

Well Name: RANA SALADA FED COM 0504	Well Location: T23S / R29E / SEC 6 / NESE / 32.3309832 / -104.0177696	County or Parish/State: EDDY / NM
Well Number: 216H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM059383, NMNM59383	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001547331	Well Status: Approved Application for Permit to Drill	Operator: NOVO OIL AND GAS NORTHERN DELA

Notice of Intent

Type of Submission: Notice of Intent	Type of Action Other
Date Sundry Submitted: 03/25/2021	Time Sundry Submitted: 12:58
Date proposed operation will begin: 04/01/2021	

Procedure Description: Novo requests changes to the SHL and BHL as follows. See attachment for changes to casing and cementing specs; revised plat, revised horizontal plan, revised Anti-Collision report; revised drill plan, and revised SUPO documents. Move Surface Hole Location From: 1441' FSL & 672' FEL, NESE, Section 6, T-23-S, R-29-E To: 1344' FSL & 585' FEL, NESE, Section 6, T-23-S, R-29-E Move Bottom Hole Location From: 2310' FSL & 130' FEL, NESE, Section 4, T-23-S, R-29-E To: 2310' FSL & 2400' FWL, NESW, Section 4, T-23-S, R-29-E

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

RS_0504_216H_Sundry_SHL_Change_Attachments_20210325124845.pdf

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Well Number: 216H	Type of Well: CONVENTIONAL GAS WELL	Allottee or Tribe Name:
Lease Number: NMNM059383, NMNM59383	Unit or CA Name:	Unit or CA Number:
US Well Number: 3001547331	Well Status: Approved Application for Permit to Drill	Operator: NOVO OIL AND GAS NORTHERN DELA

Operator Certification

I certify that the foregoing is true and correct. Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction. Electronic submission of Sundry Notices through this system satisfies regulations requiring a submission of Form 3160-5 or a Sundry Notice.

Operator Electronic Signature: BRIAN WOOD	Signed on: MAR 25, 2021 12:58 PM
Name: NOVO OIL AND GAS NORTHERN DELA	
Title: President	
Street Address: 37 VERANO LOOP	
City: SANTA FE	State: NM
Phone: (505) 466-8120	
Email address: AFMSS@PERMITSWEST.COM	

Field Representative

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

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS	BLM POC Title: Petroleum Engineer
BLM POC Phone: 5752342234	BLM POC Email Address: cwalls@blm.gov
Disposition: Approved	Disposition Date: 04/30/2021
Signature: Chris Walls	

CHANGE TO PLANS

Move Surface Hole Location

From: 1441' FSL & 672' FEL, NESE, Section 6, T-23-S, R-29-E

To: 1344' FSL & 585' FEL, NESE, Section 6, T-23-S, R-29-E

Moved on the same pad site and there will be no new surface disturbance.

Move Bottom Hole Location

From: 2310' FSL & 130' FEL, NESE, Section 4, T-23-S, R-29-E

To: 2310' FSL & 2400' FWL, NESW, Section 4, T-23-S, R-29-E

Substitution Casing

13-3/8", 54.5 ppf, J-55, BTC to be set at 381' TMD.

Design Safety Factors: Collapse 6.85, Burst 1.83, Tension 8.53

10-3/4", 40.5 ppf, J-55, BTC to be set at 2,771' TMD.

Design Safety Factors: Collapse 1.52, Burst 2.09, Tension 3.23

8-5/8", 32.0 ppf, P110 HSCY, TLW to be set at 9,350' TMD.

Design Safety Factors: Collapse 1.33, Burst 4.34, Tension 3.24

5-1/2", 20.0 ppf, P-110EC, DWC/C-IS+ to be set at 18,250' TMD.

Design Safety Factors: Collapse 2.29, Burst 1.25, Tension 2.71

Single Stage Cement Job for 13-3/8" Surface Casing (TOC = Surface)

Lead: N/A

Tail: 288 sacks; 529.4 cu. ft.; 100% excess; 1.84 cu.ft./sx; 13.2 ppg; Class C + gel + accelerator + LCM; 1,200 psi 24 hour compressive strength

Single Stage Cement Job for 10-3/4" Salt Protection Casing (TOC = Surface)

Lead: 173 sacks; 443.6 cu. ft.; 50% excess; 2.56 cu.ft./sx; 11.8 ppg; Class C + gel + retarder + LCM; 1,000 psi 24 hour compressive strength

Tail: 175 sacks; 231.0 cu. ft.; 20% excess; 1.32 cu.ft./sx; 14.8 ppg; Class C + gel + retarder + LCM; 900 psi 24 hour compressive strength

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-	² Pool Code 98220	³ Pool Name PURPLE SAGE; WOLFCAMP (GAS)
⁴ Property Code 325748	⁵ Property Name RANA SALADA FED COM 0504	⁶ Well Number 216H
⁷ OGRID No. 372920	⁸ Operator Name NOVO OIL & GAS NORTHERN DELAWARE, LLC	⁹ Elevation 3041.0

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	6	23 S	29 E		1344	SOUTH	585	EAST	EDDY

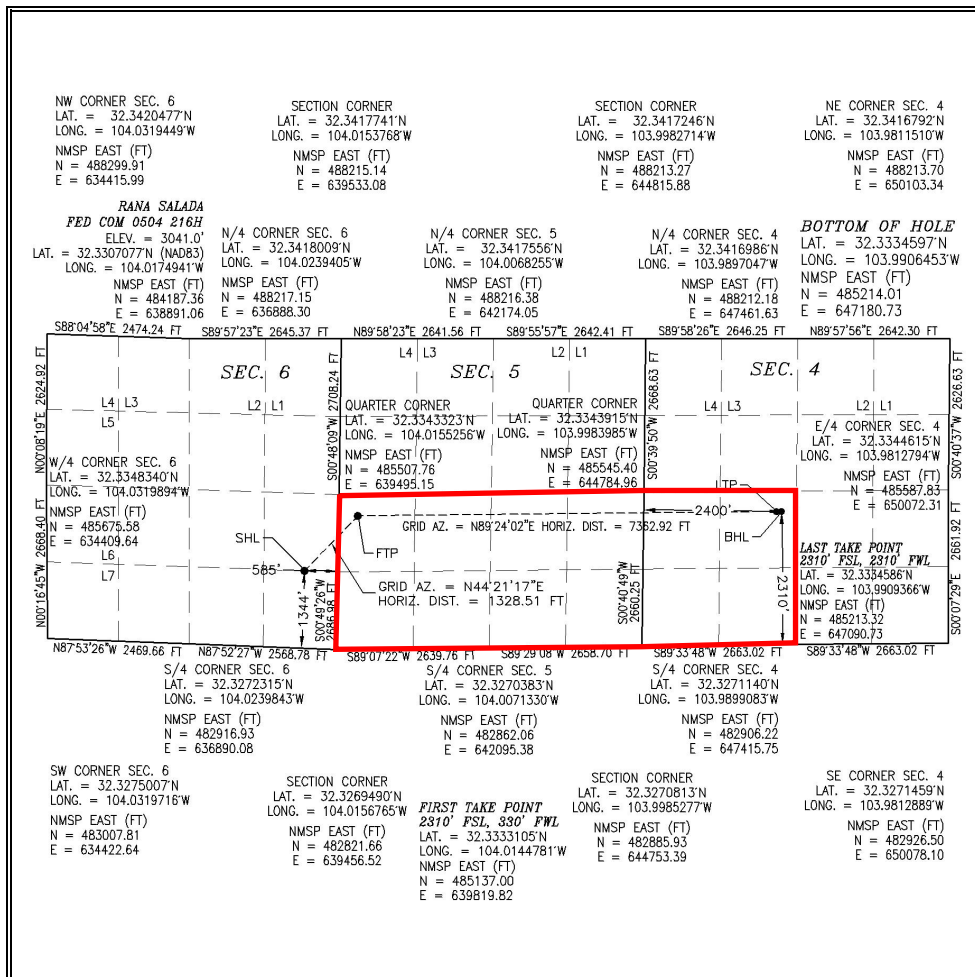
¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	4	23 S	29 E		2310	SOUTH	2400	WEST	EDDY

¹² Dedicated Acres 480	¹³ Joint or Infill	¹⁴ Consolidation Code C	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

17 OPERATOR CERTIFICATION I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division. Signature: <u>Cory Walk</u> Date: <u>03-25-21</u> Printed Name: <u>Cory Walk</u> E-mail Address: <u>cory@permitswest.com</u> <u>(505) 466-8120</u>			
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. JULY 27, 2020 Date of Survey Signature and Seal of Professional Surveyor: <u>[Signature]</u> Certificate Number: <u>12797</u> Professional Surveyor No. <u>7192B</u>			



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

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

Submit Original
to Appropriate
District Office

GAS CAPTURE PLAN

Date: 3/25/2021

X Original Operator & OGRID No.: Novo Oil & Gas Northern Delaware, LLC (372920)
☐ Amended - Reason for Amendment: _____

This Gas Capture Plan outlines actions to be taken by the Operator to reduce well/production facility flaring/venting for new completion (new drill, recomple to new zone, re-frac) activity.

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

Well(s)/Production Facility – Name of facility

The well(s) that will be located at the production facility are shown in the table below.

Well	API	SHL (ULSTR)	SHL Footages	Expected MCF/D	Flared or Vented	Comments
Rana Salada Fed Com 0504 216H	30-015-	I-6-23S-29E	1344 FSL & 585 FEL	7500	30 days	Time depends on well clean up

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is not yet dedicated. However, negotiations are underway. One possible connection is an existing Enterprise line that is 100 yards south. Novo Oil & Gas Northern Delaware, LLC will provide (periodically) to its Gas Transporter a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, Novo Oil & Gas Northern Delaware, LLC and its Gas Transporter have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at an as yet undetermined Gas Transporter Processing Plant located in Eddy County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

After the fracture treatment/completion operations, well(s) will be produced to temporary production tanks and gas will be flared or vented. During flowback, the fluids and sand content will be monitored. When the produced fluids contain minimal sand, the wells will be turned to production facilities. Gas sales should start as soon as the wells start flowing through the production facilities, unless there are operational issues on its Gas Transporter system at that time. Based on current information, it is Novo Oil & Gas Northern Delaware, LLC's belief an existing or new system can take this gas upon completion of the well(s).

Safety requirements during cleanout operations from the use of underbalanced air cleanout systems may necessitate that sand and non-pipeline quality gas be vented and/or flared rather than sold on a temporary basis.

Alternatives to Reduce Flaring

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

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

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

Lead: 687 sacks; 2150.3 cu. ft.; 100% excess; 3.13 cu.ft./sx; 10.2 ppg; Class C or H + fluid loss + retarder + LCM + possibly beaded; 900 psi 24 hour compressive strength

Tail: 150 sacks; 208.5 cu. ft.; 50% excess; 1.39 cu.ft./sx; 13.8 ppg; Class C or H + fluid loss + retarder + LCM; 1,200 psi 24 hour compressive strength

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

Lead: N/A

Tail: 2387 sacks; 3794.6 cu. ft.; 20% excess; 1.59 cu.ft./sx; 13.2 ppg; Class H + fluid loss + retarder + LCM; 1,200 psi 24 hour compressive strength



NOVO OIL & GAS NORTHERN DELAWARE, LLC

Rana Salada Fed Com 0504 216H
SHL: 1344' FSL & 587' FEL Section 04-23S-29E
BHL: 2,400' FWL & 2,310' FSL Section 04-23S-29E
Eddy County, New Mexico

DRILLING OPERATIONS PLAN
Standard Wolfcamp 4-STRING CASING DESIGN (R-111-P)

Estimated Drilling Conditions

Target Formation	Wolfcamp XY
Target Depth - TVD (ft)	9950
Anticipated Bottom-Hole Pressure (psi)	6965
Anticipated Maximum Surface Pressure (psi)	4776
Abnormal Pressure (Yes/No)	No
Anticipated Bottom-Hole Temperature (deg F)	165 deg F
H2S Contingency Plan Required (Yes/No)	Yes

Geologic Formations

	GL	KB (30')	
Elevation	3,041	3,071	
Formation Tops	TVDss	TVD - KB	Mineral Resources
Rustler	2700	371	Water
Bell Canyon (base of salt)	200	2,871	Water
Cherry Canyon	-863	3,934	Water
Brushy Canyon	-2325	5,396	Oil, Gas, Water
Bone Spring Lime	-3430	6,501	Oil, Gas, Water
Lower Avalon			
1st Bone Spring Sand	-4492	7,563	Oil, Gas, Water
2nd Bone Spring Carbonate	-4745	7,816	Oil, Gas, Water
2nd Bone Spring Sand	-5235	8,306	Oil, Gas, Water
3rd Bone Spring Carbonate	-5592	8,663	Oil, Gas, Water
3rd Bone Spring Sand	-6445	9,516	Oil, Gas, Water
Wolfcamp XY	-6748	9,819	Oil, Gas, Water
Wolfcamp A	-6900	9,971	Oil, Gas, Water
Wolfcamp B	-7147	10,218	Oil, Gas, Water
Wolfcamp B Flow Unit			
Wolfcamp C	-7825	10,896	Water

Pressure Control Equipment and Pressure Testing Procedure

A 13-5/8" 5M Blowout Preventer system will be installed on a multi-bowl (speed head) wellhead with a 13-5/8 flanged casing spool. The top flange of casing spool will be set in a cellar below ground level. The blowout preventor system will consist of a single pipe ram on bottom, mud cross, double pipe ram with blind rams on bottom and pipe rams on top and annular preventer. The blowout preventer will be installed on top of the 13-3/8" surface casing and will remain installed to total depth of the well. Wellhead, blowout preventer and choke manifold diagrams have been included. A co-flex line will be used between the BOP system and the choke manifold. A pressure test certification form for the co-flex hose will be available on the location at the time of the BOP testing.

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

The Surface Casing will be pressure tested to 250 psi low and 1500 psi high. Intermediate Casing will be pressure tested to 250 psi low and (.22 psi x Shoe TVD, which is equivalent to 609.598 psi) high for 30 minutes

Drilling Fluid Program

Depth Interval (ft)	Hole Size (in.)	Fluid Type	Mud Weight (ppg)	Funnel Viscosity (sec/qt)	API Fluid Loss (ml/30min)	Total Solids (%)
0 - 381	17-1/2	Water Based Spud Mud	8.3	30-60	N/C	2.0-8.0
381 - 2,771	12-1/4	Brine	9.8-10.2	35-45	N/C	1.0-4.0
2,771 - 9,350	9-7/8	Cut Brine	9-9.5	35-45	N/C	1.0-4.0
9,350 - 18,250	7-7/8	Oil Based Mud	8.5-12.5	35-65	4-6 cc's	1.0-8.0
Drilling Fluid System A closed loop drilling system will be used.						

Casing Program

Depth Interval	Length (ft)	Hole Size	Casing Size	Weight (ppf)	Grade	Coupling	Notes
0' - 381'	381	17-1/2	13-3/8"	54.50	J-55	BTC	
0' - 2,771'	2,771	12-1/4"	10-3/4"	40.50	J-55	BTC	SC-BTC (11.25" OD)
0' - 9,350'	9,350	9-7/8"	8-5/8"	32.00	P110 HSCY	TLW	Semi-Flush Joint
0' - 18,250'	18,250	7-7/8"	5-1/2"	20.00	P-110EC	DWC/C-IS+	Potential to upgrade to 23#

Note: **DQX, GBCD, CDC, DWC/C, TXP-BTC** could be substituted on 5-1/2" casing due to availability of coupling.

Casing Centralizers

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

Intermediate Casing: Centralizers will be run on the bottom 3 joints of casing and then 1 centralizer every 4th joint to surface.

Casing Performance Properties and Design Criteria

Depth Interval	Collapse (psi)	Burst (psi)	Joint Strength (1000 lbs)	Actual Design Safety Factors			Notes
				Collapse	Burst	Tension	
0' - 381'	1,130	2,740	853	6.85	1.83	8.53	
0' - 2,771'	1,580	3,130	629	1.52	2.09	3.23	Collapse: 1/3 fluid filled at all times
0' - 9,350'	4,230	8,930	1144	1.33	4.34	3.24	Collapse: 1/3 fluid filled at all times
0' - 18,250'	12,090	14,360	729	2.29	1.25	2.71	
Design Safety Factors Design safety factors will meet or exceed as shown.							

Surface Casing

Collapse: $DF_C = 1.125$

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

Burst: $DF_B = 1.125$

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

Tensile: $DF_T = 1.60$

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

Intermediate Casing

Collapse: $DF_C = 1.125$

- Full Internal Evacuation: Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run and internal evacuation of casing.
- Cementing: Collapse force is equal net force of the planned cement slurry gradient (0.626 psi/ft) in which the casing will be run and internal force equivalent to the displacement fluid gradient.

Burst: $DF_B = 1.125$

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

Tensile: $DF_T = 1.60$

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

Production CasingCollapse: $DF_C = 1.125$

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

Burst: $DF_B = 1.125$

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

Tensile: $DF_T = 1.60$

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

Cementing Program**Surface Casing Cement:**

0' - 381'

Top of Cement: Surface

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead								
Tail	288	529.4	94.3	13.20	1.84	9.92	1,200	100.0%

Lead:

Tail: Class C Cement with Gel, Accelerator, LCM

Salt Protection Casing Cement:

Surface Shoe Depth 381

Top of Lead 0

Top of Tail 0

Intermediate Shoe Depth 2,771

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead	173	443.6	79.0	11.80	2.56	15.42	1,000	50.0%
Tail	175	231.0	41.1	14.80	1.32	6.33	900	20.0%

Lead:

Tail: Class C Cement with Gel, Retarder, LCM

Intermediate Casing Cement:

0' - 9,350'

Top of Cement: Surface

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead	687	2150.3	383.0	10.20	3.13	15.86	900	100.0%
Tail	150	208.5	37.1	13.80	1.39	6.57	1,200	50.0%

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

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

Production Casing Cement:

0' - 18,250'

Top of Cement: 0'

Cement	Amount (sacks)	Slurry Volume (cu. ft.)	Slurry Volume (bbls)	Weight (ppg)	Yield (cu. ft./sx)	Mix Water (gal/sx)	24hr 115deg Strength (psi)	Excess Cement (%)
Lead								
Tail	2387	3794.6	675.8	13.20	1.59	7.98	1,200	20.0%

Lead:

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

Logging, Testing & Coring Program

A 2 person mud logging program will be used from 3,000 ft to Total Depth

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

Novo Oil & Gas, LLC

Project: Eddy County, NM (NAD83-Grid)
 Site: Rana Salada Fed Com 0504
 Well: Rana Salada Fed Com 0504 216H
 Wellbore: OH
 Design: Plan #1



Azimuths to Grid North
 True North: -0.17°
 Magnetic North: 6.69°
 Magnetic Field
 Strength: 47598.6nT
 Dip Angle: 59.96°
 Date: 8/20/2020
 Model: IGRF2020

PROJECT DETAILS: Eddy County, NM (NAD83-Grid)

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



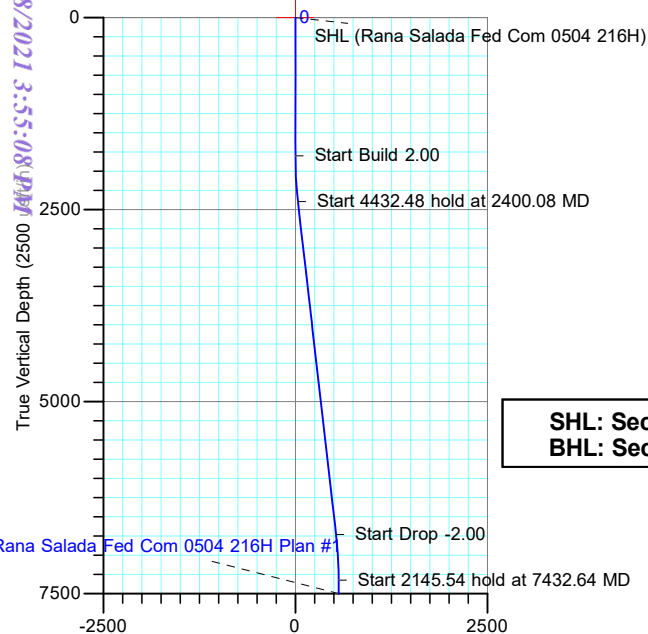
SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2400.08	12.00	25.54	2395.70	56.50	26.99	2.00	25.54	33.73	Start 4432.48 hold at 2400.08 MD
6832.56	12.00	25.54	6731.30	888.15	424.33	0.00	0.00	530.26	Start Drop -2.00
7432.64	0.00	0.00	7327.00	944.65	451.32	2.00	180.00	564.00	Start 2145.54 hold at 7432.64 MD
9578.18	0.00	0.00	9472.54	944.65	451.32	0.00	0.00	564.00	Start DLS 12.00 TFO 89.40
10328.18	90.00	89.40	9950.00	949.64	928.76	12.00	89.40	1038.43	Start 7361.31 hold at 10328.18 MD
17689.50	90.00	89.40	9950.00	1026.65	8289.67	0.00	0.00	8353.00	TD at 17689.50

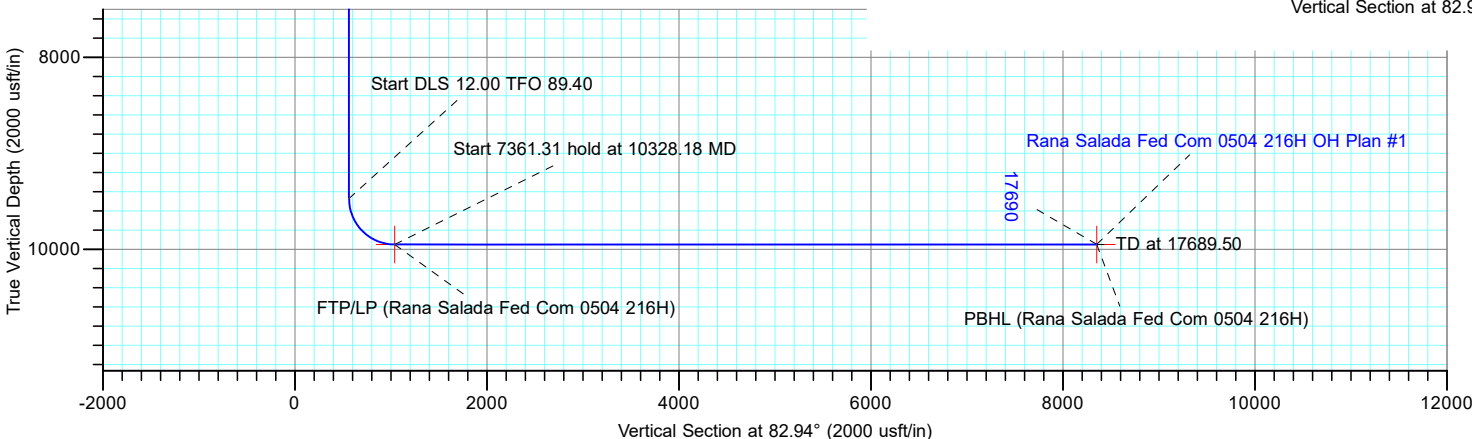
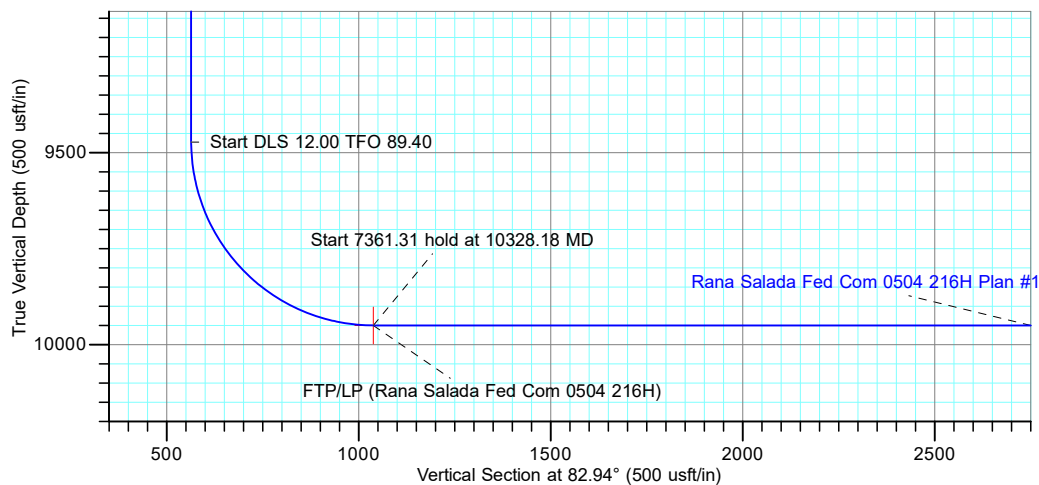
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
FTP/LP (Rana Salada Fed Com 0504 216H)	9950.00	949.64	928.76	32.333310	-104.014478
PBHL (Rana Salada Fed Com 0504 216H)	9950.00	1026.65	8289.67	32.333460	-103.990645
SHL (Rana Salada Fed Com 0504 216H)	0.00	0.00	0.00	32.330708	-104.017494

3041' GE + 25' KB @ 3066.00usft



SHL: Sec 6, T23S, R29E
 BHL: Sec 4, T23S, R29E



TOTAL DIRECTIONAL SERVICES LLC
 560 Logistics Dr, Windsor, CO 80550
 Phone: (970) 460-9402

Plan: Plan #1 (Rana Salada Fed Com 0504 216H/OH)
 Rana Salada Fed Com 0504
 Created By: Dustin Ault Date: 23:28, August 20 2020
 Date: _____
 Approved: _____ Date: _____

Novo Oil & Gas, LLC

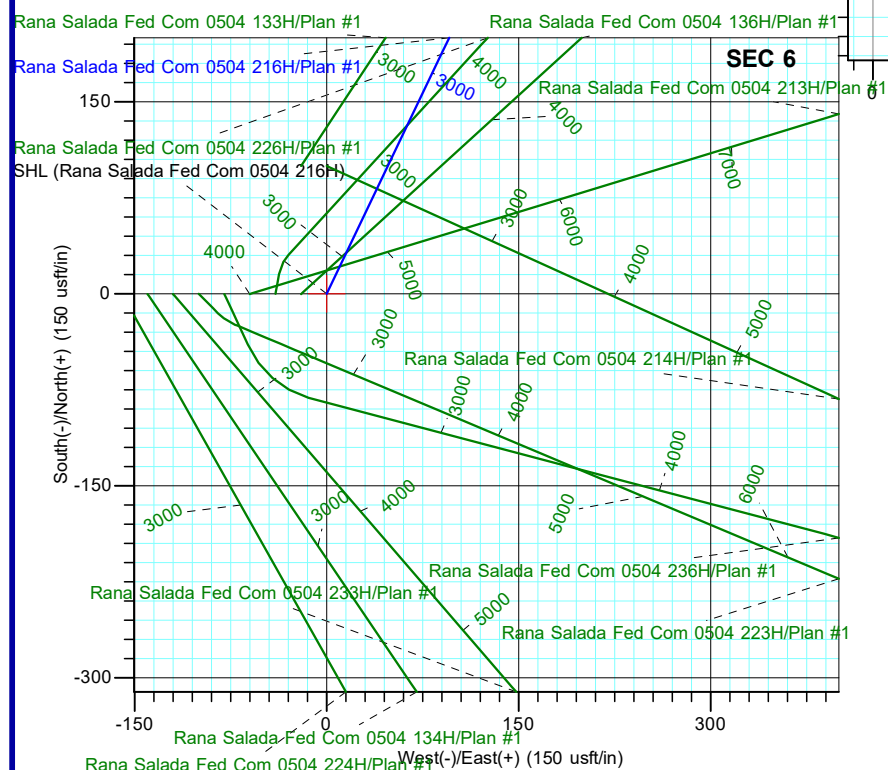
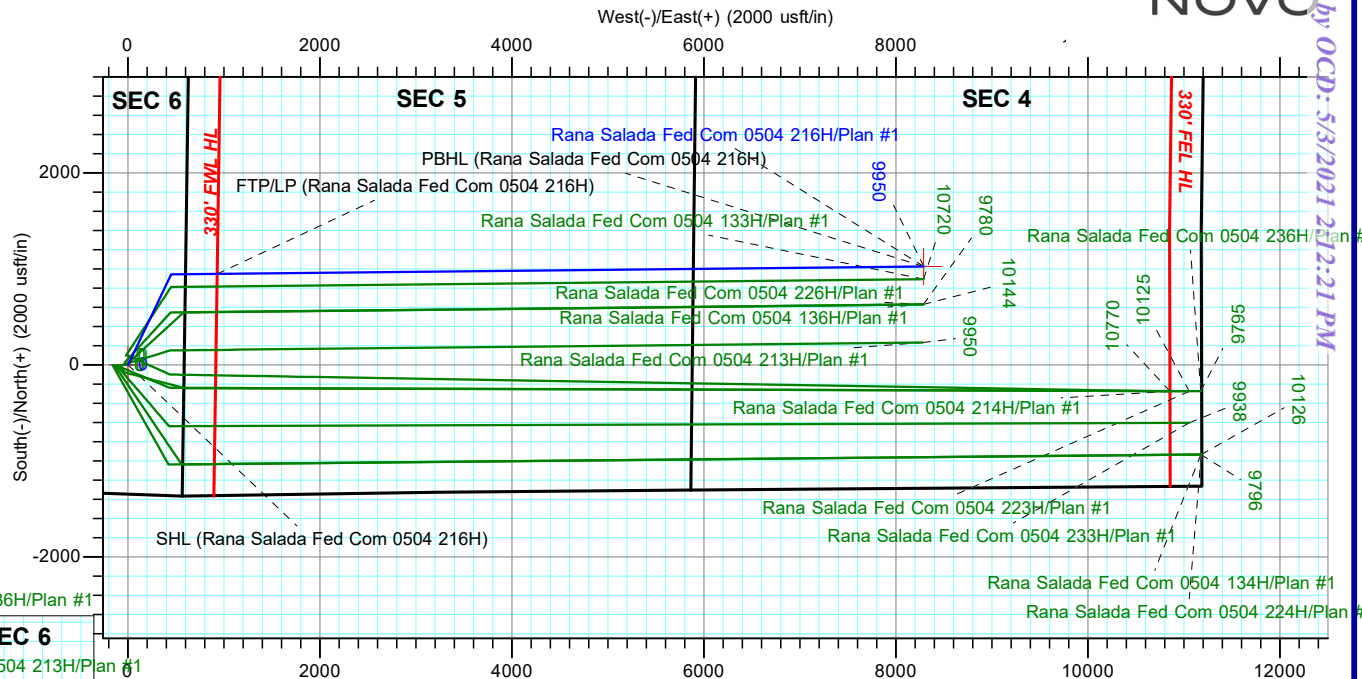
Project: Eddy County, NM (NAD83-Grid)
 Site: Rana Salada Fed Com 0504
 Well: Rana Salada Fed Com 0504 216H
 Wellbore: OH
 Design: Plan #1

PROJECT DETAILS: Eddy County, NM (NAD83-Grid)
 Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: New Mexico Eastern Zone



Azimuths to Grid North
 True North: -0.17°
 Magnetic North: 6.69°

Magnetic Field
 Strength: 47598.6nT
 Dip Angle: 59.96°
 Date: 8/20/2020
 Model: IGRF2020

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
FTP/LP (Rana Salada Fed Com 0504 216H)	9950.00	949.64	928.76	485137.00	639819.82	32.333310	-104.014478
PBHL (Rana Salada Fed Com 0504 216H)	9950.00	1026.65	8289.67	485214.01	647180.73	32.333460	-103.990645
SHL (Rana Salada Fed Com 0504 216H)	0.00	0.00	0.00	484187.36	638891.06	32.330708	-104.017494

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1800.00	0.00	0.00	1800.00	0.00	0.00	0.00	0.00	0.00	Start Build 2.00
2400.08	12.00	25.54	2395.70	56.50	26.99	2.00	25.54	33.73	Start 4432.48 hold at 2400.08 MD
6832.56	12.00	25.54	6731.30	888.15	424.33	0.00	0.00	530.26	Start Drop -2.00
7432.64	0.00	0.00	7327.00	944.65	451.32	2.00	180.00	564.00	Start 2145.54 hold at 7432.64 MD
9578.18	0.00	0.00	9472.54	944.65	451.32	0.00	0.00	564.00	Start DLS 12.00 TFO 89.40
10328.18	90.00	89.40	9950.00	949.64	928.76	12.00	89.40	1038.43	Start 7361.31 hold at 10328.18 MD
17689.50	90.00	89.40	9950.00	1026.65	8289.67	0.00	0.00	8353.00	TD at 17689.50



TOTAL DIRECTIONAL SERVICES LLC
 560 Logistics Dr, Windsor, CO 80550
 Phone: (970) 460-9402

Plan: Plan #1 (Rana Salada Fed Com 0504 216H/OH)
 Rana Salada Fed Com 0504
 Created By: Dustin Ault
 Date: 23:29, August 20 2020
 Approved: _____ Date: _____



Novo Oil & Gas, LLC

Eddy County, NM (NAD83-Grid)

Rana Salada Fed Com 0504

Rana Salada Fed Com 0504 216H

OH

Plan: Plan #1

Standard Planning Report

20 August, 2020





Total Directional Services

Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Company:	Novo Oil & Gas, LLC	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project	Eddy County, NM (NAD83-Grid)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Rana Salada Fed Com 0504				
Site Position:		Northing:	484,287.26 usft	Latitude:	32.330983
From:	Map	Easting:	638,871.02 usft	Longitude:	-104.017558
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.17

Well	Rana Salada Fed Com 0504 216H					
Well Position	+N/-S	-99.90 usft	Northing:	484,187.36 usft	Latitude:	32.330708
	+E/-W	20.04 usft	Easting:	638,891.06 usft	Longitude:	-104.017494
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,041.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	8/20/2020	6.86	59.96	47,598.63634840

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	82.94

Plan Survey Tool Program	Date	8/20/2020		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,689.43 Plan #1 (OH)	OWSG (Rev2) MWD	
			OWSG 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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,400.08	12.00	25.54	2,395.70	56.50	26.99	2.00	2.00	0.00	25.54	
6,832.56	12.00	25.54	6,731.30	888.15	424.33	0.00	0.00	0.00	0.00	
7,432.64	0.00	0.00	7,327.00	944.65	451.32	2.00	-2.00	0.00	180.00	
9,578.18	0.00	0.00	9,472.54	944.65	451.32	0.00	0.00	0.00	0.00	
10,328.18	90.00	89.40	9,950.01	949.64	928.76	12.00	12.00	11.92	89.40	
17,689.50	90.00	89.40	9,950.00	1,026.65	8,289.67	0.00	0.00	0.00	0.00	PBHL (Rana Salada F



Total Directional Services

Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Company:	Novo Oil & Gas, LLC	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SHL (Rana Salada Fed Com 0504 216H)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,900.00	2.00	25.54	1,899.98	1.57	0.75	0.94	2.00	2.00	0.00
2,000.00	4.00	25.54	1,999.84	6.30	3.01	3.76	2.00	2.00	0.00
2,100.00	6.00	25.54	2,099.45	14.16	6.77	8.45	2.00	2.00	0.00
2,200.00	8.00	25.54	2,198.70	25.16	12.02	15.02	2.00	2.00	0.00
2,300.00	10.00	25.54	2,297.47	39.27	18.76	23.45	2.00	2.00	0.00
2,400.08	12.00	25.54	2,395.70	56.50	26.99	33.73	2.00	2.00	0.00
Start 4432.48 hold at 2400.08 MD									
2,500.00	12.00	25.54	2,493.44	75.25	35.95	44.93	0.00	0.00	0.00
2,600.00	12.00	25.54	2,591.25	94.01	44.92	56.13	0.00	0.00	0.00
2,700.00	12.00	25.54	2,689.07	112.77	53.88	67.33	0.00	0.00	0.00
2,800.00	12.00	25.54	2,786.88	131.54	62.84	78.53	0.00	0.00	0.00
2,900.00	12.00	25.54	2,884.69	150.30	71.81	89.74	0.00	0.00	0.00
3,000.00	12.00	25.54	2,982.51	169.06	80.77	100.94	0.00	0.00	0.00
3,100.00	12.00	25.54	3,080.32	187.82	89.74	112.14	0.00	0.00	0.00
3,200.00	12.00	25.54	3,178.14	206.59	98.70	123.34	0.00	0.00	0.00
3,300.00	12.00	25.54	3,275.95	225.35	107.66	134.54	0.00	0.00	0.00
3,400.00	12.00	25.54	3,373.76	244.11	116.63	145.75	0.00	0.00	0.00
3,500.00	12.00	25.54	3,471.58	262.87	125.59	156.95	0.00	0.00	0.00
3,600.00	12.00	25.54	3,569.39	281.64	134.56	168.15	0.00	0.00	0.00
3,700.00	12.00	25.54	3,667.21	300.40	143.52	179.35	0.00	0.00	0.00
3,800.00	12.00	25.54	3,765.02	319.16	152.48	190.55	0.00	0.00	0.00
3,900.00	12.00	25.54	3,862.84	337.92	161.45	201.76	0.00	0.00	0.00
4,000.00	12.00	25.54	3,960.65	356.69	170.41	212.96	0.00	0.00	0.00
4,100.00	12.00	25.54	4,058.46	375.45	179.38	224.16	0.00	0.00	0.00
4,200.00	12.00	25.54	4,156.28	394.21	188.34	235.36	0.00	0.00	0.00
4,300.00	12.00	25.54	4,254.09	412.98	197.30	246.56	0.00	0.00	0.00
4,400.00	12.00	25.54	4,351.91	431.74	206.27	257.77	0.00	0.00	0.00
4,500.00	12.00	25.54	4,449.72	450.50	215.23	268.97	0.00	0.00	0.00
4,600.00	12.00	25.54	4,547.54	469.26	224.20	280.17	0.00	0.00	0.00
4,700.00	12.00	25.54	4,645.35	488.03	233.16	291.37	0.00	0.00	0.00
4,800.00	12.00	25.54	4,743.16	506.79	242.13	302.57	0.00	0.00	0.00
4,900.00	12.00	25.54	4,840.98	525.55	251.09	313.78	0.00	0.00	0.00



Total Directional Services

Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Company:	Novo Oil & Gas, LLC	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
5,000.00	12.00	25.54	4,938.79	544.31	260.05	324.98	0.00	0.00	0.00
5,100.00	12.00	25.54	5,036.61	563.08	269.02	336.18	0.00	0.00	0.00
5,200.00	12.00	25.54	5,134.42	581.84	277.98	347.38	0.00	0.00	0.00
5,300.00	12.00	25.54	5,232.23	600.60	286.95	358.58	0.00	0.00	0.00
5,400.00	12.00	25.54	5,330.05	619.36	295.91	369.79	0.00	0.00	0.00
5,500.00	12.00	25.54	5,427.86	638.13	304.87	380.99	0.00	0.00	0.00
5,600.00	12.00	25.54	5,525.68	656.89	313.84	392.19	0.00	0.00	0.00
5,700.00	12.00	25.54	5,623.49	675.65	322.80	403.39	0.00	0.00	0.00
5,800.00	12.00	25.54	5,721.31	694.41	331.77	414.59	0.00	0.00	0.00
5,900.00	12.00	25.54	5,819.12	713.18	340.73	425.80	0.00	0.00	0.00
6,000.00	12.00	25.54	5,916.93	731.94	349.69	437.00	0.00	0.00	0.00
6,100.00	12.00	25.54	6,014.75	750.70	358.66	448.20	0.00	0.00	0.00
6,200.00	12.00	25.54	6,112.56	769.46	367.62	459.40	0.00	0.00	0.00
6,300.00	12.00	25.54	6,210.38	788.23	376.59	470.60	0.00	0.00	0.00
6,400.00	12.00	25.54	6,308.19	806.99	385.55	481.81	0.00	0.00	0.00
6,500.00	12.00	25.54	6,406.00	825.75	394.51	493.01	0.00	0.00	0.00
6,600.00	12.00	25.54	6,503.82	844.51	403.48	504.21	0.00	0.00	0.00
6,700.00	12.00	25.54	6,601.63	863.28	412.44	515.41	0.00	0.00	0.00
6,800.00	12.00	25.54	6,699.45	882.04	421.41	526.61	0.00	0.00	0.00
6,832.56	12.00	25.54	6,731.30	888.15	424.33	530.26	0.00	0.00	0.00
Start Drop -2.00									
6,900.00	10.65	25.54	6,797.42	900.10	430.04	537.40	2.00	-2.00	0.00
7,000.00	8.65	25.54	6,896.00	915.23	437.26	546.43	2.00	-2.00	0.00
7,100.00	6.65	25.54	6,995.10	927.24	443.00	553.60	2.00	-2.00	0.00
7,200.00	4.65	25.54	7,094.61	936.13	447.25	558.91	2.00	-2.00	0.00
7,300.00	2.65	25.54	7,194.40	941.88	450.00	562.34	2.00	-2.00	0.00
7,400.00	0.65	25.54	7,294.36	944.48	451.24	563.90	2.00	-2.00	0.00
7,432.64	0.00	0.00	7,327.00	944.65	451.32	564.00	2.00	-2.00	-78.23
Start 2145.54 hold at 7432.64 MD									
7,500.00	0.00	0.00	7,394.36	944.65	451.32	564.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,494.36	944.65	451.32	564.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,594.36	944.65	451.32	564.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,694.36	944.65	451.32	564.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,794.36	944.65	451.32	564.00	0.00	0.00	0.00
8,000.00	0.00	0.00	7,894.36	944.65	451.32	564.00	0.00	0.00	0.00
8,100.00	0.00	0.00	7,994.36	944.65	451.32	564.00	0.00	0.00	0.00
8,200.00	0.00	0.00	8,094.36	944.65	451.32	564.00	0.00	0.00	0.00
8,300.00	0.00	0.00	8,194.36	944.65	451.32	564.00	0.00	0.00	0.00
8,400.00	0.00	0.00	8,294.36	944.65	451.32	564.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,394.36	944.65	451.32	564.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,494.36	944.65	451.32	564.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,594.36	944.65	451.32	564.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,694.36	944.65	451.32	564.00	0.00	0.00	0.00
8,900.00	0.00	0.00	8,794.36	944.65	451.32	564.00	0.00	0.00	0.00
9,000.00	0.00	0.00	8,894.36	944.65	451.32	564.00	0.00	0.00	0.00
9,100.00	0.00	0.00	8,994.36	944.65	451.32	564.00	0.00	0.00	0.00
9,200.00	0.00	0.00	9,094.36	944.65	451.32	564.00	0.00	0.00	0.00
9,300.00	0.00	0.00	9,194.36	944.65	451.32	564.00	0.00	0.00	0.00
9,400.00	0.00	0.00	9,294.36	944.65	451.32	564.00	0.00	0.00	0.00
9,500.00	0.00	0.00	9,394.36	944.65	451.32	564.00	0.00	0.00	0.00
9,578.18	0.00	0.00	9,472.54	944.65	451.32	564.00	0.00	0.00	0.00
Start DLS 12.00 TFO 89.40									
9,600.00	2.62	89.40	9,494.35	944.66	451.82	564.49	12.00	12.00	0.00



Total Directional Services

Planning Report



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Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
9,625.00	5.62	89.40	9,519.28	944.67	453.61	566.27	12.00	12.00	0.00
9,650.00	8.62	89.40	9,544.09	944.71	456.71	569.35	12.00	12.00	0.00
9,675.00	11.62	89.40	9,568.69	944.75	461.10	573.72	12.00	12.00	0.00
9,700.00	14.62	89.40	9,593.04	944.81	466.77	579.35	12.00	12.00	0.00
9,725.00	17.62	89.40	9,617.05	944.88	473.71	586.25	12.00	12.00	0.00
9,750.00	20.62	89.40	9,640.67	944.97	481.90	594.38	12.00	12.00	0.00
9,775.00	23.62	89.40	9,663.83	945.07	491.31	603.74	12.00	12.00	0.00
9,800.00	26.62	89.40	9,686.46	945.18	501.92	614.28	12.00	12.00	0.00
9,825.00	29.62	89.40	9,708.51	945.30	513.70	625.99	12.00	12.00	0.00
9,850.00	32.62	89.40	9,729.91	945.44	526.62	638.82	12.00	12.00	0.00
9,875.00	35.62	89.40	9,750.61	945.58	540.64	652.75	12.00	12.00	0.00
9,900.00	38.62	89.40	9,770.54	945.74	555.72	667.74	12.00	12.00	0.00
9,925.00	41.62	89.40	9,789.65	945.91	571.83	683.75	12.00	12.00	0.00
9,950.00	44.62	89.40	9,807.90	946.09	588.92	700.72	12.00	12.00	0.00
9,975.00	47.62	89.40	9,825.23	946.28	606.93	718.63	12.00	12.00	0.00
10,000.00	50.62	89.40	9,841.59	946.48	625.83	737.41	12.00	12.00	0.00
10,025.00	53.62	89.40	9,856.94	946.68	645.56	757.01	12.00	12.00	0.00
10,050.00	56.62	89.40	9,871.23	946.90	666.06	777.39	12.00	12.00	0.00
10,075.00	59.62	89.40	9,884.44	947.12	687.29	798.48	12.00	12.00	0.00
10,100.00	62.62	89.40	9,896.51	947.35	709.17	820.23	12.00	12.00	0.00
10,125.00	65.62	89.40	9,907.42	947.58	731.66	842.57	12.00	12.00	0.00
10,150.00	68.62	89.40	9,917.14	947.82	754.69	865.46	12.00	12.00	0.00
10,175.00	71.62	89.40	9,925.64	948.07	778.20	888.82	12.00	12.00	0.00
10,200.00	74.62	89.40	9,932.90	948.32	802.12	912.58	12.00	12.00	0.00
10,225.00	77.62	89.40	9,938.90	948.57	826.38	936.70	12.00	12.00	0.00
10,250.00	80.62	89.40	9,943.62	948.83	850.93	961.09	12.00	12.00	0.00
10,275.00	83.62	89.40	9,947.05	949.09	875.69	985.69	12.00	12.00	0.00
10,300.00	86.62	89.40	9,949.17	949.35	900.59	1,010.44	12.00	12.00	0.00
10,325.00	89.62	89.40	9,949.99	949.61	925.58	1,035.27	12.00	12.00	0.00
10,328.19	90.00	89.40	9,950.01	949.64	928.76	1,038.43	12.00	12.00	0.00
Start 7361.31 hold at 10328.18 MD - FTP/LP (Rana Salada Fed Com 0504 216H)									
10,400.00	90.00	89.40	9,950.00	950.40	1,000.57	1,109.79	0.00	0.00	0.00
10,500.00	90.00	89.40	9,950.00	951.44	1,100.57	1,209.15	0.00	0.00	0.00
10,600.00	90.00	89.40	9,950.00	952.49	1,200.56	1,308.52	0.00	0.00	0.00
10,700.00	90.00	89.40	9,950.00	953.53	1,300.55	1,407.88	0.00	0.00	0.00
10,800.00	90.00	89.40	9,950.00	954.58	1,400.55	1,507.25	0.00	0.00	0.00
10,900.00	90.00	89.40	9,950.00	955.63	1,500.54	1,606.61	0.00	0.00	0.00
11,000.00	90.00	89.40	9,950.00	956.67	1,600.54	1,705.98	0.00	0.00	0.00
11,100.00	90.00	89.40	9,950.00	957.72	1,700.53	1,805.34	0.00	0.00	0.00
11,200.00	90.00	89.40	9,950.00	958.76	1,800.53	1,904.71	0.00	0.00	0.00
11,300.00	90.00	89.40	9,950.00	959.81	1,900.52	2,004.07	0.00	0.00	0.00
11,400.00	90.00	89.40	9,950.00	960.86	2,000.52	2,103.44	0.00	0.00	0.00
11,500.00	90.00	89.40	9,950.00	961.90	2,100.51	2,202.80	0.00	0.00	0.00
11,600.00	90.00	89.40	9,950.00	962.95	2,200.51	2,302.17	0.00	0.00	0.00
11,700.00	90.00	89.40	9,950.00	964.00	2,300.50	2,401.54	0.00	0.00	0.00
11,800.00	90.00	89.40	9,950.00	965.04	2,400.49	2,500.90	0.00	0.00	0.00
11,900.00	90.00	89.40	9,950.00	966.09	2,500.49	2,600.27	0.00	0.00	0.00
12,000.00	90.00	89.40	9,950.00	967.13	2,600.48	2,699.63	0.00	0.00	0.00
12,100.00	90.00	89.40	9,950.00	968.18	2,700.48	2,799.00	0.00	0.00	0.00
12,200.00	90.00	89.40	9,950.00	969.23	2,800.47	2,898.36	0.00	0.00	0.00
12,300.00	90.00	89.40	9,950.00	970.27	2,900.47	2,997.73	0.00	0.00	0.00
12,400.00	90.00	89.40	9,950.00	971.32	3,000.46	3,097.09	0.00	0.00	0.00
12,500.00	90.00	89.40	9,950.00	972.36	3,100.46	3,196.46	0.00	0.00	0.00
12,600.00	90.00	89.40	9,950.00	973.41	3,200.45	3,295.82	0.00	0.00	0.00



