U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Sundry Print Report

08/11/2021

Well Name: ASTRODOG FED COM 0809

Well Location: T23S / R29E / SEC 8 / NWNW / 32.3238792 / -104.0119804

County or Parish/State: EDDY / NM

Well Number: 235H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMNM121951

Unit or CA Name:

Unit or CA Number:

US Well Number: 3001548655

Well Status: Drilling Well

Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Notice of Intent

Type of Submission: Notice of Intent

Type of Action Other

Date Sundry Submitted: 07/08/2021

Time Sundry Submitted: 07:52

Date proposed operation will begin: 07/27/2021

Procedure Description: Novo Oil & Gas Northern Delaware, LLC respectfully requests to change the Bottom Hole Location to 2,310' FNL & 2,510' FWL, SENW, Section 10, T-23-S, R-29-E, from 1,914' FNL & 130' FEL, SENE, Section 9, T-23-S, R-29-E. See attached for changes to directional survey and anti-collision report.

Surface Disturbance

Is any additional surface disturbance proposed?: No

NOI Attachments

Procedure Description

Astrodog_Fed_0809_235H_BHL_Change_to_Plans_20210708075151.pdf

Well Name: ASTRODOG FED COM 0809

Well Location: T23S / R29E / SEC 8 / NWNW / 32.3238792 / -104.0119804

County or Parish/State: EDDY / NM

Well Number: 235H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMNM121951

Unit or CA Name:

Unit or CA Number:

US Well Number: 3001548655

Well Status: Drilling Well

Operator: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Operator Certification

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

Operator Electronic Signature: JUSTIN CARTER

Signed on: JUL 08, 2021 07:51 AM

Name: NOVO OIL AND GAS NORTHERN DELAWARE LLC

Title: Landman

Street Address: 1001 West Wilshire Boulevard Suite 206

City: Oklahoma City **State:** OK

Phone: (405) 286-3375

Email address: JCARTER@NOVOOG.COM

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752342234

BLM POC Email Address: cwalls@blm.gov

Disposition: Approved

Disposition Date: 07/26/2021

Signature: Chris Walls

CHANGE TO PLANS

Move Bottom Hole Location

From: 1,914' FNL & 130' FEL, Section 9, T-23-S, R-29-E, SENE

To: 2,310' FNL & 2,510' FWL, Section 10, T-23-S, R-29-E, SENW

Casing Depth Interval Change (TMD)

Surface Casing (13-3/8"): 0' – 400'

Salt Protection Casing (10-3/4"): 0' – 2,715'

Intermediate Casing (8-5/8"): 0' – 10,030'

Production Casing (5-1/2"): 0' – 22,230'

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

Tail: 343 Sacks; 555.8 cu. ft.; 100% excess; 1.62 cu. ft./sx; 13.80 ppg; Class C cement + Gel + Accelerator, + LCM; 1,200 psi 24-hour comprehensive strength

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

Lead: 165 Sacks; 422.5 cu. ft.; 50% excess; 2.56 cu.ft./sx; 11.80 ppg; Class C + retarder + LCM; 1,000 psi 24-hour compressive strength.

Tail: 175 Sacks; 231.0 cu. ft; 20% excess; 1.32 cu.ft./sx; 14.80 ppg; Class C + retarder + LCM; 900 psi 24-hour compressive strength.

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

Lead: 742 Sacks; 2,321.8 cu. ft.; 100% excess; 3.13 cu.ft./sx; 10.20 ppg; Class C + retarder; possibly beaded for desired compressive strength; 900 psi 24-hour compressive strength.

Tail: 150 Sacks; 208.5 cu. ft; 50% excess; 1.39 cu.ft./sx; 13.80 ppg; Class C + retarder + LCM; 1,200 psi 24-hour compressive strength.

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

Tail: 1,452 Sacks; 2,744.6 cu. ft; 20% excess; 1.89 cu.ft./sx; 13.00 ppg; Class C + retarder + LCM; 1,200 psi 24-hour compressive strength.

