

Well Name: RANA SALADA FED COM 0106	Well Location: T23S / R28E / SEC 1 / NWSW /	County or Parish/State:
Well Number: 223H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM91078	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001548155	Well Status: Approved Application for Permit to Drill	Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Notice of Intent

Type of Submission: Notice of Intent	Type of Action Other
Date Sundry Submitted: 06/14/2021	Time Sundry Submitted: 02:14
Date proposed operation will begin: 07/19/2021	

Procedure Description: Request to move Surface Hole Location from 2,370' FSL & 125' FWL, Section 1, T-23-S, R-28-E, NWSW to 2,330' FSL & 25' FEL, Section 2, T-23-S, R-28-E, NESE. See attached for revised C-102, Horizontal Plan, and Anti-Collision Report.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

RSFC_0106_223_SHL_Sundry_Request_20210614141404.pdf

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 30-015-48155	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 223H
⁷ OGRID No. 372920	⁸ Operator Name NOVO OIL & GAS NORTHERN DELAWARE, LLC	⁹ Elevation 3064.8

¹⁰ Surface Location

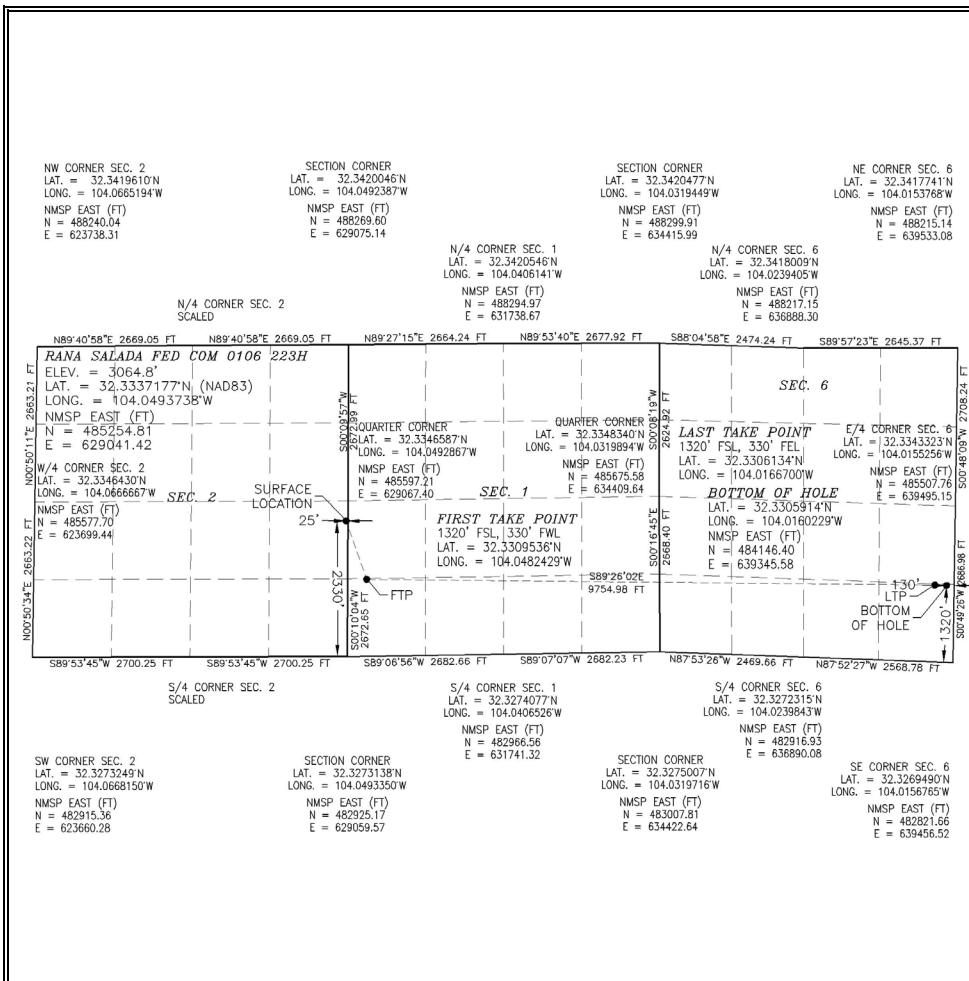
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	2	23 S	28 E		2330	SOUTH	25	EAST	EDDY

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
P	6	23 S	29 E		1320	SOUTH	130	EAST	EDDY

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

¹⁷ OPERATOR CERTIFICATION

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

Justin Carter 6/2/2021
Signature Date

Justin Carter

Printed Name

jcarter@novoog.com

E-mail Address

¹⁸ SURVEYOR CERTIFICATION

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

JUNE 1, 2021

Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: 12797
Surveyor No. 8109B

Intent ☐ As Drilled ☐

API #		
Operator Name: NOVO OIL & GAS NORTHERN DELAWARE, LLC	Property Name: RANA SALADA FED COM 0106	Well Number 223H

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 M	Section 1	Township 23S	Range 28E	Lot	Feet 1320	From N/S SOUTH	Feet 330	From E/W WEST	County EDDY
Latitude 32.3309536					Longitude 104.0482429				NAD 83

Last Take Point (LTP)

UL P	Section 6	Township 23S	Range 29E	Lot	Feet 1320	From N/S SOUTH	Feet 330	From E/W EAST	County EDDY
Latitude 32.3306134					Longitude 104.0166700				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.

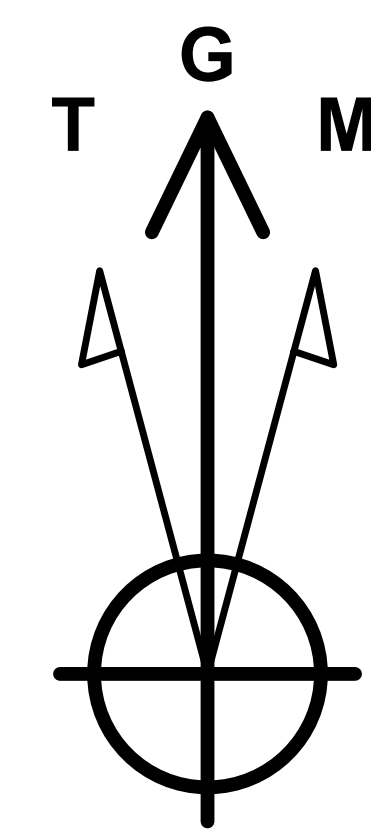
API #		
Operator Name:	Property Name:	Well Number

KZ 06/29/2018

WELL DETAILS: Rana Salada Fed Com 0106 223H									
Plan 1									
GL Elev (ft.): 3064.8									
+N/-S	+E/-W	Northing		Easting		Latitude		Longitude	
0.0	0.0	485254.81		629041.42		32° 20' 1.384 N		104° 2' 57.746 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
2163.8	13.28	192.48	2157.9	-74.8	-16.5	2.00	192.48	-15.8	EOB 13.28° Inc
5949.2	13.28	192.48	5842.1	-923.5	-204.4	0.00	0.00	-194.7	EOH 13.28° Inc
6613.0	0.00	0.00	6500.0	-998.3	-220.9	2.00	180.00	-210.4	Vertical Point
9040.0	0.00	0.00	8927.0	-998.3	-220.9	0.00	0.00	-210.4	KOP 10° DLS/100'
9940.0	90.00	90.60	9500.0	-1004.3	352.0	10.00	90.60	362.5	Landing Point
19892.7	90.00	90.60	9500.0	-1108.4	10304.2	0.00	0.00	10315.2	TD at 19892.7

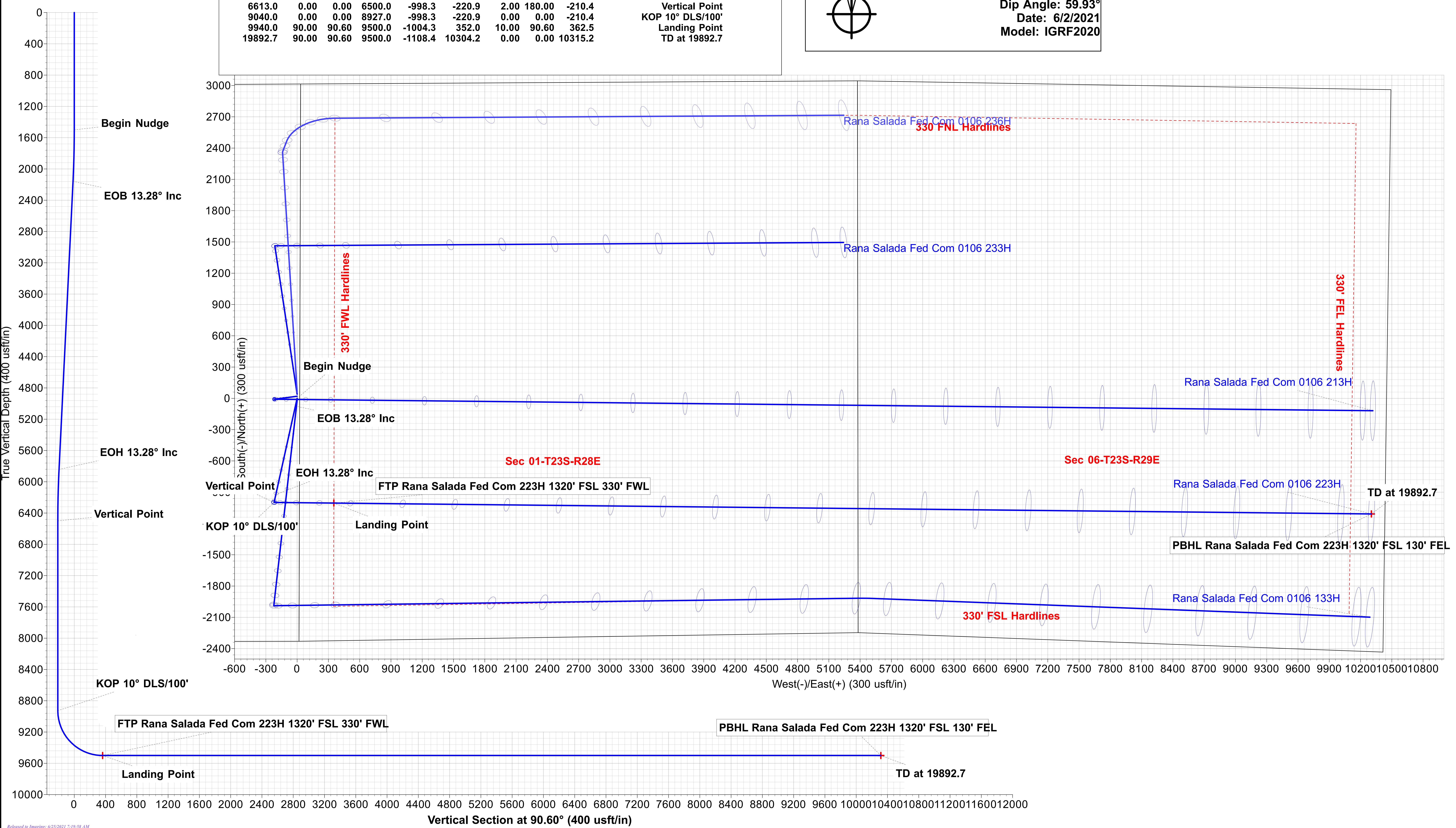
Project: EDDY CO., NM (NAD83)
Site: SEC 02-T23S-R28E
Well: Rana Salada Fed Com 0106 223H
Wellbore: Wellbore #1
Design: Plan 1

G
T M



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

Magnetic Field
Strength: 47516.0nT
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 223H

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 223H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3089.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3089.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	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 223H		
Well Position	+N/-S	0.0 usft	Northing: 485,254.81 usft
	+E/-W	0.0 usft	Easting: 629,041.42 usft
Position Uncertainty	0.5 usft	Wellhead Elevation:	usft
Grid Convergence:	0.15 °	Ground Level:	3,064.8 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	6/2/2021	6.78	59.93	47,516.02612363

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

Plan Survey Tool Program	Date	6/2/2021			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	19,892.7	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	
2,163.8	13.28	192.48	2,157.9	-74.8	-16.5	2.00	2.00	0.00	192.48	
5,949.2	13.28	192.48	5,842.1	-923.5	-204.4	0.00	0.00	0.00	0.00	
6,613.0	0.00	0.00	6,500.0	-998.3	-220.9	2.00	-2.00	0.00	180.00	
9,040.0	0.00	0.00	8,927.0	-998.3	-220.9	0.00	0.00	0.00	0.00	
9,940.0	90.00	90.60	9,500.0	-1,004.3	352.0	10.00	10.00	10.07	90.60	
19,892.7	90.00	90.60	9,500.0	-1,108.4	10,304.2	0.00	0.00	0.00	0.00	PBHL Rana Salada F



SB Directional Services

Planning Report



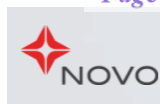
Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 223H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3089.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3089.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	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	192.48	1,600.0	-1.7	-0.4	-0.4	2.00	2.00	0.00
1,700.0	4.00	192.48	1,699.8	-6.8	-1.5	-1.4	2.00	2.00	0.00
1,800.0	6.00	192.48	1,799.5	-15.3	-3.4	-3.2	2.00	2.00	0.00
1,900.0	8.00	192.48	1,898.7	-27.2	-6.0	-5.7	2.00	2.00	0.00
2,000.0	10.00	192.48	1,997.5	-42.5	-9.4	-9.0	2.00	2.00	0.00
2,100.0	12.00	192.48	2,095.6	-61.1	-13.5	-12.9	2.00	2.00	0.00
2,163.8	13.28	192.48	2,157.9	-74.8	-16.5	-15.8	2.00	2.00	0.00
EOB 13.28° Inc									
2,200.0	13.28	192.48	2,193.1	-82.9	-18.3	-17.5	0.00	0.00	0.00
2,300.0	13.28	192.48	2,290.4	-105.3	-23.3	-22.2	0.00	0.00	0.00
2,400.0	13.28	192.48	2,387.8	-127.7	-28.3	-26.9	0.00	0.00	0.00
2,500.0	13.28	192.48	2,485.1	-150.1	-33.2	-31.6	0.00	0.00	0.00
2,600.0	13.28	192.48	2,582.4	-172.6	-38.2	-36.4	0.00	0.00	0.00
2,700.0	13.28	192.48	2,679.7	-195.0	-43.1	-41.1	0.00	0.00	0.00
2,800.0	13.28	192.48	2,777.1	-217.4	-48.1	-45.8	0.00	0.00	0.00
2,900.0	13.28	192.48	2,874.4	-239.8	-53.1	-50.6	0.00	0.00	0.00
3,000.0	13.28	192.48	2,971.7	-262.3	-58.0	-55.3	0.00	0.00	0.00
3,100.0	13.28	192.48	3,069.1	-284.7	-63.0	-60.0	0.00	0.00	0.00
3,200.0	13.28	192.48	3,166.4	-307.1	-68.0	-64.7	0.00	0.00	0.00
3,300.0	13.28	192.48	3,263.7	-329.5	-72.9	-69.5	0.00	0.00	0.00
3,400.0	13.28	192.48	3,361.0	-351.9	-77.9	-74.2	0.00	0.00	0.00
3,500.0	13.28	192.48	3,458.4	-374.4	-82.8	-78.9	0.00	0.00	0.00
3,600.0	13.28	192.48	3,555.7	-396.8	-87.8	-83.6	0.00	0.00	0.00
3,700.0	13.28	192.48	3,653.0	-419.2	-92.8	-88.4	0.00	0.00	0.00
3,800.0	13.28	192.48	3,750.3	-441.6	-97.7	-93.1	0.00	0.00	0.00
3,900.0	13.28	192.48	3,847.7	-464.1	-102.7	-97.8	0.00	0.00	0.00
4,000.0	13.28	192.48	3,945.0	-486.5	-107.6	-102.5	0.00	0.00	0.00
4,100.0	13.28	192.48	4,042.3	-508.9	-112.6	-107.3	0.00	0.00	0.00
4,200.0	13.28	192.48	4,139.7	-531.3	-117.6	-112.0	0.00	0.00	0.00
4,300.0	13.28	192.48	4,237.0	-553.7	-122.5	-116.7	0.00	0.00	0.00
4,400.0	13.28	192.48	4,334.3	-576.2	-127.5	-121.5	0.00	0.00	0.00
4,500.0	13.28	192.48	4,431.6	-598.6	-132.5	-126.2	0.00	0.00	0.00
4,600.0	13.28	192.48	4,529.0	-621.0	-137.4	-130.9	0.00	0.00	0.00
4,700.0	13.28	192.48	4,626.3	-643.4	-142.4	-135.6	0.00	0.00	0.00
4,800.0	13.28	192.48	4,723.6	-665.9	-147.3	-140.4	0.00	0.00	0.00
4,900.0	13.28	192.48	4,820.9	-688.3	-152.3	-145.1	0.00	0.00	0.00



