

Well Name: RANA SALADA FED COM 0106	Well Location: T23S / R28E / SEC 2 / NESE /	County or Parish/State:
Well Number: 233H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM91078	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001548153	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: 06/04/2021	Time Sundry Submitted: 11:51
Date proposed operation will begin: 06/11/2021	

Procedure Description: Request to move Bottom Hole Location from 1,254' FSL & 130' FEL, Section 6, T-23-S, R-29-E, SESE to 1,650' FSL & 130' FEL, Section 1, T-23-S, R-28-E, SENE. 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

RS0106_233H_Sundry_Attachment_20210604115008.pdf

County or Parish/State:

Allottee or Tribe Name:

Unit or CA Number:

Operator: NOVO OIL AND GAS
NORTHERN DELAWARE LLC

Additional Reviews

RANA_SALADA_FED_COM_0106_233H_SUNDRY_APD_Calculations_20210610132305.pdf

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.

Signed on: JUN 04, 2021 11:50 AM

Title: President

State: NM

Email address: AFMSS@PERMITSWEST.COM

Email address:

Signature: Chris Walls

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 30-015-48153	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 233H
⁷ OGRID No. 372920	⁸ Operator Name NOVO OIL & GAS NORTHERN DELAWARE, LLC	⁹ Elevation 3065.8

¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	2	23 S	28 E		2370	SOUTH	25	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	1	23 S	28 E		1650	NORTH	130	EAST	EDDY

¹² Dedicated Acres 318.88	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.
	Signature: <i>Justin Carter</i> Date: 6/2/2021 Printed Name: Justin Carter E-mail Address: jcarter@novoog.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, and that the same is true and correct to the best of my belief. JUNE 1, 2021 Date of Survey Signature and Seal of Professional Surveyor: <i>[Signature]</i> Certificate Number: LS 12797 Surveyor's No. 8099D

Intent ☐ As Drilled ☐

API #		
Operator Name: NOVO OIL & GAS NORTHERN DELAWARE, LLC	Property Name: RANA SALADA FED COM 0106	Well Number 233H

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
E	1	23S	28E		1650	NORTH	330	WEST	EDDY
Latitude 32.3374759					Longitude 104.0482000				NAD 83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
H	1	23S	28E		1650	NORTH	330	EAST	EDDY
Latitude 32.3375141					Longitude 104.0330411				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

CHANGE TO PLANS

Move Bottom Hole Location

From: 1,254' FSL & 130' FEL, Section 6, T-23-S, R-29-E, SESE

To: 1,650' FSL & 130' FEL, Section 1, T-23-S, R-28-E, SENE

Casing and Depth Setting change

Hole Size: 9-7/8", Casing: 8-5/8", 32 ppf, P-110, TLW to be set at 9,815' TMD.

Design Safety Factors: Burst 5.95, Collapse 1.34, Tension 3.14

Hole Size: 7-7/8", Casing: 5-1/2", 20 ppf, P-110, DWC/C IS+ to be set at 16,655' TMD.

Design Safety Factors: Burst 1.25, Collapse 3.60, Tension 2.62

BOP and Choke requirement change from 10M to 5M:

Request BOP and Choke requirement changes to 10M from 5M (BOP and Choke Schematic Sheets are attached).

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

Lead: 662 Sacks; 2371 cu. ft.; 100% excess; 3.58 cu.ft./sx; 10 ppg; Class C or H + fluid loss + 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 or H + fluid loss + retarder + LCM; 1,200 psi 24-hour compressive strength.

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

Lead: 776 Sacks; 1,645.1 cu. ft.; 20% excess; 2.12 cu.ft./sx; 12 ppg; Class H + fluid loss + retarder + LCM; 1,200 psi 24-hour compressive strength.

Tail: 1,378 Sacks; 2,191 cu. ft; 20% excess; 1.59 cu.ft./sx; 13.20 ppg; Class H + fluid loss + retarder + LCM; 1,200 psi 24-hour compressive strength.

Drilling Fluid Program change

Hole Size: 9-7/8"; 401' – 9,815'; Brine Diesel Emulsion; 8.8-9.6 ppg

Hole Size: 7-7/8"; 9,801' – 16,665'; Oil Based Mud; 12-12.5 ppg



NOVO OIL & GAS NORTHERN DELAWARE, LLC

Rana Salada Fed Com 0106 233H

SHL: 2370' FNL & 25' FEL Section 02-23S-28E

BHL: 1,550' FNL & 130' FEL Section 01-23S-28E

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)	10515
Planned MD (ft)	16665
Anticipated Bottom-Hole Pressure (psi)	6834.75
Anticipated Maximum Surface Pressure (psi)	4521.45
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 2159.3 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 - 9,815	9-7/8"	Brine Diesel Emulsion or Brine	8.8-9.6	35-45	N/C	1.0-4.0
9,815 - 16,665	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' - 9,815'	9,815	9-7/8"	8-5/8"	32.00	P-110	TLW	
0' - 16,665'	16,665	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' - 9,815'	4,230	8,930	1144	1.34	5.95	3.14	Collapse: 1/3 fluid filled at all times
0' - 16,665'	12,090	14,360	729	3.60	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 8,815

Surface Shoe Depth

401

Intermediate Shoe Depth

9,815

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	662	2371.0	422.3	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' - 16,665'

Top of Cement/Lead: 0'

Top of Tail: 7,815'

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	1645.1	293.0	12.00	2.12	11.91	1,200	20.0%
Tail	1378	2191.0	390.2	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

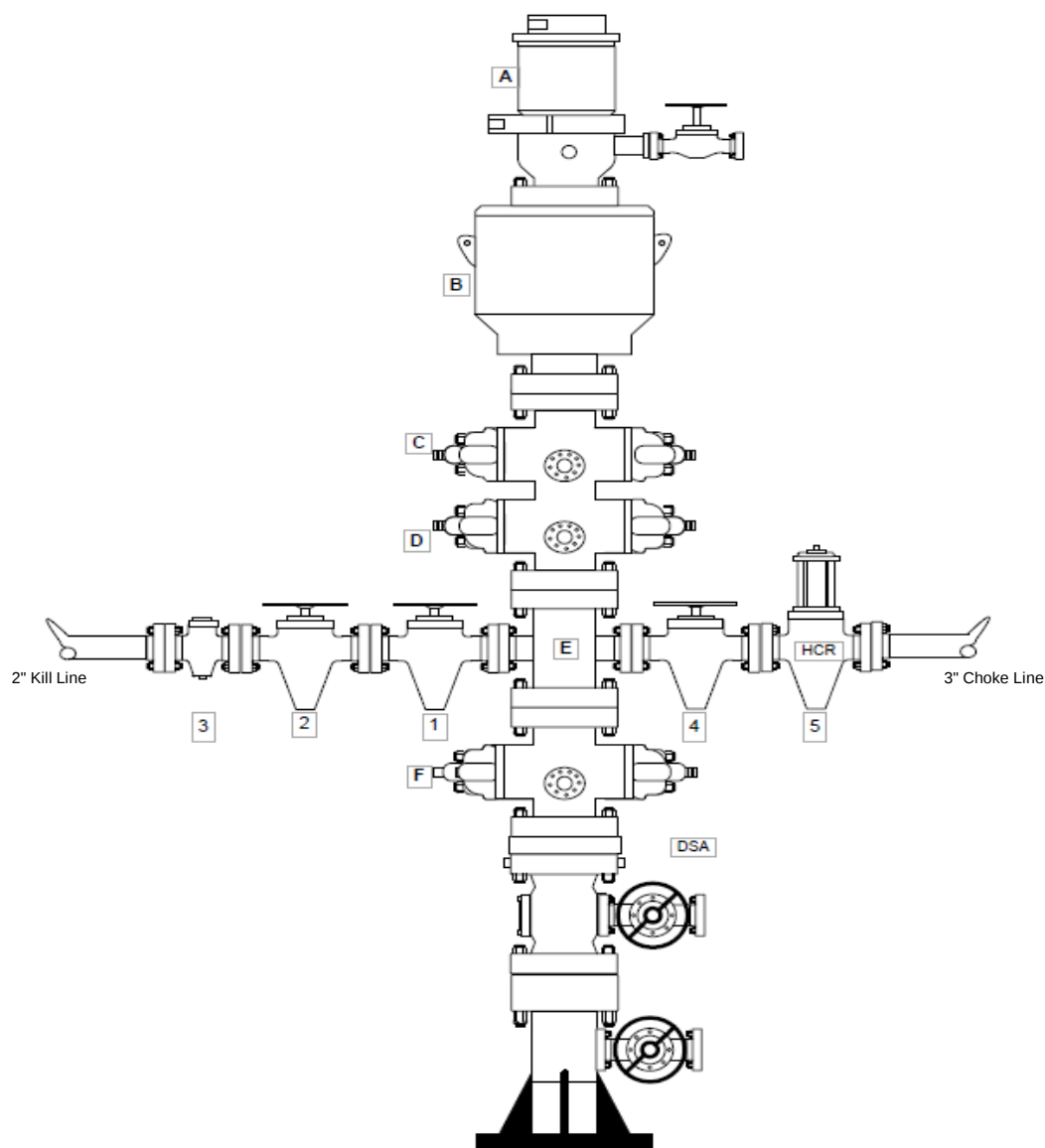
 1001 West Wilshire Boulevard, Suite 206
 Oklahoma City, Oklahoma 73116

Page No.

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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

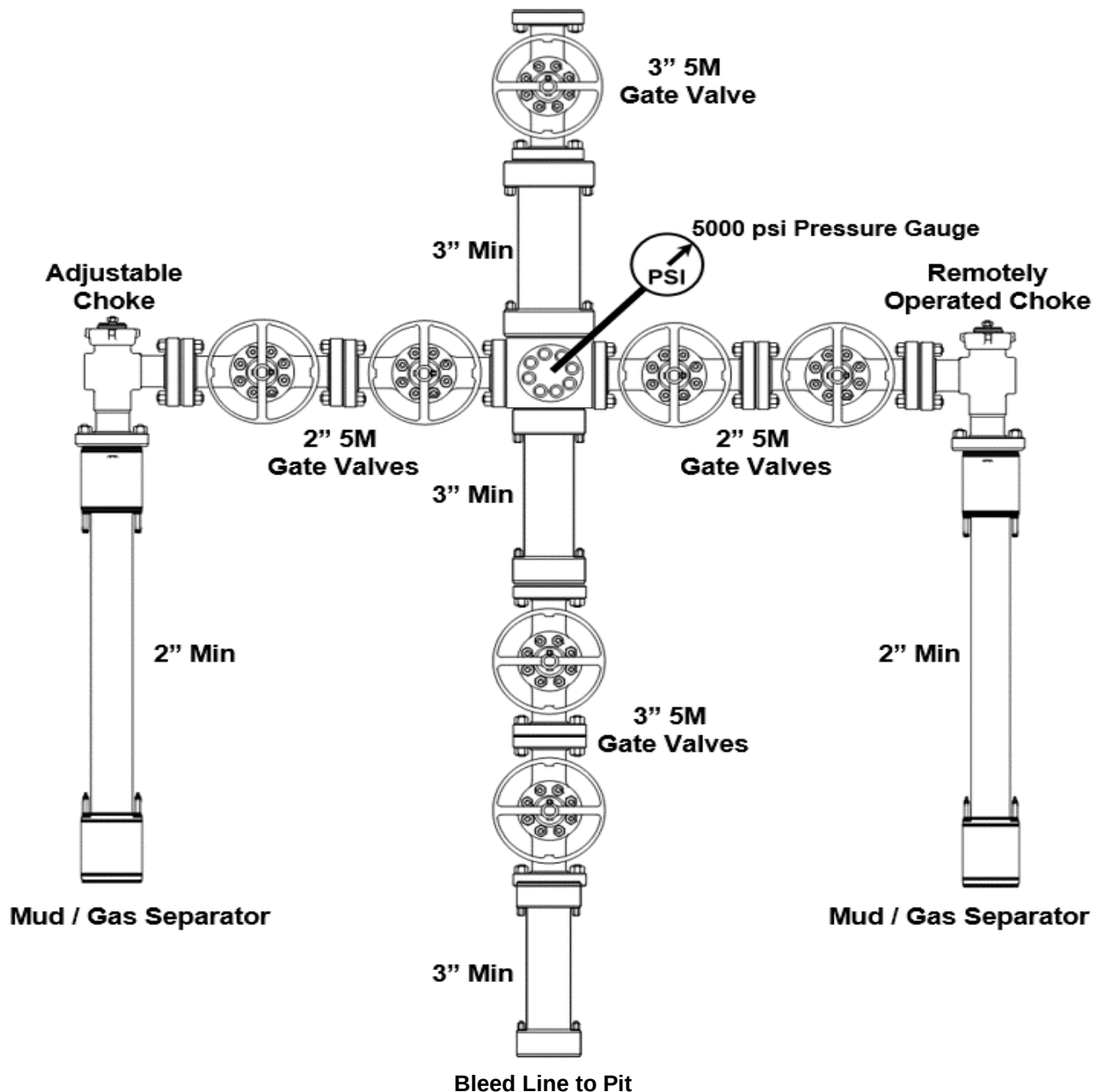
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Oklahoma City, Oklahoma 73116

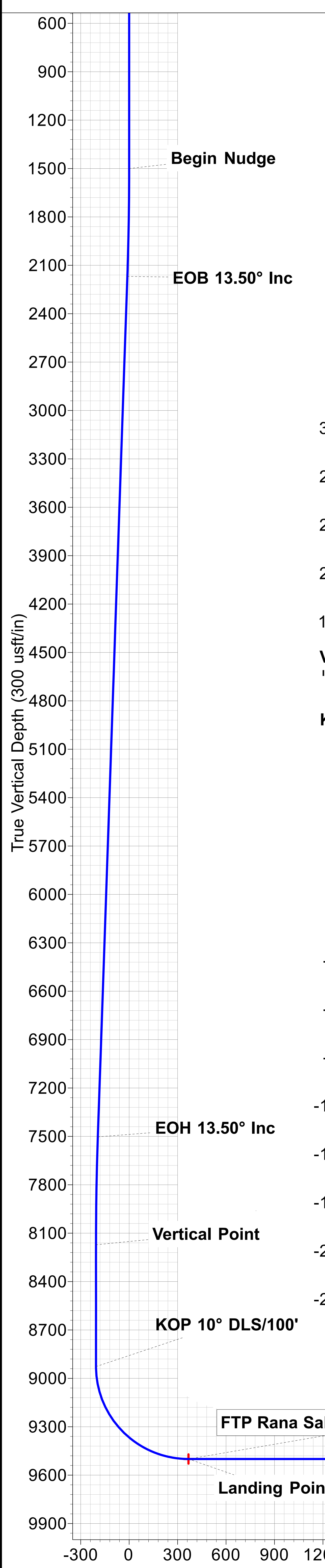
Page No.

