	0.17	20.0	0.1	20.0	15.9	4.06	4.927	
1,000.0	1,000.0	1,000.5	1,000.5	2.2	2.2	0.17	20.0	0.1	20.0	15.5	4.50	4.448	
1,100.0	1,100.0	1,100.5	1,100.5	2.5	2.5	0.17	20.0	0.1	20.0	15.1	4.94	4.052	
1,200.0	1,200.0	1,200.5	1,200.5	2.7	2.7	0.17	20.0	0.1	20.0	14.6	5.38	3.720	
1,300.0	1,300.0	1,300.5	1,300.5	2.9	2.9	0.17	20.0	0.1	20.0	14.2	5.82	3.437	
1,400.0	1,400.0	1,400.5	1,400.5	3.1	3.1	0.17	20.0	0.1	20.0	13.7	6.26	3.194	
1,416.5	1,416.5	1,417.0	1,417.0	3.2	3.2	0.17	20.0	0.1	20.0	13.7	6.34	3.157 CC	
1,500.0	1,500.0	1,500.5	1,500.5	3.4	3.4	0.17	20.0	0.1	20.0	13.3	6.71	2.982 ES, SF	
1,600.0	1,600.0	1,600.0	1,600.0	3.6	3.6	101.31	21.7	-0.2	22.0	14.9	7.13	3.085	
1,700.0	1,699.9	1,698.7	1,698.5	3.8	3.8	108.84	26.8	-1.0	28.3	20.8	7.54	3.755	
1,800.0	1,799.7	1,797.1	1,796.6	4.0	4.0	112.45	35.2	-2.2	38.4	30.4	7.95	4.824	
1,900.0	1,899.5	1,894.8	1,893.6	4.2	4.2	112.92	46.9	-4.0	51.6	43.2	8.36	6.169	
2,000.0	1,999.4	1,991.6	1,989.2	4.4	4.5	112.02	61.6	-6.2	67.9	59.1	8.76	7.742	
2,100.0	2,099.2	2,087.3	2,083.2	4.6	4.8	110.63	79.3	-8.9	87.2	78.0	9.16	9.516	
2,200.0	2,199.0	2,182.0	2,175.6	4.8	5.0	109.14	99.9	-11.9	109.6	100.0	9.56	11.463	
2,300.0	2,298.9	2,279.1	2,270.0	5.0	5.4	107.91	122.3	-15.3	133.4	123.4	10.02	13.314	
2,400.0	2,398.7	2,376.2	2,364.4	5.3	5.7	107.06	144.7	-18.7	157.2	146.7	10.47	15.004	
2,500.0	2,498.5	2,473.3	2,458.8	5.5	6.1	106.43	167.1	-22.0	181.0	170.0	10.94	16.540	
2,600.0	2,598.4	2,570.4	2,553.2	5.7	6.4	105.95	189.6	-25.4	204.8	193.4	11.41	17.945	
2,700.0	2,698.2	2,667.5	2,647.7	5.9	6.8	105.57	212.0	-28.8	228.7	216.8	11.89	19.230	
2,800.0	2,798.0	2,764.6	2,742.1	6.2	7.2	105.26	234.4	-32.1	252.5	240.2	12.37	20.411	
2,900.0	2,897.9	2,861.7	2,836.5	6.4	7.6	105.00	256.8	-35.5	276.4	263.5	12.86	21.497	
3,000.0	2,997.7	2,958.8	2,930.9	6.6	8.0	104.79	279.2	-38.9	300.3	286.9	13.35	22.499	
3,100.0	3,097.6	3,055.9	3,025.3	6.9	8.4	104.60	301.7	-42.3	324.1	310.3	13.84	23.426	
3,200.0	3,197.4	3,153.0	3,119.8	7.1	8.8	104.45	324.1	-45.6	348.0	333.7	14.33	24.285	
3,300.0	3,297.2	3,250.1	3,214.2	7.3	9.2	104.31	346.5	-49.0	371.9	357.1	14.83	25.083	
3,400.0	3,397.1	3,347.2	3,308.6	7.6	9.7	104.19	368.9	-52.4	395.8	380.4	15.32	25.826	
3,500.0	3,496.9	3,444.3	3,403.0	7.8	10.1	104.08	391.3	-55.7	419.6	403.8	15.82	26.519	
3,600.0	3,596.7	3,541.4	3,497.5	8.1	10.5	103.98	413.8	-59.1	443.5	427.2	16.33	27.167	
3,700.0	3,696.6	3,638.5	3,591.9	8.3	10.9	103.90	436.2	-62.5	467.4	450.6	16.83	27.774	
3,800.0	3,796.4	3,735.7	3,686.3	8.5	11.4	103.82	458.6	-65.8	491.3	474.0	17.33	28.343	
3,900.0	3,896.2	3,832.8	3,780.7	8.8	11.8	103.75	481.0	-69.2	515.2	497.3	17.84	28.877	
4,000.0	3,996.1	3,929.9	3,875.1	9.0	12.3	103.68	503.4	-72.6	539.1	520.7	18.35	29.380	
4,100.0	4,095.9	4,027.0	3,969.6	9.3	12.7	103.62	525.9	-75.9	562.9	544.1	18.86	29.855	
4,200.0	4,195.8	4,124.1	4,064.0	9.5	13.1	103.57	548.3	-79.3	586.8	567.5	19.37	30.302	
4,300.0	4,295.6	4,221.2	4,158.4	9.7	13.6	103.52	570.7	-82.7	610.7	590.8	19.88	30.726	
4,400.0	4,395.4	4,318.3	4,252.8	10.0	14.0	103.47	593.1	-86.0	634.6	614.2	20.39	31.127	
4,500.0	4,495.3	4,415.4	4,347.2	10.2	14.5	103.43	615.5	-89.4	658.5	637.6	20.90	31.506	
4,600.0	4,595.1	4,512.5	4,441.7	10.5	14.9	103.39	638.0	-92.8	682.4	660.9	21.41	31.867	
4,700.0	4,694.9	4,609.6	4,536.1	10.7	15.3	103.35	660.4	-96.1	706.2	684.3	21.93	32.210	
4,800.0	4,794.8	4,706.7	4,630.5	11.0	15.8	103.32	682.8	-99.5	730.1	707.7	22.44	32.536	