SB Directional Services

Planning Report



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Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	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	13.28	192.48	4,918.3	-710.7	-157.3	-149.8	0.00	0.00	0.00
5,100.0	13.28	192.48	5,015.6	-733.1	-162.2	-154.5	0.00	0.00	0.00
5,200.0	13.28	192.48	5,112.9	-755.6	-167.2	-159.3	0.00	0.00	0.00
5,300.0	13.28	192.48	5,210.3	-778.0	-172.1	-164.0	0.00	0.00	0.00
5,400.0	13.28	192.48	5,307.6	-800.4	-177.1	-168.7	0.00	0.00	0.00
5,500.0	13.28	192.48	5,404.9	-822.8	-182.1	-173.4	0.00	0.00	0.00
5,600.0	13.28	192.48	5,502.2	-845.2	-187.0	-178.2	0.00	0.00	0.00
5,700.0	13.28	192.48	5,599.6	-867.7	-192.0	-182.9	0.00	0.00	0.00
5,800.0	13.28	192.48	5,696.9	-890.1	-197.0	-187.6	0.00	0.00	0.00
5,900.0	13.28	192.48	5,794.2	-912.5	-201.9	-192.4	0.00	0.00	0.00
5,949.2	13.28	192.48	5,842.1	-923.5	-204.4	-194.7	0.00	0.00	0.00
EOH 13.28° Inc									
6,000.0	12.26	192.48	5,891.6	-934.5	-206.8	-197.0	2.00	-2.00	0.00
6,100.0	10.26	192.48	5,989.7	-953.6	-211.0	-201.0	2.00	-2.00	0.00
6,200.0	8.26	192.48	6,088.4	-969.3	-214.5	-204.3	2.00	-2.00	0.00
6,300.0	6.26	192.48	6,187.6	-981.6	-217.2	-206.9	2.00	-2.00	0.00
6,400.0	4.26	192.48	6,287.2	-990.6	-219.2	-208.8	2.00	-2.00	0.00
6,500.0	2.26	192.48	6,387.0	-996.1	-220.4	-210.0	2.00	-2.00	0.00
6,600.0	0.26	192.48	6,487.0	-998.3	-220.9	-210.4	2.00	-2.00	0.00
6,613.0	0.00	0.00	6,500.0	-998.3	-220.9	-210.4	2.00	-2.00	0.00
Vertical Point									
6,700.0	0.00	0.00	6,587.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
6,800.0	0.00	0.00	6,687.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
6,900.0	0.00	0.00	6,787.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,000.0	0.00	0.00	6,887.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,100.0	0.00	0.00	6,987.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,200.0	0.00	0.00	7,087.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,300.0	0.00	0.00	7,187.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,400.0	0.00	0.00	7,287.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,500.0	0.00	0.00	7,387.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,600.0	0.00	0.00	7,487.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,700.0	0.00	0.00	7,587.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,800.0	0.00	0.00	7,687.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
7,900.0	0.00	0.00	7,787.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,000.0	0.00	0.00	7,887.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,100.0	0.00	0.00	7,987.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,200.0	0.00	0.00	8,087.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,300.0	0.00	0.00	8,187.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,400.0	0.00	0.00	8,287.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,500.0	0.00	0.00	8,387.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,600.0	0.00	0.00	8,487.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,700.0	0.00	0.00	8,587.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,800.0	0.00	0.00	8,687.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
8,900.0	0.00	0.00	8,787.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
9,000.0	0.00	0.00	8,887.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
9,040.0	0.00	0.00	8,927.0	-998.3	-220.9	-210.4	0.00	0.00	0.00
KOP 10° DLS/100'									
9,050.0	1.00	90.60	8,937.0	-998.3	-220.8	-210.3	10.00	10.00	0.00
9,100.0	6.00	90.60	8,986.9	-998.3	-217.8	-207.3	10.00	10.00	0.00
9,150.0	11.00	90.60	9,036.3	-998.4	-210.4	-199.9	10.00	10.00	0.00
9,200.0	16.00	90.60	9,084.9	-998.5	-198.7	-188.2	10.00	10.00	0.00
9,250.0	21.00	90.60	9,132.3	-998.7	-182.9	-172.4	10.00	10.00	0.00
9,300.0	26.00	90.60	9,178.1	-998.9	-162.9	-152.5	10.00	10.00	0.00



SB Directional Services

Planning Report



Database:	EDM 5000.16 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 223H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3089.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3089.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	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)
9,350.0	31.00	90.60	9,222.1	-999.2	-139.1	-128.6	10.00	10.00	0.00
9,400.0	36.00	90.60	9,263.8	-999.4	-111.5	-101.0	10.00	10.00	0.00
9,450.0	41.00	90.60	9,302.9	-999.8	-80.4	-69.9	10.00	10.00	0.00
9,500.0	46.00	90.60	9,339.1	-1,000.1	-46.0	-35.5	10.00	10.00	0.00
9,550.0	51.00	90.60	9,372.3	-1,000.5	-8.5	1.9	10.00	10.00	0.00
9,600.0	56.00	90.60	9,402.0	-1,000.9	31.6	42.1	10.00	10.00	0.00
9,650.0	61.00	90.60	9,428.1	-1,001.4	74.2	84.7	10.00	10.00	0.00
9,700.0	66.00	90.60	9,450.4	-1,001.9	119.0	129.5	10.00	10.00	0.00
9,750.0	71.00	90.60	9,468.7	-1,002.3	165.5	176.0	10.00	10.00	0.00
9,800.0	76.00	90.60	9,482.9	-1,002.8	213.4	223.9	10.00	10.00	0.00
9,850.0	81.00	90.60	9,492.9	-1,003.4	262.4	272.9	10.00	10.00	0.00
9,900.0	86.00	90.60	9,498.6	-1,003.9	312.0	322.5	10.00	10.00	0.00
9,940.0	90.00	90.60	9,500.0	-1,004.3	352.0	362.5	10.00	10.00	0.00
Landing Point									
10,000.0	90.00	90.60	9,500.0	-1,004.9	412.0	422.5	0.00	0.00	0.00
10,100.0	90.00	90.60	9,500.0	-1,006.0	512.0	522.5	0.00	0.00	0.00
10,200.0	90.00	90.60	9,500.0	-1,007.0	612.0	622.5	0.00	0.00	0.00
10,300.0	90.00	90.60	9,500.0	-1,008.1	712.0	722.5	0.00	0.00	0.00
10,400.0	90.00	90.60	9,500.0	-1,009.1	812.0	822.5	0.00	0.00	0.00
10,500.0	90.00	90.60	9,500.0	-1,010.2	912.0	922.5	0.00	0.00	0.00
10,600.0	90.00	90.60	9,500.0	-1,011.2	1,012.0	1,022.5	0.00	0.00	0.00
10,700.0	90.00	90.60	9,500.0	-1,012.2	1,112.0	1,122.5	0.00	0.00	0.00
10,800.0	90.00	90.60	9,500.0	-1,013.3	1,212.0	1,222.5	0.00	0.00	0.00
10,900.0	90.00	90.60	9,500.0	-1,014.3	1,312.0	1,322.5	0.00	0.00	0.00
11,000.0	90.00	90.60	9,500.0	-1,015.4	1,411.9	1,422.5	0.00	0.00	0.00
11,100.0	90.00	90.60	9,500.0	-1,016.4	1,511.9	1,522.5	0.00	0.00	0.00
11,200.0	90.00	90.60	9,500.0	-1,017.5	1,611.9	1,622.5	0.00	0.00	0.00
11,300.0	90.00	90.60	9,500.0	-1,018.5	1,711.9	1,722.5	0.00	0.00	0.00
11,400.0	90.00	90.60	9,500.0	-1,019.6	1,811.9	1,822.5	0.00	0.00	0.00
11,500.0	90.00	90.60	9,500.0	-1,020.6	1,911.9	1,922.5	0.00	0.00	0.00
11,600.0	90.00	90.60	9,500.0	-1,021.7	2,011.9	2,022.5	0.00	0.00	0.00
11,700.0	90.00	90.60	9,500.0	-1,022.7	2,111.9	2,122.5	0.00	0.00	0.00
11,800.0	90.00	90.60	9,500.0	-1,023.8	2,211.9	2,222.5	0.00	0.00	0.00
11,900.0	90.00	90.60	9,500.0	-1,024.8	2,311.9	2,322.5	0.00	0.00	0.00
12,000.0	90.00	90.60	9,500.0	-1,025.8	2,411.9	2,422.5	0.00	0.00	0.00
12,100.0	90.00	90.60	9,500.0	-1,026.9	2,511.9	2,522.5	0.00	0.00	0.00
12,200.0	90.00	90.60	9,500.0	-1,027.9	2,611.9	2,622.5	0.00	0.00	0.00
12,300.0	90.00	90.60	9,500.0	-1,029.0	2,711.9	2,722.5	0.00	0.00	0.00
12,400.0	90.00	90.60	9,500.0	-1,030.0	2,811.9	2,822.5	0.00	0.00	0.00
12,500.0	90.00	90.60	9,500.0	-1,031.1	2,911.9	2,922.5	0.00	0.00	0.00
12,600.0	90.00	90.60	9,500.0	-1,032.1	3,011.9	3,022.5	0.00	0.00	0.00
12,700.0	90.00	90.60	9,500.0	-1,033.2	3,111.9	3,122.5	0.00	0.00	0.00
12,800.0	90.00	90.60	9,500.0	-1,034.2	3,211.8	3,222.5	0.00	0.00	0.00
12,900.0	90.00	90.60	9,500.0	-1,035.3	3,311.8	3,322.5	0.00	0.00	0.00
13,000.0	90.00	90.60	9,500.0	-1,036.3	3,411.8	3,422.5	0.00	0.00	0.00
13,100.0	90.00	90.60	9,500.0	-1,037.4	3,511.8	3,522.5	0.00	0.00	0.00
13,200.0	90.00	90.60	9,500.0	-1,038.4	3,611.8	3,622.5	0.00	0.00	0.00
13,300.0	90.00	90.60	9,500.0	-1,039.4	3,711.8	3,722.5	0.00	0.00	0.00
13,400.0	90.00	90.60	9,500.0	-1,040.5	3,811.8	3,822.5	0.00	0.00	0.00
13,500.0	90.00	90.60	9,500.0	-1,041.5	3,911.8	3,922.5	0.00	0.00	0.00
13,600.0	90.00	90.60	9,500.0	-1,042.6	4,011.8	4,022.5	0.00	0.00	0.00
13,700.0	90.00	90.60	9,500.0	-1,043.6	4,111.8	4,122.5	0.00	0.00	0.00
13,800.0	90.00	90.60	9,500.0	-1,044.7	4,211.8	4,222.5	0.00	0.00	0.00
13,900.0	90.00	90.60	9,500.0	-1,045.7	4,311.8	4,322.5	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 223H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3089.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3089.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	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	90.60	9,500.0	-1,046.8	4,411.8	4,422.5	0.00	0.00	0.00
14,100.0	90.00	90.60	9,500.0	-1,047.8	4,511.8	4,522.5	0.00	0.00	0.00
14,200.0	90.00	90.60	9,500.0	-1,048.9	4,611.8	4,622.5	0.00	0.00	0.00
14,300.0	90.00	90.60	9,500.0	-1,049.9	4,711.8	4,722.5	0.00	0.00	0.00
14,400.0	90.00	90.60	9,500.0	-1,051.0	4,811.8	4,822.5	0.00	0.00	0.00
14,500.0	90.00	90.60	9,500.0	-1,052.0	4,911.8	4,922.5	0.00	0.00	0.00
14,600.0	90.00	90.60	9,500.0	-1,053.0	5,011.8	5,022.5	0.00	0.00	0.00
14,700.0	90.00	90.60	9,500.0	-1,054.1	5,111.7	5,122.5	0.00	0.00	0.00
14,800.0	90.00	90.60	9,500.0	-1,055.1	5,211.7	5,222.5	0.00	0.00	0.00
14,900.0	90.00	90.60	9,500.0	-1,056.2	5,311.7	5,322.5	0.00	0.00	0.00
15,000.0	90.00	90.60	9,500.0	-1,057.2	5,411.7	5,422.5	0.00	0.00	0.00
15,100.0	90.00	90.60	9,500.0	-1,058.3	5,511.7	5,522.5	0.00	0.00	0.00
15,200.0	90.00	90.60	9,500.0	-1,059.3	5,611.7	5,622.5	0.00	0.00	0.00
15,300.0	90.00	90.60	9,500.0	-1,060.4	5,711.7	5,722.5	0.00	0.00	0.00
15,400.0	90.00	90.60	9,500.0	-1,061.4	5,811.7	5,822.5	0.00	0.00	0.00
15,500.0	90.00	90.60	9,500.0	-1,062.5	5,911.7	5,922.5	0.00	0.00	0.00
15,600.0	90.00	90.60	9,500.0	-1,063.5	6,011.7	6,022.5	0.00	0.00	0.00
15,700.0	90.00	90.60	9,500.0	-1,064.5	6,111.7	6,122.5	0.00	0.00	0.00
15,800.0	90.00	90.60	9,500.0	-1,065.6	6,211.7	6,222.5	0.00	0.00	0.00
15,900.0	90.00	90.60	9,500.0	-1,066.6	6,311.7	6,322.5	0.00	0.00	0.00
16,000.0	90.00	90.60	9,500.0	-1,067.7	6,411.7	6,422.5	0.00	0.00	0.00
16,100.0	90.00	90.60	9,500.0	-1,068.7	6,511.7	6,522.5	0.00	0.00	0.00
16,200.0	90.00	90.60	9,500.0	-1,069.8	6,611.7	6,622.5	0.00	0.00	0.00
16,300.0	90.00	90.60	9,500.0	-1,070.8	6,711.7	6,722.5	0.00	0.00	0.00
16,400.0	90.00	90.60	9,500.0	-1,071.9	6,811.7	6,822.5	0.00	0.00	0.00
16,500.0	90.00	90.60	9,500.0	-1,072.9	6,911.6	6,922.5	0.00	0.00	0.00
16,600.0	90.00	90.60	9,500.0	-1,074.0	7,011.6	7,022.5	0.00	0.00	0.00
16,700.0	90.00	90.60	9,500.0	-1,075.0	7,111.6	7,122.5	0.00	0.00	0.00
16,800.0	90.00	90.60	9,500.0	-1,076.1	7,211.6	7,222.5	0.00	0.00	0.00
16,900.0	90.00	90.60	9,500.0	-1,077.1	7,311.6	7,322.5	0.00	0.00	0.00
17,000.0	90.00	90.60	9,500.0	-1,078.1	7,411.6	7,422.5	0.00	0.00	0.00
17,100.0	90.00	90.60	9,500.0	-1,079.2	7,511.6	7,522.5	0.00	0.00	0.00
17,200.0	90.00	90.60	9,500.0	-1,080.2	7,611.6	7,622.5	0.00	0.00	0.00
17,300.0	90.00	90.60	9,500.0	-1,081.3	7,711.6	7,722.5	0.00	0.00	0.00
17,400.0	90.00	90.60	9,500.0	-1,082.3	7,811.6	7,822.5	0.00	0.00	0.00
17,500.0	90.00	90.60	9,500.0	-1,083.4	7,911.6	7,922.5	0.00	0.00	0.00
17,600.0	90.00	90.60	9,500.0	-1,084.4	8,011.6	8,022.5	0.00	0.00	0.00
17,700.0	90.00	90.60	9,500.0	-1,085.5	8,111.6	8,122.5	0.00	0.00	0.00
17,800.0	90.00	90.60	9,500.0	-1,086.5	8,211.6	8,222.5	0.00	0.00	0.00
17,900.0	90.00	90.60	9,500.0	-1,087.6	8,311.6	8,322.5	0.00	0.00	0.00
18,000.0	90.00	90.60	9,500.0	-1,088.6	8,411.6	8,422.5	0.00	0.00	0.00
18,100.0	90.00	90.60	9,500.0	-1,089.7	8,511.6	8,522.5	0.00	0.00	0.00
18,200.0	90.00	90.60	9,500.0	-1,090.7	8,611.6	8,622.5	0.00	0.00	0.00
18,300.0	90.00	90.60	9,500.0	-1,091.7	8,711.5	8,722.5	0.00	0.00	0.00
18,400.0	90.00	90.60	9,500.0	-1,092.8	8,811.5	8,822.5	0.00	0.00	0.00
18,500.0	90.00	90.60	9,500.0	-1,093.8	8,911.5	8,922.5	0.00	0.00	0.00
18,600.0	90.00	90.60	9,500.0	-1,094.9	9,011.5	9,022.5	0.00	0.00	0.00
18,700.0	90.00	90.60	9,500.0	-1,095.9	9,111.5	9,122.5	0.00	0.00	0.00
18,800.0	90.00	90.60	9,500.0	-1,097.0	9,211.5	9,222.5	0.00	0.00	0.00
18,900.0	90.00	90.60	9,500.0	-1,098.0	9,311.5	9,322.5	0.00	0.00	0.00
19,000.0	90.00	90.60	9,500.0	-1,099.1	9,411.5	9,422.5	0.00	0.00	0.00
19,100.0	90.00	90.60	9,500.0	-1,100.1	9,511.5	9,522.5	0.00	0.00	0.00
19,200.0	90.00	90.60	9,500.0	-1,101.2	9,611.5	9,622.5	0.00	0.00	0.00
19,300.0	90.00	90.60	9,500.0	-1,102.2	9,711.5	9,722.5	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 223H
Company:	NOVO Oil & Gas	TVD Reference:	RKB 25' + GL @ 3089.8usft
Project:	EDDY CO., NM (NAD83)	MD Reference:	RKB 25' + GL @ 3089.8usft
Site:	SEC 02-T23S-R28E	North Reference:	Grid
Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
19,400.0	90.00	90.60	9,500.0	-1,103.3	9,811.5	9,822.5	0.00	0.00	0.00	
19,500.0	90.00	90.60	9,500.0	-1,104.3	9,911.5	9,922.5	0.00	0.00	0.00	
19,600.0	90.00	90.60	9,500.0	-1,105.3	10,011.5	10,022.5	0.00	0.00	0.00	
19,700.0	90.00	90.60	9,500.0	-1,106.4	10,111.5	10,122.5	0.00	0.00	0.00	
19,800.0	90.00	90.60	9,500.0	-1,107.4	10,211.5	10,222.5	0.00	0.00	0.00	
19,892.7	90.00	90.60	9,500.0	-1,108.4	10,304.2	10,315.2	0.00	0.00	0.00	
TD at 19892.7										

Design Targets										
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
FTP Rana Salada Fed C - plan misses target center by 0.1usft at 9940.0usft MD (9500.0 TVD, -1004.3 N, 352.0 E) - Point	0.00	0.00	9,500.0	-1,004.3	352.0	484,250.47	629,393.43	32° 19' 51.436 N	104° 2' 53.674 W	
PBHL Rana Salada Fed - plan hits target center - Point	0.00	0.00	9,500.0	-1,108.4	10,304.2	484,146.40	639,345.58	32° 19' 50.129 N	104° 0' 57.683 W	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,500.0	1,500.0	0.0	0.0	Begin Nudge	
2,163.8	2,157.9	-74.8	-16.5	EOB 13.28° Inc	
5,949.2	5,842.1	-923.5	-204.4	EOH 13.28° Inc	
6,613.0	6,500.0	-998.3	-220.9	Vertical Point	
9,040.0	8,927.0	-998.3	-220.9	KOP 10° DLS/100'	
9,940.0	9,500.0	-1,004.3	352.0	Landing Point	
19,892.7	9,500.0	-1,108.4	10,304.2	TD at 19892.7	



NOVO Oil & Gas

EDDY CO., NM (NAD83)