Total Directional Services

Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Company:	Novo Oil & Gas, LLC	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
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)
12,700.00	90.00	89.40	9,950.00	974.46	3,300.45	3,395.19	0.00	0.00	0.00
12,800.00	90.00	89.40	9,950.00	975.50	3,400.44	3,494.55	0.00	0.00	0.00
12,900.00	90.00	89.40	9,950.00	976.55	3,500.43	3,593.92	0.00	0.00	0.00
13,000.00	90.00	89.40	9,950.00	977.59	3,600.43	3,693.28	0.00	0.00	0.00
13,100.00	90.00	89.40	9,950.00	978.64	3,700.42	3,792.65	0.00	0.00	0.00
13,200.00	90.00	89.40	9,950.00	979.69	3,800.42	3,892.01	0.00	0.00	0.00
13,300.00	90.00	89.40	9,950.00	980.73	3,900.41	3,991.38	0.00	0.00	0.00
13,400.00	90.00	89.40	9,950.00	981.78	4,000.41	4,090.74	0.00	0.00	0.00
13,500.00	90.00	89.40	9,950.00	982.82	4,100.40	4,190.11	0.00	0.00	0.00
13,600.00	90.00	89.40	9,950.00	983.87	4,200.40	4,289.47	0.00	0.00	0.00
13,700.00	90.00	89.40	9,950.00	984.92	4,300.39	4,388.84	0.00	0.00	0.00
13,800.00	90.00	89.40	9,950.00	985.96	4,400.39	4,488.20	0.00	0.00	0.00
13,900.00	90.00	89.40	9,950.00	987.01	4,500.38	4,587.57	0.00	0.00	0.00
14,000.00	90.00	89.40	9,950.00	988.05	4,600.37	4,686.93	0.00	0.00	0.00
14,100.00	90.00	89.40	9,950.00	989.10	4,700.37	4,786.30	0.00	0.00	0.00
14,200.00	90.00	89.40	9,950.00	990.15	4,800.36	4,885.66	0.00	0.00	0.00
14,300.00	90.00	89.40	9,950.00	991.19	4,900.36	4,985.03	0.00	0.00	0.00
14,400.00	90.00	89.40	9,950.00	992.24	5,000.35	5,084.39	0.00	0.00	0.00
14,500.00	90.00	89.40	9,950.00	993.29	5,100.35	5,183.76	0.00	0.00	0.00
14,600.00	90.00	89.40	9,950.00	994.33	5,200.34	5,283.12	0.00	0.00	0.00
14,700.00	90.00	89.40	9,950.00	995.38	5,300.34	5,382.49	0.00	0.00	0.00
14,800.00	90.00	89.40	9,950.00	996.42	5,400.33	5,481.85	0.00	0.00	0.00
14,900.00	90.00	89.40	9,950.00	997.47	5,500.33	5,581.22	0.00	0.00	0.00
15,000.00	90.00	89.40	9,950.00	998.52	5,600.32	5,680.58	0.00	0.00	0.00
15,100.00	90.00	89.40	9,950.00	999.56	5,700.31	5,779.95	0.00	0.00	0.00
15,200.00	90.00	89.40	9,950.00	1,000.61	5,800.31	5,879.31	0.00	0.00	0.00
15,300.00	90.00	89.40	9,950.00	1,001.65	5,900.30	5,978.68	0.00	0.00	0.00
15,400.00	90.00	89.40	9,950.00	1,002.70	6,000.30	6,078.04	0.00	0.00	0.00
15,500.00	90.00	89.40	9,950.00	1,003.75	6,100.29	6,177.41	0.00	0.00	0.00
15,600.00	90.00	89.40	9,950.00	1,004.79	6,200.29	6,276.77	0.00	0.00	0.00
15,700.00	90.00	89.40	9,950.00	1,005.84	6,300.28	6,376.14	0.00	0.00	0.00
15,800.00	90.00	89.40	9,950.00	1,006.88	6,400.28	6,475.50	0.00	0.00	0.00
15,900.00	90.00	89.40	9,950.00	1,007.93	6,500.27	6,574.87	0.00	0.00	0.00
16,000.00	90.00	89.40	9,950.00	1,008.98	6,600.26	6,674.23	0.00	0.00	0.00
16,100.00	90.00	89.40	9,950.00	1,010.02	6,700.26	6,773.60	0.00	0.00	0.00
16,200.00	90.00	89.40	9,950.00	1,011.07	6,800.25	6,872.96	0.00	0.00	0.00
16,300.00	90.00	89.40	9,950.00	1,012.11	6,900.25	6,972.33	0.00	0.00	0.00
16,400.00	90.00	89.40	9,950.00	1,013.16	7,000.24	7,071.69	0.00	0.00	0.00
16,500.00	90.00	89.40	9,950.00	1,014.21	7,100.24	7,171.06	0.00	0.00	0.00
16,600.00	90.00	89.40	9,950.00	1,015.25	7,200.23	7,270.42	0.00	0.00	0.00
16,700.00	90.00	89.40	9,950.00	1,016.30	7,300.23	7,369.79	0.00	0.00	0.00
16,800.00	90.00	89.40	9,950.00	1,017.35	7,400.22	7,469.15	0.00	0.00	0.00
16,900.00	90.00	89.40	9,950.00	1,018.39	7,500.22	7,568.52	0.00	0.00	0.00
17,000.00	90.00	89.40	9,950.00	1,019.44	7,600.21	7,667.88	0.00	0.00	0.00
17,100.00	90.00	89.40	9,950.00	1,020.48	7,700.20	7,767.25	0.00	0.00	0.00
17,200.00	90.00	89.40	9,950.00	1,021.53	7,800.20	7,866.61	0.00	0.00	0.00
17,300.00	90.00	89.40	9,950.00	1,022.58	7,900.19	7,965.98	0.00	0.00	0.00
17,400.00	90.00	89.40	9,950.00	1,023.62	8,000.19	8,065.34	0.00	0.00	0.00
17,500.00	90.00	89.40	9,950.00	1,024.67	8,100.18	8,164.71	0.00	0.00	0.00
17,600.00	90.00	89.40	9,950.00	1,025.71	8,200.18	8,264.07	0.00	0.00	0.00
17,689.50	90.00	89.40	9,950.00	1,026.65	8,289.67	8,353.00	0.00	0.00	0.00
TD at 17689.50 - PBHL (Rana Salada Fed Com 0504 216H)									



Total Directional Services

Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Company:	Novo Oil & Gas, LLC	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Project:	Eddy County, NM (NAD83-Grid)	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site:	Rana Salada Fed Com 0504	North Reference:	Grid
Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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
SHL (Rana Salada Fed Com 0504 216H) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	484,187.36	638,891.06	32.330708	-104.017494
FTP/LP (Rana Salada Fed Com 0504 216H) - plan misses target center by 0.01usft at 10328.18usft MD (9950.00 TVD, 949.64 N, 928.76 E) - Point	0.00	0.00	9,950.00	949.64	928.76	485,137.00	639,819.82	32.333311	-104.014478
PBHL (Rana Salada Fed Com 0504 216H) - plan hits target center - Point	0.00	0.00	9,950.00	1,026.65	8,289.67	485,214.01	647,180.73	32.333460	-103.990646

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,800.00	1,800.00	0.00	0.00	Start Build 2.00
2,400.08	2,395.70	56.50	26.99	Start 4432.48 hold at 2400.08 MD
6,832.56	6,731.30	888.15	424.33	Start Drop -2.00
7,432.64	7,327.00	944.65	451.32	Start 2145.54 hold at 7432.64 MD
9,578.18	9,472.54	944.65	451.32	Start DLS 12.00 TFO 89.40
10,328.18	9,950.01	949.64	928.76	Start 7361.31 hold at 10328.18 MD
17,689.50	9,950.00	1,026.65	8,289.67	TD at 17689.50



Novo Oil & Gas, LLC

Eddy County, NM (NAD83-Grid)

Rana Salada Fed Com 0504

Rana Salada Fed Com 0504 216H

OH

Plan #1

Anticollision Report

20 August, 2020





Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 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:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum ellipse separation of 1,000.00 usft	Error Surface:	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	8/20/2020		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,689.43	Plan #1 (OH)	OWSG (Rev2) MWD	OWSG MWD - Standard	

Summary						
Site Name	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Rana Salada Fed Com 0504						
Rana Salada Fed Com 0504 133H - OH - Plan #1	3,098.38	3,088.20	46.23	24.08	2.087	CC
Rana Salada Fed Com 0504 133H - OH - Plan #1	3,100.00	3,089.81	46.23	24.06	2.086	ES
Rana Salada Fed Com 0504 133H - OH - Plan #1	9,625.00	9,574.33	132.12	62.03	1.885	SF
Rana Salada Fed Com 0504 134H - OH - Plan #1	1,986.29	1,993.22	125.78	112.07	9.175	CC
Rana Salada Fed Com 0504 134H - OH - Plan #1	2,000.00	2,006.76	125.83	112.02	9.112	ES
Rana Salada Fed Com 0504 134H - OH - Plan #1	17,690.09	17,457.11	1,991.83	1,596.26	5.035	SF
Rana Salada Fed Com 0504 136H - OH - Plan #1	1,800.00	1,800.10	20.04	7.58	1.609	CC, ES
Rana Salada Fed Com 0504 136H - OH - Plan #1	17,679.35	17,341.46	430.88	66.91	1.184	Level 2, SF
Rana Salada Fed Com 0504 213H - OH - Plan #1	1,800.00	1,799.90	60.07	47.61	4.822	CC, ES
Rana Salada Fed Com 0504 213H - OH - Plan #1	17,689.50	17,621.11	791.99	395.36	1.997	SF
Rana Salada Fed Com 0504 214H - OH - Plan #1	2,445.14	2,440.05	44.31	27.39	2.619	CC, ES, SF
Rana Salada Fed Com 0504 223H - OH - Plan #1	2,061.60	2,067.59	92.87	78.63	6.519	CC
Rana Salada Fed Com 0504 223H - OH - Plan #1	2,100.00	2,106.44	93.08	78.57	6.413	ES
Rana Salada Fed Com 0504 223H - OH - Plan #1	17,690.09	17,807.12	1,301.40	906.74	3.298	SF
Rana Salada Fed Com 0504 224H - OH - Plan #1	1,994.29	1,999.42	158.38	144.59	11.487	CC
Rana Salada Fed Com 0504 224H - OH - Plan #1	2,000.00	2,005.20	158.38	144.55	11.455	ES
Rana Salada Fed Com 0504 224H - OH - Plan #1	17,690.09	17,918.22	1,994.05	1,596.68	5.018	SF
Rana Salada Fed Com 0504 226H - OH - Plan #1	2,422.50	2,423.06	27.17	10.21	1.602	CC, ES
Rana Salada Fed Com 0504 226H - OH - Plan #1	17,678.80	17,814.98	440.86	78.42	1.216	Level 2, SF
Rana Salada Fed Com 0504 233H - OH - Plan #1	1,800.00	1,799.60	120.07	107.61	9.640	CC, ES
Rana Salada Fed Com 0504 233H - OH - Plan #1	17,690.09	17,650.62	1,637.53	1,239.89	4.118	SF
Rana Salada Fed Com 0504 236H - OH - Plan #1	1,868.33	1,870.26	73.81	60.95	5.738	CC, ES
Rana Salada Fed Com 0504 236H - OH - Plan #1	17,690.09	17,347.95	1,298.70	905.94	3.307	SF

Offset Design												
Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 133H - OH - Plan #1												
Survey Program: 0-OWSG (Rev2) MWD												
Reference												
Offset												
Semi Major Axis												
Distance												
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor
0.00	0.00	0.20	0.20	0.00	0.00	-11.34	99.90	-20.04	101.89			
100.00	100.00	100.20	100.20	0.13	0.14	-11.34	99.90	-20.04	101.89	101.62	0.27	377.972
200.00	200.00	200.20	200.20	0.49	0.49	-11.34	99.90	-20.04	101.89	100.90	0.99	103.283
300.00	300.00	300.20	300.20	0.85	0.85	-11.34	99.90	-20.04	101.89	100.19	1.70	59.814
400.00	400.00	400.20	400.20	1.21	1.21	-11.34	99.90	-20.04	101.89	99.47	2.42	42.096

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 133H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
500.00	500.00	500.20	500.20	1.57	1.57	-11.34	99.90	-20.04	101.89	98.75	3.14	32.477		
600.00	600.00	600.20	600.20	1.93	1.93	-11.34	99.90	-20.04	101.89	98.04	3.85	26.436		
700.00	700.00	700.20	700.20	2.29	2.29	-11.34	99.90	-20.04	101.89	97.32	4.57	22.289		
800.00	800.00	800.20	800.20	2.64	2.64	-11.34	99.90	-20.04	101.89	96.60	5.29	19.268		
900.00	900.00	900.20	900.20	3.00	3.00	-11.34	99.90	-20.04	101.89	95.89	6.01	16.967		
1,000.00	1,000.00	1,000.20	1,000.20	3.36	3.36	-11.34	99.90	-20.04	101.89	95.17	6.72	15.158		
1,100.00	1,100.00	1,100.20	1,100.20	3.72	3.72	-11.34	99.90	-20.04	101.89	94.45	7.44	13.697		
1,200.00	1,200.00	1,200.20	1,200.20	4.08	4.08	-11.34	99.90	-20.04	101.89	93.73	8.16	12.493		
1,300.00	1,300.00	1,300.20	1,300.20	4.44	4.44	-11.34	99.90	-20.04	101.89	93.02	8.87	11.483		
1,400.00	1,400.00	1,400.20	1,400.20	4.79	4.80	-11.34	99.90	-20.04	101.89	92.30	9.59	10.625		
1,500.00	1,500.00	1,500.20	1,500.20	5.15	5.15	-11.34	99.90	-20.04	101.89	91.58	10.31	9.886		
1,600.00	1,600.00	1,600.20	1,600.20	5.51	5.51	-11.34	99.90	-20.04	101.89	90.87	11.02	9.243		
1,700.00	1,700.00	1,700.20	1,700.20	5.87	5.87	-11.34	99.90	-20.04	101.89	90.15	11.74	8.678		
1,800.00	1,800.00	1,800.20	1,800.20	6.23	6.23	-11.34	99.90	-20.04	101.89	89.43	12.46	8.179		
1,900.00	1,899.98	1,900.18	1,900.18	6.59	6.59	-37.49	99.90	-20.04	100.50	87.33	13.17	7.629		
2,000.00	1,999.84	2,000.00	2,000.00	6.94	6.95	-39.44	99.90	-20.04	96.40	82.51	13.89	6.941		
2,100.00	2,099.45	2,097.67	2,097.66	7.30	7.29	-42.15	101.29	-19.12	90.92	76.32	14.59	6.230		
2,200.00	2,198.70	2,195.54	2,195.38	7.66	7.64	-45.05	105.47	-16.37	85.26	69.96	15.29	5.575		
2,300.00	2,297.47	2,293.62	2,293.11	8.03	7.99	-48.19	112.45	-11.77	79.43	63.43	16.00	4.965		
2,400.08	2,395.70	2,392.23	2,391.02	8.40	8.35	-51.70	122.25	-5.32	73.42	56.70	16.72	4.392		
2,500.00	2,493.44	2,491.82	2,489.75	8.79	8.71	-56.08	133.10	1.83	67.28	49.81	17.47	3.851		
2,600.00	2,591.25	2,591.48	2,588.56	9.19	9.08	-61.31	143.96	8.98	61.60	43.36	18.24	3.378		
2,700.00	2,689.07	2,691.15	2,687.38	9.59	9.45	-67.53	154.82	16.13	56.53	37.51	19.02	2.972		
2,800.00	2,786.88	2,790.82	2,786.19	10.01	9.82	-74.86	165.68	23.29	52.26	32.45	19.81	2.637		
2,900.00	2,884.69	2,890.48	2,885.00	10.42	10.19	-83.32	176.54	30.44	48.99	28.37	20.61	2.376		
3,000.00	2,982.51	2,990.15	2,983.82	10.85	10.57	-92.75	187.40	37.60	46.92	25.52	21.40	2.192		
3,098.38	3,078.74	3,088.20	3,081.03	11.27	10.95	-102.58	198.08	44.63	46.23	24.08	22.15	2.087 CC		
3,100.00	3,080.32	3,089.81	3,082.63	11.27	10.95	-102.74	198.26	44.75	46.23	24.06	22.17	2.086 ES		
3,200.00	3,178.14	3,189.48	3,181.45	11.71	11.34	-112.73	209.12	51.90	46.97	24.08	22.89	2.052		
3,300.00	3,275.95	3,289.15	3,280.26	12.14	11.72	-122.13	219.98	59.06	49.08	25.49	23.59	2.081		
3,400.00	3,373.76	3,388.81	3,379.07	12.58	12.11	-130.55	230.84	66.21	52.38	28.12	24.26	2.159		
3,500.00	3,471.58	3,488.48	3,477.89	13.02	12.49	-137.85	241.70	73.36	56.69	31.76	24.93	2.274		
3,600.00	3,569.39	3,588.14	3,576.70	13.47	12.88	-144.03	252.56	80.52	61.77	36.17	25.60	2.413		
3,700.00	3,667.21	3,687.81	3,675.51	13.92	13.27	-149.23	263.42	87.67	67.47	41.18	26.29	2.567		
3,800.00	3,765.02	3,787.47	3,774.33	14.36	13.66	-153.59	274.29	94.83	73.63	46.65	26.98	2.729		
3,900.00	3,862.84	3,887.14	3,873.14	14.82	14.06	-157.27	285.15	101.98	80.15	52.47	27.68	2.896		
4,000.00	3,960.65	3,986.81	3,971.96	15.27	14.45	-160.37	296.01	109.13	86.95	58.56	28.39	3.063		
4,100.00	4,058.46	4,086.47	4,070.77	15.73	14.84	-163.03	306.87	116.29	93.97	64.87	29.11	3.229		
4,200.00	4,156.28	4,186.14	4,169.58	16.18	15.24	-165.31	317.73	123.44	101.16	71.33	29.83	3.391		
4,300.00	4,254.09	4,285.80	4,268.40	16.64	15.63	-167.28	328.59	130.59	108.49	77.94	30.56	3.551		
4,400.00	4,351.91	4,385.47	4,367.21	17.10	16.03	-169.01	339.45	137.75	115.93	84.65	31.29	3.705		
4,500.00	4,449.72	4,485.14	4,466.02	17.56	16.43	-170.52	350.31	144.90	123.47	91.44	32.02	3.856		
4,600.00	4,547.54	4,584.80	4,564.84	18.02	16.82	-171.86	361.17	152.06	131.08	98.32	32.76	4.001		
4,700.00	4,645.35	4,684.47	4,663.65	18.48	17.22	-173.06	372.03	159.21	138.75	105.25	33.50	4.142		
4,800.00	4,743.16	4,784.13	4,762.47	18.95	17.62	-174.12	382.89	166.36	146.48	112.23	34.24	4.277		
4,900.00	4,840.98	4,883.80	4,861.28	19.41	18.02	-175.08	393.75	173.52	154.25	119.26	34.99	4.409		
5,000.00	4,938.79	4,983.47	4,960.09	19.88	18.42	-175.95	404.61	180.67	162.06	126.32	35.73	4.535		
5,100.00	5,036.61	5,083.13	5,058.91	20.35	18.82	-176.74	415.47	187.82	169.90	133.42	36.48	4.657		
5,200.00	5,134.42	5,182.80	5,157.72	20.81	19.22	-177.46	426.33	194.98	177.78	140.55	37.23	4.775		
5,300.00	5,232.23	5,282.46	5,256.53	21.28	19.62	-178.12	437.19	202.13	185.68	147.70	37.98	4.889		
5,400.00	5,330.05	5,382.13	5,355.35	21.75	20.02	-178.72	448.06	209.29	193.60	154.87	38.73	4.999		
5,500.00	5,427.86	5,481.79	5,454.16	22.22	20.42	-179.28	458.92	216.44	201.54	162.06	39.48	5.105		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,600.00	5,525.68	5,581.46	5,552.98	22.69	20.82	-179.79	469.78	223.59	209.50	169.26	40.24	5.207		
5,700.00	5,623.49	5,681.13	5,651.79	23.16	21.22	179.73	480.64	230.75	217.47	176.48	40.99	5.306		
5,800.00	5,721.31	5,780.79	5,750.60	23.63	21.63	179.29	491.50	237.90	225.46	183.72	41.74	5.401		
5,900.00	5,819.12	5,880.46	5,849.42	24.10	22.03	178.88	502.36	245.05	233.46	190.96	42.50	5.494		
6,000.00	5,916.93	5,980.12	5,948.23	24.57	22.43	178.49	513.22	252.21	241.47	198.22	43.25	5.583		
6,100.00	6,014.75	6,079.79	6,047.04	25.04	22.83	178.13	524.08	259.36	249.49	205.49	44.01	5.669		
6,200.00	6,112.56	6,179.46	6,145.86	25.51	23.24	177.80	534.94	266.52	257.52	212.76	44.76	5.753		
6,300.00	6,210.38	6,279.12	6,244.67	25.99	23.64	177.48	545.80	273.67	265.56	220.04	45.52	5.834		
6,400.00	6,308.19	6,378.79	6,343.49	26.46	24.04	177.18	556.66	280.82	273.61	227.33	46.28	5.912		
6,500.00	6,406.00	6,478.45	6,442.30	26.93	24.45	176.90	567.52	287.98	281.67	234.63	47.03	5.988		
6,600.00	6,503.82	6,578.12	6,541.11	27.40	24.85	176.63	578.38	295.13	289.73	241.93	47.79	6.062		
6,700.00	6,601.63	6,677.78	6,639.93	27.88	25.25	176.38	589.24	302.28	297.79	249.24	48.55	6.134		
6,800.00	6,699.45	6,777.45	6,738.74	28.35	25.66	176.14	600.10	309.44	305.86	256.55	49.31	6.203		
6,832.56	6,731.30	6,809.90	6,770.92	28.51	25.79	176.07	603.64	311.77	308.49	258.94	49.56	6.225		
6,900.00	6,797.42	6,877.17	6,837.61	28.82	26.06	175.91	610.97	316.60	313.15	263.08	50.07	6.255		
7,000.00	6,896.00	6,977.08	6,936.66	29.26	26.47	175.65	621.86	323.77	317.15	266.33	50.82	6.241		
7,100.00	6,995.10	7,077.06	7,035.78	29.67	26.88	175.33	632.75	330.94	317.68	266.11	51.57	6.160		
7,200.00	7,094.61	7,176.99	7,134.86	30.05	27.28	174.96	643.64	338.12	314.75	262.43	52.31	6.016		
7,300.00	7,194.40	7,276.75	7,233.77	30.41	27.69	174.51	654.51	345.28	308.35	255.30	53.05	5.812		
7,400.00	7,294.36	7,376.22	7,332.39	30.73	28.09	173.97	665.35	352.42	298.52	244.73	53.78	5.550		
7,432.64	7,327.00	7,408.61	7,364.50	30.83	28.22	-160.70	668.88	354.74	294.56	240.54	54.02	5.453		
7,500.00	7,394.36	7,475.39	7,430.71	31.03	28.49	-161.13	676.16	359.53	286.04	231.53	54.51	5.248		
7,600.00	7,494.36	7,574.53	7,529.01	31.33	28.90	-161.81	686.96	366.65	273.42	218.18	55.24	4.950		
7,700.00	7,594.36	7,673.68	7,627.31	31.63	29.30	-162.56	697.77	373.77	260.84	204.87	55.97	4.660		
7,800.00	7,694.36	7,772.82	7,725.60	31.93	29.70	-163.39	708.57	380.88	248.31	191.60	56.71	4.378		
7,900.00	7,794.36	7,871.97	7,823.90	32.24	30.11	-164.30	719.37	388.00	235.84	178.38	57.46	4.105		
8,000.00	7,894.36	7,971.11	7,922.20	32.54	30.51	-165.32	730.18	395.12	223.43	165.22	58.21	3.838		
8,100.00	7,994.36	8,070.26	8,020.50	32.85	30.91	-166.45	740.98	402.23	211.10	152.12	58.98	3.579		
8,200.00	8,094.36	8,169.40	8,118.79	33.16	31.32	-167.72	751.79	409.35	198.86	139.11	59.75	3.328		
8,300.00	8,194.36	8,268.55	8,217.09	33.47	31.72	-169.16	762.59	416.47	186.73	126.19	60.54	3.084		
8,400.00	8,294.36	8,367.69	8,315.39	33.77	32.13	-170.80	773.39	423.58	174.74	113.38	61.35	2.848		
8,500.00	8,394.36	8,466.84	8,413.68	34.08	32.53	-172.68	784.20	430.70	162.90	100.72	62.18	2.620		
8,600.00	8,494.36	8,564.82	8,510.85	34.40	32.93	-174.80	794.78	437.67	151.36	88.32	63.04	2.401		
8,700.00	8,594.36	8,660.01	8,605.49	34.71	33.30	-176.71	803.16	443.19	142.14	78.28	63.86	2.226		
8,800.00	8,694.36	8,755.76	8,700.99	35.02	33.65	-178.17	808.93	446.99	135.94	71.32	64.61	2.104		
8,900.00	8,794.36	8,851.86	8,797.02	35.33	33.99	-179.01	812.04	449.04	132.65	67.38	65.27	2.032		
8,996.30	8,890.66	8,945.71	8,890.86	35.64	34.31	-179.18	812.62	449.42	132.04	66.18	65.86	2.005		
9,000.00	8,894.36	8,949.40	8,894.56	35.65	34.32	-179.18	812.62	449.42	132.04	66.16	65.89	2.004		
9,100.00	8,994.36	9,049.40	8,994.56	35.96	34.65	-179.18	812.62	449.42	132.04	65.48	66.57	1.984		
9,200.00	9,094.36	9,149.40	9,094.56	36.28	34.97	-179.18	812.62	449.42	132.04	64.79	67.25	1.963		
9,300.00	9,194.36	9,249.40	9,194.56	36.60	35.30	-179.18	812.62	449.42	132.04	64.11	67.94	1.944		
9,400.00	9,294.36	9,349.40	9,294.56	36.91	35.63	-179.18	812.62	449.42	132.04	63.42	68.62	1.924		
9,500.00	9,394.36	9,449.40	9,394.56	37.23	35.96	-179.18	812.62	449.42	132.04	62.74	69.31	1.905		
9,578.18	9,472.54	9,527.59	9,472.74	37.48	36.22	-179.18	812.62	449.42	132.04	62.20	69.84	1.891		
9,600.00	9,494.35	9,549.40	9,494.55	37.55	36.29	91.64	812.62	449.42	132.06	62.08	69.97	1.887		
9,625.00	9,519.28	9,574.33	9,519.48	37.64	36.37	92.41	812.62	449.42	132.12	62.03	70.09	1.885 SF		
9,650.00	9,544.09	9,599.13	9,544.29	37.72	36.46	93.72	812.62	449.42	132.29	62.12	70.16	1.885		
9,675.00	9,568.69	9,623.74	9,568.89	37.81	36.54	95.54	812.62	449.42	132.65	62.44	70.21	1.889		
9,700.00	9,593.04	9,648.09	9,593.24	37.90	36.62	97.82	812.62	449.42	133.33	63.10	70.22	1.899		
9,725.00	9,617.05	9,672.10	9,617.25	38.00	36.70	100.50	812.62	449.42	134.48	64.26	70.22	1.915		
9,750.00	9,640.67	9,695.72	9,640.87	38.10	36.78	103.50	812.62	449.42	136.28	66.06	70.21	1.941		
9,775.00	9,663.83	9,718.88	9,664.03	38.20	36.85	106.72	812.62	449.42	138.92	68.70	70.21	1.978		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 133H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,800.00	9,686.46	9,741.51	9,686.66	38.30	36.93	110.05	812.62	449.42	142.58	72.34	70.24	2.030		
9,825.00	9,708.51	9,763.56	9,708.71	38.41	37.00	113.39	812.62	449.42	147.43	77.14	70.30	2.097		
9,850.00	9,729.91	9,784.96	9,730.11	38.52	37.07	116.63	812.62	449.42	153.62	83.22	70.40	2.182		
9,875.00	9,750.61	9,805.65	9,750.81	38.63	37.14	119.70	812.62	449.42	161.25	90.69	70.55	2.285		
9,900.00	9,770.54	9,825.59	9,770.74	38.74	37.21	122.51	812.62	449.42	170.36	99.61	70.74	2.408		
9,925.00	9,789.65	9,844.70	9,789.85	38.85	37.27	125.04	812.62	449.42	180.97	110.00	70.97	2.550		
9,950.00	9,807.90	9,862.95	9,808.10	38.97	37.33	127.22	812.62	449.42	193.06	121.84	71.22	2.711		
9,975.00	9,825.23	9,880.28	9,825.43	39.09	37.39	129.06	812.62	449.42	206.58	135.10	71.48	2.890		
10,000.00	9,841.59	9,896.64	9,841.79	39.22	37.44	130.52	812.62	449.42	221.44	149.71	71.74	3.087		
10,025.00	9,856.94	9,911.99	9,857.14	39.35	37.49	131.59	812.62	449.42	237.58	165.58	71.99	3.300		
10,050.00	9,871.23	9,926.28	9,871.43	39.48	37.54	132.27	812.62	449.42	254.88	182.64	72.24	3.528		
10,075.00	9,884.44	9,939.48	9,884.64	39.62	37.59	132.51	812.62	449.42	273.26	200.79	72.47	3.771		
10,100.00	9,896.51	9,951.56	9,896.71	39.77	37.63	132.30	812.62	449.42	292.62	219.94	72.68	4.026		
10,125.00	9,907.42	9,962.47	9,907.62	39.92	37.66	131.57	812.62	449.42	312.85	239.98	72.87	4.293		
10,150.00	9,917.14	9,972.19	9,917.34	40.08	37.69	130.26	812.62	449.42	333.87	260.83	73.04	4.571		
10,175.00	9,925.64	9,980.69	9,925.84	40.24	37.72	128.27	812.62	449.42	355.59	282.39	73.20	4.858		
10,200.00	9,932.90	9,987.95	9,933.10	40.41	37.75	125.43	812.62	449.42	377.90	304.57	73.34	5.153		
10,225.00	9,938.90	9,993.95	9,939.10	40.59	37.77	121.58	812.62	449.42	400.73	327.27	73.46	5.455		
10,250.00	9,943.62	9,998.67	9,943.82	40.77	37.78	116.45	812.62	449.42	423.98	350.42	73.56	5.764		
10,275.00	9,947.05	10,002.09	9,947.25	40.96	37.79	109.81	812.62	449.42	447.58	373.93	73.65	6.077		
10,300.00	9,949.17	10,004.22	9,949.37	41.16	37.80	101.43	812.62	449.42	471.44	397.71	73.73	6.395		
10,325.00	9,949.99	10,005.04	9,950.19	41.36	37.80	91.38	812.62	449.42	495.47	421.68	73.79	6.715		
10,328.18	9,950.01	10,005.05	9,950.21	41.39	37.80	90.00	812.62	449.42	498.54	424.75	73.79	6.756		
10,400.00	9,950.01	10,005.05	9,950.21	42.01	37.80	90.00	812.62	449.42	568.11	494.18	73.93	7.684		
10,500.00	9,950.00	10,005.05	9,950.20	42.99	37.80	90.00	812.62	449.42	665.78	591.70	74.08	8.987		
10,600.00	9,950.00	10,005.05	9,950.20	44.08	37.80	90.00	812.62	449.42	764.05	689.86	74.20	10.298		
10,700.00	9,950.00	11,422.49	10,720.00	45.29	46.80	170.27	821.54	1,301.94	781.04	734.22	46.82	16.682		
10,800.00	9,950.00	11,522.49	10,720.00	46.60	48.10	170.27	822.59	1,401.93	781.04	733.50	47.53	16.432		
10,900.00	9,950.00	11,622.49	10,720.00	48.00	49.48	170.27	823.63	1,501.93	781.04	732.74	48.30	16.172		
11,000.00	9,950.00	11,722.49	10,720.00	49.48	50.95	170.27	824.68	1,601.92	781.04	731.92	49.11	15.904		
11,100.00	9,950.00	11,822.49	10,720.00	51.04	52.48	170.27	825.73	1,701.91	781.04	731.06	49.97	15.629		
11,200.00	9,950.00	11,922.49	10,720.00	52.67	54.09	170.27	826.77	1,801.91	781.03	730.15	50.88	15.349		
11,300.00	9,950.00	12,022.49	10,720.00	54.37	55.75	170.27	827.82	1,901.90	781.03	729.20	51.84	15.067		
11,400.00	9,950.00	12,122.49	10,720.00	56.12	57.48	170.27	828.87	2,001.90	781.03	728.20	52.83	14.783		
11,500.00	9,950.00	12,222.49	10,720.00	57.92	59.25	170.27	829.91	2,101.89	781.03	727.17	53.87	14.500		
11,600.00	9,950.00	12,322.49	10,720.00	59.77	61.07	170.27	830.96	2,201.89	781.03	726.10	54.94	14.217		
11,700.00	9,950.00	12,422.49	10,720.00	61.66	62.93	170.27	832.01	2,301.88	781.03	724.99	56.04	13.937		
11,800.00	9,950.00	12,522.49	10,720.00	63.59	64.84	170.27	833.05	2,401.88	781.03	723.86	57.18	13.659		
11,900.00	9,950.00	12,622.49	10,720.00	65.55	66.77	170.27	834.10	2,501.87	781.03	722.69	58.35	13.386		
12,000.00	9,950.00	12,722.49	10,720.00	67.55	68.74	170.27	835.14	2,601.87	781.03	721.49	59.54	13.117		
12,100.00	9,950.00	12,822.49	10,720.00	69.57	70.74	170.27	836.19	2,701.86	781.03	720.27	60.77	12.853		
12,200.00	9,950.00	12,922.49	10,720.00	71.62	72.77	170.27	837.24	2,801.85	781.03	719.02	62.02	12.593		
12,300.00	9,950.00	13,022.49	10,720.00	73.70	74.82	170.27	838.28	2,901.85	781.03	717.74	63.29	12.340		
12,400.00	9,950.00	13,122.49	10,720.00	75.80	76.89	170.27	839.33	3,001.84	781.03	716.44	64.59	12.092		
12,500.00	9,950.00	13,222.49	10,720.00	77.92	78.99	170.27	840.38	3,101.84	781.03	715.13	65.91	11.850		
12,600.00	9,950.00	13,322.49	10,720.00	80.05	81.11	170.27	841.42	3,201.83	781.03	713.79	67.25	11.615		
12,700.00	9,950.00	13,422.49	10,720.00	82.21	83.24	170.27	842.47	3,301.83	781.03	712.43	68.60	11.385		
12,800.00	9,950.00	13,522.49	10,720.00	84.37	85.39	170.27	843.52	3,401.82	781.03	711.06	69.98	11.161		
12,900.00	9,950.00	13,622.49	10,720.00	86.56	87.55	170.27	844.56	3,501.82	781.03	709.66	71.37	10.944		
13,000.00	9,950.00	13,722.49	10,720.00	88.76	89.73	170.27	845.61	3,601.81	781.03	708.26	72.78	10.732		
13,100.00	9,950.00	13,822.49	10,720.00	90.97	91.92	170.27	846.66	3,701.81	781.03	706.83	74.20	10.526		
13,200.00	9,950.00	13,922.49	10,720.00	93.19	94.13	170.27	847.70	3,801.80	781.03	705.40	75.64	10.326		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 133H - OH - Plan #1		Offset Site Error: 0.00 usft	
Survey Program: 0-OWSG (Rev2) MWD												Offset Well Error: 0.00 usft			
Reference		Offset		Semi Major Axis		Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor				
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)				
13,300.00	9,950.00	14,022.49	10,720.00	95.42	96.35	170.27	848.75	3,901.79	781.03	703.95	77.09	10.132			
13,400.00	9,950.00	14,122.49	10,720.00	97.67	98.57	170.27	849.79	4,001.79	781.03	702.49	78.55	9.943			
13,500.00	9,950.00	14,222.49	10,720.00	99.92	100.81	170.27	850.84	4,101.78	781.03	701.01	80.02	9.760			
13,600.00	9,950.00	14,322.49	10,720.00	102.18	103.06	170.27	851.89	4,201.78	781.03	699.53	81.51	9.582			
13,700.00	9,950.00	14,422.49	10,720.00	104.45	105.31	170.27	852.93	4,301.77	781.03	698.03	83.00	9.410			
13,800.00	9,950.00	14,522.49	10,720.00	106.73	107.57	170.27	853.98	4,401.77	781.03	696.52	84.51	9.242			
13,900.00	9,950.00	14,622.49	10,720.00	109.01	109.84	170.27	855.03	4,501.76	781.03	695.01	86.03	9.079			
14,000.00	9,950.00	14,722.49	10,720.00	111.30	112.12	170.27	856.07	4,601.76	781.03	693.48	87.55	8.921			
14,100.00	9,950.00	14,822.49	10,720.00	113.60	114.41	170.27	857.12	4,701.75	781.03	691.95	89.08	8.767			
14,200.00	9,950.00	14,922.49	10,720.00	115.90	116.70	170.27	858.17	4,801.74	781.03	690.41	90.62	8.618			
14,300.00	9,950.00	15,022.49	10,720.00	118.21	119.00	170.27	859.21	4,901.74	781.03	688.86	92.17	8.474			
14,400.00	9,950.00	15,122.49	10,720.00	120.52	121.30	170.27	860.26	5,001.73	781.03	687.30	93.73	8.333			
14,500.00	9,950.00	15,222.49	10,720.00	122.84	123.61	170.27	861.31	5,101.73	781.03	685.74	95.29	8.196			
14,600.00	9,950.00	15,322.49	10,720.00	125.17	125.92	170.27	862.35	5,201.72	781.03	684.17	96.86	8.063			
14,700.00	9,950.00	15,422.49	10,720.00	127.49	128.24	170.27	863.40	5,301.72	781.03	682.59	98.44	7.934			
14,800.00	9,950.00	15,522.49	10,720.00	129.83	130.56	170.27	864.44	5,401.71	781.03	681.01	100.02	7.809			
14,900.00	9,950.00	15,622.49	10,720.00	132.16	132.89	170.27	865.49	5,501.71	781.03	679.42	101.61	7.687			
15,000.00	9,950.00	15,722.49	10,720.00	134.50	135.22	170.27	866.54	5,601.70	781.03	677.83	103.20	7.568			
15,100.00	9,950.00	15,822.49	10,720.00	136.85	137.55	170.27	867.58	5,701.70	781.03	676.23	104.80	7.452			
15,200.00	9,950.00	15,922.49	10,720.00	139.19	139.89	170.27	868.63	5,801.69	781.03	674.63	106.41	7.340			
15,300.00	9,950.00	16,022.49	10,720.00	141.54	142.23	170.27	869.68	5,901.68	781.03	673.02	108.02	7.231			
15,400.00	9,950.00	16,122.49	10,720.00	143.90	144.58	170.27	870.72	6,001.68	781.03	671.40	109.63	7.124			
15,500.00	9,950.00	16,222.49	10,720.00	146.25	146.93	170.27	871.77	6,101.67	781.03	669.79	111.25	7.021			
15,600.00	9,950.00	16,322.49	10,720.00	148.61	149.28	170.27	872.82	6,201.67	781.03	668.16	112.87	6.920			
15,700.00	9,950.00	16,422.49	10,720.00	150.97	151.63	170.27	873.86	6,301.66	781.03	666.54	114.49	6.822			
15,800.00	9,950.00	16,522.49	10,720.00	153.34	153.99	170.27	874.91	6,401.66	781.03	664.91	116.12	6.726			
15,900.00	9,950.00	16,622.49	10,720.00	155.70	156.35	170.27	875.96	6,501.65	781.03	663.27	117.76	6.633			
16,000.00	9,950.00	16,722.49	10,720.00	158.07	158.71	170.27	877.00	6,601.65	781.03	661.64	119.39	6.542			
16,100.00	9,950.00	16,822.49	10,720.00	160.44	161.07	170.27	878.05	6,701.64	781.03	660.00	121.03	6.453			
16,200.00	9,950.00	16,922.49	10,720.00	162.82	163.44	170.27	879.09	6,801.64	781.03	658.35	122.68	6.367			
16,300.00	9,950.00	17,022.49	10,720.00	165.19	165.81	170.27	880.14	6,901.63	781.03	656.71	124.32	6.282			
16,400.00	9,950.00	17,122.49	10,720.00	167.57	168.18	170.27	881.19	7,001.62	781.03	655.06	125.97	6.200			
16,500.00	9,950.00	17,222.49	10,720.00	169.95	170.55	170.27	882.23	7,101.62	781.03	653.41	127.63	6.120			
16,600.00	9,950.00	17,322.49	10,720.00	172.33	172.93	170.27	883.28	7,201.61	781.03	651.75	129.28	6.041			
16,700.00	9,950.00	17,422.49	10,720.00	174.71	175.30	170.27	884.33	7,301.61	781.03	650.09	130.94	5.965			
16,800.00	9,950.00	17,522.49	10,720.00	177.09	177.68	170.27	885.37	7,401.60	781.03	648.43	132.60	5.890			
16,900.00	9,950.00	17,622.49	10,720.00	179.48	180.06	170.27	886.42	7,501.60	781.03	646.77	134.26	5.817			
17,000.00	9,950.00	17,722.49	10,720.00	181.87	182.44	170.27	887.47	7,601.59	781.03	645.10	135.93	5.746			
17,100.00	9,950.00	17,822.49	10,720.00	184.26	184.83	170.27	888.51	7,701.59	781.03	643.44	137.60	5.676			
17,200.00	9,950.00	17,922.49	10,720.00	186.65	187.21	170.27	889.56	7,801.58	781.03	641.77	139.27	5.608			
17,300.00	9,950.00	18,022.49	10,720.00	189.04	189.60	170.27	890.61	7,901.58	781.03	640.09	140.94	5.542			
17,400.00	9,950.00	18,122.49	10,720.00	191.43	191.99	170.27	891.65	8,001.57	781.03	638.42	142.61	5.477			
17,500.00	9,950.00	18,222.49	10,720.00	193.82	194.38	170.27	892.70	8,101.56	781.03	636.74	144.29	5.413			
17,600.00	9,950.00	18,322.49	10,720.00	196.22	196.60	170.27	893.74	8,201.56	781.03	635.15	145.88	5.354			
17,685.50	9,950.00	18,407.99	10,720.00	198.27	198.01	170.27	894.64	8,287.06	781.03	634.04	146.99	5.314			
17,689.50	9,950.00	18,409.03	10,720.00	198.36	198.02	170.27	894.65	8,288.10	781.04	634.02	147.02	5.312			
17,690.09	9,950.00	18,409.03	10,720.00	198.38	198.02	170.27	894.65	8,288.10	781.04	634.00	147.04	5.312			