1 of 1

5M CHOKE MANIFOLD SCHEMATIC

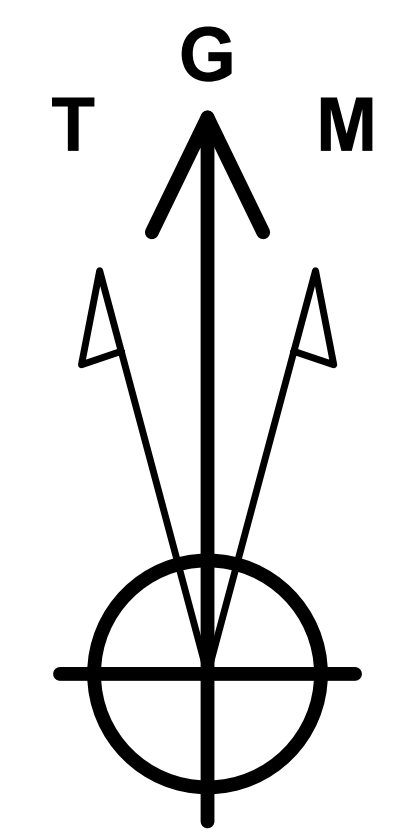
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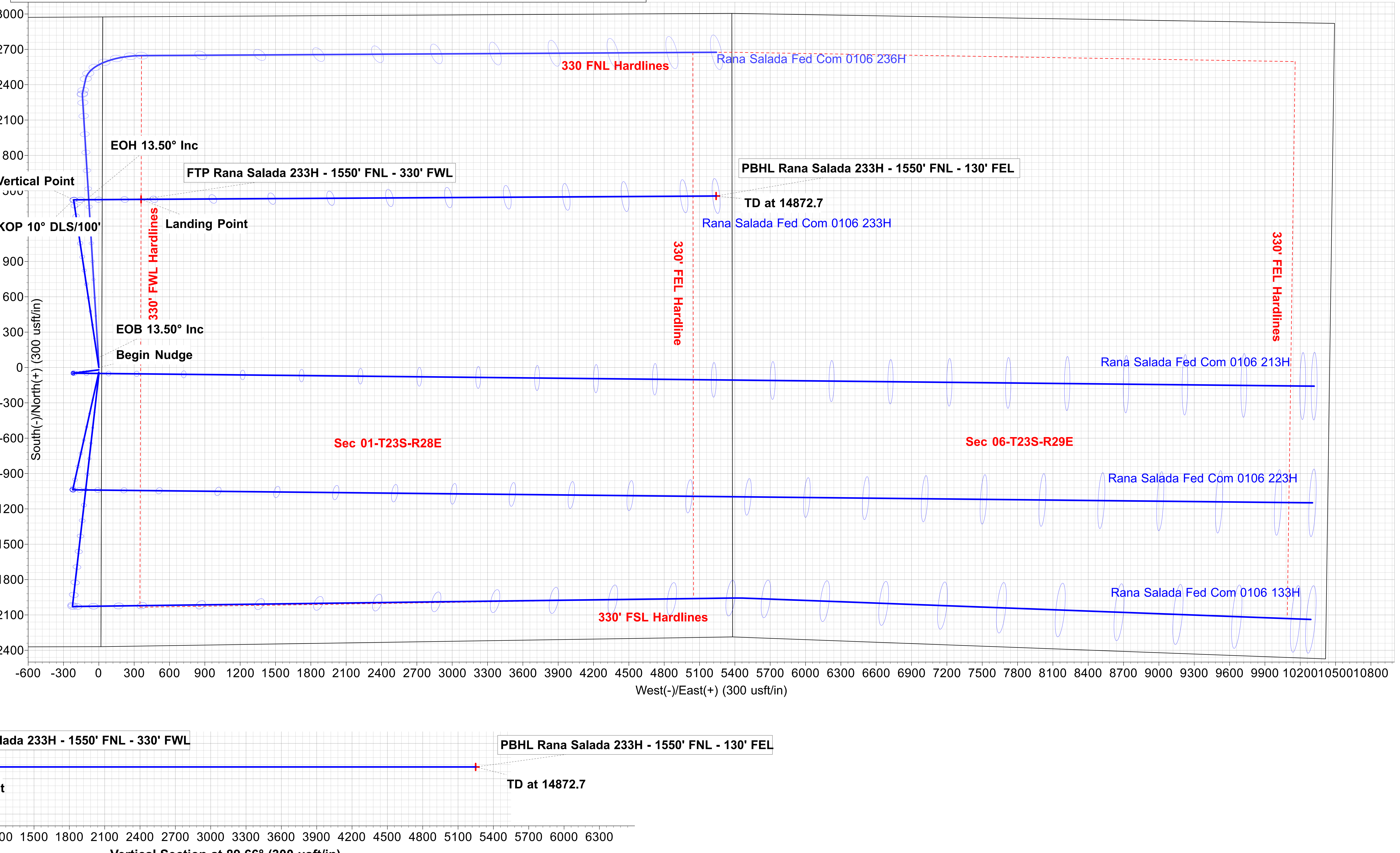
WELL DETAILS: Rana Salada Fed Com 0106 233H									
Plan 1									
		GL Elev (ft.):		3065.8					
+N/-S	+E/-W	Northing		Easting		Latitude		Longitude	
0.0	0.0	485294.81		629041.54		32° 20' 1.779 N		104° 2' 57.743 W	
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	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
2175.1	13.50	351.46	2168.9	78.3	-11.8	2.00	351.46	-11.3	EOB 13.50° Inc
7661.0	13.50	351.46	7503.1	1344.9	-202.0	0.00	0.00	-194.1	EOH 13.50° Inc
8336.1	0.00	0.00	8172.0	1423.2	-213.8	2.00	180.00	-205.4	Vertical Point
9091.1	0.00	0.00	8927.0	1423.2	-213.8	0.00	0.00	-205.4	KOP 10° DLS/100'
9991.1	90.00	89.66	9500.0	1426.6	359.1	10.00	89.66	367.6	Landing Point
14872.7	90.00	89.66	9500.0	1455.2	5240.7	0.00	0.00	5249.3	TD at 14872.7

Project: EDDY CO., NM (NAD83)
Site: SEC 02-T23S-R28E
Well: Rana Salada Fed Com 0106 233H
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 233H

Wellbore #1

Plan: Plan 1

Standard Planning Report

02 June, 2021





SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 233H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 233H	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 233H		
Well Position	+N/-S	0.0 usft	Northing: 485,294.81 usft
	+E/-W	0.0 usft	Easting: 629,041.54 usft
Position Uncertainty	0.5 usft	Wellhead Elevation:	usft
Grid Convergence:	0.15 °	Ground Level:	3,065.8 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/2/2021	6.78	59.93	47,516.08401951

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	89.66	

Plan Survey Tool Program	Date	6/2/2021			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	14,872.7	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	
2,175.1	13.50	351.46	2,168.9	78.3	-11.8	2.00	2.00	0.00	351.46	
7,661.0	13.50	351.46	7,503.1	1,344.9	-202.0	0.00	0.00	0.00	0.00	
8,336.1	0.00	0.00	8,172.0	1,423.2	-213.8	2.00	-2.00	0.00	180.00	
9,091.1	0.00	0.00	8,927.0	1,423.2	-213.8	0.00	0.00	0.00	0.00	
9,991.1	90.00	89.66	9,500.0	1,426.6	359.1	10.00	10.00	9.96	89.66	
14,872.7	90.00	89.66	9,500.0	1,455.2	5,240.7	0.00	0.00	0.00	0.00	



SB Directional Services

Planning Report



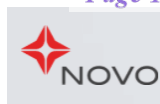
Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 233H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 233H	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	351.46	1,600.0	1.7	-0.3	-0.2	2.00	2.00	0.00
1,700.0	4.00	351.46	1,699.8	6.9	-1.0	-1.0	2.00	2.00	0.00
1,800.0	6.00	351.46	1,799.5	15.5	-2.3	-2.2	2.00	2.00	0.00
1,900.0	8.00	351.46	1,898.7	27.6	-4.1	-4.0	2.00	2.00	0.00
2,000.0	10.00	351.46	1,997.5	43.0	-6.5	-6.2	2.00	2.00	0.00
2,100.0	12.00	351.46	2,095.6	61.9	-9.3	-8.9	2.00	2.00	0.00
2,175.1	13.50	351.46	2,168.9	78.3	-11.8	-11.3	2.00	2.00	0.00
EOB 13.50° Inc									
2,200.0	13.50	351.46	2,193.1	84.0	-12.6	-12.1	0.00	0.00	0.00
2,300.0	13.50	351.46	2,290.3	107.1	-16.1	-15.5	0.00	0.00	0.00
2,400.0	13.50	351.46	2,387.6	130.2	-19.6	-18.8	0.00	0.00	0.00
2,500.0	13.50	351.46	2,484.8	153.3	-23.0	-22.1	0.00	0.00	0.00
2,600.0	13.50	351.46	2,582.0	176.4	-26.5	-25.5	0.00	0.00	0.00
2,700.0	13.50	351.46	2,679.3	199.5	-30.0	-28.8	0.00	0.00	0.00
2,800.0	13.50	351.46	2,776.5	222.6	-33.4	-32.1	0.00	0.00	0.00
2,900.0	13.50	351.46	2,873.7	245.7	-36.9	-35.4	0.00	0.00	0.00
3,000.0	13.50	351.46	2,971.0	268.8	-40.4	-38.8	0.00	0.00	0.00
3,100.0	13.50	351.46	3,068.2	291.8	-43.8	-42.1	0.00	0.00	0.00
3,200.0	13.50	351.46	3,165.4	314.9	-47.3	-45.4	0.00	0.00	0.00
3,300.0	13.50	351.46	3,262.7	338.0	-50.8	-48.8	0.00	0.00	0.00
3,400.0	13.50	351.46	3,359.9	361.1	-54.2	-52.1	0.00	0.00	0.00
3,500.0	13.50	351.46	3,457.2	384.2	-57.7	-55.4	0.00	0.00	0.00
3,600.0	13.50	351.46	3,554.4	407.3	-61.2	-58.8	0.00	0.00	0.00
3,700.0	13.50	351.46	3,651.6	430.4	-64.7	-62.1	0.00	0.00	0.00
3,800.0	13.50	351.46	3,748.9	453.5	-68.1	-65.4	0.00	0.00	0.00
3,900.0	13.50	351.46	3,846.1	476.6	-71.6	-68.8	0.00	0.00	0.00
4,000.0	13.50	351.46	3,943.3	499.6	-75.1	-72.1	0.00	0.00	0.00
4,100.0	13.50	351.46	4,040.6	522.7	-78.5	-75.4	0.00	0.00	0.00
4,200.0	13.50	351.46	4,137.8	545.8	-82.0	-78.8	0.00	0.00	0.00
4,300.0	13.50	351.46	4,235.0	568.9	-85.5	-82.1	0.00	0.00	0.00
4,400.0	13.50	351.46	4,332.3	592.0	-88.9	-85.4	0.00	0.00	0.00
4,500.0	13.50	351.46	4,429.5	615.1	-92.4	-88.7	0.00	0.00	0.00
4,600.0	13.50	351.46	4,526.8	638.2	-95.9	-92.1	0.00	0.00	0.00
4,700.0	13.50	351.46	4,624.0	661.3	-99.3	-95.4	0.00	0.00	0.00
4,800.0	13.50	351.46	4,721.2	684.3	-102.8	-98.7	0.00	0.00	0.00
4,900.0	13.50	351.46	4,818.5	707.4	-106.3	-102.1	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 233H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 233H	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	13.50	351.46	4,915.7	730.5	-109.7	-105.4	0.00	0.00	0.00
5,100.0	13.50	351.46	5,012.9	753.6	-113.2	-108.7	0.00	0.00	0.00
5,200.0	13.50	351.46	5,110.2	776.7	-116.7	-112.1	0.00	0.00	0.00
5,300.0	13.50	351.46	5,207.4	799.8	-120.1	-115.4	0.00	0.00	0.00
5,400.0	13.50	351.46	5,304.6	822.9	-123.6	-118.7	0.00	0.00	0.00
5,500.0	13.50	351.46	5,401.9	846.0	-127.1	-122.1	0.00	0.00	0.00
5,600.0	13.50	351.46	5,499.1	869.1	-130.6	-125.4	0.00	0.00	0.00
5,700.0	13.50	351.46	5,596.4	892.1	-134.0	-128.7	0.00	0.00	0.00
5,800.0	13.50	351.46	5,693.6	915.2	-137.5	-132.1	0.00	0.00	0.00
5,900.0	13.50	351.46	5,790.8	938.3	-141.0	-135.4	0.00	0.00	0.00
6,000.0	13.50	351.46	5,888.1	961.4	-144.4	-138.7	0.00	0.00	0.00
6,100.0	13.50	351.46	5,985.3	984.5	-147.9	-142.1	0.00	0.00	0.00
6,200.0	13.50	351.46	6,082.5	1,007.6	-151.4	-145.4	0.00	0.00	0.00
6,300.0	13.50	351.46	6,179.8	1,030.7	-154.8	-148.7	0.00	0.00	0.00
6,400.0	13.50	351.46	6,277.0	1,053.8	-158.3	-152.0	0.00	0.00	0.00
6,500.0	13.50	351.46	6,374.2	1,076.8	-161.8	-155.4	0.00	0.00	0.00
6,600.0	13.50	351.46	6,471.5	1,099.9	-165.2	-158.7	0.00	0.00	0.00
6,700.0	13.50	351.46	6,568.7	1,123.0	-168.7	-162.0	0.00	0.00	0.00
6,800.0	13.50	351.46	6,665.9	1,146.1	-172.2	-165.4	0.00	0.00	0.00
6,900.0	13.50	351.46	6,763.2	1,169.2	-175.6	-168.7	0.00	0.00	0.00
7,000.0	13.50	351.46	6,860.4	1,192.3	-179.1	-172.0	0.00	0.00	0.00
7,100.0	13.50	351.46	6,957.7	1,215.4	-182.6	-175.4	0.00	0.00	0.00
7,200.0	13.50	351.46	7,054.9	1,238.5	-186.0	-178.7	0.00	0.00	0.00
7,300.0	13.50	351.46	7,152.1	1,261.6	-189.5	-182.0	0.00	0.00	0.00
7,400.0	13.50	351.46	7,249.4	1,284.6	-193.0	-185.4	0.00	0.00	0.00
7,500.0	13.50	351.46	7,346.6	1,307.7	-196.5	-188.7	0.00	0.00	0.00
7,600.0	13.50	351.46	7,443.8	1,330.8	-199.9	-192.0	0.00	0.00	0.00
7,661.0	13.50	351.46	7,503.1	1,344.9	-202.0	-194.1	0.00	0.00	0.00
EOH 13.50° Inc									
7,700.0	12.72	351.46	7,541.1	1,353.7	-203.4	-195.3	2.00	-2.00	0.00
7,800.0	10.72	351.46	7,639.0	1,373.7	-206.4	-198.2	2.00	-2.00	0.00
7,900.0	8.72	351.46	7,737.6	1,390.4	-208.9	-200.6	2.00	-2.00	0.00
8,000.0	6.72	351.46	7,836.7	1,403.7	-210.9	-202.5	2.00	-2.00	0.00
8,100.0	4.72	351.46	7,936.2	1,413.6	-212.4	-204.0	2.00	-2.00	0.00
8,200.0	2.72	351.46	8,036.0	1,420.0	-213.3	-204.9	2.00	-2.00	0.00
8,300.0	0.72	351.46	8,135.9	1,423.0	-213.8	-205.3	2.00	-2.00	0.00
8,336.1	0.00	0.00	8,172.0	1,423.2	-213.8	-205.4	2.00	-2.00	0.00
Vertical Point									
8,400.0	0.00	0.00	8,235.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
8,500.0	0.00	0.00	8,335.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
8,600.0	0.00	0.00	8,435.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
8,700.0	0.00	0.00	8,535.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
8,800.0	0.00	0.00	8,635.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
8,900.0	0.00	0.00	8,735.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
9,000.0	0.00	0.00	8,835.9	1,423.2	-213.8	-205.4	0.00	0.00	0.00
9,091.1	0.00	0.00	8,927.0	1,423.2	-213.8	-205.4	0.00	0.00	0.00
KOP 10° DLS/100'									
9,100.0	0.89	89.66	8,935.9	1,423.2	-213.7	-205.3	10.00	10.00	0.00
9,150.0	5.89	89.66	8,985.8	1,423.2	-210.8	-202.3	10.00	10.00	0.00
9,200.0	10.89	89.66	9,035.3	1,423.3	-203.5	-195.0	10.00	10.00	0.00
9,250.0	15.89	89.66	9,083.9	1,423.3	-191.9	-183.5	10.00	10.00	0.00
9,300.0	20.89	89.66	9,131.3	1,423.4	-176.1	-167.7	10.00	10.00	0.00
9,350.0	25.89	89.66	9,177.2	1,423.5	-156.3	-147.8	10.00	10.00	0.00