SEC 02-T23S-R28E

Rana Salada Fed Com 0106 223H

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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 2,179.7usft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISWCSA
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	19,892.7	Plan 1 (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name Offset Well - Wellbore - Design	Reference	Offset	Distance		Separation Factor	Warning
	Measured	Measured	Between	Between		
	Depth (usft)	Depth (usft)	Centres (usft)	Ellipses (usft)		
SEC 02-T23S-R28E						
Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1	800.0	799.5	20.0	16.4	5.520	CC, ES
Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1	19,892.7	20,005.9	989.8	415.5	1.723	Collision Risk Procedures Re
Rana Salada Fed Com 0106 213H - Wellbore #1 - Plan 1	1,500.1	1,500.6	20.0	13.3	2.982	CC, ES
Rana Salada Fed Com 0106 213H - Wellbore #1 - Plan 1	19,892.7	19,793.4	990.0	415.3	1.723	Collision Risk Procedures Re
Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1	1,416.3	1,417.3	40.0	33.7	6.313	CC
Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1	1,500.0	1,501.0	40.0	33.3	5.963	ES, SF
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	616.2	617.7	60.0	57.1	21.105	CC
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	700.0	701.5	60.0	56.8	18.759	ES
Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1	900.0	897.1	66.9	62.9	16.511	SF

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1												Offset Site Error: 0.0 usft	
Survey Program: 0-MWD				Rule Assigned:								Offset Well Error: 0.5 usft	
Reference		Offset		Semi Major Axis		Offset Wellbore Centre			Distance				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	
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	CC, ES
900.0	900.0	898.8	898.8	2.0	2.0	-179.33	-21.7	-0.3	21.7	17.7	4.03	5.387	
1,000.0	1,000.0	997.8	997.7	2.2	2.2	-178.22	-26.8	-0.8	26.9	22.4	4.42	6.082	
1,100.0	1,100.0	1,096.4	1,095.8	2.5	2.4	-177.09	-35.2	-1.8	35.5	30.6	4.81	7.372	
1,200.0	1,200.0	1,194.2	1,193.0	2.7	2.6	-176.20	-46.9	-3.1	47.5	42.3	5.20	9.119	
1,300.0	1,300.0	1,291.2	1,288.8	2.9	2.8	-175.55	-61.7	-4.8	62.8	57.2	5.60	11.217	
1,400.0	1,400.0	1,387.0	1,382.9	3.1	3.1	-175.09	-79.5	-6.8	81.5	75.5	6.00	13.588	
1,500.0	1,500.0	1,481.5	1,475.1	3.4	3.4	-174.77	-100.2	-9.2	103.5	97.1	6.40	16.174	
1,600.0	1,600.0	1,575.4	1,565.9	3.5	3.8	-7.05	-123.6	-11.8	127.0	120.2	6.77	18.758	
1,700.0	1,699.8	1,673.0	1,660.1	3.7	4.2	-7.05	-149.3	-14.7	148.3	141.2	7.16	20.714	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 usft
Measured Depth (usft)	Vertical Depth (usft)	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
1,800.0	1,799.5	1,771.4	1,755.0	3.9	4.6	-7.20	-175.1	-17.7	166.3	158.7	7.57	21.969	
1,900.0	1,898.7	1,870.3	1,850.4	4.1	5.1	-7.46	-201.1	-20.6	180.9	172.9	8.00	22.624	
2,000.0	1,997.5	1,969.7	1,946.2	4.3	5.6	-7.83	-227.2	-23.6	192.0	183.6	8.44	22.753	
2,100.0	2,095.6	2,069.4	2,042.4	4.6	6.0	-8.30	-253.3	-26.6	199.8	190.9	8.90	22.444	
2,200.0	2,193.1	2,169.2	2,138.7	4.9	6.5	-8.89	-279.6	-29.6	204.3	194.9	9.38	21.785	
2,300.0	2,290.4	2,269.1	2,235.0	5.2	7.0	-9.49	-305.8	-32.5	208.1	198.2	9.87	21.089	
2,400.0	2,387.8	2,369.1	2,331.4	5.5	7.5	-10.08	-332.0	-35.5	212.0	201.6	10.37	20.439	
2,500.0	2,485.1	2,469.0	2,427.7	5.9	8.0	-10.64	-358.3	-38.5	215.8	204.9	10.88	19.832	
2,600.0	2,582.4	2,568.9	2,524.1	6.3	8.6	-11.18	-384.5	-41.5	219.7	208.3	11.41	19.265	
2,700.0	2,679.7	2,668.8	2,620.4	6.7	9.1	-11.70	-410.8	-44.5	223.6	211.7	11.94	18.735	
2,800.0	2,777.1	2,768.7	2,716.8	7.1	9.6	-12.21	-437.0	-47.4	227.6	215.1	12.48	18.240	
2,900.0	2,874.4	2,868.6	2,813.1	7.5	10.1	-12.70	-463.2	-50.4	231.5	218.5	13.02	17.776	
3,000.0	2,971.7	2,968.5	2,909.5	7.9	10.6	-13.17	-489.5	-53.4	235.5	221.9	13.58	17.342	
3,100.0	3,069.1	3,068.4	3,005.8	8.3	11.1	-13.62	-515.7	-56.4	239.5	225.3	14.14	16.935	
3,200.0	3,166.4	3,168.3	3,102.2	8.7	11.6	-14.06	-541.9	-59.4	243.5	228.8	14.71	16.552	
3,300.0	3,263.7	3,268.2	3,198.6	9.2	12.2	-14.49	-568.2	-62.4	247.5	232.2	15.28	16.193	
3,400.0	3,361.0	3,368.1	3,294.9	9.6	12.7	-14.90	-594.4	-65.3	251.5	235.6	15.86	15.854	
3,500.0	3,458.4	3,468.0	3,391.3	10.0	13.2	-15.30	-620.6	-68.3	255.5	239.1	16.45	15.535	
3,600.0	3,555.7	3,567.9	3,487.6	10.5	13.7	-15.69	-646.9	-71.3	259.6	242.6	17.04	15.234	
3,700.0	3,653.0	3,667.8	3,584.0	10.9	14.3	-16.07	-673.1	-74.3	263.7	246.0	17.64	14.950	
3,800.0	3,750.3	3,767.7	3,680.3	11.4	14.8	-16.43	-699.4	-77.3	267.7	249.5	18.24	14.681	
3,900.0	3,847.7	3,867.6	3,776.7	11.8	15.3	-16.78	-725.6	-80.2	271.8	253.0	18.84	14.426	
4,000.0	3,945.0	3,967.5	3,873.0	12.3	15.8	-17.13	-751.8	-83.2	275.9	256.4	19.45	14.184	
4,100.0	4,042.3	4,067.4	3,969.4	12.7	16.4	-17.46	-778.1	-86.2	280.0	259.9	20.07	13.954	
4,200.0	4,139.7	4,167.3	4,065.7	13.2	16.9	-17.78	-804.3	-89.2	284.1	263.4	20.68	13.736	
4,300.0	4,237.0	4,267.2	4,162.1	13.7	17.4	-18.10	-830.5	-92.2	288.2	266.9	21.30	13.529	
4,400.0	4,334.3	4,367.1	4,258.4	14.1	17.9	-18.40	-856.8	-95.2	292.4	270.4	21.93	13.331	
4,500.0	4,431.6	4,467.0	4,354.8	14.6	18.5	-18.70	-883.0	-98.1	296.5	273.9	22.56	13.143	
4,600.0	4,529.0	4,566.9	4,451.1	15.0	19.0	-18.98	-909.2	-101.1	300.6	277.4	23.19	12.963	
4,700.0	4,626.3	4,666.8	4,547.5	15.5	19.5	-19.27	-935.5	-104.1	304.8	281.0	23.83	12.792	
4,800.0	4,723.6	4,766.7	4,643.8	16.0	20.0	-19.54	-961.7	-107.1	308.9	284.5	24.47	12.628	
4,900.0	4,820.9	4,866.6	4,740.2	16.4	20.6	-19.80	-988.0	-110.1	313.1	288.0	25.11	12.471	
5,000.0	4,918.3	4,966.5	4,836.5	16.9	21.1	-20.06	-1,014.2	-113.0	317.3	291.5	25.75	12.321	
5,100.0	5,015.6	5,066.4	4,932.9	17.4	21.6	-20.31	-1,040.4	-116.0	321.5	295.1	26.40	12.177	
5,200.0	5,112.9	5,166.3	5,029.2	17.8	22.1	-20.56	-1,066.7	-119.0	325.6	298.6	27.05	12.039	
5,300.0	5,210.3	5,266.2	5,125.6	18.3	22.7	-20.80	-1,092.9	-122.0	329.8	302.1	27.70	11.907	
5,400.0	5,307.6	5,366.1	5,221.9	18.8	23.2	-21.03	-1,119.1	-125.0	334.0	305.7	28.36	11.779	
5,500.0	5,404.9	5,466.0	5,318.3	19.2	23.7	-21.26	-1,145.4	-127.9	338.2	309.2	29.01	11.657	
5,600.0	5,502.2	5,565.9	5,414.6	19.7	24.3	-21.48	-1,171.6	-130.9	342.4	312.8	29.67	11.540	
5,700.0	5,599.6	5,665.8	5,511.0	20.2	24.8	-21.70	-1,197.8	-133.9	346.6	316.3	30.34	11.427	
5,800.0	5,696.9	5,765.7	5,607.3	20.6	25.3	-21.91	-1,224.1	-136.9	350.8	319.9	31.00	11.318	
5,900.0	5,794.2	5,865.7	5,703.7	21.1	25.8	-22.12	-1,250.3	-139.9	355.1	323.4	31.67	11.213	
6,000.0	5,891.6	5,965.5	5,800.0	21.5	26.4	-22.31	-1,276.5	-142.9	359.7	327.4	32.32	11.131	
6,100.0	5,989.7	6,065.3	5,896.2	21.9	26.9	-22.35	-1,302.7	-145.8	367.2	334.3	32.88	11.168	
6,200.0	6,088.4	6,164.7	5,992.0	22.1	27.4	-22.22	-1,328.8	-148.8	377.9	344.5	33.38	11.322	
6,300.0	6,187.6	6,263.7	6,087.5	22.4	28.0	-21.93	-1,354.8	-151.8	391.8	358.0	33.81	11.586	
6,400.0	6,287.2	6,362.1	6,182.4	22.6	28.5	-21.51	-1,380.7	-154.7	408.9	374.7	34.20	11.957	
6,500.0	6,387.0	6,459.9	6,276.7	22.8	29.0	-20.98	-1,406.4	-157.6	429.3	394.8	34.54	12.430	
6,600.0	6,487.0	6,556.9	6,370.3	22.9	29.5	-20.38	-1,431.8	-160.5	452.9	418.1	34.84	13.000	
6,700.0	6,587.0	6,653.3	6,463.3	23.1	30.0	172.86	-1,457.2	-163.4	478.6	443.4	35.14	13.620	
6,800.0	6,687.0	6,749.8	6,556.3	23.2	30.5	173.56	-1,482.5	-166.3	504.4	468.9	35.45	14.227	
6,900.0	6,787.0	6,846.2	6,649.3	23.3	31.0	174.20	-1,507.8	-169.1	530.2	494.4	35.78	14.818	