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.05	-0.11	-140.01	140.01					
100.00	100.00	98.90	98.90	0.13	0.13	-90.05	-0.11	-140.01	140.01	139.74	0.27	523.646		
200.00	200.00	198.90	198.90	0.49	0.49	-90.05	-0.11	-140.01	140.01	139.03	0.98	142.598		
300.00	300.00	298.90	298.90	0.85	0.85	-90.05	-0.11	-140.01	140.01	138.31	1.70	82.417		
400.00	400.00	398.90	398.90	1.21	1.21	-90.05	-0.11	-140.01	140.01	137.59	2.42	57.957		
500.00	500.00	498.90	498.90	1.57	1.56	-90.05	-0.11	-140.01	140.01	136.88	3.13	44.693		
600.00	600.00	598.90	598.90	1.93	1.92	-90.05	-0.11	-140.01	140.01	136.16	3.85	36.370		
700.00	700.00	698.90	698.90	2.29	2.28	-90.05	-0.11	-140.01	140.01	135.44	4.57	30.660		
800.00	800.00	798.90	798.90	2.64	2.64	-90.05	-0.11	-140.01	140.01	134.73	5.28	26.499		
900.00	900.00	898.90	898.90	3.00	3.00	-90.05	-0.11	-140.01	140.01	134.01	6.00	23.333		
1,000.00	1,000.00	998.90	998.90	3.36	3.36	-90.05	-0.11	-140.01	140.01	133.29	6.72	20.843		
1,100.00	1,100.00	1,098.90	1,098.90	3.72	3.72	-90.05	-0.11	-140.01	140.01	132.58	7.43	18.833		
1,200.00	1,200.00	1,198.90	1,198.90	4.08	4.07	-90.05	-0.11	-140.01	140.01	131.86	8.15	17.176		
1,300.00	1,300.00	1,298.90	1,298.90	4.44	4.43	-90.05	-0.11	-140.01	140.01	131.14	8.87	15.788		
1,400.00	1,400.00	1,398.90	1,398.90	4.79	4.79	-90.05	-0.11	-140.01	140.01	130.42	9.59	14.607		
1,500.00	1,500.00	1,498.90	1,498.90	5.15	5.15	-90.05	-0.11	-140.01	140.01	129.71	10.30	13.590		
1,600.00	1,600.00	1,601.64	1,601.62	5.51	5.50	-90.66	-1.60	-139.00	139.04	128.03	11.01	12.628		
1,700.00	1,700.00	1,704.15	1,703.97	5.87	5.84	-92.58	-6.13	-135.94	136.17	124.47	11.70	11.638		
1,800.00	1,800.00	1,806.13	1,805.55	6.23	6.18	-95.95	-13.65	-130.86	131.73	119.34	12.39	10.629		
1,900.00	1,899.98	1,907.20	1,905.83	6.59	6.53	-127.23	-24.04	-123.82	127.37	114.28	13.09	9.728		
1,986.29	1,986.16	1,993.22	1,990.78	6.89	6.83	-134.48	-35.19	-116.28	125.78	112.07	13.71	9.175 CC		
2,000.00	1,999.84	2,006.76	2,004.12	6.94	6.88	-135.80	-37.14	-114.97	125.83	112.02	13.81	9.112 ES		
2,100.00	2,099.45	2,104.17	2,099.80	7.30	7.24	-146.21	-52.27	-104.73	129.80	115.26	14.54	8.928		
2,200.00	2,198.70	2,200.42	2,194.28	7.66	7.61	-156.28	-67.48	-94.44	141.16	125.90	15.26	9.250		
2,300.00	2,297.47	2,295.85	2,287.97	8.03	7.98	-164.97	-82.57	-84.24	159.76	143.80	15.97	10.004		
2,400.08	2,395.70	2,390.44	2,380.82	8.40	8.36	-171.95	-97.52	-74.13	184.76	168.10	16.67	11.086		
2,500.00	2,493.44	2,484.38	2,473.02	8.79	8.74	-177.36	-112.36	-64.09	213.49	196.14	17.36	12.301		
2,600.00	2,591.25	2,578.39	2,565.31	9.19	9.13	178.50	-127.22	-54.04	243.63	225.58	18.05	13.500		
2,700.00	2,689.07	2,672.40	2,657.59	9.59	9.52	175.26	-142.08	-43.99	274.68	255.94	18.74	14.655		
2,800.00	2,786.88	2,766.41	2,749.87	10.01	9.92	172.67	-156.94	-33.94	306.39	286.94	19.44	15.757		
2,900.00	2,884.69	2,860.42	2,842.16	10.42	10.32	170.57	-171.79	-23.90	338.56	318.41	20.15	16.801		
3,000.00	2,982.51	2,954.43	2,934.44	10.85	10.73	168.83	-186.65	-13.85	371.07	350.21	20.86	17.787		
3,100.00	3,080.32	3,048.44	3,026.72	11.27	11.14	167.36	-201.51	-3.80	403.84	382.26	21.58	18.715		
3,200.00	3,178.14	3,142.45	3,119.01	11.71	11.55	166.12	-216.37	6.25	436.81	414.51	22.30	19.590		
3,300.00	3,275.95	3,236.46	3,211.29	12.14	11.96	165.05	-231.23	16.30	469.95	446.92	23.02	20.413		
3,400.00	3,373.76	3,330.47	3,303.57	12.58	12.38	164.12	-246.08	26.35	503.21	479.46	23.75	21.188		
3,500.00	3,471.58	3,424.48	3,395.85	13.02	12.80	163.30	-260.94	36.40	536.57	512.09	24.48	21.919		
3,600.00	3,569.39	3,518.49	3,488.14	13.47	13.22	162.58	-275.80	46.45	570.02	544.81	25.21	22.608		
3,700.00	3,667.21	3,612.50	3,580.42	13.92	13.64	161.94	-290.66	56.50	603.54	577.60	25.95	23.259		
3,800.00	3,765.02	3,706.51	3,672.70	14.36	14.06	161.36	-305.52	66.55	637.13	610.44	26.69	23.874		
3,900.00	3,862.84	3,800.52	3,764.99	14.82	14.49	160.85	-320.38	76.59	670.76	643.33	27.43	24.456		
4,000.00	3,960.65	3,894.53	3,857.27	15.27	14.91	160.38	-335.23	86.64	704.44	676.27	28.17	25.007		
4,100.00	4,058.46	3,988.54	3,949.55	15.73	15.34	159.96	-350.09	96.69	738.15	709.24	28.91	25.529		
4,200.00	4,156.28	4,082.55	4,041.83	16.18	15.77	159.57	-364.95	106.74	771.90	742.24	29.66	26.024		
4,300.00	4,254.09	4,176.56	4,134.12	16.64	16.20	159.21	-379.81	116.79	805.68	775.27	30.41	26.495		
4,400.00	4,351.91	4,270.57	4,226.40	17.10	16.63	158.89	-394.67	126.84	839.48	808.32	31.16	26.943		
4,500.00	4,449.72	4,364.58	4,318.68	17.56	17.06	158.58	-409.52	136.89	873.31	841.40	31.91	27.369		
4,600.00	4,547.54	4,458.59	4,410.97	18.02	17.49	158.31	-424.38	146.94	907.15	874.49	32.66	27.775		
4,700.00	4,645.35	4,552.60	4,503.25	18.48	17.92	158.05	-439.24	156.99	941.01	907.60	33.41	28.163		
4,800.00	4,743.16	4,646.61	4,595.53	18.95	18.35	157.81	-454.10	167.04	974.89	940.72	34.17	28.532		
4,900.00	4,840.98	4,740.62	4,687.81	19.41	18.79	157.58	-468.96	177.08	1,008.78	973.86	34.92	28.886		
5,000.00	4,938.79	4,834.63	4,780.10	19.88	19.22	157.37	-483.81	187.13	1,042.69	1,007.01	35.68	29.224		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 134H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
5,100.00	5,036.61	4,928.64	4,872.38	20.35	19.66	157.17	-498.67	197.18	1,076.61	1,040.17	36.44	29.547		
5,200.00	5,134.42	5,022.65	4,964.66	20.81	20.09	156.99	-513.53	207.23	1,110.53	1,073.34	37.20	29.857		
5,300.00	5,232.23	5,116.66	5,056.95	21.28	20.53	156.81	-528.39	217.28	1,144.47	1,106.52	37.95	30.154		
5,400.00	5,330.05	5,210.67	5,149.23	21.75	20.96	156.65	-543.25	227.33	1,178.42	1,139.70	38.71	30.439		
5,500.00	5,427.86	5,304.68	5,241.51	22.22	21.40	156.50	-558.10	237.38	1,212.37	1,172.89	39.48	30.712		
5,600.00	5,525.68	5,398.69	5,333.79	22.69	21.84	156.35	-572.96	247.43	1,246.33	1,206.09	40.24	30.975		
5,700.00	5,623.49	5,492.70	5,426.08	23.16	22.28	156.21	-587.82	257.48	1,280.30	1,239.30	41.00	31.227		
5,800.00	5,721.31	5,586.71	5,518.36	23.63	22.71	156.08	-602.68	267.52	1,314.27	1,272.51	41.76	31.470		
5,900.00	5,819.12	5,680.72	5,610.64	24.10	23.15	155.95	-617.54	277.57	1,348.25	1,305.73	42.53	31.704		
6,000.00	5,916.93	5,774.73	5,702.93	24.57	23.59	155.84	-632.40	287.62	1,382.24	1,338.95	43.29	31.930		
6,100.00	6,014.75	5,868.74	5,795.21	25.04	24.03	155.72	-647.25	297.67	1,416.23	1,372.18	44.05	32.147		
6,200.00	6,112.56	5,962.75	5,887.49	25.51	24.47	155.61	-662.11	307.72	1,450.23	1,405.41	44.82	32.356		
6,300.00	6,210.38	6,056.76	5,979.78	25.99	24.91	155.51	-676.97	317.77	1,484.23	1,438.64	45.59	32.559		
6,400.00	6,308.19	6,150.77	6,072.06	26.46	25.35	155.41	-691.83	327.82	1,518.23	1,471.88	46.35	32.754		
6,500.00	6,406.00	6,244.78	6,164.34	26.93	25.79	155.32	-706.69	337.87	1,552.24	1,505.12	47.12	32.942		
6,600.00	6,503.82	6,338.79	6,256.62	27.40	26.23	155.23	-721.54	347.92	1,586.25	1,538.36	47.89	33.125		
6,700.00	6,601.63	6,432.80	6,348.91	27.88	26.67	155.14	-736.40	357.97	1,620.26	1,571.61	48.66	33.301		
6,800.00	6,699.45	6,526.81	6,441.19	28.35	27.11	155.06	-751.26	368.01	1,654.28	1,604.86	49.42	33.471		
6,832.56	6,731.30	6,557.42	6,471.24	28.51	27.25	155.04	-756.10	371.29	1,665.36	1,615.68	49.67	33.526		
6,900.00	6,797.42	6,621.05	6,533.70	28.82	27.55	155.17	-766.16	378.09	1,687.62	1,637.43	50.19	33.624		
7,000.00	6,896.00	6,716.20	6,627.10	29.26	28.00	155.30	-781.19	388.26	1,718.13	1,667.17	50.95	33.719		
7,100.00	6,995.10	6,812.20	6,721.34	29.67	28.45	155.36	-796.37	398.52	1,745.61	1,693.90	51.71	33.757		
7,200.00	7,094.61	6,908.93	6,816.29	30.05	28.90	155.34	-811.65	408.86	1,770.05	1,717.59	52.46	33.740		
7,300.00	7,194.40	7,006.27	6,911.84	30.41	29.36	155.26	-827.04	419.27	1,791.43	1,738.23	53.20	33.671		
7,400.00	7,294.36	7,104.11	7,007.88	30.73	29.82	155.11	-842.50	429.72	1,809.75	1,755.82	53.94	33.553		
7,432.64	7,327.00	7,136.13	7,039.32	30.83	29.97	-179.42	-847.56	433.15	1,815.07	1,760.90	54.17	33.505		
7,500.00	7,394.36	7,202.25	7,104.23	31.03	30.28	-179.65	-858.01	440.21	1,825.72	1,771.06	54.66	33.401		
7,600.00	7,494.36	7,300.42	7,200.59	31.33	30.74	-179.98	-873.53	450.71	1,841.58	1,786.20	55.39	33.250		
7,700.00	7,594.36	7,398.58	7,296.94	31.63	31.20	179.69	-889.04	461.20	1,857.51	1,801.40	56.11	33.105		
7,800.00	7,694.36	7,496.74	7,393.30	31.93	31.66	179.37	-904.56	471.69	1,873.49	1,816.65	56.83	32.965		
7,900.00	7,794.36	7,594.90	7,489.66	32.24	32.12	179.05	-920.07	482.19	1,889.53	1,831.97	57.56	32.829		
8,000.00	7,894.36	7,693.07	7,586.02	32.54	32.59	178.74	-935.59	492.68	1,905.62	1,847.34	58.28	32.698		
8,100.00	7,994.36	7,791.23	7,682.38	32.85	33.05	178.43	-951.10	503.17	1,921.77	1,862.77	59.00	32.571		
8,200.00	8,094.36	7,889.39	7,778.74	33.16	33.51	178.13	-966.61	513.66	1,937.97	1,878.25	59.73	32.448		
8,300.00	8,194.36	7,987.56	7,875.10	33.47	33.97	177.84	-982.13	524.16	1,954.23	1,893.78	60.45	32.328		
8,400.00	8,294.36	8,141.19	8,026.20	33.77	34.68	177.40	-1,005.15	539.73	1,969.99	1,908.40	61.59	31.987		
8,500.00	8,394.36	8,383.82	8,267.10	34.08	35.65	176.98	-1,028.55	555.55	1,979.97	1,916.81	63.16	31.349		
8,600.00	8,494.36	8,610.17	8,493.26	34.40	36.38	176.86	-1,035.11	559.99	1,982.74	1,918.41	64.33	30.820		
8,700.00	8,594.36	8,710.17	8,593.26	34.71	36.66	176.86	-1,035.11	559.99	1,982.74	1,917.76	64.98	30.515		
8,800.00	8,694.36	8,810.17	8,693.26	35.02	36.93	176.86	-1,035.11	559.99	1,982.74	1,917.12	65.62	30.215		
8,900.00	8,794.36	8,910.17	8,793.26	35.33	37.21	176.86	-1,035.11	559.99	1,982.74	1,916.47	66.27	29.920		
9,000.00	8,894.36	9,010.17	8,893.26	35.65	37.49	176.86	-1,035.11	559.99	1,982.74	1,915.82	66.92	29.630		
9,100.00	8,994.36	9,110.17	8,993.26	35.96	37.77	176.86	-1,035.11	559.99	1,982.74	1,915.18	67.57	29.346		
9,200.00	9,094.36	9,210.17	9,093.26	36.28	38.05	176.86	-1,035.11	559.99	1,982.74	1,914.52	68.22	29.066		
9,300.00	9,194.36	9,310.17	9,193.26	36.60	38.33	176.86	-1,035.11	559.99	1,982.74	1,913.87	68.87	28.791		
9,400.00	9,294.36	9,410.17	9,293.26	36.91	38.62	176.86	-1,035.11	559.99	1,982.74	1,913.22	69.52	28.520		
9,500.00	9,394.36	9,497.87	9,380.77	37.23	38.89	176.74	-1,035.07	564.20	1,982.97	1,912.81	70.16	28.264		
9,578.18	9,472.54	9,561.07	9,442.67	37.48	39.14	176.38	-1,034.95	576.68	1,983.77	1,913.10	70.67	28.070		
9,600.00	9,494.35	9,578.12	9,459.05	37.55	39.21	86.81	-1,034.90	581.44	1,984.09	1,913.27	70.82	28.017		
9,625.00	9,519.28	9,600.00	9,479.79	37.64	39.30	86.61	-1,034.83	588.40	1,984.46	1,913.46	71.00	27.950		
9,650.00	9,544.09	9,616.81	9,495.49	37.72	39.38	86.45	-1,034.77	594.39	1,984.83	1,913.66	71.17	27.890		
9,675.00	9,568.69	9,635.95	9,513.11	37.81	39.47	86.29	-1,034.70	601.88	1,985.20	1,913.85	71.35	27.823		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,700.00	9,593.04	9,654.98	9,530.30	37.90	39.56	86.13	-1,034.62	610.01	1,985.56	1,914.02	71.54	27.753		
9,725.00	9,617.05	9,675.00	9,548.04	38.00	39.65	85.97	-1,034.53	619.31	1,985.92	1,914.18	71.75	27.680		
9,750.00	9,640.67	9,692.72	9,563.39	38.10	39.74	85.83	-1,034.44	628.15	1,986.27	1,914.32	71.94	27.608		
9,775.00	9,663.83	9,711.45	9,579.25	38.20	39.84	85.70	-1,034.34	638.10	1,986.60	1,914.45	72.15	27.533		
9,800.00	9,686.46	9,730.10	9,594.65	38.30	39.93	85.58	-1,034.24	648.63	1,986.92	1,914.55	72.37	27.455		
9,825.00	9,708.51	9,750.00	9,610.61	38.41	40.04	85.46	-1,034.12	660.51	1,987.22	1,914.62	72.60	27.371		
9,850.00	9,729.91	9,767.18	9,623.98	38.52	40.13	85.36	-1,034.02	671.30	1,987.50	1,914.68	72.82	27.292		
9,875.00	9,750.61	9,785.62	9,637.89	38.63	40.24	85.26	-1,033.90	683.41	1,987.76	1,914.70	73.06	27.206		
9,900.00	9,770.54	9,804.02	9,651.29	38.74	40.34	85.18	-1,033.78	696.01	1,988.00	1,914.69	73.31	27.118		
9,925.00	9,789.65	9,825.00	9,665.97	38.85	40.47	85.10	-1,033.63	711.00	1,988.21	1,914.63	73.58	27.021		
9,950.00	9,807.90	9,840.68	9,676.50	38.97	40.56	85.04	-1,033.52	722.61	1,988.39	1,914.56	73.82	26.934		
9,975.00	9,825.23	9,858.96	9,688.29	39.09	40.68	84.99	-1,033.38	736.58	1,988.54	1,914.45	74.10	26.838		
10,000.00	9,841.59	9,875.00	9,698.18	39.22	40.78	84.95	-1,033.25	749.20	1,988.67	1,914.31	74.36	26.744		
10,025.00	9,856.94	9,895.45	9,710.18	39.35	40.91	84.91	-1,033.09	765.76	1,988.76	1,914.09	74.67	26.635		
10,050.00	9,871.23	9,913.67	9,720.25	39.48	41.03	84.90	-1,032.94	780.94	1,988.83	1,913.86	74.97	26.528		
10,075.00	9,884.44	9,931.88	9,729.74	39.62	41.15	84.89	-1,032.79	796.49	1,988.86	1,913.57	75.28	26.418		
10,100.00	9,896.51	9,950.00	9,738.59	39.77	41.28	84.89	-1,032.64	812.30	1,988.86	1,913.25	75.61	26.305		
10,125.00	9,907.42	9,968.32	9,746.91	39.92	41.41	84.90	-1,032.48	828.61	1,988.83	1,912.88	75.95	26.188		
10,150.00	9,917.14	9,986.55	9,754.57	40.08	41.54	84.93	-1,032.31	845.15	1,988.77	1,912.47	76.29	26.067		
10,175.00	9,925.64	10,004.80	9,761.60	40.24	41.68	84.97	-1,032.15	861.99	1,988.68	1,912.02	76.65	25.943		
10,200.00	9,932.90	10,025.00	9,768.63	40.41	41.84	85.02	-1,031.96	880.93	1,988.56	1,911.51	77.04	25.811		
10,225.00	9,938.90	10,041.38	9,773.73	40.59	41.96	85.07	-1,031.81	896.49	1,988.41	1,910.99	77.41	25.686		
10,250.00	9,943.62	10,059.72	9,778.80	40.77	42.11	85.14	-1,031.64	914.12	1,988.23	1,910.42	77.81	25.553		
10,275.00	9,947.05	10,075.00	9,782.51	40.96	42.24	85.21	-1,031.49	928.94	1,988.03	1,909.84	78.18	25.428		
10,300.00	9,949.17	10,096.55	9,786.94	41.16	42.42	85.31	-1,031.29	950.02	1,987.79	1,909.17	78.63	25.281		
10,325.00	9,949.99	10,115.04	9,789.97	41.36	42.58	85.41	-1,031.11	968.27	1,987.54	1,908.49	79.05	25.142		
10,328.18	9,950.01	10,117.40	9,790.30	41.39	42.60	85.42	-1,031.08	970.60	1,987.51	1,908.40	79.11	25.124		
10,400.00	9,950.01	10,171.27	9,794.82	42.01	43.07	85.55	-1,030.56	1,024.25	1,987.08	1,906.70	80.38	24.721		
10,412.10	9,950.00	10,180.42	9,794.99	42.13	43.16	85.56	-1,030.47	1,033.39	1,987.07	1,906.46	80.61	24.651		
10,500.00	9,950.00	10,267.02	9,795.01	42.99	44.00	85.56	-1,029.62	1,119.99	1,987.13	1,904.60	82.52	24.080		
10,600.00	9,950.00	10,367.02	9,795.00	44.08	45.06	85.56	-1,028.64	1,219.98	1,987.19	1,902.28	84.91	23.403		
10,700.00	9,950.00	10,467.02	9,795.00	45.29	46.24	85.56	-1,027.66	1,319.98	1,987.26	1,899.75	87.51	22.709		
10,800.00	9,950.00	10,567.02	9,795.00	46.60	47.51	85.56	-1,026.68	1,419.97	1,987.32	1,897.03	90.29	22.009		
10,900.00	9,950.00	10,667.02	9,795.00	48.00	48.88	85.56	-1,025.70	1,519.97	1,987.39	1,894.14	93.25	21.312		
11,000.00	9,950.00	10,767.02	9,795.00	49.48	50.34	85.56	-1,024.72	1,619.97	1,987.45	1,891.09	96.36	20.624		
11,100.00	9,950.00	10,867.02	9,795.00	51.04	51.88	85.56	-1,023.74	1,719.96	1,987.52	1,887.90	99.62	19.952		
11,200.00	9,950.00	10,967.02	9,795.00	52.67	53.48	85.56	-1,022.76	1,819.96	1,987.58	1,884.59	103.00	19.297		
11,300.00	9,950.00	11,067.02	9,795.00	54.37	55.15	85.56	-1,021.78	1,919.95	1,987.65	1,881.16	106.49	18.664		
11,400.00	9,950.00	11,167.02	9,795.00	56.12	56.89	85.56	-1,020.80	2,019.95	1,987.71	1,877.62	110.09	18.055		
11,500.00	9,950.00	11,267.02	9,795.00	57.92	58.67	85.56	-1,019.82	2,119.94	1,987.78	1,873.99	113.79	17.469		
11,600.00	9,950.00	11,367.02	9,795.00	59.77	60.50	85.56	-1,018.83	2,219.94	1,987.85	1,870.28	117.57	16.908		
11,700.00	9,950.00	11,467.02	9,795.00	61.66	62.38	85.56	-1,017.85	2,319.93	1,987.91	1,866.48	121.43	16.371		
11,800.00	9,950.00	11,567.02	9,795.00	63.59	64.29	85.56	-1,016.87	2,419.93	1,987.98	1,862.62	125.36	15.859		
11,900.00	9,950.00	11,667.02	9,795.00	65.55	66.24	85.56	-1,015.89	2,519.92	1,988.04	1,858.69	129.35	15.369		
12,000.00	9,950.00	11,767.02	9,795.00	67.55	68.23	85.56	-1,014.91	2,619.92	1,988.11	1,854.71	133.40	14.903		
12,100.00	9,950.00	11,867.02	9,795.00	69.57	70.24	85.56	-1,013.93	2,719.91	1,988.17	1,850.67	137.50	14.459		
12,200.00	9,950.00	11,967.02	9,795.00	71.62	72.28	85.56	-1,012.95	2,819.91	1,988.24	1,846.58	141.66	14.036		
12,300.00	9,950.00	12,067.02	9,795.00	73.70	74.35	85.56	-1,011.97	2,919.90	1,988.30	1,842.45	145.85	13.632		
12,400.00	9,950.00	12,167.02	9,795.00	75.80	76.44	85.56	-1,010.99	3,019.90	1,988.37	1,838.28	150.09	13.248		
12,500.00	9,950.00	12,267.02	9,795.00	77.92	78.55	85.56	-1,010.01	3,119.89	1,988.43	1,834.07	154.37	12.881		
12,600.00	9,950.00	12,367.02	9,795.00	80.05	80.68	85.56	-1,009.03	3,219.89	1,988.50	1,829.82	158.68	12.532		
12,700.00	9,950.00	12,467.02	9,795.00	82.21	82.83	85.56	-1,008.05	3,319.88	1,988.57	1,825.55	163.02	12.199		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design		Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 134H - OH - Plan #1											Offset Site Error:	0.00 usft
Survey Program:		0-OWSG (Rev2) MWD											Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,800.00	9,950.00	12,567.02	9,795.00	84.37	84.99	85.56	-1,007.07	3,419.88	1,988.63	1,821.24	167.39	11.880		
12,900.00	9,950.00	12,667.02	9,795.00	86.56	87.17	85.56	-1,006.09	3,519.87	1,988.70	1,816.91	171.78	11.577		
13,000.00	9,950.00	12,767.02	9,795.00	88.76	89.36	85.56	-1,005.11	3,619.87	1,988.76	1,812.56	176.20	11.287		
13,100.00	9,950.00	12,867.02	9,795.00	90.97	91.57	85.56	-1,004.13	3,719.86	1,988.83	1,808.18	180.65	11.009		
13,200.00	9,950.00	12,967.02	9,795.00	93.19	93.78	85.56	-1,003.15	3,819.86	1,988.89	1,803.78	185.12	10.744		
13,300.00	9,950.00	13,067.02	9,795.00	95.42	96.01	85.56	-1,002.17	3,919.85	1,988.96	1,799.36	189.60	10.490		
13,400.00	9,950.00	13,167.02	9,795.00	97.67	98.25	85.56	-1,001.19	4,019.85	1,989.02	1,794.92	194.11	10.247		
13,500.00	9,950.00	13,267.02	9,795.00	99.92	100.50	85.56	-1,000.21	4,119.84	1,989.09	1,790.46	198.63	10.014		
13,600.00	9,950.00	13,367.02	9,795.00	102.18	102.76	85.56	-999.23	4,219.84	1,989.15	1,785.99	203.16	9.791		
13,700.00	9,950.00	13,467.02	9,795.00	104.45	105.02	85.56	-998.25	4,319.83	1,989.22	1,781.50	207.72	9.577		
13,800.00	9,950.00	13,567.02	9,795.00	106.73	107.30	85.56	-997.27	4,419.83	1,989.29	1,777.00	212.28	9.371		
13,900.00	9,950.00	13,667.02	9,795.00	109.01	109.58	85.56	-996.29	4,519.83	1,989.35	1,772.49	216.86	9.173		
14,000.00	9,950.00	13,767.02	9,795.00	111.30	111.87	85.56	-995.30	4,619.82	1,989.42	1,767.96	221.46	8.983		
14,100.00	9,950.00	13,867.02	9,795.00	113.60	114.16	85.56	-994.32	4,719.82	1,989.48	1,763.42	226.06	8.801		
14,200.00	9,950.00	13,967.02	9,795.00	115.90	116.46	85.56	-993.34	4,819.81	1,989.55	1,758.87	230.67	8.625		
14,300.00	9,950.00	14,067.02	9,795.00	118.21	118.77	85.56	-992.36	4,919.81	1,989.61	1,754.31	235.30	8.456		
14,400.00	9,950.00	14,167.02	9,795.00	120.52	121.08	85.56	-991.38	5,019.80	1,989.68	1,749.74	239.93	8.293		
14,500.00	9,950.00	14,267.02	9,795.00	122.84	123.40	85.56	-990.40	5,119.80	1,989.74	1,745.17	244.58	8.135		
14,600.00	9,950.00	14,367.02	9,795.00	125.17	125.72	85.56	-989.42	5,219.79	1,989.81	1,740.58	249.23	7.984		
14,700.00	9,950.00	14,467.02	9,795.00	127.49	128.04	85.56	-988.44	5,319.79	1,989.87	1,735.98	253.89	7.838		
14,800.00	9,950.00	14,567.02	9,795.00	129.83	130.37	85.56	-987.46	5,419.78	1,989.94	1,731.38	258.56	7.696		
14,900.00	9,950.00	14,667.02	9,795.00	132.16	132.71	85.56	-986.48	5,519.78	1,990.01	1,726.77	263.24	7.560		
15,000.00	9,950.00	14,767.02	9,795.00	134.50	135.05	85.56	-985.50	5,619.77	1,990.07	1,722.15	267.92	7.428		
15,100.00	9,950.00	14,867.02	9,795.00	136.85	137.39	85.56	-984.52	5,719.77	1,990.14	1,717.53	272.61	7.300		
15,200.00	9,950.00	14,967.02	9,795.00	139.19	139.73	85.56	-983.54	5,819.76	1,990.20	1,712.90	277.30	7.177		
15,300.00	9,950.00	15,067.02	9,795.00	141.54	142.08	85.57	-982.56	5,919.76	1,990.27	1,708.26	282.00	7.058		
15,400.00	9,950.00	15,167.02	9,795.00	143.90	144.43	85.57	-981.58	6,019.75	1,990.33	1,703.62	286.71	6.942		
15,500.00	9,950.00	15,267.02	9,795.00	146.25	146.79	85.57	-980.60	6,119.75	1,990.40	1,698.98	291.42	6.830		
15,600.00	9,950.00	15,367.02	9,795.00	148.61	149.15	85.57	-979.62	6,219.74	1,990.46	1,694.32	296.14	6.721		
15,700.00	9,950.00	15,467.02	9,795.00	150.97	151.51	85.57	-978.64	6,319.74	1,990.53	1,689.67	300.86	6.616		
15,800.00	9,950.00	15,567.02	9,795.00	153.34	153.87	85.57	-977.66	6,419.73	1,990.60	1,685.01	305.59	6.514		
15,900.00	9,950.00	15,667.02	9,795.00	155.70	156.23	85.57	-976.68	6,519.73	1,990.66	1,680.34	310.32	6.415		
16,000.00	9,950.00	15,767.02	9,795.00	158.07	158.60	85.57	-975.70	6,619.72	1,990.73	1,675.67	315.05	6.319		
16,100.00	9,950.00	15,867.02	9,795.00	160.44	160.97	85.57	-974.72	6,719.72	1,990.79	1,671.00	319.79	6.225		
16,200.00	9,950.00	15,967.02	9,795.00	162.82	163.34	85.57	-973.74	6,819.71	1,990.86	1,666.32	324.54	6.134		
16,300.00	9,950.00	16,067.02	9,795.00	165.19	165.72	85.57	-972.76	6,919.71	1,990.92	1,661.64	329.28	6.046		
16,400.00	9,950.00	16,167.02	9,795.00	167.57	168.09	85.57	-971.77	7,019.70	1,990.99	1,656.95	334.03	5.960		
16,500.00	9,950.00	16,267.02	9,795.00	169.95	170.47	85.57	-970.79	7,119.70	1,991.05	1,652.27	338.79	5.877		
16,600.00	9,950.00	16,367.02	9,795.00	172.33	172.85	85.57	-969.81	7,219.69	1,991.12	1,647.57	343.55	5.796		
16,700.00	9,950.00	16,467.02	9,795.00	174.71	175.23	85.57	-968.83	7,319.69	1,991.18	1,642.88	348.31	5.717		
16,800.00	9,950.00	16,567.02	9,795.00	177.09	177.62	85.57	-967.85	7,419.69	1,991.25	1,638.18	353.07	5.640		
16,900.00	9,950.00	16,667.02	9,795.00	179.48	180.00	85.57	-966.87	7,519.68	1,991.32	1,633.48	357.83	5.565		
17,000.00	9,950.00	16,767.02	9,795.00	181.87	182.39	85.57	-965.89	7,619.68	1,991.38	1,628.78	362.60	5.492		
17,100.00	9,950.00	16,867.02	9,795.00	184.26	184.77	85.57	-964.91	7,719.67	1,991.45	1,624.07	367.37	5.421		
17,200.00	9,950.00	16,967.02	9,795.00	186.65	187.16	85.57	-963.93	7,819.67	1,991.51	1,619.36	372.15	5.351		
17,300.00	9,950.00	17,067.02	9,795.00	189.04	189.55	85.57	-962.95	7,919.66	1,991.58	1,614.65	376.92	5.284		
17,400.00	9,950.00	17,167.02	9,795.00	191.43	191.95	85.57	-961.97	8,019.66	1,991.64	1,609.94	381.70	5.218		
17,500.00	9,950.00	17,267.02	9,795.00	193.82	194.34	85.57	-960.99	8,119.65	1,991.71	1,605.22	386.48	5.153		
17,600.00	9,950.00	17,367.02	9,795.00	196.22	196.73	85.57	-960.01	8,219.65	1,991.77	1,600.51	391.27	5.091		
17,689.50	9,950.00	17,456.51	9,795.00	198.36	198.88	85.57	-959.13	8,309.14	1,991.83	1,596.28	395.55	5.036		
17,690.09	9,950.00	17,457.11	9,795.00	198.38	198.89	85.57	-959.13	8,309.73	1,991.83	1,596.26	395.57	5.035 SF		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 136H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.10	0.10	0.00	0.00	-90.34	-0.12	-20.04	20.04					
100.00	100.00	100.10	100.10	0.13	0.13	-90.34	-0.12	-20.04	20.04	19.77	0.27	74.441		
200.00	200.00	200.10	200.10	0.49	0.49	-90.34	-0.12	-20.04	20.04	19.05	0.99	20.322		
300.00	300.00	300.10	300.10	0.85	0.85	-90.34	-0.12	-20.04	20.04	18.34	1.70	11.767		
400.00	400.00	400.10	400.10	1.21	1.21	-90.34	-0.12	-20.04	20.04	17.62	2.42	8.281		
500.00	500.00	500.10	500.10	1.57	1.57	-90.34	-0.12	-20.04	20.04	16.90	3.14	6.388		
600.00	600.00	600.10	600.10	1.93	1.93	-90.34	-0.12	-20.04	20.04	16.19	3.85	5.200		
700.00	700.00	700.10	700.10	2.29	2.29	-90.34	-0.12	-20.04	20.04	15.47	4.57	4.384		
800.00	800.00	800.10	800.10	2.64	2.64	-90.34	-0.12	-20.04	20.04	14.75	5.29	3.790		
900.00	900.00	900.10	900.10	3.00	3.00	-90.34	-0.12	-20.04	20.04	14.04	6.00	3.337		
1,000.00	1,000.00	1,000.10	1,000.10	3.36	3.36	-90.34	-0.12	-20.04	20.04	13.32	6.72	2.981		
1,100.00	1,100.00	1,100.10	1,100.10	3.72	3.72	-90.34	-0.12	-20.04	20.04	12.60	7.44	2.694		
1,200.00	1,200.00	1,200.10	1,200.10	4.08	4.08	-90.34	-0.12	-20.04	20.04	11.88	8.16	2.457		
1,300.00	1,300.00	1,300.10	1,300.10	4.44	4.44	-90.34	-0.12	-20.04	20.04	11.17	8.87	2.259		
1,400.00	1,400.00	1,400.10	1,400.10	4.79	4.79	-90.34	-0.12	-20.04	20.04	10.45	9.59	2.090		
1,500.00	1,500.00	1,500.10	1,500.10	5.15	5.15	-90.34	-0.12	-20.04	20.04	9.73	10.31	1.944		
1,600.00	1,600.00	1,600.10	1,600.10	5.51	5.51	-90.34	-0.12	-20.04	20.04	9.02	11.02	1.818		
1,700.00	1,700.00	1,700.10	1,700.10	5.87	5.87	-90.34	-0.12	-20.04	20.04	8.30	11.74	1.707		
1,800.00	1,800.00	1,800.10	1,800.10	6.23	6.23	-90.34	-0.12	-20.04	20.04	7.58	12.46	1.609 CC, ES		
1,900.00	1,899.98	1,900.08	1,900.08	6.59	6.59	-120.18	-0.12	-20.04	20.86	7.69	13.17	1.584		
2,000.00	1,999.84	1,999.94	1,999.94	6.94	6.95	-131.02	-0.12	-20.04	23.92	10.04	13.89	1.723		
2,100.00	2,099.45	2,099.55	2,099.55	7.30	7.30	-143.43	-0.12	-20.04	30.37	15.77	14.60	2.080		
2,200.00	2,198.70	2,198.80	2,198.80	7.66	7.66	-153.57	-0.12	-20.04	40.82	25.51	15.31	2.666		
2,300.00	2,297.47	2,297.57	2,297.57	8.03	8.01	-160.70	-0.12	-20.04	55.29	39.27	16.02	3.451		
2,400.00	2,395.70	2,395.80	2,395.80	8.40	8.36	-165.52	-0.12	-20.04	73.61	56.88	16.73	4.399		
2,500.00	2,493.44	2,493.54	2,493.54	8.79	8.71	-168.69	-0.12	-20.04	93.89	76.45	17.44	5.385		
2,600.00	2,591.25	2,595.01	2,595.00	9.19	9.08	-170.98	0.94	-18.88	112.89	94.74	18.15	6.220		
2,700.00	2,689.07	2,697.89	2,697.74	9.59	9.44	-173.02	4.49	-15.00	128.62	109.76	18.86	6.821		
2,800.00	2,786.88	2,801.71	2,801.16	10.01	9.81	-175.06	10.59	-8.32	141.05	121.50	19.55	7.215		
2,900.00	2,884.69	2,906.21	2,904.85	10.42	10.18	-177.23	19.27	1.19	150.19	129.96	20.23	7.422		
3,000.00	2,982.51	3,008.02	3,005.45	10.85	10.55	-179.49	29.79	12.70	156.69	135.75	20.94	7.482		
3,100.00	3,080.32	3,107.64	3,103.85	11.27	10.92	178.43	40.31	24.21	163.10	141.43	21.67	7.525		
3,200.00	3,178.14	3,207.27	3,202.25	11.71	11.29	176.50	50.82	35.73	169.72	147.31	22.41	7.573		
3,300.00	3,275.95	3,306.89	3,300.65	12.14	11.67	174.73	61.34	47.24	176.51	153.35	23.16	7.623		
3,400.00	3,373.76	3,406.52	3,399.04	12.58	12.04	173.09	71.86	58.75	183.46	159.55	23.90	7.675		
3,500.00	3,471.58	3,506.14	3,497.44	13.02	12.43	171.56	82.37	70.26	190.54	165.89	24.66	7.728		
3,600.00	3,569.39	3,605.77	3,595.84	13.47	12.81	170.15	92.89	81.77	197.76	172.34	25.41	7.782		
3,700.00	3,667.21	3,705.39	3,694.24	13.92	13.20	168.84	103.40	93.28	205.08	178.90	26.17	7.835		
3,800.00	3,765.02	3,805.02	3,792.64	14.36	13.59	167.62	113.92	104.79	212.50	185.56	26.94	7.888		
3,900.00	3,862.84	3,904.64	3,891.03	14.82	13.99	166.48	124.43	116.30	220.01	192.30	27.71	7.940		
4,000.00	3,960.65	4,004.27	3,989.43	15.27	14.38	165.41	134.95	127.81	227.61	199.12	28.48	7.991		
4,100.00	4,058.46	4,103.89	4,087.83	15.73	14.78	164.42	145.46	139.32	235.27	206.01	29.26	8.040		
4,200.00	4,156.28	4,203.52	4,186.23	16.18	15.18	163.49	155.98	150.84	243.01	212.96	30.04	8.088		
4,300.00	4,254.09	4,303.14	4,284.62	16.64	15.58	162.61	166.50	162.35	250.80	219.97	30.83	8.135		
4,400.00	4,351.91	4,402.77	4,383.02	17.10	15.99	161.79	177.01	173.86	258.65	227.03	31.62	8.180		
4,500.00	4,449.72	4,502.39	4,481.42	17.56	16.39	161.02	187.53	185.37	266.54	234.13	32.41	8.224		
4,600.00	4,547.54	4,602.02	4,579.82	18.02	16.80	160.29	198.04	196.88	274.48	241.28	33.20	8.266		
4,700.00	4,645.35	4,701.64	4,678.21	18.48	17.20	159.60	208.56	208.39	282.47	248.47	34.00	8.307		
4,800.00	4,743.16	4,801.27	4,776.61	18.95	17.61	158.95	219.07	219.90	290.49	255.69	34.80	8.347		
4,900.00	4,840.98	4,900.89	4,875.01	19.41	18.02	158.34	229.59	231.41	298.55	262.94	35.60	8.385		
5,000.00	4,938.79	5,000.52	4,973.41	19.88	18.43	157.76	240.11	242.92	306.64	270.23	36.41	8.422		
5,100.00	5,036.61	5,100.15	5,071.80	20.35	18.84	157.21	250.62	254.43	314.76	277.54	37.22	8.458		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 136H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.42	5,199.77	5,170.20	20.81	19.26	156.68	261.14	265.95	322.90	284.88	38.02	8.492		
5,300.00	5,232.23	5,299.40	5,268.60	21.28	19.67	156.18	271.65	277.46	331.08	292.24	38.84	8.525		
5,400.00	5,330.05	5,399.02	5,367.00	21.75	20.08	155.71	282.17	288.97	339.27	299.62	39.65	8.557		
5,500.00	5,427.86	5,498.65	5,465.39	22.22	20.50	155.26	292.68	300.48	347.49	307.03	40.46	8.588		
5,600.00	5,525.68	5,598.27	5,563.79	22.69	20.91	154.83	303.20	311.99	355.73	314.45	41.28	8.618		
5,700.00	5,623.49	5,697.90	5,662.19	23.16	21.33	154.41	313.72	323.50	363.99	321.89	42.10	8.646		
5,800.00	5,721.31	5,797.52	5,760.59	23.63	21.75	154.02	324.23	335.01	372.26	329.35	42.92	8.674		
5,900.00	5,819.12	5,897.15	5,858.98	24.10	22.16	153.64	334.75	346.52	380.56	336.82	43.74	8.701		
6,000.00	5,916.93	5,996.77	5,957.38	24.57	22.58	153.28	345.26	358.03	388.86	344.31	44.56	8.727		
6,100.00	6,014.75	6,096.40	6,055.78	25.04	23.00	152.94	355.78	369.54	397.19	351.81	45.38	8.752		
6,200.00	6,112.56	6,196.02	6,154.18	25.51	23.42	152.61	366.29	381.06	405.52	359.32	46.21	8.776		
6,300.00	6,210.38	6,295.65	6,252.57	25.99	23.84	152.29	376.81	392.57	413.87	366.84	47.03	8.800		
6,400.00	6,308.19	6,395.27	6,350.97	26.46	24.26	151.98	387.33	404.08	422.23	374.38	47.86	8.823		
6,500.00	6,406.00	6,494.90	6,449.37	26.93	24.68	151.69	397.84	415.59	430.61	381.92	48.69	8.845		
6,600.00	6,503.82	6,594.52	6,547.77	27.40	25.10	151.41	408.36	427.10	438.99	389.48	49.51	8.866		
6,700.00	6,601.63	6,694.15	6,646.16	27.88	25.52	151.14	418.87	438.61	447.39	397.04	50.34	8.887		
6,800.00	6,699.45	6,793.77	6,744.56	28.35	25.94	150.88	429.39	450.12	455.79	404.61	51.17	8.907		
6,832.56	6,731.30	6,826.21	6,776.60	28.51	26.08	150.79	432.81	453.87	458.53	407.08	51.44	8.913		
6,900.00	6,797.42	6,893.44	6,843.00	28.82	26.36	150.63	439.91	461.64	463.51	411.51	52.01	8.913		
7,000.00	6,896.00	6,993.24	6,941.57	29.26	26.78	150.18	450.44	473.17	468.38	415.54	52.85	8.863		
7,100.00	6,995.10	7,093.05	7,040.16	29.67	27.21	149.51	460.98	484.70	470.28	416.59	53.69	8.759		
7,200.00	7,094.61	7,192.76	7,138.64	30.05	27.63	148.59	471.50	496.22	469.26	414.72	54.55	8.603		
7,300.00	7,194.40	7,292.25	7,236.90	30.41	28.05	147.41	482.00	507.72	465.42	410.01	55.41	8.400		
7,400.00	7,294.36	7,391.39	7,334.82	30.73	28.47	145.95	492.47	519.17	458.87	402.59	56.28	8.153		
7,432.64	7,327.00	7,423.66	7,366.69	30.83	28.61	170.94	495.87	522.90	456.17	399.60	56.57	8.065		
7,500.00	7,394.36	7,490.18	7,432.39	31.03	28.89	169.83	502.90	530.59	450.41	393.25	57.16	7.880		
7,600.00	7,494.36	7,588.95	7,529.94	31.33	29.31	168.13	513.32	542.00	442.18	384.14	58.04	7.618		
7,700.00	7,594.36	7,687.72	7,627.50	31.63	29.73	166.37	523.75	553.41	434.37	375.43	58.94	7.370		
7,800.00	7,694.36	7,780.42	7,719.25	31.93	30.12	164.82	532.62	563.12	427.65	367.88	59.77	7.155		
7,900.00	7,794.36	7,873.59	7,811.86	32.24	30.49	163.58	539.52	570.67	422.71	362.15	60.55	6.981		
8,000.00	7,894.36	7,967.34	7,905.32	32.54	30.84	162.69	544.40	576.02	419.36	358.08	61.28	6.843		
8,100.00	7,994.36	8,061.46	7,999.35	32.85	31.17	162.17	547.23	579.12	417.49	355.53	61.96	6.739		
8,200.00	8,094.36	8,156.58	8,094.46	33.16	31.49	162.03	548.00	579.96	416.99	354.41	62.58	6.663		
8,300.00	8,194.36	8,256.58	8,194.46	33.47	31.81	162.03	548.00	579.96	416.99	353.75	63.23	6.594		
8,400.00	8,294.36	8,356.58	8,294.46	33.77	32.14	162.03	548.00	579.96	416.99	353.10	63.89	6.527		
8,500.00	8,394.36	8,456.58	8,394.46	34.08	32.46	162.03	548.00	579.96	416.99	352.44	64.55	6.460		
8,600.00	8,494.36	8,556.58	8,494.46	34.40	32.79	162.03	548.00	579.96	416.99	351.78	65.20	6.395		
8,700.00	8,594.36	8,656.58	8,594.46	34.71	33.11	162.03	548.00	579.96	416.99	351.13	65.86	6.331		
8,800.00	8,694.36	8,756.58	8,694.46	35.02	33.44	162.03	548.00	579.96	416.99	350.47	66.52	6.268		
8,900.00	8,794.36	8,856.58	8,794.46	35.33	33.77	162.03	548.00	579.96	416.99	349.80	67.18	6.207		
9,000.00	8,894.36	8,956.58	8,894.46	35.65	34.10	162.03	548.00	579.96	416.99	349.14	67.85	6.146		
9,100.00	8,994.36	9,056.58	8,994.46	35.96	34.43	162.03	548.00	579.96	416.99	348.48	68.51	6.087		
9,200.00	9,094.36	9,156.58	9,094.46	36.28	34.76	162.03	548.00	579.96	416.99	347.81	69.17	6.028		
9,300.00	9,194.36	9,256.58	9,194.46	36.60	35.09	162.03	548.00	579.96	416.99	347.15	69.84	5.971		
9,400.00	9,294.36	9,356.58	9,294.46	36.91	35.42	162.03	548.00	579.96	416.99	346.48	70.51	5.914		
9,500.00	9,394.36	9,437.03	9,374.63	37.23	35.71	161.32	548.06	585.43	419.12	348.14	70.98	5.904		
9,578.18	9,472.54	9,496.18	9,432.40	37.48	35.95	159.70	548.19	597.96	424.62	353.31	71.31	5.955		
9,600.00	9,494.35	9,512.16	9,447.70	37.55	36.02	69.53	548.24	602.56	426.67	355.30	71.37	5.978		
9,625.00	9,519.28	9,530.37	9,464.93	37.64	36.11	68.69	548.31	608.42	429.00	357.57	71.43	6.006		
9,650.00	9,544.09	9,550.00	9,483.25	37.72	36.20	67.85	548.38	615.48	431.27	359.76	71.51	6.031		
9,675.00	9,568.69	9,566.45	9,498.37	37.81	36.28	67.15	548.45	621.96	433.46	361.99	71.48	6.064		
9,700.00	9,593.04	9,584.35	9,514.55	37.90	36.37	66.46	548.53	629.61	435.58	364.10	71.48	6.094		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,725.00	9,617.05	9,600.00	9,528.46	38.00	36.45	65.86	548.61	636.79	437.60	366.23	71.37	6.131		
9,750.00	9,640.67	9,619.91	9,545.80	38.10	36.55	65.22	548.71	646.57	439.49	368.08	71.42	6.154		
9,775.00	9,663.83	9,637.58	9,560.84	38.20	36.65	64.68	548.81	655.85	441.27	369.91	71.36	6.183		
9,800.00	9,686.46	9,655.20	9,575.47	38.30	36.75	64.19	548.92	665.65	442.91	371.62	71.30	6.212		
9,825.00	9,708.51	9,675.00	9,591.48	38.41	36.86	63.72	549.04	677.31	444.42	373.10	71.32	6.232		
9,850.00	9,729.91	9,690.26	9,603.48	38.52	36.95	63.37	549.15	686.73	445.75	374.62	71.13	6.267		
9,875.00	9,750.61	9,707.73	9,616.84	38.63	37.05	63.03	549.27	697.99	446.93	375.90	71.03	6.292		
9,900.00	9,770.54	9,725.00	9,629.63	38.74	37.16	62.75	549.39	709.59	447.94	377.02	70.92	6.316		
9,925.00	9,789.65	9,742.57	9,642.21	38.85	37.27	62.51	549.52	721.86	448.78	377.95	70.83	6.336		
9,950.00	9,807.90	9,759.95	9,654.19	38.97	37.38	62.33	549.66	734.44	449.44	378.70	70.73	6.354		
9,975.00	9,825.23	9,775.00	9,664.20	39.09	37.48	62.21	549.78	745.68	449.92	379.40	70.52	6.380		
10,000.00	9,841.59	9,794.67	9,676.73	39.22	37.61	62.12	549.94	760.84	450.20	379.64	70.56	6.381		
10,025.00	9,856.94	9,812.02	9,687.25	39.35	37.73	62.09	550.09	774.63	450.30	379.81	70.49	6.388		
10,050.00	9,871.23	9,829.36	9,697.27	39.48	37.86	62.11	550.24	788.78	450.22	379.78	70.44	6.391		
10,075.00	9,884.44	9,850.00	9,708.51	39.62	38.01	62.20	550.43	806.09	449.96	379.38	70.58	6.375		
10,100.00	9,896.51	9,864.07	9,715.74	39.77	38.12	62.31	550.56	818.16	449.48	379.08	70.41	6.384		
10,125.00	9,907.42	9,881.45	9,724.17	39.92	38.25	62.49	550.72	833.36	448.84	378.41	70.43	6.372		