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Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 233H	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)	
9,400.0	30.89	89.66	9,221.2	1,423.7	-132.5	-124.1	10.00	10.00	0.00	
9,450.0	35.89	89.66	9,262.9	1,423.8	-105.0	-96.6	10.00	10.00	0.00	
9,500.0	40.89	89.66	9,302.1	1,424.0	-74.0	-65.5	10.00	10.00	0.00	
9,550.0	45.89	89.66	9,338.4	1,424.2	-39.6	-31.2	10.00	10.00	0.00	
9,600.0	50.89	89.66	9,371.6	1,424.4	-2.3	6.2	10.00	10.00	0.00	
9,650.0	55.89	89.66	9,401.4	1,424.7	37.9	46.3	10.00	10.00	0.00	
9,700.0	60.89	89.66	9,427.6	1,424.9	80.4	88.9	10.00	10.00	0.00	
9,750.0	65.89	89.66	9,450.0	1,425.2	125.1	133.6	10.00	10.00	0.00	
9,800.0	70.89	89.66	9,468.4	1,425.5	171.6	180.1	10.00	10.00	0.00	
9,850.0	75.89	89.66	9,482.7	1,425.7	219.5	228.0	10.00	10.00	0.00	
9,900.0	80.89	89.66	9,492.7	1,426.0	268.5	276.9	10.00	10.00	0.00	
9,950.0	85.89	89.66	9,498.5	1,426.3	318.1	326.6	10.00	10.00	0.00	
9,991.1	90.00	89.66	9,500.0	1,426.6	359.1	367.6	10.00	10.00	0.00	
Landing Point										
10,000.0	90.00	89.66	9,500.0	1,426.6	368.1	376.5	0.00	0.00	0.00	
10,100.0	90.00	89.66	9,500.0	1,427.2	468.1	476.5	0.00	0.00	0.00	
10,200.0	90.00	89.66	9,500.0	1,427.8	568.1	576.5	0.00	0.00	0.00	
10,300.0	90.00	89.66	9,500.0	1,428.4	668.1	676.5	0.00	0.00	0.00	
10,400.0	90.00	89.66	9,500.0	1,429.0	768.1	776.5	0.00	0.00	0.00	
10,500.0	90.00	89.66	9,500.0	1,429.5	868.1	876.5	0.00	0.00	0.00	
10,600.0	90.00	89.66	9,500.0	1,430.1	968.1	976.5	0.00	0.00	0.00	
10,700.0	90.00	89.66	9,500.0	1,430.7	1,068.1	1,076.5	0.00	0.00	0.00	
10,800.0	90.00	89.66	9,500.0	1,431.3	1,168.1	1,176.5	0.00	0.00	0.00	
10,900.0	90.00	89.66	9,500.0	1,431.9	1,268.1	1,276.5	0.00	0.00	0.00	
11,000.0	90.00	89.66	9,500.0	1,432.5	1,368.1	1,376.5	0.00	0.00	0.00	
11,100.0	90.00	89.66	9,500.0	1,433.1	1,468.1	1,476.5	0.00	0.00	0.00	
11,200.0	90.00	89.66	9,500.0	1,433.7	1,568.1	1,576.5	0.00	0.00	0.00	
11,300.0	90.00	89.66	9,500.0	1,434.2	1,668.0	1,676.5	0.00	0.00	0.00	
11,400.0	90.00	89.66	9,500.0	1,434.8	1,768.0	1,776.5	0.00	0.00	0.00	
11,500.0	90.00	89.66	9,500.0	1,435.4	1,868.0	1,876.5	0.00	0.00	0.00	
11,600.0	90.00	89.66	9,500.0	1,436.0	1,968.0	1,976.5	0.00	0.00	0.00	
11,700.0	90.00	89.66	9,500.0	1,436.6	2,068.0	2,076.5	0.00	0.00	0.00	
11,800.0	90.00	89.66	9,500.0	1,437.2	2,168.0	2,176.5	0.00	0.00	0.00	
11,900.0	90.00	89.66	9,500.0	1,437.8	2,268.0	2,276.5	0.00	0.00	0.00	
12,000.0	90.00	89.66	9,500.0	1,438.3	2,368.0	2,376.5	0.00	0.00	0.00	
12,100.0	90.00	89.66	9,500.0	1,438.9	2,468.0	2,476.5	0.00	0.00	0.00	
12,200.0	90.00	89.66	9,500.0	1,439.5	2,568.0	2,576.5	0.00	0.00	0.00	
12,300.0	90.00	89.66	9,500.0	1,440.1	2,668.0	2,676.5	0.00	0.00	0.00	
12,400.0	90.00	89.66	9,500.0	1,440.7	2,768.0	2,776.5	0.00	0.00	0.00	
12,500.0	90.00	89.66	9,500.0	1,441.3	2,868.0	2,876.5	0.00	0.00	0.00	
12,600.0	90.00	89.66	9,500.0	1,441.9	2,968.0	2,976.5	0.00	0.00	0.00	
12,700.0	90.00	89.66	9,500.0	1,442.5	3,068.0	3,076.5	0.00	0.00	0.00	
12,800.0	90.00	89.66	9,500.0	1,443.0	3,168.0	3,176.5	0.00	0.00	0.00	
12,900.0	90.00	89.66	9,500.0	1,443.6	3,268.0	3,276.5	0.00	0.00	0.00	
13,000.0	90.00	89.66	9,500.0	1,444.2	3,368.0	3,376.5	0.00	0.00	0.00	
13,100.0	90.00	89.66	9,500.0	1,444.8	3,468.0	3,476.5	0.00	0.00	0.00	
13,200.0	90.00	89.66	9,500.0	1,445.4	3,568.0	3,576.5	0.00	0.00	0.00	
13,300.0	90.00	89.66	9,500.0	1,446.0	3,668.0	3,676.5	0.00	0.00	0.00	
13,400.0	90.00	89.66	9,500.0	1,446.6	3,768.0	3,776.5	0.00	0.00	0.00	
13,500.0	90.00	89.66	9,500.0	1,447.1	3,868.0	3,876.5	0.00	0.00	0.00	
13,600.0	90.00	89.66	9,500.0	1,447.7	3,968.0	3,976.5	0.00	0.00	0.00	
13,700.0	90.00	89.66	9,500.0	1,448.3	4,068.0	4,076.5	0.00	0.00	0.00	
13,800.0	90.00	89.66	9,500.0	1,448.9	4,168.0	4,176.5	0.00	0.00	0.00	
13,900.0	90.00	89.66	9,500.0	1,449.5	4,268.0	4,276.5	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 233H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3090.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3090.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 233H	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)	
14,000.0	90.00	89.66	9,500.0	1,450.1	4,368.0	4,376.5	0.00	0.00	0.00	
14,100.0	90.00	89.66	9,500.0	1,450.7	4,468.0	4,476.5	0.00	0.00	0.00	
14,200.0	90.00	89.66	9,500.0	1,451.3	4,568.0	4,576.5	0.00	0.00	0.00	
14,300.0	90.00	89.66	9,500.0	1,451.8	4,668.0	4,676.5	0.00	0.00	0.00	
14,400.0	90.00	89.66	9,500.0	1,452.4	4,768.0	4,776.5	0.00	0.00	0.00	
14,500.0	90.00	89.66	9,500.0	1,453.0	4,868.0	4,876.5	0.00	0.00	0.00	
14,600.0	90.00	89.66	9,500.0	1,453.6	4,968.0	4,976.5	0.00	0.00	0.00	
14,700.0	90.00	89.66	9,500.0	1,454.2	5,068.0	5,076.5	0.00	0.00	0.00	
14,800.0	90.00	89.66	9,500.0	1,454.8	5,168.0	5,176.5	0.00	0.00	0.00	
14,872.7	90.00	89.66	9,500.0	1,455.2	5,240.7	5,249.3	0.00	0.00	0.00	
TD at 14872.7										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
FTP Rana Salada 233H	0.00	0.00	9,500.0	1,426.6	359.1	486,721.42	629,400.63	32° 20' 15.887 N	104° 2' 53.513 W	
- plan misses target center by 0.1usft at 9991.0usft MD (9500.0 TVD, 1426.6 N, 359.1 E)										
- Point										
PBHL Rana Salada 233I	0.00	0.00	9,500.0	1,455.2	5,240.7	486,750.01	634,282.27	32° 20' 16.038 N	104° 1' 56.611 W	
- plan hits target center										
- Point										

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	
2,175.1	2,168.9	78.3	-11.8	EOB 13.50° Inc	
7,661.0	7,503.1	1,344.9	-202.0	EOH 13.50° Inc	
8,336.1	8,172.0	1,423.2	-213.8	Vertical Point	
9,091.1	8,927.0	1,423.2	-213.8	KOP 10° DLS/100'	
9,991.1	9,500.0	1,426.6	359.1	Landing Point	
14,872.7	9,500.0	1,455.2	5,240.7	TD at 14872.7	



NOVO Oil & Gas

EDDY CO., NM (NAD83)

SEC 02-T23S-R28E

Rana Salada Fed Com 0106 233H

Wellbore #1

Plan 1

Anticollision Report

02 June, 2021





SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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
Depth Range:	Unlimited
Results Limited by:	Maximum centre distance of 2,189.3usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCSWA
Scan Method:	Closest Approach 3D
Error Surface:	Pedal Curve
Casing Method:	Not applied

Survey Tool Program		Date	6/2/2021		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	14,872.7	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	798.5	60.0	56.4	16.569	CC, ES
Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1	1,000.0	994.2	66.7	62.3	15.123	SF
Rana Salada Fed Com 0106 213H - Wellbore #1 - Plan 1	1,500.0	1,499.5	20.0	13.3	2.983	CC, ES, SF
Rana Salada Fed Com 0106 223H - Wellbore #1 - Plan 1	1,500.0	1,499.0	40.0	33.3	5.967	CC, ES, SF
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	616.5	617.0	20.0	17.1	7.034	CC
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	700.0	700.5	20.0	16.8	6.255	ES
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	14,872.7	15,091.3	1,219.7	924.1	4.126	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										Offset Well Error:	0.5 usft
Reference	Vertical Depth (usft)	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:	Minimum Separation	Separation Factor	Warning		
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
0.0	0.0	0.0	0.0	0.5	0.5	-179.83	-60.0	-0.2	60.0			
100.0	100.0	98.5	98.5	0.5	0.5	-179.83	-60.0	-0.2	60.0	58.9	1.05	56.899
200.0	200.0	198.5	198.5	0.6	0.6	-179.83	-60.0	-0.2	60.0	58.7	1.27	47.234
300.0	300.0	298.5	298.5	0.8	0.8	-179.83	-60.0	-0.2	60.0	58.4	1.59	37.797
400.0	400.0	398.5	398.5	1.0	1.0	-179.83	-60.0	-0.2	60.0	58.0	1.96	30.657
500.0	500.0	498.5	498.5	1.2	1.2	-179.83	-60.0	-0.2	60.0	57.6	2.35	25.480
600.0	600.0	598.5	598.5	1.4	1.4	-179.83	-60.0	-0.2	60.0	57.2	2.77	21.674
700.0	700.0	698.5	698.5	1.6	1.6	-179.83	-60.0	-0.2	60.0	56.8	3.19	18.799
800.0	800.0	798.5	798.5	1.8	1.8	-179.83	-60.0	-0.2	60.0	56.4	3.62	16.569 CC, ES
900.0	900.0	898.5	898.4	2.0	2.0	-179.66	-61.6	-0.4	61.6	57.6	4.02	15.317
1,000.0	1,000.0	994.2	994.0	2.2	2.2	-179.21	-66.5	-0.9	66.7	62.3	4.41	15.123 SF
1,100.0	1,100.0	1,091.4	1,090.9	2.5	2.4	-178.58	-74.7	-1.9	75.1	70.3	4.80	15.649
1,200.0	1,200.0	1,188.0	1,186.8	2.7	2.6	-177.91	-86.1	-3.1	86.9	81.7	5.19	16.733
1,300.0	1,300.0	1,283.7	1,281.4	2.9	2.8	-177.28	-100.5	-4.8	102.0	96.4	5.59	18.255
1,400.0	1,400.0	1,378.3	1,374.4	3.1	3.1	-176.72	-117.8	-6.7	120.4	114.4	5.99	20.121
1,500.0	1,500.0	1,471.7	1,465.5	3.4	3.4	-176.25	-137.9	-9.0	142.1	135.7	6.38	22.262
1,600.0	1,600.0	1,563.2	1,554.2	3.6	3.7	-167.33	-160.4	-11.6	168.5	161.7	6.78	24.850
1,700.0	1,699.8	1,658.0	1,645.6	3.8	4.1	-167.20	-185.3	-14.4	199.8	192.5	7.23	27.621
1,800.0	1,799.5	1,751.8	1,736.1	4.0	4.5	-167.25	-209.9	-17.2	234.3	226.6	7.69	30.464
1,900.0	1,898.7	1,844.4	1,825.4	4.3	5.0	-167.40	-234.3	-20.0	272.0	263.8	8.14	33.406
2,000.0	1,997.5	1,935.7	1,913.4	4.5	5.4	-167.60	-258.2	-22.7	312.8	304.2	8.60	36.369