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.5	0.5	0.17	40.0	0.1	40.0				
100.0	100.0	101.0	101.0	0.5	0.5	0.17	40.0	0.1	40.0	38.9	1.06	37.868	
200.0	200.0	201.0	201.0	0.6	0.6	0.17	40.0	0.1	40.0	38.7	1.27	31.396	
300.0	300.0	301.0	301.0	0.8	0.8	0.17	40.0	0.1	40.0	38.4	1.59	25.123	
400.0	400.0	401.0	401.0	1.0	1.0	0.17	40.0	0.1	40.0	38.0	1.96	20.383	
500.0	500.0	501.0	501.0	1.2	1.2	0.17	40.0	0.1	40.0	37.6	2.36	16.946	
600.0	600.0	601.0	601.0	1.4	1.4	0.17	40.0	0.1	40.0	37.2	2.77	14.418	
616.3	616.3	617.3	617.3	1.4	1.4	0.17	40.0	0.1	40.0	37.1	2.84	14.070 CC	
700.0	700.0	701.0	701.0	1.6	1.6	0.17	40.0	0.1	40.0	36.8	3.20	12.509 ES	
800.0	800.0	800.0	800.0	1.8	1.8	0.02	41.7	0.0	41.7	38.1	3.62	11.516 SF	
900.0	900.0	897.9	897.8	2.0	2.0	-0.36	46.8	-0.3	46.9	42.9	4.05	11.574	
1,000.0	1,000.0	995.8	995.3	2.2	2.3	-0.84	55.2	-0.8	55.5	51.0	4.48	12.383	
1,100.0	1,100.0	1,093.0	1,091.8	2.5	2.5	-1.30	66.9	-1.5	67.5	62.6	4.91	13.746	
1,200.0	1,200.0	1,189.3	1,186.9	2.7	2.7	-1.69	81.6	-2.4	82.8	77.5	5.34	15.527	
1,300.0	1,300.0	1,284.5	1,280.4	2.9	3.0	-2.01	99.3	-3.5	101.5	95.7	5.76	17.627	
1,400.0	1,400.0	1,378.4	1,372.1	3.1	3.4	-2.26	119.8	-4.7	123.3	117.2	6.17	19.976	
1,500.0	1,500.0	1,470.8	1,461.6	3.4	3.7	-2.46	142.9	-6.1	148.3	141.8	6.59	22.519	
1,600.0	1,600.0	1,561.6	1,548.7	3.6	4.1	94.72	168.3	-7.7	176.6	169.6	6.99	25.281	
1,700.0	1,699.9	1,654.1	1,636.7	3.8	4.6	95.51	196.6	-9.4	207.7	200.3	7.41	28.031	
1,800.0	1,799.7	1,748.9	1,726.9	4.0	5.1	96.60	225.9	-11.2	239.2	231.3	7.86	30.442	
1,900.0	1,899.5	1,843.8	1,817.1	4.2	5.6	97.43	255.1	-13.0	270.7	262.4	8.32	32.521	
2,000.0	1,999.4	1,938.6	1,907.3	4.4	6.1	98.09	284.4	-14.7	302.3	293.5	8.80	34.354	
2,100.0	2,099.2	2,033.4	1,997.5	4.6	6.6	98.63	313.6	-16.5	333.9	324.6	9.28	35.974	
2,200.0	2,199.0	2,128.3	2,087.7	4.8	7.1	99.07	342.9	-18.3	365.5	355.8	9.77	37.411	
2,300.0	2,298.9	2,223.1	2,177.9	5.0	7.7	99.44	372.1	-20.1	397.2	386.9	10.27	38.692	
2,400.0	2,398.7	2,317.9	2,268.1	5.3	8.2	99.76	401.4	-21.9	428.9	418.1	10.76	39.838	
2,500.0	2,498.5	2,412.8	2,358.2	5.5	8.7	100.03	430.7	-23.6	460.5	449.3	11.27	40.868	
2,600.0	2,598.4	2,507.6	2,448.4	5.7	9.3	100.27	459.9	-25.4	492.2	480.4	11.78	41.797	
2,700.0	2,698.2	2,602.4	2,538.6	5.9	9.8	100.48	489.2	-27.2	523.9	511.6	12.29	42.638	
2,800.0	2,798.0	2,697.2	2,628.8	6.2	10.4	100.67	518.4	-29.0	555.6	542.8	12.80	43.403	
2,900.0	2,897.9	2,792.1	2,719.0	6.4	10.9	100.83	547.7	-30.8	587.3	574.0	13.32	44.101	
3,000.0	2,997.7	2,886.9	2,809.2	6.6	11.5	100.98	576.9	-32.5	619.0	605.2	13.84	44.740	
3,100.0	3,097.6	2,981.7	2,899.4	6.9	12.0	101.11	606.2	-34.3	650.7	636.4	14.36	45.326	
3,200.0	3,197.4	3,076.6	2,989.6	7.1	12.6	101.24	635.4	-36.1	682.4	667.5	14.88	45.865	
3,300.0	3,297.2	3,171.4	3,079.7	7.3	13.1	101.35	664.7	-37.9	714.1	698.7	15.40	46.363	