10,150.00	9,917.14	9,900.00	9,732.56	40.08	38.40	62.72	550.90	849.90	448.02	377.47	70.55	6.350		
10,175.00	9,925.64	9,916.28	9,739.38	40.24	38.53	62.99	551.06	864.68	447.02	376.43	70.59	6.333		
10,200.00	9,932.90	9,933.75	9,746.14	40.41	38.68	63.32	551.23	880.79	445.86	375.13	70.72	6.304		
10,225.00	9,938.90	9,950.00	9,751.89	40.59	38.81	63.68	551.39	895.98	444.53	373.69	70.84	6.275		
10,250.00	9,943.62	9,968.80	9,757.90	40.77	38.98	64.13	551.58	913.80	443.04	371.92	71.12	6.229		
10,275.00	9,947.05	9,986.41	9,762.88	40.96	39.13	64.62	551.76	930.68	441.41	370.02	71.39	6.183		
10,300.00	9,949.17	10,004.07	9,767.25	41.16	39.29	65.15	551.95	947.79	439.64	367.94	71.70	6.132		
10,325.00	9,949.99	10,025.00	9,771.61	41.36	39.49	65.81	552.17	968.26	437.77	365.57	72.20	6.063		
10,328.18	9,950.01	10,025.00	9,771.61	41.39	39.49	65.84	552.17	968.26	437.50	365.35	72.15	6.064		
10,400.00	9,950.01	10,075.00	9,778.36	42.01	39.97	66.65	552.70	1,017.78	433.54	360.42	73.12	5.929		
10,500.00	9,950.00	10,162.11	9,780.01	42.99	40.86	66.85	553.63	1,104.84	432.67	357.97	74.70	5.792		
10,530.31	9,950.00	10,192.41	9,780.00	43.31	41.18	66.85	553.96	1,135.14	432.66	357.34	75.32	5.744		
10,600.00	9,950.00	10,262.11	9,780.00	44.08	41.98	66.85	554.71	1,204.83	432.65	355.84	76.81	5.633		
10,700.00	9,950.00	10,362.11	9,780.00	45.29	43.21	66.85	555.78	1,304.82	432.62	353.51	79.11	5.469		
10,800.00	9,950.00	10,462.11	9,780.00	46.60	44.53	66.85	556.85	1,404.82	432.60	351.00	81.60	5.301		
10,900.00	9,950.00	10,562.11	9,780.00	48.00	45.95	66.84	557.93	1,504.81	432.57	348.31	84.26	5.134		
11,000.00	9,950.00	10,662.11	9,780.00	49.48	47.46	66.84	559.00	1,604.81	432.55	345.47	87.07	4.968		
11,100.00	9,950.00	10,762.11	9,780.00	51.04	49.04	66.84	560.07	1,704.80	432.52	342.49	90.03	4.804		
11,200.00	9,950.00	10,862.11	9,780.00	52.67	50.68	66.84	561.15	1,804.80	432.50	339.39	93.11	4.645		
11,300.00	9,950.00	10,962.11	9,780.00	54.37	52.40	66.84	562.22	1,904.79	432.47	336.17	96.30	4.491		
11,400.00	9,950.00	11,062.11	9,780.00	56.12	54.16	66.84	563.29	2,004.78	432.45	332.85	99.60	4.342		
11,500.00	9,950.00	11,162.11	9,780.00	57.92	55.98	66.84	564.37	2,104.78	432.42	329.43	102.99	4.199		
11,600.00	9,950.00	11,262.11	9,780.00	59.77	57.85	66.83	565.44	2,204.77	432.40	325.93	106.47	4.061		
11,700.00	9,950.00	11,362.11	9,780.00	61.66	59.75	66.83	566.51	2,304.77	432.37	322.35	110.02	3.930		
11,800.00	9,950.00	11,462.11	9,780.00	63.59	61.70	66.83	567.59	2,404.76	432.35	318.70	113.64	3.804		
11,900.00	9,950.00	11,562.11	9,780.00	65.55	63.68	66.83	568.66	2,504.75	432.32	315.00	117.33	3.685		
12,000.00	9,950.00	11,662.11	9,780.00	67.55	65.69	66.83	569.73	2,604.75	432.30	311.23	121.07	3.571		
12,100.00	9,950.00	11,762.11	9,780.00	69.57	67.73	66.83	570.81	2,704.74	432.27	307.41	124.86	3.462		
12,200.00	9,950.00	11,862.11	9,780.00	71.62	69.79	66.83	571.88	2,804.74	432.25	303.54	128.70	3.359		
12,300.00	9,950.00	11,962.11	9,780.00	73.70	71.88	66.82	572.95	2,904.73	432.22	299.64	132.59	3.260		
12,400.00	9,950.00	12,062.11	9,780.00	75.80	73.99	66.82	574.03	3,004.73	432.20	295.69	136.51	3.166		
12,500.00	9,950.00	12,162.11	9,780.00	77.92	76.12	66.82	575.10	3,104.72	432.17	291.70	140.47	3.077		
12,600.00	9,950.00	12,262.11	9,780.00	80.05	78.27	66.82	576.17	3,204.71	432.15	287.68	144.46	2.991		
12,700.00	9,950.00	12,362.11	9,780.00	82.21	80.43	66.82	577.25	3,304.71	432.12	283.64	148.48	2.910		
12,800.00	9,950.00	12,462.11	9,780.00	84.37	82.61	66.82	578.32	3,404.70	432.10	279.56	152.54	2.833		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 136H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,900.00	9,950.00	12,562.11	9,780.00	86.56	84.81	66.82	579.39	3,504.70	432.07	275.46	156.61	2.759		
13,000.00	9,950.00	12,662.11	9,780.00	88.76	87.02	66.81	580.47	3,604.69	432.05	271.33	160.72	2.688		
13,100.00	9,950.00	12,762.11	9,780.00	90.97	89.24	66.81	581.54	3,704.69	432.02	267.18	164.84	2.621		
13,200.00	9,950.00	12,862.11	9,780.00	93.19	91.47	66.81	582.61	3,804.68	432.00	263.01	168.98	2.556		
13,300.00	9,950.00	12,962.11	9,780.00	95.42	93.71	66.81	583.69	3,904.67	431.97	258.82	173.15	2.495		
13,400.00	9,950.00	13,062.11	9,780.00	97.67	95.96	66.81	584.76	4,004.67	431.95	254.62	177.33	2.436		
13,500.00	9,950.00	13,162.11	9,780.00	99.92	98.23	66.81	585.83	4,104.66	431.92	250.40	181.52	2.379		
13,600.00	9,950.00	13,262.11	9,780.00	102.18	100.49	66.81	586.90	4,204.66	431.90	246.16	185.74	2.325		
13,700.00	9,950.00	13,362.11	9,780.00	104.45	102.77	66.80	587.98	4,304.65	431.87	241.91	189.96	2.273		
13,800.00	9,950.00	13,462.11	9,780.00	106.73	105.06	66.80	589.05	4,404.65	431.85	237.64	194.20	2.224		
13,900.00	9,950.00	13,562.11	9,780.00	109.01	107.35	66.80	590.12	4,504.64	431.82	233.36	198.46	2.176		
14,000.00	9,950.00	13,662.11	9,780.00	111.30	109.65	66.80	591.20	4,604.63	431.80	229.07	202.72	2.130		
14,100.00	9,950.00	13,762.11	9,780.00	113.60	111.95	66.80	592.27	4,704.63	431.77	224.77	207.00	2.086		
14,200.00	9,950.00	13,862.11	9,780.00	115.90	114.26	66.80	593.34	4,804.62	431.75	220.46	211.28	2.043		
14,300.00	9,950.00	13,962.11	9,780.00	118.21	116.58	66.80	594.42	4,904.62	431.72	216.14	215.58	2.003		
14,400.00	9,950.00	14,062.11	9,780.00	120.52	118.90	66.79	595.49	5,004.61	431.70	211.81	219.88	1.963		
14,500.00	9,950.00	14,162.11	9,780.00	122.84	121.22	66.79	596.56	5,104.60	431.67	207.47	224.20	1.925		
14,600.00	9,950.00	14,262.11	9,780.00	125.17	123.55	66.79	597.64	5,204.60	431.65	203.13	228.52	1.889		
14,700.00	9,950.00	14,362.11	9,780.00	127.49	125.89	66.79	598.71	5,304.59	431.62	198.77	232.85	1.854		
14,800.00	9,950.00	14,462.11	9,780.00	129.83	128.22	66.79	599.78	5,404.59	431.60	194.41	237.18	1.820		
14,900.00	9,950.00	14,562.11	9,780.00	132.16	130.57	66.79	600.86	5,504.58	431.57	190.04	241.53	1.787		
15,000.00	9,950.00	14,662.11	9,780.00	134.50	132.91	66.79	601.93	5,604.58	431.55	185.67	245.88	1.755		
15,100.00	9,950.00	14,762.11	9,780.00	136.85	135.26	66.78	603.00	5,704.57	431.52	181.29	250.23	1.724		
15,200.00	9,950.00	14,862.11	9,780.00	139.19	137.61	66.78	604.08	5,804.56	431.50	176.90	254.59	1.695		
15,300.00	9,950.00	14,962.11	9,780.00	141.54	139.97	66.78	605.15	5,904.56	431.47	172.51	258.96	1.666		
15,400.00	9,950.00	15,062.11	9,780.00	143.90	142.33	66.78	606.22	6,004.55	431.45	168.11	263.33	1.638		
15,500.00	9,950.00	15,162.11	9,780.00	146.25	144.69	66.78	607.30	6,104.55	431.42	163.71	267.71	1.612		
15,600.00	9,950.00	15,262.11	9,780.00	148.61	147.05	66.78	608.37	6,204.54	431.40	159.31	272.09	1.585		
15,700.00	9,950.00	15,362.11	9,780.00	150.97	149.42	66.78	609.44	6,304.54	431.37	154.89	276.48	1.560		
15,800.00	9,950.00	15,462.11	9,780.00	153.34	151.78	66.77	610.52	6,404.53	431.35	150.48	280.87	1.536		
15,900.00	9,950.00	15,562.11	9,780.00	155.70	154.15	66.77	611.59	6,504.52	431.32	146.06	285.26	1.512		
16,000.00	9,950.00	15,662.11	9,780.00	158.07	156.53	66.77	612.66	6,604.52	431.30	141.64	289.66	1.489 Level 3		
16,100.00	9,950.00	15,762.11	9,780.00	160.44	158.90	66.77	613.74	6,704.51	431.27	137.21	294.06	1.467 Level 3		
16,200.00	9,950.00	15,862.11	9,780.00	162.82	161.28	66.77	614.81	6,804.51	431.25	132.78	298.47	1.445 Level 3		
16,300.00	9,950.00	15,962.11	9,780.00	165.19	163.66	66.77	615.88	6,904.50	431.22	128.34	302.88	1.424 Level 3		
16,400.00	9,950.00	16,062.11	9,780.00	167.57	166.04	66.77	616.96	7,004.50	431.20	123.91	307.29	1.403 Level 3		
16,500.00	9,950.00	16,162.11	9,780.00	169.95	168.42	66.76	618.03	7,104.49	431.17	119.47	311.71	1.383 Level 3		
16,600.00	9,950.00	16,262.11	9,780.00	172.33	170.81	66.76	619.10	7,204.48	431.15	115.02	316.12	1.364 Level 3		
16,700.00	9,950.00	16,362.11	9,780.00	174.71	173.19	66.76	620.18	7,304.48	431.12	110.58	320.55	1.345 Level 3		
16,800.00	9,950.00	16,462.11	9,780.00	177.09	175.58	66.76	621.25	7,404.47	431.10	106.13	324.97	1.327 Level 3		
16,900.00	9,950.00	16,562.11	9,780.00	179.48	177.97	66.76	622.32	7,504.47	431.07	101.68	329.40	1.309 Level 3		
17,000.00	9,950.00	16,662.11	9,780.00	181.87	180.36	66.76	623.40	7,604.46	431.05	97.22	333.82	1.291 Level 3		
17,100.00	9,950.00	16,762.11	9,780.00	184.26	182.75	66.76	624.47	7,704.46	431.02	92.77	338.26	1.274 Level 3		
17,200.00	9,950.00	16,862.11	9,780.00	186.65	185.14	66.75	625.54	7,804.45	431.00	88.31	342.69	1.258 Level 3		
17,300.00	9,950.00	16,962.11	9,780.00	189.04	187.53	66.75	626.62	7,904.44	430.97	83.85	347.13	1.242 Level 2		
17,400.00	9,950.00	17,062.11	9,780.00	191.43	189.93	66.75	627.69	8,004.44	430.95	79.38	351.56	1.226 Level 2		
17,500.00	9,950.00	17,162.11	9,780.00	193.82	192.33	66.75	628.76	8,104.43	430.92	74.92	356.00	1.210 Level 2		
17,600.00	9,950.00	17,262.11	9,780.00	196.22	194.72	66.75	629.84	8,204.43	430.90	70.45	360.45	1.195 Level 2		
17,679.35	9,950.00	17,341.46	9,780.00	198.12	196.63	66.75	630.69	8,283.77	430.88	66.91	363.97	1.184 Level 2, SF		
17,689.50	9,950.00	17,342.66	9,780.00	198.36	196.66	66.75	630.70	8,284.97	430.97	67.15	363.82	1.185 Level 2		
17,690.09	9,950.00	17,342.66	9,780.00	198.38	196.66	66.75	630.70	8,284.97	430.98	67.20	363.78	1.185 Level 2		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 213H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.13	-0.14	-60.07	60.07					
100.00	100.00	99.90	99.90	0.13	0.13	-90.13	-0.14	-60.07	60.07	59.80	0.27	223.542		
200.00	200.00	199.90	199.90	0.49	0.49	-90.13	-0.14	-60.07	60.07	59.08	0.99	60.958		
300.00	300.00	299.90	299.90	0.85	0.85	-90.13	-0.14	-60.07	60.07	58.37	1.70	35.286		
400.00	400.00	399.90	399.90	1.21	1.21	-90.13	-0.14	-60.07	60.07	57.65	2.42	24.829		
500.00	500.00	499.90	499.90	1.57	1.57	-90.13	-0.14	-60.07	60.07	56.93	3.14	19.153		
600.00	600.00	599.90	599.90	1.93	1.93	-90.13	-0.14	-60.07	60.07	56.22	3.85	15.590		
700.00	700.00	699.90	699.90	2.29	2.28	-90.13	-0.14	-60.07	60.07	55.50	4.57	13.144		
800.00	800.00	799.90	799.90	2.64	2.64	-90.13	-0.14	-60.07	60.07	54.78	5.29	11.362		
900.00	900.00	899.90	899.90	3.00	3.00	-90.13	-0.14	-60.07	60.07	54.07	6.00	10.005		
1,000.00	1,000.00	999.90	999.90	3.36	3.36	-90.13	-0.14	-60.07	60.07	53.35	6.72	8.938		
1,100.00	1,100.00	1,099.90	1,099.90	3.72	3.72	-90.13	-0.14	-60.07	60.07	52.63	7.44	8.076		
1,200.00	1,200.00	1,199.90	1,199.90	4.08	4.08	-90.13	-0.14	-60.07	60.07	51.92	8.15	7.366		
1,300.00	1,300.00	1,299.90	1,299.90	4.44	4.44	-90.13	-0.14	-60.07	60.07	51.20	8.87	6.771		
1,400.00	1,400.00	1,399.90	1,399.90	4.79	4.79	-90.13	-0.14	-60.07	60.07	50.48	9.59	6.265		
1,500.00	1,500.00	1,499.90	1,499.90	5.15	5.15	-90.13	-0.14	-60.07	60.07	49.76	10.31	5.829		
1,600.00	1,600.00	1,599.90	1,599.90	5.51	5.51	-90.13	-0.14	-60.07	60.07	49.05	11.02	5.450		
1,700.00	1,700.00	1,699.90	1,699.90	5.87	5.87	-90.13	-0.14	-60.07	60.07	48.33	11.74	5.117		
1,800.00	1,800.00	1,799.90	1,799.90	6.23	6.23	-90.13	-0.14	-60.07	60.07	47.61	12.46	4.822 CC, ES		
1,900.00	1,899.98	1,899.88	1,899.88	6.59	6.59	-117.14	-0.14	-60.07	60.85	47.67	13.17	4.619		
2,000.00	1,999.84	1,999.74	1,999.74	6.94	6.94	-121.30	-0.14	-60.07	63.41	49.52	13.89	4.566		
2,100.00	2,099.45	2,099.35	2,099.35	7.30	7.30	-127.46	-0.14	-60.07	68.35	53.75	14.60	4.682		
2,200.00	2,198.70	2,198.60	2,198.60	7.66	7.66	-134.59	-0.14	-60.07	76.40	61.09	15.31	4.989		
2,300.00	2,297.47	2,297.37	2,297.37	8.03	8.01	-141.67	-0.14	-60.07	88.13	72.11	16.03	5.500		
2,400.00	2,395.70	2,395.60	2,395.60	8.40	8.36	-148.02	-0.14	-60.07	103.87	87.13	16.74	6.206		
2,500.00	2,493.44	2,493.34	2,493.34	8.79	8.71	-153.17	-0.14	-60.07	122.08	104.64	17.44	6.999		
2,600.00	2,591.25	2,591.15	2,591.15	9.19	9.06	-156.97	-0.14	-60.07	141.02	122.87	18.15	7.769		
2,700.00	2,689.07	2,688.97	2,688.97	9.59	9.42	-159.87	-0.14	-60.07	160.42	141.56	18.86	8.506		
2,800.00	2,786.88	2,786.78	2,786.78	10.01	9.77	-162.14	-0.14	-60.07	180.13	160.56	19.57	9.205		
2,900.00	2,884.69	2,884.59	2,884.59	10.42	10.12	-163.97	-0.14	-60.07	200.06	179.78	20.28	9.865		
3,000.00	2,982.51	2,982.41	2,982.41	10.85	10.47	-165.46	-0.14	-60.07	220.15	199.16	20.99	10.488		
3,100.00	3,080.32	3,080.22	3,080.22	11.27	10.82	-166.70	-0.14	-60.07	240.36	218.66	21.70	11.074		
3,200.00	3,178.14	3,178.04	3,178.04	11.71	11.17	-167.75	-0.14	-60.07	260.66	238.24	22.42	11.627		
3,300.00	3,275.95	3,275.85	3,275.85	12.14	11.52	-168.65	-0.14	-60.07	281.03	257.90	23.13	12.149		
3,400.00	3,373.76	3,373.66	3,373.66	12.58	11.87	-169.43	-0.14	-60.07	301.47	277.62	23.85	12.640		
3,500.00	3,471.58	3,471.48	3,471.48	13.02	12.22	-170.11	-0.14	-60.07	321.94	297.38	24.57	13.105		
3,600.00	3,569.39	3,569.29	3,569.29	13.47	12.57	-170.70	-0.14	-60.07	342.46	317.17	25.28	13.545		
3,700.00	3,667.21	3,667.11	3,667.11	13.92	12.92	-171.23	-0.14	-60.07	363.01	337.00	26.00	13.960		
3,800.00	3,765.02	3,764.92	3,764.92	14.36	13.27	-171.71	-0.14	-60.07	383.58	356.86	26.72	14.355		
3,900.00	3,862.84	3,862.74	3,862.74	14.82	13.62	-172.13	-0.14	-60.07	404.18	376.73	27.44	14.729		
4,000.00	3,960.65	3,960.55	3,960.55	15.27	13.97	-172.52	-0.14	-60.07	424.79	396.63	28.16	15.084		
4,100.00	4,058.46	4,066.18	4,066.17	15.73	14.35	-172.96	0.08	-59.34	444.91	415.99	28.92	15.382		
4,200.00	4,156.28	4,177.88	4,177.77	16.18	14.74	-173.70	1.47	-54.79	462.41	432.71	29.70	15.569		
4,300.00	4,254.09	4,290.29	4,289.80	16.64	15.13	-174.74	4.15	-46.02	477.10	446.64	30.46	15.664		
4,400.00	4,351.91	4,403.07	4,401.74	17.10	15.53	-176.08	8.13	-33.00	489.07	457.86	31.20	15.673		
4,500.00	4,449.72	4,501.51	4,499.23	17.56	15.88	-177.33	12.13	-19.89	499.91	467.98	31.93	15.656		
4,600.00	4,547.54	4,600.33	4,597.08	18.02	16.23	-178.53	16.15	-6.74	510.99	478.33	32.66	15.645		
4,700.00	4,645.35	4,699.15	4,694.94	18.48	16.59	-179.68	20.16	6.42	522.28	488.88	33.39	15.640		
4,800.00	4,743.16	4,797.97	4,792.79	18.95	16.95	-179.22	24.18	19.57	533.77	499.64	34.13	15.638		
4,900.00	4,840.98	4,896.79	4,890.65	19.41	17.31	-178.16	28.20	32.73	545.45	510.58	34.87	15.641		
5,000.00	4,938.79	4,995.60	4,988.51	19.88	17.67	-177.15	32.22	45.88	557.31	521.69	35.62	15.647		
5,100.00	5,036.61	5,094.42	5,086.36	20.35	18.04	-176.18	36.23	59.04	569.33	532.96	36.37	15.655		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 213H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.42	5,193.24	5,184.22	20.81	18.41	175.25	40.25	72.19	581.51	544.39	37.12	15.666		
5,300.00	5,232.23	5,292.06	5,282.08	21.28	18.78	174.36	44.27	85.35	593.84	555.96	37.87	15.679		
5,400.00	5,330.05	5,390.88	5,379.93	21.75	19.15	173.50	48.29	98.51	606.30	567.66	38.63	15.694		
5,500.00	5,427.86	5,489.69	5,477.79	22.22	19.53	172.68	52.30	111.66	618.89	579.49	39.39	15.710		
5,600.00	5,525.68	5,588.51	5,575.64	22.69	19.90	171.89	56.32	124.82	631.60	591.44	40.16	15.727		
5,700.00	5,623.49	5,687.33	5,673.50	23.16	20.28	171.14	60.34	137.97	644.42	603.50	40.93	15.746		
5,800.00	5,721.31	5,786.15	5,771.36	23.63	20.66	170.41	64.36	151.13	657.36	615.66	41.70	15.765		
5,900.00	5,819.12	5,884.97	5,869.21	24.10	21.04	169.71	68.37	164.28	670.39	627.92	42.47	15.785		
6,000.00	5,916.93	5,983.78	5,967.07	24.57	21.42	169.03	72.39	177.44	683.52	640.27	43.25	15.805		
6,100.00	6,014.75	6,082.60	6,064.92	25.04	21.80	168.39	76.41	190.59	696.74	652.71	44.03	15.826		
6,200.00	6,112.56	6,181.42	6,162.78	25.51	22.19	167.76	80.42	203.75	710.04	665.24	44.81	15.847		
6,300.00	6,210.38	6,280.24	6,260.64	25.99	22.57	167.16	84.44	216.90	723.43	677.84	45.59	15.868		
6,400.00	6,308.19	6,379.06	6,358.49	26.46	22.96	166.58	88.46	230.06	736.89	690.51	46.37	15.890		
6,500.00	6,406.00	6,477.87	6,456.35	26.93	23.35	166.02	92.48	243.21	750.42	703.26	47.16	15.911		
6,600.00	6,503.82	6,576.69	6,554.20	27.40	23.73	165.48	96.49	256.37	764.02	716.07	47.95	15.933		
6,700.00	6,601.63	6,675.51	6,652.06	27.88	24.12	164.96	100.51	269.52	777.68	728.94	48.74	15.955		
6,800.00	6,699.45	6,774.33	6,749.92	28.35	24.51	164.46	104.53	282.68	791.41	741.87	49.54	15.976		
6,832.56	6,731.30	6,806.51	6,781.78	28.51	24.64	164.30	105.84	286.96	795.89	746.09	49.80	15.983		
6,900.00	6,797.42	6,873.23	6,847.86	28.82	24.90	164.01	108.55	295.84	804.43	754.10	50.33	15.983		
7,000.00	6,896.00	6,972.43	6,946.09	29.26	25.30	163.51	112.58	309.05	814.37	763.25	51.12	15.929		
7,100.00	6,995.10	7,071.82	7,044.51	29.67	25.69	162.94	116.62	322.28	821.06	769.14	51.91	15.815		
7,200.00	7,094.61	7,171.29	7,143.01	30.05	26.09	162.29	120.67	335.52	824.51	771.81	52.70	15.645		
7,300.00	7,194.40	7,270.71	7,241.46	30.41	26.48	161.56	124.71	348.76	824.77	771.28	53.48	15.421		
7,400.00	7,294.36	7,369.96	7,339.75	30.73	26.88	160.72	128.74	361.97	821.87	767.61	54.26	15.146		
7,432.64	7,327.00	7,402.30	7,371.77	30.83	27.01	-174.04	130.06	366.28	820.25	765.73	54.51	15.046		
7,500.00	7,394.36	7,469.00	7,437.83	31.03	27.28	-174.64	132.77	375.16	816.61	761.57	55.03	14.838		
7,600.00	7,494.36	7,568.03	7,535.89	31.33	27.67	-175.54	136.80	388.34	811.37	755.57	55.81	14.538		
7,700.00	7,594.36	7,667.05	7,633.95	31.63	28.07	-176.46	140.82	401.52	806.35	749.76	56.59	14.250		
7,800.00	7,694.36	7,765.14	7,731.08	31.93	28.46	-177.37	144.80	414.56	801.54	744.18	57.36	13.974		
7,900.00	7,794.36	7,866.01	7,821.29	32.24	28.82	-178.11	147.99	425.00	797.55	739.48	58.07	13.734		
8,000.00	7,894.36	7,947.48	7,912.40	32.54	29.17	-178.66	150.35	432.73	794.72	735.96	58.76	13.524		
8,100.00	7,994.36	8,039.38	8,004.15	32.85	29.50	-179.01	151.87	437.69	792.96	733.53	59.43	13.343		
8,200.00	8,094.36	8,131.52	8,096.26	33.16	29.83	-179.17	152.52	439.84	792.21	732.14	60.07	13.188		
8,244.89	8,139.24	8,174.40	8,139.14	33.30	29.97	-179.18	152.55	439.93	792.18	731.82	60.36	13.124		
8,300.00	8,194.36	8,229.52	8,194.26	33.47	30.16	-179.18	152.55	439.93	792.18	731.45	60.74	13.043		
8,400.00	8,294.36	8,329.52	8,294.26	33.77	30.50	-179.18	152.55	439.93	792.18	730.77	61.42	12.899		
8,500.00	8,394.36	8,429.52	8,394.26	34.08	30.85	-179.18	152.55	439.93	792.18	730.09	62.10	12.757		
8,600.00	8,494.36	8,529.52	8,494.26	34.40	31.19	-179.18	152.55	439.93	792.18	729.40	62.78	12.619		
8,700.00	8,594.36	8,629.52	8,594.26	34.71	31.53	-179.18	152.55	439.93	792.18	728.72	63.46	12.483		
8,800.00	8,694.36	8,729.52	8,694.26	35.02	31.87	-179.18	152.55	439.93	792.18	728.04	64.14	12.350		
8,900.00	8,794.36	8,829.52	8,794.26	35.33	32.22	-179.18	152.55	439.93	792.18	727.36	64.83	12.220		
9,000.00	8,894.36	8,929.52	8,894.26	35.65	32.56	-179.18	152.55	439.93	792.18	726.67	65.51	12.092		
9,100.00	8,994.36	9,029.52	8,994.26	35.96	32.91	-179.18	152.55	439.93	792.18	725.99	66.20	11.967		
9,200.00	9,094.36	9,129.52	9,094.26	36.28	33.25	-179.18	152.55	439.93	792.18	725.30	66.88	11.845		
9,300.00	9,194.36	9,229.52	9,194.26	36.60	33.60	-179.18	152.55	439.93	792.18	724.61	67.57	11.724		
9,400.00	9,294.36	9,329.52	9,294.26	36.91	33.94	-179.18	152.55	439.93	792.18	723.93	68.25	11.606		
9,500.00	9,394.36	9,429.52	9,394.26	37.23	34.29	-179.18	152.55	439.93	792.18	723.24	68.94	11.490		
9,578.18	9,472.54	9,507.70	9,472.44	37.48	34.56	-179.18	152.55	439.93	792.18	722.70	69.48	11.402		
9,600.00	9,494.35	9,530.45	9,495.18	37.55	34.64	91.42	152.56	440.47	792.18	722.54	69.64	11.375		
9,625.00	9,519.28	9,556.52	9,521.18	37.64	34.73	91.42	152.58	442.41	792.18	722.35	69.83	11.345		
9,650.00	9,544.09	9,582.59	9,547.02	37.72	34.83	91.41	152.61	445.78	792.18	722.15	70.03	11.313		
9,675.00	9,568.69	9,608.65	9,572.64	37.81	34.94	91.39	152.66	450.54	792.17	721.94	70.23	11.279		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 213H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,700.00	9,593.04	9,634.69	9,597.94	37.90	35.05	91.38	152.73	456.69	792.17	721.72	70.45	11.244		
9,725.00	9,617.05	9,660.72	9,622.86	38.00	35.17	91.36	152.80	464.21	792.16	721.48	70.68	11.208		
9,750.00	9,640.67	9,686.73	9,647.31	38.10	35.29	91.33	152.90	473.07	792.15	721.24	70.91	11.171		
9,775.00	9,663.83	9,712.72	9,671.23	38.20	35.42	91.30	153.00	483.23	792.14	720.99	71.15	11.133		
9,800.00	9,686.46	9,738.68	9,694.53	38.30	35.55	91.27	153.12	494.67	792.13	720.73	71.40	11.094		
9,825.00	9,708.51	9,764.62	9,717.15	38.41	35.68	91.23	153.26	507.35	792.12	720.46	71.66	11.054		
9,850.00	9,729.91	9,790.52	9,739.03	38.52	35.82	91.19	153.40	521.21	792.11	720.18	71.93	11.012		
9,875.00	9,750.61	9,816.40	9,760.10	38.63	35.97	91.15	153.56	536.23	792.10	719.89	72.21	10.970		
9,900.00	9,770.54	9,842.23	9,780.29	38.74	36.12	91.10	153.73	552.34	792.08	719.59	72.49	10.926		
9,925.00	9,789.65	9,868.03	9,799.56	38.85	36.27	91.06	153.91	569.49	792.07	719.28	72.79	10.882		
9,950.00	9,807.90	9,893.79	9,817.84	38.97	36.43	91.00	154.10	587.63	792.06	718.96	73.10	10.836		
9,975.00	9,825.23	9,919.51	9,835.09	39.09	36.60	90.95	154.30	606.69	792.04	718.63	73.41	10.789		
10,000.00	9,841.59	9,945.18	9,851.26	39.22	36.78	90.89	154.51	626.62	792.03	718.29	73.74	10.740		
10,025.00	9,856.94	9,970.80	9,866.32	39.35	36.96	90.83	154.72	647.36	792.02	717.93	74.08	10.691		
10,050.00	9,871.23	9,996.38	9,880.21	39.48	37.14	90.77	154.95	668.83	792.00	717.57	74.44	10.640		
10,075.00	9,884.44	10,021.91	9,892.91	39.62	37.33	90.70	155.18	690.97	791.99	717.19	74.80	10.588		
10,100.00	9,896.51	10,047.39	9,904.39	39.77	37.53	90.64	155.42	713.71	791.98	716.80	75.18	10.534		
10,125.00	9,907.42	10,072.81	9,914.62	39.92	37.74	90.57	155.66	736.99	791.97	716.40	75.57	10.480		
10,150.00	9,917.14	10,098.19	9,923.57	40.08	37.95	90.50	155.91	760.72	791.96	715.99	75.98	10.424		
10,175.00	9,925.64	10,123.51	9,931.24	40.24	38.17	90.43	156.16	784.85	791.95	715.56	76.39	10.367		
10,200.00	9,932.90	10,148.78	9,937.61	40.41	38.40	90.36	156.42	809.30	791.95	715.13	76.82	10.309		
10,225.00	9,938.90	10,173.99	9,942.67	40.59	38.63	90.28	156.68	833.99	791.94	714.68	77.26	10.251		
10,250.00	9,943.62	10,199.15	9,946.41	40.77	38.86	90.21	156.94	858.87	791.93	714.23	77.70	10.192		
10,275.00	9,947.05	10,224.26	9,948.83	40.96	39.10	90.14	157.20	883.85	791.93	713.77	78.16	10.132		
10,300.00	9,949.17	10,249.31	9,949.93	41.16	39.34	90.06	157.46	908.88	791.93	713.31	78.62	10.073		
10,325.00	9,949.99	10,274.31	9,950.01	41.36	39.59	90.01	157.73	933.87	791.93	712.83	79.09	10.013		
10,328.18	9,950.01	10,277.49	9,950.01	41.39	39.62	90.01	157.76	937.06	791.93	712.77	79.15	10.005		
10,400.00	9,950.01	10,349.31	9,950.00	42.01	40.38	90.01	158.51	1,008.87	791.93	711.31	80.61	9.824		
10,500.00	9,950.00	10,449.31	9,950.00	42.99	41.53	90.01	159.56	1,108.86	791.92	709.09	82.83	9.560		
10,600.00	9,950.00	10,549.31	9,950.00	44.08	42.78	90.01	160.61	1,208.86	791.92	706.65	85.28	9.287		
10,700.00	9,950.00	10,649.31	9,950.00	45.29	44.13	90.01	161.66	1,308.85	791.92	704.00	87.92	9.007		
10,800.00	9,950.00	10,749.31	9,950.00	46.60	45.58	90.01	162.70	1,408.85	791.92	701.17	90.75	8.726		
10,900.00	9,950.00	10,849.31	9,950.00	48.00	47.10	90.01	163.75	1,508.84	791.92	698.16	93.75	8.447		
11,000.00	9,950.00	10,949.31	9,950.00	49.48	48.71	90.01	164.80	1,608.84	791.92	695.01	96.91	8.172		
11,100.00	9,950.00	11,049.31	9,950.00	51.04	50.37	90.01	165.85	1,708.83	791.91	691.71	100.20	7.903		
11,200.00	9,950.00	11,149.31	9,950.00	52.67	52.10	90.01	166.90	1,808.83	791.91	688.29	103.62	7.643		
11,300.00	9,950.00	11,249.31	9,950.00	54.37	53.89	90.01	167.94	1,908.82	791.91	684.76	107.15	7.391		
11,400.00	9,950.00	11,349.31	9,950.00	56.12	55.72	90.01	168.99	2,008.82	791.91	681.12	110.78	7.148		
11,500.00	9,950.00	11,449.31	9,950.00	57.92	57.60	90.01	170.04	2,108.81	791.91	677.39	114.51	6.915		
11,600.00	9,950.00	11,549.31	9,950.00	59.77	59.52	90.01	171.09	2,208.80	791.90	673.58	118.32	6.693		
11,700.00	9,950.00	11,649.31	9,950.00	61.66	61.48	90.01	172.14	2,308.80	791.90	669.69	122.21	6.480		
11,800.00	9,950.00	11,749.31	9,950.00	63.59	63.47	90.01	173.18	2,408.79	791.90	665.73	126.17	6.277		
11,900.00	9,950.00	11,849.31	9,950.00	65.55	65.49	90.01	174.23	2,508.79	791.90	661.71	130.19	6.083		
12,000.00	9,950.00	11,949.31	9,950.00	67.55	67.54	90.01	175.28	2,608.78	791.90	657.63	134.27	5.898		
12,100.00	9,950.00	12,049.31	9,950.00	69.57	69.62	90.01	176.33	2,708.78	791.89	653.50	138.40	5.722		
12,200.00	9,950.00	12,149.31	9,950.00	71.62	71.72	90.01	177.38	2,808.77	791.89	649.32	142.57	5.554		
12,300.00	9,950.00	12,249.31	9,950.00	73.70	73.83	90.01	178.42	2,908.77	791.89	645.10	146.79	5.395		
12,400.00	9,950.00	12,349.31	9,950.00	75.80	75.97	90.01	179.47	3,008.76	791.89	640.83	151.05	5.242		
12,500.00	9,950.00	12,449.31	9,950.00	77.92	78.13	90.01	180.52	3,108.76	791.89	636.53	155.35	5.097		
12,600.00	9,950.00	12,549.31	9,950.00	80.05	80.30	90.01	181.57	3,208.75	791.88	632.20	159.68	4.959		
12,700.00	9,950.00	12,649.31	9,950.00	82.21	82.49	90.01	182.62	3,308.74	791.88	627.84	164.04	4.827		
12,800.00	9,950.00	12,749.31	9,950.00	84.37	84.69	90.01	183.66	3,408.74	791.88	623.45	168.44	4.701		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 213H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,900.00	9,950.00	12,849.31	9,950.00	86.56	86.91	90.01	184.71	3,508.73	791.88	619.03	172.85	4.581		
13,000.00	9,950.00	12,949.31	9,950.00	88.76	89.13	90.01	185.76	3,608.73	791.88	614.58	177.29	4.466		
13,100.00	9,950.00	13,049.31	9,950.00	90.97	91.37	90.01	186.81	3,708.72	791.88	610.12	181.76	4.357		
13,200.00	9,950.00	13,149.31	9,950.00	93.19	93.62	90.01	187.86	3,808.72	791.87	605.63	186.24	4.252		
13,300.00	9,950.00	13,249.31	9,950.00	95.42	95.87	90.01	188.90	3,908.71	791.87	601.12	190.75	4.151		
13,400.00	9,950.00	13,349.31	9,950.00	97.67	98.14	90.01	189.95	4,008.71	791.87	596.60	195.27	4.055		
13,500.00	9,950.00	13,449.31	9,950.00	99.92	100.41	90.01	191.00	4,108.70	791.87	592.06	199.81	3.963		
13,600.00	9,950.00	13,549.31	9,950.00	102.18	102.69	90.01	192.05	4,208.69	791.87	587.50	204.37	3.875		
13,700.00	9,950.00	13,649.31	9,950.00	104.45	104.98	90.01	193.10	4,308.69	791.86	582.93	208.94	3.790		
13,800.00	9,950.00	13,749.31	9,950.00	106.73	107.28	90.01	194.14	4,408.68	791.86	578.34	213.52	3.709		
13,900.00	9,950.00	13,849.31	9,950.00	109.01	109.58	90.01	195.19	4,508.68	791.86	573.74	218.12	3.630		
14,000.00	9,950.00	13,949.31	9,950.00	111.30	111.89	90.01	196.24	4,608.67	791.86	569.13	222.73	3.555		
14,100.00	9,950.00	14,049.31	9,950.00	113.60	114.20	90.01	197.29	4,708.67	791.86	564.51	227.35	3.483		
14,200.00	9,950.00	14,149.31	9,950.00	115.90	116.52	90.01	198.34	4,808.66	791.85	559.87	231.98	3.413		
14,300.00	9,950.00	14,249.31	9,950.00	118.21	118.84	90.01	199.38	4,908.66	791.85	555.23	236.62	3.346		
14,400.00	9,950.00	14,349.31	9,950.00	120.52	121.17	90.01	200.43	5,008.65	791.85	550.58	241.27	3.282		
14,500.00	9,950.00	14,449.31	9,950.00	122.84	123.51	90.01	201.48	5,108.65	791.85	545.91	245.94	3.220		
14,600.00	9,950.00	14,549.31	9,950.00	125.17	125.84	90.01	202.53	5,208.64	791.85	541.24	250.60	3.160		
14,700.00	9,950.00	14,649.31	9,950.00	127.49	128.18	90.01	203.58	5,308.63	791.84	536.56	255.28	3.102		
14,800.00	9,950.00	14,749.31	9,950.00	129.83	130.53	90.01	204.62	5,408.63	791.84	531.88	259.97	3.046		
14,900.00	9,950.00	14,849.31	9,950.00	132.16	132.87	90.01	205.67	5,508.62	791.84	527.18	264.66	2.992		
15,000.00	9,950.00	14,949.31	9,950.00	134.50	135.23	90.01	206.72	5,608.62	791.84	522.48	269.36	2.940		
15,100.00	9,950.00	15,049.31	9,950.00	136.85	137.58	90.01	207.77	5,708.61	791.84	517.78	274.06	2.889		
15,200.00	9,950.00	15,149.31	9,950.00	139.19	139.94	90.01	208.82	5,808.61	791.84	513.06	278.77	2.840		
15,300.00	9,950.00	15,249.31	9,950.00	141.54	142.30	90.01	209.86	5,908.60	791.83	508.35	283.49	2.793		
15,400.00	9,950.00	15,349.31	9,950.00	143.90	144.66	90.01	210.91	6,008.60	791.83	503.62	288.21	2.747		
15,500.00	9,950.00	15,449.31	9,950.00	146.25	147.03	90.01	211.96	6,108.59	791.83	498.89	292.94	2.703		
15,600.00	9,950.00	15,549.31	9,950.00	148.61	149.39	90.01	213.01	6,208.58	791.83	494.16	297.67	2.660		
15,700.00	9,950.00	15,649.31	9,950.00	150.97	151.76	90.01	214.06	6,308.58	791.83	489.42	302.41	2.618		
15,800.00	9,950.00	15,749.31	9,950.00	153.34	154.14	90.01	215.10	6,408.57	791.82	484.67	307.15	2.578		
15,900.00	9,950.00	15,849.31	9,950.00	155.70	156.51	90.01	216.15	6,508.57	791.82	479.93	311.90	2.539		
16,000.00	9,950.00	15,949.31	9,950.00	158.07	158.89	90.01	217.20	6,608.56	791.82	475.17	316.65	2.501		
16,100.00	9,950.00	16,049.31	9,950.00	160.44	161.27	90.01	218.25	6,708.56	791.82	470.42	321.40	2.464		
16,200.00	9,950.00	16,149.31	9,950.00	162.82	163.65	90.01	219.30	6,808.55	791.82	465.66	326.16	2.428		
16,300.00	9,950.00	16,249.31	9,950.00	165.19	166.03	90.01	220.34	6,908.55	791.81	460.89	330.92	2.393		
16,400.00	9,950.00	16,349.31	9,950.00	167.57	168.41	90.01	221.39	7,008.54	791.81	456.13	335.69	2.359		
16,500.00	9,950.00	16,449.31	9,950.00	169.95	170.80	90.01	222.44	7,108.54	791.81	451.36	340.46	2.326		
16,600.00	9,950.00	16,549.31	9,950.00	172.33	173.19	90.01	223.49	7,208.53	791.81	446.58	345.23	2.294		
16,700.00	9,950.00	16,649.31	9,950.00	174.71	175.57	90.01	224.54	7,308.52	791.81	441.80	350.00	2.262		
16,800.00	9,950.00	16,749.31	9,950.00	177.09	177.96	90.01	225.58	7,408.52	791.80	437.02	354.78	2.232		
16,900.00	9,950.00	16,849.31	9,950.00	179.48	180.35	90.01	226.63	7,508.51	791.80	432.24	359.56	2.202		
17,000.00	9,950.00	16,949.31	9,950.00	181.87	182.75	90.01	227.68	7,608.51	791.80	427.46	364.34	2.173		
17,100.00	9,950.00	17,049.31	9,950.00	184.26	185.14	90.01	228.73	7,708.50	791.80	422.67	369.13	2.145		
17,200.00	9,950.00	17,149.31	9,950.00	186.65	187.54	90.01	229.78	7,808.50	791.80	417.88	373.92	2.118		
17,300.00	9,950.00	17,249.31	9,950.00	189.04	189.93	90.01	230.82	7,908.49	791.80	413.09	378.71	2.091		
17,400.00	9,950.00	17,349.31	9,950.00	191.43	192.33	90.01	231.87	8,008.49	791.79	408.29	383.50	2.065		
17,500.00	9,950.00	17,449.31	9,950.00	193.82	194.73	90.01	232.92	8,108.48	791.79	403.49	388.30	2.039		
17,600.00	9,950.00	17,549.31	9,950.00	196.22	197.13	90.01	233.97	8,208.48	791.79	398.69	393.10	2.014		
17,671.16	9,950.00	17,620.47	9,950.00	197.92	198.84	90.01	234.71	8,279.63	791.79	395.28	396.51	1.997		
17,689.50	9,950.00	17,621.11	9,950.00	198.36	198.85	90.01	234.72	8,280.27	791.99	395.36	396.62	1.997 SF		
17,690.09	9,950.00	17,621.11	9,950.00	198.38	198.85	90.01	234.72	8,280.27	792.00	395.38	396.62	1.997		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 214H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.40	0.40	0.00	0.00	-0.02	99.91	-0.04	99.91					
100.00	100.00	100.40	100.40	0.13	0.14	-0.02	99.91	-0.04	99.91	99.64	0.27	369.643		
200.00	200.00	200.40	200.40	0.49	0.49	-0.02	99.91	-0.04	99.91	98.92	0.99	101.202		
300.00	300.00	300.40	300.40	0.85	0.85	-0.02	99.91	-0.04	99.91	98.21	1.70	58.627		
400.00	400.00	400.40	400.40	1.21	1.21	-0.02	99.91	-0.04	99.91	97.49	2.42	41.266		
500.00	500.00	500.40	500.40	1.57	1.57	-0.02	99.91	-0.04	99.91	96.77	3.14	31.838		
600.00	600.00	600.40	600.40	1.93	1.93	-0.02	99.91	-0.04	99.91	96.06	3.86	25.917		
700.00	700.00	700.40	700.40	2.29	2.29	-0.02	99.91	-0.04	99.91	95.34	4.57	21.853		
800.00	800.00	800.40	800.40	2.64	2.65	-0.02	99.91	-0.04	99.91	94.62	5.29	18.891		
900.00	900.00	900.40	900.40	3.00	3.00	-0.02	99.91	-0.04	99.91	93.90	6.01	16.635		
1,000.00	1,000.00	1,000.40	1,000.40	3.36	3.36	-0.02	99.91	-0.04	99.91	93.19	6.72	14.861		
1,100.00	1,100.00	1,100.40	1,100.40	3.72	3.72	-0.02	99.91	-0.04	99.91	92.47	7.44	13.429		
1,200.00	1,200.00	1,200.40	1,200.40	4.08	4.08	-0.02	99.91	-0.04	99.91	91.75	8.16	12.249		
1,300.00	1,300.00	1,300.40	1,300.40	4.44	4.44	-0.02	99.91	-0.04	99.91	91.04	8.87	11.259		
1,400.00	1,400.00	1,400.40	1,400.40	4.79	4.80	-0.02	99.91	-0.04	99.91	90.32	9.59	10.418		
1,500.00	1,500.00	1,500.41	1,500.41	5.15	5.15	-0.02	99.91	-0.04	99.91	89.60	10.31	9.693		
1,600.00	1,600.00	1,601.83	1,601.81	5.51	5.51	0.93	99.16	1.61	99.18	88.17	11.02	9.004		
1,700.00	1,700.00	1,703.00	1,702.83	5.87	5.85	3.84	96.93	6.50	97.18	85.47	11.71	8.296		
1,800.00	1,800.00	1,803.63	1,803.06	6.23	6.19	8.89	93.26	14.59	94.43	82.01	12.42	7.605		
1,900.00	1,899.98	1,903.06	1,901.95	6.59	6.54	-10.62	88.95	24.05	90.45	77.32	13.12	6.892		
2,000.00	1,999.84	2,002.39	2,000.73	6.94	6.89	-4.29	84.66	33.50	84.09	70.25	13.83	6.078		
2,100.00	2,099.45	2,101.47	2,099.27	7.30	7.25	3.12	80.37	42.93	75.44	60.90	14.55	5.186		
2,200.00	2,198.70	2,200.20	2,197.46	7.66	7.60	12.89	76.10	52.32	64.98	49.72	15.25	4.260		
2,300.00	2,297.47	2,298.46	2,295.18	8.03	7.96	27.38	71.85	61.67	53.94	37.99	15.95	3.383		
2,400.08	2,395.70	2,396.19	2,392.38	8.40	8.32	50.14	67.62	70.97	45.51	28.89	16.62	2.739		
2,445.14	2,439.78	2,440.05	2,435.99	8.58	8.49	62.96	65.72	75.14	44.31	27.39	16.92	2.619	CC, ES, SF	
2,500.00	2,493.44	2,493.43	2,489.09	8.79	8.68	78.45	63.41	80.22	46.07	28.77	17.30	2.663		
2,600.00	2,591.25	2,590.75	2,585.87	9.19	9.05	101.00	59.20	89.48	56.84	38.80	18.04	3.150		
2,700.00	2,689.07	2,688.07	2,682.66	9.59	9.41	115.13	54.99	98.74	73.47	54.67	18.80	3.909		
2,800.00	2,786.88	2,785.39	2,779.45	10.01	9.78	123.81	50.78	108.00	92.85	73.31	19.55	4.750		
2,900.00	2,884.69	2,882.71	2,876.23	10.42	10.15	129.45	46.57	117.26	113.60	93.30	20.29	5.597		
3,000.00	2,982.51	2,980.03	2,973.02	10.85	10.52	133.34	42.36	126.52	135.07	114.03	21.04	6.419		
3,100.00	3,080.32	3,077.35	3,069.81	11.27	10.89	136.15	38.15	135.77	156.98	135.19	21.79	7.204		
3,200.00	3,178.14	3,174.67	3,166.59	11.71	11.26	138.28	33.94	145.03	179.16	156.62	22.54	7.949		
3,300.00	3,275.95	3,271.99	3,263.38	12.14	11.63	139.93	29.73	154.29	201.52	178.24	23.29	8.654		
3,400.00	3,373.76	3,369.31	3,360.17	12.58	12.00	141.26	25.52	163.55	224.01	199.98	24.04	9.319		
3,500.00	3,471.58	3,466.63	3,456.95	13.02	12.38	142.34	21.30	172.81	246.60	221.81	24.79	9.948		
3,600.00	3,569.39	3,563.95	3,553.74	13.47	12.75	143.25	17.09	182.07	269.26	243.71	25.54	10.541		
3,700.00	3,667.21	3,661.27	3,650.53	13.92	13.13	144.01	12.88	191.33	291.96	265.67	26.30	11.102		
3,800.00	3,765.02	3,758.59	3,747.31	14.36	13.50	144.66	8.67	200.59	314.72	287.66	27.06	11.632		
3,900.00	3,862.84	3,855.91	3,844.10	14.82	13.88	145.23	4.46	209.85	337.50	309.69	27.81	12.135		
4,000.00	3,960.65	3,953.23	3,940.89	15.27	14.25	145.72	0.25	219.11	360.31	331.74	28.57	12.611		