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Minimum	Separation	Warning					
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)	Separation (usft)		
2,100.0	2,095.6	2,025.5	2,000.0	4.8	5.8	-167.83	-281.8	-25.4	356.7	347.7	9.06	39.374	
2,200.0	2,193.1	2,113.7	2,085.2	5.1	6.3	-168.12	-305.0	-28.0	403.6	394.1	9.52	42.380	
2,300.0	2,290.3	2,201.6	2,169.9	5.4	6.7	-168.50	-328.1	-30.6	451.4	441.4	9.97	45.261	
2,400.0	2,387.6	2,289.4	2,254.6	5.8	7.1	-168.82	-351.1	-33.3	499.2	488.7	10.43	47.867	
2,500.0	2,484.8	2,377.2	2,339.3	6.2	7.6	-169.07	-374.2	-35.9	547.0	536.1	10.89	50.231	
2,600.0	2,582.0	2,465.0	2,423.9	6.5	8.0	-169.29	-397.2	-38.5	594.8	583.4	11.35	52.382	
2,700.0	2,679.3	2,552.8	2,508.6	6.9	8.5	-169.47	-420.3	-41.1	642.6	630.7	11.82	54.344	
2,800.0	2,776.5	2,640.7	2,593.3	7.3	8.9	-169.63	-443.4	-43.7	690.4	678.1	12.30	56.140	
2,900.0	2,873.7	2,728.5	2,678.0	7.8	9.4	-169.77	-466.4	-46.4	738.2	725.4	12.77	57.788	
3,000.0	2,971.0	2,816.3	2,762.7	8.2	9.8	-169.89	-489.5	-49.0	786.0	772.7	13.25	59.304	
3,100.0	3,068.2	2,904.1	2,847.4	8.6	10.3	-170.00	-512.6	-51.6	833.8	820.1	13.74	60.703	
3,200.0	3,165.4	2,991.9	2,932.1	9.0	10.7	-170.09	-535.6	-54.2	881.6	867.4	14.22	61.995	
3,300.0	3,262.7	3,079.7	3,016.8	9.5	11.2	-170.18	-558.7	-56.9	929.4	914.7	14.71	63.193	
3,400.0	3,359.9	3,167.6	3,101.5	9.9	11.6	-170.26	-581.7	-59.5	977.2	962.0	15.20	64.306	
3,500.0	3,457.2	3,255.4	3,186.2	10.3	12.1	-170.33	-604.8	-62.1	1,025.1	1,009.4	15.69	65.341	
3,600.0	3,554.4	3,343.2	3,270.9	10.8	12.6	-170.39	-627.9	-64.7	1,072.9	1,056.7	16.18	66.306	
3,700.0	3,651.6	3,431.0	3,355.6	11.2	13.0	-170.45	-650.9	-67.3	1,120.7	1,104.0	16.68	67.208	
3,800.0	3,748.9	3,518.8	3,440.3	11.7	13.5	-170.50	-674.0	-70.0	1,168.5	1,151.4	17.17	68.052	
3,900.0	3,846.1	3,606.7	3,525.0	12.1	13.9	-170.55	-697.1	-72.6	1,216.4	1,198.7	17.67	68.844	
4,000.0	3,943.3	3,694.5	3,609.7	12.6	14.4	-170.60	-720.1	-75.2	1,264.2	1,246.0	18.17	69.587	
4,100.0	4,040.6	3,782.3	3,694.4	13.0	14.9	-170.64	-743.2	-77.8	1,312.0	1,293.3	18.67	70.286	
4,200.0	4,137.8	3,870.1	3,779.1	13.5	15.3	-170.68	-766.3	-80.4	1,359.8	1,340.7	19.17	70.944	
4,300.0	4,235.0	3,957.9	3,863.8	13.9	15.8	-170.72	-789.3	-83.1	1,407.7	1,388.0	19.67	71.565	
4,400.0	4,332.3	4,045.7	3,948.5	14.4	16.2	-170.75	-812.4	-85.7	1,455.5	1,435.3	20.17	72.152	
4,500.0	4,429.5	4,133.6	4,033.2	14.8	16.7	-170.78	-835.4	-88.3	1,503.3	1,482.6	20.68	72.707	
4,600.0	4,526.8	4,221.4	4,117.9	15.3	17.2	-170.81	-858.5	-90.9	1,551.1	1,530.0	21.18	73.232	
4,700.0	4,624.0	4,309.2	4,202.6	15.8	17.6	-170.84	-881.6	-93.5	1,599.0	1,577.3	21.69	73.730	
4,800.0	4,721.2	4,397.0	4,287.2	16.2	18.1	-170.87	-904.6	-96.2	1,646.8	1,624.6	22.19	74.202	
4,900.0	4,818.5	4,484.8	4,371.9	16.7	18.6	-170.89	-927.7	-98.8	1,694.6	1,671.9	22.70	74.650	
5,000.0	4,915.7	4,572.7	4,456.6	17.1	19.0	-170.92	-950.8	-101.4	1,742.4	1,719.2	23.21	75.077	
5,100.0	5,012.9	4,660.5	4,541.3	17.6	19.5	-170.94	-973.8	-104.0	1,790.3	1,766.6	23.72	75.483	
5,200.0	5,110.2	4,748.3	4,626.0	18.1	19.9	-170.96	-996.9	-106.6	1,838.1	1,813.9	24.23	75.870	
5,300.0	5,207.4	4,836.1	4,710.7	18.5	20.4	-170.98	-1,019.9	-109.3	1,885.9	1,861.2	24.74	76.239	
5,400.0	5,304.6	4,923.9	4,795.4	19.0	20.9	-171.00	-1,043.0	-111.9	1,933.8	1,908.5	25.25	76.590	
5,500.0	5,401.9	5,011.7	4,880.1	19.5	21.3	-171.02	-1,066.1	-114.5	1,981.6	1,955.8	25.76	76.927	
5,600.0	5,499.1	5,099.6	4,964.8	19.9	21.8	-171.04	-1,089.1	-117.1	2,029.4	2,003.1	26.27	77.248	
5,700.0	5,596.4	5,187.4	5,049.5	20.4	22.3	-171.05	-1,112.2	-119.8	2,077.2	2,050.5	26.78	77.555	
5,800.0	5,693.6	5,275.2	5,134.2	20.9	22.7	-171.07	-1,135.3	-122.4	2,125.1	2,097.8	27.30	77.849	
5,900.0	5,790.8	5,363.0	5,218.9	21.3	23.2	-171.09	-1,158.3	-125.0	2,172.9	2,145.1	27.81	78.130	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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 213H - 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)	Reference	Offset	Highside 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	1,599.4	1,599.3	3.6	3.6	-167.51	-20.2	-1.8	22.0	14.9	7.13	3.084		
1,700.0	1,699.8	1,699.0	1,698.8	3.8	3.8	-159.86	-20.9	-6.7	28.3	20.8	7.55	3.751		
1,800.0	1,799.5	1,798.4	1,798.1	4.0	4.0	-156.19	-21.6	-12.3	38.4	30.5	7.98	4.816		
1,900.0	1,898.7	1,897.5	1,897.0	4.3	4.2	-155.68	-22.3	-18.0	51.8	43.4	8.42	6.152		
2,000.0	1,997.5	1,996.1	1,995.5	4.5	4.4	-156.54	-23.0	-23.6	68.3	59.4	8.86	7.706		
2,100.0	2,095.6	2,094.2	2,093.4	4.8	4.6	-157.89	-23.8	-29.1	87.9	78.6	9.31	9.448		
2,200.0	2,193.1	2,191.5	2,190.5	5.1	4.8	-159.37	-24.5	-34.7	110.8	101.0	9.77	11.339		
2,300.0	2,290.3	2,288.6	2,287.5	5.4	5.0	-160.57	-25.2	-40.2	134.5	124.3	10.22	13.158		
2,400.0	2,387.6	2,385.7	2,384.4	5.8	5.2	-161.41	-25.9	-45.7	158.3	147.6	10.68	14.817		
2,500.0	2,484.8	2,482.8	2,481.4	6.2	5.4	-162.03	-26.6	-51.2	182.1	171.0	11.15	16.332		
2,600.0	2,582.0	2,579.9	2,578.3	6.5	5.7	-162.51	-27.3	-56.7	206.0	194.4	11.62	17.719		
2,700.0	2,679.3	2,677.0	2,675.3	6.9	5.9	-162.88	-28.0	-62.2	229.8	217.7	12.10	18.992		
2,800.0	2,776.5	2,774.1	2,772.2	7.3	6.1	-163.19	-28.7	-67.7	253.7	241.1	12.58	20.162		
2,900.0	2,873.7	2,871.2	2,869.1	7.8	6.3	-163.44	-29.5	-73.2	277.5	264.5	13.07	21.240		
3,000.0	2,971.0	2,968.3	2,966.1	8.2	6.6	-163.66	-30.2	-78.8	301.4	287.9	13.55	22.237		
3,100.0	3,068.2	3,065.4	3,063.0	8.6	6.8	-163.84	-30.9	-84.3	325.3	311.2	14.05	23.160		
3,200.0	3,165.4	3,162.5	3,160.0	9.0	7.0	-164.00	-31.6	-89.8	349.2	334.6	14.54	24.017		
3,300.0	3,262.7	3,259.6	3,256.9	9.5	7.3	-164.13	-32.3	-95.3	373.0	358.0	15.03	24.814		
3,400.0	3,359.9	3,356.7	3,353.9	9.9	7.5	-164.26	-33.0	-100.8	396.9	381.4	15.53	25.556		
3,500.0	3,457.2	3,453.8	3,450.8	10.3	7.7	-164.36	-33.7	-106.3	420.8	404.8	16.03	26.250		
3,600.0	3,554.4	3,550.9	3,547.8	10.8	7.9	-164.46	-34.5	-111.8	444.7	428.1	16.53	26.898		
3,700.0	3,651.6	3,648.0	3,644.7	11.2	8.2	-164.54	-35.2	-117.3	468.6	451.5	17.03	27.507		
3,800.0	3,748.9	3,745.2	3,741.7	11.7	8.4	-164.62	-35.9	-122.8	492.4	474.9	17.54	28.078		
3,900.0	3,846.1	3,842.3	3,838.6	12.1	8.6	-164.69	-36.6	-128.4	516.3	498.3	18.04	28.615		
4,000.0	3,943.3	3,939.4	3,935.5	12.6	8.9	-164.76	-37.3	-133.9	540.2	521.7	18.55	29.121		
4,100.0	4,040.6	4,036.5	4,032.5	13.0	9.1	-164.81	-38.0	-139.4	564.1	545.0	19.06	29.598		
4,200.0	4,137.8	4,133.6	4,129.4	13.5	9.3	-164.87	-38.7	-144.9	588.0	568.4	19.57	30.049		
4,300.0	4,235.0	4,230.7	4,226.4	13.9	9.6	-164.92	-39.4	-150.4	611.9	591.8	20.08	30.475		
4,400.0	4,332.3	4,327.8	4,323.3	14.4	9.8	-164.96	-40.2	-155.9	635.7	615.2	20.59	30.880		
4,500.0	4,429.5	4,424.9	4,420.3	14.8	10.0	-165.01	-40.9	-161.4	659.6	638.5	21.10	31.263		
4,600.0	4,526.8	4,522.0	4,517.2	15.3	10.3	-165.05	-41.6	-166.9	683.5	661.9	21.61	31.627		
4,700.0	4,624.0	4,619.1	4,614.2	15.8	10.5	-165.08	-42.3	-172.5	707.4	685.3	22.12	31.973		
4,800.0	4,721.2	4,716.2	4,711.1	16.2	10.7	-165.12	-43.0	-178.0	731.3	708.6	22.64	32.302		
4,900.0	4,818.5	4,813.3	4,808.0	16.7	11.0	-165.15	-43.7	-183.5	755.2	732.0	23.15	32.616		
5,000.0	4,915.7	4,910.4	4,905.0	17.1	11.2	-165.18	-44.4	-189.0	779.1	755.4	23.67	32.916		
5,100.0	5,012.9	5,007.5	5,001.9	17.6	11.5	-165.21	-45.1	-194.5	802.9	778.8	24.18	33.202		