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB 25' + GL @ 3090.3usft

Offset Depths are relative to Offset Datum

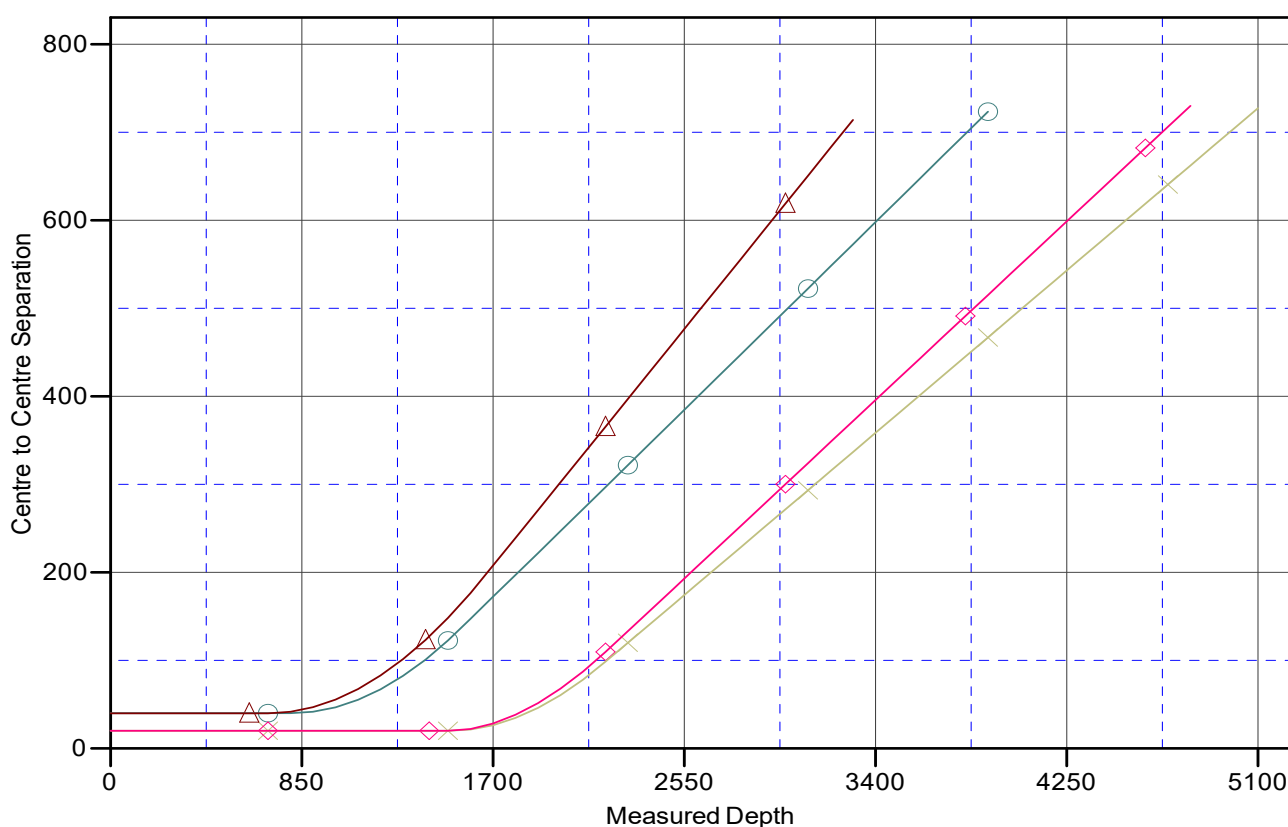
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 213H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.15°

Ladder Plot



LEGEND

- Rana Salada FedCom 0106 133H, Wellbore#1, Plan 1 V0
 Rana Salada FedCom 0106 223H, Wellbore#1, Plan 1 V0
 Rana Salada FedCom 0106 233H, Wellbore#1, Plan 1 V0

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



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.3usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.3usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB 25' + GL @ 3090.3usft