4,100.00	4,058.46	4,050.55	4,037.67	15.73	14.63	146.15	-3.96	228.37	383.15	353.81	29.33	13.063		
4,200.00	4,156.28	4,147.87	4,134.46	16.18	15.01	146.54	-8.17	237.62	406.00	375.91	30.09	13.492		
4,300.00	4,254.09	4,245.18	4,231.24	16.64	15.39	146.88	-12.38	246.88	428.87	398.01	30.85	13.900		
4,400.00	4,351.91	4,342.50	4,328.03	17.10	15.77	147.19	-16.59	256.14	451.75	420.13	31.62	14.288		
4,500.00	4,449.72	4,439.82	4,424.82	17.56	16.14	147.47	-20.80	265.40	474.64	442.26	32.38	14.658		
4,600.00	4,547.54	4,537.14	4,521.60	18.02	16.52	147.73	-25.01	274.66	497.54	464.40	33.14	15.011		
4,700.00	4,645.35	4,634.46	4,618.39	18.48	16.90	147.96	-29.22	283.92	520.45	486.54	33.91	15.348		
4,800.00	4,743.16	4,731.78	4,715.18	18.95	17.28	148.17	-33.43	293.18	543.37	508.70	34.68	15.670		
4,900.00	4,840.98	4,829.10	4,811.96	19.41	17.66	148.36	-37.64	302.44	566.30	530.85	35.44	15.978		
5,000.00	4,938.79	4,926.42	4,908.75	19.88	18.04	148.54	-41.86	311.70	589.23	553.02	36.21	16.273		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 214H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,036.61	5,023.74	5,005.54	20.35	18.42	148.71	-46.07	320.96	612.16	575.18	36.98	16.556		
5,200.00	5,134.42	5,121.06	5,102.32	20.81	18.80	148.86	-50.28	330.22	635.10	597.36	37.74	16.826		
5,300.00	5,232.23	5,218.38	5,199.11	21.28	19.18	149.01	-54.49	339.47	658.04	619.53	38.51	17.086		
5,400.00	5,330.05	5,315.70	5,295.90	21.75	19.57	149.14	-58.70	348.73	680.99	641.71	39.28	17.336		
5,500.00	5,427.86	5,413.02	5,392.68	22.22	19.95	149.27	-62.91	357.99	703.94	663.89	40.05	17.576		
5,600.00	5,525.68	5,510.34	5,489.47	22.69	20.33	149.38	-67.12	367.25	726.90	686.08	40.82	17.807		
5,700.00	5,623.49	5,607.66	5,586.26	23.16	20.71	149.49	-71.33	376.51	749.85	708.26	41.59	18.029		
5,800.00	5,721.31	5,704.98	5,683.04	23.63	21.09	149.60	-75.54	385.77	772.81	730.45	42.36	18.243		
5,900.00	5,819.12	5,802.30	5,779.83	24.10	21.47	149.70	-79.75	395.03	795.77	752.64	43.13	18.449		
6,000.00	5,916.93	5,899.62	5,876.62	24.57	21.86	149.79	-83.96	404.29	818.74	774.83	43.91	18.648		
6,100.00	6,014.75	5,996.94	5,973.40	25.04	22.24	149.87	-88.17	413.55	841.70	797.02	44.68	18.839		
6,200.00	6,112.56	6,095.87	6,071.79	25.51	22.63	149.96	-92.44	422.94	864.66	819.20	45.46	19.019		
6,300.00	6,210.38	6,209.83	6,185.37	25.99	23.06	150.21	-96.25	431.32	886.54	840.19	46.34	19.129		
6,400.00	6,308.19	6,324.31	6,299.75	26.46	23.47	150.70	-98.20	435.59	906.61	859.42	47.19	19.213		
6,500.00	6,406.00	6,430.97	6,406.40	26.93	23.82	151.35	-98.46	436.17	925.15	877.20	47.95	19.296		
6,600.00	6,503.82	6,528.78	6,504.22	27.40	24.14	151.96	-98.46	436.17	943.54	894.89	48.65	19.395		
6,700.00	6,601.63	6,626.59	6,602.03	27.88	24.46	152.54	-98.46	436.17	962.03	912.68	49.35	19.494		
6,800.00	6,699.45	6,724.41	6,699.85	28.35	24.78	153.09	-98.46	436.17	980.61	930.56	50.05	19.592		
6,832.56	6,731.30	6,756.26	6,731.70	28.51	24.88	153.27	-98.46	436.17	986.68	936.40	50.28	19.623		
6,900.00	6,797.42	6,822.38	6,797.82	28.82	25.10	153.72	-98.46	436.17	998.58	947.82	50.75	19.675		
7,000.00	6,896.00	6,920.96	6,896.40	29.26	25.42	154.27	-98.46	436.17	1,013.69	962.24	51.45	19.702		
7,100.00	6,995.10	7,020.07	6,995.50	29.67	25.75	154.70	-98.46	436.17	1,025.73	973.58	52.14	19.671		
7,200.00	7,094.61	7,119.57	7,095.01	30.05	26.08	155.00	-98.46	436.17	1,034.65	981.82	52.83	19.584		
7,300.00	7,194.40	7,219.37	7,194.80	30.41	26.41	155.20	-98.46	436.17	1,040.43	986.92	53.51	19.443		
7,400.00	7,294.36	7,319.32	7,294.76	30.73	26.74	155.29	-98.46	436.17	1,043.05	988.87	54.19	19.250		
7,432.64	7,327.00	7,351.96	7,327.40	30.83	26.85	-179.17	-98.46	436.17	1,043.22	988.82	54.40	19.175		
7,500.00	7,394.36	7,419.32	7,394.76	31.03	27.07	-179.17	-98.46	436.17	1,043.22	988.37	54.85	19.018		
7,600.00	7,494.36	7,519.32	7,494.76	31.33	27.41	-179.17	-98.46	436.17	1,043.22	987.70	55.52	18.789		
7,700.00	7,594.36	7,619.32	7,594.76	31.63	27.74	-179.17	-98.46	436.17	1,043.22	987.03	56.19	18.566		
7,800.00	7,694.36	7,719.32	7,694.76	31.93	28.08	-179.17	-98.46	436.17	1,043.22	986.36	56.86	18.347		
7,900.00	7,794.36	7,819.32	7,794.76	32.24	28.41	-179.17	-98.46	436.17	1,043.22	985.69	57.53	18.132		
8,000.00	7,894.36	7,919.32	7,894.76	32.54	28.75	-179.17	-98.46	436.17	1,043.22	985.01	58.21	17.923		
8,100.00	7,994.36	8,019.32	7,994.76	32.85	29.08	-179.17	-98.46	436.17	1,043.22	984.34	58.88	17.718		
8,200.00	8,094.36	8,119.32	8,094.76	33.16	29.42	-179.17	-98.46	436.17	1,043.22	983.67	59.55	17.517		
8,300.00	8,194.36	8,219.32	8,194.76	33.47	29.76	-179.17	-98.46	436.17	1,043.22	982.99	60.23	17.320		
8,400.00	8,294.36	8,319.32	8,294.76	33.77	30.09	-179.17	-98.46	436.17	1,043.22	982.31	60.91	17.128		
8,500.00	8,394.36	8,419.32	8,394.76	34.08	30.43	-179.17	-98.46	436.17	1,043.22	981.64	61.59	16.940		
8,600.00	8,494.36	8,519.32	8,494.76	34.40	30.77	-179.17	-98.46	436.17	1,043.22	980.96	62.26	16.755		
8,700.00	8,594.36	8,619.32	8,594.76	34.71	31.11	-179.17	-98.46	436.17	1,043.22	980.28	62.94	16.574		
8,800.00	8,694.36	8,719.32	8,694.76	35.02	31.45	-179.17	-98.46	436.17	1,043.22	979.60	63.62	16.397		
8,900.00	8,794.36	8,819.32	8,794.76	35.33	31.79	-179.17	-98.46	436.17	1,043.22	978.92	64.30	16.223		
9,000.00	8,894.36	8,919.32	8,894.76	35.65	32.13	-179.17	-98.46	436.17	1,043.22	978.23	64.99	16.053		
9,100.00	8,994.36	9,019.32	8,994.76	35.96	32.47	-179.17	-98.46	436.17	1,043.22	977.55	65.67	15.886		
9,200.00	9,094.36	9,119.32	9,094.76	36.28	32.81	-179.17	-98.46	436.17	1,043.22	976.87	66.35	15.723		
9,300.00	9,194.36	9,219.32	9,194.76	36.60	33.15	-179.17	-98.46	436.17	1,043.22	976.18	67.04	15.562		
9,400.00	9,294.36	9,319.32	9,294.76	36.91	33.50	-179.17	-98.46	436.17	1,043.22	975.50	67.72	15.405		
9,500.00	9,394.36	9,419.32	9,394.76	37.23	33.84	-179.17	-98.46	436.17	1,043.22	974.81	68.41	15.251		
9,578.18	9,472.54	9,497.50	9,472.94	37.48	34.11	-179.17	-98.46	436.17	1,043.22	974.28	68.94	15.132		
9,600.00	9,494.35	9,519.31	9,494.75	37.55	34.18	91.46	-98.46	436.17	1,043.23	974.14	69.09	15.099		
9,625.00	9,519.28	9,544.24	9,519.68	37.64	34.27	91.55	-98.46	436.17	1,043.28	974.02	69.26	15.063		
9,650.00	9,544.09	9,569.05	9,544.49	37.72	34.35	91.71	-98.46	436.17	1,043.37	973.94	69.43	15.027		
9,675.00	9,568.69	9,593.66	9,569.09	37.81	34.43	91.93	-98.46	436.17	1,043.51	973.91	69.61	14.992		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 214H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
9,700.00	9,593.04	9,618.00	9,593.44	37.90	34.52	92.21	-98.46	436.17	1,043.72	973.94	69.78	14.958		
9,725.00	9,617.05	9,642.02	9,617.45	38.00	34.60	92.54	-98.46	436.17	1,044.02	974.07	69.95	14.925		
9,750.00	9,640.67	9,665.63	9,641.07	38.10	34.68	92.91	-98.46	436.17	1,044.43	974.31	70.12	14.894		
9,775.00	9,663.83	9,688.79	9,664.23	38.20	34.76	93.32	-98.46	436.17	1,044.98	974.69	70.29	14.866		
9,800.00	9,686.46	9,711.43	9,686.86	38.30	34.84	93.76	-98.46	436.17	1,045.71	975.24	70.46	14.840		
9,825.00	9,708.51	9,733.47	9,708.91	38.41	34.91	94.22	-98.46	436.17	1,046.64	976.01	70.63	14.818		
9,850.00	9,729.91	9,754.87	9,730.31	38.52	34.99	94.68	-98.46	436.17	1,047.81	977.01	70.80	14.800		
9,875.00	9,750.61	9,775.57	9,751.01	38.63	35.06	95.14	-98.46	436.17	1,049.26	978.29	70.96	14.786		
9,900.00	9,770.54	9,795.50	9,770.94	38.74	35.13	95.58	-98.46	436.17	1,051.02	979.90	71.13	14.777		
9,925.00	9,789.65	9,814.62	9,790.05	38.85	35.19	96.00	-98.46	436.17	1,053.14	981.86	71.28	14.774		
9,950.00	9,807.90	9,832.86	9,808.30	38.97	35.26	96.37	-98.46	436.17	1,055.66	984.22	71.44	14.777		
9,975.00	9,825.23	9,850.19	9,825.63	39.09	35.32	96.70	-98.46	436.17	1,058.60	987.01	71.59	14.787		
10,000.00	9,841.59	9,866.55	9,841.99	39.22	35.37	96.96	-98.46	436.17	1,062.01	990.27	71.74	14.803		
10,025.00	9,856.94	9,881.90	9,857.34	39.35	35.42	97.14	-98.46	436.17	1,065.91	994.02	71.89	14.828		
10,050.00	9,871.23	9,896.20	9,871.63	39.48	35.47	97.24	-98.46	436.17	1,070.34	998.31	72.03	14.860		
10,075.00	9,884.44	9,909.40	9,884.84	39.62	35.52	97.24	-98.46	436.17	1,075.31	1,003.15	72.16	14.902		
10,100.00	9,896.51	9,921.47	9,896.91	39.77	35.56	97.14	-98.46	436.17	1,080.85	1,008.56	72.29	14.951		
10,125.00	9,907.42	9,932.38	9,907.82	39.92	35.60	96.92	-98.46	436.17	1,086.98	1,014.56	72.42	15.010		
10,150.00	9,917.14	9,942.10	9,917.54	40.08	35.63	96.57	-98.46	436.17	1,093.69	1,021.16	72.54	15.078		
10,175.00	9,925.64	9,950.60	9,926.04	40.24	35.66	96.09	-98.46	436.17	1,101.00	1,028.35	72.65	15.155		
10,200.00	9,932.90	9,957.86	9,933.30	40.41	35.69	95.48	-98.46	436.17	1,108.90	1,036.15	72.75	15.242		
10,225.00	9,938.90	9,963.86	9,939.30	40.59	35.71	94.72	-98.46	436.17	1,117.38	1,044.53	72.85	15.338		
10,250.00	9,943.62	9,968.58	9,944.02	40.77	35.72	93.81	-98.46	436.17	1,126.43	1,053.49	72.94	15.443		
10,275.00	9,947.05	9,972.01	9,947.45	40.96	35.73	92.75	-98.46	436.17	1,136.02	1,062.99	73.02	15.557		
10,300.00	9,949.17	9,974.14	9,949.57	41.16	35.74	91.54	-98.46	436.17	1,146.12	1,073.03	73.10	15.680		
10,325.00	9,949.99	9,974.96	9,950.39	41.36	35.74	90.18	-98.46	436.17	1,156.71	1,083.55	73.16	15.811		
10,328.18	9,950.01	9,974.97	9,950.41	41.39	35.74	90.00	-98.46	436.17	1,158.09	1,084.92	73.17	15.828		
10,400.00	9,950.01	9,974.97	9,950.41	42.01	35.74	90.00	-98.46	436.17	1,191.07	1,117.74	73.33	16.242		
10,500.00	9,950.00	9,974.97	9,950.40	42.99	35.74	90.00	-98.46	436.17	1,242.46	1,168.91	73.56	16.891		
10,600.00	9,950.00	9,974.97	9,950.40	44.08	35.74	90.00	-98.46	436.17	1,299.53	1,225.76	73.77	17.615		
10,700.00	9,950.00	11,436.22	10,770.00	45.29	45.37	127.56	-112.68	1,282.64	1,344.95	1,268.21	76.74	17.526		
10,800.00	9,950.00	11,536.19	10,770.00	46.60	46.70	127.49	-114.36	1,382.59	1,347.11	1,268.18	78.93	17.067		
10,900.00	9,950.00	11,636.15	10,770.00	48.00	48.12	127.41	-116.04	1,482.53	1,349.28	1,268.01	81.27	16.602		
11,000.00	9,950.00	11,736.11	10,770.00	49.48	49.61	127.34	-117.72	1,582.48	1,351.44	1,267.70	83.74	16.139		
11,100.00	9,950.00	11,836.08	10,770.00	51.04	51.18	127.27	-119.40	1,682.43	1,353.61	1,267.28	86.33	15.679		
11,200.00	9,950.00	11,936.04	10,770.00	52.67	52.82	127.20	-121.08	1,782.38	1,355.78	1,266.74	89.04	15.227		
11,300.00	9,950.00	12,036.00	10,770.00	54.37	54.52	127.14	-122.76	1,882.33	1,357.95	1,266.11	91.85	14.785		
11,400.00	9,950.00	12,135.96	10,770.00	56.12	56.27	127.07	-124.44	1,982.28	1,360.13	1,265.38	94.75	14.355		
11,500.00	9,950.00	12,235.93	10,770.00	57.92	58.07	127.00	-126.12	2,082.23	1,362.31	1,264.56	97.74	13.938		
11,600.00	9,950.00	12,335.89	10,770.00	59.77	59.92	126.93	-127.80	2,182.18	1,364.48	1,263.67	100.81	13.535		
11,700.00	9,950.00	12,435.85	10,770.00	61.66	61.81	126.86	-129.48	2,282.12	1,366.66	1,262.71	103.96	13.146		
11,800.00	9,950.00	12,535.82	10,770.00	63.59	63.74	126.79	-131.16	2,382.07	1,368.85	1,261.68	107.17	12.772		
11,900.00	9,950.00	12,635.78	10,770.00	65.55	65.70	126.72	-132.84	2,482.02	1,371.03	1,260.58	110.45	12.413		
12,000.00	9,950.00	12,735.74	10,770.00	67.55	67.69	126.65	-134.52	2,581.97	1,373.22	1,259.44	113.78	12.069		
12,100.00	9,950.00	12,835.70	10,770.00	69.57	69.72	126.59	-136.20	2,681.92	1,375.41	1,258.24	117.17	11.739		
12,200.00	9,950.00	12,935.67	10,770.00	71.62	71.77	126.52	-137.88	2,781.87	1,377.60	1,256.99	120.60	11.423		
12,300.00	9,950.00	13,035.63	10,770.00	73.70	73.84	126.45	-139.56	2,881.82	1,379.79	1,255.71	124.08	11.120		
12,400.00	9,950.00	13,135.59	10,770.00	75.80	75.93	126.38	-141.24	2,981.77	1,381.98	1,254.38	127.61	10.830		
12,500.00	9,950.00	13,235.56	10,770.00	77.92	78.05	126.32	-142.92	3,081.71	1,384.18	1,253.01	131.17	10.552		
12,600.00	9,950.00	13,335.52	10,770.00	80.05	80.18	126.25	-144.60	3,181.66	1,386.38	1,251.60	134.77	10.287		
12,700.00	9,950.00	13,435.48	10,770.00	82.21	82.33	126.18	-146.28	3,281.61	1,388.58	1,250.17	138.41	10.033		
12,800.00	9,950.00	13,535.44	10,770.00	84.37	84.50	126.12	-147.96	3,381.56	1,390.78	1,248.70	142.07	9.789		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,900.00	9,950.00	13,635.41	10,770.00	86.56	86.68	126.05	-149.64	3,481.51	1,392.98	1,247.21	145.77	9.556		
13,000.00	9,950.00	13,735.37	10,770.00	88.76	88.88	125.99	-151.32	3,581.46	1,395.19	1,245.69	149.50	9.332		
13,100.00	9,950.00	13,835.33	10,770.00	90.97	91.09	125.92	-153.00	3,681.41	1,397.39	1,244.14	153.25	9.118		
13,200.00	9,950.00	13,935.30	10,770.00	93.19	93.31	125.86	-154.68	3,781.36	1,399.60	1,242.57	157.03	8.913		
13,300.00	9,950.00	14,035.26	10,770.00	95.42	95.54	125.79	-156.36	3,881.30	1,401.81	1,240.98	160.83	8.716		
13,400.00	9,950.00	14,135.22	10,770.00	97.67	97.78	125.72	-158.04	3,981.25	1,404.03	1,239.37	164.66	8.527		
13,500.00	9,950.00	14,235.18	10,770.00	99.92	100.03	125.66	-159.72	4,081.20	1,406.24	1,237.74	168.50	8.345		
13,600.00	9,950.00	14,335.15	10,770.00	102.18	102.29	125.60	-161.39	4,181.15	1,408.46	1,236.09	172.37	8.171		
13,700.00	9,950.00	14,435.11	10,770.00	104.45	104.56	125.53	-163.07	4,281.10	1,410.67	1,234.42	176.26	8.004		
13,800.00	9,950.00	14,535.07	10,770.00	106.73	106.84	125.47	-164.75	4,381.05	1,412.89	1,232.73	180.16	7.842		
13,900.00	9,950.00	14,635.04	10,770.00	109.01	109.12	125.40	-166.43	4,481.00	1,415.11	1,231.03	184.08	7.687		
14,000.00	9,950.00	14,735.00	10,770.00	111.30	111.41	125.34	-168.11	4,580.95	1,417.34	1,229.32	188.02	7.538		
14,100.00	9,950.00	14,834.96	10,770.00	113.60	113.71	125.28	-169.79	4,680.89	1,419.56	1,227.59	191.98	7.395		
14,200.00	9,950.00	14,934.92	10,770.00	115.90	116.01	125.21	-171.47	4,780.84	1,421.79	1,225.85	195.94	7.256		
14,300.00	9,950.00	15,034.89	10,770.00	118.21	118.32	125.15	-173.15	4,880.79	1,424.02	1,224.09	199.93	7.123		
14,400.00	9,950.00	15,134.85	10,770.00	120.52	120.63	125.09	-174.83	4,980.74	1,426.25	1,222.32	203.93	6.994		
14,500.00	9,950.00	15,234.81	10,770.00	122.84	122.95	125.02	-176.51	5,080.69	1,428.48	1,220.54	207.94	6.870		
14,600.00	9,950.00	15,334.77	10,770.00	125.17	125.27	124.96	-178.19	5,180.64	1,430.71	1,218.75	211.96	6.750		
14,700.00	9,950.00	15,434.74	10,770.00	127.49	127.60	124.90	-179.87	5,280.59	1,432.95	1,216.95	216.00	6.634		
14,800.00	9,950.00	15,534.70	10,770.00	129.83	129.93	124.84	-181.55	5,380.53	1,435.19	1,215.13	220.05	6.522		
14,900.00	9,950.00	15,634.66	10,770.00	132.16	132.27	124.77	-183.23	5,480.48	1,437.43	1,213.31	224.11	6.414		
15,000.00	9,950.00	15,734.63	10,770.00	134.50	134.61	124.71	-184.91	5,580.43	1,439.67	1,211.48	228.19	6.309		
15,100.00	9,950.00	15,834.59	10,770.00	136.85	136.95	124.65	-186.59	5,680.38	1,441.91	1,209.64	232.27	6.208		
15,200.00	9,950.00	15,934.55	10,770.00	139.19	139.30	124.59	-188.27	5,780.33	1,444.15	1,207.79	236.36	6.110		
15,300.00	9,950.00	16,034.51	10,770.00	141.54	141.65	124.53	-189.95	5,880.28	1,446.40	1,205.93	240.47	6.015		
15,400.00	9,950.00	16,134.48	10,770.00	143.90	144.01	124.47	-191.63	5,980.23	1,448.64	1,204.06	244.58	5.923		
15,500.00	9,950.00	16,234.44	10,770.00	146.25	146.36	124.40	-193.31	6,080.18	1,450.89	1,202.19	248.71	5.834		
15,600.00	9,950.00	16,334.40	10,770.00	148.61	148.72	124.34	-194.99	6,180.12	1,453.14	1,200.30	252.84	5.747		
15,700.00	9,950.00	16,434.37	10,770.00	150.97	151.08	124.28	-196.67	6,280.07	1,455.39	1,198.41	256.98	5.663		
15,800.00	9,950.00	16,534.33	10,770.00	153.34	153.45	124.22	-198.35	6,380.02	1,457.65	1,196.52	261.13	5.582		
15,900.00	9,950.00	16,634.29	10,770.00	155.70	155.82	124.16	-200.03	6,479.97	1,459.90	1,194.61	265.29	5.503		
16,000.00	9,950.00	16,734.25	10,770.00	158.07	158.19	124.10	-201.71	6,579.92	1,462.16	1,192.70	269.46	5.426		
16,100.00	9,950.00	16,834.22	10,770.00	160.44	160.56	124.04	-203.39	6,679.87	1,464.42	1,190.78	273.64	5.352		
16,200.00	9,950.00	16,934.18	10,770.00	162.82	162.93	123.98	-205.07	6,779.82	1,466.68	1,188.86	277.82	5.279		
16,300.00	9,950.00	17,034.14	10,770.00	165.19	165.31	123.92	-206.75	6,879.77	1,468.94	1,186.93	282.01	5.209		
16,400.00	9,950.00	17,134.11	10,770.00	167.57	167.69	123.87	-208.42	6,979.71	1,471.20	1,184.99	286.21	5.140		
16,500.00	9,950.00	17,234.07	10,770.00	169.95	170.07	123.81	-210.10	7,079.66	1,473.47	1,183.05	290.42	5.074		
16,600.00	9,950.00	17,334.03	10,770.00	172.33	172.45	123.75	-211.78	7,179.61	1,475.73	1,181.10	294.63	5.009		
16,700.00	9,950.00	17,433.99	10,770.00	174.71	174.83	123.69	-213.46	7,279.56	1,478.00	1,179.15	298.85	4.946		
16,800.00	9,950.00	17,533.96	10,770.00	177.09	177.22	123.63	-215.14	7,379.51	1,480.27	1,177.19	303.08	4.884		
16,900.00	9,950.00	17,633.92	10,770.00	179.48	179.60	123.57	-216.82	7,479.46	1,482.54	1,175.22	307.32	4.824		
17,000.00	9,950.00	17,733.88	10,770.00	181.87	181.99	123.51	-218.50	7,579.41	1,484.81	1,173.25	311.56	4.766		
17,100.00	9,950.00	17,833.85	10,770.00	184.26	184.38	123.46	-220.18	7,679.36	1,487.09	1,171.28	315.81	4.709		
17,200.00	9,950.00	17,933.81	10,770.00	186.65	186.77	123.40	-221.86	7,779.30	1,489.36	1,169.30	320.06	4.653		
17,300.00	9,950.00	18,033.77	10,770.00	189.04	189.17	123.34	-223.54	7,879.25	1,491.64	1,167.32	324.33	4.599		
17,400.00	9,950.00	18,133.73	10,770.00	191.43	191.56	123.28	-225.22	7,979.20	1,493.92	1,165.33	328.59	4.546		
17,500.00	9,950.00	18,233.70	10,770.00	193.82	193.96	123.23	-226.90	8,079.15	1,496.20	1,163.33	332.87	4.495		
17,600.00	9,950.00	18,333.66	10,770.00	196.22	196.35	123.17	-228.58	8,179.10	1,498.48	1,161.33	337.15	4.445		
17,689.50	9,950.00	18,423.12	10,770.00	198.36	198.50	123.12	-230.08	8,268.55	1,500.52	1,159.54	340.98	4.401		
17,690.09	9,950.00	18,423.72	10,770.00	198.38	198.51	123.12	-230.09	8,269.14	1,500.54	1,159.52	341.02	4.400		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.02	-0.04	-100.06	100.06					
100.00	100.00	99.60	99.60	0.13	0.13	-90.02	-0.04	-100.06	100.06	99.79	0.27	372.918		
200.00	200.00	199.60	199.60	0.49	0.49	-90.02	-0.04	-100.06	100.06	99.08	0.98	101.649		
300.00	300.00	299.60	299.60	0.85	0.85	-90.02	-0.04	-100.06	100.06	98.36	1.70	58.814		
400.00	400.00	399.60	399.60	1.21	1.21	-90.02	-0.04	-100.06	100.06	97.64	2.42	41.377		
500.00	500.00	499.60	499.60	1.57	1.57	-90.02	-0.04	-100.06	100.06	96.92	3.14	31.915		
600.00	600.00	599.60	599.60	1.93	1.93	-90.02	-0.04	-100.06	100.06	96.21	3.85	25.975		
700.00	700.00	699.60	699.60	2.29	2.28	-90.02	-0.04	-100.06	100.06	95.49	4.57	21.899		
800.00	800.00	799.60	799.60	2.64	2.64	-90.02	-0.04	-100.06	100.06	94.77	5.29	18.929		
900.00	900.00	899.60	899.60	3.00	3.00	-90.02	-0.04	-100.06	100.06	94.06	6.00	16.668		
1,000.00	1,000.00	999.60	999.60	3.36	3.36	-90.02	-0.04	-100.06	100.06	93.34	6.72	14.890		
1,100.00	1,100.00	1,099.60	1,099.60	3.72	3.72	-90.02	-0.04	-100.06	100.06	92.62	7.44	13.455		
1,200.00	1,200.00	1,199.60	1,199.60	4.08	4.08	-90.02	-0.04	-100.06	100.06	91.91	8.15	12.272		
1,300.00	1,300.00	1,299.60	1,299.60	4.44	4.43	-90.02	-0.04	-100.06	100.06	91.19	8.87	11.280		
1,400.00	1,400.00	1,399.60	1,399.60	4.79	4.79	-90.02	-0.04	-100.06	100.06	90.47	9.59	10.436		
1,500.00	1,500.00	1,499.60	1,499.60	5.15	5.15	-90.02	-0.04	-100.06	100.06	89.76	10.30	9.710		
1,600.00	1,600.00	1,599.60	1,599.60	5.51	5.51	-90.02	-0.04	-100.06	100.06	89.04	11.02	9.079		
1,700.00	1,700.00	1,699.60	1,699.60	5.87	5.87	-90.02	-0.04	-100.06	100.06	88.32	11.74	8.524		
1,800.00	1,800.00	1,802.08	1,802.06	6.23	6.22	-90.77	-1.33	-98.77	98.81	86.37	12.45	7.940		
1,900.00	1,899.98	1,904.24	1,904.07	6.59	6.56	-119.65	-5.19	-94.91	96.01	82.88	13.13	7.312		
2,000.00	1,999.84	2,005.60	2,005.02	6.94	6.90	-126.70	-11.55	-88.55	93.44	79.63	13.82	6.763		
2,061.60	2,061.23	2,067.59	2,066.59	7.16	7.11	-132.84	-16.61	-83.41	92.87	78.63	14.25	6.519 CC		
2,100.00	2,099.45	2,106.44	2,105.15	7.30	7.25	-136.92	-19.54	-79.79	93.08	78.57	14.51	6.413 ES		
2,200.00	2,198.70	2,207.10	2,205.08	7.66	7.60	-147.42	-25.18	-69.07	95.68	80.46	15.22	6.285		
2,300.00	2,297.47	2,305.21	2,302.47	8.03	7.96	-157.40	-29.82	-58.05	103.45	87.50	15.95	6.486		
2,400.08	2,395.70	2,402.83	2,399.35	8.40	8.31	-166.18	-34.44	-47.08	117.36	100.68	16.67	7.038		
2,500.00	2,493.44	2,499.96	2,495.76	8.79	8.67	-173.16	-39.03	-36.17	135.16	117.77	17.39	7.771		
2,600.00	2,591.25	2,597.16	2,592.24	9.19	9.03	-178.49	-43.62	-25.25	154.50	136.39	18.11	8.531		
2,700.00	2,689.07	2,694.36	2,688.72	9.59	9.40	177.37	-48.22	-14.33	174.85	156.02	18.83	9.285		
2,800.00	2,786.88	2,791.57	2,785.20	10.01	9.77	174.09	-52.82	-3.41	195.90	176.35	19.56	10.018		
2,900.00	2,884.69	2,888.77	2,881.68	10.42	10.14	171.46	-57.41	7.51	217.45	197.17	20.28	10.721		
3,000.00	2,982.51	2,985.98	2,978.16	10.85	10.51	169.30	-62.01	18.43	239.37	218.35	21.02	11.390		
3,100.00	3,080.32	3,083.18	3,074.64	11.27	10.88	167.50	-66.61	29.35	261.55	239.80	21.75	12.024		
3,200.00	3,178.14	3,180.39	3,171.12	11.71	11.26	165.98	-71.20	40.27	283.95	261.46	22.49	12.625		
3,300.00	3,275.95	3,277.59	3,267.60	12.14	11.63	164.68	-75.80	51.19	306.50	283.27	23.23	13.192		
3,400.00	3,373.76	3,374.80	3,364.08	12.58	12.01	163.57	-80.40	62.10	329.19	305.21	23.98	13.727		
3,500.00	3,471.58	3,472.00	3,460.56	13.02	12.39	162.59	-84.99	73.02	351.98	327.25	24.73	14.233		
3,600.00	3,569.39	3,569.21	3,557.04	13.47	12.77	161.73	-89.59	83.94	374.85	349.37	25.48	14.710		
3,700.00	3,667.21	3,666.41	3,653.52	13.92	13.15	160.98	-94.19	94.86	397.80	371.56	26.24	15.162		
3,800.00	3,765.02	3,763.62	3,750.00	14.36	13.53	160.30	-98.78	105.78	420.80	393.81	26.99	15.589		
3,900.00	3,862.84	3,860.82	3,846.48	14.82	13.92	159.70	-103.38	116.70	443.85	416.10	27.75	15.993		
4,000.00	3,960.65	3,958.03	3,942.96	15.27	14.30	159.15	-107.97	127.62	466.95	438.43	28.51	16.376		
4,100.00	4,058.46	4,055.23	4,039.44	15.73	14.68	158.66	-112.57	138.54	490.08	460.80	29.28	16.740		
4,200.00	4,156.28	4,152.44	4,135.92	16.18	15.07	158.21	-117.17	149.46	513.24	483.20	30.04	17.085		
4,300.00	4,254.09	4,249.64	4,232.40	16.64	15.46	157.79	-121.76	160.38	536.44	505.63	30.81	17.413		
4,400.00	4,351.91	4,346.85	4,328.88	17.10	15.84	157.42	-126.36	171.30	559.65	528.08	31.57	17.725		
4,500.00	4,449.72	4,444.05	4,425.36	17.56	16.23	157.07	-130.96	182.22	582.89	550.54	32.34	18.022		
4,600.00	4,547.54	4,541.25	4,521.84	18.02	16.62	156.75	-135.55	193.14	606.14	573.03	33.11	18.305		
4,700.00	4,645.35	4,638.46	4,618.32	18.48	17.01	156.45	-140.15	204.06	629.41	595.53	33.88	18.576		
4,800.00	4,743.16	4,735.66	4,714.80	18.95	17.39	156.18	-144.75	214.98	652.70	618.04	34.66	18.834		
4,900.00	4,840.98	4,832.87	4,811.28	19.41	17.78	155.92	-149.34	225.89	676.00	640.57	35.43	19.080		
5,000.00	4,938.79	4,930.07	4,907.76	19.88	18.17	155.68	-153.94	236.81	699.31	663.11	36.20	19.316		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 223H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,036.61	5,027.28	5,004.24	20.35	18.56	155.46	-158.54	247.73	722.63	685.65	36.98	19.542		
5,200.00	5,134.42	5,124.48	5,100.72	20.81	18.95	155.25	-163.13	258.65	745.96	708.21	37.75	19.758		
5,300.00	5,232.23	5,221.69	5,197.20	21.28	19.34	155.05	-167.73	269.57	769.30	730.77	38.53	19.966		
5,400.00	5,330.05	5,318.89	5,293.68	21.75	19.73	154.86	-172.32	280.49	792.65	753.35	39.31	20.165		
5,500.00	5,427.86	5,416.10	5,390.16	22.22	20.12	154.69	-176.92	291.41	816.01	775.92	40.09	20.356		
5,600.00	5,525.68	5,513.30	5,486.64	22.69	20.51	154.52	-181.52	302.33	839.37	798.51	40.87	20.540		
5,700.00	5,623.49	5,610.51	5,583.12	23.16	20.91	154.37	-186.11	313.25	862.74	821.10	41.65	20.716		
5,800.00	5,721.31	5,707.71	5,679.60	23.63	21.30	154.22	-190.71	324.17	886.12	843.69	42.43	20.886		
5,900.00	5,819.12	5,804.92	5,776.08	24.10	21.69	154.08	-195.31	335.09	909.50	866.29	43.21	21.050		
6,000.00	5,916.93	5,902.12	5,872.56	24.57	22.08	153.95	-199.90	346.01	932.89	888.90	43.99	21.207		
6,100.00	6,014.75	5,999.33	5,969.04	25.04	22.47	153.82	-204.50	356.93	956.28	911.51	44.77	21.360		
6,200.00	6,112.56	6,096.53	6,065.52	25.51	22.87	153.70	-209.10	367.85	979.67	934.12	45.55	21.506		
6,300.00	6,210.38	6,193.73	6,162.00	25.99	23.26	153.58	-213.69	378.77	1,003.07	956.73	46.34	21.648		
6,400.00	6,308.19	6,290.94	6,258.48	26.46	23.65	153.47	-218.29	389.68	1,026.47	979.35	47.12	21.785		
6,500.00	6,406.00	6,388.14	6,354.96	26.93	24.04	153.37	-222.88	400.60	1,049.88	1,001.97	47.90	21.917		
6,600.00	6,503.82	6,485.35	6,451.44	27.40	24.44	153.27	-227.48	411.52	1,073.28	1,024.60	48.69	22.044		
6,700.00	6,601.63	6,595.62	6,561.02	27.88	24.87	153.22	-232.20	422.74	1,096.26	1,046.70	49.56	22.119		
6,800.00	6,699.45	6,710.94	6,676.04	28.35	25.31	153.39	-235.43	430.40	1,117.74	1,067.30	50.44	22.162		
6,832.56	6,731.30	6,748.60	6,713.66	28.51	25.44	153.49	-236.09	431.98	1,124.40	1,073.69	50.71	22.173		
6,900.00	6,797.42	6,826.84	6,791.88	28.82	25.71	153.86	-236.86	433.79	1,136.97	1,085.70	51.27	22.177		
7,000.00	6,896.00	6,930.56	6,895.60	29.26	26.05	154.37	-236.93	433.97	1,152.16	1,100.17	51.99	22.160		
7,100.00	6,995.10	7,029.67	6,994.70	29.67	26.36	154.76	-236.93	433.97	1,164.21	1,111.53	52.68	22.099		
7,200.00	7,094.61	7,129.18	7,094.21	30.05	26.69	155.04	-236.93	433.97	1,173.14	1,119.77	53.36	21.984		
7,300.00	7,194.40	7,228.97	7,194.00	30.41	27.01	155.22	-236.93	433.97	1,178.92	1,124.88	54.04	21.817		
7,400.00	7,294.36	7,328.92	7,293.96	30.73	27.33	155.30	-236.93	433.97	1,181.54	1,126.83	54.70	21.598		
7,432.64	7,327.00	7,361.57	7,326.60	30.83	27.44	-179.16	-236.93	433.97	1,181.71	1,126.79	54.92	21.517		
7,500.00	7,394.36	7,428.92	7,393.96	31.03	27.66	-179.16	-236.93	433.97	1,181.71	1,126.34	55.37	21.344		
7,600.00	7,494.36	7,528.92	7,493.96	31.33	27.98	-179.16	-236.93	433.97	1,181.71	1,125.68	56.03	21.092		
7,700.00	7,594.36	7,628.92	7,593.96	31.63	28.31	-179.16	-236.93	433.97	1,181.71	1,125.02	56.69	20.845		
7,800.00	7,694.36	7,728.92	7,693.96	31.93	28.64	-179.16	-236.93	433.97	1,181.71	1,124.35	57.35	20.604		
7,900.00	7,794.36	7,828.92	7,793.96	32.24	28.96	-179.16	-236.93	433.97	1,181.71	1,123.69	58.02	20.368		
8,000.00	7,894.36	7,928.92	7,893.96	32.54	29.29	-179.16	-236.93	433.97	1,181.71	1,123.02	58.69	20.136		
8,100.00	7,994.36	8,028.92	7,993.96	32.85	29.62	-179.16	-236.93	433.97	1,181.71	1,122.35	59.35	19.910		
8,200.00	8,094.36	8,128.92	8,093.96	33.16	29.95	-179.16	-236.93	433.97	1,181.71	1,121.69	60.02	19.688		
8,300.00	8,194.36	8,228.92	8,193.96	33.47	30.28	-179.16	-236.93	433.97	1,181.71	1,121.02	60.69	19.471		
8,400.00	8,294.36	8,328.92	8,293.96	33.77	30.61	-179.16	-236.93	433.97	1,181.71	1,120.34	61.36	19.258		
8,500.00	8,394.36	8,428.92	8,393.96	34.08	30.95	-179.16	-236.93	433.97	1,181.71	1,119.67	62.04	19.049		
8,600.00	8,494.36	8,528.92	8,493.96	34.40	31.28	-179.16	-236.93	433.97	1,181.71	1,119.00	62.71	18.845		
8,700.00	8,594.36	8,628.92	8,593.96	34.71	31.61	-179.16	-236.93	433.97	1,181.71	1,118.33	63.38	18.644		
8,800.00	8,694.36	8,728.92	8,693.96	35.02	31.95	-179.16	-236.93	433.97	1,181.71	1,117.65	64.06	18.448		
8,900.00	8,794.36	8,828.92	8,793.96	35.33	32.28	-179.16	-236.93	433.97	1,181.71	1,116.97	64.73	18.255		
9,000.00	8,894.36	8,928.92	8,893.96	35.65	32.61	-179.16	-236.93	433.97	1,181.71	1,116.30	65.41	18.066		
9,100.00	8,994.36	9,028.92	8,993.96	35.96	32.95	-179.16	-236.93	433.97	1,181.71	1,115.62	66.09	17.881		
9,200.00	9,094.36	9,128.92	9,093.96	36.28	33.28	-179.16	-236.93	433.97	1,181.71	1,114.94	66.77	17.699		
9,300.00	9,194.36	9,228.92	9,193.96	36.60	33.62	-179.16	-236.93	433.97	1,181.71	1,114.26	67.44	17.521		
9,400.00	9,294.36	9,328.92	9,293.96	36.91	33.96	-179.16	-236.93	433.97	1,181.71	1,113.58	68.12	17.346		
9,500.00	9,394.36	9,428.92	9,393.96	37.23	34.29	-179.16	-236.93	433.97	1,181.71	1,112.90	68.81	17.175		
9,578.18	9,472.54	9,507.11	9,472.14	37.48	34.56	-179.16	-236.93	433.97	1,181.71	1,112.37	69.34	17.043		
9,600.00	9,494.35	9,528.91	9,493.95	37.55	34.63	91.46	-236.93	433.97	1,181.72	1,112.23	69.49	17.006		
9,625.00	9,519.28	9,553.85	9,518.88	37.64	34.72	91.54	-236.93	433.97	1,181.77	1,112.11	69.66	16.966		
9,650.00	9,544.09	9,578.65	9,543.69	37.72	34.80	91.68	-236.93	433.97	1,181.86	1,112.03	69.83	16.925		
9,675.00	9,568.69	9,603.26	9,568.29	37.81	34.88	91.88	-236.93	433.97	1,181.99	1,111.99	70.00	16.885		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design		Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 223H - OH - Plan #1											Offset Site Error:		0.00 usft	
Survey Program:		0-OWSG (Rev2) MWD											Offset Well Error:		0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(usft)	(usft)	(usft)	(usft)	(usft)	(usft)	(°)	+N/-S (usft)	+E/-W (usft)	(usft)	(usft)	(usft)					
9,700.00	9,593.04	9,627.60	9,592.64	37.90	34.97	92.12	-236.93	433.97	1,182.20	1,112.02	70.18	16.846				
9,725.00	9,617.05	9,651.62	9,616.65	38.00	35.05	92.41	-236.93	433.97	1,182.48	1,112.13	70.35	16.808				
9,750.00	9,640.67	9,675.24	9,640.27	38.10	35.13	92.73	-236.93	433.97	1,182.87	1,112.35	70.53	16.772				
9,775.00	9,663.83	9,700.39	9,665.42	38.20	35.21	93.12	-236.93	434.30	1,183.38	1,112.66	70.71	16.735				
9,800.00	9,686.46	9,726.87	9,691.84	38.30	35.31	93.51	-236.94	436.03	1,183.97	1,113.05	70.92	16.695				
9,825.00	9,708.51	9,753.97	9,718.74	38.41	35.42	93.91	-236.95	439.31	1,184.64	1,113.50	71.13	16.654				
9,850.00	9,729.91	9,781.74	9,746.06	38.52	35.53	94.29	-236.96	444.24	1,185.38	1,114.02	71.36	16.611				
9,875.00	9,750.61	9,810.19	9,773.71	38.63	35.65	94.68	-236.99	450.94	1,186.20	1,114.59	71.61	16.566				
9,900.00	9,770.54	9,839.38	9,801.61	38.74	35.79	95.05	-237.01	459.51	1,187.08	1,115.22	71.86	16.519				
9,925.00	9,789.65	9,869.32	9,829.63	38.85	35.93	95.42	-237.05	470.05	1,188.02	1,115.88	72.13	16.470				
9,950.00	9,807.90	9,900.06	9,857.64	38.97	36.08	95.78	-237.09	482.68	1,189.00	1,116.58	72.42	16.419				
9,975.00	9,825.23	9,931.61	9,885.49	39.09	36.24	96.13	-237.14	497.49	1,190.01	1,117.30	72.71	16.366				
10,000.00	9,841.59	9,963.98	9,913.00	39.22	36.42	96.46	-237.20	514.56	1,191.06	1,118.03	73.03	16.310				
10,025.00	9,856.94	9,997.21	9,939.94	39.35	36.60	96.78	-237.26	533.98	1,192.11	1,118.75	73.36	16.251				
10,050.00	9,871.23	10,031.27	9,966.11	39.48	36.81	97.09	-237.33	555.78	1,193.16	1,119.46	73.70	16.189				
10,075.00	9,884.44	10,066.18	9,991.23	39.62	37.02	97.37	-237.41	580.00	1,194.20	1,120.13	74.07	16.123				
10,100.00	9,896.51	10,101.89	10,015.04	39.77	37.25	97.63	-237.50	606.61	1,195.21	1,120.75	74.46	16.053				
10,125.00	9,907.42	10,138.38	10,037.24	39.92	37.51	97.86	-237.60	635.56	1,196.18	1,121.31	74.87	15.977				
10,150.00	9,917.14	10,175.60	10,057.54	40.08	37.77	98.06	-237.70	666.75	1,197.09	1,121.78	75.30	15.897				
10,175.00	9,925.64	10,213.47	10,075.64	40.24	38.06	98.23	-237.81	700.00	1,197.93	1,122.16	75.77	15.810				
10,200.00	9,932.90	10,251.91	10,091.26	40.41	38.37	98.36	-237.92	735.11	1,198.69	1,122.43	76.27	15.717				
10,225.00	9,938.90	10,290.82	10,104.14	40.59	38.70	98.45	-238.05	771.81	1,199.37	1,122.57	76.80	15.617				
10,250.00	9,943.62	10,330.07	10,114.06	40.77	39.04	98.50	-238.17	809.78	1,199.94	1,122.58	77.36	15.511				
10,275.00	9,947.05	10,369.55	10,120.86	40.96	39.41	98.51	-238.30	848.66	1,200.41	1,122.45	77.95	15.399				
10,300.00	9,949.17	10,409.13	10,124.43	41.16	39.78	98.47	-238.43	888.06	1,200.76	1,122.19	78.57	15.282				
10,325.00	9,949.99	10,442.72	10,125.01	41.36	40.11	98.40	-238.54	921.65	1,201.04	1,121.89	79.15	15.175				
10,328.18	9,950.01	10,445.91	10,125.01	41.39	40.14	98.40	-238.55	924.83	1,201.08	1,121.87	79.21	15.164				
10,400.00	9,950.01	10,517.72	10,125.01	42.01	40.88	98.39	-238.79	996.64	1,202.06	1,121.42	80.64	14.907				
10,500.00	9,950.00	10,617.71	10,125.00	42.99	42.01	98.38	-239.12	1,096.63	1,203.42	1,120.59	82.83	14.529				
10,600.00	9,950.00	10,717.70	10,125.00	44.08	43.25	98.37	-239.45	1,196.62	1,204.78	1,119.54	85.24	14.135				
10,700.00	9,950.00	10,817.69	10,125.00	45.29	44.59	98.36	-239.78	1,296.61	1,206.14	1,118.30	87.85	13.730				
10,800.00	9,950.00	10,917.68	10,125.00	46.60	46.02	98.35	-240.11	1,396.60	1,207.50	1,116.86	90.64	13.322				
10,900.00	9,950.00	11,017.67	10,125.00	48.00	47.54	98.34	-240.44	1,496.59	1,208.87	1,115.26	93.60	12.915				
11,000.00	9,950.00	11,117.66	10,125.00	49.48	49.13	98.33	-240.77	1,596.58	1,210.23	1,113.51	96.71	12.514				
11,100.00	9,950.00	11,217.65	10,125.00	51.04	50.78	98.32	-241.10	1,696.57	1,211.59	1,111.62	99.96	12.120				
11,200.00	9,950.00	11,317.64	10,125.00	52.67	52.50	98.32	-241.43	1,796.56	1,212.95	1,109.61	103.34	11.738				
11,300.00	9,950.00	11,417.63	10,125.00	54.37	54.28	98.31	-241.76	1,896.55	1,214.31	1,107.49	106.83	11.367				
11,400.00	9,950.00	11,517.62	10,125.00	56.12	56.10	98.30	-242.09	1,996.54	1,215.67	1,105.26	110.42	11.010				
11,500.00	9,950.00	11,617.61	10,125.00	57.92	57.97	98.29	-242.42	2,096.53	1,217.04	1,102.94	114.10	10.666				
11,600.00	9,950.00	11,717.60	10,125.00	59.77	59.89	98.28	-242.75	2,196.52	1,218.40	1,100.53	117.87	10.337				
11,700.00	9,950.00	11,817.59	10,125.00	61.66	61.84	98.27	-243.08	2,296.51	1,219.76	1,098.05	121.71	10.022				
11,800.00	9,950.00	11,917.58	10,125.00	63.59	63.82	98.26	-243.41	2,396.50	1,221.12	1,095.50	125.62	9.720				
11,900.00	9,950.00	12,017.58	10,125.00	65.55	65.83	98.25	-243.74	2,496.49	1,222.48	1,092.88	129.60	9.433				
12,000.00	9,950.00	12,117.57	10,125.00	67.55	67.88	98.24	-244.07	2,596.48	1,223.85	1,090.21	133.63	9.158				
12,100.00	9,950.00	12,217.56	10,125.00	69.57	69.95	98.23	-244.40	2,696.47	1,225.21	1,087.49	137.72	8.896				
12,200.00	9,950.00	12,317.55	10,125.00	71.62	72.04	98.22	-244.73	2,796.46	1,226.57	1,084.72	141.85	8.647				
12,300.00	9,950.00	12,417.54	10,125.00	73.70	74.15	98.21	-245.06	2,896.45	1,227.93	1,081.90	146.03	8.409				
12,400.00	9,950.00	12,517.53	10,125.00	75.80	76.29	98.20	-245.39	2,996.44	1,229.30	1,079.05	150.25	8.182				
12,500.00	9,950.00	12,617.52	10,125.00	77.92	78.44	98.19	-245.72	3,096.43	1,230.66	1,076.16	154.50	7.965				
12,600.00	9,950.00	12,717.51	10,125.00	80.05	80.61	98.19	-246.05	3,196.42	1,232.02	1,073.23	158.79	7.759				
12,700.00	9,950.00	12,817.50	10,125.00	82.21	82.79	98.18	-246.38	3,296.41	1,233.38	1,070.28	163.11	7.562				
12,800.00	9,950.00	12,917.49	10,125.00	84.37	84.99	98.17	-246.71	3,396.40	1,234.74	1,067.29	167.46	7.374				