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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 213H - 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 Toolface (°)	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)		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,200.0	5,110.2	5,104.6	5,098.9	18.1	11.7	-165.24	-45.9	-200.0	826.8	802.1	24.70	33.475	
5,300.0	5,207.4	5,201.7	5,195.8	18.5	11.9	-165.26	-46.6	-205.5	850.7	825.5	25.22	33.736	
5,400.0	5,304.6	5,298.8	5,292.8	19.0	12.2	-165.29	-47.3	-211.0	874.6	848.9	25.73	33.987	
5,500.0	5,401.9	5,400.0	5,393.9	19.5	12.4	-165.35	-47.9	-216.2	898.4	872.1	26.25	34.219	
5,600.0	5,499.1	5,504.7	5,498.5	19.9	12.6	-165.62	-48.2	-218.2	921.4	894.7	26.73	34.467	
5,700.0	5,596.4	5,602.1	5,595.9	20.4	12.8	-165.97	-48.2	-218.2	944.1	916.9	27.18	34.730	
5,800.0	5,693.6	5,699.3	5,693.1	20.9	13.0	-166.31	-48.2	-218.2	966.8	939.2	27.64	34.976	
5,900.0	5,790.8	5,796.5	5,790.3	21.3	13.2	-166.63	-48.2	-218.2	989.5	961.4	28.10	35.213	
6,000.0	5,888.1	5,893.8	5,887.6	21.8	13.4	-166.93	-48.2	-218.2	1,012.3	983.7	28.56	35.443	
6,100.0	5,985.3	5,991.0	5,984.8	22.2	13.6	-167.22	-48.2	-218.2	1,035.1	1,006.1	29.02	35.665	
6,200.0	6,082.5	6,088.2	6,082.0	22.7	13.8	-167.50	-48.2	-218.2	1,057.9	1,028.4	29.48	35.881	
6,300.0	6,179.8	6,185.5	6,179.3	23.2	13.9	-167.77	-48.2	-218.2	1,080.7	1,050.8	29.95	36.089	
6,400.0	6,277.0	6,282.7	6,276.5	23.6	14.1	-168.03	-48.2	-218.2	1,103.6	1,073.2	30.41	36.290	
6,500.0	6,374.2	6,380.0	6,373.7	24.1	14.3	-168.27	-48.2	-218.2	1,126.5	1,095.6	30.87	36.485	
6,600.0	6,471.5	6,477.2	6,471.0	24.6	14.5	-168.51	-48.2	-218.2	1,149.4	1,118.0	31.34	36.674	
6,700.0	6,568.7	6,574.4	6,568.2	25.0	14.7	-168.74	-48.2	-218.2	1,172.3	1,140.5	31.81	36.857	
6,800.0	6,665.9	6,671.7	6,665.4	25.5	14.9	-168.95	-48.2	-218.2	1,195.2	1,162.9	32.27	37.035	
6,900.0	6,763.2	6,768.9	6,762.7	26.0	15.1	-169.16	-48.2	-218.2	1,218.1	1,185.4	32.74	37.207	
7,000.0	6,860.4	6,866.1	6,859.9	26.5	15.3	-169.37	-48.2	-218.2	1,241.1	1,207.9	33.21	37.374	
7,100.0	6,957.7	6,963.4	6,957.2	26.9	15.5	-169.56	-48.2	-218.2	1,264.1	1,230.4	33.68	37.536	
7,200.0	7,054.9	7,060.6	7,054.4	27.4	15.7	-169.75	-48.2	-218.2	1,287.1	1,252.9	34.15	37.693	
7,300.0	7,152.1	7,157.8	7,151.6	27.9	15.9	-169.93	-48.2	-218.2	1,310.1	1,275.5	34.62	37.845	
7,400.0	7,249.4	7,255.1	7,248.9	28.3	16.1	-170.11	-48.2	-218.2	1,333.1	1,298.0	35.09	37.993	
7,500.0	7,346.6	7,352.3	7,346.1	28.8	16.4	-170.28	-48.2	-218.2	1,356.1	1,320.5	35.56	38.137	
7,600.0	7,443.8	7,449.5	7,443.3	29.3	16.6	-170.44	-48.2	-218.2	1,379.1	1,343.1	36.03	38.276	
7,700.0	7,541.1	7,546.8	7,540.6	29.7	16.8	-170.63	-48.2	-218.2	1,401.9	1,365.4	36.49	38.417	
7,800.0	7,639.0	7,644.8	7,638.5	30.1	17.0	-170.82	-48.2	-218.2	1,422.0	1,385.1	36.91	38.528	
7,900.0	7,737.6	7,743.3	7,737.1	30.4	17.2	-170.98	-48.2	-218.2	1,438.7	1,401.4	37.31	38.555	
8,000.0	7,836.7	7,842.4	7,836.2	30.6	17.4	-171.11	-48.2	-218.2	1,451.9	1,414.2	37.71	38.500	
8,100.0	7,936.2	7,941.9	7,935.7	30.9	17.6	-171.20	-48.2	-218.2	1,461.8	1,423.7	38.10	38.365	
8,200.0	8,036.0	8,041.7	8,035.5	31.0	17.8	-171.26	-48.2	-218.2	1,468.2	1,429.7	38.48	38.154	
8,300.0	8,135.9	8,141.6	8,135.4	31.2	18.0	-171.28	-48.2	-218.2	1,471.2	1,432.3	38.85	37.869	
8,400.0	8,235.9	8,241.6	8,235.4	31.3	18.2	-179.83	-48.2	-218.2	1,471.4	1,432.2	39.22	37.515	
8,500.0	8,335.9	8,341.6	8,335.4	31.4	18.4	-179.83	-48.2	-218.2	1,471.4	1,431.8	39.62	37.134	
8,600.0	8,435.9	8,441.6	8,435.4	31.5	18.6	-179.83	-48.2	-218.2	1,471.4	1,431.4	40.03	36.760	
8,700.0	8,535.9	8,541.6	8,535.4	31.7	18.9	-179.83	-48.2	-218.2	1,471.4	1,431.0	40.43	36.392	
8,800.0	8,635.9	8,641.6	8,635.4	31.8	19.1	-179.83	-48.2	-218.2	1,471.4	1,430.6	40.84	36.031	
8,900.0	8,735.9	8,741.6	8,735.4	31.9	19.3	-179.83	-48.2	-218.2	1,471.4	1,430.2	41.24	35.677	
9,000.0	8,835.9	8,841.6	8,835.4	32.1	19.5	-179.83	-48.2	-218.2	1,471.4	1,429.8	41.65	35.328	
9,007.9	8,843.9	8,849.6	8,843.4	32.1	19.5	90.51	-48.2	-218.2	1,471.4	1,429.7	41.68	35.301	
9,100.0	8,935.9	8,941.5	8,935.3	32.2	19.7	90.51	-48.2	-218.1	1,471.4	1,429.4	42.05	34.988	
9,200.0	9,035.3	9,039.6	9,032.8	32.3	19.9	90.50	-48.3	-208.3	1,471.6	1,429.2	42.36	34.742	
9,300.0	9,131.3	9,137.8	9,127.3	32.4	20.0	90.48	-48.6	-182.0	1,472.0	1,429.4	42.59	34.560	
9,400.0	9,221.2	9,236.1	9,216.0	32.4	20.1	90.44	-49.0	-139.9	1,472.7	1,429.9	42.81	34.400	
9,500.0	9,302.1	9,334.6	9,296.4	32.5	20.3	90.39	-49.6	-83.2	1,473.7	1,430.6	43.10	34.192	
9,600.0	9,371.6	9,433.3	9,366.0	32.5	20.5	90.33	-50.3	-13.4	1,474.8	1,431.2	43.59	33.836	
9,700.0	9,427.6	9,532.3	9,422.7	32.6	20.9	90.26	-51.2	67.5	1,476.2	1,431.8	44.43	33.226	
9,800.0	9,468.4	9,631.5	9,464.8	32.7	21.6	90.18	-52.1	157.3	1,477.7	1,431.9	45.75	32.296	
9,900.0	9,492.7	9,731.1	9,490.9	32.8	22.6	90.10	-53.1	253.2	1,479.2	1,431.6	47.62	31.060	
10,000.0	9,500.0	9,831.0	9,500.0	33.1	23.8	90.02	-54.2	352.6	1,480.9	1,430.9	50.00	29.620	
10,100.0	9,500.0	9,931.0	9,500.0	33.6	25.3	90.02	-55.2	452.6	1,482.5	1,429.7	52.83	28.060	
10,200.0	9,500.0	10,031.0	9,500.0	34.3	27.0	90.02	-56.3	552.5	1,484.1	1,428.1	56.05	26.479	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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 213H - 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	Minimum	Separation	Rule Assigned:					
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference	Offset	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Separation Factor	Warning	
10,300.0	9,500.0	10,131.0	9,500.0	35.3	28.8	90.02	-57.3	652.5	1,485.8	1,426.2	59.60	24.928	
10,400.0	9,500.0	10,231.0	9,500.0	36.6	30.8	90.02	-58.4	752.5	1,487.4	1,424.0	63.44	23.446	
10,500.0	9,500.0	10,330.9	9,500.0	38.1	32.8	90.02	-59.4	852.5	1,489.0	1,421.5	67.51	22.056	
10,600.0	9,500.0	10,430.9	9,500.0	39.9	35.0	90.02	-60.5	952.5	1,490.7	1,418.9	71.77	20.769	
10,700.0	9,500.0	10,530.9	9,500.0	41.7	37.3	90.02	-61.5	1,052.4	1,492.3	1,416.1	76.20	19.584	
10,800.0	9,500.0	10,630.9	9,500.0	43.8	39.6	90.02	-62.5	1,152.4	1,493.9	1,413.2	80.76	18.498	
10,900.0	9,500.0	10,730.9	9,500.0	45.9	42.0	90.02	-63.6	1,252.4	1,495.6	1,410.1	85.43	17.506	
11,000.0	9,500.0	10,830.9	9,500.0	48.1	44.4	90.02	-64.6	1,352.4	1,497.2	1,407.0	90.20	16.598	
11,100.0	9,500.0	10,930.9	9,500.0	50.3	46.8	90.02	-65.7	1,452.4	1,498.8	1,403.8	95.05	15.768	
11,200.0	9,500.0	11,030.9	9,500.0	52.7	49.3	90.02	-66.7	1,552.3	1,500.5	1,400.5	99.97	15.009	
11,300.0	9,500.0	11,130.8	9,500.0	55.0	51.9	90.02	-67.8	1,652.3	1,502.1	1,397.1	104.95	14.312	
11,400.0	9,500.0	11,230.8	9,500.0	57.4	54.4	90.02	-68.8	1,752.3	1,503.7	1,393.7	109.98	13.672	
11,500.0	9,500.0	11,330.8	9,500.0	59.9	57.0	90.02	-69.9	1,852.3	1,505.4	1,390.3	115.06	13.083	
11,600.0	9,500.0	11,430.8	9,500.0	62.3	59.5	90.02	-70.9	1,952.3	1,507.0	1,386.8	120.17	12.540	
11,700.0	9,500.0	11,530.8	9,500.0	64.8	62.1	90.02	-72.0	2,052.3	1,508.6	1,383.3	125.32	12.038	
11,800.0	9,500.0	11,630.8	9,500.0	67.3	64.7	90.02	-73.0	2,152.2	1,510.3	1,379.8	130.50	11.573	
11,900.0	9,500.0	11,730.8	9,500.0	69.9	67.4	90.02	-74.1	2,252.2	1,511.9	1,376.2	135.71	11.141	
12,000.0	9,500.0	11,830.7	9,500.0	72.4	70.0	90.02	-75.1	2,352.2	1,513.5	1,372.6	140.94	10.739	
12,100.0	9,500.0	11,930.7	9,500.0	75.0	72.6	90.02	-76.1	2,452.2	1,515.2	1,369.0	146.19	10.364	
12,200.0	9,500.0	12,030.7	9,500.0	77.6	75.3	90.02	-77.2	2,552.2	1,516.8	1,365.3	151.46	10.014	
12,300.0	9,500.0	12,130.7	9,500.0	80.2	77.9	90.02	-78.2	2,652.1	1,518.4	1,361.7	156.75	9.687	
12,400.0	9,500.0	12,230.7	9,500.0	82.8	80.6	90.02	-79.3	2,752.1	1,520.1	1,358.0	162.06	9.380	
12,500.0	9,500.0	12,330.7	9,500.0	85.4	83.3	90.02	-80.3	2,852.1	1,521.7	1,354.3	167.37	9.092	
12,600.0	9,500.0	12,430.7	9,500.0	88.0	86.0	90.02	-81.4	2,952.1	1,523.3	1,350.6	172.70	8.821	
12,700.0	9,500.0	12,530.7	9,500.0	90.6	88.6	90.02	-82.4	3,052.1	1,525.0	1,346.9	178.04	8.565	
12,800.0	9,500.0	12,630.6	9,500.0	93.3	91.3	90.02	-83.5	3,152.0	1,526.6	1,343.2	183.40	8.324	
12,900.0	9,500.0	12,730.6	9,500.0	95.9	94.0	90.02	-84.5	3,252.0	1,528.2	1,339.5	188.76	8.096	
13,000.0	9,500.0	12,830.6	9,500.0	98.6	96.7	90.02	-85.6	3,352.0	1,529.9	1,335.7	194.13	7.881	
13,100.0	9,500.0	12,930.6	9,500.0	101.2	99.4	90.02	-86.6	3,452.0	1,531.5	1,332.0	199.51	7.676	
13,200.0	9,500.0	13,030.6	9,500.0	103.9	102.1	90.02	-87.7	3,552.0	1,533.1	1,328.2	204.90	7.482	
13,300.0	9,500.0	13,130.6	9,500.0	106.6	104.8	90.02	-88.7	3,652.0	1,534.8	1,324.5	210.29	7.298	
13,400.0	9,500.0	13,230.6	9,500.0	109.2	107.5	90.02	-89.8	3,751.9	1,536.4	1,320.7	215.69	7.123	
13,500.0	9,500.0	13,330.5	9,500.0	111.9	110.2	90.02	-90.8	3,851.9	1,538.0	1,316.9	221.09	6.956	
13,600.0	9,500.0	13,430.5	9,500.0	114.6	112.9	90.02	-91.8	3,951.9	1,539.7	1,313.2	226.51	6.797	
13,700.0	9,500.0	13,530.5	9,500.0	117.3	115.7	90.02	-92.9	4,051.9	1,541.3	1,309.4	231.92	6.646	
13,800.0	9,500.0	13,630.5	9,500.0	120.0	118.4	90.02	-93.9	4,151.9	1,542.9	1,305.6	237.34	6.501	
13,900.0	9,500.0	13,730.5	9,500.0	122.6	121.1	90.02	-95.0	4,251.8	1,544.6	1,301.8	242.77	6.362	
14,000.0	9,500.0	13,830.5	9,500.0	125.3	123.8	90.02	-96.0	4,351.8	1,546.2	1,298.0	248.20	6.230	
14,100.0	9,500.0	13,930.5	9,500.0	128.0	126.5	90.02	-97.1	4,451.8	1,547.8	1,294.2	253.63	6.103	
14,200.0	9,500.0	14,030.5	9,500.0	130.7	129.3	90.02	-98.1	4,551.8	1,549.5	1,290.4	259.07	5.981	
14,300.0	9,500.0	14,130.4	9,500.0	133.4	132.0	90.02	-99.2	4,651.8	1,551.1	1,286.6	264.51	5.864	
14,400.0	9,500.0	14,230.4	9,500.0	136.1	134.7	90.02	-100.2	4,751.7	1,552.7	1,282.8	269.96	5.752	
14,500.0	9,500.0	14,330.4	9,500.0	138.8	137.4	90.02	-101.3	4,851.7	1,554.4	1,279.0	275.40	5.644	
14,600.0	9,500.0	14,430.4	9,500.0	141.5	140.2	90.02	-102.3	4,951.7	1,556.0	1,275.1	280.85	5.540	
14,700.0	9,500.0	14,530.4	9,500.0	144.3	142.9	90.02	-103.4	5,051.7	1,557.6	1,271.3	286.31	5.440	
14,800.0	9,500.0	14,630.4	9,500.0	147.0	145.6	90.02	-104.4	5,151.7	1,559.3	1,267.5	291.76	5.344	
14,872.7	9,500.0	14,703.1	9,500.0	148.9	147.6	90.02	-105.2	5,224.4	1,560.5	1,264.7	295.73	5.277	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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
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 +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
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		
900.0	900.0	899.0	899.0	2.0	2.0	-179.83	-40.0	-0.1	40.0	35.9	4.06	9.861		
1,000.0	1,000.0	999.0	999.0	2.2	2.2	-179.83	-40.0	-0.1	40.0	35.5	4.49	8.902		
1,100.0	1,100.0	1,099.0	1,099.0	2.5	2.5	-179.83	-40.0	-0.1	40.0	35.1	4.93	8.109		
1,200.0	1,200.0	1,199.0	1,199.0	2.7	2.7	-179.83	-40.0	-0.1	40.0	34.6	5.37	7.444		
1,300.0	1,300.0	1,299.0	1,299.0	2.9	2.9	-179.83	-40.0	-0.1	40.0	34.2	5.82	6.878		
1,400.0	1,400.0	1,399.0	1,399.0	3.1	3.1	-179.83	-40.0	-0.1	40.0	33.7	6.26	6.391		
1,500.0	1,500.0	1,499.0	1,499.0	3.4	3.4	-179.83	-40.0	-0.1	40.0	33.3	6.70	5.967 CC, ES, SF		
1,600.0	1,600.0	1,597.6	1,597.5	3.6	3.5	-171.15	-41.6	-0.5	43.4	36.3	7.12	6.095		
1,700.0	1,699.8	1,695.4	1,695.3	3.8	3.7	-170.83	-46.5	-1.6	53.5	46.0	7.50	7.134		
1,800.0	1,799.5	1,791.9	1,791.4	4.0	3.9	-170.49	-54.5	-3.3	70.4	62.5	7.89	8.923		
1,900.0	1,898.7	1,886.5	1,885.3	4.3	4.1	-170.19	-65.4	-5.7	93.8	85.6	8.27	11.345		
2,000.0	1,997.5	1,978.5	1,976.3	4.5	4.3	-169.95	-78.9	-8.7	123.6	115.0	8.65	14.301		
2,100.0	2,095.6	2,067.5	2,063.8	4.8	4.5	-169.75	-94.7	-12.2	159.6	150.6	9.02	17.706		
2,200.0	2,193.1	2,153.1	2,147.4	5.1	4.7	-169.60	-112.4	-16.1	201.5	192.1	9.38	21.474		
2,300.0	2,290.3	2,241.9	2,233.9	5.4	5.0	-169.55	-132.3	-20.5	245.8	236.0	9.78	25.126		
2,400.0	2,387.6	2,331.6	2,321.2	5.8	5.3	-169.51	-152.4	-25.0	290.1	279.9	10.20	28.444		
2,500.0	2,484.8	2,421.2	2,408.4	6.2	5.6	-169.48	-172.5	-29.4	334.5	323.8	10.62	31.487		
2,600.0	2,582.0	2,510.8	2,495.6	6.5	5.9	-169.46	-192.6	-33.9	378.8	367.7	11.06	34.262		
2,700.0	2,679.3	2,600.5	2,582.9	6.9	6.3	-169.44	-212.7	-38.3	423.1	411.6	11.50	36.805		
2,800.0	2,776.5	2,690.1	2,670.1	7.3	6.6	-169.43	-232.8	-42.8	467.5	455.5	11.94	39.139		
2,900.0	2,873.7	2,779.7	2,757.4	7.8	7.0	-169.42	-252.9	-47.2	511.8	499.4	12.40	41.286		
3,000.0	2,971.0	2,869.4	2,844.6	8.2	7.3	-169.41	-273.0	-51.7	556.2	543.3	12.85	43.264		
3,100.0	3,068.2	2,959.0	2,931.8	8.6	7.7	-169.40	-293.1	-56.1	600.5	587.2	13.32	45.091		
3,200.0	3,165.4	3,048.6	3,019.1	9.0	8.1	-169.39	-313.2	-60.6	644.8	631.0	13.78	46.781		
3,300.0	3,262.7	3,138.3	3,106.3	9.5	8.5	-169.38	-333.3	-65.0	689.2	674.9	14.25	48.347		
3,400.0	3,359.9	3,227.9	3,193.5	9.9	8.9	-169.38	-353.4	-69.5	733.5	718.8	14.73	49.802		
3,500.0	3,457.2	3,317.5	3,280.8	10.3	9.2	-169.37	-373.5	-73.9	777.9	762.6	15.21	51.156		
3,600.0	3,554.4	3,407.2	3,368.0	10.8	9.6	-169.37	-393.5	-78.4	822.2	806.5	15.69	52.418		
3,700.0	3,651.6	3,496.8	3,455.3	11.2	10.0	-169.37	-413.6	-82.8	866.5	850.4	16.17	53.596		
3,800.0	3,748.9	3,586.4	3,542.5	11.7	10.4	-169.36	-433.7	-87.2	910.9	894.2	16.65	54.698		
3,900.0	3,846.1	3,676.1	3,629.7	12.1	10.8	-169.36	-453.8	-91.7	955.2	938.1	17.14	55.730		
4,000.0	3,943.3	3,765.7	3,717.0	12.6	11.2	-169.36	-473.9	-96.1	999.5	981.9	17.63	56.699		
4,100.0	4,040.6	3,855.3	3,804.2	13.0	11.6	-169.35	-494.0	-100.6	1,043.9	1,025.8	18.12	57.609		
4,200.0	4,137.8	3,945.0	3,891.4	13.5	12.0	-169.35	-514.1	-105.0	1,088.2	1,069.6	18.61	58.466		
4,300.0	4,235.0	4,034.6	3,978.7	13.9	12.4	-169.35	-534.2	-109.5	1,132.6	1,113.5	19.11	59.274		
4,400.0	4,332.3	4,124.2	4,065.9	14.4	12.9	-169.35	-554.3	-113.9	1,176.9	1,157.3	19.60	60.036		
4,500.0	4,429.5	4,213.9	4,153.1	14.8	13.3	-169.34	-574.4	-118.4	1,221.2	1,201.1	20.10	60.756		
4,600.0	4,526.8	4,303.5	4,240.4	15.3	13.7	-169.34	-594.5	-122.8	1,265.6	1,245.0	20.60	61.437		
4,700.0	4,624.0	4,393.1	4,327.6	15.8	14.1	-169.34	-614.6	-127.3	1,309.9	1,288.8	21.10	62.083		
4,800.0	4,721.2	4,482.8	4,414.9	16.2	14.5	-169.34	-634.7	-131.7	1,354.3	1,332.7	21.60	62.695		
4,900.0	4,818.5	4,572.4	4,502.1	16.7	14.9	-169.34	-654.8	-136.2	1,398.6	1,376.5	22.10	63.275		
5,000.0	4,915.7	4,662.0	4,589.3	17.1	15.3	-169.34	-674.9	-140.6	1,442.9	1,420.3	22.61	63.827		
5,100.0	5,012.9	4,751.7	4,676.6	17.6	15.7	-169.34	-695.0	-145.1	1,487.3	1,464.2	23.11	64.353		