Offset Depths are relative to Offset Datum

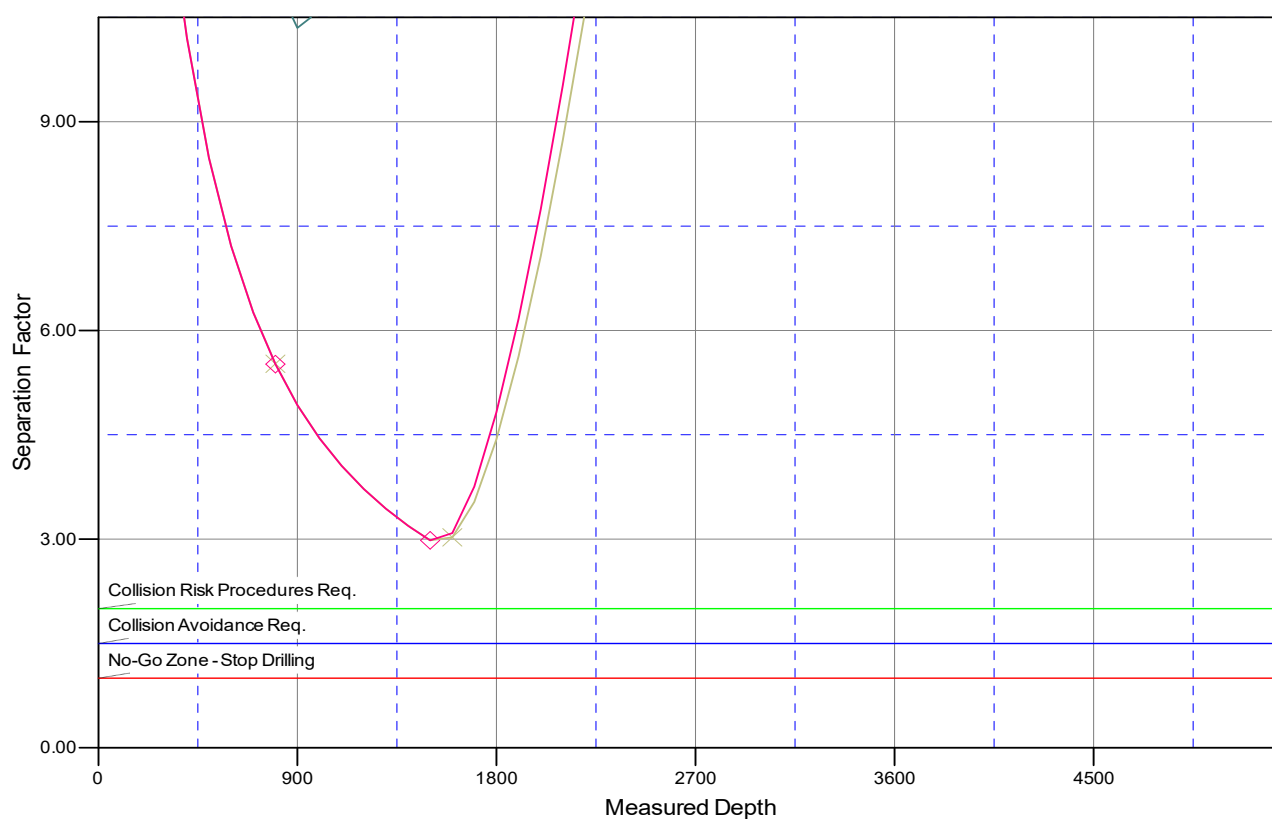
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 213H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.15°

Separation Factor Plot



LEGEND

Rana Salada FedCom0106 133H, Wellbore#1, Plan 1 V0
 Rana Salada FedCom0106 233H, Wellbore#1, Plan 1 V0
 Rana Salada FedCom0106 236H, Wellbore#1, Plan 1 V0

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



NOVO Oil & Gas

EDDY CO., NM (NAD83)

SEC 02-T23S-R28E

Rana Salada Fed Com 0106 213H

Wellbore #1

Plan: Plan 1

Standard Planning Report

08 June, 2021





SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Project	EDDY CO., NM (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	SEC 02-T23S-R28E		
Site Position:		Northing:	485,314.80 usft
From:	Map	Easting:	629,041.60 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 20' 1.977 N
		Longitude:	104° 2' 57.742 W

Well	Rana Salada Fed Com 0106 213H		
Well Position	+N/-S	0.0 usft	Northing: 485,274.81 usft
	+E/-W	0.0 usft	Easting: 629,041.48 usft
Position Uncertainty	0.5 usft	Wellhead Elevation:	usft
Grid Convergence:	0.15 °	Ground Level:	3,065.3 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/2/2021	6.78	59.93	47,516.05507158

Design	Plan 1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	90.60	

Plan Survey Tool Program	Date	6/8/2021			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	20,812.3 Plan 1 (Wellbore #1)	MWD		
			MWD - Standard		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,664.1	3.28	262.63	1,664.0	-0.6	-4.7	2.00	2.00	0.00	262.63	
5,342.1	3.28	262.63	5,336.0	-27.6	-213.4	0.00	0.00	0.00	0.00	
5,506.2	0.00	0.00	5,500.0	-28.2	-218.1	2.00	-2.00	0.00	180.00	
9,948.2	0.00	0.00	9,942.0	-28.2	-218.1	0.00	0.00	0.00	0.00	
10,848.2	90.00	90.60	10,515.0	-34.2	354.8	10.00	10.00	10.07	90.60	
20,812.3	90.00	90.60	10,515.0	-138.5	10,318.3	0.00	0.00	0.00	0.00	PBHL Rana Salada 2