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SB Directional Services

Anticollision Report



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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
Rule Assigned:												Warning	
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
7,000.0	6,887.0	6,942.6	6,742.3	23.4	31.6	174.78	-1,533.2	-172.0	556.1	520.0	36.13	15.393	
7,100.0	6,987.0	7,039.1	6,835.4	23.5	32.1	175.30	-1,558.5	-174.9	582.0	545.5	36.49	15.952	
7,200.0	7,087.0	7,135.5	6,928.4	23.6	32.6	175.79	-1,583.8	-177.8	608.0	571.2	36.86	16.496	
7,300.0	7,187.0	7,232.0	7,021.4	23.8	33.1	176.23	-1,609.1	-180.6	634.0	596.8	37.24	17.026	
7,400.0	7,287.0	7,328.4	7,114.4	23.9	33.6	176.64	-1,634.5	-183.5	660.1	622.5	37.63	17.542	
7,500.0	7,387.0	7,424.9	7,207.4	24.0	34.1	177.01	-1,659.8	-186.4	686.2	648.1	38.03	18.045	
7,600.0	7,487.0	7,521.3	7,300.4	24.1	34.6	177.36	-1,685.1	-189.3	712.3	673.8	38.43	18.534	
7,700.0	7,587.0	7,617.8	7,393.4	24.3	35.1	177.69	-1,710.5	-192.2	738.4	699.6	38.84	19.011	
7,800.0	7,687.0	7,714.2	7,486.5	24.4	35.6	177.99	-1,735.8	-195.0	764.6	725.3	39.26	19.476	
7,900.0	7,787.0	7,810.6	7,579.5	24.5	36.2	178.27	-1,761.1	-197.9	790.7	751.1	39.68	19.929	
8,000.0	7,887.0	7,907.1	7,672.5	24.7	36.7	178.54	-1,786.4	-200.8	816.9	776.8	40.10	20.370	
8,100.0	7,987.0	8,003.5	7,765.5	24.8	37.2	178.79	-1,811.8	-203.7	843.1	802.6	40.53	20.801	
8,200.0	8,087.0	8,100.0	7,858.5	24.9	37.7	179.02	-1,837.1	-206.6	869.3	828.4	40.97	21.221	
8,300.0	8,187.0	8,196.4	7,951.5	25.1	38.2	179.24	-1,862.4	-209.4	895.6	854.2	41.40	21.631	
8,400.0	8,287.0	8,293.7	8,045.4	25.2	38.7	179.45	-1,888.0	-212.3	921.8	880.0	41.85	22.028	
8,500.0	8,387.0	8,437.3	8,184.8	25.4	39.2	179.71	-1,922.1	-216.2	945.6	903.1	42.42	22.289	
8,600.0	8,487.0	8,584.1	8,328.9	25.5	39.7	179.91	-1,949.7	-219.4	964.4	921.5	42.91	22.476	
8,700.0	8,587.0	8,733.5	8,476.8	25.6	40.1	-179.95	-1,970.3	-221.7	978.2	934.9	43.29	22.596	
8,800.0	8,687.0	8,884.6	8,627.4	25.8	40.3	-179.87	-1,983.3	-223.2	986.8	943.2	43.56	22.652	
8,900.0	8,787.0	9,036.8	8,779.4	25.9	40.5	-179.83	-1,988.4	-223.8	990.2	946.4	43.73	22.642	
9,000.0	8,887.0	9,143.8	8,886.5	26.1	40.6	-179.83	-1,988.5	-223.8	990.2	946.2	44.04	22.483	
9,100.0	8,986.9	9,245.5	8,988.0	26.2	40.7	89.57	-1,988.5	-220.5	990.1	945.8	44.36	22.323	
9,200.0	9,084.9	9,348.2	9,088.6	26.3	40.8	89.59	-1,988.2	-200.5	989.7	945.1	44.58	22.201	
9,300.0	9,178.1	9,450.8	9,184.0	26.4	40.8	89.62	-1,987.7	-162.9	988.8	944.1	44.73	22.106	
9,400.0	9,263.8	9,553.2	9,270.9	26.4	40.8	89.66	-1,987.0	-109.1	987.6	942.7	44.88	22.004	
9,500.0	9,339.1	9,655.3	9,346.7	26.5	40.9	89.71	-1,986.2	-40.9	986.1	940.9	45.15	21.840	
9,600.0	9,402.0	9,757.0	9,409.0	26.5	40.9	89.77	-1,985.1	39.4	984.3	938.6	45.69	21.543	
9,700.0	9,450.4	9,858.4	9,456.0	26.6	40.9	89.84	-1,984.0	129.0	982.2	935.6	46.66	21.052	
9,800.0	9,482.9	9,959.2	9,486.4	26.8	41.0	89.91	-1,982.8	225.0	980.0	931.8	48.16	20.348	
9,900.0	9,498.6	10,059.7	9,499.4	27.2	41.2	89.99	-1,981.5	324.5	977.7	927.5	50.22	19.469	
10,000.0	9,500.0	10,159.7	9,500.0	27.9	41.4	90.03	-1,980.2	424.4	975.4	922.6	52.77	18.485	
10,100.0	9,500.0	10,259.6	9,500.0	28.9	41.8	90.03	-1,979.0	524.4	973.1	917.4	55.71	17.467	
10,200.0	9,500.0	10,359.6	9,500.0	30.3	42.3	90.03	-1,977.7	624.4	970.7	911.7	59.02	16.446	
10,300.0	9,500.0	10,459.6	9,500.0	32.0	43.0	90.03	-1,976.4	724.3	968.4	905.8	62.65	15.458	
10,400.0	9,500.0	10,559.6	9,500.0	33.8	43.8	90.03	-1,975.1	824.3	966.1	899.6	66.54	14.520	
10,500.0	9,500.0	10,659.5	9,500.0	35.8	44.9	90.03	-1,973.8	924.3	963.8	893.1	70.64	13.644	
10,600.0	9,500.0	10,759.5	9,500.0	37.9	46.1	90.03	-1,972.6	1,024.2	961.5	886.5	74.92	12.833	
10,700.0	9,500.0	10,859.5	9,500.0	40.1	47.5	90.03	-1,971.3	1,124.2	959.1	879.8	79.36	12.086	
10,800.0	9,500.0	10,959.4	9,500.0	42.3	49.1	90.03	-1,970.0	1,224.2	956.8	872.9	83.92	11.401	
10,900.0	9,500.0	11,059.4	9,500.0	44.7	50.9	90.03	-1,968.7	1,324.1	954.5	865.9	88.60	10.773	
11,000.0	9,500.0	11,159.4	9,500.0	47.0	52.8	90.03	-1,967.5	1,424.1	952.2	858.8	93.36	10.199	
11,100.0	9,500.0	11,259.4	9,500.0	49.5	54.8	90.03	-1,966.2	1,524.1	949.8	851.6	98.21	9.672	
11,200.0	9,500.0	11,359.3	9,500.0	51.9	56.8	90.03	-1,964.9	1,624.0	947.5	844.4	103.12	9.189	
11,300.0	9,500.0	11,459.3	9,500.0	54.4	59.0	90.03	-1,963.6	1,724.0	945.2	837.1	108.09	8.745	
11,400.0	9,500.0	11,559.3	9,500.0	56.9	61.2	90.03	-1,962.4	1,824.0	942.9	829.8	113.11	8.336	
11,500.0	9,500.0	11,659.3	9,500.0	59.4	63.5	90.03	-1,961.1	1,923.9	940.6	822.4	118.17	7.959	
11,600.0	9,500.0	11,759.2	9,500.0	62.0	65.8	90.03	-1,959.8	2,023.9	938.2	815.0	123.28	7.611	
11,700.0	9,500.0	11,859.2	9,500.0	64.5	68.2	90.03	-1,958.5	2,123.9	935.9	807.5	128.42	7.288	
11,800.0	9,500.0	11,959.2	9,500.0	67.1	70.6	90.03	-1,957.3	2,223.8	933.6	800.0	133.58	6.989	
11,900.0	9,500.0	12,059.1	9,500.0	69.7	73.0	90.03	-1,956.0	2,323.8	931.3	792.5	138.78	6.710	
12,000.0	9,500.0	12,159.1	9,500.0	72.3	75.5	90.03	-1,954.7	2,423.7	928.9	784.9	144.00	6.451	
12,100.0	9,500.0	12,259.1	9,500.0	75.0	78.0	90.03	-1,953.4	2,523.7	926.6	777.4	149.24	6.209	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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				Rule Assigned:								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)			
12,200.0	9,500.0	12,359.1	9,500.0	77.6	80.5	90.03	-1,952.2	2,623.7	924.3	769.8	154.50	5.983	
12,300.0	9,500.0	12,459.0	9,500.0	80.2	83.0	90.03	-1,950.9	2,723.6	922.0	762.2	159.78	5.770	
12,400.0	9,500.0	12,559.0	9,500.0	82.9	85.5	90.03	-1,949.6	2,823.6	919.7	754.6	165.07	5.571	
12,500.0	9,500.0	12,659.0	9,500.0	85.5	88.1	90.03	-1,948.3	2,923.6	917.3	747.0	170.38	5.384	
12,600.0	9,500.0	12,759.0	9,500.0	88.2	90.7	90.03	-1,947.1	3,023.5	915.0	739.3	175.70	5.208	
12,700.0	9,500.0	12,858.9	9,500.0	90.8	93.2	90.03	-1,945.8	3,123.5	912.7	731.7	181.03	5.042	
12,800.0	9,500.0	12,958.9	9,500.0	93.5	95.8	90.03	-1,944.5	3,223.5	910.4	724.0	186.37	4.885	
12,900.0	9,500.0	13,058.9	9,500.0	96.2	98.4	90.03	-1,943.2	3,323.4	908.0	716.3	191.73	4.736	
13,000.0	9,500.0	13,158.9	9,500.0	98.9	101.0	90.03	-1,942.0	3,423.4	905.7	708.6	197.09	4.596	
13,100.0	9,500.0	13,258.8	9,500.0	101.6	103.6	90.03	-1,940.7	3,523.4	903.4	700.9	202.46	4.462	
13,200.0	9,500.0	13,358.8	9,500.0	104.3	106.3	90.03	-1,939.4	3,623.3	901.1	693.2	207.84	4.335	
13,300.0	9,500.0	13,458.8	9,500.0	107.0	108.9	90.03	-1,938.1	3,723.3	898.8	685.5	213.22	4.215	
13,400.0	9,500.0	13,558.7	9,500.0	109.6	111.5	90.03	-1,936.9	3,823.3	896.4	677.8	218.62	4.101	
13,500.0	9,500.0	13,658.7	9,500.0	112.4	114.2	90.03	-1,935.6	3,923.2	894.1	670.1	224.01	3.991	
13,600.0	9,500.0	13,758.7	9,500.0	115.1	116.8	90.03	-1,934.3	4,023.2	891.8	662.4	229.42	3.887	
13,700.0	9,500.0	13,858.7	9,500.0	117.8	119.5	90.03	-1,933.0	4,123.1	889.5	654.6	234.83	3.788	
13,800.0	9,500.0	13,958.6	9,500.0	120.5	122.1	90.03	-1,931.8	4,223.1	887.2	646.9	240.24	3.693	
13,900.0	9,500.0	14,058.6	9,500.0	123.2	124.8	90.03	-1,930.5	4,323.1	884.8	639.2	245.66	3.602	
14,000.0	9,500.0	14,158.6	9,500.0	125.9	127.5	90.03	-1,929.2	4,423.0	882.5	631.4	251.08	3.515	
14,100.0	9,500.0	14,258.6	9,500.0	128.6	130.1	90.03	-1,927.9	4,523.0	880.2	623.7	256.51	3.431	
14,200.0	9,500.0	14,358.5	9,500.0	131.3	132.8	90.03	-1,926.7	4,623.0	877.9	615.9	261.94	3.351	
14,300.0	9,500.0	14,458.5	9,500.0	134.0	135.5	90.03	-1,925.4	4,722.9	875.5	608.2	267.38	3.275	
14,400.0	9,500.0	14,558.5	9,500.0	136.8	138.2	90.03	-1,924.1	4,822.9	873.2	600.4	272.81	3.201	
14,500.0	9,500.0	14,658.4	9,500.0	139.5	140.8	90.03	-1,922.8	4,922.9	870.9	592.6	278.25	3.130	
14,600.0	9,500.0	14,758.4	9,500.0	142.2	143.5	90.03	-1,921.5	5,022.8	868.6	584.9	283.70	3.062	
14,700.0	9,500.0	14,858.4	9,500.0	144.9	146.2	90.03	-1,920.3	5,122.8	866.3	577.1	289.15	2.996	
14,800.0	9,500.0	14,958.4	9,500.0	147.7	148.9	90.03	-1,919.0	5,222.8	863.9	569.3	294.59	2.933	
14,900.0	9,500.0	15,058.3	9,500.0	150.4	151.6	90.03	-1,917.7	5,322.7	861.6	561.6	300.05	2.872	
15,000.0	9,500.0	15,147.6	9,500.0	153.1	154.0	90.03	-1,916.8	5,412.0	859.6	554.0	305.60	2.813	
15,039.9	9,500.0	15,178.3	9,500.0	154.2	154.8	90.03	-1,917.0	5,442.7	859.4	551.5	307.82	2.792	
15,100.0	9,500.0	15,224.5	9,500.0	155.9	156.1	90.03	-1,917.8	5,488.9	859.8	548.7	311.11	2.764	
15,200.0	9,500.0	15,315.0	9,500.0	158.6	158.6	90.03	-1,921.0	5,579.3	862.3	545.8	316.53	2.724	
15,300.0	9,500.0	15,414.9	9,500.0	161.3	161.3	90.03	-1,924.8	5,679.2	865.1	543.1	322.00	2.687	
15,400.0	9,500.0	15,514.9	9,500.0	164.0	164.0	90.03	-1,928.6	5,779.1	867.8	540.3	327.47	2.650	
15,500.0	9,500.0	15,614.9	9,500.0	166.8	166.7	90.03	-1,932.3	5,879.0	870.5	537.5	332.94	2.615	
15,600.0	9,500.0	15,714.8	9,500.0	169.5	169.5	90.03	-1,936.1	5,978.9	873.2	534.8	338.41	2.580	
15,700.0	9,500.0	15,814.8	9,500.0	172.3	172.2	90.03	-1,939.8	6,078.7	875.9	532.0	343.89	2.547	
15,800.0	9,500.0	15,914.7	9,500.0	175.0	174.9	90.03	-1,943.6	6,178.6	878.6	529.3	349.36	2.515	
15,900.0	9,500.0	16,014.7	9,500.0	177.7	177.6	90.03	-1,947.4	6,278.5	881.3	526.5	354.84	2.484	
16,000.0	9,500.0	16,114.7	9,500.0	180.5	180.4	90.03	-1,951.1	6,378.4	884.1	523.7	360.32	2.454	
16,100.0	9,500.0	16,214.6	9,500.0	183.2	183.1	90.03	-1,954.9	6,478.3	886.8	521.0	365.80	2.424	
16,200.0	9,500.0	16,314.6	9,500.0	185.9	185.8	90.03	-1,958.6	6,578.2	889.5	518.2	371.29	2.396	
16,300.0	9,500.0	16,414.6	9,500.0	188.7	188.6	90.03	-1,962.4	6,678.1	892.2	515.4	376.77	2.368	
16,400.0	9,500.0	16,514.5	9,500.0	191.4	191.3	90.03	-1,966.2	6,778.0	894.9	512.7	382.25	2.341	
16,500.0	9,500.0	16,614.5	9,500.0	194.2	194.0	90.03	-1,969.9	6,877.9	897.6	509.9	387.74	2.315	
16,600.0	9,500.0	16,714.4	9,500.0	196.9	196.8	90.03	-1,973.7	6,977.8	900.4	507.1	393.23	2.290	
16,700.0	9,500.0	16,814.4	9,500.0	199.7	199.5	90.03	-1,977.4	7,077.7	903.1	504.4	398.72	2.265	
16,800.0	9,500.0	16,914.4	9,500.0	202.4	202.3	90.03	-1,981.2	7,177.6	905.8	501.6	404.21	2.241	
16,900.0	9,500.0	17,014.3	9,500.0	205.1	205.0	90.03	-1,985.0	7,277.5	908.5	498.8	409.70	2.218	
17,000.0	9,500.0	17,114.3	9,500.0	207.9	207.7	90.03	-1,988.7	7,377.3	911.2	496.0	415.19	2.195	
17,100.0	9,500.0	17,214.3	9,500.0	210.6	210.5	90.03	-1,992.5	7,477.2	913.9	493.3	420.68	2.173	
17,200.0	9,500.0	17,314.2	9,500.0	213.4	213.2	90.03	-1,996.2	7,577.1	916.7	490.5	426.17	2.151	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 133H - Wellbore #1 - Plan 1													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.5 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,300.0	9,500.0	17,414.2	9,500.0	216.1	216.0	90.03	-2,000.0	7,677.0	919.4	487.7	431.67	2.130	
17,400.0	9,500.0	17,514.2	9,500.0	218.9	218.7	90.03	-2,003.8	7,776.9	922.1	484.9	437.16	2.109	
17,500.0	9,500.0	17,614.1	9,500.0	221.6	221.4	90.03	-2,007.5	7,876.8	924.8	482.1	442.66	2.089	
17,600.0	9,500.0	17,714.1	9,500.0	224.4	224.2	90.03	-2,011.3	7,976.7	927.5	479.4	448.15	2.070	
17,700.0	9,500.0	17,814.0	9,500.0	227.1	226.9	90.03	-2,015.0	8,076.6	930.2	476.6	453.65	2.051	
17,800.0	9,500.0	17,914.0	9,500.0	229.9	229.7	90.03	-2,018.8	8,176.5	932.9	473.8	459.15	2.032	
17,900.0	9,500.0	18,014.0	9,500.0	232.6	232.4	90.03	-2,022.6	8,276.4	935.7	471.0	464.64	2.014	
18,000.0	9,500.0	18,113.9	9,500.0	235.3	235.2	90.03	-2,026.3	8,376.3	938.4	468.2	470.14	1.996 Collision Risk Procedures Req.	
18,100.0	9,500.0	18,213.9	9,500.0	238.1	237.9	90.03	-2,030.1	8,476.2	941.1	465.4	475.64	1.979 Collision Risk Procedures Req.	
18,200.0	9,500.0	18,313.9	9,500.0	240.8	240.7	90.03	-2,033.8	8,576.1	943.8	462.7	481.14	1.962 Collision Risk Procedures Req.	
18,300.0	9,500.0	18,413.8	9,500.0	243.6	243.4	90.03	-2,037.6	8,675.9	946.5	459.9	486.64	1.945 Collision Risk Procedures Req.	
18,400.0	9,500.0	18,513.8	9,500.0	246.3	246.2	90.03	-2,041.4	8,775.8	949.2	457.1	492.14	1.929 Collision Risk Procedures Req.	
18,500.0	9,500.0	18,613.7	9,500.0	249.1	248.9	90.03	-2,045.1	8,875.7	952.0	454.3	497.65	1.913 Collision Risk Procedures Req.	
18,600.0	9,500.0	18,713.7	9,500.0	251.8	251.6	90.03	-2,048.9	8,975.6	954.7	451.5	503.15	1.897 Collision Risk Procedures Req.	
18,700.0	9,500.0	18,813.7	9,500.0	254.6	254.4	90.03	-2,052.6	9,075.5	957.4	448.7	508.65	1.882 Collision Risk Procedures Req.	
18,800.0	9,500.0	18,913.6	9,500.0	257.3	257.1	90.03	-2,056.4	9,175.4	960.1	445.9	514.15	1.867 Collision Risk Procedures Req.	
18,900.0	9,500.0	19,013.6	9,500.0	260.1	259.9	90.03	-2,060.2	9,275.3	962.8	443.2	519.66	1.853 Collision Risk Procedures Req.	
19,000.0	9,500.0	19,113.6	9,500.0	262.8	262.6	90.03	-2,063.9	9,375.2	965.5	440.4	525.16	1.839 Collision Risk Procedures Req.	
19,100.0	9,500.0	19,213.5	9,500.0	265.6	265.4	90.03	-2,067.7	9,475.1	968.2	437.6	530.67	1.825 Collision Risk Procedures Req.	
19,200.0	9,500.0	19,313.5	9,500.0	268.3	268.1	90.03	-2,071.4	9,575.0	971.0	434.8	536.17	1.811 Collision Risk Procedures Req.	
19,300.0	9,500.0	19,413.5	9,500.0	271.1	270.9	90.03	-2,075.2	9,674.9	973.7	432.0	541.68	1.798 Collision Risk Procedures Req.	
19,400.0	9,500.0	19,513.4	9,500.0	273.9	273.6	90.03	-2,079.0	9,774.8	976.4	429.2	547.18	1.784 Collision Risk Procedures Req.	
19,500.0	9,500.0	19,613.4	9,500.0	276.6	276.4	90.03	-2,082.7	9,874.7	979.1	426.4	552.69	1.772 Collision Risk Procedures Req.	
19,600.0	9,500.0	19,713.3	9,500.0	279.4	279.1	90.03	-2,086.5	9,974.5	981.8	423.6	558.19	1.759 Collision Risk Procedures Req.	
19,700.0	9,500.0	19,813.3	9,500.0	282.1	281.9	90.03	-2,090.2	10,074.4	984.5	420.8	563.70	1.747 Collision Risk Procedures Req.	
19,800.0	9,500.0	19,913.3	9,500.0	284.9	284.6	90.03	-2,094.0	10,174.3	987.3	418.0	569.21	1.734 Collision Risk Procedures Req.	
19,892.7	9,500.0	20,005.9	9,500.0	287.4	287.2	90.03	-2,097.5	10,266.9	989.8	415.5	574.31	1.723 Collision Risk Procedures Req., 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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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)	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	0.5	0.5	0.5	0.5	0.17	20.0	0.1	20.0					
100.0	100.0	100.5	100.5	0.5	0.5	0.17	20.0	0.1	20.0	18.9	1.06	18.945		
200.0	200.0	200.5	200.5	0.6	0.6	0.17	20.0	0.1	20.0	18.7	1.27	15.710		
300.0	300.0	300.5	300.5	0.8	0.8	0.17	20.0	0.1	20.0	18.4	1.59	12.571		
400.0	400.0	400.5	400.5	1.0	1.0	0.17	20.0	0.1	20.0	18.0	1.96	10.199		
500.0	500.0	500.5	500.5	1.2	1.2	0.17	20.0	0.1	20.0	17.6	2.36	8.479		
600.0	600.0	600.5	600.5	1.4	1.4	0.17	20.0	0.1	20.0	17.2	2.77	7.214		
700.0	700.0	700.5	700.5	1.6	1.6	0.17	20.0	0.1	20.0	16.8	3.20	6.258		
800.0	800.0	800.5	800.5	1.8	1.8	0.17	20.0	0.1	20.0	16.4	3.63	5.516		
900.0	900.0	900.5	900.5	2.0	2.0	0.17	20.0	0.1	20.0	15.9	4.06	4.927		
1,000.0	1,000.0	1,000.5	1,000.5	2.2	2.2	0.17	20.0	0.1	20.0	15.5	4.50	4.448		
1,100.0	1,100.0	1,100.5	1,100.5	2.5	2.5	0.17	20.0	0.1	20.0	15.1	4.94	4.052		
1,200.0	1,200.0	1,200.5	1,200.5	2.7	2.7	0.17	20.0	0.1	20.0	14.6	5.38	3.720		
1,300.0	1,300.0	1,300.5	1,300.5	2.9	2.9	0.17	20.0	0.1	20.0	14.2	5.82	3.437		
1,400.0	1,400.0	1,400.5	1,400.5	3.1	3.1	0.17	20.0	0.1	20.0	13.7	6.26	3.194		
1,500.0	1,500.0	1,500.5	1,500.5	3.4	3.4	0.17	20.0	0.1	20.0	13.3	6.71	2.982		
1,500.1	1,500.1	1,500.6	1,500.6	3.4	3.4	0.17	20.0	0.1	20.0	13.3	6.71	2.982 CC, ES		
1,600.0	1,600.0	1,600.6	1,600.5	3.5	3.6	164.02	19.8	-1.7	21.5	14.4	7.11	3.027		
1,700.0	1,699.8	1,700.4	1,700.2	3.7	3.8	156.23	19.1	-6.7	26.5	19.0	7.48	3.537		
1,800.0	1,799.5	1,800.0	1,799.7	3.9	4.0	152.55	18.4	-12.3	34.9	27.0	7.86	4.437		
1,900.0	1,898.7	1,899.3	1,898.9	4.1	4.2	152.38	17.7	-18.0	46.5	38.2	8.26	5.625		
2,000.0	1,997.5	1,998.2	1,997.6	4.3	4.4	153.75	16.9	-23.6	61.1	52.4	8.67	7.050		
2,100.0	2,095.6	2,096.6	2,095.8	4.6	4.6	155.61	16.2	-29.2	78.9	69.8	9.09	8.683		
2,200.0	2,193.1	2,194.4	2,193.4	4.9	4.8	157.53	15.5	-34.7	99.7	90.2	9.52	10.475		
2,300.0	2,290.4	2,292.0	2,290.9	5.2	5.0	158.97	14.8	-40.2	121.3	111.3	9.95	12.182		
2,400.0	2,387.8	2,389.6	2,388.3	5.5	5.2	159.99	14.1	-45.8	142.9	132.5	10.40	13.740		
2,500.0	2,485.1	2,487.2	2,485.8	5.9	5.5	160.73	13.4	-51.3	164.5	153.6	10.85	15.163		
2,600.0	2,582.4	2,584.8	2,583.2	6.3	5.7	161.30	12.6	-56.9	186.1	174.8	11.31	16.464		
2,700.0	2,679.7	2,682.4	2,680.7	6.7	5.9	161.76	11.9	-62.4	207.8	196.0	11.77	17.656		
2,800.0	2,777.1	2,780.0	2,778.1	7.1	6.1	162.12	11.2	-67.9	229.5	217.2	12.24	18.750		
2,900.0	2,874.4	2,877.7	2,875.6	7.5	6.4	162.43	10.5	-73.5	251.2	238.4	12.71	19.756		
3,000.0	2,971.7	2,975.3	2,973.0	7.9	6.6	162.68	9.8	-79.0	272.8	259.6	13.19	20.684		
3,100.0	3,069.1	3,072.9	3,070.5	8.3	6.8	162.90	9.1	-84.6	294.5	280.9	13.67	21.541		
3,200.0	3,166.4	3,170.5	3,167.9	8.7	7.0	163.09	8.3	-90.1	316.2	302.1	14.16	22.334		
3,300.0	3,263.7	3,268.1	3,265.4	9.2	7.3	163.25	7.6	-95.7	337.9	323.3	14.65	23.070		
3,400.0	3,361.0	3,365.7	3,362.8	9.6	7.5	163.40	6.9	-101.2	359.6	344.5	15.14	23.754		
3,500.0	3,458.4	3,463.3	3,460.3	10.0	7.7	163.53	6.2	-106.7	381.3	365.7	15.63	24.392		
3,600.0	3,555.7	3,561.0	3,557.8	10.5	8.0	163.64	5.5	-112.3	403.0	386.9	16.13	24.987		
3,700.0	3,653.0	3,658.6	3,655.2	10.9	8.2	163.74	4.8	-117.8	424.7	408.1	16.63	25.543		
3,800.0	3,750.3	3,756.2	3,752.7	11.4	8.4	163.84	4.0	-123.4	446.4	429.3	17.13	26.064		
3,900.0	3,847.7	3,853.8	3,850.1	11.8	8.7	163.92	3.3	-128.9	468.1	450.5	17.63	26.553		
4,000.0	3,945.0	3,951.4	3,947.6	12.3	8.9	164.00	2.6	-134.4	489.8	471.7	18.13	27.012		
4,100.0	4,042.3	4,049.0	4,045.0	12.7	9.1	164.07	1.9	-140.0	511.5	492.9	18.64	27.444		
4,200.0	4,139.7	4,146.6	4,142.5	13.2	9.4	164.13	1.2	-145.5	533.2	514.1	19.15	27.852		
4,300.0	4,237.0	4,244.3	4,239.9	13.7	9.6	164.19	0.5	-151.1	554.9	535.3	19.65	28.237		
4,400.0	4,334.3	4,341.9	4,337.4	14.1	9.8	164.24	-0.3	-156.6	576.7	556.5	20.16	28.601		
4,500.0	4,431.6	4,439.5	4,434.8	14.6	10.1	164.30	-1.0	-162.1	598.4	577.7	20.67	28.945		
4,600.0	4,529.0	4,537.1	4,532.3	15.0	10.3	164.34	-1.7	-167.7	620.1	598.9	21.18	29.271		
4,700.0	4,626.3	4,634.7	4,629.7	15.5	10.6	164.39	-2.4	-173.2	641.8	620.1	21.70	29.581		
4,800.0	4,723.6	4,732.3	4,727.2	16.0	10.8	164.43	-3.1	-178.8	663.5	641.3	22.21	29.876		
4,900.0	4,820.9	4,829.9	4,824.7	16.4	11.0	164.47	-3.8	-184.3	685.2	662.5	22.72	30.156		
5,000.0	4,918.3	4,927.6	4,922.1	16.9	11.3	164.50	-4.6	-189.8	706.9	683.7	23.24	30.422		