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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
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)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,200.0	5,110.2	4,841.3	4,763.8	18.1	16.2	-169.33	-715.1	-149.5	1,531.6	1,508.0	23.62	64.853	
5,300.0	5,207.4	4,930.9	4,851.0	18.5	16.6	-169.33	-735.2	-154.0	1,576.0	1,551.8	24.12	65.329	
5,400.0	5,304.6	5,020.6	4,938.3	19.0	17.0	-169.33	-755.3	-158.4	1,620.3	1,595.7	24.63	65.784	
5,500.0	5,401.9	5,110.2	5,025.5	19.5	17.4	-169.33	-775.4	-162.8	1,664.6	1,639.5	25.14	66.218	
5,600.0	5,499.1	5,199.8	5,112.8	19.9	17.8	-169.33	-795.5	-167.3	1,709.0	1,683.3	25.65	66.633	
5,700.0	5,596.4	5,289.5	5,200.0	20.4	18.2	-169.33	-815.6	-171.7	1,753.3	1,727.2	26.16	67.029	
5,800.0	5,693.6	5,379.1	5,287.2	20.9	18.7	-169.33	-835.7	-176.2	1,797.7	1,771.0	26.67	67.409	
5,900.0	5,790.8	5,468.7	5,374.5	21.3	19.1	-169.33	-855.8	-180.6	1,842.0	1,814.8	27.18	67.772	
6,000.0	5,888.1	5,558.3	5,461.7	21.8	19.5	-169.33	-875.9	-185.1	1,886.3	1,858.7	27.69	68.120	
6,100.0	5,985.3	5,648.0	5,548.9	22.2	19.9	-169.33	-896.0	-189.5	1,930.7	1,902.5	28.20	68.454	
6,200.0	6,082.5	5,737.6	5,636.2	22.7	20.3	-169.32	-916.1	-194.0	1,975.0	1,946.3	28.72	68.774	
6,300.0	6,179.8	5,827.2	5,723.4	23.2	20.8	-169.32	-936.2	-198.4	2,019.4	1,990.1	29.23	69.082	
6,400.0	6,277.0	5,916.9	5,810.6	23.6	21.2	-169.32	-956.3	-202.9	2,063.7	2,034.0	29.75	69.377	
6,500.0	6,374.2	6,155.4	6,044.3	24.1	22.0	-169.36	-1,002.7	-213.1	2,106.0	2,075.1	30.97	68.013	
6,600.0	6,471.5	6,502.5	6,389.5	24.6	22.8	-169.60	-1,036.2	-220.6	2,138.4	2,106.1	32.28	66.241	
6,700.0	6,568.7	6,680.7	6,567.7	25.0	23.0	-169.79	-1,038.3	-221.0	2,162.0	2,129.1	32.91	65.703	
6,800.0	6,665.9	6,778.0	6,664.9	25.5	23.1	-169.90	-1,038.3	-221.0	2,185.0	2,151.6	33.35	65.515	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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	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	18.936	
200.0	200.0	200.5	200.5	0.6	0.6	0.17	20.0	0.1	20.0	18.7	1.27	15.703	
300.0	300.0	300.5	300.5	0.8	0.8	0.17	20.0	0.1	20.0	18.4	1.59	12.565	
400.0	400.0	400.5	400.5	1.0	1.0	0.17	20.0	0.1	20.0	18.0	1.96	10.194	
500.0	500.0	500.5	500.5	1.2	1.2	0.17	20.0	0.1	20.0	17.6	2.36	8.474	
600.0	600.0	600.5	600.5	1.4	1.4	0.17	20.0	0.1	20.0	17.2	2.77	7.210	
616.5	616.5	617.0	617.0	1.4	1.4	0.17	20.0	0.1	20.0	17.1	2.84	7.034 CC	
700.0	700.0	700.5	700.5	1.6	1.6	0.17	20.0	0.1	20.0	16.8	3.20	6.255 ES	
800.0	800.0	800.0	800.0	1.8	1.8	-0.12	21.7	0.0	21.7	18.1	3.62	5.997	
900.0	900.0	898.8	898.6	2.0	2.0	-0.76	26.9	-0.4	26.9	22.9	4.06	6.642	
1,000.0	1,000.0	997.3	996.8	2.2	2.3	-1.42	35.4	-0.9	35.6	31.1	4.49	7.930	
1,100.0	1,100.0	1,095.2	1,094.0	2.5	2.5	-1.93	47.2	-1.6	47.6	42.7	4.92	9.691	
1,200.0	1,200.0	1,192.1	1,189.7	2.7	2.8	-2.31	62.1	-2.5	63.1	57.7	5.34	11.806	
1,300.0	1,300.0	1,288.0	1,283.8	2.9	3.0	-2.57	80.0	-3.6	81.8	76.0	5.76	14.193	
1,400.0	1,400.0	1,382.4	1,376.0	3.1	3.4	-2.76	100.7	-4.9	103.8	97.6	6.18	16.788	
1,500.0	1,500.0	1,475.5	1,466.0	3.4	3.7	-2.89	124.1	-6.3	129.0	122.4	6.60	19.547	
1,600.0	1,600.0	1,567.3	1,554.1	3.6	4.2	5.56	150.0	-7.8	155.6	148.6	7.00	22.211	
1,700.0	1,699.8	1,662.1	1,644.3	3.8	4.6	5.58	179.1	-9.6	181.3	173.8	7.45	24.348	
1,800.0	1,799.5	1,759.5	1,737.0	4.0	5.1	5.69	209.1	-11.4	203.8	195.9	7.91	25.756	
1,900.0	1,898.7	1,857.7	1,830.3	4.3	5.6	5.86	239.4	-13.3	223.0	214.6	8.40	26.536	
2,000.0	1,997.5	1,956.4	1,924.2	4.5	6.2	6.10	269.9	-15.1	238.7	229.8	8.90	26.813	
2,100.0	2,095.6	2,055.6	2,018.6	4.8	6.7	6.40	300.5	-17.0	251.0	241.6	9.41	26.661	
2,200.0	2,193.1	2,155.2	2,113.3	5.1	7.3	6.77	331.2	-18.9	259.9	250.0	9.94	26.158	
2,300.0	2,290.3	2,254.9	2,208.1	5.4	7.8	7.15	361.9	-20.7	267.9	257.5	10.47	25.581	
2,400.0	2,387.6	2,354.5	2,302.9	5.8	8.4	7.52	392.7	-22.6	276.0	264.9	11.02	25.045	
2,500.0	2,484.8	2,454.2	2,397.7	6.2	9.0	7.86	423.4	-24.5	284.0	272.4	11.57	24.546	
2,600.0	2,582.0	2,553.9	2,492.4	6.5	9.5	8.18	454.2	-26.3	292.0	279.9	12.13	24.082	
2,700.0	2,679.3	2,653.5	2,587.2	6.9	10.1	8.49	484.9	-28.2	300.1	287.4	12.69	23.649	
2,800.0	2,776.5	2,753.2	2,682.0	7.3	10.7	8.78	515.7	-30.1	308.1	294.9	13.25	23.246	
2,900.0	2,873.7	2,852.8	2,776.8	7.8	11.3	9.05	546.4	-32.0	316.2	302.3	13.83	22.869	
3,000.0	2,971.0	2,952.5	2,871.6	8.2	11.9	9.31	577.1	-33.8	324.2	309.8	14.40	22.516	
3,100.0	3,068.2	3,052.2	2,966.4	8.6	12.4	9.56	607.9	-35.7	332.3	317.3	14.98	22.185	
3,200.0	3,165.4	3,151.8	3,061.1	9.0	13.0	9.80	638.6	-37.6	340.4	324.8	15.56	21.875	
3,300.0	3,262.7	3,251.5	3,155.9	9.5	13.6	10.02	669.4	-39.4	348.5	332.3	16.15	21.583	
3,400.0	3,359.9	3,351.2	3,250.7	9.9	14.2	10.24	700.1	-41.3	356.6	339.8	16.73	21.308	
3,500.0	3,457.2	3,450.8	3,345.5	10.3	14.8	10.44	730.9	-43.2	364.6	347.3	17.32	21.049	
3,600.0	3,554.4	3,550.5	3,440.3	10.8	15.4	10.64	761.6	-45.0	372.7	354.8	17.92	20.805	
3,700.0	3,651.6	3,650.2	3,535.1	11.2	15.9	10.83	792.3	-46.9	380.8	362.3	18.51	20.574	
3,800.0	3,748.9	3,749.8	3,629.9	11.7	16.5	11.01	823.1	-48.8	388.9	369.8	19.11	20.355	
3,900.0	3,846.1	3,849.5	3,724.6	12.1	17.1	11.18	853.8	-50.7	397.1	377.3	19.71	20.147	
4,000.0	3,943.3	3,949.1	3,819.4	12.6	17.7	11.35	884.6	-52.5	405.2	384.9	20.31	19.951	
4,100.0	4,040.6	4,048.8	3,914.2	13.0	18.3	11.51	915.3	-54.4	413.3	392.4	20.91	19.764	
4,200.0	4,137.8	4,148.5	4,009.0	13.5	18.9	11.66	946.1	-56.3	421.4	399.9	21.52	19.586	
4,300.0	4,235.0	4,248.1	4,103.8	13.9	19.5	11.81	976.8	-58.1	429.5	407.4	22.12	19.416	
4,400.0	4,332.3	4,347.8	4,198.6	14.4	20.1	11.95	1,007.5	-60.0	437.6	414.9	22.73	19.255	
4,500.0	4,429.5	4,447.5	4,293.4	14.8	20.6	12.09	1,038.3	-61.9	445.8	422.4	23.34	19.101	
4,600.0	4,526.8	4,547.1	4,388.1	15.3	21.2	12.22	1,069.0	-63.7	453.9	430.0	23.95	18.953	
4,700.0	4,624.0	4,646.8	4,482.9	15.8	21.8	12.35	1,099.8	-65.6	462.0	437.5	24.56	18.813	
4,800.0	4,721.2	4,746.5	4,577.7	16.2	22.4	12.47	1,130.5	-67.5	470.2	445.0	25.17	18.678	
4,900.0	4,818.5	4,846.1	4,672.5	16.7	23.0	12.59	1,161.3	-69.3	478.3	452.5	25.79	18.549	
5,000.0	4,915.7	4,945.8	4,767.3	17.1	23.6	12.71	1,192.0	-71.2	486.4	460.0	26.40	18.425	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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	Minimum	Separation	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)	Separation Factor	Warning	
5,100.0	5,012.9	5,045.4	4,862.1	17.6	24.2	12.82	1,222.7	-73.1	494.6	467.6	27.02	18.306	
5,200.0	5,110.2	5,145.1	4,956.9	18.1	24.8	12.93	1,253.5	-75.0	502.7	475.1	27.63	18.192	
5,300.0	5,207.4	5,244.8	5,051.6	18.5	25.4	13.03	1,284.2	-76.8	510.9	482.6	28.25	18.083	
5,400.0	5,304.6	5,344.4	5,146.4	19.0	26.0	13.13	1,315.0	-78.7	519.0	490.1	28.87	17.977	
5,500.0	5,401.9	5,444.1	5,241.2	19.5	26.6	13.23	1,345.7	-80.6	527.2	497.7	29.49	17.876	
5,600.0	5,499.1	5,543.8	5,336.0	19.9	27.1	13.32	1,376.5	-82.4	535.3	505.2	30.11	17.779	
5,700.0	5,596.4	5,643.4	5,430.8	20.4	27.7	13.42	1,407.2	-84.3	543.4	512.7	30.73	17.684	
5,800.0	5,693.6	5,743.1	5,525.6	20.9	28.3	13.51	1,437.9	-86.2	551.6	520.2	31.35	17.594	
5,900.0	5,790.8	5,842.8	5,620.3	21.3	28.9	13.59	1,468.7	-88.0	559.8	527.8	31.97	17.506	
6,000.0	5,888.1	5,942.4	5,715.1	21.8	29.5	13.68	1,499.4	-89.9	567.9	535.3	32.60	17.422	
6,100.0	5,985.3	6,042.1	5,809.9	22.2	30.1	13.76	1,530.2	-91.8	576.1	542.8	33.22	17.340	
6,200.0	6,082.5	6,141.7	5,904.7	22.7	30.7	13.84	1,560.9	-93.7	584.2	550.4	33.85	17.261	
6,300.0	6,179.8	6,241.4	5,999.5	23.2	31.3	13.92	1,591.7	-95.5	592.4	557.9	34.47	17.185	
6,400.0	6,277.0	6,341.1	6,094.3	23.6	31.9	13.99	1,622.4	-97.4	600.5	565.4	35.10	17.111	
6,500.0	6,374.2	6,440.7	6,189.1	24.1	32.5	14.06	1,653.1	-99.3	608.7	573.0	35.72	17.040	
6,600.0	6,471.5	6,540.4	6,283.8	24.6	33.1	14.14	1,683.9	-101.1	616.8	580.5	36.35	16.971	
6,700.0	6,568.7	6,640.1	6,378.6	25.0	33.6	14.21	1,714.6	-103.0	625.0	588.0	36.98	16.903	
6,800.0	6,665.9	6,739.7	6,473.4	25.5	34.2	14.27	1,745.4	-104.9	633.2	595.6	37.60	16.838	
6,900.0	6,763.2	6,839.4	6,568.2	26.0	34.8	14.34	1,776.1	-106.7	641.3	603.1	38.23	16.775	
7,000.0	6,860.4	6,939.1	6,663.0	26.5	35.4	14.40	1,806.9	-108.6	649.5	610.6	38.86	16.714	
7,100.0	6,957.7	7,038.7	6,757.8	26.9	36.0	14.47	1,837.6	-110.5	657.7	618.2	39.49	16.655	
7,200.0	7,054.9	7,138.4	6,852.6	27.4	36.6	14.53	1,868.3	-112.4	665.8	625.7	40.12	16.597	
7,300.0	7,152.1	7,238.1	6,947.3	27.9	37.2	14.59	1,899.1	-114.2	674.0	633.2	40.75	16.541	
7,400.0	7,249.4	7,337.7	7,042.1	28.3	37.8	14.64	1,929.8	-116.1	682.1	640.8	41.38	16.486	
7,500.0	7,346.6	7,437.4	7,136.9	28.8	38.4	14.70	1,960.6	-118.0	690.3	648.3	42.01	16.433	
7,600.0	7,443.8	7,537.0	7,231.7	29.3	39.0	14.76	1,991.3	-119.8	698.5	655.8	42.64	16.382	
7,700.0	7,541.1	7,636.7	7,326.5	29.7	39.6	14.82	2,022.0	-121.7	706.9	663.7	43.26	16.342	
7,800.0	7,639.0	7,736.1	7,421.0	30.1	40.2	14.87	2,052.7	-123.6	718.1	674.3	43.80	16.393	
7,900.0	7,737.6	7,835.0	7,515.1	30.4	40.8	14.86	2,083.2	-125.4	732.6	688.2	44.32	16.529	
8,000.0	7,836.7	7,933.4	7,608.6	30.6	41.3	14.81	2,113.6	-127.3	750.4	705.6	44.80	16.750	
8,100.0	7,936.2	8,031.1	7,701.5	30.9	41.9	14.71	2,143.7	-129.1	771.6	726.3	45.25	17.051	
8,200.0	8,036.0	8,128.0	7,793.7	31.0	42.5	14.58	2,173.6	-130.9	796.0	750.3	45.67	17.429	
8,300.0	8,135.9	8,251.1	7,911.3	31.2	43.1	14.34	2,210.1	-133.1	822.6	776.4	46.18	17.813	
8,400.0	8,235.9	8,387.1	8,042.8	31.3	43.7	5.46	2,244.5	-135.2	847.5	800.9	46.65	18.168	
8,500.0	8,335.9	8,526.0	8,178.7	31.4	44.2	5.16	2,273.3	-137.0	868.0	821.0	47.05	18.448	
8,600.0	8,435.9	8,667.6	8,318.4	31.5	44.6	4.94	2,295.8	-138.3	883.8	836.4	47.36	18.661	
8,700.0	8,535.9	8,811.1	8,461.0	31.7	44.9	4.79	2,311.6	-139.3	894.7	847.1	47.57	18.810	
8,800.0	8,635.9	8,955.8	8,605.4	31.8	45.1	4.71	2,320.3	-139.8	900.6	853.0	47.66	18.898	
8,900.0	8,735.9	9,086.8	8,736.4	31.9	45.3	4.70	2,322.0	-139.9	901.8	854.1	47.77	18.879	
9,000.0	8,835.9	9,186.8	8,836.4	32.1	45.3	4.70	2,322.0	-139.9	901.8	853.7	48.12	18.742	
9,064.4	8,900.3	9,250.3	8,900.0	32.1	45.4	-84.99	2,322.0	-139.9	901.8	853.4	48.35	18.653	
9,100.0	8,935.9	9,263.3	8,912.9	32.2	45.4	-84.94	2,322.2	-139.9	902.3	853.7	48.63	18.554	
9,200.0	9,035.3	9,300.0	8,949.6	32.3	45.5	-84.62	2,324.4	-139.0	907.5	858.4	49.10	18.482	
9,300.0	9,131.3	9,325.0	8,974.4	32.4	45.6	-83.88	2,327.4	-137.9	918.4	869.2	49.20	18.669	
9,400.0	9,221.2	9,365.0	9,013.5	32.4	45.7	-83.16	2,334.8	-135.1	934.6	885.5	49.13	19.022	
9,500.0	9,302.1	9,400.0	9,047.2	32.5	45.9	-82.10	2,343.7	-131.6	956.2	907.0	49.25	19.416	
9,600.0	9,371.6	9,425.0	9,070.8	32.5	46.0	-80.37	2,351.5	-128.7	983.0	933.1	49.83	19.725	
9,700.0	9,427.6	9,450.0	9,093.9	32.6	46.2	-78.26	2,360.4	-125.3	1,014.5	963.3	51.17	19.825	
9,800.0	9,468.4	9,461.1	9,104.0	32.7	46.3	-75.12	2,364.7	-123.6	1,050.0	996.8	53.26	19.715	
9,900.0	9,492.7	9,475.0	9,116.5	32.8	46.4	-71.80	2,370.5	-121.4	1,089.0	1,032.9	56.07	19.421	
10,000.0	9,500.0	9,483.1	9,123.6	33.1	46.4	-68.37	2,373.9	-120.1	1,130.4	1,071.1	59.32	19.056	
10,100.0	9,500.0	9,489.5	9,129.3	33.6	46.5	-68.72	2,376.8	-119.0	1,176.5	1,113.8	62.69	18.768	