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,900.00	9,950.00	13,017.48	10,125.00	86.56	87.20	98.16	-247.04	3,496.39	1,236.11	1,064.28	171.83	7.194		
13,000.00	9,950.00	13,117.47	10,125.00	88.76	89.42	98.15	-247.38	3,596.38	1,237.47	1,061.24	176.23	7.022		
13,100.00	9,950.00	13,217.46	10,125.00	90.97	91.66	98.14	-247.71	3,696.37	1,238.83	1,058.18	180.65	6.858		
13,200.00	9,950.00	13,317.45	10,125.00	93.19	93.90	98.13	-248.04	3,796.36	1,240.19	1,055.10	185.10	6.700		
13,300.00	9,950.00	13,417.44	10,125.00	95.42	96.15	98.12	-248.37	3,896.35	1,241.56	1,052.00	189.56	6.550		
13,400.00	9,950.00	13,517.43	10,125.00	97.67	98.42	98.11	-248.70	3,996.34	1,242.92	1,048.88	194.04	6.405		
13,500.00	9,950.00	13,617.42	10,125.00	99.92	100.69	98.10	-249.03	4,096.33	1,244.28	1,045.74	198.54	6.267		
13,600.00	9,950.00	13,717.41	10,125.00	102.18	102.97	98.10	-249.36	4,196.32	1,245.64	1,042.59	203.06	6.134		
13,700.00	9,950.00	13,817.40	10,125.00	104.45	105.26	98.09	-249.69	4,296.31	1,247.01	1,039.42	207.59	6.007		
13,800.00	9,950.00	13,917.40	10,125.00	106.73	107.55	98.08	-250.02	4,396.30	1,248.37	1,036.24	212.13	5.885		
13,900.00	9,950.00	14,017.39	10,125.00	109.01	109.85	98.07	-250.35	4,496.29	1,249.73	1,033.04	216.69	5.767		
14,000.00	9,950.00	14,117.38	10,125.00	111.30	112.16	98.06	-250.68	4,596.28	1,251.10	1,029.83	221.26	5.654		
14,100.00	9,950.00	14,217.37	10,125.00	113.60	114.47	98.05	-251.01	4,696.27	1,252.46	1,026.61	225.84	5.546		
14,200.00	9,950.00	14,317.36	10,125.00	115.90	116.79	98.04	-251.34	4,796.26	1,253.82	1,023.38	230.44	5.441		
14,300.00	9,950.00	14,417.35	10,125.00	118.21	119.11	98.03	-251.67	4,896.25	1,255.18	1,020.14	235.04	5.340		
14,400.00	9,950.00	14,517.34	10,125.00	120.52	121.44	98.02	-252.00	4,996.24	1,256.55	1,016.89	239.65	5.243		
14,500.00	9,950.00	14,617.33	10,125.00	122.84	123.77	98.02	-252.33	5,096.23	1,257.91	1,013.63	244.28	5.150		
14,600.00	9,950.00	14,717.32	10,125.00	125.17	126.11	98.01	-252.66	5,196.22	1,259.27	1,010.37	248.91	5.059		
14,700.00	9,950.00	14,817.31	10,125.00	127.49	128.45	98.00	-252.99	5,296.21	1,260.64	1,007.09	253.55	4.972		
14,800.00	9,950.00	14,917.30	10,125.00	129.83	130.79	97.99	-253.32	5,396.20	1,262.00	1,003.80	258.19	4.888		
14,900.00	9,950.00	15,017.29	10,125.00	132.16	133.14	97.98	-253.65	5,496.19	1,263.36	1,000.51	262.85	4.806		
15,000.00	9,950.00	15,117.28	10,125.00	134.50	135.49	97.97	-253.98	5,596.18	1,264.72	997.21	267.51	4.728		
15,100.00	9,950.00	15,217.27	10,125.00	136.85	137.84	97.96	-254.31	5,696.17	1,266.09	993.91	272.18	4.652		
15,200.00	9,950.00	15,317.26	10,125.00	139.19	140.20	97.96	-254.64	5,796.16	1,267.45	990.60	276.85	4.578		
15,300.00	9,950.00	15,417.25	10,125.00	141.54	142.56	97.95	-254.97	5,896.15	1,268.81	987.28	281.53	4.507		
15,400.00	9,950.00	15,517.24	10,125.00	143.90	144.92	97.94	-255.30	5,996.14	1,270.18	983.96	286.22	4.438		
15,500.00	9,950.00	15,617.23	10,125.00	146.25	147.29	97.93	-255.63	6,096.13	1,271.54	980.63	290.91	4.371		
15,600.00	9,950.00	15,717.22	10,125.00	148.61	149.65	97.92	-255.96	6,196.12	1,272.90	977.29	295.61	4.306		
15,700.00	9,950.00	15,817.22	10,125.00	150.97	152.02	97.91	-256.29	6,296.11	1,274.27	973.95	300.31	4.243		
15,800.00	9,950.00	15,917.21	10,125.00	153.34	154.40	97.90	-256.62	6,396.10	1,275.63	970.61	305.02	4.182		
15,900.00	9,950.00	16,017.20	10,125.00	155.70	156.77	97.90	-256.95	6,496.09	1,276.99	967.26	309.73	4.123		
16,000.00	9,950.00	16,117.19	10,125.00	158.07	159.15	97.89	-257.28	6,596.08	1,278.36	963.91	314.45	4.065		
16,100.00	9,950.00	16,217.18	10,125.00	160.44	161.53	97.88	-257.61	6,696.07	1,279.72	960.55	319.17	4.010		
16,200.00	9,950.00	16,317.17	10,125.00	162.82	163.91	97.87	-257.94	6,796.06	1,281.08	957.19	323.89	3.955		
16,300.00	9,950.00	16,417.16	10,125.00	165.19	166.29	97.86	-258.27	6,896.05	1,282.45	953.83	328.62	3.903		
16,400.00	9,950.00	16,517.15	10,125.00	167.57	168.67	97.85	-258.60	6,996.04	1,283.81	950.46	333.35	3.851		
16,500.00	9,950.00	16,617.14	10,125.00	169.95	171.06	97.84	-258.93	7,096.03	1,285.17	947.09	338.08	3.801		
16,600.00	9,950.00	16,717.13	10,125.00	172.33	173.45	97.84	-259.26	7,196.02	1,286.54	943.71	342.82	3.753		
16,700.00	9,950.00	16,817.12	10,125.00	174.71	175.84	97.83	-259.59	7,296.01	1,287.90	940.34	347.56	3.705		
16,800.00	9,950.00	16,917.11	10,125.00	177.09	178.23	97.82	-259.92	7,396.00	1,289.26	936.95	352.31	3.659		
16,900.00	9,950.00	17,017.10	10,125.00	179.48	180.62	97.81	-260.26	7,495.99	1,290.63	933.57	357.06	3.615		
17,000.00	9,950.00	17,117.09	10,125.00	181.87	183.01	97.80	-260.59	7,595.98	1,291.99	930.18	361.81	3.571		
17,100.00	9,950.00	17,217.08	10,125.00	184.26	185.41	97.80	-260.92	7,695.97	1,293.35	926.79	366.56	3.528		
17,200.00	9,950.00	17,317.07	10,125.00	186.65	187.80	97.79	-261.25	7,795.96	1,294.72	923.40	371.32	3.487		
17,300.00	9,950.00	17,417.06	10,125.00	189.04	190.20	97.78	-261.58	7,895.95	1,296.08	920.01	376.08	3.446		
17,400.00	9,950.00	17,517.05	10,125.00	191.43	192.60	97.77	-261.91	7,995.94	1,297.45	916.61	380.84	3.407		
17,500.00	9,950.00	17,617.05	10,125.00	193.82	195.00	97.76	-262.24	8,095.93	1,298.81	913.21	385.60	3.368		
17,600.00	9,950.00	17,717.04	10,125.00	196.22	197.40	97.75	-262.57	8,195.92	1,300.17	909.81	390.37	3.331		
17,689.50	9,950.00	17,806.52	10,125.00	198.36	199.55	97.75	-262.86	8,285.41	1,301.39	906.76	394.63	3.298		
17,690.09	9,950.00	17,807.12	10,125.00	198.38	199.56	97.75	-262.86	8,286.00	1,301.40	906.74	394.66	3.298 SF		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 224H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.04	-0.11	-160.00	160.00					
100.00	100.00	99.40	99.40	0.13	0.13	-90.04	-0.11	-160.00	160.00	159.73	0.27	596.909		
200.00	200.00	199.40	199.40	0.49	0.49	-90.04	-0.11	-160.00	160.00	159.02	0.98	162.660		
300.00	300.00	299.40	299.40	0.85	0.85	-90.04	-0.11	-160.00	160.00	158.30	1.70	94.085		
400.00	400.00	399.40	399.40	1.21	1.21	-90.04	-0.11	-160.00	160.00	157.58	2.42	66.183		
500.00	500.00	499.40	499.40	1.57	1.57	-90.04	-0.11	-160.00	160.00	156.87	3.13	51.045		
600.00	600.00	599.40	599.40	1.93	1.92	-90.04	-0.11	-160.00	160.00	156.15	3.85	41.543		
700.00	700.00	699.40	699.40	2.29	2.28	-90.04	-0.11	-160.00	160.00	155.43	4.57	35.024		
800.00	800.00	799.40	799.40	2.64	2.64	-90.04	-0.11	-160.00	160.00	154.71	5.29	30.273		
900.00	900.00	899.40	899.40	3.00	3.00	-90.04	-0.11	-160.00	160.00	154.00	6.00	26.657		
1,000.00	1,000.00	999.40	999.40	3.36	3.36	-90.04	-0.11	-160.00	160.00	153.28	6.72	23.812		
1,100.00	1,100.00	1,099.40	1,099.40	3.72	3.72	-90.04	-0.11	-160.00	160.00	152.56	7.44	21.517		
1,200.00	1,200.00	1,199.40	1,199.40	4.08	4.08	-90.04	-0.11	-160.00	160.00	151.85	8.15	19.624		
1,300.00	1,300.00	1,299.40	1,299.40	4.44	4.43	-90.04	-0.11	-160.00	160.00	151.13	8.87	18.038		
1,400.00	1,400.00	1,399.40	1,399.40	4.79	4.79	-90.04	-0.11	-160.00	160.00	150.41	9.59	16.689		
1,500.00	1,500.00	1,499.40	1,499.40	5.15	5.15	-90.04	-0.11	-160.00	160.00	149.70	10.30	15.528		
1,600.00	1,600.00	1,599.40	1,599.40	5.51	5.51	-90.04	-0.11	-160.00	160.00	148.98	11.02	14.518		
1,700.00	1,700.00	1,699.40	1,699.40	5.87	5.87	-90.04	-0.11	-160.00	160.00	148.26	11.74	13.631		
1,800.00	1,800.00	1,800.78	1,800.78	6.23	6.22	-90.18	-0.50	-159.78	159.79	147.34	12.45	12.834		
1,900.00	1,899.98	1,903.38	1,903.31	6.59	6.56	-117.47	-3.69	-157.99	158.87	145.74	13.14	12.092		
1,994.29	1,994.14	1,999.42	1,999.11	6.92	6.88	-121.22	-9.57	-154.68	158.38	144.59	13.79	11.487 CC		
2,000.00	1,999.84	2,005.20	2,004.86	6.94	6.90	-121.51	-10.01	-154.43	158.38	144.55	13.83	11.455 ES		
2,100.00	2,099.45	2,105.67	2,104.75	7.30	7.23	-127.68	-19.33	-149.19	159.62	145.10	14.52	10.993		
2,200.00	2,198.70	2,204.23	2,202.32	7.66	7.57	-135.53	-31.43	-142.38	164.49	149.27	15.22	10.806		
2,300.00	2,297.47	2,300.37	2,296.99	8.03	7.92	-144.28	-46.04	-134.15	175.10	159.17	15.93	10.993		
2,400.08	2,395.70	2,394.71	2,389.59	8.40	8.26	-152.69	-61.73	-125.32	192.90	176.27	16.63	11.601		
2,500.00	2,493.44	2,488.36	2,481.53	8.79	8.62	-159.93	-77.31	-116.56	216.01	198.69	17.32	12.475		
2,600.00	2,591.25	2,582.10	2,573.54	9.19	8.98	-165.78	-92.90	-107.78	241.96	223.96	18.00	13.442		
2,700.00	2,689.07	2,675.83	2,665.55	9.59	9.35	-170.52	-108.49	-99.01	269.92	251.24	18.68	14.446		
2,800.00	2,786.88	2,769.57	2,757.56	10.01	9.73	-174.39	-124.08	-90.24	299.33	279.96	19.37	15.451		
2,900.00	2,884.69	2,863.30	2,849.58	10.42	10.11	-177.57	-139.67	-81.46	329.80	309.73	20.06	16.437		
3,000.00	2,982.51	2,957.04	2,941.59	10.85	10.50	179.78	-155.26	-72.69	361.06	340.30	20.76	17.391		
3,100.00	3,080.32	3,050.77	3,033.60	11.27	10.89	177.54	-170.85	-63.91	392.92	371.46	21.46	18.308		
3,200.00	3,178.14	3,144.51	3,125.61	11.71	11.29	175.63	-186.44	-55.14	425.25	403.08	22.17	19.185		
3,300.00	3,275.95	3,238.24	3,217.62	12.14	11.69	173.99	-202.04	-46.37	457.95	435.07	22.87	20.020		
3,400.00	3,373.76	3,331.97	3,309.63	12.58	12.09	172.57	-217.63	-37.59	490.94	467.35	23.59	20.814		
3,500.00	3,471.58	3,425.71	3,401.64	13.02	12.49	171.33	-233.22	-28.82	524.17	499.87	24.30	21.568		
3,600.00	3,569.39	3,519.44	3,493.66	13.47	12.90	170.23	-248.81	-20.05	557.60	532.58	25.02	22.284		
3,700.00	3,667.21	3,613.18	3,585.67	13.92	13.31	169.25	-264.40	-11.27	591.19	565.45	25.74	22.964		
3,800.00	3,765.02	3,706.91	3,677.68	14.36	13.72	168.38	-279.99	-2.50	624.92	598.45	26.47	23.610		
3,900.00	3,862.84	3,800.65	3,769.69	14.82	14.14	167.60	-295.58	6.27	658.76	631.57	27.20	24.223		
4,000.00	3,960.65	3,894.38	3,861.70	15.27	14.55	166.89	-311.17	15.05	692.71	664.78	27.93	24.806		
4,100.00	4,058.46	3,988.12	3,953.71	15.73	14.97	166.25	-326.76	23.82	726.74	698.08	28.66	25.360		
4,200.00	4,156.28	4,081.85	4,045.72	16.18	15.39	165.67	-342.35	32.59	760.84	731.45	29.39	25.887		
4,300.00	4,254.09	4,175.58	4,137.74	16.64	15.81	165.14	-357.94	41.37	795.00	764.88	30.13	26.389		
4,400.00	4,351.91	4,269.32	4,229.75	17.10	16.24	164.65	-373.53	50.14	829.22	798.36	30.86	26.868		
4,500.00	4,449.72	4,363.05	4,321.76	17.56	16.66	164.20	-389.12	58.91	863.49	831.89	31.60	27.324		
4,600.00	4,547.54	4,456.79	4,413.77	18.02	17.08	163.78	-404.71	67.69	897.81	865.47	32.34	27.760		
4,700.00	4,645.35	4,550.52	4,505.78	18.48	17.51	163.39	-420.30	76.46	932.16	899.08	33.08	28.176		
4,800.00	4,743.16	4,644.26	4,597.79	18.95	17.93	163.03	-435.89	85.23	966.55	932.73	33.83	28.574		
4,900.00	4,840.98	4,737.99	4,689.80	19.41	18.36	162.70	-451.49	94.01	1,000.97	966.40	34.57	28.954		
5,000.00	4,938.79	4,831.73	4,781.82	19.88	18.79	162.39	-467.08	102.78	1,035.42	1,000.10	35.32	29.319		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 224H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,036.61	4,925.46	4,873.83	20.35	19.22	162.10	-482.67	111.56	1,069.89	1,033.83	36.06	29.668		
5,200.00	5,134.42	5,019.20	4,965.84	20.81	19.65	161.82	-498.26	120.33	1,104.39	1,067.58	36.81	30.003		
5,300.00	5,232.23	5,112.93	5,057.85	21.28	20.08	161.57	-513.85	129.10	1,138.91	1,101.35	37.56	30.324		
5,400.00	5,330.05	5,206.66	5,149.86	21.75	20.51	161.32	-529.44	137.88	1,173.44	1,135.14	38.31	30.632		
5,500.00	5,427.86	5,300.40	5,241.87	22.22	20.94	161.09	-545.03	146.65	1,208.00	1,168.94	39.06	30.928		
5,600.00	5,525.68	5,394.13	5,333.88	22.69	21.37	160.88	-560.62	155.42	1,242.57	1,202.76	39.81	31.213		
5,700.00	5,623.49	5,487.87	5,425.90	23.16	21.81	160.67	-576.21	164.20	1,277.15	1,236.59	40.56	31.487		
5,800.00	5,721.31	5,581.60	5,517.91	23.63	22.24	160.48	-591.80	172.97	1,311.75	1,270.44	41.31	31.751		
5,900.00	5,819.12	5,675.34	5,609.92	24.10	22.67	160.30	-607.39	181.74	1,346.36	1,304.29	42.07	32.005		
6,000.00	5,916.93	5,769.07	5,701.93	24.57	23.11	160.12	-622.98	190.52	1,380.98	1,338.16	42.82	32.250		
6,100.00	6,014.75	5,862.81	5,793.94	25.04	23.54	159.96	-638.57	199.29	1,415.62	1,372.04	43.58	32.486		
6,200.00	6,112.56	5,956.54	5,885.95	25.51	23.98	159.80	-654.16	208.06	1,450.26	1,405.93	44.33	32.714		
6,300.00	6,210.38	6,050.27	5,977.97	25.99	24.41	159.65	-669.75	216.84	1,484.91	1,439.82	45.09	32.934		
6,400.00	6,308.19	6,144.01	6,069.98	26.46	24.85	159.51	-685.34	225.61	1,519.57	1,473.73	45.84	33.147		
6,500.00	6,406.00	6,237.74	6,161.99	26.93	25.28	159.37	-700.93	234.38	1,554.24	1,507.64	46.60	33.352		
6,600.00	6,503.82	6,331.48	6,254.00	27.40	25.72	159.24	-716.53	243.16	1,588.92	1,541.56	47.36	33.551		
6,700.00	6,601.63	6,425.21	6,346.01	27.88	26.16	159.11	-732.12	251.93	1,623.60	1,575.48	48.12	33.743		
6,800.00	6,699.45	6,518.95	6,438.02	28.35	26.59	158.99	-747.71	260.71	1,658.29	1,609.41	48.88	33.929		
6,832.56	6,731.30	6,549.47	6,467.98	28.51	26.73	158.95	-752.78	263.56	1,669.59	1,620.46	49.12	33.988		
6,900.00	6,797.42	6,612.92	6,530.27	28.82	27.03	159.04	-763.34	269.50	1,692.29	1,642.66	49.63	34.095		
7,000.00	6,896.00	6,707.85	6,623.45	29.26	27.47	159.11	-779.13	278.39	1,723.38	1,672.99	50.39	34.201		
7,100.00	6,995.10	6,803.67	6,717.51	29.67	27.92	159.12	-795.06	287.36	1,751.37	1,700.23	51.14	34.246		
7,200.00	7,094.61	6,900.27	6,812.34	30.05	28.37	159.07	-811.13	296.40	1,776.24	1,724.35	51.89	34.233		
7,300.00	7,194.40	6,997.53	6,907.81	30.41	28.83	158.96	-827.31	305.50	1,797.97	1,745.35	52.63	34.165		
7,400.00	7,294.36	7,095.33	7,003.81	30.73	29.28	158.79	-843.57	314.65	1,816.56	1,763.20	53.36	34.046		
7,432.64	7,327.00	7,127.35	7,035.24	30.83	29.43	-175.74	-848.90	317.65	1,821.94	1,768.35	53.59	33.996		
7,500.00	7,394.36	7,193.47	7,100.15	31.03	29.74	-175.96	-859.90	323.84	1,832.72	1,778.64	54.08	33.889		
7,600.00	7,494.36	7,291.63	7,198.50	31.33	30.20	-176.28	-876.23	333.03	1,848.77	1,793.96	54.80	33.734		
7,700.00	7,594.36	7,389.79	7,292.86	31.63	30.66	-176.60	-892.55	342.22	1,864.87	1,809.35	55.53	33.584		
7,800.00	7,694.36	7,487.95	7,389.22	31.93	31.12	-176.91	-908.88	351.40	1,881.04	1,824.78	56.25	33.439		
7,900.00	7,794.36	7,586.12	7,485.58	32.24	31.58	-177.22	-925.21	360.59	1,897.25	1,840.28	56.98	33.299		
8,000.00	7,894.36	7,684.28	7,581.93	32.54	32.04	-177.52	-941.53	369.78	1,913.52	1,855.82	57.70	33.163		
8,100.00	7,994.36	7,782.44	7,678.29	32.85	32.50	-177.82	-957.86	378.97	1,929.84	1,871.42	58.42	33.032		
8,200.00	8,094.36	7,880.60	7,774.65	33.16	32.96	-178.11	-974.19	388.16	1,946.22	1,887.07	59.15	32.905		
8,300.00	8,194.36	7,982.22	7,879.32	33.47	33.46	-178.43	-991.89	398.12	1,962.62	1,902.69	59.94	32.744		
8,400.00	8,294.36	8,230.32	8,119.80	33.77	34.50	-178.95	-1,022.41	415.29	1,975.06	1,913.43	61.64	32.043		
8,500.00	8,394.36	8,477.71	8,366.69	34.08	35.37	-179.16	-1,035.12	422.44	1,980.16	1,917.14	63.02	31.420		
8,600.00	8,494.36	8,604.78	8,493.76	34.40	35.73	-179.17	-1,035.43	422.62	1,980.29	1,916.52	63.77	31.056		
8,700.00	8,594.36	8,704.78	8,593.76	34.71	36.01	-179.17	-1,035.43	422.62	1,980.29	1,915.87	64.41	30.743		
8,800.00	8,694.36	8,804.78	8,693.76	35.02	36.29	-179.17	-1,035.43	422.62	1,980.29	1,915.22	65.06	30.436		
8,900.00	8,794.36	8,904.78	8,793.76	35.33	36.57	-179.17	-1,035.43	422.62	1,980.29	1,914.57	65.72	30.134		
9,000.00	8,894.36	9,004.78	8,893.76	35.65	36.86	-179.17	-1,035.43	422.62	1,980.29	1,913.92	66.37	29.837		
9,100.00	8,994.36	9,104.78	8,993.76	35.96	37.14	-179.17	-1,035.43	422.62	1,980.29	1,913.26	67.02	29.546		
9,200.00	9,094.36	9,204.78	9,093.76	36.28	37.43	-179.17	-1,035.43	422.62	1,980.29	1,912.61	67.68	29.260		
9,300.00	9,194.36	9,304.78	9,193.76	36.60	37.72	-179.17	-1,035.43	422.62	1,980.29	1,911.95	68.34	28.979		
9,400.00	9,294.36	9,404.78	9,293.76	36.91	38.00	-179.17	-1,035.43	422.62	1,980.29	1,911.29	68.99	28.702		
9,500.00	9,394.36	9,504.78	9,393.76	37.23	38.29	-179.17	-1,035.43	422.62	1,980.29	1,910.63	69.65	28.431		
9,578.18	9,472.54	9,582.97	9,471.94	37.48	38.52	-179.17	-1,035.43	422.62	1,980.29	1,910.12	70.17	28.221		
9,600.00	9,494.35	9,604.77	9,493.75	37.55	38.58	91.44	-1,035.43	422.62	1,980.30	1,909.99	70.31	28.164		
9,625.00	9,519.28	9,629.71	9,518.68	37.64	38.66	91.49	-1,035.43	422.62	1,980.35	1,909.86	70.48	28.097		
9,650.00	9,544.09	9,654.51	9,543.49	37.72	38.73	91.57	-1,035.43	422.62	1,980.43	1,909.77	70.66	28.029		
9,675.00	9,568.69	9,679.12	9,568.09	37.81	38.80	91.68	-1,035.43	422.62	1,980.56	1,909.72	70.83	27.961		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 224H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,700.00	9,593.04	9,703.46	9,592.44	37.90	38.87	91.82	-1,035.43	422.62	1,980.73	1,909.72	71.01	27.892		
9,725.00	9,617.05	9,727.48	9,616.45	38.00	38.94	91.98	-1,035.43	422.62	1,980.97	1,909.77	71.20	27.823		
9,750.00	9,640.67	9,751.10	9,640.07	38.10	39.01	92.17	-1,035.43	422.62	1,981.29	1,909.90	71.39	27.754		
9,775.00	9,663.83	9,777.78	9,666.75	38.20	39.09	92.40	-1,035.43	423.01	1,981.68	1,910.08	71.59	27.680		
9,800.00	9,686.46	9,806.67	9,695.56	38.30	39.19	92.65	-1,035.41	425.04	1,982.10	1,910.29	71.81	27.600		
9,825.00	9,708.51	9,836.34	9,724.97	38.41	39.29	92.90	-1,035.37	428.94	1,982.56	1,910.51	72.05	27.517		
9,850.00	9,729.91	9,866.83	9,754.88	38.52	39.41	93.14	-1,035.31	434.84	1,983.04	1,910.75	72.29	27.430		
9,875.00	9,750.61	9,898.17	9,785.17	38.63	39.53	93.38	-1,035.24	442.88	1,983.54	1,910.99	72.55	27.339		
9,900.00	9,770.54	9,930.39	9,815.68	38.74	39.66	93.61	-1,035.14	453.20	1,984.06	1,911.23	72.83	27.244		
9,925.00	9,789.65	9,963.50	9,846.24	38.85	39.80	93.83	-1,035.01	465.93	1,984.58	1,911.47	73.11	27.145		
9,950.00	9,807.90	9,997.52	9,876.64	38.97	39.95	94.05	-1,034.87	481.17	1,985.10	1,911.69	73.41	27.041		
9,975.00	9,825.23	10,032.44	9,906.64	39.09	40.11	94.25	-1,034.69	499.04	1,985.60	1,911.88	73.73	26.933		
10,000.00	9,841.59	10,068.26	9,935.97	39.22	40.29	94.45	-1,034.50	519.58	1,986.09	1,912.04	74.06	26.819		
10,025.00	9,856.94	10,104.93	9,964.32	39.35	40.47	94.62	-1,034.27	542.83	1,986.55	1,912.15	74.41	26.699		
10,050.00	9,871.23	10,142.43	9,991.36	39.48	40.66	94.79	-1,034.02	568.78	1,986.98	1,912.21	74.77	26.573		
10,075.00	9,884.44	10,180.66	10,016.77	39.62	40.87	94.93	-1,033.75	597.35	1,987.36	1,912.19	75.16	26.440		
10,100.00	9,896.51	10,219.57	10,040.18	39.77	41.08	95.05	-1,033.45	628.40	1,987.69	1,912.11	75.58	26.300		
10,125.00	9,907.42	10,259.03	10,061.27	39.92	41.32	95.14	-1,033.13	661.74	1,987.95	1,911.94	76.02	26.151		
10,150.00	9,917.14	10,298.93	10,079.72	40.08	41.57	95.21	-1,032.79	697.11	1,988.16	1,911.67	76.48	25.994		
10,175.00	9,925.64	10,339.14	10,095.26	40.24	41.83	95.25	-1,032.43	734.18	1,988.29	1,911.31	76.98	25.829		
10,200.00	9,932.90	10,379.51	10,107.67	40.41	42.11	95.26	-1,032.06	772.57	1,988.35	1,910.85	77.50	25.656		
10,225.00	9,938.90	10,419.88	10,116.79	40.59	42.41	95.25	-1,031.69	811.89	1,988.34	1,910.29	78.05	25.477		
10,250.00	9,943.62	10,460.11	10,122.55	40.77	42.72	95.21	-1,031.30	851.70	1,988.25	1,909.64	78.62	25.291		
10,275.00	9,947.05	10,500.06	10,124.93	40.96	43.04	95.13	-1,030.92	891.55	1,988.10	1,908.90	79.20	25.102		
10,300.00	9,949.17	10,528.14	10,125.01	41.16	43.28	95.09	-1,030.65	919.64	1,987.93	1,908.22	79.71	24.939		
10,323.65	9,949.98	10,551.78	10,125.01	41.35	43.49	95.07	-1,030.42	943.28	1,987.88	1,907.71	80.17	24.795		
10,325.00	9,949.99	10,553.13	10,125.01	41.36	43.50	95.07	-1,030.41	944.62	1,987.88	1,907.68	80.20	24.787		
10,328.18	9,950.01	10,556.31	10,125.01	41.39	43.53	95.07	-1,030.38	947.81	1,987.88	1,907.62	80.26	24.768		
10,400.00	9,950.01	10,628.13	10,125.00	42.01	44.20	95.07	-1,029.69	1,019.62	1,987.95	1,906.22	81.72	24.325		
10,500.00	9,950.00	10,728.13	10,125.00	42.99	45.23	95.07	-1,028.72	1,119.62	1,988.03	1,904.07	83.96	23.677		
10,600.00	9,950.00	10,828.13	10,125.00	44.08	46.37	95.07	-1,027.76	1,219.61	1,988.11	1,901.69	86.42	23.005		
10,700.00	9,950.00	10,928.13	10,125.00	45.29	47.61	95.07	-1,026.80	1,319.61	1,988.20	1,899.12	89.07	22.321		
10,800.00	9,950.00	11,028.13	10,125.00	46.60	48.96	95.07	-1,025.84	1,419.60	1,988.28	1,896.37	91.91	21.633		
10,900.00	9,950.00	11,128.13	10,125.00	48.00	50.39	95.07	-1,024.88	1,519.60	1,988.36	1,893.45	94.91	20.950		
11,000.00	9,950.00	11,228.13	10,125.00	49.48	51.90	95.07	-1,023.91	1,619.59	1,988.45	1,890.39	98.06	20.278		
11,100.00	9,950.00	11,328.13	10,125.00	51.04	53.49	95.07	-1,022.95	1,719.59	1,988.53	1,887.18	101.35	19.621		
11,200.00	9,950.00	11,428.13	10,125.00	52.67	55.14	95.07	-1,021.99	1,819.58	1,988.62	1,883.86	104.76	18.983		
11,300.00	9,950.00	11,528.13	10,125.00	54.37	56.85	95.07	-1,021.03	1,919.58	1,988.70	1,880.42	108.28	18.366		
11,400.00	9,950.00	11,628.13	10,125.00	56.12	58.62	95.07	-1,020.07	2,019.57	1,988.78	1,876.88	111.90	17.773		
11,500.00	9,950.00	11,728.13	10,125.00	57.92	60.43	95.07	-1,019.11	2,119.57	1,988.87	1,873.25	115.61	17.203		
11,600.00	9,950.00	11,828.13	10,125.00	59.77	62.29	95.07	-1,018.14	2,219.56	1,988.95	1,869.54	119.41	16.656		
11,700.00	9,950.00	11,928.13	10,125.00	61.66	64.19	95.06	-1,017.18	2,319.56	1,989.03	1,865.75	123.28	16.134		
11,800.00	9,950.00	12,028.13	10,125.00	63.59	66.13	95.06	-1,016.22	2,419.55	1,989.12	1,861.89	127.22	15.635		
11,900.00	9,950.00	12,128.13	10,125.00	65.55	68.10	95.06	-1,015.26	2,519.55	1,989.20	1,857.98	131.23	15.159		
12,000.00	9,950.00	12,228.13	10,125.00	67.55	70.11	95.06	-1,014.30	2,619.55	1,989.29	1,854.00	135.29	14.704		
12,100.00	9,950.00	12,328.13	10,125.00	69.57	72.14	95.06	-1,013.33	2,719.54	1,989.37	1,849.97	139.40	14.271		
12,200.00	9,950.00	12,428.13	10,125.00	71.62	74.19	95.06	-1,012.37	2,819.54	1,989.45	1,845.90	143.56	13.858		
12,300.00	9,950.00	12,528.13	10,125.00	73.70	76.27	95.06	-1,011.41	2,919.53	1,989.54	1,841.78	147.76	13.465		
12,400.00	9,950.00	12,628.13	10,125.00	75.80	78.37	95.06	-1,010.45	3,019.53	1,989.62	1,837.62	152.00	13.090		
12,500.00	9,950.00	12,728.13	10,125.00	77.92	80.49	95.06	-1,009.49	3,119.52	1,989.70	1,833.43	156.28	12.732		
12,600.00	9,950.00	12,828.13	10,125.00	80.05	82.63	95.06	-1,008.52	3,219.52	1,989.79	1,829.20	160.59	12.391		
12,700.00	9,950.00	12,928.13	10,125.00	82.21	84.79	95.06	-1,007.56	3,319.51	1,989.87	1,824.94	164.93	12.065		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 224H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance							Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,800.00	9,950.00	13,028.13	10,125.00	84.37	86.96	95.06	-1,006.60	3,419.51	1,989.96	1,820.65	169.30	11.754		
12,900.00	9,950.00	13,128.13	10,125.00	86.56	89.14	95.06	-1,005.64	3,519.50	1,990.04	1,816.34	173.70	11.457		
13,000.00	9,950.00	13,228.13	10,125.00	88.76	91.34	95.06	-1,004.68	3,619.50	1,990.12	1,812.00	178.12	11.173		
13,100.00	9,950.00	13,328.13	10,125.00	90.97	93.55	95.06	-1,003.71	3,719.49	1,990.21	1,807.64	182.56	10.901		
13,200.00	9,950.00	13,428.13	10,125.00	93.19	95.77	95.06	-1,002.75	3,819.49	1,990.29	1,803.26	187.03	10.642		
13,300.00	9,950.00	13,528.13	10,125.00	95.42	98.01	95.06	-1,001.79	3,919.48	1,990.37	1,798.86	191.52	10.393		
13,400.00	9,950.00	13,628.13	10,125.00	97.67	100.25	95.06	-1,000.83	4,019.48	1,990.46	1,794.44	196.02	10.154		
13,500.00	9,950.00	13,728.13	10,125.00	99.92	102.50	95.06	-999.87	4,119.48	1,990.54	1,790.00	200.54	9.926		
13,600.00	9,950.00	13,828.13	10,125.00	102.18	104.76	95.06	-998.90	4,219.47	1,990.63	1,785.55	205.08	9.707		
13,700.00	9,950.00	13,928.13	10,125.00	104.45	107.03	95.06	-997.94	4,319.47	1,990.71	1,781.08	209.63	9.496		
13,800.00	9,950.00	14,028.13	10,125.00	106.73	109.31	95.06	-996.98	4,419.46	1,990.79	1,776.60	214.19	9.294		
13,900.00	9,950.00	14,128.13	10,125.00	109.01	111.59	95.06	-996.02	4,519.46	1,990.88	1,772.11	218.77	9.100		
14,000.00	9,950.00	14,228.13	10,125.00	111.30	113.88	95.06	-995.06	4,619.45	1,990.96	1,767.60	223.36	8.914		
14,100.00	9,950.00	14,328.13	10,125.00	113.60	116.18	95.06	-994.09	4,719.45	1,991.05	1,763.08	227.96	8.734		
14,200.00	9,950.00	14,428.13	10,125.00	115.90	118.48	95.06	-993.13	4,819.44	1,991.13	1,758.55	232.57	8.561		
14,300.00	9,950.00	14,528.13	10,125.00	118.21	120.79	95.06	-992.17	4,919.44	1,991.21	1,754.02	237.20	8.395		
14,400.00	9,950.00	14,628.13	10,125.00	120.52	123.10	95.06	-991.21	5,019.43	1,991.30	1,749.47	241.83	8.234		
14,500.00	9,950.00	14,728.13	10,125.00	122.84	125.42	95.06	-990.25	5,119.43	1,991.38	1,744.91	246.47	8.080		
14,600.00	9,950.00	14,828.13	10,125.00	125.17	127.74	95.06	-989.28	5,219.42	1,991.46	1,740.34	251.12	7.930		
14,700.00	9,950.00	14,928.13	10,125.00	127.49	130.07	95.06	-988.32	5,319.42	1,991.55	1,735.77	255.78	7.786		
14,800.00	9,950.00	15,028.13	10,125.00	129.83	132.40	95.06	-987.36	5,419.41	1,991.63	1,731.19	260.44	7.647		
14,900.00	9,950.00	15,128.13	10,125.00	132.16	134.73	95.06	-986.40	5,519.41	1,991.72	1,726.60	265.12	7.513		
15,000.00	9,950.00	15,228.13	10,125.00	134.50	137.07	95.06	-985.44	5,619.41	1,991.80	1,722.00	269.80	7.383		
15,100.00	9,950.00	15,328.13	10,125.00	136.85	139.41	95.06	-984.47	5,719.40	1,991.88	1,717.40	274.48	7.257		
15,200.00	9,950.00	15,428.13	10,125.00	139.19	141.76	95.06	-983.51	5,819.40	1,991.97	1,712.79	279.18	7.135		
15,300.00	9,950.00	15,528.13	10,125.00	141.54	144.11	95.06	-982.55	5,919.39	1,992.05	1,708.18	283.87	7.017		
15,400.00	9,950.00	15,628.13	10,125.00	143.90	146.46	95.06	-981.59	6,019.39	1,992.13	1,703.56	288.58	6.903		
15,500.00	9,950.00	15,728.13	10,125.00	146.25	148.82	95.06	-980.63	6,119.38	1,992.22	1,698.93	293.29	6.793		
15,600.00	9,950.00	15,828.13	10,125.00	148.61	151.17	95.06	-979.66	6,219.38	1,992.30	1,694.30	298.00	6.686		
15,700.00	9,950.00	15,928.13	10,125.00	150.97	153.53	95.06	-978.70	6,319.37	1,992.39	1,689.67	302.72	6.582		
15,800.00	9,950.00	16,028.13	10,125.00	153.34	155.90	95.06	-977.74	6,419.37	1,992.47	1,685.03	307.44	6.481		
15,900.00	9,950.00	16,128.13	10,125.00	155.70	158.26	95.06	-976.78	6,519.36	1,992.55	1,680.38	312.17	6.383		
16,000.00	9,950.00	16,228.13	10,125.00	158.07	160.63	95.06	-975.82	6,619.36	1,992.64	1,675.73	316.90	6.288		
16,100.00	9,950.00	16,328.13	10,125.00	160.44	163.00	95.06	-974.85	6,719.35	1,992.72	1,671.08	321.64	6.195		
16,200.00	9,950.00	16,428.13	10,125.00	162.82	165.37	95.06	-973.89	6,819.35	1,992.80	1,666.42	326.38	6.106		
16,300.00	9,950.00	16,528.13	10,125.00	165.19	167.75	95.06	-972.93	6,919.35	1,992.89	1,661.76	331.13	6.019		
16,400.00	9,950.00	16,628.13	10,125.00	167.57	170.12	95.05	-971.97	7,019.34	1,992.97	1,657.10	335.87	5.934		
16,500.00	9,950.00	16,728.13	10,125.00	169.95	172.50	95.05	-971.01	7,119.34	1,993.06	1,652.43	340.62	5.851		
16,600.00	9,950.00	16,828.13	10,125.00	172.33	174.88	95.05	-970.04	7,219.33	1,993.14	1,647.76	345.38	5.771		
16,700.00	9,950.00	16,928.13	10,125.00	174.71	177.26	95.05	-969.08	7,319.33	1,993.22	1,643.09	350.13	5.693		
16,800.00	9,950.00	17,028.13	10,125.00	177.09	179.64	95.05	-968.12	7,419.32	1,993.31	1,638.41	354.90	5.617		
16,900.00	9,950.00	17,128.13	10,125.00	179.48	182.03	95.05	-967.16	7,519.32	1,993.39	1,633.73	359.66	5.542		
17,000.00	9,950.00	17,228.13	10,125.00	181.87	184.41	95.05	-966.20	7,619.31	1,993.47	1,629.05	364.42	5.470		
17,100.00	9,950.00	17,328.13	10,125.00	184.26	186.80	95.05	-965.23	7,719.31	1,993.56	1,624.37	369.19	5.400		
17,200.00	9,950.00	17,428.13	10,125.00	186.65	189.19	95.05	-964.27	7,819.30	1,993.64	1,619.68	373.96	5.331		
17,300.00	9,950.00	17,528.13	10,125.00	189.04	191.58	95.05	-963.31	7,919.30	1,993.73	1,614.99	378.74	5.264		
17,400.00	9,950.00	17,628.13	10,125.00	191.43	193.97	95.05	-962.35	8,019.29	1,993.81	1,610.30	383.51	5.199		
17,500.00	9,950.00	17,728.13	10,125.00	193.82	196.36	95.05	-961.39	8,119.29	1,993.89	1,605.60	388.29	5.135		
17,600.00	9,950.00	17,828.13	10,125.00	196.22	198.76	95.05	-960.42	8,219.28	1,993.98	1,600.91	393.07	5.073		
17,689.50	9,950.00	17,917.62	10,125.00	198.36	200.90	95.05	-959.56	8,308.78	1,994.05	1,596.70	397.35	5.018		
17,690.09	9,950.00	17,918.22	10,125.00	198.38	200.92	95.05	-959.56	8,309.37	1,994.05	1,596.68	397.37	5.018 SF		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.06	-0.04	-40.03	40.03					
100.00	100.00	100.00	100.00	0.13	0.13	-90.06	-0.04	-40.03	40.03	39.76	0.27	148.891		
200.00	200.00	200.00	200.00	0.49	0.49	-90.06	-0.04	-40.03	40.03	39.04	0.99	40.607		
300.00	300.00	300.00	300.00	0.85	0.85	-90.06	-0.04	-40.03	40.03	38.33	1.70	23.509		
400.00	400.00	400.00	400.00	1.21	1.21	-90.06	-0.04	-40.03	40.03	37.61	2.42	16.543		
500.00	500.00	500.00	500.00	1.57	1.57	-90.06	-0.04	-40.03	40.03	36.89	3.14	12.762		
600.00	600.00	600.00	600.00	1.93	1.93	-90.06	-0.04	-40.03	40.03	36.18	3.85	10.388		
700.00	700.00	700.00	700.00	2.29	2.29	-90.06	-0.04	-40.03	40.03	35.46	4.57	8.758		
800.00	800.00	800.00	800.00	2.64	2.64	-90.06	-0.04	-40.03	40.03	34.74	5.29	7.571		
900.00	900.00	900.00	900.00	3.00	3.00	-90.06	-0.04	-40.03	40.03	34.03	6.00	6.667		
1,000.00	1,000.00	1,000.00	1,000.00	3.36	3.36	-90.06	-0.04	-40.03	40.03	33.31	6.72	5.956		
1,100.00	1,100.00	1,100.00	1,100.00	3.72	3.72	-90.06	-0.04	-40.03	40.03	32.59	7.44	5.382		
1,200.00	1,200.00	1,200.00	1,200.00	4.08	4.08	-90.06	-0.04	-40.03	40.03	31.87	8.16	4.909		
1,300.00	1,300.00	1,300.00	1,300.00	4.44	4.44	-90.06	-0.04	-40.03	40.03	31.16	8.87	4.512		
1,400.00	1,400.00	1,400.00	1,400.00	4.79	4.79	-90.06	-0.04	-40.03	40.03	30.44	9.59	4.175		
1,500.00	1,500.00	1,500.00	1,500.00	5.15	5.15	-90.06	-0.04	-40.03	40.03	29.72	10.31	3.884		
1,600.00	1,600.00	1,600.20	1,600.18	5.51	5.51	-87.57	1.69	-39.73	39.76	28.74	11.02	3.607		
1,700.00	1,700.00	1,700.16	1,700.00	5.87	5.87	-80.00	6.84	-38.82	39.41	27.68	11.74	3.358		
1,700.01	1,700.01	1,700.17	1,700.01	5.87	5.87	-80.00	6.84	-38.82	39.41	27.68	11.74	3.358		
1,800.00	1,800.00	1,799.64	1,799.09	6.23	6.23	-67.60	15.38	-37.31	40.37	27.92	12.45	3.242		
1,900.00	1,899.98	1,900.72	1,899.65	6.59	6.59	-81.46	25.00	-33.89	41.82	28.64	13.18	3.174		
2,000.00	1,999.84	2,001.53	1,999.93	6.94	6.96	-74.24	33.11	-27.47	40.59	26.70	13.90	2.921		
2,100.00	2,099.45	2,101.47	2,099.32	7.30	7.32	-71.18	40.80	-20.41	38.06	23.44	14.62	2.603		
2,200.00	2,198.70	2,201.39	2,198.70	7.66	7.69	-73.08	48.50	-13.35	34.47	19.12	15.35	2.246		
2,300.00	2,297.47	2,301.18	2,297.94	8.03	8.06	-81.82	56.18	-6.30	30.24	14.15	16.08	1.880		
2,400.08	2,395.70	2,400.79	2,397.00	8.40	8.43	-100.26	63.84	0.74	27.30	10.49	16.80	1.625		
2,422.50	2,417.63	2,423.06	2,419.15	8.49	8.51	-105.57	65.56	2.31	27.17	10.21	16.96	1.602 CC, ES		
2,500.00	2,493.44	2,500.06	2,495.73	8.79	8.80	-123.37	71.49	7.75	28.54	11.06	17.49	1.632		
2,600.00	2,591.25	2,599.42	2,594.54	9.19	9.17	-141.92	79.13	14.77	33.78	15.62	18.16	1.860		
2,700.00	2,689.07	2,698.78	2,693.36	9.59	9.54	-154.59	86.78	21.79	41.52	22.66	18.86	2.202		
2,800.00	2,786.88	2,798.13	2,792.17	10.01	9.92	-163.02	94.43	28.81	50.63	31.06	19.57	2.588		
2,900.00	2,884.69	2,897.49	2,890.98	10.42	10.30	-168.81	102.08	35.83	60.49	40.21	20.29	2.982		
3,000.00	2,982.51	2,996.85	2,989.79	10.85	10.67	-172.95	109.73	42.84	70.80	49.78	21.01	3.369		
3,100.00	3,080.32	3,096.20	3,088.61	11.27	11.05	-176.03	117.37	49.86	81.37	59.63	21.75	3.742		
3,200.00	3,178.14	3,195.56	3,187.42	11.71	11.43	-178.39	125.02	56.88	92.13	69.65	22.48	4.098		
3,300.00	3,275.95	3,294.92	3,286.23	12.14	11.81	-179.74	132.67	63.90	103.01	79.79	23.22	4.436		
3,400.00	3,373.76	3,394.27	3,385.05	12.58	12.19	-178.23	140.32	70.92	113.97	90.01	23.96	4.757		
3,500.00	3,471.58	3,493.63	3,483.86	13.02	12.57	-176.98	147.97	77.94	125.00	100.30	24.70	5.061		
3,600.00	3,569.39	3,592.98	3,582.67	13.47	12.95	-175.94	155.61	84.96	136.08	110.64	25.44	5.349		
3,700.00	3,667.21	3,692.34	3,681.48	13.92	13.34	-175.05	163.26	91.98	147.20	121.01	26.19	5.621		
3,800.00	3,765.02	3,791.70	3,780.30	14.36	13.72	-174.29	170.91	99.00	158.34	131.41	26.93	5.879		
3,900.00	3,862.84	3,891.05	3,879.11	14.82	14.10	-173.63	178.56	106.02	169.51	141.84	27.68	6.124		
4,000.00	3,960.65	3,990.41	3,977.92	15.27	14.48	-173.05	186.21	113.04	180.70	152.28	28.43	6.357		
4,100.00	4,058.46	4,089.77	4,076.73	15.73	14.87	-172.54	193.85	120.06	191.91	162.74	29.18	6.578		
4,200.00	4,156.28	4,189.12	4,175.55	16.18	15.25	-172.09	201.50	127.07	203.13	173.20	29.93	6.788		
4,300.00	4,254.09	4,288.48	4,274.36	16.64	15.64	-171.68	209.15	134.09	214.36	183.69	30.68	6.988		
4,400.00	4,351.91	4,387.84	4,373.17	17.10	16.02	-171.31	216.80	141.11	225.60	194.17	31.43	7.178		
4,500.00	4,449.72	4,487.19	4,471.98	17.56	16.41	-170.98	224.45	148.13	236.85	204.67	32.18	7.360		
4,600.00	4,547.54	4,586.55	4,570.80	18.02	16.79	-170.68	232.09	155.15	248.11	215.18	32.93	7.534		
4,700.00	4,645.35	4,685.90	4,669.61	18.48	17.18	-170.40	239.74	162.17	259.37	225.68	33.69	7.700		
4,800.00	4,743.16	4,785.26	4,768.42	18.95	17.56	-170.15	247.39	169.19	270.64	236.20	34.44	7.858		
4,900.00	4,840.98	4,884.62	4,867.23	19.41	17.95	-169.92	255.04	176.21	281.91	246.72	35.19	8.010		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 226H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,000.00	4,938.79	4,983.97	4,966.05	19.88	18.33	169.70	262.69	183.23	293.19	257.24	35.95	8.156		
5,100.00	5,036.61	5,083.33	5,064.86	20.35	18.72	169.50	270.33	190.25	304.47	267.76	36.70	8.295		
5,200.00	5,134.42	5,182.69	5,163.67	20.81	19.10	169.32	277.98	197.27	315.75	278.29	37.46	8.429		
5,300.00	5,232.23	5,282.04	5,262.48	21.28	19.49	169.15	285.63	204.28	327.04	288.82	38.22	8.557		
5,400.00	5,330.05	5,381.40	5,361.30	21.75	19.88	168.98	293.28	211.30	338.33	299.35	38.97	8.681		
5,500.00	5,427.86	5,480.76	5,460.11	22.22	20.26	168.83	300.93	218.32	349.62	309.89	39.73	8.800		
5,600.00	5,525.68	5,580.11	5,558.92	22.69	20.65	168.69	308.57	225.34	360.91	320.43	40.49	8.914		
5,700.00	5,623.49	5,679.47	5,657.73	23.16	21.04	168.56	316.22	232.36	372.21	330.96	41.25	9.024		
5,800.00	5,721.31	5,778.82	5,756.55	23.63	21.42	168.44	323.87	239.38	383.51	341.50	42.00	9.130		
5,900.00	5,819.12	5,878.18	5,855.36	24.10	21.81	168.32	331.52	246.40	394.81	352.05	42.76	9.233		
6,000.00	5,916.93	5,977.54	5,954.17	24.57	22.20	168.21	339.17	253.42	406.11	362.59	43.52	9.331		
6,100.00	6,014.75	6,076.89	6,052.99	25.04	22.59	168.10	346.81	260.44	417.41	373.13	44.28	9.427		
6,200.00	6,112.56	6,176.25	6,151.80	25.51	22.97	168.01	354.46	267.46	428.72	383.68	45.04	9.519		
6,300.00	6,210.38	6,275.61	6,250.61	25.99	23.36	167.91	362.11	274.48	440.02	394.22	45.80	9.608		
6,400.00	6,308.19	6,374.96	6,349.42	26.46	23.75	167.82	369.76	281.49	451.33	404.77	46.56	9.694		
6,500.00	6,406.00	6,474.32	6,448.24	26.93	24.13	167.74	377.41	288.51	462.64	415.32	47.32	9.777		
6,600.00	6,503.82	6,573.68	6,547.05	27.40	24.52	167.66	385.05	295.53	473.94	425.87	48.08	9.858		
6,700.00	6,601.63	6,673.03	6,645.86	27.88	24.91	167.58	392.70	302.55	485.25	436.42	48.84	9.936		
6,800.00	6,699.45	6,772.39	6,744.67	28.35	25.30	167.51	400.35	309.57	496.56	446.96	49.60	10.011		
6,832.56	6,731.30	6,804.74	6,776.85	28.51	25.42	167.48	402.84	311.86	500.25	450.40	49.85	10.036		
6,900.00	6,797.42	6,871.82	6,843.57	28.82	25.69	167.45	408.00	316.60	507.10	456.75	50.36	10.070		
7,000.00	6,896.00	6,971.54	6,942.74	29.26	26.08	167.31	415.68	323.64	514.43	463.32	51.12	10.064		
7,100.00	6,995.10	7,071.43	7,042.08	29.67	26.47	167.08	423.37	330.70	518.37	466.50	51.87	9.993		
7,200.00	7,094.61	7,171.38	7,141.48	30.05	26.86	166.75	431.06	337.76	518.92	466.29	52.63	9.860		
7,300.00	7,194.40	7,271.26	7,240.82	30.41	27.25	166.31	438.75	344.81	516.10	462.72	53.38	9.669		
7,400.00	7,294.36	7,370.96	7,339.97	30.73	27.64	165.76	446.43	351.86	509.92	455.80	54.12	9.422		
7,432.64	7,327.00	7,403.44	7,372.27	30.83	27.76	-168.91	448.93	354.15	507.18	452.82	54.36	9.330		
7,500.00	7,394.36	7,470.43	7,438.89	31.03	28.02	-169.33	454.08	358.88	501.18	446.32	54.86	9.135		
7,600.00	7,494.36	7,569.88	7,537.80	31.33	28.41	-169.97	461.74	365.91	492.33	436.72	55.60	8.854		
7,700.00	7,594.36	7,669.33	7,636.71	31.63	28.80	-170.63	469.39	372.94	483.54	427.19	56.35	8.581		
7,800.00	7,694.36	7,768.79	7,735.62	31.93	29.19	-171.32	477.05	379.96	474.81	417.71	57.10	8.316		
7,900.00	7,794.36	7,868.24	7,834.53	32.24	29.58	-172.04	484.70	386.99	466.16	408.31	57.85	8.058		
8,000.00	7,894.36	7,967.69	7,933.43	32.54	29.97	-172.78	492.36	394.01	457.58	398.97	58.60	7.808		
8,100.00	7,994.36	8,067.14	8,032.34	32.85	30.36	-173.55	500.02	401.04	449.08	389.72	59.36	7.565		
8,200.00	8,094.36	8,166.60	8,131.25	33.16	30.74	-174.35	507.67	408.07	440.66	380.54	60.12	7.329		
8,300.00	8,194.36	8,266.05	8,230.16	33.47	31.13	-175.18	515.33	415.09	432.34	371.44	60.89	7.100		
8,400.00	8,294.36	8,365.50	8,329.07	33.77	31.52	-176.04	522.98	422.12	424.10	362.44	61.66	6.878		
8,500.00	8,394.36	8,464.95	8,427.98	34.08	31.91	-176.93	530.64	429.14	415.97	353.53	62.43	6.663		
8,600.00	8,494.36	8,562.81	8,525.30	34.40	32.29	-177.85	538.14	436.03	407.97	344.77	63.20	6.455		
8,700.00	8,594.36	8,652.81	8,614.98	34.71	32.63	-178.54	543.69	441.13	401.62	337.72	63.89	6.286		
8,800.00	8,694.36	8,743.20	8,705.24	35.02	32.96	-178.99	547.18	444.32	397.68	333.15	64.54	6.162		
8,900.00	8,794.36	8,833.80	8,795.82	35.33	33.28	-179.17	548.56	445.60	396.13	331.01	65.12	6.083		
8,939.51	8,833.87	8,871.85	8,833.87	35.46	33.40	-179.18	548.59	445.62	396.10	330.73	65.37	6.059		
9,000.00	8,894.36	8,932.34	8,894.36	35.65	33.61	-179.18	548.59	445.62	396.10	330.31	65.79	6.021		
9,100.00	8,994.36	9,032.34	8,994.36	35.96	33.94	-179.18	548.59	445.62	396.10	329.63	66.47	5.959		
9,200.00	9,094.36	9,132.34	9,094.36	36.28	34.27	-179.18	548.59	445.62	396.10	328.95	67.15	5.898		
9,300.00	9,194.36	9,232.34	9,194.36	36.60	34.61	-179.18	548.59	445.62	396.10	328.26	67.84	5.839		
9,400.00	9,294.36	9,332.34	9,294.36	36.91	34.94	-179.18	548.59	445.62	396.10	327.58	68.52	5.781		
9,500.00	9,394.36	9,432.34	9,394.36	37.23	35.28	-179.18	548.59	445.62	396.10	326.89	69.21	5.723		
9,578.18	9,472.54	9,510.52	9,472.54	37.48	35.54	-179.18	548.59	445.62	396.10	326.36	69.75	5.679		
9,600.00	9,494.35	9,532.33	9,494.35	37.55	35.62	91.49	548.59	445.62	396.11	326.22	69.89	5.668		
9,625.00	9,519.28	9,557.26	9,519.28	37.64	35.70	91.75	548.59	445.62	396.16	326.12	70.05	5.656		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,650.00	9,544.09	9,582.07	9,544.09	37.72	35.78	92.18	548.59	445.62	396.27	326.08	70.19	5.646		
9,675.00	9,568.69	9,606.67	9,568.69	37.81	35.87	92.78	548.59	445.62	396.46	326.14	70.33	5.637		
9,700.00	9,593.04	9,631.02	9,593.04	37.90	35.95	93.54	548.59	445.62	396.79	326.33	70.45	5.632		
9,725.00	9,617.05	9,655.03	9,617.05	38.00	36.03	94.44	548.59	445.62	397.29	326.72	70.57	5.630		
9,750.00	9,640.67	9,678.65	9,640.67	38.10	36.11	95.46	548.59	445.62	398.04	327.36	70.68	5.632		
9,775.00	9,663.83	9,701.81	9,663.83	38.20	36.19	96.58	548.59	445.62	399.10	328.32	70.78	5.639		
9,800.00	9,686.46	9,727.31	9,689.33	38.30	36.27	97.88	548.60	446.16	400.49	329.58	70.92	5.647		
9,825.00	9,708.51	9,753.80	9,715.73	38.41	36.37	99.20	548.62	448.16	402.13	331.05	71.08	5.658		
9,850.00	9,729.91	9,780.99	9,742.68	38.52	36.47	100.51	548.65	451.73	403.99	332.73	71.26	5.669		
9,875.00	9,750.61	9,808.93	9,770.12	38.63	36.58	101.80	548.71	456.99	406.06	334.61	71.45	5.683		
9,900.00	9,770.54	9,837.67	9,797.97	38.74	36.70	103.08	548.78	464.06	408.33	336.68	71.65	5.699		
9,925.00	9,789.65	9,867.26	9,826.15	38.85	36.82	104.33	548.88	473.09	410.75	338.90	71.85	5.717		
9,950.00	9,807.90	9,897.75	9,854.54	38.97	36.96	105.56	548.99	484.19	413.31	341.28	72.04	5.737		
9,975.00	9,825.23	9,929.18	9,883.00	39.09	37.10	106.76	549.13	497.50	415.98	343.76	72.21	5.760		
10,000.00	9,841.59	9,961.58	9,911.36	39.22	37.25	107.92	549.30	513.16	418.70	346.34	72.37	5.786		
10,025.00	9,856.94	9,994.99	9,939.42	39.35	37.42	109.04	549.49	531.28	421.46	348.96	72.50	5.813		
10,050.00	9,871.23	10,029.44	9,966.96	39.48	37.59	110.11	549.70	551.97	424.20	351.59	72.61	5.842		
10,075.00	9,884.44	10,064.93	9,993.69	39.62	37.78	111.12	549.95	575.30	426.87	354.18	72.69	5.872		
10,100.00	9,896.51	10,101.46	10,019.31	39.77	37.99	112.07	550.22	601.32	429.44	356.68	72.76	5.902		
10,125.00	9,907.42	10,139.01	10,043.50	39.92	38.21	112.94	550.52	630.03	431.86	359.03	72.83	5.930		
10,150.00	9,917.14	10,177.53	10,065.89	40.08	38.45	113.73	550.85	661.36	434.08	361.17	72.91	5.954		
10,175.00	9,925.64	10,216.96	10,086.12	40.24	38.71	114.42	551.20	695.19	436.06	363.02	73.03	5.971		
10,200.00	9,932.90	10,257.21	10,103.81	40.41	38.99	115.00	551.58	731.32	437.75	364.54	73.21	5.979		
10,225.00	9,938.90	10,298.14	10,118.63	40.59	39.29	115.47	551.98	769.47	439.12	365.65	73.47	5.977		
10,250.00	9,943.62	10,339.63	10,130.25	40.77	39.62	115.82	552.40	809.28	440.14	366.30	73.84	5.960		
10,275.00	9,947.05	10,381.52	10,138.43	40.96	39.97	116.04	552.83	850.34	440.79	366.45	74.34	5.929		
10,300.00	9,949.17	10,423.62	10,143.01	41.16	40.33	116.13	553.27	892.18	441.05	366.08	74.97	5.883		
10,325.00	9,949.99	10,461.19	10,144.01	41.36	40.67	116.10	553.66	929.72	440.95	365.31	75.64	5.830		
10,328.18	9,950.01	10,464.37	10,144.01	41.39	40.70	116.10	553.69	932.91	440.94	365.25	75.69	5.826		
10,400.00	9,950.01	10,536.19	10,144.01	42.01	41.40	116.10	554.45	1,004.72	440.94	363.96	76.99	5.728		
10,500.00	9,950.00	10,636.19	10,144.00	42.99	42.46	116.10	555.49	1,104.71	440.94	361.98	78.96	5.585		
10,600.00	9,950.00	10,736.19	10,144.00	44.08	43.64	116.10	556.54	1,204.71	440.94	359.82	81.12	5.435		
10,700.00	9,950.00	10,836.19	10,144.00	45.29	44.91	116.10	557.59	1,304.70	440.94	357.47	83.47	5.283		
10,800.00	9,950.00	10,936.19	10,144.00	46.60	46.29	116.10	558.64	1,404.70	440.94	354.96	85.98	5.128		
10,900.00	9,950.00	11,036.19	10,144.00	48.00	47.74	116.10	559.68	1,504.69	440.94	352.29	88.64	4.974		
11,000.00	9,950.00	11,136.19	10,144.00	49.48	49.28	116.10	560.73	1,604.69	440.93	349.49	91.45	4.822		
11,100.00	9,950.00	11,236.19	10,144.00	51.04	50.89	116.10	561.78	1,704.68	440.93	346.56	94.37	4.672		
11,200.00	9,950.00	11,336.19	10,144.00	52.67	52.56	116.10	562.82	1,804.67	440.93	343.51	97.42	4.526		
11,300.00	9,950.00	11,436.19	10,144.00	54.37	54.29	116.10	563.87	1,904.67	440.93	340.37	100.57	4.385		
11,400.00	9,950.00	11,536.19	10,144.00	56.12	56.07	116.10	564.92	2,004.66	440.93	337.12	103.81	4.248		
11,500.00	9,950.00	11,636.19	10,144.00	57.92	57.91	116.10	565.97	2,104.66	440.93	333.79	107.14	4.116		
11,600.00	9,950.00	11,736.19	10,144.00	59.77	59.78	116.10	567.01	2,204.65	440.93	330.39	110.54	3.989		
11,700.00	9,950.00	11,836.19	10,144.00	61.66	61.70	116.10	568.06	2,304.65	440.93	326.91	114.02	3.867		
11,800.00	9,950.00	11,936.19	10,144.00	63.59	63.65	116.10	569.11	2,404.64	440.93	323.36	117.56	3.751		
11,900.00	9,950.00	12,036.19	10,144.00	65.55	65.64	116.10	570.16	2,504.64	440.92	319.76	121.17	3.639		
12,000.00	9,950.00	12,136.19	10,144.00	67.55	67.65	116.10	571.20	2,604.63	440.92	316.10	124.82	3.532		
12,100.00	9,950.00	12,236.19	10,144.00	69.57	69.69	116.10	572.25	2,704.63	440.92	312.39	128.53	3.431		
12,200.00	9,950.00	12,336.19	10,144.00	71.62	71.76	116.10	573.30	2,804.62	440.92	308.64	132.28	3.333		
12,300.00	9,950.00	12,436.19	10,144.00	73.70	73.85	116.10	574.35	2,904.61	440.92	304.85	136.07	3.240		
12,400.00	9,950.00	12,536.19	10,144.00	75.80	75.96	116.10	575.39	3,004.61	440.92	301.01	139.91	3.152		
12,500.00	9,950.00	12,636.19	10,144.00	77.92	78.10	116.10	576.44	3,104.60	440.92	297.15	143.77	3.067		
12,600.00	9,950.00	12,736.19	10,144.00	80.05	80.24	116.10	577.49	3,204.60	440.92	293.25	147.67	2.986		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 226H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,700.00	9,950.00	12,836.19	10,144.00	82.21	82.41	116.10	578.54	3,304.59	440.92	289.32	151.60	2.908		
12,800.00	9,950.00	12,936.19	10,144.00	84.37	84.59	116.10	579.58	3,404.59	440.91	285.36	155.56	2.834		
12,900.00	9,950.00	13,036.19	10,144.00	86.56	86.78	116.10	580.63	3,504.58	440.91	281.37	159.54	2.764		
13,000.00	9,950.00	13,136.19	10,144.00	88.76	88.99	116.10	581.68	3,604.58	440.91	277.37	163.55	2.696		
13,100.00	9,950.00	13,236.19	10,144.00	90.97	91.21	116.10	582.72	3,704.57	440.91	273.34	167.57	2.631		
13,200.00	9,950.00	13,336.19	10,144.00	93.19	93.44	116.10	583.77	3,804.56	440.91	269.29	171.62	2.569		
13,300.00	9,950.00	13,436.19	10,144.00	95.42	95.68	116.10	584.82	3,904.56	440.91	265.22	175.69	2.510		
13,400.00	9,950.00	13,536.19	10,144.00	97.67	97.93	116.10	585.87	4,004.55	440.91	261.13	179.78	2.453		
13,500.00	9,950.00	13,636.19	10,144.00	99.92	100.19	116.10	586.91	4,104.55	440.91	257.03	183.88	2.398		
13,600.00	9,950.00	13,736.19	10,144.00	102.18	102.46	116.10	587.96	4,204.54	440.91	252.91	188.00	2.345		
13,700.00	9,950.00	13,836.19	10,144.00	104.45	104.73	116.10	589.01	4,304.54	440.90	248.78	192.13	2.295		
13,800.00	9,950.00	13,936.19	10,144.00	106.73	107.01	116.10	590.06	4,404.53	440.90	244.63	196.27	2.246		
13,900.00	9,950.00	14,036.19	10,144.00	109.01	109.30	116.10	591.10	4,504.53	440.90	240.47	200.43	2.200		
14,000.00	9,950.00	14,136.19	10,144.00	111.30	111.60	116.10	592.15	4,604.52	440.90	236.30	204.60	2.155		
14,100.00	9,950.00	14,236.19	10,144.00	113.60	113.90	116.10	593.20	4,704.52	440.90	232.12	208.78	2.112		
14,200.00	9,950.00	14,336.19	10,144.00	115.90	116.21	116.10	594.25	4,804.51	440.90	227.92	212.98	2.070		
14,300.00	9,950.00	14,436.19	10,144.00	118.21	118.52	116.10	595.29	4,904.50	440.90	223.72	217.18	2.030		
14,400.00	9,950.00	14,536.19	10,144.00	120.52	120.84	116.10	596.34	5,004.50	440.90	219.51	221.39	1.991		
14,500.00	9,950.00	14,636.19	10,144.00	122.84	123.16	116.10	597.39	5,104.49	440.89	215.29	225.61	1.954		
14,600.00	9,950.00	14,736.19	10,144.00	125.17	125.49	116.10	598.43	5,204.49	440.89	211.06	229.84	1.918		
14,700.00	9,950.00	14,836.19	10,144.00	127.49	127.82	116.10	599.48	5,304.48	440.89	206.82	234.07	1.884		
14,800.00	9,950.00	14,936.19	10,144.00	129.83	130.16	116.11	600.53	5,404.48	440.89	202.57	238.32	1.850		
14,900.00	9,950.00	15,036.19	10,144.00	132.16	132.50	116.11	601.58	5,504.47	440.89	198.32	242.57	1.818		
15,000.00	9,950.00	15,136.19	10,144.00	134.50	134.84	116.11	602.62	5,604.47	440.89	194.06	246.83	1.786		
15,100.00	9,950.00	15,236.19	10,144.00	136.85	137.19	116.11	603.67	5,704.46	440.89	189.80	251.09	1.756		
15,200.00	9,950.00	15,336.19	10,144.00	139.19	139.54	116.11	604.72	5,804.46	440.89	185.52	255.36	1.727		
15,300.00	9,950.00	15,436.19	10,144.00	141.54	141.89	116.11	605.77	5,904.45	440.89	181.25	259.64	1.698		
15,400.00	9,950.00	15,536.19	10,144.00	143.90	144.25	116.11	606.81	6,004.44	440.88	176.96	263.92	1.671		
15,500.00	9,950.00	15,636.19	10,144.00	146.25	146.61	116.11	607.86	6,104.44	440.88	172.67	268.21	1.644		
15,600.00	9,950.00	15,736.19	10,144.00	148.61	148.97	116.11	608.91	6,204.43	440.88	168.38	272.50	1.618		
15,700.00	9,950.00	15,836.19	10,144.00	150.97	151.33	116.11	609.96	6,304.43	440.88	164.08	276.80	1.593		
15,800.00	9,950.00	15,936.19	10,144.00	153.34	153.70	116.11	611.00	6,404.42	440.88	159.78	281.10	1.568		
15,900.00	9,950.00	16,036.19	10,144.00	155.70	156.07	116.11	612.05	6,504.42	440.88	155.47	285.40	1.545		
16,000.00	9,950.00	16,136.19	10,144.00	158.07	158.44	116.11	613.10	6,604.41	440.88	151.16	289.71	1.522		
16,100.00	9,950.00	16,236.19	10,144.00	160.44	160.81	116.11	614.15	6,704.41	440.88	146.85	294.03	1.499 Level 3		
16,200.00	9,950.00	16,336.19	10,144.00	162.82	163.19	116.11	615.19	6,804.40	440.88	142.53	298.35	1.478 Level 3		
16,300.00	9,950.00	16,436.19	10,144.00	165.19	165.56	116.11	616.24	6,904.40	440.87	138.21	302.67	1.457 Level 3		
16,400.00	9,950.00	16,536.19	10,144.00	167.57	167.94	116.11	617.29	7,004.39	440.87	133.88	306.99	1.436 Level 3		
16,500.00	9,950.00	16,636.19	10,144.00	169.95	170.32	116.11	618.33	7,104.38	440.87	129.55	311.32	1.416 Level 3		
16,600.00	9,950.00	16,736.19	10,144.00	172.33	172.71	116.11	619.38	7,204.38	440.87	125.22	315.65	1.397 Level 3		
16,700.00	9,950.00	16,836.19	10,144.00	174.71	175.09	116.11	620.43	7,304.37	440.87	120.88	319.99	1.378 Level 3		
16,800.00	9,950.00	16,936.19	10,144.00	177.09	177.48	116.11	621.48	7,404.37	440.87	116.55	324.32	1.359 Level 3		
16,900.00	9,950.00	17,036.19	10,144.00	179.48	179.86	116.11	622.52	7,504.36	440.87	112.21	328.66	1.341 Level 3		
17,000.00	9,950.00	17,136.19	10,144.00	181.87	182.25	116.11	623.57	7,604.36	440.87	107.86	333.01	1.324 Level 3		
17,100.00	9,950.00	17,236.19	10,144.00	184.26	184.64	116.11	624.62	7,704.35	440.87	103.51	337.35	1.307 Level 3		
17,200.00	9,950.00	17,336.19	10,144.00	186.65	187.03	116.11	625.67	7,804.35	440.86	99.17	341.70	1.290 Level 3		
17,300.00	9,950.00	17,436.19	10,144.00	189.04	189.42	116.11	626.71	7,904.34	440.86	94.81	346.05	1.274 Level 3		
17,400.00	9,950.00	17,536.19	10,144.00	191.43	191.82	116.11	627.76	8,004.33	440.86	90.46	350.40	1.258 Level 3		
17,500.00	9,950.00	17,636.19	10,144.00	193.82	194.21	116.11	628.81	8,104.33	440.86	86.11	354.76	1.243 Level 2		
17,600.00	9,950.00	17,736.19	10,144.00	196.22	196.61	116.11	629.86	8,204.32	440.86	81.75	359.11	1.228 Level 2		
17,678.80	9,950.00	17,814.98	10,144.00	198.11	198.39	116.11	630.68	8,283.12	440.86	78.42	362.44	1.216 Level 2, SF		
17,689.50	9,950.00	17,816.84	10,144.00	198.36	198.42	116.11	630.70	8,284.97	440.95	78.59	362.36	1.217 Level 2		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 usft
Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 226H - OH - Plan #1												Offset Well Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
17,690.09	9,950.00	17,816.84	10,144.00	198.38	198.42	116.11	630.70	8,284.97	440.96	78.61	362.35	1.217	Level 2