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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: Reference		Offset		Semi Major Axis		Offset Wellbore Centre		Rule Assigned: Distance				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	
5,100.0	5,015.6	5,025.2	5,019.6	17.4	11.5	164.54	-5.3	-195.4	728.6	704.9	23.75	30.676		
5,200.0	5,112.9	5,122.8	5,117.0	17.8	11.7	164.57	-6.0	-200.9	750.3	726.1	24.27	30.919		
5,300.0	5,210.3	5,220.4	5,214.5	18.3	12.0	164.60	-6.7	-206.5	772.0	747.3	24.78	31.150		
5,400.0	5,307.6	5,318.0	5,311.9	18.8	12.2	164.63	-7.4	-212.0	793.8	768.5	25.30	31.372		
5,500.0	5,404.9	5,413.9	5,407.7	19.2	12.4	164.72	-8.0	-216.6	815.5	789.8	25.78	31.632		
5,600.0	5,502.2	5,508.9	5,502.7	19.7	12.6	165.02	-8.2	-218.0	837.6	811.4	26.21	31.953		
5,700.0	5,599.6	5,606.3	5,600.1	20.2	12.8	165.41	-8.2	-218.0	859.9	833.2	26.65	32.260		
5,800.0	5,696.9	5,703.6	5,697.4	20.6	13.0	165.79	-8.2	-218.0	882.1	855.0	27.10	32.549		
5,900.0	5,794.2	5,800.9	5,794.7	21.1	13.2	166.14	-8.2	-218.0	904.5	876.9	27.55	32.828		
6,000.0	5,891.6	5,898.4	5,892.1	21.5	13.4	166.53	-8.2	-218.0	926.4	898.4	27.99	33.093		
6,100.0	5,989.7	5,996.4	5,990.2	21.9	13.6	166.89	-8.2	-218.0	945.4	917.0	28.41	33.280		
6,200.0	6,088.4	6,095.1	6,088.9	22.1	13.8	167.18	-8.2	-218.0	961.1	932.3	28.82	33.353		
6,300.0	6,187.6	6,194.3	6,188.1	22.4	14.0	167.40	-8.2	-218.0	973.4	944.2	29.22	33.315		
6,400.0	6,287.2	6,293.9	6,287.7	22.6	14.2	167.56	-8.2	-218.0	982.4	952.8	29.61	33.173		
6,500.0	6,387.0	6,393.7	6,387.5	22.8	14.4	167.65	-8.2	-218.0	987.9	957.9	30.00	32.930		
6,600.0	6,487.0	6,493.7	6,487.5	22.9	14.6	167.69	-8.2	-218.0	990.1	959.7	30.38	32.591		
6,700.0	6,587.0	6,593.7	6,587.5	23.1	14.8	0.17	-8.2	-218.0	990.1	959.3	30.76	32.187		
6,800.0	6,687.0	6,693.7	6,687.5	23.2	15.0	0.17	-8.2	-218.0	990.1	959.0	31.14	31.799		
6,900.0	6,787.0	6,793.7	6,787.5	23.3	15.2	0.17	-8.2	-218.0	990.1	958.6	31.51	31.418		
7,000.0	6,887.0	6,893.7	6,887.5	23.4	15.4	0.17	-8.2	-218.0	990.1	958.2	31.89	31.045		
7,100.0	6,987.0	6,993.7	6,987.5	23.5	15.6	0.17	-8.2	-218.0	990.1	957.8	32.27	30.679		
7,200.0	7,087.0	7,093.7	7,087.5	23.6	15.8	0.17	-8.2	-218.0	990.1	957.4	32.66	30.319		
7,300.0	7,187.0	7,193.7	7,187.5	23.8	16.0	0.17	-8.2	-218.0	990.1	957.1	33.04	29.967		
7,400.0	7,287.0	7,293.7	7,287.5	23.9	16.2	0.17	-8.2	-218.0	990.1	956.7	33.43	29.621		
7,500.0	7,387.0	7,393.7	7,387.5	24.0	16.4	0.17	-8.2	-218.0	990.1	956.3	33.81	29.282		
7,600.0	7,487.0	7,493.7	7,487.5	24.1	16.6	0.17	-8.2	-218.0	990.1	955.9	34.20	28.949		
7,700.0	7,587.0	7,593.7	7,587.5	24.3	16.9	0.17	-8.2	-218.0	990.1	955.5	34.59	28.622		
7,800.0	7,687.0	7,693.7	7,687.5	24.4	17.1	0.17	-8.2	-218.0	990.1	955.1	34.98	28.302		
7,900.0	7,787.0	7,793.7	7,787.5	24.5	17.3	0.17	-8.2	-218.0	990.1	954.7	35.38	27.988		
8,000.0	7,887.0	7,893.7	7,887.5	24.7	17.5	0.17	-8.2	-218.0	990.1	954.3	35.77	27.679		
8,100.0	7,987.0	7,993.7	7,987.5	24.8	17.7	0.17	-8.2	-218.0	990.1	953.9	36.17	27.377		
8,200.0	8,087.0	8,093.7	8,087.5	24.9	17.9	0.17	-8.2	-218.0	990.1	953.5	36.56	27.080		
8,300.0	8,187.0	8,193.7	8,187.5	25.1	18.1	0.17	-8.2	-218.0	990.1	953.1	36.96	26.788		
8,400.0	8,287.0	8,293.7	8,287.5	25.2	18.3	0.17	-8.2	-218.0	990.1	952.7	37.36	26.502		
8,500.0	8,387.0	8,393.7	8,387.5	25.4	18.5	0.17	-8.2	-218.0	990.1	952.3	37.76	26.221		
8,600.0	8,487.0	8,493.7	8,487.5	25.5	18.8	0.17	-8.2	-218.0	990.1	951.9	38.16	25.946		
8,700.0	8,587.0	8,593.7	8,587.5	25.6	19.0	0.17	-8.2	-218.0	990.1	951.5	38.56	25.675		
8,800.0	8,687.0	8,693.7	8,687.5	25.8	19.2	0.17	-8.2	-218.0	990.1	951.1	38.97	25.409		
8,900.0	8,787.0	8,793.7	8,787.5	25.9	19.4	0.17	-8.2	-218.0	990.1	950.7	39.37	25.148		
9,000.0	8,887.0	8,893.7	8,887.5	26.1	19.6	0.17	-8.2	-218.0	990.1	950.3	39.78	24.892		
9,100.0	8,986.9	8,994.5	8,988.2	26.2	19.8	-90.43	-8.2	-214.8	990.1	950.0	40.15	24.662		
9,200.0	9,084.9	9,095.8	9,087.4	26.3	19.9	-90.41	-8.4	-195.1	990.1	949.7	40.42	24.496		
9,300.0	9,178.1	9,197.0	9,181.5	26.4	20.1	-90.38	-8.8	-158.4	990.1	949.5	40.63	24.369		
9,400.0	9,263.8	9,298.1	9,267.7	26.4	20.2	-90.33	-9.4	-105.8	990.1	949.2	40.85	24.235		
9,418.6	9,278.6	9,316.9	9,282.6	26.4	20.2	-90.32	-9.5	-94.3	990.1	949.2	40.92	24.198		
9,500.0	9,339.1	9,399.0	9,343.1	26.5	20.4	-90.28	-10.1	-38.9	990.1	948.9	41.22	24.019		
9,520.2	9,352.9	9,419.3	9,356.9	26.5	20.5	-90.27	-10.2	-23.9	990.1	948.7	41.35	23.945		
9,600.0	9,402.0	9,499.7	9,405.6	26.5	20.8	-90.22	-10.9	39.9	990.1	948.2	41.90	23.632		
9,622.0	9,413.9	9,521.9	9,417.4	26.6	20.9	-90.20	-11.1	58.7	990.1	947.9	42.13	23.500		
9,700.0	9,450.4	9,600.3	9,453.3	26.6	21.4	-90.15	-11.8	128.3	990.1	947.0	43.04	23.005		
9,724.9	9,460.1	9,625.3	9,462.7	26.7	21.6	-90.13	-12.1	151.5	990.1	946.6	43.45	22.789		
9,800.0	9,482.9	9,700.6	9,484.7	26.8	22.2	-90.07	-12.8	223.5	990.1	945.3	44.75	22.126		

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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				Rule Assigned:								Offset Well Error:	0.5 usft
Reference		Offset		Semi Major Axis		Offset Wellbore Centre			Distance				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			
9,834.6	9,490.3	9,735.2	9,491.6	26.9	22.6	-90.05	-13.2	257.4	990.1	944.6	45.51	21.756			
9,900.0	9,498.6	9,800.7	9,499.0	27.2	23.4	-90.00	-13.9	322.4	990.1	943.1	47.02	21.059			
10,000.0	9,500.0	9,900.7	9,500.0	27.9	24.8	-89.97	-14.9	422.4	990.1	940.3	49.76	19.897			
10,008.2	9,500.0	9,908.9	9,500.0	27.9	24.9	-89.97	-15.0	430.6	990.1	940.1	50.02	19.793			
10,100.0	9,500.0	10,000.7	9,500.0	28.9	26.4	-89.97	-15.9	522.4	990.1	937.1	52.93	18.704			
10,129.6	9,500.0	10,030.3	9,500.0	29.3	26.9	-89.97	-16.3	552.0	990.1	936.1	53.98	18.340			
10,200.0	9,500.0	10,100.7	9,500.0	30.3	28.2	-89.97	-17.0	622.4	990.1	933.6	56.47	17.532			
10,229.6	9,500.0	10,130.3	9,500.0	30.8	28.8	-89.97	-17.3	652.0	990.1	932.5	57.61	17.186			
10,300.0	9,500.0	10,200.7	9,500.0	32.0	30.1	-89.97	-18.0	722.3	990.1	929.8	60.31	16.416			
10,329.6	9,500.0	10,230.3	9,500.0	32.5	30.7	-89.97	-18.4	752.0	990.1	928.6	61.52	16.093			
10,400.0	9,500.0	10,300.7	9,500.0	33.8	32.2	-89.97	-19.1	822.3	990.1	925.7	64.39	15.375			
10,429.6	9,500.0	10,330.3	9,500.0	34.4	32.8	-89.97	-19.4	852.0	990.1	924.4	65.66	15.078			
10,500.0	9,500.0	10,400.7	9,500.0	35.8	34.3	-89.97	-20.1	922.3	990.1	921.4	68.68	14.416			
10,529.6	9,500.0	10,430.3	9,500.0	36.4	35.0	-89.97	-20.4	952.0	990.1	920.1	70.00	14.144			
10,600.0	9,500.0	10,500.7	9,500.0	37.9	36.6	-89.97	-21.2	1,022.3	990.1	916.9	73.13	13.538			
10,629.6	9,500.0	10,530.3	9,500.0	38.5	37.3	-89.97	-21.5	1,052.0	990.1	915.6	74.49	13.291			
10,700.0	9,500.0	10,600.7	9,500.0	40.1	38.9	-89.97	-22.2	1,122.3	990.1	912.4	77.72	12.739			
10,729.6	9,500.0	10,630.3	9,500.0	40.7	39.6	-89.97	-22.5	1,152.0	990.1	911.0	79.11	12.515			
10,800.0	9,500.0	10,700.7	9,500.0	42.3	41.2	-89.97	-23.3	1,222.3	990.1	907.6	82.42	12.012			
10,829.6	9,500.0	10,730.3	9,500.0	43.0	42.0	-89.97	-23.6	1,252.0	990.1	906.2	83.85	11.808			
10,900.0	9,500.0	10,800.7	9,500.0	44.7	43.7	-89.97	-24.3	1,322.3	990.1	902.8	87.22	11.351			
10,929.6	9,500.0	10,830.3	9,500.0	45.4	44.4	-89.97	-24.6	1,352.0	990.1	901.4	88.67	11.166			
11,000.0	9,500.0	10,900.7	9,500.0	47.0	46.1	-89.97	-25.4	1,422.3	990.1	898.0	92.10	10.749			
11,029.6	9,500.0	10,930.3	9,500.0	47.8	46.8	-89.97	-25.7	1,452.0	990.1	896.5	93.57	10.581			
11,100.0	9,500.0	11,000.7	9,500.0	49.5	48.6	-89.97	-26.4	1,522.3	990.1	893.0	97.05	10.201			
11,129.6	9,500.0	11,030.3	9,500.0	50.2	49.3	-89.97	-26.7	1,551.9	990.1	891.5	98.54	10.047			
11,200.0	9,500.0	11,100.7	9,500.0	51.9	51.1	-89.97	-27.5	1,622.3	990.1	888.0	102.06	9.700			
11,229.6	9,500.0	11,130.3	9,500.0	52.6	51.8	-89.97	-27.8	1,651.9	990.1	886.5	103.56	9.560			
11,300.0	9,500.0	11,200.7	9,500.0	54.4	53.6	-89.97	-28.5	1,722.3	990.1	882.9	107.12	9.242			
11,329.6	9,500.0	11,230.3	9,500.0	55.1	54.4	-89.97	-28.8	1,751.9	990.1	881.4	108.64	9.114			
11,400.0	9,500.0	11,300.7	9,500.0	56.9	56.2	-89.97	-29.6	1,822.3	990.1	877.8	112.23	8.822			
11,429.6	9,500.0	11,330.3	9,500.0	57.6	56.9	-89.97	-29.9	1,851.9	990.1	876.3	113.75	8.704			
11,500.0	9,500.0	11,400.7	9,500.0	59.4	58.8	-89.97	-30.6	1,922.3	990.1	872.7	117.37	8.436			
11,529.6	9,500.0	11,430.3	9,500.0	60.2	59.5	-89.97	-30.9	1,951.9	990.1	871.2	118.90	8.327			
11,600.0	9,500.0	11,500.7	9,500.0	62.0	61.3	-89.97	-31.6	2,022.3	990.1	867.5	122.54	8.079			
11,629.6	9,500.0	11,530.3	9,500.0	62.7	62.1	-89.97	-32.0	2,051.9	990.1	866.0	124.09	7.979			
11,700.0	9,500.0	11,600.7	9,500.0	64.5	64.0	-89.97	-32.7	2,122.3	990.1	862.3	127.75	7.750			
11,729.6	9,500.0	11,630.3	9,500.0	65.3	64.7	-89.97	-33.0	2,151.9	990.1	860.8	129.30	7.657			
11,800.0	9,500.0	11,700.7	9,500.0	67.1	66.6	-89.97	-33.7	2,222.3	990.1	857.1	132.98	7.445			
11,829.6	9,500.0	11,730.3	9,500.0	67.9	67.3	-89.97	-34.1	2,251.9	990.1	855.5	134.53	7.359			
11,900.0	9,500.0	11,800.7	9,500.0	69.7	69.2	-89.97	-34.8	2,322.3	990.1	851.8	138.23	7.162			
11,929.6	9,500.0	11,830.3	9,500.0	70.5	70.0	-89.97	-35.1	2,351.9	990.1	850.3	139.79	7.082			
12,000.0	9,500.0	11,900.7	9,500.0	72.3	71.8	-89.97	-35.8	2,422.3	990.1	846.6	143.50	6.899			
12,029.6	9,500.0	11,930.3	9,500.0	73.1	72.6	-89.97	-36.1	2,451.9	990.1	845.0	145.07	6.825			
12,100.0	9,500.0	12,000.7	9,500.0	75.0	74.5	-89.97	-36.9	2,522.2	990.1	841.3	148.79	6.654			
12,129.6	9,500.0	12,030.3	9,500.0	75.7	75.3	-89.97	-37.2	2,551.9	990.1	839.7	150.37	6.584			
12,200.0	9,500.0	12,100.7	9,500.0	77.6	77.1	-89.97	-37.9	2,622.2	990.1	836.0	154.10	6.425			
12,229.6	9,500.0	12,130.3	9,500.0	78.4	77.9	-89.97	-38.2	2,651.9	990.1	834.4	155.68	6.360			
12,300.0	9,500.0	12,200.7	9,500.0	80.2	79.8	-89.97	-39.0	2,722.2	990.1	830.6	159.42	6.210			
12,329.6	9,500.0	12,230.3	9,500.0	81.0	80.6	-89.97	-39.3	2,751.9	990.1	829.1	161.00	6.149			
12,400.0	9,500.0	12,300.7	9,500.0	82.9	82.5	-89.97	-40.0	2,822.2	990.1	825.3	164.76	6.009			
12,429.6	9,500.0	12,330.3	9,500.0	83.7	83.3	-89.97	-40.3	2,851.9	990.1	823.7	166.34	5.952			