Drilling Fluid Program Changes

Water based spud mud:	0’ – 400’	8.3 ppg.
Brine:	400’ – 2,715’	9.8 - 10.2 ppg.
Cut Brine:	2,715’ – 10,030’	9.8 – 10.2 ppg.
Oil Based Mud:	10,030’ – 22,230’	8.5 – 12.5 ppg.

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-48655	98220	Purple Sage; Wolfcamp Gas Pool

[4] Property Code	[5] Property Name	[6] Well Number
	ASTRODOG FED COM 0810	235H

[7] OGRID No.	[8] Operator Name	[9] Elevation
372920	NOVO OIL & GAS NORTHERN DELAWARE, LLC	2988.2

[10] Surface Location

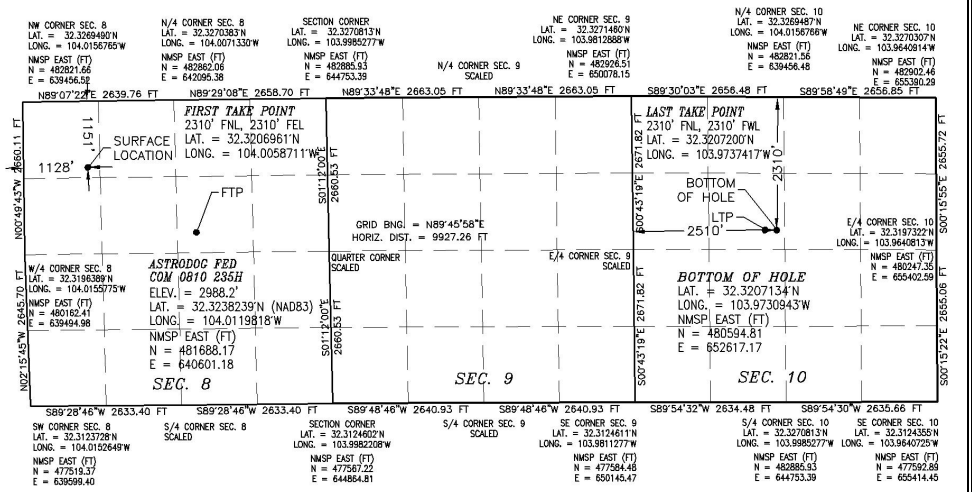
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	8	23 S	29 E		1151	NORTH	1128	WEST	EDDY

[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
F	10	23 S	29 E		2310	NORTH	2510	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.

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



[17] OPERATOR CERTIFICATION

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

Justin Carter 7/7/2021
Signature Date

Justin Carter
Printed Name

jcarter@novoog.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

JUNE 29, 2021
Date of Survey

Signature and Seal of Professional Surveyor:

Certificate Number: EDMOND F. JARAMILLO, PLS 12797
SURVEY NO. 7742D

Intent ☐ As Drilled ☐

API #

Operator Name:	Property Name:	Well Number
NOVO OIL & GAS NORTHERN DELAWARE, LLC	ASTRODOG FED COM 0810	235H

Kick Off Point (KOP)

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

Latitude	Longitude	NAD

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
G	8	23S	29E		2310	NORTH	2310	EAST	EDDY

Latitude	Longitude	NAD
32.3206961	104.0058711	83

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
F	10	23S	29E		2310	NORTH	2310	WEST	EDDY