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 233H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.08	-0.17	-120.07	120.07					
100.00	100.00	99.60	99.60	0.13	0.13	-90.08	-0.17	-120.07	120.07	119.80	0.27	447.495		
200.00	200.00	199.60	199.60	0.49	0.49	-90.08	-0.17	-120.07	120.07	119.09	0.98	121.977		
300.00	300.00	299.60	299.60	0.85	0.85	-90.08	-0.17	-120.07	120.07	118.37	1.70	70.575		
400.00	400.00	399.60	399.60	1.21	1.21	-90.08	-0.17	-120.07	120.07	117.65	2.42	49.652		
500.00	500.00	499.60	499.60	1.57	1.57	-90.08	-0.17	-120.07	120.07	116.93	3.14	38.298		
600.00	600.00	599.60	599.60	1.93	1.93	-90.08	-0.17	-120.07	120.07	116.22	3.85	31.170		
700.00	700.00	699.60	699.60	2.29	2.28	-90.08	-0.17	-120.07	120.07	115.50	4.57	26.279		
800.00	800.00	799.60	799.60	2.64	2.64	-90.08	-0.17	-120.07	120.07	114.78	5.29	22.715		
900.00	900.00	899.60	899.60	3.00	3.00	-90.08	-0.17	-120.07	120.07	114.07	6.00	20.002		
1,000.00	1,000.00	999.60	999.60	3.36	3.36	-90.08	-0.17	-120.07	120.07	113.35	6.72	17.868		
1,100.00	1,100.00	1,099.60	1,099.60	3.72	3.72	-90.08	-0.17	-120.07	120.07	112.63	7.44	16.145		
1,200.00	1,200.00	1,199.60	1,199.60	4.08	4.08	-90.08	-0.17	-120.07	120.07	111.92	8.15	14.726		
1,300.00	1,300.00	1,299.60	1,299.60	4.44	4.43	-90.08	-0.17	-120.07	120.07	111.20	8.87	13.536		
1,400.00	1,400.00	1,399.60	1,399.60	4.79	4.79	-90.08	-0.17	-120.07	120.07	110.48	9.59	12.523		
1,500.00	1,500.00	1,499.60	1,499.60	5.15	5.15	-90.08	-0.17	-120.07	120.07	109.77	10.30	11.652		
1,600.00	1,600.00	1,599.60	1,599.60	5.51	5.51	-90.08	-0.17	-120.07	120.07	109.05	11.02	10.894		
1,700.00	1,700.00	1,699.60	1,699.60	5.87	5.87	-90.08	-0.17	-120.07	120.07	108.33	11.74	10.229		
1,800.00	1,800.00	1,799.60	1,799.60	6.23	6.23	-90.08	-0.17	-120.07	120.07	107.61	12.46	9.640 CC, ES		
1,900.00	1,899.98	1,899.58	1,899.58	6.59	6.59	-116.35	-0.17	-120.07	120.83	107.66	13.17	9.174		
2,000.00	1,999.84	1,999.44	1,999.44	6.94	6.94	-118.49	-0.17	-120.07	123.25	109.36	13.88	8.877		
2,100.00	2,099.45	2,101.56	2,101.54	7.30	7.29	-122.61	-1.53	-118.89	126.66	112.07	14.59	8.682		
2,200.00	2,198.70	2,202.72	2,202.55	7.66	7.63	-129.04	-5.60	-115.39	131.13	115.86	15.27	8.585		
2,300.00	2,297.47	2,302.38	2,301.82	8.03	7.96	-137.19	-12.24	-109.66	138.45	122.48	15.97	8.672		
2,400.00	2,395.70	2,399.70	2,398.46	8.40	8.29	-146.03	-20.93	-102.16	150.62	133.96	16.66	9.041		
2,500.00	2,493.44	2,495.69	2,493.74	8.79	8.62	-153.90	-29.78	-94.52	167.50	150.15	17.35	9.654		
2,600.00	2,591.25	2,591.76	2,589.09	9.19	8.96	-160.29	-38.65	-86.88	187.00	168.97	18.04	10.366		
2,700.00	2,689.07	2,687.83	2,684.44	9.59	9.30	-165.46	-47.51	-79.23	208.39	189.66	18.73	11.126		
2,800.00	2,786.88	2,783.89	2,779.79	10.01	9.65	-169.68	-56.38	-71.58	231.14	211.72	19.42	11.901		
2,900.00	2,884.69	2,879.96	2,875.14	10.42	10.00	-173.14	-65.24	-63.93	254.89	234.77	20.12	12.670		
3,000.00	2,982.51	2,976.03	2,970.49	10.85	10.35	-176.01	-74.11	-56.28	279.38	258.56	20.82	13.420		
3,100.00	3,080.32	3,072.10	3,065.84	11.27	10.70	-178.42	-82.98	-48.64	304.43	282.91	21.52	14.146		
3,200.00	3,178.14	3,168.16	3,161.19	11.71	11.06	-179.53	-91.84	-40.99	329.92	307.69	22.23	14.843		
3,300.00	3,275.95	3,264.23	3,256.55	12.14	11.42	-177.78	-100.71	-33.34	355.75	332.81	22.94	15.509		
3,400.00	3,373.76	3,360.30	3,351.90	12.58	11.78	-176.26	-109.57	-25.69	381.85	358.20	23.65	16.145		
3,500.00	3,471.58	3,456.36	3,447.25	13.02	12.15	-174.93	-118.44	-18.04	408.17	383.80	24.37	16.751		
3,600.00	3,569.39	3,552.43	3,542.60	13.47	12.52	-173.77	-127.30	-10.40	434.67	409.59	25.09	17.327		
3,700.00	3,667.21	3,648.50	3,637.95	13.92	12.88	-172.73	-136.17	-2.75	461.32	435.51	25.81	17.875		
3,800.00	3,765.02	3,744.57	3,733.30	14.36	13.25	-171.82	-145.03	4.90	488.10	461.57	26.53	18.396		
3,900.00	3,862.84	3,840.63	3,828.65	14.82	13.62	-170.99	-153.90	12.55	514.98	487.72	27.26	18.892		
4,000.00	3,960.65	3,936.70	3,924.00	15.27	14.00	-170.25	-162.76	20.19	541.95	513.96	27.99	19.364		
4,100.00	4,058.46	4,032.77	4,019.35	15.73	14.37	-169.58	-171.63	27.84	569.00	540.28	28.72	19.813		
4,200.00	4,156.28	4,128.84	4,114.70	16.18	14.74	-168.96	-180.49	35.49	596.11	566.66	29.45	20.241		
4,300.00	4,254.09	4,224.90	4,210.06	16.64	15.12	-168.40	-189.36	43.14	623.28	593.10	30.18	20.649		
4,400.00	4,351.91	4,320.97	4,305.41	17.10	15.49	-167.89	-198.22	50.79	650.50	619.58	30.92	21.039		
4,500.00	4,449.72	4,417.04	4,400.76	17.56	15.87	-167.42	-207.09	58.43	677.77	646.11	31.66	21.410		
4,600.00	4,547.54	4,513.10	4,496.11	18.02	16.25	-166.99	-215.96	66.08	705.07	672.68	32.39	21.765		
4,700.00	4,645.35	4,609.17	4,591.46	18.48	16.63	-166.58	-224.82	73.73	732.41	699.28	33.13	22.105		
4,800.00	4,743.16	4,705.24	4,686.81	18.95	17.01	-166.21	-233.69	81.38	759.78	725.91	33.87	22.430		
4,900.00	4,840.98	4,801.31	4,782.16	19.41	17.39	-165.86	-242.55	89.02	787.18	752.57	34.62	22.741		
5,000.00	4,938.79	4,897.37	4,877.51	19.88	17.77	-165.54	-251.42	96.67	814.61	779.25	35.36	23.038		
5,100.00	5,036.61	4,993.44	4,972.86	20.35	18.15	-165.24	-260.28	104.32	842.05	805.95	36.10	23.324		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 233H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,200.00	5,134.42	5,089.51	5,068.21	20.81	18.53	164.95	-269.15	111.97	869.52	832.67	36.85	23.598		
5,300.00	5,232.23	5,185.57	5,163.57	21.28	18.91	164.69	-278.01	119.62	897.01	859.41	37.59	23.861		
5,400.00	5,330.05	5,281.64	5,258.92	21.75	19.30	164.44	-286.88	127.26	924.51	886.17	38.34	24.114		
5,500.00	5,427.86	5,377.71	5,354.27	22.22	19.68	164.20	-295.74	134.91	952.03	912.94	39.09	24.357		
5,600.00	5,525.68	5,473.78	5,449.62	22.69	20.06	163.98	-304.61	142.56	979.56	939.73	39.83	24.591		
5,700.00	5,623.49	5,569.84	5,544.97	23.16	20.45	163.76	-313.47	150.21	1,007.10	966.52	40.58	24.816		
5,800.00	5,721.31	5,665.91	5,640.32	23.63	20.83	163.57	-322.34	157.86	1,034.66	993.33	41.33	25.033		
5,900.00	5,819.12	5,761.98	5,735.67	24.10	21.21	163.38	-331.20	165.50	1,062.23	1,020.15	42.08	25.242		
6,000.00	5,916.93	5,858.04	5,831.02	24.57	21.60	163.20	-340.07	173.15	1,089.81	1,046.98	42.83	25.444		
6,100.00	6,014.75	5,954.11	5,926.37	25.04	21.99	163.03	-348.93	180.80	1,117.39	1,073.81	43.58	25.638		
6,200.00	6,112.56	6,050.18	6,021.73	25.51	22.37	162.86	-357.80	188.45	1,144.99	1,100.66	44.33	25.826		
6,300.00	6,210.38	6,146.25	6,117.08	25.99	22.76	162.71	-366.67	196.09	1,172.60	1,127.51	45.09	26.008		
6,400.00	6,308.19	6,242.31	6,212.43	26.46	23.14	162.56	-375.53	203.74	1,200.21	1,154.37	45.84	26.183		
6,500.00	6,406.00	6,338.38	6,307.78	26.93	23.53	162.42	-384.40	211.39	1,227.83	1,181.23	46.59	26.352		
6,600.00	6,503.82	6,434.45	6,403.13	27.40	23.92	162.28	-393.26	219.04	1,255.45	1,208.11	47.35	26.516		
6,700.00	6,601.63	6,530.51	6,498.48	27.88	24.30	162.15	-402.13	226.69	1,283.08	1,234.98	48.10	26.675		
6,800.00	6,699.45	6,626.58	6,593.83	28.35	24.69	162.03	-410.99	234.33	1,310.72	1,261.87	48.86	26.829		
6,832.56	6,731.30	6,657.86	6,624.88	28.51	24.82	161.99	-413.88	236.82	1,319.72	1,270.62	49.10	26.878		
6,900.00	6,797.42	6,722.84	6,689.38	28.82	25.08	162.02	-419.88	242.00	1,337.64	1,288.03	49.61	26.964		
7,000.00	6,896.00	6,819.87	6,785.68	29.26	25.47	162.00	-428.83	249.72	1,361.52	1,311.16	50.36	27.036		
7,100.00	6,995.10	6,917.58	6,882.66	29.67	25.86	161.92	-437.85	257.50	1,382.19	1,331.08	51.11	27.044		
7,200.00	7,094.61	7,015.87	6,980.21	30.05	26.26	161.78	-446.92	265.32	1,399.61	1,347.76	51.85	26.993		
7,300.00	7,194.40	7,114.60	7,078.21	30.41	26.66	161.58	-456.03	273.18	1,413.79	1,361.21	52.59	26.885		
7,400.00	7,294.36	7,213.67	7,176.54	30.73	27.06	161.33	-465.17	281.07	1,424.73	1,371.42	53.32	26.722		
7,432.64	7,327.00	7,246.06	7,208.69	30.83	27.19	-173.23	-468.16	283.65	1,427.60	1,374.05	53.55	26.658		
7,500.00	7,394.36	7,312.91	7,275.05	31.03	27.46	-173.47	-474.33	288.97	1,433.18	1,379.14	54.04	26.522		
7,600.00	7,494.36	7,412.17	7,373.56	31.33	27.86	-173.83	-483.49	296.87	1,441.50	1,386.74	54.76	26.324		
7,700.00	7,594.36	7,511.42	7,472.08	31.63	28.26	-174.18	-492.65	304.77	1,449.88	1,394.40	55.48	26.133		
7,800.00	7,694.36	7,610.68	7,570.59	31.93	28.67	-174.52	-501.81	312.68	1,458.31	1,402.11	56.20	25.947		
7,900.00	7,794.36	7,709.93	7,669.11	32.24	29.07	-174.87	-510.97	320.58	1,466.80	1,409.87	56.93	25.767		
8,000.00	7,894.36	7,809.19	7,767.62	32.54	29.47	-175.21	-520.13	328.48	1,475.34	1,417.69	57.65	25.592		
8,100.00	7,994.36	7,908.44	7,866.14	32.85	29.87	-175.54	-529.28	336.38	1,483.92	1,425.56	58.37	25.423		
8,200.00	8,094.36	8,007.70	7,964.65	33.16	30.27	-175.87	-538.44	344.28	1,492.56	1,433.47	59.09	25.259		
8,300.00	8,194.36	8,106.95	8,063.16	33.47	30.68	-176.20	-547.60	352.18	1,501.25	1,441.44	59.81	25.099		
8,400.00	8,294.36	8,206.21	8,161.68	33.77	31.08	-176.52	-556.76	360.09	1,509.99	1,449.45	60.54	24.944		
8,500.00	8,394.36	8,305.46	8,260.19	34.08	31.48	-176.84	-565.92	367.99	1,518.77	1,457.51	61.26	24.794		
8,600.00	8,494.36	8,404.71	8,358.71	34.40	31.89	-177.16	-575.08	375.89	1,527.60	1,465.62	61.98	24.647		
8,700.00	8,594.36	8,503.97	8,457.22	34.71	32.29	-177.47	-584.24	383.79	1,536.48	1,473.78	62.70	24.505		
8,800.00	8,694.36	8,603.22	8,555.74	35.02	32.69	-177.78	-593.40	391.69	1,545.40	1,481.98	63.42	24.367		
8,900.00	8,794.36	8,702.48	8,654.25	35.33	33.09	-178.09	-602.56	399.59	1,554.37	1,490.22	64.14	24.233		
9,000.00	8,894.36	8,801.73	8,752.77	35.65	33.50	-178.39	-611.72	407.50	1,563.38	1,498.51	64.87	24.102		
9,100.00	8,994.36	8,908.25	8,858.50	35.96	33.93	-178.71	-621.51	415.94	1,572.40	1,506.76	65.64	23.955		
9,200.00	9,094.36	9,077.17	9,026.76	36.28	34.58	-179.06	-632.56	425.47	1,578.85	1,512.05	66.80	23.635		
9,300.00	9,194.36	9,247.23	9,196.74	36.60	35.16	-179.17	-636.07	428.50	1,580.89	1,513.06	67.83	23.306		
9,332.06	9,226.42	9,276.52	9,226.02	36.70	35.25	-179.17	-636.08	428.51	1,580.89	1,512.86	68.03	23.237		
9,400.00	9,294.36	9,344.45	9,293.96	36.91	35.46	-179.17	-636.08	428.51	1,580.89	1,512.41	68.49	23.084		
9,500.00	9,394.36	9,444.45	9,393.96	37.23	35.78	-179.17	-636.08	428.51	1,580.89	1,511.74	69.15	22.861		
9,578.18	9,472.54	9,523.35	9,472.86	37.48	36.02	-179.18	-636.08	428.67	1,580.89	1,511.22	69.68	22.689		
9,600.00	9,494.35	9,546.49	9,495.96	37.55	36.10	91.40	-636.08	429.83	1,580.89	1,511.05	69.84	22.637		
9,611.73	9,506.06	9,558.92	9,508.34	37.59	36.15	91.39	-636.07	430.91	1,580.88	1,510.96	69.92	22.609		
9,625.00	9,519.28	9,572.97	9,522.29	37.64	36.20	91.37	-636.07	432.52	1,580.89	1,510.86	70.02	22.576		
9,650.00	9,544.09	9,599.39	9,548.39	37.72	36.30	91.34	-636.05	436.66	1,580.89	1,510.67	70.22	22.513		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 233H - OH - Plan #1													Offset Site Error: 0.00 usft	
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error: 0.00 usft	
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
9,675.00	9,568.69	9,625.76	9,574.16	37.81	36.41	91.30	-636.04	442.23	1,580.91	1,510.48	70.43	22.447		
9,700.00	9,593.04	9,652.07	9,599.53	37.90	36.52	91.26	-636.01	449.19	1,580.94	1,510.29	70.64	22.379		
9,725.00	9,617.05	9,678.33	9,624.43	38.00	36.63	91.22	-635.99	457.52	1,580.97	1,510.11	70.87	22.309		
9,750.00	9,640.67	9,704.51	9,648.77	38.10	36.75	91.17	-635.96	467.18	1,581.02	1,509.92	71.10	22.237		
9,775.00	9,663.83	9,730.63	9,672.48	38.20	36.87	91.12	-635.92	478.12	1,581.07	1,509.73	71.34	22.164		
9,800.00	9,686.46	9,756.68	9,695.49	38.30	37.00	91.06	-635.88	490.32	1,581.13	1,509.55	71.58	22.088		
9,825.00	9,708.51	9,782.66	9,717.75	38.41	37.13	91.01	-635.84	503.71	1,581.20	1,509.36	71.84	22.011		
9,850.00	9,729.91	9,808.56	9,739.18	38.52	37.26	90.95	-635.79	518.25	1,581.28	1,509.18	72.10	21.931		
9,875.00	9,750.61	9,834.38	9,759.73	38.63	37.39	90.89	-635.74	533.87	1,581.37	1,509.00	72.37	21.850		
9,900.00	9,770.54	9,860.12	9,779.34	38.74	37.53	90.82	-635.69	550.54	1,581.47	1,508.81	72.65	21.767		
9,925.00	9,789.65	9,885.78	9,797.98	38.85	37.67	90.76	-635.63	568.17	1,581.57	1,508.62	72.95	21.681		
9,950.00	9,807.90	9,911.36	9,815.58	38.97	37.82	90.69	-635.57	586.73	1,581.68	1,508.44	73.25	21.594		
9,975.00	9,825.23	9,936.85	9,832.11	39.09	37.97	90.62	-635.51	606.13	1,581.80	1,508.25	73.56	21.504		
10,000.00	9,841.59	9,962.26	9,847.54	39.22	38.13	90.55	-635.44	626.32	1,581.93	1,508.05	73.88	21.412		
10,025.00	9,856.94	9,987.59	9,861.82	39.35	38.29	90.47	-635.38	647.23	1,582.07	1,507.85	74.22	21.317		
10,050.00	9,871.23	10,012.83	9,874.93	39.48	38.45	90.40	-635.31	668.80	1,582.21	1,507.65	74.56	21.219		
10,075.00	9,884.44	10,037.99	9,886.85	39.62	38.63	90.32	-635.24	690.95	1,582.36	1,507.44	74.92	21.120		
10,100.00	9,896.51	10,063.06	9,897.55	39.77	38.80	90.25	-635.16	713.62	1,582.52	1,507.22	75.30	21.017		
10,125.00	9,907.42	10,088.05	9,907.01	39.92	38.99	90.17	-635.09	736.75	1,582.68	1,507.00	75.68	20.912		
10,150.00	9,917.14	10,112.96	9,915.23	40.08	39.18	90.09	-635.01	760.26	1,582.85	1,506.77	76.08	20.805		
10,175.00	9,925.64	10,137.79	9,922.19	40.24	39.37	90.02	-634.94	784.09	1,583.02	1,506.53	76.49	20.696		
10,200.00	9,932.90	10,162.53	9,927.88	40.41	39.58	89.94	-634.86	808.17	1,583.20	1,506.29	76.91	20.585		
10,225.00	9,938.90	10,187.20	9,932.31	40.59	39.78	89.86	-634.78	832.43	1,583.38	1,506.04	77.34	20.472		
10,250.00	9,943.62	10,211.79	9,935.47	40.77	39.99	89.79	-634.70	856.81	1,583.57	1,505.78	77.79	20.358		
10,275.00	9,947.05	10,236.31	9,937.36	40.96	40.21	89.71	-634.63	881.25	1,583.75	1,505.52	78.24	20.243		
10,300.00	9,949.17	10,260.75	9,938.00	41.16	40.43	89.64	-634.55	905.68	1,583.94	1,505.25	78.70	20.127		
10,325.00	9,949.99	10,285.73	9,938.01	41.36	40.66	89.58	-634.47	930.66	1,584.13	1,504.96	79.17	20.009		
10,328.18	9,950.01	10,288.91	9,938.01	41.39	40.69	89.58	-634.46	933.84	1,584.15	1,504.92	79.23	19.994		
10,400.00	9,950.01	10,360.72	9,938.01	42.01	41.42	89.58	-634.23	1,005.66	1,584.67	1,503.98	80.70	19.637		
10,500.00	9,950.00	10,460.72	9,938.00	42.99	42.51	89.58	-633.91	1,105.66	1,585.40	1,502.47	82.93	19.118		
10,600.00	9,950.00	10,560.72	9,938.00	44.08	43.72	89.58	-633.58	1,205.65	1,586.12	1,500.75	85.37	18.578		
10,700.00	9,950.00	10,660.72	9,938.00	45.29	45.03	89.58	-633.26	1,305.65	1,586.85	1,498.82	88.03	18.027		
10,800.00	9,950.00	10,760.71	9,938.00	46.60	46.44	89.58	-632.94	1,405.65	1,587.57	1,496.71	90.86	17.472		
10,900.00	9,950.00	10,860.71	9,938.00	48.00	47.94	89.58	-632.62	1,505.64	1,588.30	1,494.43	93.87	16.920		
11,000.00	9,950.00	10,960.71	9,938.00	49.48	49.51	89.58	-632.30	1,605.64	1,589.02	1,491.99	97.03	16.377		
11,100.00	9,950.00	11,060.71	9,938.00	51.04	51.15	89.58	-631.98	1,705.64	1,589.75	1,489.42	100.33	15.846		
11,200.00	9,950.00	11,160.70	9,938.00	52.67	52.85	89.58	-631.66	1,805.63	1,590.47	1,486.72	103.75	15.330		
11,300.00	9,950.00	11,260.70	9,938.00	54.37	54.62	89.58	-631.34	1,905.63	1,591.20	1,483.91	107.29	14.831		
11,400.00	9,950.00	11,360.70	9,938.00	56.12	56.43	89.58	-631.02	2,005.63	1,591.92	1,481.00	110.92	14.352		
11,500.00	9,950.00	11,460.70	9,938.00	57.92	58.29	89.58	-630.70	2,105.62	1,592.65	1,477.99	114.65	13.891		
11,600.00	9,950.00	11,560.69	9,938.00	59.77	60.20	89.58	-630.37	2,205.62	1,593.37	1,474.90	118.47	13.450		
11,700.00	9,950.00	11,660.69	9,938.00	61.66	62.14	89.58	-630.05	2,305.62	1,594.10	1,471.74	122.36	13.028		
11,800.00	9,950.00	11,760.69	9,938.00	63.59	64.11	89.58	-629.73	2,405.61	1,594.82	1,468.50	126.32	12.625		
11,900.00	9,950.00	11,860.68	9,938.00	65.55	66.12	89.58	-629.41	2,505.61	1,595.55	1,465.21	130.34	12.241		
12,000.00	9,950.00	11,960.68	9,938.00	67.55	68.16	89.58	-629.09	2,605.61	1,596.27	1,461.85	134.42	11.875		
12,100.00	9,950.00	12,060.68	9,938.00	69.57	70.22	89.58	-628.77	2,705.61	1,597.00	1,458.45	138.55	11.526		
12,200.00	9,950.00	12,160.68	9,938.00	71.62	72.31	89.58	-628.45	2,805.60	1,597.72	1,454.99	142.73	11.194		
12,300.00	9,950.00	12,260.67	9,938.00	73.70	74.42	89.58	-628.13	2,905.60	1,598.45	1,451.49	146.96	10.877		
12,400.00	9,950.00	12,360.67	9,938.00	75.80	76.55	89.58	-627.81	3,005.60	1,599.17	1,447.96	151.22	10.575		
12,500.00	9,950.00	12,460.67	9,938.00	77.92	78.69	89.58	-627.48	3,105.59	1,599.90	1,444.38	155.52	10.288		
12,600.00	9,950.00	12,560.67	9,938.00	80.05	80.86	89.58	-627.16	3,205.59	1,600.62	1,440.77	159.85	10.013		
12,700.00	9,950.00	12,660.66	9,938.00	82.21	83.04	89.58	-626.84	3,305.59	1,601.35	1,437.13	164.21	9.752		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 233H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,800.00	9,950.00	12,760.66	9,938.00	84.37	85.23	89.59	-626.52	3,405.58	1,602.07	1,433.47	168.61	9.502		
12,900.00	9,950.00	12,860.66	9,938.00	86.56	87.44	89.59	-626.20	3,505.58	1,602.80	1,429.77	173.02	9.263		
13,000.00	9,950.00	12,960.66	9,938.00	88.76	89.66	89.59	-625.88	3,605.58	1,603.52	1,426.06	177.47	9.036		
13,100.00	9,950.00	13,060.65	9,938.00	90.97	91.89	89.59	-625.56	3,705.57	1,604.25	1,422.32	181.93	8.818		
13,200.00	9,950.00	13,160.65	9,938.00	93.19	94.13	89.59	-625.24	3,805.57	1,604.97	1,418.55	186.42	8.609		
13,300.00	9,950.00	13,260.65	9,938.00	95.42	96.38	89.59	-624.92	3,905.57	1,605.70	1,414.77	190.93	8.410		
13,400.00	9,950.00	13,360.65	9,938.00	97.67	98.64	89.59	-624.60	4,005.56	1,606.42	1,410.97	195.45	8.219		
13,500.00	9,950.00	13,460.64	9,938.00	99.92	100.91	89.59	-624.27	4,105.56	1,607.15	1,407.16	199.99	8.036		
13,600.00	9,950.00	13,560.64	9,938.00	102.18	103.19	89.59	-623.95	4,205.56	1,607.87	1,403.32	204.55	7.861		
13,700.00	9,950.00	13,660.64	9,938.00	104.45	105.48	89.59	-623.63	4,305.56	1,608.60	1,399.48	209.12	7.692		
13,800.00	9,950.00	13,760.63	9,938.00	106.73	107.77	89.59	-623.31	4,405.55	1,609.32	1,395.62	213.71	7.531		
13,900.00	9,950.00	13,860.63	9,938.00	109.01	110.07	89.59	-622.99	4,505.55	1,610.05	1,391.74	218.30	7.375		
14,000.00	9,950.00	13,960.63	9,938.00	111.30	112.37	89.59	-622.67	4,605.55	1,610.77	1,387.86	222.92	7.226		
14,100.00	9,950.00	14,060.63	9,938.00	113.60	114.68	89.59	-622.35	4,705.54	1,611.50	1,383.96	227.54	7.082		
14,200.00	9,950.00	14,160.62	9,938.00	115.90	117.00	89.59	-622.03	4,805.54	1,612.22	1,380.05	232.17	6.944		
14,300.00	9,950.00	14,260.62	9,938.00	118.21	119.32	89.59	-621.71	4,905.54	1,612.95	1,376.14	236.81	6.811		
14,400.00	9,950.00	14,360.62	9,938.00	120.52	121.64	89.59	-621.38	5,005.53	1,613.67	1,372.21	241.47	6.683		
14,500.00	9,950.00	14,460.62	9,938.00	122.84	123.97	89.59	-621.06	5,105.53	1,614.40	1,368.27	246.13	6.559		
14,600.00	9,950.00	14,560.61	9,938.00	125.17	126.31	89.59	-620.74	5,205.53	1,615.12	1,364.33	250.80	6.440		
14,700.00	9,950.00	14,660.61	9,938.00	127.49	128.64	89.59	-620.42	5,305.52	1,615.85	1,360.37	255.48	6.325		
14,800.00	9,950.00	14,760.61	9,938.00	129.83	130.99	89.59	-620.10	5,405.52	1,616.57	1,356.41	260.16	6.214		
14,900.00	9,950.00	14,860.61	9,938.00	132.16	133.33	89.59	-619.78	5,505.52	1,617.30	1,352.45	264.85	6.106		
15,000.00	9,950.00	14,960.60	9,938.00	134.50	135.68	89.59	-619.46	5,605.51	1,618.02	1,348.47	269.55	6.003		
15,100.00	9,950.00	15,060.60	9,938.00	136.85	138.03	89.59	-619.14	5,705.51	1,618.75	1,344.49	274.26	5.902		
15,200.00	9,950.00	15,160.60	9,938.00	139.19	140.39	89.59	-618.82	5,805.51	1,619.47	1,340.50	278.97	5.805		
15,300.00	9,950.00	15,260.60	9,938.00	141.54	142.75	89.59	-618.50	5,905.50	1,620.20	1,336.51	283.69	5.711		
15,400.00	9,950.00	15,360.59	9,938.00	143.90	145.11	89.59	-618.17	6,005.50	1,620.92	1,332.51	288.41	5.620		
15,500.00	9,950.00	15,460.59	9,938.00	146.25	147.47	89.59	-617.85	6,105.50	1,621.65	1,328.51	293.14	5.532		
15,600.00	9,950.00	15,560.59	9,938.00	148.61	149.84	89.59	-617.53	6,205.50	1,622.37	1,324.50	297.87	5.447		
15,700.00	9,950.00	15,660.58	9,938.00	150.97	152.21	89.59	-617.21	6,305.49	1,623.10	1,320.49	302.61	5.364		
15,800.00	9,950.00	15,760.58	9,938.00	153.34	154.58	89.59	-616.89	6,405.49	1,623.82	1,316.47	307.36	5.283		
15,900.00	9,950.00	15,860.58	9,938.00	155.70	156.95	89.59	-616.57	6,505.49	1,624.55	1,312.45	312.10	5.205		
16,000.00	9,950.00	15,960.58	9,938.00	158.07	159.33	89.59	-616.25	6,605.48	1,625.27	1,308.42	316.85	5.129		
16,100.00	9,950.00	16,060.57	9,938.00	160.44	161.70	89.59	-615.93	6,705.48	1,626.00	1,304.39	321.61	5.056		
16,200.00	9,950.00	16,160.57	9,938.00	162.82	164.08	89.59	-615.61	6,805.48	1,626.72	1,300.36	326.37	4.984		
16,300.00	9,950.00	16,260.57	9,938.00	165.19	166.47	89.59	-615.28	6,905.47	1,627.45	1,296.32	331.13	4.915		
16,400.00	9,950.00	16,360.57	9,938.00	167.57	168.85	89.59	-614.96	7,005.47	1,628.17	1,292.28	335.90	4.847		
16,500.00	9,950.00	16,460.56	9,938.00	169.95	171.23	89.59	-614.64	7,105.47	1,628.90	1,288.23	340.67	4.781		
16,600.00	9,950.00	16,560.56	9,938.00	172.33	173.62	89.59	-614.32	7,205.46	1,629.62	1,284.18	345.44	4.718		
16,700.00	9,950.00	16,660.56	9,938.00	174.71	176.01	89.59	-614.00	7,305.46	1,630.35	1,280.13	350.22	4.655		
16,800.00	9,950.00	16,760.56	9,938.00	177.09	178.40	89.59	-613.68	7,405.46	1,631.07	1,276.08	355.00	4.595		
16,900.00	9,950.00	16,860.55	9,938.00	179.48	180.79	89.59	-613.36	7,505.45	1,631.80	1,272.02	359.78	4.536		
17,000.00	9,950.00	16,960.55	9,938.00	181.87	183.18	89.59	-613.04	7,605.45	1,632.52	1,267.96	364.56	4.478		
17,100.00	9,950.00	17,060.55	9,938.00	184.26	185.57	89.59	-612.72	7,705.45	1,633.25	1,263.90	369.35	4.422		
17,200.00	9,950.00	17,160.55	9,938.00	186.65	187.97	89.59	-612.40	7,805.45	1,633.97	1,259.84	374.14	4.367		
17,300.00	9,950.00	17,260.54	9,938.00	189.04	190.36	89.59	-612.07	7,905.44	1,634.70	1,255.77	378.93	4.314		
17,400.00	9,950.00	17,360.54	9,938.00	191.43	192.76	89.59	-611.75	8,005.44	1,635.42	1,251.70	383.72	4.262		
17,500.00	9,950.00	17,460.54	9,938.00	193.82	195.16	89.59	-611.43	8,105.44	1,636.15	1,247.63	388.52	4.211		
17,600.00	9,950.00	17,560.54	9,938.00	196.22	197.56	89.59	-611.11	8,205.43	1,636.87	1,243.56	393.32	4.162		
17,689.50	9,950.00	17,650.03	9,938.00	198.36	199.71	89.59	-610.82	8,294.93	1,637.52	1,239.91	397.62	4.118		
17,690.09	9,950.00	17,650.62	9,938.00	198.38	199.72	89.59	-610.82	8,295.52	1,637.53	1,239.89	397.64	4.118 SF		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 236H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.09	-0.13	-80.03	80.03					
100.00	100.00	99.70	99.70	0.13	0.13	-90.09	-0.13	-80.03	80.03	79.76	0.27	298.118		
200.00	200.00	199.70	199.70	0.49	0.49	-90.09	-0.13	-80.03	80.03	79.05	0.98	81.272		
300.00	300.00	299.70	299.70	0.85	0.85	-90.09	-0.13	-80.03	80.03	78.33	1.70	47.030		
400.00	400.00	399.70	399.70	1.21	1.21	-90.09	-0.13	-80.03	80.03	77.61	2.42	33.089		
500.00	500.00	499.70	499.70	1.57	1.57	-90.09	-0.13	-80.03	80.03	76.89	3.14	25.523		
600.00	600.00	599.70	599.70	1.93	1.93	-90.09	-0.13	-80.03	80.03	76.18	3.85	20.774		
700.00	700.00	699.70	699.70	2.29	2.28	-90.09	-0.13	-80.03	80.03	75.46	4.57	17.514		
800.00	800.00	799.70	799.70	2.64	2.64	-90.09	-0.13	-80.03	80.03	74.74	5.29	15.139		
900.00	900.00	899.70	899.70	3.00	3.00	-90.09	-0.13	-80.03	80.03	74.03	6.00	13.331		
1,000.00	1,000.00	999.70	999.70	3.36	3.36	-90.09	-0.13	-80.03	80.03	73.31	6.72	11.909		
1,100.00	1,100.00	1,099.70	1,099.70	3.72	3.72	-90.09	-0.13	-80.03	80.03	72.59	7.44	10.761		
1,200.00	1,200.00	1,199.70	1,199.70	4.08	4.08	-90.09	-0.13	-80.03	80.03	71.88	8.15	9.815		
1,300.00	1,300.00	1,299.70	1,299.70	4.44	4.44	-90.09	-0.13	-80.03	80.03	71.16	8.87	9.021		
1,400.00	1,400.00	1,399.70	1,399.70	4.79	4.79	-90.09	-0.13	-80.03	80.03	70.44	9.59	8.347		
1,500.00	1,500.00	1,499.70	1,499.70	5.15	5.15	-90.09	-0.13	-80.03	80.03	69.73	10.30	7.766		
1,600.00	1,600.00	1,600.85	1,600.82	5.51	5.50	-91.26	-1.74	-79.28	79.31	68.30	11.01	7.205		
1,700.00	1,700.00	1,701.74	1,701.58	5.87	5.83	-94.87	-6.57	-77.03	77.33	65.64	11.69	6.613		
1,800.00	1,800.00	1,802.14	1,801.58	6.23	6.16	-101.23	-14.56	-73.30	74.76	62.37	12.39	6.036		
1,868.33	1,868.32	1,870.26	1,869.23	6.47	6.39	-133.31	-21.79	-69.93	73.81	60.95	12.86	5.738 CC, ES		
1,900.00	1,899.98	1,901.63	1,900.31	6.59	6.50	-137.06	-25.60	-68.15	74.07	60.99	13.09	5.661		
2,000.00	1,999.84	1,999.57	1,997.04	6.94	6.85	-150.72	-39.51	-61.67	79.29	65.51	13.78	5.752		
2,100.00	2,099.45	2,099.89	2,095.94	7.30	7.21	-164.05	-53.97	-53.18	90.81	76.30	14.50	6.261		
2,200.00	2,198.70	2,200.59	2,195.36	7.66	7.59	-174.58	-65.80	-42.38	106.02	90.80	15.23	6.963		
2,300.00	2,297.47	2,301.65	2,295.14	8.03	7.97	-177.21	-74.94	-29.25	123.91	107.95	15.96	7.766		
2,400.08	2,395.70	2,403.15	2,395.24	8.40	8.36	-170.74	-81.35	-13.78	143.76	127.07	16.69	8.614		
2,500.00	2,493.44	2,500.97	2,491.58	8.79	8.75	-165.84	-85.74	2.60	164.41	146.99	17.42	9.440		
2,600.00	2,591.25	2,597.98	2,587.11	9.19	9.13	-162.07	-90.03	18.89	185.92	167.77	18.15	10.245		
2,700.00	2,689.07	2,694.98	2,682.64	9.59	9.52	-159.08	-94.33	35.18	208.04	189.15	18.88	11.016		
2,800.00	2,786.88	2,791.98	2,778.17	10.01	9.91	-156.66	-98.62	51.47	230.60	210.97	19.63	11.747		
2,900.00	2,884.69	2,888.98	2,873.70	10.42	10.31	-154.68	-102.92	67.76	253.48	233.10	20.38	12.436		
3,000.00	2,982.51	2,985.99	2,969.23	10.85	10.71	-153.02	-107.22	84.05	276.60	255.46	21.14	13.083		
3,100.00	3,080.32	3,082.99	3,064.75	11.27	11.11	-151.62	-111.51	100.33	299.91	278.01	21.91	13.690		
3,200.00	3,178.14	3,179.99	3,160.28	11.71	11.52	-150.42	-115.81	116.62	323.37	300.69	22.68	14.259		
3,300.00	3,275.95	3,276.99	3,255.81	12.14	11.93	-149.38	-120.10	132.91	346.94	323.49	23.45	14.792		
3,400.00	3,373.76	3,373.99	3,351.34	12.58	12.34	-148.48	-124.40	149.20	370.61	346.37	24.24	15.292		
3,500.00	3,471.58	3,471.00	3,446.87	13.02	12.75	-147.68	-128.69	165.49	394.35	369.33	25.02	15.761		
3,600.00	3,569.39	3,568.00	3,542.40	13.47	13.17	-146.97	-132.99	181.78	418.16	392.35	25.81	16.202		
3,700.00	3,667.21	3,665.00	3,637.93	13.92	13.59	-146.34	-137.29	198.07	442.02	415.42	26.60	16.616		
3,800.00	3,765.02	3,762.00	3,733.45	14.36	14.01	-145.77	-141.58	214.35	465.93	438.53	27.40	17.006		
3,900.00	3,862.84	3,859.01	3,828.98	14.82	14.43	-145.26	-145.88	230.64	489.88	461.68	28.20	17.374		
4,000.00	3,960.65	3,956.01	3,924.51	15.27	14.85	-144.80	-150.17	246.93	513.85	484.86	29.00	17.720		
4,100.00	4,058.46	4,053.01	4,020.04	15.73	15.27	-144.38	-154.47	263.22	537.86	508.06	29.80	18.048		
4,200.00	4,156.28	4,150.01	4,115.57	16.18	15.69	-143.99	-158.76	279.51	561.90	531.29	30.61	18.357		
4,300.00	4,254.09	4,247.02	4,211.10	16.64	16.12	-143.64	-163.06	295.80	585.95	554.53	31.42	18.651		
4,400.00	4,351.91	4,344.02	4,306.62	17.10	16.55	-143.31	-167.36	312.09	610.03	577.80	32.23	18.929		
4,500.00	4,449.72	4,441.02	4,402.15	17.56	16.97	-143.01	-171.65	328.37	634.12	601.08	33.04	19.192		
4,600.00	4,547.54	4,538.02	4,497.68	18.02	17.40	-142.73	-175.95	344.66	658.23	624.37	33.85	19.443		
4,700.00	4,645.35	4,635.02	4,593.21	18.48	17.83	-142.47	-180.24	360.95	682.35	647.68	34.67	19.681		
4,800.00	4,743.16	4,732.03	4,688.74	18.95	18.26	-142.23	-184.54	377.24	706.48	671.00	35.49	19.908		
4,900.00	4,840.98	4,829.03	4,784.27	19.41	18.69	-142.00	-188.83	393.53	730.63	694.32	36.31	20.124		
5,000.00	4,938.79	4,926.03	4,879.79	19.88	19.12	-141.79	-193.13	409.82	754.78	717.66	37.13	20.331		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 236H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
5,100.00	5,036.61	5,023.03	4,975.32	20.35	19.55	141.59	-197.43	426.11	778.95	741.00	37.95	20.528		
5,200.00	5,134.42	5,120.04	5,070.85	20.81	19.98	141.40	-201.72	442.39	803.12	764.35	38.77	20.716		
5,300.00	5,232.23	5,217.04	5,166.38	21.28	20.41	141.23	-206.02	458.68	827.30	787.71	39.59	20.896		
5,400.00	5,330.05	5,314.04	5,261.91	21.75	20.84	141.06	-210.31	474.97	851.48	811.07	40.42	21.068		
5,500.00	5,427.86	5,411.04	5,357.44	22.22	21.28	140.91	-214.61	491.26	875.68	834.44	41.24	21.233		
5,600.00	5,525.68	5,508.05	5,452.96	22.69	21.71	140.76	-218.90	507.55	899.88	857.81	42.07	21.391		
5,700.00	5,623.49	5,605.05	5,548.49	23.16	22.14	140.62	-223.20	523.84	924.08	881.19	42.89	21.543		
5,800.00	5,721.31	5,702.05	5,644.02	23.63	22.58	140.48	-227.49	540.13	948.29	904.57	43.72	21.689		
5,900.00	5,819.12	5,808.68	5,749.13	24.10	23.05	140.38	-232.06	557.42	972.25	927.63	44.63	21.787		
6,000.00	5,916.93	5,924.81	5,864.24	24.57	23.53	140.49	-235.99	572.33	994.58	949.01	45.57	21.826		
6,100.00	6,014.75	6,041.65	5,980.56	25.04	23.98	140.83	-238.74	582.77	1,015.07	968.60	46.47	21.843		
6,200.00	6,112.56	6,158.79	6,097.54	25.51	24.39	141.40	-240.28	588.62	1,033.75	986.42	47.33	21.842		
6,300.00	6,210.38	6,271.34	6,210.08	25.99	24.75	142.13	-240.64	589.97	1,050.76	1,002.64	48.12	21.835		
6,400.00	6,308.19	6,369.16	6,307.89	26.46	25.05	142.81	-240.64	589.97	1,067.39	1,018.55	48.83	21.858		
6,500.00	6,406.00	6,466.97	6,405.70	26.93	25.35	143.47	-240.64	589.97	1,084.16	1,034.61	49.54	21.884		
6,600.00	6,503.82	6,564.78	6,503.52	27.40	25.65	144.11	-240.64	589.97	1,101.06	1,050.81	50.25	21.912		
6,700.00	6,601.63	6,662.60	6,601.33	27.88	25.96	144.73	-240.64	589.97	1,118.10	1,067.14	50.96	21.942		
6,800.00	6,699.45	6,760.41	6,699.15	28.35	26.26	145.33	-240.64	589.97	1,135.26	1,083.60	51.66	21.974		
6,832.56	6,731.30	6,792.26	6,731.00	28.51	26.36	145.53	-240.64	589.97	1,140.88	1,088.98	51.89	21.985		
6,900.00	6,797.42	6,858.39	6,797.12	28.82	26.57	146.02	-240.64	589.97	1,151.90	1,099.53	52.37	21.996		
7,000.00	6,896.00	6,956.96	6,895.70	29.26	26.87	146.64	-240.64	589.97	1,165.91	1,112.85	53.06	21.972		
7,100.00	6,995.10	7,056.07	6,994.80	29.67	27.19	147.11	-240.64	589.97	1,177.09	1,123.34	53.75	21.899		
7,200.00	7,094.61	7,155.58	7,094.31	30.05	27.50	147.46	-240.64	589.97	1,185.39	1,130.96	54.43	21.778		
7,300.00	7,194.40	7,255.37	7,194.10	30.41	27.81	147.68	-240.64	589.97	1,190.78	1,135.68	55.10	21.612		
7,400.00	7,294.36	7,355.32	7,294.06	30.73	28.13	147.78	-240.64	589.97	1,193.21	1,137.46	55.76	21.400		
7,432.64	7,327.00	7,387.97	7,326.70	30.83	28.24	173.33	-240.64	589.97	1,193.37	1,137.40	55.97	21.322		
7,500.00	7,394.36	7,455.32	7,394.06	31.03	28.45	173.33	-240.64	589.97	1,193.37	1,136.96	56.41	21.156		
7,600.00	7,494.36	7,555.32	7,494.06	31.33	28.77	173.33	-240.64	589.97	1,193.37	1,136.31	57.06	20.914		
7,700.00	7,594.36	7,655.32	7,594.06	31.63	29.09	173.33	-240.64	589.97	1,193.37	1,135.66	57.71	20.677		
7,800.00	7,694.36	7,755.32	7,694.06	31.93	29.41	173.33	-240.64	589.97	1,193.37	1,135.00	58.37	20.445		
7,900.00	7,794.36	7,855.32	7,794.06	32.24	29.73	173.33	-240.64	589.97	1,193.37	1,134.35	59.03	20.218		
8,000.00	7,894.36	7,955.32	7,894.06	32.54	30.06	173.33	-240.64	589.97	1,193.37	1,133.69	59.68	19.995		
8,100.00	7,994.36	8,055.32	7,994.06	32.85	30.38	173.33	-240.64	589.97	1,193.37	1,133.03	60.34	19.777		
8,200.00	8,094.36	8,155.32	8,094.06	33.16	30.70	173.33	-240.64	589.97	1,193.37	1,132.37	61.00	19.563		
8,300.00	8,194.36	8,255.32	8,194.06	33.47	31.03	173.33	-240.64	589.97	1,193.37	1,131.71	61.66	19.353		
8,400.00	8,294.36	8,355.32	8,294.06	33.77	31.35	173.33	-240.64	589.97	1,193.37	1,131.04	62.33	19.147		
8,500.00	8,394.36	8,455.32	8,394.06	34.08	31.68	173.33	-240.64	589.97	1,193.37	1,130.38	62.99	18.945		
8,600.00	8,494.36	8,555.32	8,494.06	34.40	32.01	173.33	-240.64	589.97	1,193.37	1,129.71	63.66	18.747		
8,700.00	8,594.36	8,655.32	8,594.06	34.71	32.34	173.33	-240.64	589.97	1,193.37	1,129.05	64.32	18.553		
8,800.00	8,694.36	8,755.32	8,694.06	35.02	32.66	173.33	-240.64	589.97	1,193.37	1,128.38	64.99	18.362		
8,900.00	8,794.36	8,855.32	8,794.06	35.33	32.99	173.33	-240.64	589.97	1,193.37	1,127.71	65.66	18.175		
9,000.00	8,894.36	8,955.32	8,894.06	35.65	33.32	173.33	-240.64	589.97	1,193.37	1,127.04	66.33	17.992		
9,100.00	8,994.36	9,055.32	8,994.06	35.96	33.65	173.33	-240.64	589.97	1,193.37	1,126.37	67.00	17.812		
9,200.00	9,094.36	9,155.32	9,094.06	36.28	33.98	173.33	-240.64	589.97	1,193.37	1,125.70	67.67	17.635		
9,300.00	9,194.36	9,255.32	9,194.06	36.60	34.32	173.33	-240.64	589.97	1,193.37	1,125.03	68.34	17.461		
9,400.00	9,294.36	9,355.32	9,294.06	36.91	34.65	173.33	-240.64	589.97	1,193.37	1,124.35	69.02	17.291		
9,500.00	9,394.36	9,437.48	9,376.07	37.23	34.94	173.16	-240.65	593.57	1,193.94	1,124.32	69.62	17.149		
9,578.18	9,472.54	9,495.64	9,433.21	37.48	35.19	172.65	-240.68	604.19	1,195.79	1,125.69	70.10	17.059		
9,600.00	9,494.35	9,511.43	9,448.47	37.55	35.26	82.99	-240.69	608.27	1,196.50	1,126.27	70.23	17.037		
9,625.00	9,519.28	9,529.43	9,465.68	37.64	35.35	82.70	-240.71	613.53	1,197.31	1,126.93	70.38	17.012		
9,650.00	9,544.09	9,550.00	9,485.09	37.72	35.45	82.40	-240.73	620.33	1,198.11	1,127.55	70.56	16.980		
9,675.00	9,568.69	9,565.16	9,499.20	37.81	35.53	82.17	-240.74	625.88	1,198.89	1,128.19	70.70	16.958		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 236H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning	
9,700.00	9,593.04	9,582.91	9,515.49	37.90	35.62	81.93	-240.76	632.94	1,199.65	1,128.79	70.86	16.929		
9,725.00	9,617.05	9,600.00	9,530.91	38.00	35.72	81.71	-240.78	640.30	1,200.39	1,129.36	71.03	16.901		
9,750.00	9,640.67	9,618.22	9,547.05	38.10	35.82	81.50	-240.81	648.75	1,201.09	1,129.89	71.21	16.868		
9,775.00	9,663.83	9,635.79	9,562.29	38.20	35.92	81.31	-240.83	657.47	1,201.76	1,130.38	71.38	16.836		
9,800.00	9,686.46	9,650.00	9,574.39	38.30	36.01	81.16	-240.86	664.94	1,202.39	1,130.87	71.52	16.811		
9,825.00	9,708.51	9,670.79	9,591.66	38.41	36.14	80.99	-240.89	676.50	1,202.97	1,131.22	71.75	16.767		
9,850.00	9,729.91	9,688.24	9,605.76	38.52	36.25	80.86	-240.92	686.78	1,203.51	1,131.57	71.94	16.730		
9,875.00	9,750.61	9,705.65	9,619.45	38.63	36.36	80.74	-240.95	697.54	1,203.99	1,131.86	72.14	16.691		
9,900.00	9,770.54	9,725.00	9,634.19	38.74	36.50	80.64	-240.99	710.07	1,204.43	1,132.07	72.36	16.644		
9,925.00	9,789.65	9,740.43	9,645.57	38.85	36.60	80.57	-241.02	720.49	1,204.81	1,132.26	72.55	16.607		
9,950.00	9,807.90	9,757.80	9,657.97	38.97	36.73	80.52	-241.05	732.65	1,205.14	1,132.37	72.77	16.561		
9,975.00	9,825.23	9,775.00	9,669.81	39.09	36.85	80.48	-241.09	745.13	1,205.40	1,132.41	72.99	16.514		
10,000.00	9,841.59	9,792.52	9,681.40	39.22	36.99	80.46	-241.12	758.27	1,205.61	1,132.38	73.24	16.462		
10,025.00	9,856.94	9,809.89	9,692.40	39.35	37.12	80.47	-241.16	771.71	1,205.76	1,132.28	73.49	16.408		
10,050.00	9,871.23	9,825.00	9,701.57	39.48	37.24	80.49	-241.20	783.72	1,205.86	1,132.15	73.71	16.359		
10,075.00	9,884.44	9,844.67	9,712.93	39.62	37.40	80.54	-241.24	799.77	1,205.89	1,131.87	74.02	16.292		
10,100.00	9,896.51	9,862.09	9,722.43	39.77	37.54	80.60	-241.29	814.37	1,205.87	1,131.56	74.31	16.229		
10,125.00	9,907.42	9,879.54	9,731.40	39.92	37.69	80.68	-241.33	829.33	1,205.79	1,131.18	74.61	16.162		
10,150.00	9,917.14	9,900.00	9,741.22	40.08	37.87	80.80	-241.38	847.29	1,205.66	1,130.70	74.96	16.083		
10,175.00	9,925.64	9,914.55	9,747.73	40.24	38.00	80.91	-241.42	860.29	1,205.47	1,130.22	75.25	16.020		
10,200.00	9,932.90	9,932.12	9,755.06	40.41	38.16	81.05	-241.46	876.26	1,205.24	1,129.65	75.59	15.944		
10,225.00	9,938.90	9,950.00	9,761.91	40.59	38.33	81.21	-241.51	892.78	1,204.96	1,129.00	75.96	15.864		
10,250.00	9,943.62	9,967.44	9,767.99	40.77	38.50	81.38	-241.56	909.12	1,204.64	1,128.31	76.33	15.782		
10,275.00	9,947.05	9,985.19	9,773.57	40.96	38.67	81.58	-241.61	925.98	1,204.27	1,127.56	76.72	15.698		
10,300.00	9,949.17	10,000.00	9,777.74	41.16	38.82	81.76	-241.65	940.18	1,203.88	1,126.81	77.07	15.620		
10,325.00	9,949.99	10,020.94	9,782.87	41.36	39.03	82.02	-241.71	960.49	1,203.45	1,125.91	77.53	15.521		
10,328.18	9,950.01	10,025.00	9,783.77	41.39	39.07	82.07	-241.72	964.44	1,203.39	1,125.78	77.61	15.505		
10,400.00	9,950.01	10,075.00	9,791.98	42.01	39.59	82.46	-241.86	1,013.74	1,202.72	1,123.89	78.82	15.258		
10,406.82	9,950.01	10,081.02	9,792.62	42.08	39.65	82.50	-241.88	1,019.73	1,202.71	1,123.75	78.96	15.231		
10,500.00	9,950.00	10,158.50	9,795.01	42.99	40.50	82.61	-242.10	1,097.13	1,203.53	1,122.77	80.76	14.902		
10,600.00	9,950.00	10,258.49	9,795.00	44.08	41.69	82.62	-242.39	1,197.12	1,204.85	1,121.74	83.11	14.496		
10,700.00	9,950.00	10,358.48	9,795.00	45.29	42.97	82.63	-242.68	1,297.11	1,206.18	1,120.51	85.67	14.079		
10,800.00	9,950.00	10,458.48	9,795.00	46.60	44.36	82.64	-242.96	1,397.10	1,207.50	1,119.08	88.42	13.657		
10,900.00	9,950.00	10,558.47	9,795.00	48.00	45.83	82.65	-243.25	1,497.09	1,208.82	1,117.48	91.34	13.234		
11,000.00	9,950.00	10,658.46	9,795.00	49.48	47.38	82.65	-243.54	1,597.08	1,210.15	1,115.72	94.42	12.816		
11,100.00	9,950.00	10,758.45	9,795.00	51.04	49.01	82.66	-243.83	1,697.07	1,211.47	1,113.82	97.65	12.406		
11,200.00	9,950.00	10,858.44	9,795.00	52.67	50.70	82.67	-244.11	1,797.06	1,212.79	1,111.79	101.01	12.007		
11,300.00	9,950.00	10,958.43	9,795.00	54.37	52.45	82.68	-244.40	1,897.06	1,214.11	1,109.64	104.48	11.621		
11,400.00	9,950.00	11,058.42	9,795.00	56.12	54.26	82.69	-244.69	1,997.05	1,215.44	1,107.38	108.06	11.248		
11,500.00	9,950.00	11,158.41	9,795.00	57.92	56.11	82.69	-244.98	2,097.04	1,216.76	1,105.03	111.73	10.890		
11,600.00	9,950.00	11,258.40	9,795.00	59.77	58.01	82.70	-245.27	2,197.03	1,218.08	1,102.59	115.50	10.547		
11,700.00	9,950.00	11,358.40	9,795.00	61.66	59.95	82.71	-245.55	2,297.02	1,219.41	1,100.07	119.34	10.218		
11,800.00	9,950.00	11,458.39	9,795.00	63.59	61.92	82.72	-245.84	2,397.01	1,220.73	1,097.48	123.25	9.905		
11,900.00	9,950.00	11,558.38	9,795.00	65.55	63.92	82.73	-246.13	2,497.00	1,222.05	1,094.83	127.23	9.605		
12,000.00	9,950.00	11,658.37	9,795.00	67.55	65.96	82.73	-246.42	2,596.99	1,223.38	1,092.11	131.26	9.320		
12,100.00	9,950.00	11,758.36	9,795.00	69.57	68.02	82.74	-246.71	2,696.98	1,224.70	1,089.35	135.35	9.048		
12,200.00	9,950.00	11,858.35	9,795.00	71.62	70.11	82.75	-246.99	2,796.97	1,226.02	1,086.53	139.49	8.789		
12,300.00	9,950.00	11,958.34	9,795.00	73.70	72.22	82.76	-247.28	2,896.96	1,227.35	1,083.67	143.67	8.543		
12,400.00	9,950.00	12,058.33	9,795.00	75.80	74.35	82.77	-247.57	2,996.95	1,228.67	1,080.77	147.90	8.308		
12,500.00	9,950.00	12,158.32	9,795.00	77.92	76.50	82.77	-247.86	3,096.94	1,229.99	1,077.83	152.16	8.084		
12,600.00	9,950.00	12,258.32	9,795.00	80.05	78.66	82.78	-248.14	3,196.93	1,231.32	1,074.86	156.45	7.870		
12,700.00	9,950.00	12,358.31	9,795.00	82.21	80.84	82.79	-248.43	3,296.93	1,232.64	1,071.86	160.78	7.667		