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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			Semi Maior 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		
12,500.0	9,500.0	12,400.7	9,500.0	85.5	85.1	-89.97	-41.1	2,922.2	990.1	820.0	170.11	5.820			
12,529.6	9,500.0	12,430.3	9,500.0	86.3	85.9	-89.97	-41.4	2,951.9	990.1	818.4	171.69	5.766			
12,600.0	9,500.0	12,500.7	9,500.0	88.2	87.8	-89.97	-42.1	3,022.2	990.1	814.6	175.46	5.643			
12,629.6	9,500.0	12,530.3	9,500.0	89.0	88.6	-89.97	-42.4	3,051.9	990.1	813.0	177.06	5.592			
12,700.0	9,500.0	12,600.7	9,500.0	90.8	90.5	-89.97	-43.2	3,122.2	990.1	809.2	180.83	5.475			
12,729.6	9,500.0	12,630.3	9,500.0	91.6	91.3	-89.97	-43.5	3,151.9	990.1	807.6	182.43	5.427			
12,800.0	9,500.0	12,700.7	9,500.0	93.5	93.2	-89.97	-44.2	3,222.2	990.1	803.8	186.21	5.317			
12,829.6	9,500.0	12,730.3	9,500.0	94.3	94.0	-89.97	-44.5	3,251.9	990.1	802.3	187.81	5.272			
12,900.0	9,500.0	12,800.7	9,500.0	96.2	95.9	-89.97	-45.3	3,322.2	990.1	798.5	191.60	5.167			
12,929.6	9,500.0	12,830.3	9,500.0	97.0	96.7	-89.97	-45.6	3,351.8	990.1	796.9	193.19	5.125			
13,000.0	9,500.0	12,900.7	9,500.0	98.9	98.6	-89.97	-46.3	3,422.2	990.1	793.1	196.99	5.026			
13,029.6	9,500.0	12,930.3	9,500.0	99.7	99.4	-89.97	-46.6	3,451.8	990.1	791.5	198.59	4.985			
13,100.0	9,500.0	13,000.7	9,500.0	101.6	101.3	-89.97	-47.3	3,522.2	990.1	787.7	202.39	4.892			
13,129.6	9,500.0	13,030.3	9,500.0	102.4	102.1	-89.97	-47.7	3,551.8	990.1	786.1	203.99	4.853			
13,200.0	9,500.0	13,100.7	9,500.0	104.3	104.0	-89.97	-48.4	3,622.2	990.1	782.3	207.80	4.765			
13,229.6	9,500.0	13,130.3	9,500.0	105.1	104.8	-89.97	-48.7	3,651.8	990.1	780.7	209.40	4.728			
13,300.0	9,500.0	13,200.7	9,500.0	107.0	106.7	-89.97	-49.4	3,722.2	990.1	776.8	213.21	4.644			
13,329.6	9,500.0	13,230.3	9,500.0	107.8	107.5	-89.97	-49.8	3,751.8	990.1	775.2	214.82	4.609			
13,400.0	9,500.0	13,300.7	9,500.0	109.6	109.4	-89.97	-50.5	3,822.2	990.1	771.4	218.63	4.528			
13,429.6	9,500.0	13,330.3	9,500.0	110.5	110.2	-89.97	-50.8	3,851.8	990.1	769.8	220.24	4.495			
13,500.0	9,500.0	13,400.7	9,500.0	112.4	112.1	-89.97	-51.5	3,922.2	990.1	766.0	224.05	4.419			
13,529.6	9,500.0	13,430.3	9,500.0	113.2	112.9	-89.97	-51.8	3,951.8	990.1	764.4	225.66	4.387			
13,600.0	9,500.0	13,500.7	9,500.0	115.1	114.8	-89.97	-52.6	4,022.2	990.1	760.6	229.48	4.314			
13,629.6	9,500.0	13,530.3	9,500.0	115.9	115.7	-89.97	-52.9	4,051.8	990.1	759.0	231.09	4.284			
13,700.0	9,500.0	13,600.7	9,500.0	117.8	117.6	-89.97	-53.6	4,122.2	990.1	755.1	234.91	4.215			
13,729.6	9,500.0	13,630.3	9,500.0	118.6	118.4	-89.97	-53.9	4,151.8	990.1	753.5	236.52	4.186			
13,800.0	9,500.0	13,700.7	9,500.0	120.5	120.3	-89.97	-54.7	4,222.2	990.1	749.7	240.35	4.119			
13,829.6	9,500.0	13,730.3	9,500.0	121.3	121.1	-89.97	-55.0	4,251.8	990.1	748.1	241.96	4.092			
13,900.0	9,500.0	13,800.7	9,500.0	123.2	123.0	-89.97	-55.7	4,322.2	990.1	744.3	245.79	4.028			
13,929.6	9,500.0	13,830.3	9,500.0	124.0	123.8	-89.97	-56.0	4,351.8	990.1	742.6	247.40	4.002			
14,000.0	9,500.0	13,900.7	9,500.0	125.9	125.7	-89.97	-56.8	4,422.1	990.1	738.8	251.24	3.941			
14,029.6	9,500.0	13,930.3	9,500.0	126.7	126.5	-89.97	-57.1	4,451.8	990.1	737.2	252.85	3.916			
14,100.0	9,500.0	14,000.7	9,500.0	128.6	128.5	-89.97	-57.8	4,522.1	990.1	733.4	256.68	3.857			
14,129.6	9,500.0	14,030.3	9,500.0	129.4	129.3	-89.97	-58.1	4,551.8	990.1	731.8	258.30	3.833			
14,200.0	9,500.0	14,100.7	9,500.0	131.3	131.2	-89.97	-58.9	4,622.1	990.1	727.9	262.13	3.777			
14,229.6	9,500.0	14,130.3	9,500.0	132.1	132.0	-89.97	-59.2	4,651.8	990.1	726.3	263.75	3.754			
14,300.0	9,500.0	14,200.7	9,500.0	134.0	133.9	-89.97	-59.9	4,722.1	990.1	722.5	267.59	3.700			
14,329.6	9,500.0	14,230.3	9,500.0	134.9	134.7	-89.97	-60.2	4,751.8	990.1	720.8	269.21	3.678			
14,400.0	9,500.0	14,300.7	9,500.0	136.8	136.6	-89.97	-61.0	4,822.1	990.1	717.0	273.05	3.626			
14,429.6	9,500.0	14,330.3	9,500.0	137.6	137.4	-89.97	-61.3	4,851.8	990.1	715.4	274.66	3.605			
14,500.0	9,500.0	14,400.7	9,500.0	139.5	139.4	-89.97	-62.0	4,922.1	990.1	711.5	278.50	3.555			
14,529.6	9,500.0	14,430.3	9,500.0	140.3	140.2	-89.97	-62.3	4,951.8	990.1	709.9	280.12	3.534			
14,600.0	9,500.0	14,500.7	9,500.0	142.2	142.1	-89.97	-63.0	5,022.1	990.1	706.1	283.97	3.487			
14,629.6	9,500.0	14,530.3	9,500.0	143.0	142.9	-89.97	-63.4	5,051.8	990.1	704.5	285.59	3.467			
14,700.0	9,500.0	14,600.7	9,500.0	144.9	144.8	-89.97	-64.1	5,122.1	990.1	700.6	289.43	3.421			
14,729.6	9,500.0	14,630.3	9,500.0	145.7	145.6	-89.97	-64.4	5,151.7	990.0	699.0	291.05	3.402			
14,800.0	9,500.0	14,700.7	9,500.0	147.7	147.6	-89.97	-65.1	5,222.1	990.0	695.2	294.90	3.357			
14,829.6	9,500.0	14,730.3	9,500.0	148.5	148.4	-89.97	-65.4	5,251.7	990.0	693.5	296.52	3.339			
14,900.0	9,500.0	14,800.7	9,500.0	150.4	150.3	-89.97	-66.2	5,322.1	990.0	689.7	300.37	3.296			
14,929.6	9,500.0	14,830.3	9,500.0	151.2	151.1	-89.97	-66.5	5,351.7	990.0	688.1	301.99	3.278			
15,000.0	9,500.0	14,900.7	9,500.0	153.1	153.0	-89.97	-67.2	5,422.1	990.0	684.2	305.84	3.237			
15,029.6	9,500.0	14,930.3	9,500.0	153.9	153.8	-89.97	-67.5	5,451.7	990.0	682.6	307.46	3.220			

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



SB Directional Services

Anticollision Report



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Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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:		Reference		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)	Distance Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning		
15,100.0	9,500.0	15,000.7	9,500.0	155.9	155.8	-89.97	-68.3	5,522.1	990.0	678.7	311.31	3.180			
15,129.6	9,500.0	15,030.3	9,500.0	156.7	156.6	-89.97	-68.6	5,551.7	990.0	677.1	312.93	3.164			
15,200.0	9,500.0	15,100.7	9,500.0	158.6	158.5	-89.97	-69.3	5,622.1	990.0	673.3	316.78	3.125			
15,229.6	9,500.0	15,130.3	9,500.0	159.4	159.3	-89.97	-69.6	5,651.7	990.0	671.6	318.41	3.109			
15,300.0	9,500.0	15,200.7	9,500.0	161.3	161.2	-89.97	-70.4	5,722.1	990.0	667.8	322.26	3.072			
15,329.6	9,500.0	15,230.3	9,500.0	162.1	162.1	-89.97	-70.7	5,751.7	990.0	666.2	323.88	3.057			
15,400.0	9,500.0	15,300.7	9,500.0	164.0	164.0	-89.97	-71.4	5,822.1	990.0	662.3	327.74	3.021			
15,429.6	9,500.0	15,330.3	9,500.0	164.9	164.8	-89.97	-71.7	5,851.7	990.0	660.7	329.36	3.006			
15,500.0	9,500.0	15,400.7	9,500.0	166.8	166.7	-89.97	-72.5	5,922.1	990.0	656.8	333.22	2.971			
15,529.6	9,500.0	15,430.3	9,500.0	167.6	167.5	-89.97	-72.8	5,951.7	990.0	655.2	334.84	2.957			
15,600.0	9,500.0	15,500.7	9,500.0	169.5	169.5	-89.97	-73.5	6,022.1	990.0	651.3	338.70	2.923			
15,629.6	9,500.0	15,530.3	9,500.0	170.3	170.3	-89.97	-73.8	6,051.7	990.0	649.7	340.32	2.909			
15,700.0	9,500.0	15,600.7	9,500.0	172.3	172.2	-89.97	-74.6	6,122.1	990.0	645.9	344.18	2.877			
15,729.6	9,500.0	15,630.3	9,500.0	173.1	173.0	-89.97	-74.9	6,151.7	990.0	644.2	345.80	2.863			
15,800.0	9,500.0	15,700.7	9,500.0	175.0	175.0	-89.97	-75.6	6,222.0	990.0	640.4	349.66	2.831			
15,829.6	9,500.0	15,730.3	9,500.0	175.8	175.8	-89.97	-75.9	6,251.7	990.0	638.8	351.29	2.818			
15,900.0	9,500.0	15,800.7	9,500.0	177.7	177.7	-89.97	-76.7	6,322.0	990.0	634.9	355.15	2.788			
15,929.6	9,500.0	15,830.3	9,500.0	178.5	178.5	-89.97	-77.0	6,351.7	990.0	633.3	356.77	2.775			
16,000.0	9,500.0	15,900.7	9,500.0	180.5	180.4	-89.97	-77.7	6,422.0	990.0	629.4	360.63	2.745			
16,029.6	9,500.0	15,930.3	9,500.0	181.3	181.3	-89.97	-78.0	6,451.7	990.0	627.8	362.26	2.733			
16,100.0	9,500.0	16,000.7	9,500.0	183.2	183.2	-89.97	-78.7	6,522.0	990.0	623.9	366.12	2.704			
16,129.6	9,500.0	16,030.3	9,500.0	184.0	184.0	-89.97	-79.1	6,551.7	990.0	622.3	367.75	2.692			
16,200.0	9,500.0	16,100.7	9,500.0	185.9	185.9	-89.97	-79.8	6,622.0	990.0	618.4	371.61	2.664			
16,229.6	9,500.0	16,130.3	9,500.0	186.8	186.7	-89.97	-80.1	6,651.7	990.0	616.8	373.23	2.653			
16,300.0	9,500.0	16,200.7	9,500.0	188.7	188.7	-89.97	-80.8	6,722.0	990.0	612.9	377.10	2.625			
16,329.6	9,500.0	16,230.3	9,500.0	189.5	189.5	-89.97	-81.1	6,751.7	990.0	611.3	378.72	2.614			
16,400.0	9,500.0	16,300.7	9,500.0	191.4	191.4	-89.97	-81.9	6,822.0	990.0	607.5	382.59	2.588			
16,429.6	9,500.0	16,330.3	9,500.0	192.2	192.2	-89.97	-82.2	6,851.7	990.0	605.8	384.21	2.577			
16,500.0	9,500.0	16,400.7	9,500.0	194.2	194.2	-89.97	-82.9	6,922.0	990.0	602.0	388.08	2.551			
16,529.6	9,500.0	16,430.3	9,500.0	195.0	195.0	-89.97	-83.2	6,951.6	990.0	600.3	389.70	2.540			
16,600.0	9,500.0	16,500.7	9,500.0	196.9	196.9	-89.97	-84.0	7,022.0	990.0	596.5	393.57	2.516			
16,629.6	9,500.0	16,530.3	9,500.0	197.7	197.7	-89.97	-84.3	7,051.6	990.0	594.8	395.20	2.505			
16,700.0	9,500.0	16,600.7	9,500.0	199.7	199.7	-89.97	-85.0	7,122.0	990.0	591.0	399.06	2.481			
16,729.6	9,500.0	16,630.3	9,500.0	200.5	200.5	-89.97	-85.3	7,151.6	990.0	589.4	400.69	2.471			
16,800.0	9,500.0	16,700.7	9,500.0	202.4	202.4	-89.97	-86.1	7,222.0	990.0	585.5	404.55	2.447			
16,829.6	9,500.0	16,730.3	9,500.0	203.2	203.2	-89.97	-86.4	7,251.6	990.0	583.9	406.18	2.437			
16,900.0	9,500.0	16,800.7	9,500.0	205.1	205.1	-89.97	-87.1	7,322.0	990.0	580.0	410.05	2.414			
16,929.6	9,500.0	16,830.3	9,500.0	206.0	206.0	-89.97	-87.4	7,351.6	990.0	578.4	411.68	2.405			
17,000.0	9,500.0	16,900.7	9,500.0	207.9	207.9	-89.97	-88.2	7,422.0	990.0	574.5	415.54	2.383			
17,029.6	9,500.0	16,930.3	9,500.0	208.7	208.7	-89.97	-88.5	7,451.6	990.0	572.9	417.17	2.373			
17,100.0	9,500.0	17,000.7	9,500.0	210.6	210.6	-89.97	-89.2	7,522.0	990.0	569.0	421.04	2.351			
17,129.6	9,500.0	17,030.3	9,500.0	211.4	211.5	-89.97	-89.5	7,551.6	990.0	567.4	422.67	2.342			
17,200.0	9,500.0	17,100.7	9,500.0	213.4	213.4	-89.97	-90.3	7,622.0	990.0	563.5	426.54	2.321			
17,229.6	9,500.0	17,130.3	9,500.0	214.2	214.2	-89.97	-90.6	7,651.6	990.0	561.9	428.17	2.312			
17,300.0	9,500.0	17,200.7	9,500.0	216.1	216.1	-89.97	-91.3	7,722.0	990.0	558.0	432.03	2.292			
17,329.6	9,500.0	17,230.3	9,500.0	216.9	217.0	-89.97	-91.6	7,751.6	990.0	556.4	433.66	2.283			
17,400.0	9,500.0	17,300.7	9,500.0	218.9	218.9	-89.97	-92.4	7,822.0	990.0	552.5	437.53	2.263			
17,429.6	9,500.0	17,330.3	9,500.0	219.7	219.7	-89.97	-92.7	7,851.6	990.0	550.9	439.16	2.254			
17,500.0	9,500.0	17,400.7	9,500.0	221.6	221.6	-89.97	-93.4	7,922.0	990.0	547.0	443.03	2.235			
17,529.6	9,500.0	17,430.3	9,500.0	222.4	222.5	-89.97	-93.7	7,951.6	990.0	545.4	444.66	2.227			
17,600.0	9,500.0	17,500.7	9,500.0	224.4	224.4	-89.97	-94.4	8,021.9	990.0	541.5	448.53	2.207			
17,629.6	9,500.0	17,530.3	9,500.0	225.2	225.2	-89.97	-94.8	8,051.6	990.0	539.9	450.16	2.199			