Latitude	Longitude	NAD
32.3207200	103.9737417	83

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

Is this well an infill well? ☐

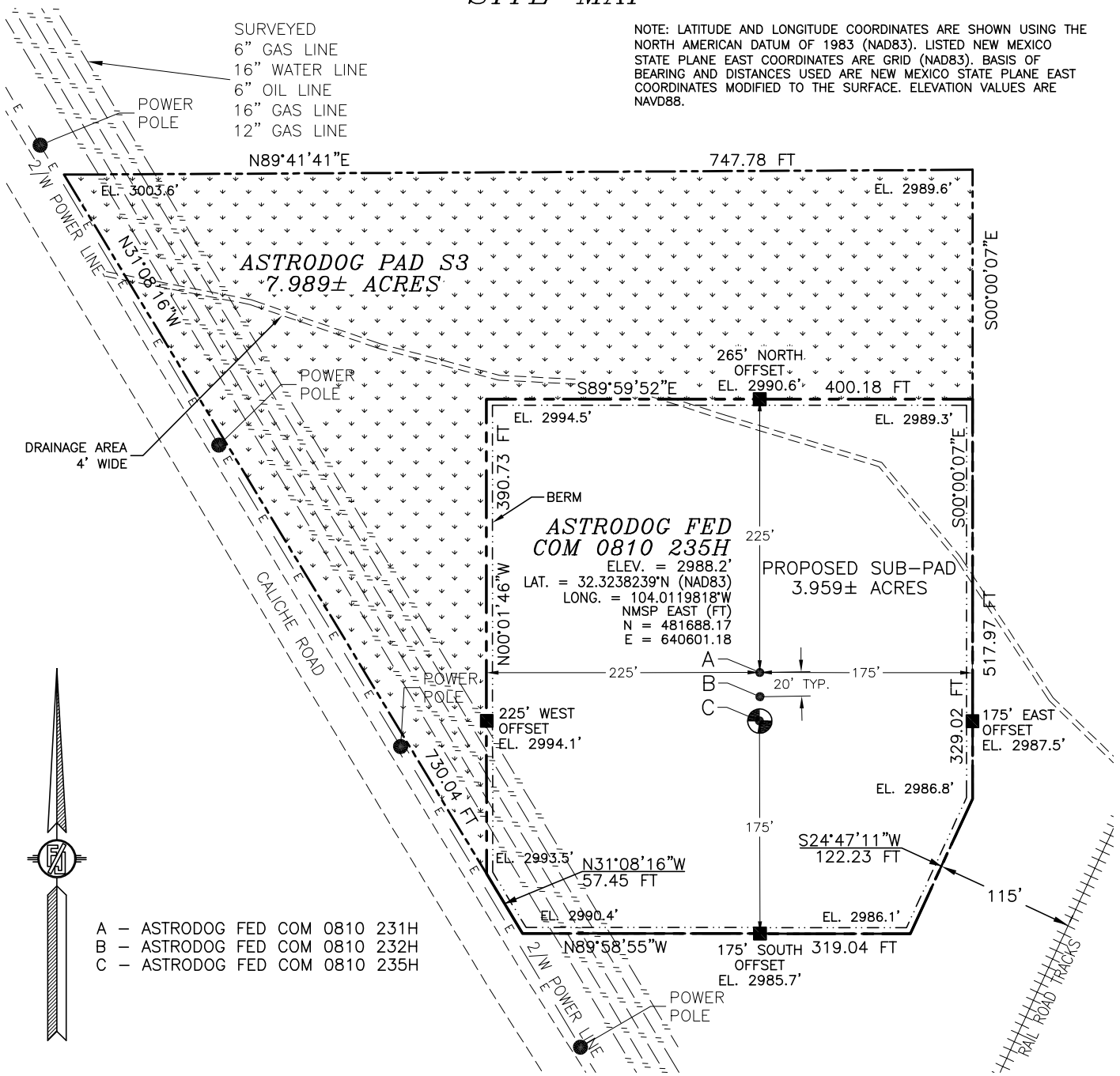
If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:	Property Name:	Well Number

KZ 06/29/2018

SECTION 8, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP



DIRECTIONS TO LOCATION

FROM STATE HWY 31 AND REFINERY ROAD, GO NORTH-NORTHEAST ON HWY 31 1.1 MILES, TURN RIGHT ON CALICHE ROAD (POTASH MINE ROAD) AND GO SOUTH-SOUTHEAST APPROX. 0.35 MILES TO THE NORTHWEST CORNER OF PAD FOR THIS LOCATION.

I, FILIMON F. JARAMILLO, NEW MEXICO REGISTERED PROFESSIONAL SURVEYOR CERTIFY THAT I DIRECTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR SURVEYING IN NEW MEXICO.