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
Begin Nudge									
1,600.0	2.00	262.63	1,600.0	-0.2	-1.7	-1.7	2.00	2.00	0.00
1,664.1	3.28	262.63	1,664.0	-0.6	-4.7	-4.7	2.00	2.00	0.00
EOB 3.28° Inc									
1,700.0	3.28	262.63	1,699.9	-0.9	-6.7	-6.7	0.00	0.00	0.00
1,800.0	3.28	262.63	1,799.7	-1.6	-12.4	-12.4	0.00	0.00	0.00
1,900.0	3.28	262.63	1,899.5	-2.3	-18.1	-18.0	0.00	0.00	0.00
2,000.0	3.28	262.63	1,999.4	-3.1	-23.7	-23.7	0.00	0.00	0.00
2,100.0	3.28	262.63	2,099.2	-3.8	-29.4	-29.4	0.00	0.00	0.00
2,200.0	3.28	262.63	2,199.0	-4.5	-35.1	-35.0	0.00	0.00	0.00
2,300.0	3.28	262.63	2,298.9	-5.3	-40.8	-40.7	0.00	0.00	0.00
2,400.0	3.28	262.63	2,398.7	-6.0	-46.4	-46.4	0.00	0.00	0.00
2,500.0	3.28	262.63	2,498.5	-6.7	-52.1	-52.0	0.00	0.00	0.00
2,600.0	3.28	262.63	2,598.4	-7.5	-57.8	-57.7	0.00	0.00	0.00
2,700.0	3.28	262.63	2,698.2	-8.2	-63.5	-63.4	0.00	0.00	0.00
2,800.0	3.28	262.63	2,798.0	-8.9	-69.1	-69.0	0.00	0.00	0.00
2,900.0	3.28	262.63	2,897.9	-9.7	-74.8	-74.7	0.00	0.00	0.00
3,000.0	3.28	262.63	2,997.7	-10.4	-80.5	-80.4	0.00	0.00	0.00
3,100.0	3.28	262.63	3,097.6	-11.1	-86.2	-86.0	0.00	0.00	0.00
3,200.0	3.28	262.63	3,197.4	-11.9	-91.8	-91.7	0.00	0.00	0.00
3,300.0	3.28	262.63	3,297.2	-12.6	-97.5	-97.4	0.00	0.00	0.00
3,400.0	3.28	262.63	3,397.1	-13.3	-103.2	-103.1	0.00	0.00	0.00
3,500.0	3.28	262.63	3,496.9	-14.1	-108.9	-108.7	0.00	0.00	0.00
3,600.0	3.28	262.63	3,596.7	-14.8	-114.6	-114.4	0.00	0.00	0.00
3,700.0	3.28	262.63	3,696.6	-15.5	-120.2	-120.1	0.00	0.00	0.00
3,800.0	3.28	262.63	3,796.4	-16.3	-125.9	-125.7	0.00	0.00	0.00
3,900.0	3.28	262.63	3,896.2	-17.0	-131.6	-131.4	0.00	0.00	0.00
4,000.0	3.28	262.63	3,996.1	-17.7	-137.3	-137.1	0.00	0.00	0.00
4,100.0	3.28	262.63	4,095.9	-18.5	-142.9	-142.7	0.00	0.00	0.00
4,200.0	3.28	262.63	4,195.8	-19.2	-148.6	-148.4	0.00	0.00	0.00
4,300.0	3.28	262.63	4,295.6	-19.9	-154.3	-154.1	0.00	0.00	0.00
4,400.0	3.28	262.63	4,395.4	-20.7	-160.0	-159.7	0.00	0.00	0.00
4,500.0	3.28	262.63	4,495.3	-21.4	-165.6	-165.4	0.00	0.00	0.00
4,600.0	3.28	262.63	4,595.1	-22.2	-171.3	-171.1	0.00	0.00	0.00
4,700.0	3.28	262.63	4,694.9	-22.9	-177.0	-176.7	0.00	0.00	0.00
4,800.0	3.28	262.63	4,794.8	-23.6	-182.7	-182.4	0.00	0.00	0.00
4,900.0	3.28	262.63	4,894.6	-24.4	-188.3	-188.1	0.00	0.00	0.00



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	3.28	262.63	4,994.4	-25.1	-194.0	-193.7	0.00	0.00	0.00
5,100.0	3.28	262.63	5,094.3	-25.8	-199.7	-199.4	0.00	0.00	0.00
5,200.0	3.28	262.63	5,194.1	-26.6	-205.4	-205.1	0.00	0.00	0.00
5,300.0	3.28	262.63	5,293.9	-27.3	-211.0	-210.8	0.00	0.00	0.00
5,342.1	3.28	262.63	5,336.0	-27.6	-213.4	-213.1	0.00	0.00	0.00
EOH 3.28° Inc									
5,400.0	2.12	262.63	5,393.8	-27.9	-216.1	-215.8	2.00	-2.00	0.00
5,506.2	0.00	0.00	5,500.0	-28.2	-218.1	-217.8	2.00	-2.00	0.00
Vertical Point									
5,600.0	0.00	0.00	5,593.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,693.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,793.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,893.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,993.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,100.0	0.00	0.00	6,093.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,193.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,300.0	0.00	0.00	6,293.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,393.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,500.0	0.00	0.00	6,493.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,593.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,700.0	0.00	0.00	6,693.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,800.0	0.00	0.00	6,793.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
6,900.0	0.00	0.00	6,893.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,000.0	0.00	0.00	6,993.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,100.0	0.00	0.00	7,093.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,200.0	0.00	0.00	7,193.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,300.0	0.00	0.00	7,293.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,400.0	0.00	0.00	7,393.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,500.0	0.00	0.00	7,493.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,600.0	0.00	0.00	7,593.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,700.0	0.00	0.00	7,693.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,800.0	0.00	0.00	7,793.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
7,900.0	0.00	0.00	7,893.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,000.0	0.00	0.00	7,993.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,100.0	0.00	0.00	8,093.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,200.0	0.00	0.00	8,193.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,300.0	0.00	0.00	8,293.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,400.0	0.00	0.00	8,393.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,500.0	0.00	0.00	8,493.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,600.0	0.00	0.00	8,593.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,700.0	0.00	0.00	8,693.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,800.0	0.00	0.00	8,793.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
8,900.0	0.00	0.00	8,893.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,000.0	0.00	0.00	8,993.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,100.0	0.00	0.00	9,093.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,200.0	0.00	0.00	9,193.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,300.0	0.00	0.00	9,293.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,400.0	0.00	0.00	9,393.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,500.0	0.00	0.00	9,493.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,600.0	0.00	0.00	9,593.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,700.0	0.00	0.00	9,693.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,800.0	0.00	0.00	9,793.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,900.0	0.00	0.00	9,893.8	-28.2	-218.1	-217.8	0.00	0.00	0.00
9,948.2	0.00	0.00	9,942.0	-28.2	-218.1	-217.8	0.00	0.00	0.00