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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			Semi Major Axis		Offset Wellbore Centre		Rule Assigned:			Offset Well Error:	0.5 usft
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)	Minimum Separation (usft)	Separation Factor	Warning		
10,200.0	9,500.0	10,418.5	9,500.0	34.3	51.8	-89.98	2,647.8	561.0	1,220.0	1,159.3	60.76	20.081			
10,300.0	9,500.0	10,518.5	9,500.0	35.3	52.3	-89.98	2,648.4	661.0	1,220.0	1,156.1	63.96	19.074			
10,334.5	9,500.0	10,553.0	9,500.0	35.7	52.4	-89.98	2,648.6	695.5	1,220.0	1,154.9	65.16	18.723			
10,400.0	9,500.0	10,618.5	9,500.0	36.6	52.8	-89.98	2,649.0	761.0	1,220.0	1,152.6	67.47	18.083			
10,434.5	9,500.0	10,653.0	9,500.0	37.1	53.0	-89.98	2,649.2	795.5	1,220.0	1,151.3	68.76	17.744			
10,500.0	9,500.0	10,718.5	9,500.0	38.1	53.5	-89.98	2,649.5	861.0	1,220.0	1,148.8	71.23	17.129			
10,534.5	9,500.0	10,753.0	9,500.0	38.7	53.7	-89.98	2,649.7	895.5	1,220.0	1,147.4	72.59	16.807			
10,600.0	9,500.0	10,818.5	9,500.0	39.9	54.3	-89.98	2,650.1	961.0	1,220.0	1,144.8	75.20	16.223			
10,634.4	9,500.0	10,853.0	9,500.0	40.5	54.6	-89.98	2,650.3	995.4	1,220.0	1,143.4	76.63	15.921			
10,700.0	9,500.0	10,918.5	9,500.0	41.7	55.2	-89.98	2,650.7	1,061.0	1,220.0	1,140.6	79.36	15.373			
10,734.4	9,500.0	10,953.0	9,500.0	42.4	55.5	-89.98	2,650.9	1,095.4	1,220.0	1,139.2	80.84	15.091			
10,800.0	9,500.0	11,018.5	9,500.0	43.8	56.2	-89.98	2,651.3	1,161.0	1,220.0	1,136.3	83.68	14.580			
10,834.4	9,500.0	11,053.0	9,500.0	44.5	56.6	-89.98	2,651.5	1,195.4	1,220.0	1,134.8	85.21	14.318			
10,900.0	9,500.0	11,118.5	9,500.0	45.9	57.4	-89.98	2,651.9	1,261.0	1,220.0	1,131.9	88.13	13.843			
10,934.4	9,500.0	11,153.0	9,500.0	46.6	57.8	-89.98	2,652.1	1,295.4	1,220.0	1,130.3	89.69	13.601			
11,000.0	9,500.0	11,218.5	9,500.0	48.1	58.7	-89.98	2,652.4	1,361.0	1,220.0	1,127.3	92.69	13.162			
11,034.4	9,500.0	11,253.0	9,500.0	48.9	59.2	-89.98	2,652.6	1,395.4	1,220.0	1,125.7	94.29	12.938			
11,100.0	9,500.0	11,318.5	9,500.0	50.3	60.2	-89.98	2,653.0	1,461.0	1,220.0	1,122.6	97.35	12.531			
11,134.4	9,500.0	11,352.9	9,500.0	51.1	60.7	-89.98	2,653.2	1,495.4	1,220.0	1,121.0	98.99	12.325			
11,200.0	9,500.0	11,418.5	9,500.0	52.7	61.7	-89.98	2,653.6	1,561.0	1,220.0	1,117.9	102.10	11.948			
11,234.4	9,500.0	11,452.9	9,500.0	53.5	62.3	-89.98	2,653.8	1,595.4	1,220.0	1,116.2	103.76	11.758			
11,300.0	9,500.0	11,518.5	9,500.0	55.0	63.4	-89.98	2,654.2	1,661.0	1,220.0	1,113.0	106.92	11.409			
11,334.4	9,500.0	11,552.9	9,500.0	55.9	64.0	-89.98	2,654.4	1,695.4	1,220.0	1,111.3	108.60	11.233			
11,400.0	9,500.0	11,618.5	9,500.0	57.4	65.2	-89.98	2,654.8	1,761.0	1,219.9	1,108.1	111.81	10.911			
11,434.4	9,500.0	11,652.9	9,500.0	58.3	65.8	-89.98	2,655.0	1,795.4	1,219.9	1,106.4	113.51	10.748			
11,500.0	9,500.0	11,718.5	9,500.0	59.9	67.1	-89.98	2,655.3	1,861.0	1,219.9	1,103.2	116.75	10.449			
11,534.4	9,500.0	11,752.9	9,500.0	60.7	67.7	-89.98	2,655.5	1,895.3	1,219.9	1,101.5	118.47	10.298			
11,600.0	9,500.0	11,818.5	9,500.0	62.3	69.0	-89.98	2,655.9	1,961.0	1,219.9	1,098.2	121.75	10.020			
11,634.4	9,500.0	11,852.9	9,500.0	63.2	69.7	-89.98	2,656.1	1,995.3	1,219.9	1,096.5	123.47	9.880			
11,700.0	9,500.0	11,918.5	9,500.0	64.8	71.0	-89.98	2,656.5	2,061.0	1,219.9	1,093.1	126.78	9.622			
11,734.4	9,500.0	11,952.9	9,500.0	65.7	71.8	-89.98	2,656.7	2,095.3	1,219.9	1,091.4	128.52	9.492			
11,800.0	9,500.0	12,018.5	9,500.0	67.3	73.1	-89.98	2,657.1	2,161.0	1,219.9	1,088.1	131.86	9.252			
11,834.3	9,500.0	12,052.9	9,500.0	68.2	73.9	-89.98	2,657.3	2,195.3	1,219.9	1,086.3	133.61	9.130			
11,900.0	9,500.0	12,118.5	9,500.0	69.9	75.3	-89.98	2,657.6	2,261.0	1,219.9	1,082.9	136.96	8.907			
11,934.3	9,500.0	12,152.9	9,500.0	70.8	76.0	-89.98	2,657.8	2,295.3	1,219.9	1,081.2	138.73	8.794			
12,000.0	9,500.0	12,218.5	9,500.0	72.4	77.5	-89.98	2,658.2	2,361.0	1,219.9	1,077.8	142.10	8.585			
12,034.3	9,500.0	12,252.9	9,500.0	73.3	78.3	-89.98	2,658.4	2,395.3	1,219.9	1,076.0	143.88	8.479			
12,100.0	9,500.0	12,318.5	9,500.0	75.0	79.8	-89.98	2,658.8	2,461.0	1,219.9	1,072.6	147.27	8.283			
12,134.3	9,500.0	12,352.9	9,500.0	75.9	80.5	-89.98	2,659.0	2,495.3	1,219.9	1,070.8	149.05	8.184			
12,200.0	9,500.0	12,418.5	9,500.0	77.6	82.1	-89.98	2,659.4	2,561.0	1,219.9	1,067.4	152.46	8.001			
12,234.3	9,500.0	12,452.9	9,500.0	78.5	82.8	-89.98	2,659.6	2,595.3	1,219.9	1,065.6	154.25	7.909			
12,300.0	9,500.0	12,518.5	9,500.0	80.2	84.4	-89.98	2,660.0	2,661.0	1,219.9	1,062.2	157.67	7.737			
12,334.3	9,500.0	12,552.8	9,500.0	81.1	85.2	-89.98	2,660.2	2,695.3	1,219.9	1,060.4	159.47	7.650			
12,400.0	9,500.0	12,618.5	9,500.0	82.8	86.7	-89.98	2,660.5	2,761.0	1,219.9	1,057.0	162.91	7.488			
12,434.3	9,500.0	12,652.8	9,500.0	83.7	87.6	-89.98	2,660.7	2,795.3	1,219.9	1,055.2	164.71	7.406			
12,500.0	9,500.0	12,718.5	9,500.0	85.4	89.1	-89.98	2,661.1	2,861.0	1,219.9	1,051.7	168.16	7.254			
12,534.3	9,500.0	12,752.8	9,500.0	86.3	90.0	-89.98	2,661.3	2,895.2	1,219.9	1,049.9	169.96	7.177			
12,600.0	9,500.0	12,818.5	9,500.0	88.0	91.6	-89.98	2,661.7	2,961.0	1,219.9	1,046.4	173.43	7.034			
12,634.3	9,500.0	12,852.8	9,500.0	88.9	92.4	-89.98	2,661.9	2,995.2	1,219.9	1,044.6	175.24	6.961			
12,700.0	9,500.0	12,918.5	9,500.0	90.6	94.0	-89.98	2,662.3	3,061.0	1,219.9	1,041.1	178.71	6.826			
12,734.3	9,500.0	12,952.8	9,500.0	91.5	94.8	-89.98	2,662.5	3,095.2	1,219.8	1,039.3	180.53	6.757			
12,800.0	9,500.0	13,018.5	9,500.0	93.3	96.5	-89.98	2,662.9	3,161.0	1,219.8	1,035.8	184.01	6.629			