FILIMON F. JARAMILLO PLS. 12797

NOVO OIL & GAS NORTHERN DELAWARE, LLC

ASTRODOG FED COM 0810 235H

LOCATED 1151 FT. FROM THE NORTH LINE AND 1128 FT. FROM THE WEST LINE OF SECTION 8, TOWNSHIP 23 SOUTH, RANGE 29 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

JUNE 29, 2021

SURVEY NO. 7742D

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

NOVO OIL & GAS NORTHERN DELAWARE, LLC

Astrodog Fed Com 0810 235H

SHL: 1151' FNL & 1128' FWL Section 08-23S-29E
BHL: 2310' FNL & 2510' FWL Section 10-23S-29E
Eddy County, New Mexico

DRILLING OPERATIONS PLAN

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

Estimated Drilling Conditions

Target Formation	Wolfcamp B
Target Depth - TVD (ft)	10830
Anticipated Bottom-Hole Pressure (psi)	7039.5
Anticipated Maximum Surface Pressure (psi)	4656.9
Abnormal Pressure (Yes/No)	No
Anticipated Bottom-Hole Temperature (deg F)	215 deg F
H2S Contingency Plan Required (Yes/No)	Yes

Geologic Formations

	GR	KB (25')	
Elevation	2,990	3,015	
Formation Tops	**TVDss**	**TVD - KB**	**Mineral Resources**
Rustler	2700	315	Water
Bell Canyon (base of salt)	200	2,815	Water
Cherry Canyon	-863	3,878	Water
Brushy Canyon	-2325	5,340	Oil, Gas, Water
Bone Spring Lime	-3430	6,445	Oil, Gas, Water
Lower Avalon		3,015	Oil, Gas, Water
1st Bone Spring Sand	-4492	7,507	Oil, Gas, Water
2nd Bone Spring Carbonate	-4745	7,760	Oil, Gas, Water
2nd Bone Spring Sand	-5235	8,250	Oil, Gas, Water
3rd Bone Spring Carbonate	-5592	8,607	Oil, Gas, Water
3rd Bone Spring Sand	-6495	9,510	Oil, Gas, Water
Wolfcamp XY	-6805	9,820	Oil, Gas, Water
Wolfcamp A	-6950	9,965	Oil, Gas, Water
Wolfcamp B	-7200	10,215	Oil, Gas, Water
Wolfcamp B Flow Unit	-7800	10,815	Oil, Gas, Water
Wolfcamp C	-7885	10,900	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.

Salt Strings will be pressure tested to 250 psi low and (.22 psi x Shoe TVD, which is equivalent to 597.322 psi) high for 30 minutes.

Intermediate will be pressure tested to 250 psi low and (.22 psi x Shoe TVD, which is equivalent to 2206.6 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 - 400	17-1/2	Water Based Spud Mud	8.3	30-60	N/C	2.0-8.0
400 - 2,715	12-1/4	Brine	9.8-10.2	35-45	N/C	1.0-4.0
2,715 - 10,030	9-7/8	Cut Brine	9.8-10.2	35-45	N/C	1.0-4.0
10,030 - 22,230	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' - 400'	400	17-1/2	13-3/8"	54.50	J-55	BTC	
0' - 2,715'	2,715	12-1/4	10-3/4"	40.50	J-55	BTC-SC	11.25 inch collar OD
0' - 10,030'	10,030	9-7/8	8-5/8"	32.00	P110HSCY	TLW	9 inch collar OD
0' - 22,230'	22,230	7-7/8	5-1/2"	20.00	P110	DWC/C-IS+	

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' - 400'	1,130	2,740	853	6.52	1.83	8.53	
0' - 2,715'	1,580	3,130	629	1.34	2.09	3.26	
0' - 10,030'	4,230	8,930	1144	1.32	4.05	3.08	Collapse: 1/3 fluid filled at all times
0' - 22,230'	12,090	14,360	729	2.10	1.25	2.57	
Design Safety Factors	Design safety factors will meet or exceed as shown.						

Surface Casing

Collapse: $DF_C = 1.125$

a. 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.

b. 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: $DF_B = 1.125$

a. 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: $DF_T = 1.60$

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

Salt String

Collapse: $DF_C = 1.125$

a. 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.

b. 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: $DF_B = 1.125$

a. 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.

b. Gas Kick: Internal burst load of a 50 bbl gas kick at the casing with drillpipe in the hole. External force will be 10.2 ppg brine water gradient (0.531 psi/ft) and intrenal force will be with 10.0 ppg brine water gradient (0.521 psi/ft) with gas kick.