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
KOP 10°/100'									
9,950.0	0.18	90.60	9,943.8	-28.2	-218.1	-217.8	9.95	9.95	0.00
10,000.0	5.18	90.60	9,993.7	-28.2	-215.8	-215.5	10.00	10.00	0.00
10,050.0	10.18	90.60	10,043.3	-28.3	-209.1	-208.8	10.00	10.00	0.00
10,100.0	15.18	90.60	10,092.0	-28.4	-198.1	-197.8	10.00	10.00	0.00
10,150.0	20.18	90.60	10,139.6	-28.6	-182.9	-182.6	10.00	10.00	0.00
10,200.0	25.18	90.60	10,185.8	-28.8	-163.7	-163.4	10.00	10.00	0.00
10,250.0	30.18	90.60	10,230.0	-29.0	-140.4	-140.1	10.00	10.00	0.00
10,300.0	35.18	90.60	10,272.1	-29.3	-113.5	-113.1	10.00	10.00	0.00
10,350.0	40.18	90.60	10,311.7	-29.6	-82.9	-82.6	10.00	10.00	0.00
10,400.0	45.18	90.60	10,348.4	-30.0	-49.0	-48.7	10.00	10.00	0.00
10,450.0	50.18	90.60	10,382.1	-30.4	-12.1	-11.8	10.00	10.00	0.00
10,500.0	55.18	90.60	10,412.4	-30.8	27.7	28.0	10.00	10.00	0.00
10,550.0	60.18	90.60	10,439.1	-31.2	69.9	70.2	10.00	10.00	0.00
10,600.0	65.18	90.60	10,462.0	-31.7	114.3	114.6	10.00	10.00	0.00
10,650.0	70.18	90.60	10,481.0	-32.2	160.6	160.9	10.00	10.00	0.00
10,700.0	75.18	90.60	10,495.9	-32.7	208.3	208.6	10.00	10.00	0.00
10,750.0	80.18	90.60	10,506.6	-33.2	257.1	257.4	10.00	10.00	0.00
10,800.0	85.18	90.60	10,512.9	-33.7	306.7	307.0	10.00	10.00	0.00
10,848.2	90.00	90.60	10,515.0	-34.2	354.8	355.2	10.00	10.00	0.00
Landing Point									
10,900.0	90.00	90.60	10,515.0	-34.7	406.6	407.0	0.00	0.00	0.00
11,000.0	90.00	90.60	10,515.0	-35.8	506.6	507.0	0.00	0.00	0.00
11,100.0	90.00	90.60	10,515.0	-36.8	606.6	607.0	0.00	0.00	0.00
11,200.0	90.00	90.60	10,515.0	-37.9	706.6	707.0	0.00	0.00	0.00
11,300.0	90.00	90.60	10,515.0	-38.9	806.6	807.0	0.00	0.00	0.00
11,400.0	90.00	90.60	10,515.0	-40.0	906.6	907.0	0.00	0.00	0.00
11,500.0	90.00	90.60	10,515.0	-41.0	1,006.6	1,007.0	0.00	0.00	0.00
11,600.0	90.00	90.60	10,515.0	-42.1	1,106.6	1,107.0	0.00	0.00	0.00
11,700.0	90.00	90.60	10,515.0	-43.1	1,206.6	1,207.0	0.00	0.00	0.00
11,800.0	90.00	90.60	10,515.0	-44.2	1,306.6	1,307.0	0.00	0.00	0.00
11,900.0	90.00	90.60	10,515.0	-45.2	1,406.6	1,407.0	0.00	0.00	0.00
12,000.0	90.00	90.60	10,515.0	-46.3	1,506.6	1,507.0	0.00	0.00	0.00
12,100.0	90.00	90.60	10,515.0	-47.3	1,606.5	1,607.0	0.00	0.00	0.00
12,200.0	90.00	90.60	10,515.0	-48.3	1,706.5	1,707.0	0.00	0.00	0.00
12,300.0	90.00	90.60	10,515.0	-49.4	1,806.5	1,807.0	0.00	0.00	0.00
12,400.0	90.00	90.60	10,515.0	-50.4	1,906.5	1,907.0	0.00	0.00	0.00
12,500.0	90.00	90.60	10,515.0	-51.5	2,006.5	2,007.0	0.00	0.00	0.00
12,600.0	90.00	90.60	10,515.0	-52.5	2,106.5	2,107.0	0.00	0.00	0.00
12,700.0	90.00	90.60	10,515.0	-53.6	2,206.5	2,207.0	0.00	0.00	0.00
12,800.0	90.00	90.60	10,515.0	-54.6	2,306.5	2,307.0	0.00	0.00	0.00
12,900.0	90.00	90.60	10,515.0	-55.7	2,406.5	2,407.0	0.00	0.00	0.00
13,000.0	90.00	90.60	10,515.0	-56.7	2,506.5	2,507.0	0.00	0.00	0.00
13,100.0	90.00	90.60	10,515.0	-57.8	2,606.5	2,607.0	0.00	0.00	0.00
13,200.0	90.00	90.60	10,515.0	-58.8	2,706.5	2,707.0	0.00	0.00	0.00
13,300.0	90.00	90.60	10,515.0	-59.9	2,806.5	2,807.0	0.00	0.00	0.00
13,400.0	90.00	90.60	10,515.0	-60.9	2,906.5	2,907.0	0.00	0.00	0.00
13,500.0	90.00	90.60	10,515.0	-62.0	3,006.5	3,007.0	0.00	0.00	0.00
13,600.0	90.00	90.60	10,515.0	-63.0	3,106.5	3,107.0	0.00	0.00	0.00
13,700.0	90.00	90.60	10,515.0	-64.0	3,206.5	3,207.0	0.00	0.00	0.00
13,800.0	90.00	90.60	10,515.0	-65.1	3,306.5	3,307.0	0.00	0.00	0.00
13,900.0	90.00	90.60	10,515.0	-66.1	3,406.5	3,407.0	0.00	0.00	0.00
14,000.0	90.00	90.60	10,515.0	-67.2	3,506.4	3,507.0	0.00	0.00	0.00
14,100.0	90.00	90.60	10,515.0	-68.2	3,606.4	3,607.0	0.00	0.00	0.00