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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		Distance		Rule Assigned:		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)	Minimum Separation (usft)	Separation Factor
12,834.3	9,500.0	13,052.8	9,500.0	94.2	97.3	-89.98	2,663.1	3,195.2	1,219.8	1,034.0	185.83	6.564
12,900.0	9,500.0	13,118.5	9,500.0	95.9	98.9	-89.98	2,663.4	3,261.0	1,219.8	1,030.5	189.32	6.443
12,934.3	9,500.0	13,152.8	9,500.0	96.8	99.8	-89.98	2,663.6	3,295.2	1,219.8	1,028.7	191.14	6.382
13,000.0	9,500.0	13,218.5	9,500.0	98.6	101.4	-89.98	2,664.0	3,361.0	1,219.8	1,025.2	194.64	6.267
13,034.2	9,500.0	13,252.8	9,500.0	99.5	102.3	-89.98	2,664.2	3,395.2	1,219.8	1,023.4	196.46	6.209
13,100.0	9,500.0	13,318.5	9,500.0	101.2	103.9	-89.98	2,664.6	3,461.0	1,219.8	1,019.9	199.97	6.100
13,134.2	9,500.0	13,352.8	9,500.0	102.1	104.8	-89.98	2,664.8	3,495.2	1,219.8	1,018.0	201.80	6.045
13,200.0	9,500.0	13,418.5	9,500.0	103.9	106.5	-89.98	2,665.2	3,560.9	1,219.8	1,014.5	205.31	5.941
13,234.2	9,500.0	13,452.8	9,500.0	104.8	107.3	-89.98	2,665.4	3,595.2	1,219.8	1,012.7	207.14	5.889
13,300.0	9,500.0	13,518.5	9,500.0	106.6	109.0	-89.98	2,665.8	3,660.9	1,219.8	1,009.1	210.66	5.790
13,334.2	9,500.0	13,552.8	9,500.0	107.5	109.9	-89.98	2,666.0	3,695.2	1,219.8	1,007.3	212.50	5.740
13,400.0	9,500.0	13,618.5	9,500.0	109.2	111.6	-89.98	2,666.3	3,760.9	1,219.8	1,003.8	216.02	5.647
13,434.2	9,500.0	13,652.8	9,500.0	110.1	112.4	-89.98	2,666.5	3,795.2	1,219.8	1,001.9	217.86	5.599
13,500.0	9,500.0	13,718.5	9,500.0	111.9	114.1	-89.98	2,666.9	3,860.9	1,219.8	998.4	221.39	5.510
13,534.2	9,500.0	13,752.8	9,500.0	112.8	115.0	-89.98	2,667.1	3,895.1	1,219.8	996.6	223.23	5.464
13,600.0	9,500.0	13,818.5	9,500.0	114.6	116.7	-89.98	2,667.5	3,960.9	1,219.8	993.0	226.76	5.379
13,634.2	9,500.0	13,852.7	9,500.0	115.5	117.6	-89.98	2,667.7	3,995.1	1,219.8	991.2	228.60	5.336
13,700.0	9,500.0	13,918.5	9,500.0	117.3	119.3	-89.98	2,668.1	4,060.9	1,219.8	987.6	232.15	5.254
13,734.2	9,500.0	13,952.7	9,500.0	118.2	120.2	-89.98	2,668.3	4,095.1	1,219.8	985.8	233.99	5.213
13,800.0	9,500.0	14,018.5	9,500.0	120.0	121.9	-89.98	2,668.7	4,160.9	1,219.8	982.2	237.53	5.135
13,834.2	9,500.0	14,052.7	9,500.0	120.9	122.8	-89.98	2,668.9	4,195.1	1,219.8	980.4	239.38	5.096
13,900.0	9,500.0	14,118.5	9,500.0	122.6	124.5	-89.98	2,669.2	4,260.9	1,219.8	976.8	242.93	5.021
13,934.2	9,500.0	14,152.7	9,500.0	123.6	125.4	-89.98	2,669.4	4,295.1	1,219.8	975.0	244.77	4.983
14,000.0	9,500.0	14,218.5	9,500.0	125.3	127.1	-89.98	2,669.8	4,360.9	1,219.8	971.4	248.33	4.912
14,034.2	9,500.0	14,252.7	9,500.0	126.3	128.0	-89.98	2,670.0	4,395.1	1,219.8	969.6	250.17	4.876
14,100.0	9,500.0	14,318.5	9,500.0	128.0	129.7	-89.98	2,670.4	4,460.9	1,219.7	966.0	253.73	4.807
14,134.2	9,500.0	14,352.7	9,500.0	129.0	130.6	-89.98	2,670.6	4,495.1	1,219.7	964.2	255.58	4.773
14,200.0	9,500.0	14,418.5	9,500.0	130.7	132.3	-89.98	2,671.0	4,560.9	1,219.7	960.6	259.14	4.707
14,234.1	9,500.0	14,452.7	9,500.0	131.7	133.2	-89.98	2,671.2	4,595.1	1,219.7	958.8	260.99	4.674
14,300.0	9,500.0	14,518.5	9,500.0	133.4	134.9	-89.98	2,671.6	4,660.9	1,219.7	955.2	264.55	4.611
14,334.1	9,500.0	14,552.7	9,500.0	134.4	135.8	-89.98	2,671.8	4,695.1	1,219.7	953.3	266.40	4.579
14,400.0	9,500.0	14,618.5	9,500.0	136.1	137.6	-89.98	2,672.1	4,760.9	1,219.7	949.8	269.97	4.518
14,434.1	9,500.0	14,652.7	9,500.0	137.1	138.5	-89.98	2,672.3	4,795.1	1,219.7	947.9	271.82	4.487
14,500.0	9,500.0	14,718.5	9,500.0	138.8	140.2	-89.98	2,672.7	4,860.9	1,219.7	944.3	275.39	4.429
14,534.1	9,500.0	14,752.7	9,500.0	139.8	141.1	-89.98	2,672.9	4,895.1	1,219.7	942.5	277.24	4.399
14,600.0	9,500.0	14,818.5	9,500.0	141.5	142.8	-89.98	2,673.3	4,960.9	1,219.7	938.9	280.82	4.343
14,634.1	9,500.0	14,852.7	9,500.0	142.5	143.7	-89.98	2,673.5	4,995.0	1,219.7	937.0	282.67	4.315
14,700.0	9,500.0	14,918.5	9,500.0	144.3	145.5	-89.98	2,673.9	5,060.9	1,219.7	933.5	286.24	4.261
14,734.1	9,500.0	14,952.7	9,500.0	145.2	146.4	-89.98	2,674.1	5,095.0	1,219.7	931.6	288.10	4.234
14,800.0	9,500.0	15,018.5	9,500.0	147.0	148.1	-89.98	2,674.5	5,160.9	1,219.7	928.0	291.68	4.182
14,834.1	9,500.0	15,052.6	9,500.0	147.9	149.0	-89.98	2,674.6	5,195.0	1,219.7	926.2	293.53	4.155
14,860.8	9,500.0	15,079.4	9,500.0	148.6	149.8	-89.98	2,674.8	5,221.7	1,219.7	924.7	294.98	4.135
14,872.7	9,500.0	15,091.3	9,500.0	148.9	150.1	-89.98	2,674.9	5,233.7	1,219.7	924.1	295.63	4.126 SF

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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 @ 3090.8usft

Offset Depths are relative to Offset Datum

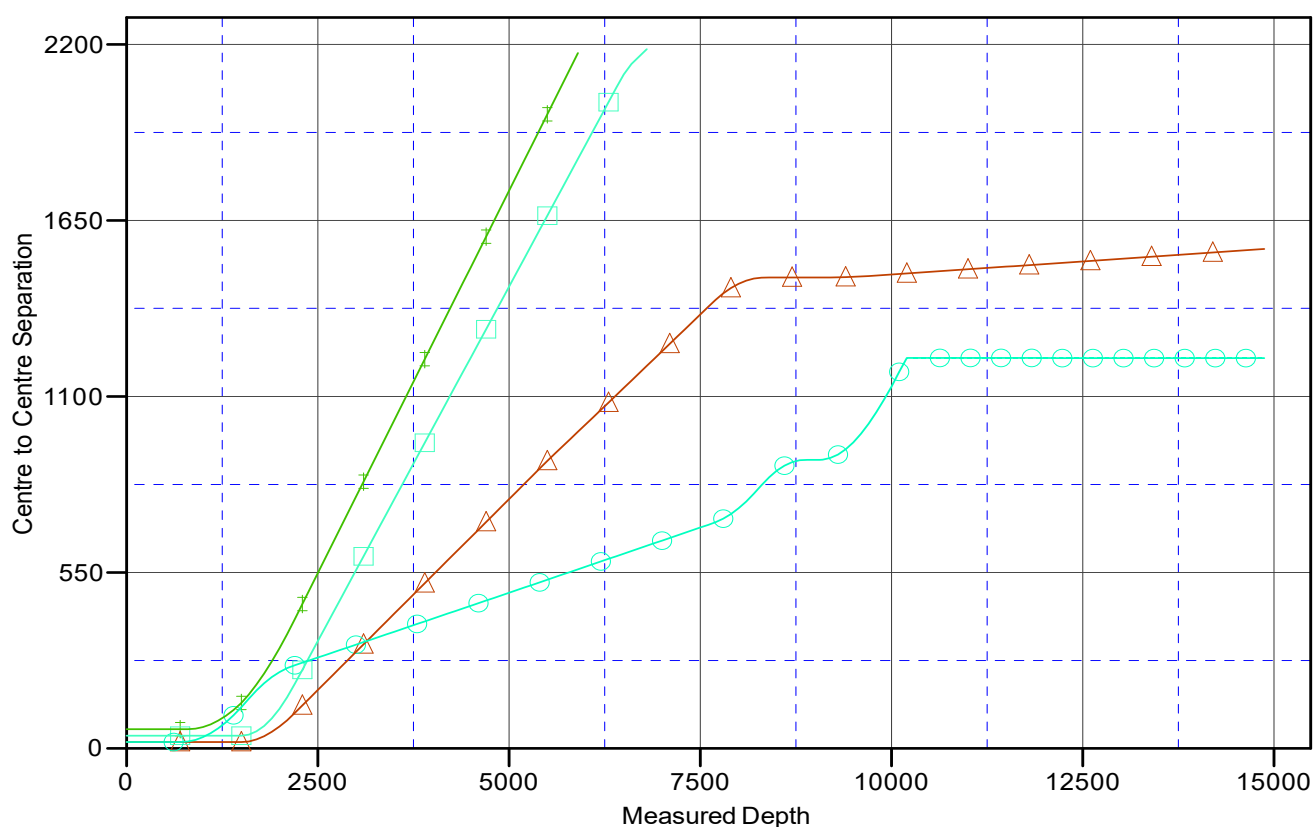
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 233H

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 233H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3090.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3090.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 233H	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 @ 3090.8usft

Offset Depths are relative to Offset Datum

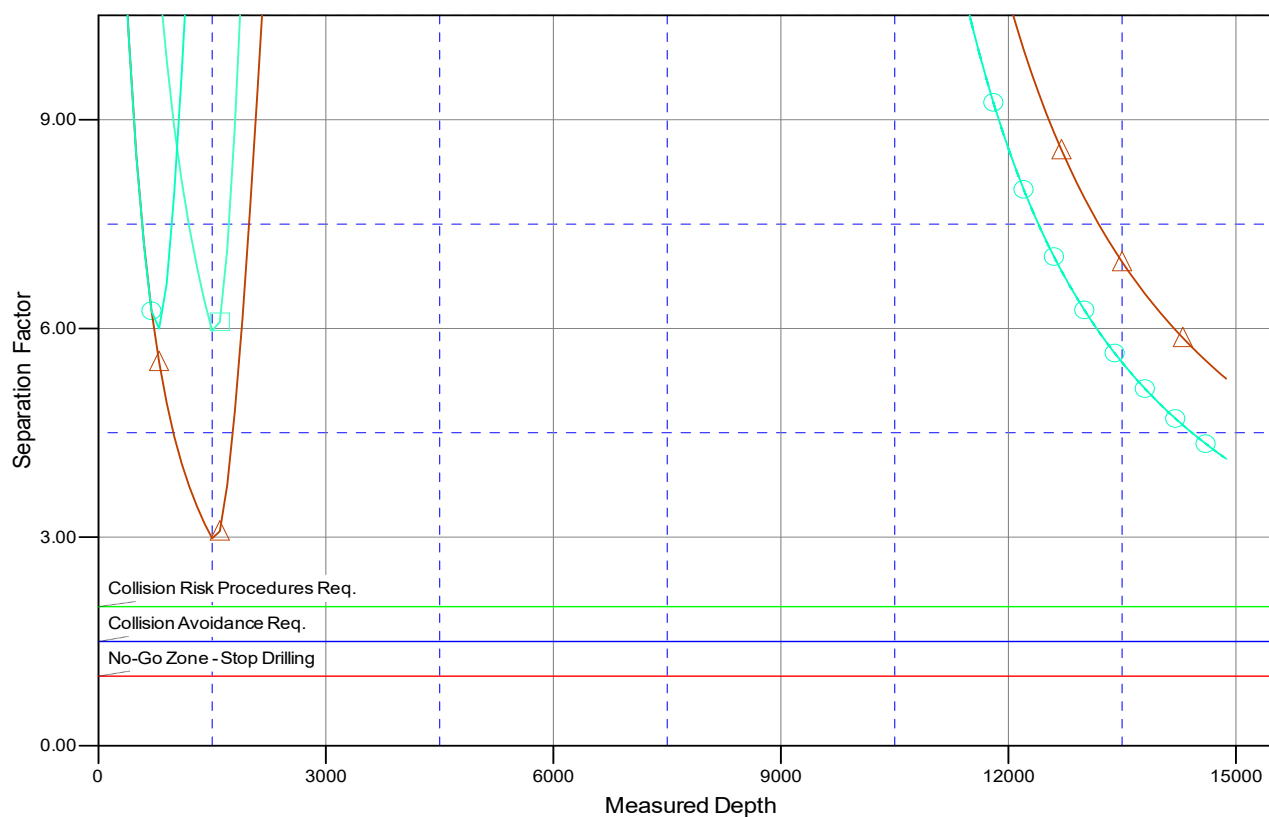
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 233H

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 223H, Wellbore#1, Plan 1 V0
- Rana Salada FedCom0106 233H, Wellbore#1, Plan 1 V0

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

District I

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811 S. First St., Artesia, NM 88210
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District III

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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 31752

CONDITIONS

Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	OGRID: 372920
	Action Number: 31752
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
jagarcia	None	6/22/2021