Tensile: $DF_T = 1.60$

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

Intermediate Casing

Collapse: $DF_C = 1.125$

a. **Partial (2/3rd) Internal Evacuation: Casing will remain greater than 1/3 fluid filled at all times with a mud weight greather than 11 ppg**

b. 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: $DF_B = 1.125$

a. 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.

b. Gas Kick: Internal burst load of a 50 bbl gas kick at the casing with drillpipe in the hole. External force will be 10.2 ppg brine water gradient (0.531 psi/ft) and intrenal force will be with 10.0 ppg brine water gradient (0.521 psi/ft) with gas kick.

Tensile: $DF_T = 1.60$

a. 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 Casing

Collapse: $DF_C = 1.125$

a. Full Internal Evacuation: Collapse force is equal to mud gradient (0.531 psi/ft) in which the casing will be run and internal evacuation of casing.

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

Burst: $DF_B = 1.125$

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

Tensile: $DF_T = 1.60$

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

Cementing Program

Surface Casing Cement: 0' - 400' 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	343	555.8	99.0	13.80	1.62	7.67	1,200	100.0%

Lead:

Tail: Class C Cement with Gel, Accelerator, LCM

Salt Protection Casing Cement: Surface Shoe Depth 400

Top of Lead 0 Top of Tail 0 Intermediate Shoe Depth 2,715

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	165	422.5	75.2	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' - 10,030' 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	742	2321.8	413.5	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' - 22,230' Top of Cement: 9,030'

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	1452	2744.6	488.8	13.00	1.89	9.63	1,200	20.0%

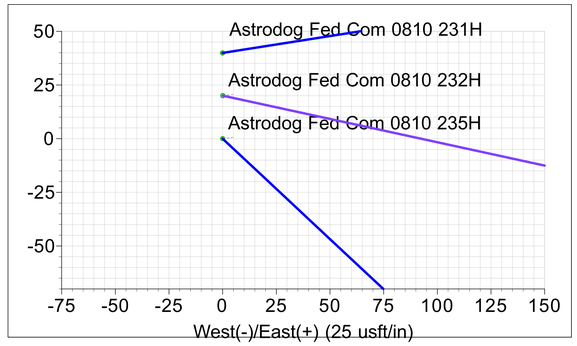
Lead:

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

Logging, Testing & Coring Program

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

Astrodog Fed Com 0810 235H



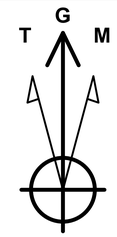
WELL DETAILS: Astrodog Fed Com 0810 235H
Plan 1

GL Elev (ft).: 2988.2

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	481688.17	640601.18	32.323824	-104.011982