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



Total Directional Services

Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design Rana Salada Fed Com 0504 - Rana Salada Fed Com 0504 236H - OH - Plan #1													Offset Site Error:	0.00 usft
Survey Program: 0-OWSG (Rev2) MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
12,800.00	9,950.00	12,458.30	9,795.00	84.37	83.04	82.80	-248.72	3,396.92	1,233.96	1,068.82	165.14	7.472		
12,900.00	9,950.00	12,558.29	9,795.00	86.56	85.25	82.81	-249.01	3,496.91	1,235.29	1,065.76	169.52	7.287		
13,000.00	9,950.00	12,658.28	9,795.00	88.76	87.47	82.81	-249.30	3,596.90	1,236.61	1,062.68	173.93	7.110		
13,100.00	9,950.00	12,758.27	9,795.00	90.97	89.71	82.82	-249.58	3,696.89	1,237.93	1,059.57	178.36	6.940		
13,200.00	9,950.00	12,858.26	9,795.00	93.19	91.95	82.83	-249.87	3,796.88	1,239.26	1,056.44	182.82	6.779		
13,300.00	9,950.00	12,958.25	9,795.00	95.42	94.20	82.84	-250.16	3,896.87	1,240.58	1,053.29	187.29	6.624		
13,400.00	9,950.00	13,058.24	9,795.00	97.67	96.47	82.84	-250.45	3,996.86	1,241.90	1,050.12	191.78	6.476		
13,500.00	9,950.00	13,158.24	9,795.00	99.92	98.74	82.85	-250.73	4,096.85	1,243.23	1,046.94	196.29	6.334		
13,600.00	9,950.00	13,258.23	9,795.00	102.18	101.02	82.86	-251.02	4,196.84	1,244.55	1,043.73	200.82	6.197		
13,700.00	9,950.00	13,358.22	9,795.00	104.45	103.31	82.87	-251.31	4,296.83	1,245.87	1,040.52	205.36	6.067		
13,800.00	9,950.00	13,458.21	9,795.00	106.73	105.60	82.87	-251.60	4,396.82	1,247.20	1,037.29	209.91	5.942		
13,900.00	9,950.00	13,558.20	9,795.00	109.01	107.90	82.88	-251.89	4,496.81	1,248.52	1,034.04	214.48	5.821		
14,000.00	9,950.00	13,658.19	9,795.00	111.30	110.21	82.89	-252.17	4,596.80	1,249.84	1,030.78	219.06	5.705		
14,100.00	9,950.00	13,758.18	9,795.00	113.60	112.52	82.90	-252.46	4,696.79	1,251.17	1,027.52	223.65	5.594		
14,200.00	9,950.00	13,858.17	9,795.00	115.90	114.84	82.90	-252.75	4,796.79	1,252.49	1,024.24	228.25	5.487		
14,300.00	9,950.00	13,958.16	9,795.00	118.21	117.16	82.91	-253.04	4,896.78	1,253.82	1,020.95	232.87	5.384		
14,400.00	9,950.00	14,058.16	9,795.00	120.52	119.49	82.92	-253.33	4,996.77	1,255.14	1,017.65	237.49	5.285		
14,500.00	9,950.00	14,158.15	9,795.00	122.84	121.83	82.93	-253.61	5,096.76	1,256.46	1,014.34	242.12	5.189		
14,600.00	9,950.00	14,258.14	9,795.00	125.17	124.16	82.93	-253.90	5,196.75	1,257.79	1,011.02	246.76	5.097		
14,700.00	9,950.00	14,358.13	9,795.00	127.49	126.50	82.94	-254.19	5,296.74	1,259.11	1,007.70	251.41	5.008		
14,800.00	9,950.00	14,458.12	9,795.00	129.83	128.85	82.95	-254.48	5,396.73	1,260.43	1,004.37	256.07	4.922		
14,900.00	9,950.00	14,558.11	9,795.00	132.16	131.20	82.96	-254.76	5,496.72	1,261.76	1,001.03	260.73	4.839		
15,000.00	9,950.00	14,658.10	9,795.00	134.50	133.55	82.96	-255.05	5,596.71	1,263.08	997.68	265.40	4.759		
15,100.00	9,950.00	14,758.09	9,795.00	136.85	135.90	82.97	-255.34	5,696.70	1,264.41	994.33	270.08	4.682		
15,200.00	9,950.00	14,858.08	9,795.00	139.19	138.26	82.98	-255.63	5,796.69	1,265.73	990.97	274.76	4.607		
15,300.00	9,950.00	14,958.08	9,795.00	141.54	140.62	82.99	-255.92	5,896.68	1,267.05	987.60	279.45	4.534		
15,400.00	9,950.00	15,058.07	9,795.00	143.90	142.99	82.99	-256.20	5,996.67	1,268.38	984.23	284.15	4.464		
15,500.00	9,950.00	15,158.06	9,795.00	146.25	145.35	83.00	-256.49	6,096.66	1,269.70	980.85	288.85	4.396		
15,600.00	9,950.00	15,258.05	9,795.00	148.61	147.72	83.01	-256.78	6,196.66	1,271.03	977.47	293.56	4.330		
15,700.00	9,950.00	15,358.04	9,795.00	150.97	150.09	83.02	-257.07	6,296.65	1,272.35	974.08	298.27	4.266		
15,800.00	9,950.00	15,458.03	9,795.00	153.34	152.47	83.02	-257.36	6,396.64	1,273.67	970.69	302.98	4.204		
15,900.00	9,950.00	15,558.02	9,795.00	155.70	154.84	83.03	-257.64	6,496.63	1,275.00	967.30	307.70	4.144		
16,000.00	9,950.00	15,658.01	9,795.00	158.07	157.22	83.04	-257.93	6,596.62	1,276.32	963.90	312.43	4.085		
16,100.00	9,950.00	15,758.00	9,795.00	160.44	159.60	83.04	-258.22	6,696.61	1,277.65	960.49	317.16	4.028		
16,200.00	9,950.00	15,858.00	9,795.00	162.82	161.98	83.05	-258.51	6,796.60	1,278.97	957.08	321.89	3.973		
16,300.00	9,950.00	15,957.99	9,795.00	165.19	164.37	83.06	-258.79	6,896.59	1,280.29	953.67	326.62	3.920		
16,400.00	9,950.00	16,057.98	9,795.00	167.57	166.75	83.07	-259.08	6,996.58	1,281.62	950.26	331.36	3.868		
16,500.00	9,950.00	16,157.97	9,795.00	169.95	169.14	83.07	-259.37	7,096.57	1,282.94	946.84	336.11	3.817		
16,600.00	9,950.00	16,257.96	9,795.00	172.33	171.53	83.08	-259.66	7,196.56	1,284.27	943.42	340.85	3.768		
16,700.00	9,950.00	16,357.95	9,795.00	174.71	173.92	83.09	-259.95	7,296.55	1,285.59	939.99	345.60	3.720		
16,800.00	9,950.00	16,457.94	9,795.00	177.09	176.31	83.10	-260.23	7,396.54	1,286.92	936.56	350.35	3.673		
16,900.00	9,950.00	16,557.93	9,795.00	179.48	178.70	83.10	-260.52	7,496.53	1,288.24	933.13	355.11	3.628		
17,000.00	9,950.00	16,657.92	9,795.00	181.87	181.10	83.11	-260.81	7,596.52	1,289.56	929.70	359.87	3.583		
17,100.00	9,950.00	16,757.92	9,795.00	184.26	183.49	83.12	-261.10	7,696.52	1,290.89	926.26	364.63	3.540		
17,200.00	9,950.00	16,857.91	9,795.00	186.65	185.89	83.12	-261.38	7,796.51	1,292.21	922.82	369.39	3.498		
17,300.00	9,950.00	16,957.90	9,795.00	189.04	188.29	83.13	-261.67	7,896.50	1,293.54	919.38	374.16	3.457		
17,400.00	9,950.00	17,057.89	9,795.00	191.43	190.69	83.14	-261.96	7,996.49	1,294.86	915.93	378.93	3.417		
17,500.00	9,950.00	17,157.88	9,795.00	193.82	193.09	83.14	-262.25	8,096.48	1,296.19	912.49	383.70	3.378		
17,600.00	9,950.00	17,257.87	9,795.00	196.22	195.49	83.15	-262.54	8,196.47	1,297.51	909.04	388.47	3.340		
17,689.50	9,950.00	17,347.36	9,795.00	198.36	197.64	83.16	-262.79	8,285.96	1,298.70	905.95	392.75	3.307		
17,690.09	9,950.00	17,347.95	9,795.00	198.38	197.65	83.16	-262.80	8,286.55	1,298.70	905.94	392.77	3.307 SF		

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



Total Directional Services

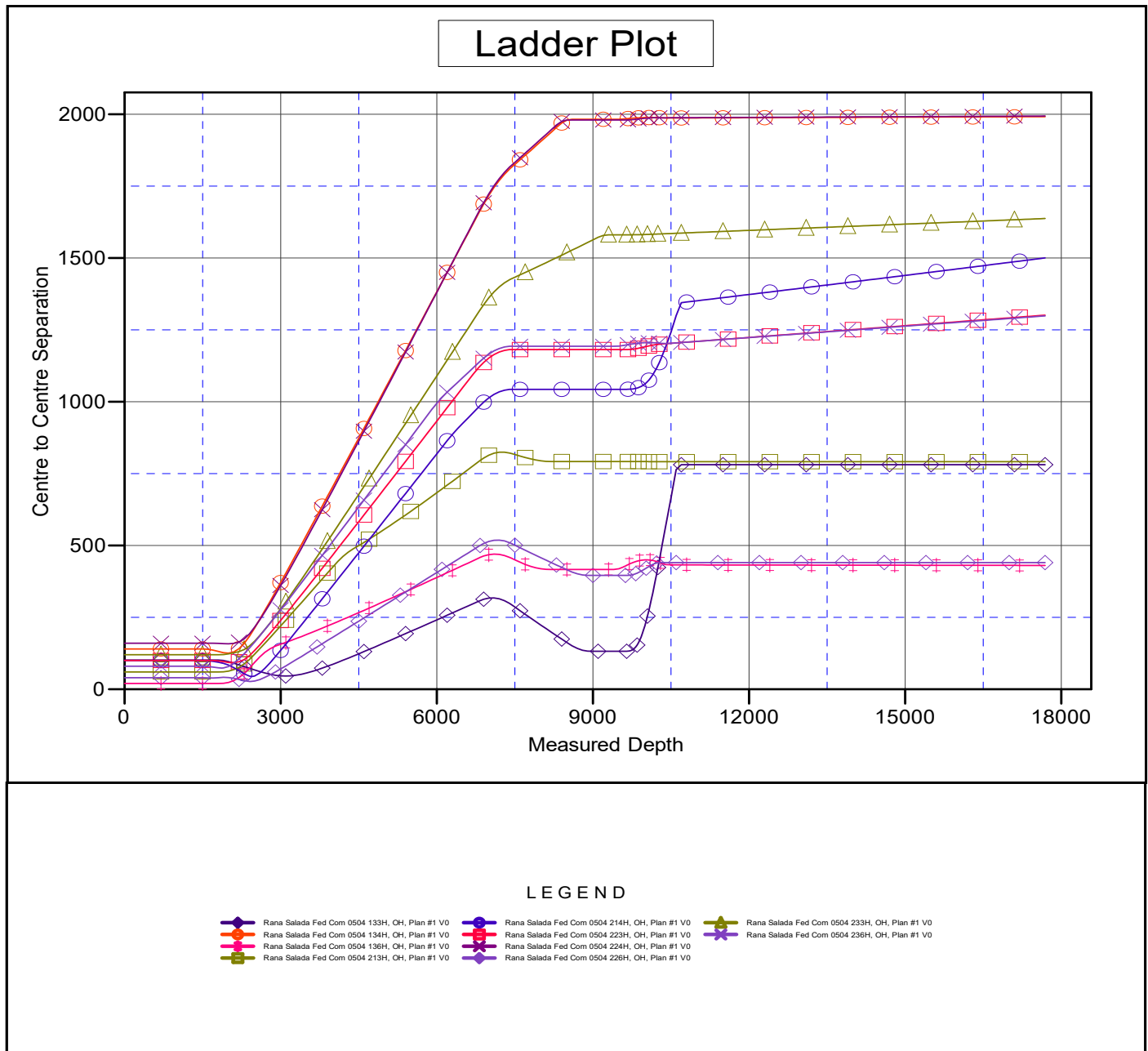
Anticollision Report



Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
Reference Site:	Rana Salada Fed Com 0504	MD Reference:	3041' GE + 25' KB @ 3066.00usft
Site Error:	0.00 usft	North Reference:	Grid
Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 3041' GE + 25' KB @ 3066.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Rana Salada Fed Com 0504 216H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.17°



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



Total Directional Services

Anticollision Report

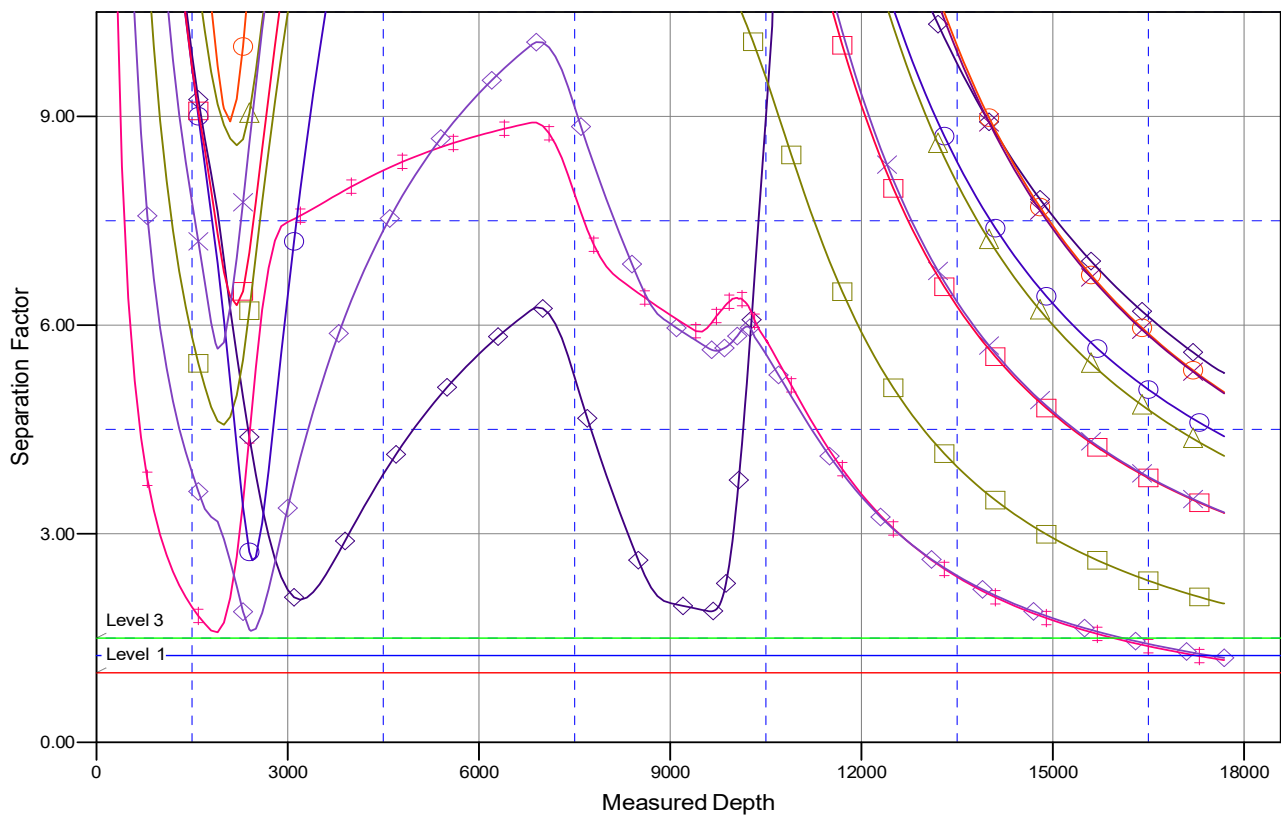


Company:	Novo Oil & Gas, LLC	Local Co-ordinate Reference:	Well Rana Salada Fed Com 0504 216H
Project:	Eddy County, NM (NAD83-Grid)	TVD Reference:	3041' GE + 25' KB @ 3066.00usft
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Reference Well:	Rana Salada Fed Com 0504 216H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 usft	Output errors are at	2.00 sigma
Reference Wellbore	OH	Database:	EDM 5000.15 Single User Db
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to 3041' GE + 25' KB @ 3066.00usft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Rana Salada Fed Com 0504 216H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.17°

Separation Factor Plot



LEGEND

Rana Salada Fed Com 0504 133H, OH, Plan #1 V0	Rana Salada Fed Com 0504 214H, OH, Plan #1 V0	Rana Salada Fed Com 0504 233H, OH, Plan #1 V0
Rana Salada Fed Com 0504 134H, OH, Plan #1 V0	Rana Salada Fed Com 0504 223H, OH, Plan #1 V0	Rana Salada Fed Com 0504 236H, OH, Plan #1 V0
Rana Salada Fed Com 0504 136H, OH, Plan #1 V0	Rana Salada Fed Com 0504 224H, OH, Plan #1 V0	
Rana Salada Fed Com 0504 213H, OH, Plan #1 V0	Rana Salada Fed Com 0504 226H, OH, 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
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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
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Phone:(505) 476-3470 Fax:(505) 476-3462

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

COMMENTS

Action 26677

COMMENTS

Operator:		OGRID:	Action Number:	Action Type:
NOVO OIL & GAS NORTHERN DELAWA		372920	26677	C-103A
Suite 206 Oklahoma City, OK73116				
1001 West Wilshire Blvd				
Created By	Comment	Comment Date		
kpickford	KP GEO Review 5/5/2021	05/05/2021		

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CONDITIONS

Action 26677

CONDITIONS OF APPROVAL

Operator: NOVO OIL & GAS NORTHERN DELAWA Suite 206 Oklahoma City, OK73116		1001 West Wilshire Blvd	OGRID: 372920	Action Number: 26677	Action Type: C-103A
OCD Reviewer kpickford	Condition Adhere to previous NMOCD Conditions of Approval				