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,200.0	90.00	90.60	10,515.0	-69.3	3,706.4	3,707.0	0.00	0.00	0.00
14,300.0	90.00	90.60	10,515.0	-70.3	3,806.4	3,807.0	0.00	0.00	0.00
14,400.0	90.00	90.60	10,515.0	-71.4	3,906.4	3,907.0	0.00	0.00	0.00
14,500.0	90.00	90.60	10,515.0	-72.4	4,006.4	4,007.0	0.00	0.00	0.00
14,600.0	90.00	90.60	10,515.0	-73.5	4,106.4	4,107.0	0.00	0.00	0.00
14,700.0	90.00	90.60	10,515.0	-74.5	4,206.4	4,207.0	0.00	0.00	0.00
14,800.0	90.00	90.60	10,515.0	-75.6	4,306.4	4,307.0	0.00	0.00	0.00
14,900.0	90.00	90.60	10,515.0	-76.6	4,406.4	4,407.0	0.00	0.00	0.00
15,000.0	90.00	90.60	10,515.0	-77.6	4,506.4	4,507.0	0.00	0.00	0.00
15,100.0	90.00	90.60	10,515.0	-78.7	4,606.4	4,607.0	0.00	0.00	0.00
15,200.0	90.00	90.60	10,515.0	-79.7	4,706.4	4,707.0	0.00	0.00	0.00
15,300.0	90.00	90.60	10,515.0	-80.8	4,806.4	4,807.0	0.00	0.00	0.00
15,400.0	90.00	90.60	10,515.0	-81.8	4,906.4	4,907.0	0.00	0.00	0.00
15,500.0	90.00	90.60	10,515.0	-82.9	5,006.4	5,007.0	0.00	0.00	0.00
15,600.0	90.00	90.60	10,515.0	-83.9	5,106.4	5,107.0	0.00	0.00	0.00
15,700.0	90.00	90.60	10,515.0	-85.0	5,206.4	5,207.0	0.00	0.00	0.00
15,800.0	90.00	90.60	10,515.0	-86.0	5,306.3	5,307.0	0.00	0.00	0.00
15,900.0	90.00	90.60	10,515.0	-87.1	5,406.3	5,407.0	0.00	0.00	0.00
16,000.0	90.00	90.60	10,515.0	-88.1	5,506.3	5,507.0	0.00	0.00	0.00
16,100.0	90.00	90.60	10,515.0	-89.2	5,606.3	5,607.0	0.00	0.00	0.00
16,200.0	90.00	90.60	10,515.0	-90.2	5,706.3	5,707.0	0.00	0.00	0.00
16,300.0	90.00	90.60	10,515.0	-91.3	5,806.3	5,807.0	0.00	0.00	0.00
16,400.0	90.00	90.60	10,515.0	-92.3	5,906.3	5,907.0	0.00	0.00	0.00
16,500.0	90.00	90.60	10,515.0	-93.3	6,006.3	6,007.0	0.00	0.00	0.00
16,600.0	90.00	90.60	10,515.0	-94.4	6,106.3	6,107.0	0.00	0.00	0.00
16,700.0	90.00	90.60	10,515.0	-95.4	6,206.3	6,207.0	0.00	0.00	0.00
16,800.0	90.00	90.60	10,515.0	-96.5	6,306.3	6,307.0	0.00	0.00	0.00
16,900.0	90.00	90.60	10,515.0	-97.5	6,406.3	6,407.0	0.00	0.00	0.00
17,000.0	90.00	90.60	10,515.0	-98.6	6,506.3	6,507.0	0.00	0.00	0.00
17,100.0	90.00	90.60	10,515.0	-99.6	6,606.3	6,607.0	0.00	0.00	0.00
17,200.0	90.00	90.60	10,515.0	-100.7	6,706.3	6,707.0	0.00	0.00	0.00
17,300.0	90.00	90.60	10,515.0	-101.7	6,806.3	6,807.0	0.00	0.00	0.00
17,400.0	90.00	90.60	10,515.0	-102.8	6,906.3	6,907.0	0.00	0.00	0.00
17,500.0	90.00	90.60	10,515.0	-103.8	7,006.3	7,007.0	0.00	0.00	0.00
17,600.0	90.00	90.60	10,515.0	-104.9	7,106.2	7,107.0	0.00	0.00	0.00
17,700.0	90.00	90.60	10,515.0	-105.9	7,206.2	7,207.0	0.00	0.00	0.00
17,800.0	90.00	90.60	10,515.0	-107.0	7,306.2	7,307.0	0.00	0.00	0.00
17,900.0	90.00	90.60	10,515.0	-108.0	7,406.2	7,407.0	0.00	0.00	0.00
18,000.0	90.00	90.60	10,515.0	-109.0	7,506.2	7,507.0	0.00	0.00	0.00
18,100.0	90.00	90.60	10,515.0	-110.1	7,606.2	7,607.0	0.00	0.00	0.00
18,200.0	90.00	90.60	10,515.0	-111.1	7,706.2	7,707.0	0.00	0.00	0.00
18,300.0	90.00	90.60	10,515.0	-112.2	7,806.2	7,807.0	0.00	0.00	0.00
18,400.0	90.00	90.60	10,515.0	-113.2	7,906.2	7,907.0	0.00	0.00	0.00
18,500.0	90.00	90.60	10,515.0	-114.3	8,006.2	8,007.0	0.00	0.00	0.00
18,600.0	90.00	90.60	10,515.0	-115.3	8,106.2	8,107.0	0.00	0.00	0.00
18,700.0	90.00	90.60	10,515.0	-116.4	8,206.2	8,207.0	0.00	0.00	0.00
18,800.0	90.00	90.60	10,515.0	-117.4	8,306.2	8,307.0	0.00	0.00	0.00
18,900.0	90.00	90.60	10,515.0	-118.5	8,406.2	8,407.0	0.00	0.00	0.00
19,000.0	90.00	90.60	10,515.0	-119.5	8,506.2	8,507.0	0.00	0.00	0.00
19,100.0	90.00	90.60	10,515.0	-120.6	8,606.2	8,607.0	0.00	0.00	0.00
19,200.0	90.00	90.60	10,515.0	-121.6	8,706.2	8,707.0	0.00	0.00	0.00
19,300.0	90.00	90.60	10,515.0	-122.7	8,806.2	8,807.0	0.00	0.00	0.00
19,400.0	90.00	90.60	10,515.0	-123.7	8,906.1	8,907.0	0.00	0.00	0.00
19,500.0	90.00	90.60	10,515.0	-124.7	9,006.1	9,007.0	0.00	0.00	0.00