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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								Rule Assigned:				Offset Well Error: 0.5 usft	
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		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)			Minimum Separation (usft)
17,700.0	9,500.0	17,600.7	9,500.0	227.1	227.1	-89.97	-95.5	8,121.9	990.0	536.0	454.03	2.181	
17,729.6	9,500.0	17,630.3	9,500.0	227.9	228.0	-89.97	-95.8	8,151.6	990.0	534.4	455.66	2.173	
17,800.0	9,500.0	17,700.7	9,500.0	229.9	229.9	-89.97	-96.5	8,221.9	990.0	530.5	459.53	2.154	
17,829.6	9,500.0	17,730.3	9,500.0	230.7	230.7	-89.97	-96.8	8,251.6	990.0	528.9	461.16	2.147	
17,900.0	9,500.0	17,800.7	9,500.0	232.6	232.6	-89.97	-97.6	8,321.9	990.0	525.0	465.03	2.129	
17,929.6	9,500.0	17,830.3	9,500.0	233.4	233.5	-89.97	-97.9	8,351.6	990.0	523.4	466.66	2.122	
18,000.0	9,500.0	17,900.7	9,500.0	235.3	235.4	-89.97	-98.6	8,421.9	990.0	519.5	470.53	2.104	
18,029.6	9,500.0	17,930.3	9,500.0	236.2	236.2	-89.97	-98.9	8,451.6	990.0	517.9	472.16	2.097	
18,100.0	9,500.0	18,000.7	9,500.0	238.1	238.1	-89.97	-99.7	8,521.9	990.0	514.0	476.03	2.080	
18,129.6	9,500.0	18,030.3	9,500.0	238.9	239.0	-89.97	-100.0	8,551.6	990.0	512.4	477.67	2.073	
18,200.0	9,500.0	18,100.7	9,500.0	240.8	240.9	-89.97	-100.7	8,621.9	990.0	508.5	481.54	2.056	
18,229.6	9,500.0	18,130.3	9,500.0	241.7	241.7	-89.97	-101.0	8,651.6	990.0	506.9	483.17	2.049	
18,300.0	9,500.0	18,200.7	9,500.0	243.6	243.6	-89.97	-101.8	8,721.9	990.0	503.0	487.04	2.033	
18,329.6	9,500.0	18,230.3	9,500.0	244.4	244.5	-89.97	-102.1	8,751.6	990.0	501.4	488.67	2.026	
18,400.0	9,500.0	18,300.7	9,500.0	246.3	246.4	-89.97	-102.8	8,821.9	990.0	497.5	492.54	2.010	
18,429.6	9,500.0	18,330.3	9,500.0	247.2	247.2	-89.97	-103.1	8,851.5	990.0	495.9	494.17	2.003	
18,500.0	9,500.0	18,400.7	9,500.0	249.1	249.2	-89.97	-103.9	8,921.9	990.0	492.0	498.05	1.988 Collision Risk Procedures Req.	
18,529.6	9,500.0	18,430.3	9,500.0	249.9	250.0	-89.97	-104.2	8,951.5	990.0	490.4	499.68	1.981 Collision Risk Procedures Req.	
18,600.0	9,500.0	18,500.7	9,500.0	251.8	251.9	-89.97	-104.9	9,021.9	990.0	486.5	503.55	1.966 Collision Risk Procedures Req.	
18,629.6	9,500.0	18,530.3	9,500.0	252.7	252.7	-89.97	-105.2	9,051.5	990.0	484.8	505.18	1.960 Collision Risk Procedures Req.	
18,700.0	9,500.0	18,600.7	9,500.0	254.6	254.7	-89.97	-106.0	9,121.9	990.0	481.0	509.06	1.945 Collision Risk Procedures Req.	
18,729.6	9,500.0	18,630.3	9,500.0	255.4	255.5	-89.97	-106.3	9,151.5	990.0	479.3	510.69	1.939 Collision Risk Procedures Req.	
18,800.0	9,500.0	18,700.7	9,500.0	257.3	257.4	-89.97	-107.0	9,221.9	990.0	475.5	514.56	1.924 Collision Risk Procedures Req.	
18,829.6	9,500.0	18,730.3	9,500.0	258.2	258.2	-89.97	-107.3	9,251.5	990.0	473.8	516.19	1.918 Collision Risk Procedures Req.	
18,900.0	9,500.0	18,800.7	9,500.0	260.1	260.2	-89.97	-108.0	9,321.9	990.0	470.0	520.07	1.904 Collision Risk Procedures Req.	
18,929.6	9,500.0	18,830.3	9,500.0	260.9	261.0	-89.97	-108.4	9,351.5	990.0	468.3	521.70	1.898 Collision Risk Procedures Req.	
19,000.0	9,500.0	18,900.7	9,500.0	262.8	262.9	-89.97	-109.1	9,421.9	990.0	464.5	525.57	1.884 Collision Risk Procedures Req.	
19,029.6	9,500.0	18,930.3	9,500.0	263.7	263.7	-89.97	-109.4	9,451.5	990.0	462.8	527.20	1.878 Collision Risk Procedures Req.	
19,100.0	9,500.0	19,000.7	9,500.0	265.6	265.7	-89.97	-110.1	9,521.9	990.0	458.9	531.08	1.864 Collision Risk Procedures Req.	
19,129.6	9,500.0	19,030.3	9,500.0	266.4	266.5	-89.97	-110.5	9,551.5	990.0	457.3	532.71	1.858 Collision Risk Procedures Req.	
19,200.0	9,500.0	19,100.7	9,500.0	268.3	268.4	-89.97	-111.2	9,621.9	990.0	453.4	536.59	1.845 Collision Risk Procedures Req.	
19,229.6	9,500.0	19,130.3	9,500.0	269.2	269.2	-89.97	-111.5	9,651.5	990.0	451.8	538.22	1.839 Collision Risk Procedures Req.	
19,300.0	9,500.0	19,200.7	9,500.0	271.1	271.2	-89.97	-112.2	9,721.9	990.0	447.9	542.09	1.826 Collision Risk Procedures Req.	
19,329.6	9,500.0	19,230.3	9,500.0	271.9	272.0	-89.97	-112.5	9,751.5	990.0	446.3	543.73	1.821 Collision Risk Procedures Req.	
19,400.0	9,500.0	19,300.7	9,500.0	273.9	273.9	-89.97	-113.3	9,821.8	990.0	442.4	547.60	1.808 Collision Risk Procedures Req.	
19,429.6	9,500.0	19,330.3	9,500.0	274.7	274.7	-89.97	-113.6	9,851.5	990.0	440.8	549.23	1.803 Collision Risk Procedures Req.	
19,500.0	9,500.0	19,400.7	9,500.0	276.6	276.7	-89.97	-114.3	9,921.8	990.0	436.9	553.11	1.790 Collision Risk Procedures Req.	
19,529.6	9,500.0	19,430.3	9,500.0	277.4	277.5	-89.97	-114.6	9,951.5	990.0	435.3	554.74	1.785 Collision Risk Procedures Req.	
19,600.0	9,500.0	19,500.7	9,500.0	279.4	279.4	-89.97	-115.4	10,021.8	990.0	431.4	558.62	1.772 Collision Risk Procedures Req.	
19,629.6	9,500.0	19,530.3	9,500.0	280.2	280.3	-89.97	-115.7	10,051.5	990.0	429.8	560.25	1.767 Collision Risk Procedures Req.	
19,700.0	9,500.0	19,600.7	9,500.0	282.1	282.2	-89.97	-116.4	10,121.8	990.0	425.9	564.12	1.755 Collision Risk Procedures Req.	
19,729.6	9,500.0	19,630.3	9,500.0	282.9	283.0	-89.97	-116.7	10,151.5	990.0	424.3	565.76	1.750 Collision Risk Procedures Req.	
19,800.0	9,500.0	19,700.7	9,500.0	284.9	284.9	-89.97	-117.5	10,221.8	990.0	420.4	569.63	1.738 Collision Risk Procedures Req.	
19,829.6	9,500.0	19,730.3	9,500.0	285.7	285.8	-89.97	-117.8	10,251.5	990.0	418.8	571.27	1.733 Collision Risk Procedures Req.	
19,873.4	9,500.0	19,774.1	9,500.0	286.9	287.0	-89.97	-118.2	10,295.2	990.0	416.4	573.67	1.726 Collision Risk Procedures Req.	
19,892.7	9,500.0	19,793.4	9,500.0	287.4	287.5	-89.97	-118.4	10,314.5	990.0	415.3	574.74	1.723 Collision Risk Procedures Req., 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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1													Offset Site Error: 0.0 usft
Survey Program: 0-MWD													Offset Well Error: 0.5 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.5	0.5	0.17	40.0	0.1	40.0				
100.0	100.0	101.0	101.0	0.5	0.5	0.17	40.0	0.1	40.0	38.9	1.06	37.878	
200.0	200.0	201.0	201.0	0.6	0.6	0.17	40.0	0.1	40.0	38.7	1.27	31.404	
300.0	300.0	301.0	301.0	0.8	0.8	0.17	40.0	0.1	40.0	38.4	1.59	25.129	
400.0	400.0	401.0	401.0	1.0	1.0	0.17	40.0	0.1	40.0	38.0	1.96	20.388	
500.0	500.0	501.0	501.0	1.2	1.2	0.17	40.0	0.1	40.0	37.6	2.36	16.950	
600.0	600.0	601.0	601.0	1.4	1.4	0.17	40.0	0.1	40.0	37.2	2.77	14.422	
700.0	700.0	701.0	701.0	1.6	1.6	0.17	40.0	0.1	40.0	36.8	3.20	12.512	
800.0	800.0	801.0	801.0	1.8	1.8	0.17	40.0	0.1	40.0	36.4	3.63	11.029	
900.0	900.0	901.0	901.0	2.0	2.0	0.17	40.0	0.1	40.0	35.9	4.06	9.851	
1,000.0	1,000.0	1,001.0	1,001.0	2.2	2.2	0.17	40.0	0.1	40.0	35.5	4.50	8.893	
1,100.0	1,100.0	1,101.0	1,101.0	2.5	2.5	0.17	40.0	0.1	40.0	35.1	4.94	8.102	
1,200.0	1,200.0	1,201.0	1,201.0	2.7	2.7	0.17	40.0	0.1	40.0	34.6	5.38	7.438	
1,300.0	1,300.0	1,301.0	1,301.0	2.9	2.9	0.17	40.0	0.1	40.0	34.2	5.82	6.872	
1,400.0	1,400.0	1,401.0	1,401.0	3.1	3.1	0.17	40.0	0.1	40.0	33.7	6.26	6.386	
1,416.3	1,416.3	1,417.3	1,417.3	3.2	3.2	0.17	40.0	0.1	40.0	33.7	6.34	6.313 CC	
1,500.0	1,500.0	1,501.0	1,501.0	3.4	3.4	0.17	40.0	0.1	40.0	33.3	6.71	5.963 ES, SF	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.6	167.82	41.7	-0.1	43.4	36.3	7.12	6.100	
1,700.0	1,699.8	1,697.3	1,697.2	3.7	3.8	168.10	46.7	-0.9	53.7	46.2	7.51	7.150	
1,800.0	1,799.5	1,793.8	1,793.3	3.9	4.0	168.38	54.9	-2.1	70.6	62.7	7.89	8.946	
1,900.0	1,898.7	1,888.4	1,887.2	4.1	4.2	168.58	66.0	-3.8	94.1	85.8	8.27	11.373	
2,000.0	1,997.5	1,980.3	1,978.1	4.3	4.5	168.70	79.7	-5.8	124.0	115.3	8.65	14.332	
2,100.0	2,095.6	2,069.3	2,065.5	4.6	4.7	168.75	95.8	-8.3	160.0	151.0	9.02	17.739	
2,200.0	2,193.1	2,154.8	2,149.1	4.9	5.0	168.80	113.7	-10.9	201.8	192.4	9.39	21.496	
2,300.0	2,290.4	2,243.1	2,235.0	5.2	5.2	168.86	134.0	-14.0	246.0	236.3	9.78	25.146	
2,400.0	2,387.8	2,332.7	2,322.1	5.5	5.5	168.90	154.7	-17.1	290.4	280.2	10.19	28.482	
2,500.0	2,485.1	2,422.3	2,409.3	5.9	5.9	168.92	175.4	-20.2	334.7	324.1	10.62	31.511	
2,600.0	2,582.4	2,512.0	2,496.4	6.3	6.2	168.95	196.1	-23.3	379.1	368.0	11.06	34.284	
2,700.0	2,679.7	2,601.6	2,583.6	6.7	6.5	168.96	216.8	-26.4	423.4	411.9	11.50	36.825	
2,800.0	2,777.1	2,691.2	2,670.7	7.1	6.9	168.98	237.5	-29.5	467.7	455.8	11.94	39.158	
2,900.0	2,874.4	2,780.9	2,757.9	7.5	7.3	168.99	258.2	-32.7	512.1	499.7	12.40	41.303	
3,000.0	2,971.7	2,870.5	2,845.0	7.9	7.6	169.00	278.9	-35.8	556.4	543.6	12.86	43.280	
3,100.0	3,069.1	2,960.1	2,932.2	8.3	8.0	169.01	299.5	-38.9	600.8	587.4	13.32	45.105	
3,200.0	3,166.4	3,049.8	3,019.3	8.7	8.4	169.02	320.2	-42.0	645.1	631.3	13.79	46.793	
3,300.0	3,263.7	3,139.4	3,106.5	9.2	8.8	169.02	340.9	-45.1	689.4	675.2	14.26	48.359	
3,400.0	3,361.0	3,229.0	3,193.7	9.6	9.2	169.03	361.6	-48.2	733.8	719.0	14.73	49.812	
3,500.0	3,458.4	3,318.6	3,280.8	10.0	9.5	169.03	382.3	-51.3	778.1	762.9	15.21	51.165	
3,600.0	3,555.7	3,408.3	3,368.0	10.5	9.9	169.04	403.0	-54.4	822.5	806.8	15.69	52.426	
3,700.0	3,653.0	3,497.9	3,455.1	10.9	10.3	169.04	423.7	-57.5	866.8	850.6	16.17	53.603	
3,800.0	3,750.3	3,587.5	3,542.3	11.4	10.7	169.04	444.4	-60.6	911.1	894.5	16.66	54.704	
3,900.0	3,847.7	3,677.2	3,629.4	11.8	11.1	169.05	465.1	-63.7	955.5	938.3	17.14	55.735	
4,000.0	3,945.0	3,766.8	3,716.6	12.3	11.5	169.05	485.8	-66.9	999.8	982.2	17.63	56.703	
4,100.0	4,042.3	3,856.4	3,803.7	12.7	11.9	169.05	506.5	-70.0	1,044.1	1,026.0	18.12	57.613	
4,200.0	4,139.7	3,946.1	3,890.9	13.2	12.3	169.05	527.2	-73.1	1,088.5	1,069.9	18.62	58.469	
4,300.0	4,237.0	4,035.7	3,978.1	13.7	12.7	169.06	547.9	-76.2	1,132.8	1,113.7	19.11	59.275	
4,400.0	4,334.3	4,125.3	4,065.2	14.1	13.1	169.06	568.6	-79.3	1,177.2	1,157.6	19.61	60.037	
4,500.0	4,431.6	4,215.0	4,152.4	14.6	13.5	169.06	589.3	-82.4	1,221.5	1,201.4	20.11	60.756	
4,600.0	4,529.0	4,304.6	4,239.5	15.0	14.0	169.06	610.0	-85.5	1,265.8	1,245.2	20.60	61.437	
4,700.0	4,626.3	4,394.2	4,326.7	15.5	14.4	169.06	630.7	-88.6	1,310.2	1,289.1	21.10	62.081	
4,800.0	4,723.6	4,483.9	4,413.8	16.0	14.8	169.07	651.4	-91.7	1,354.5	1,332.9	21.61	62.693	
4,900.0	4,820.9	4,573.5	4,501.0	16.4	15.2	169.07	672.1	-94.8	1,398.9	1,376.8	22.11	63.273	
5,000.0	4,918.3	4,663.1	4,588.1	16.9	15.6	169.07	692.7	-97.9	1,443.2	1,420.6	22.61	63.824	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 233H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 usft
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (usft)	Separation Factor	Warning
				Reference	Offset		+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)			
5,100.0	5,015.6	4,752.8	4,675.3	17.4	16.0	169.07	713.4	-101.0	1,487.5	1,464.4	23.12	64.349	
5,200.0	5,112.9	4,842.4	4,762.5	17.8	16.4	169.07	734.1	-104.2	1,531.9	1,508.3	23.62	64.848	
5,300.0	5,210.3	4,932.0	4,849.6	18.3	16.8	169.07	754.8	-107.3	1,576.2	1,552.1	24.13	65.324	
5,400.0	5,307.6	5,021.7	4,936.8	18.8	17.2	169.07	775.5	-110.4	1,620.6	1,595.9	24.64	65.778	
5,500.0	5,404.9	5,111.3	5,023.9	19.2	17.7	169.07	796.2	-113.5	1,664.9	1,639.8	25.15	66.212	
5,600.0	5,502.2	5,200.9	5,111.1	19.7	18.1	169.08	816.9	-116.6	1,709.2	1,683.6	25.65	66.626	
5,700.0	5,599.6	5,290.6	5,198.2	20.2	18.5	169.08	837.6	-119.7	1,753.6	1,727.4	26.16	67.022	
5,800.0	5,696.9	5,380.2	5,285.4	20.6	18.9	169.08	858.3	-122.8	1,797.9	1,771.3	26.68	67.400	
5,900.0	5,794.2	5,469.8	5,372.5	21.1	19.3	169.08	879.0	-125.9	1,842.3	1,815.1	27.19	67.763	
6,000.0	5,891.6	5,559.7	5,459.9	21.5	19.7	169.17	899.7	-129.0	1,886.2	1,858.5	27.69	68.116	
6,100.0	5,989.7	5,650.8	5,548.5	21.9	20.2	169.32	920.8	-132.2	1,927.4	1,899.2	28.17	68.417	
6,200.0	6,088.4	5,743.2	5,638.4	22.1	20.6	169.43	942.1	-135.4	1,965.5	1,936.8	28.65	68.610	
6,300.0	6,187.6	5,836.9	5,729.5	22.4	21.0	169.51	963.8	-138.7	2,000.4	1,971.2	29.12	68.698	
6,400.0	6,287.2	5,931.7	5,821.7	22.6	21.5	169.55	985.6	-141.9	2,032.0	2,002.4	29.58	68.688	
6,500.0	6,387.0	6,027.6	5,914.9	22.8	21.9	169.57	1,007.8	-145.3	2,060.4	2,030.3	30.04	68.587	
6,600.0	6,487.0	6,124.3	6,008.9	22.9	22.4	169.55	1,030.1	-148.6	2,085.4	2,054.9	30.49	68.399	
6,700.0	6,587.0	6,221.5	6,103.5	23.1	22.8	1.92	1,052.6	-152.0	2,108.4	2,077.5	30.94	68.140	
6,800.0	6,687.0	6,318.8	6,198.0	23.2	23.3	1.81	1,075.0	-155.4	2,131.4	2,100.0	31.39	67.899	
6,900.0	6,787.0	6,416.0	6,292.6	23.3	23.7	1.70	1,097.5	-158.7	2,154.4	2,122.6	31.84	67.663	
7,000.0	6,887.0	6,513.2	6,387.1	23.4	24.2	1.59	1,119.9	-162.1	2,177.4	2,145.1	32.29	67.430	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.5 usft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM 5000.16 Single User Db
Reference Design:	Plan 1	Offset TVD Reference:	Offset Datum