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 213H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.3usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.3usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 213H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
19,600.0	90.00	90.60	10,515.0	-125.8	9,106.1	9,107.0	0.00	0.00	0.00	
19,700.0	90.00	90.60	10,515.0	-126.8	9,206.1	9,207.0	0.00	0.00	0.00	
19,800.0	90.00	90.60	10,515.0	-127.9	9,306.1	9,307.0	0.00	0.00	0.00	
19,900.0	90.00	90.60	10,515.0	-128.9	9,406.1	9,407.0	0.00	0.00	0.00	
20,000.0	90.00	90.60	10,515.0	-130.0	9,506.1	9,507.0	0.00	0.00	0.00	
20,100.0	90.00	90.60	10,515.0	-131.0	9,606.1	9,607.0	0.00	0.00	0.00	
20,200.0	90.00	90.60	10,515.0	-132.1	9,706.1	9,707.0	0.00	0.00	0.00	
20,300.0	90.00	90.60	10,515.0	-133.1	9,806.1	9,807.0	0.00	0.00	0.00	
20,400.0	90.00	90.60	10,515.0	-134.2	9,906.1	9,907.0	0.00	0.00	0.00	
20,500.0	90.00	90.60	10,515.0	-135.2	10,006.1	10,007.0	0.00	0.00	0.00	
20,600.0	90.00	90.60	10,515.0	-136.3	10,106.1	10,107.0	0.00	0.00	0.00	
20,700.0	90.00	90.60	10,515.0	-137.3	10,206.1	10,207.0	0.00	0.00	0.00	
20,800.0	90.00	90.60	10,515.0	-138.4	10,306.1	10,307.0	0.00	0.00	0.00	
20,812.3	90.00	90.60	10,515.0	-138.5	10,318.3	10,319.2	0.00	0.00	0.00	
TD at 20812.3' MD										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude		Longitude
FTP Rana Salada 213 H - hit/miss target - Shape	0.00	0.00	10,515.0	-34.2	354.8	485,240.63	629,396.32	32° 20' 1.234 N		104° 2' 53.609 W
PBHL Rana Salada 213I - plan hits target center - Point	0.00	0.00	10,515.0	-138.5	10,318.3	485,136.33	639,359.83	32° 19' 59.925 N		104° 0' 57.482 W

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,500.0	1,500.0	0.0	0.0	Begin Nudge	
1,664.1	1,664.0	-0.6	-4.7	EOB 3.28° Inc	
5,342.1	5,336.0	-27.6	-213.4	EOH 3.28° Inc	
5,506.2	5,500.0	-28.2	-218.1	Vertical Point	
9,948.2	9,942.0	-28.2	-218.1	KOP 10°/100'	
10,848.2	10,515.0	-34.2	354.8	Landing Point	
20,812.3	10,515.0	-138.5	10,318.3	TD at 20812.3' MD	

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

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

COMMENTS

Action 32870

COMMENTS

Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	OGRID: 372920
	Action Number: 32870
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO Review 6/22/2021	6/22/2021

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CONDITIONS

Action 32870

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Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	OGRID: 372920
	Action Number: 32870
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
kpickford	• NSL Will require an administrative order for non-standard location prior to placing the well on production	6/22/2021
kpickford	Adhere to previous NMOCD Conditions of Approval	6/22/2021