Offset Design: SEC 02-T23S-R28E - Rana Salada Fed Com 0106 236H - Wellbore #1 - Plan 1												Offset Site Error:	0.0 usft
Survey Program: 0-MWD												Offset Well Error:	0.5 usft
Reference	Offset	Semi Major Axis	Highside	Offset Wellbore Centre	Distance	Rule Assigned:							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Toolface (°)	+N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	1.5	1.5	0.5	0.5	0.17	60.0	0.2	60.0				
100.0	100.0	101.5	101.5	0.5	0.5	0.17	60.0	0.2	60.0	58.9	1.06	56.788	
200.0	200.0	201.5	201.5	0.6	0.6	0.17	60.0	0.2	60.0	58.7	1.27	47.072	
300.0	300.0	301.5	301.5	0.8	0.8	0.17	60.0	0.2	60.0	58.4	1.59	37.667	
400.0	400.0	401.5	401.5	1.0	1.0	0.17	60.0	0.2	60.0	58.0	1.96	30.561	
500.0	500.0	501.5	501.5	1.2	1.2	0.17	60.0	0.2	60.0	57.6	2.36	25.410	
600.0	600.0	601.5	601.5	1.4	1.4	0.17	60.0	0.2	60.0	57.2	2.77	21.621	
616.2	616.2	617.7	617.7	1.4	1.4	0.17	60.0	0.2	60.0	57.1	2.84	21.105 CC	
700.0	700.0	701.5	701.5	1.6	1.6	0.17	60.0	0.2	60.0	56.8	3.20	18.759 ES	
800.0	800.0	800.0	800.0	1.8	1.8	0.07	61.7	0.1	61.8	58.1	3.62	17.035	
900.0	900.0	897.1	896.9	2.0	2.0	-0.20	66.8	-0.2	66.9	62.9	4.05	16.511 SF	
1,000.0	1,000.0	994.3	993.8	2.2	2.2	-0.56	75.1	-0.7	75.5	71.0	4.48	16.844	
1,100.0	1,100.0	1,090.8	1,089.6	2.5	2.5	-0.95	86.6	-1.4	87.4	82.5	4.91	17.811	
1,200.0	1,200.0	1,186.5	1,184.2	2.7	2.7	-1.32	101.1	-2.3	102.6	97.3	5.33	19.257	
1,300.0	1,300.0	1,281.1	1,277.1	2.9	3.0	-1.63	118.6	-3.4	121.1	115.4	5.75	21.072	
1,400.0	1,400.0	1,374.4	1,368.2	3.1	3.3	-1.90	138.9	-4.6	142.9	136.7	6.17	23.174	
1,500.0	1,500.0	1,466.3	1,457.2	3.4	3.7	-2.13	161.7	-6.0	167.7	161.2	6.58	25.501	
1,600.0	1,600.0	1,556.1	1,543.4	3.5	4.1	165.18	186.7	-7.5	197.3	190.3	6.97	28.319	
1,700.0	1,699.8	1,646.5	1,629.5	3.7	4.5	165.16	214.3	-9.2	232.6	225.2	7.37	31.567	
1,800.0	1,799.5	1,738.6	1,717.1	3.9	5.0	165.28	242.7	-10.9	271.4	263.6	7.79	34.836	
1,900.0	1,898.7	1,829.4	1,803.4	4.1	5.5	165.47	270.7	-12.6	313.3	305.1	8.23	38.073	
2,000.0	1,997.5	1,918.7	1,888.4	4.3	6.0	165.69	298.2	-14.3	358.3	349.6	8.67	41.323	
2,100.0	2,095.6	2,006.4	1,971.7	4.6	6.4	165.93	325.3	-16.0	406.3	397.1	9.11	44.575	
2,200.0	2,193.1	2,092.5	2,053.6	4.9	6.9	166.25	351.9	-17.6	457.0	447.4	9.56	47.788	
2,300.0	2,290.4	2,178.2	2,135.2	5.2	7.4	166.68	378.3	-19.2	508.4	498.4	10.00	50.839	
2,400.0	2,387.8	2,263.9	2,216.7	5.5	7.9	167.03	404.7	-20.8	559.8	549.3	10.44	53.596	
2,500.0	2,485.1	2,349.7	2,298.3	5.9	8.4	167.33	431.2	-22.4	611.2	600.3	10.90	56.094	
2,600.0	2,582.4	2,435.4	2,379.8	6.3	8.9	167.57	457.6	-24.0	662.6	651.2	11.35	58.362	
2,700.0	2,679.7	2,521.2	2,461.3	6.7	9.4	167.78	484.1	-25.6	714.0	702.2	11.82	60.427	
2,800.0	2,777.1	2,606.9	2,542.9	7.1	9.8	167.96	510.5	-27.2	765.4	753.1	12.28	62.313	
2,900.0	2,874.4	2,692.6	2,624.4	7.5	10.3	168.12	537.0	-28.8	816.9	804.1	12.76	64.038	
3,000.0	2,971.7	2,778.4	2,706.0	7.9	10.8	168.26	563.4	-30.4	868.3	855.1	13.23	65.620	
3,100.0	3,069.1	2,864.1	2,787.5	8.3	11.3	168.39	589.9	-32.0	919.7	906.0	13.71	67.075	
3,200.0	3,166.4	2,949.9	2,869.1	8.7	11.8	168.50	616.3	-33.7	971.2	957.0	14.19	68.417	
3,300.0	3,263.7	3,035.6	2,950.6	9.2	12.3	168.60	642.8	-35.3	1,022.6	1,007.9	14.68	69.656	
3,400.0	3,361.0	3,121.3	3,032.1	9.6	12.8	168.69	669.2	-36.9	1,074.1	1,058.9	15.17	70.804	
3,500.0	3,458.4	3,207.1	3,113.7	10.0	13.3	168.78	695.7	-38.5	1,125.5	1,109.9	15.66	71.869	
3,600.0	3,555.7	3,292.8	3,195.2	10.5	13.8	168.85	722.1	-40.1	1,177.0	1,160.8	16.15	72.858	
3,700.0	3,653.0	3,378.6	3,276.8	10.9	14.3	168.92	748.6	-41.7	1,228.4	1,211.8	16.65	73.780	
3,800.0	3,750.3	3,464.3	3,358.3	11.4	14.8	168.98	775.0	-43.3	1,279.9	1,262.7	17.15	74.640	
3,900.0	3,847.7	3,550.0	3,439.9	11.8	15.4	169.04	801.5	-44.9	1,331.3	1,313.7	17.65	75.444	
4,000.0	3,945.0	3,635.8	3,521.4	12.3	15.9	169.10	827.9	-46.5	1,382.8	1,364.6	18.15	76.197	
4,100.0	4,042.3	3,721.5	3,602.9	12.7	16.4	169.15	854.4	-48.1	1,434.2	1,415.6	18.65	76.903	
4,200.0	4,139.7	3,807.3	3,684.5	13.2	16.9	169.19	880.8	-49.7	1,485.7	1,466.5	19.15	77.566	
4,300.0	4,237.0	3,893.0	3,766.0	13.7	17.4	169.24	907.3	-51.3	1,537.1	1,517.5	19.66	78.189	
4,400.0	4,334.3	3,978.7	3,847.6	14.1	17.9	169.28	933.7	-53.0	1,588.6	1,568.4	20.17	78.776	
4,500.0	4,431.6	4,064.5	3,929.1	14.6	18.4	169.32	960.1	-54.6	1,640.1	1,619.4	20.67	79.330	
4,600.0	4,529.0	4,150.2	4,010.7	15.0	18.9	169.35	986.6	-56.2	1,691.5	1,670.3	21.18	79.853	
4,700.0	4,626.3	4,236.0	4,092.2	15.5	19.4	169.39	1,013.0	-57.8	1,743.0	1,721.3	21.69	80.347	
4,800.0	4,723.6	4,321.7	4,173.7	16.0	19.9	169.42	1,039.5	-59.4	1,794.4	1,772.2	22.20	80.814	
4,900.0	4,820.9	4,407.4	4,255.3	16.4	20.4	169.45	1,065.9	-61.0	1,845.9	1,823.2	22.72	81.257	
5,000.0	4,918.3	4,493.2	4,336.8	16.9	20.9	169.48	1,092.4	-62.6	1,897.3	1,874.1	23.23	81.677	

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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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		Offset Wellbore Centre		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		
5,100.0	5,015.6	4,578.9	4,418.4	17.4	21.4	169.50	1,118.8	-64.2	1,948.8	1,925.1	23.74	82.076		
5,200.0	5,112.9	4,664.7	4,499.9	17.8	21.9	169.53	1,145.3	-65.8	2,000.3	1,976.0	24.26	82.455		
5,300.0	5,210.3	4,750.4	4,581.5	18.3	22.4	169.55	1,171.7	-67.4	2,051.7	2,027.0	24.77	82.815		
5,400.0	5,307.6	4,836.1	4,663.0	18.8	22.9	169.58	1,198.2	-69.0	2,103.2	2,077.9	25.29	83.157		
5,500.0	5,404.9	4,921.9	4,744.5	19.2	23.5	169.60	1,224.6	-70.6	2,154.7	2,128.8	25.81	83.484		



SB Directional Services

Anticollision Report



Company:	NOVO Oil & Gas	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0106 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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 @ 3089.8usft

Offset Depths are relative to Offset Datum

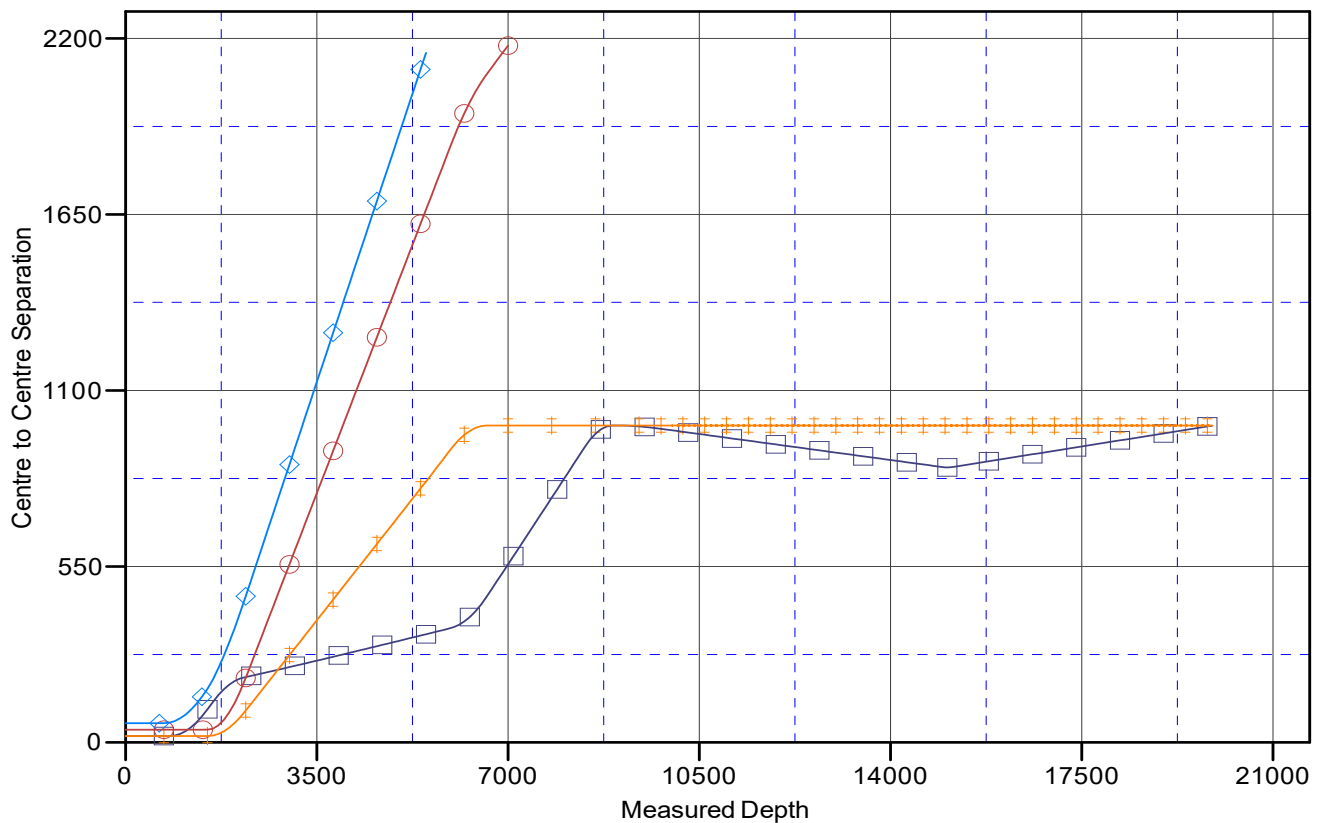
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 223H

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 213H, Wellbore#1, Plan 1 V0
- Rana Salada FedCom 0106 236H, 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 223H
Project:	EDDY CO., NM (NAD83)	TVD Reference:	RKB 25' + GL @ 3089.8usft
Reference Site:	SEC 02-T23S-R28E	MD Reference:	RKB 25' + GL @ 3089.8usft
Site Error:	0.0 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0106 223H	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 @ 3089.8usft

Offset Depths are relative to Offset Datum

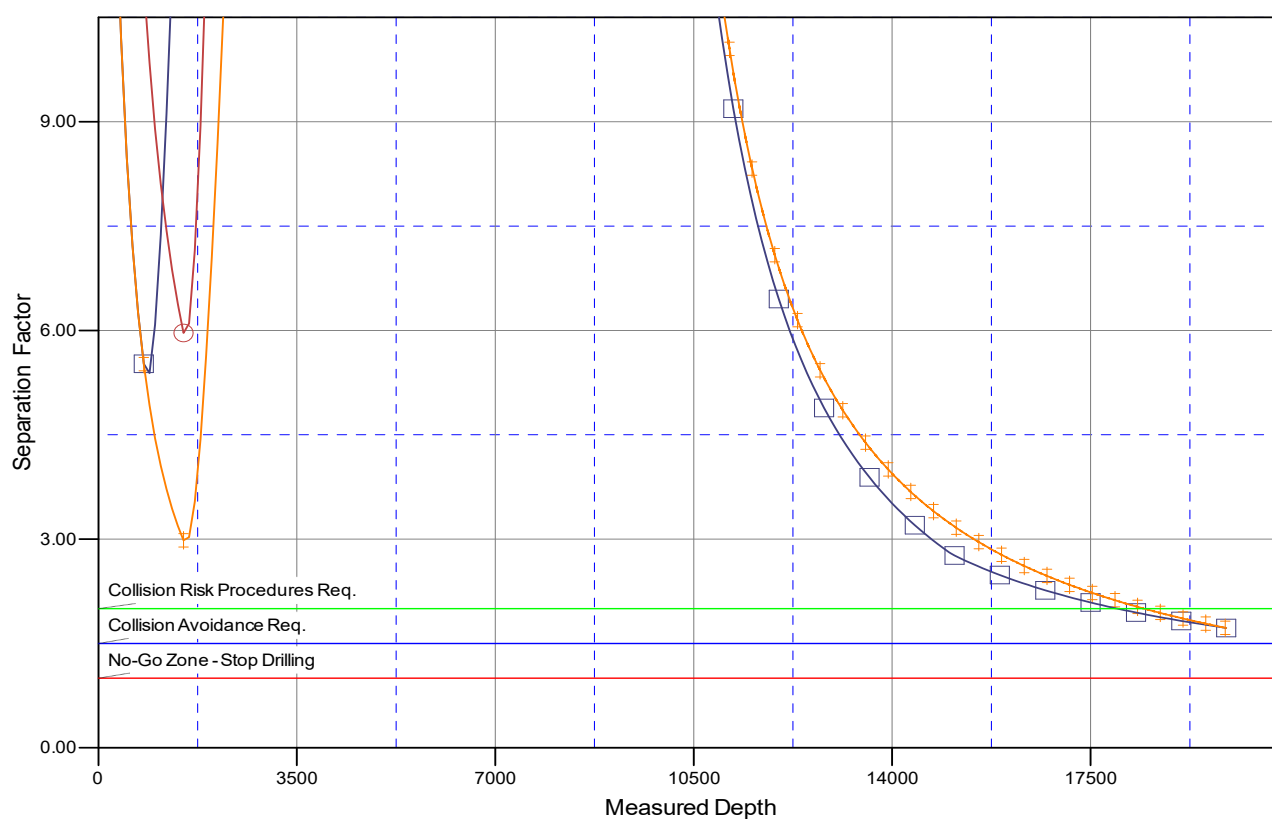
Central Meridian is 104° 20' 0.000 W

Coordinates are relative to: Rana Salada Fed Com 0106 223H

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 213H, Wellbore#1, Plan 1 V0
- Rana Salada FedCom0106 236H, Wellbore#1, Plan 1 V0

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

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

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

COMMENTS

Action 33447

COMMENTS

Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	OGRID: 372920
	Action Number: 33447
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
jagarcia	Accepted for record	6/25/2021

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CONDITIONS

Action 33447

CONDITIONS

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	Action Number: 33447
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CONDITIONS

Created By	Condition	Condition Date
jagarcia	None	6/25/2021