SECTION DETAILS

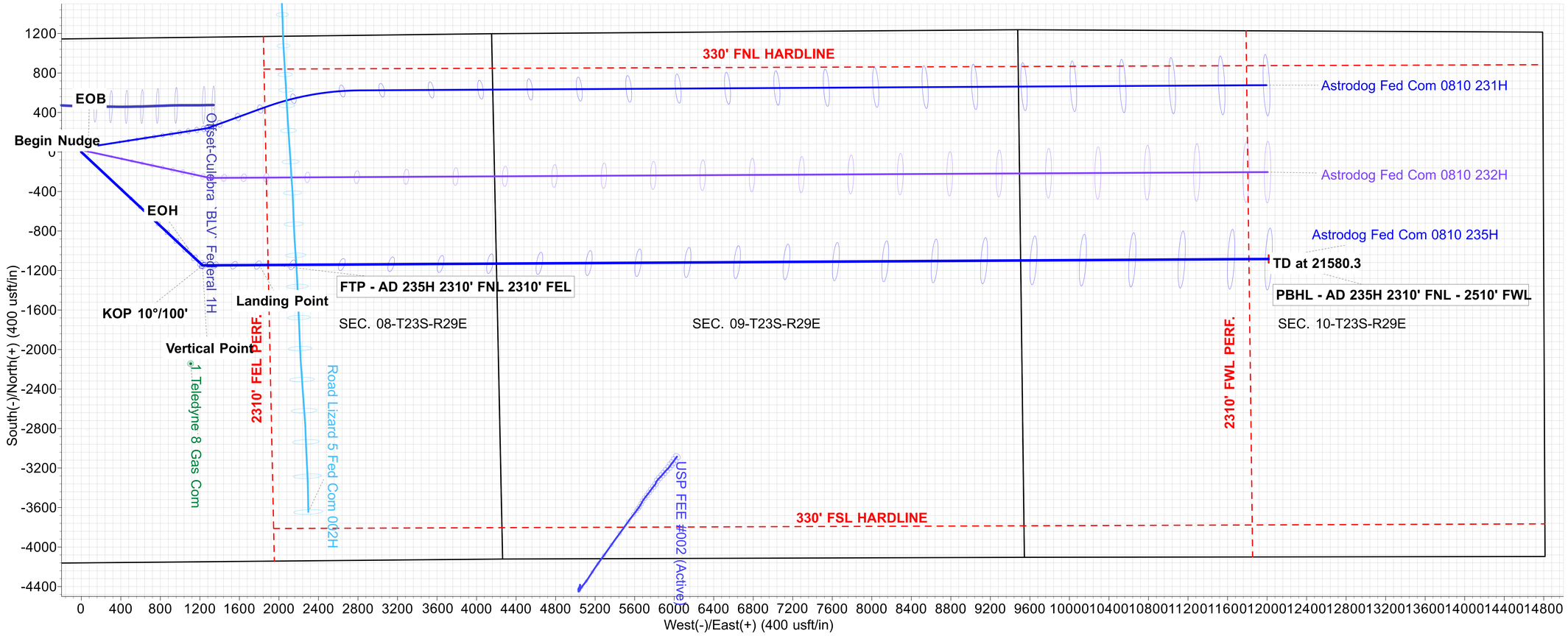
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	Begin Nudge
2528.2	14.56	133.09	2520.4	-62.9	67.2	2.00	133.09	67.2	EOB
8478.6	14.56	133.09	8279.6	-1085.0	1160.0	0.00	0.00	1160.0	EOH
9206.8	0.00	0.00	9000.0	-1147.9	1227.2	2.00	180.00	1227.2	Vertical Point
10463.9	0.00	0.00	10257.0	-1147.9	1227.2	0.00	0.00	1227.2	KOP 10°/100'
11363.9	90.00	89.66	10830.0	-1144.5	1800.1	10.00	89.66	1800.1	Landing Point
21580.3	90.00	89.66	10830.0	-1083.2	12016.4	0.00	0.00	12016.4	TD at 21580.3



Azimuths to Grid North
True North: -0.17°
Magnetic North: 6.61°

Magnetic Field
Strength: 47533.2nT
Dip Angle: 59.93°
Date: 3/29/2021
Model: IGRF2020

Project: EDDY CO., NM (NAD83)
Site: SEC 08-T23S-R29E
Well: Astrodog Fed Com 0810 235H
Wellbore: Wellbore #1
Design: Plan 1



NOVO Oil & Gas

EDDY CO., NM (NAD83)
SEC 08-T23S-R29E
Astrodog Fed Com 0810 235H

Wellbore #1
Plan 1

Anticollision Report

05 July, 2021

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Plan 1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0usft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum centre distance of 2,298.9usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 7/5/2021

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.0	21,580.3	Plan 1 (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
SEC 02-T23S-R28E						
Offset-Culebra `BLV` Federal 1H - Wellbore #1 - Wellbore	6,062.2	12,140.2	1,152.6	963.1	6.083	CC
Offset-Culebra `BLV` Federal 1H - Wellbore #1 - Wellbore	6,100.0	12,145.0	1,153.2	962.5	6.048	ES
Offset-Culebra `BLV` Federal 1H - Wellbore #1 - Wellbore	6,200.0	12,164.2	1,160.5	967.4	6.008	SF
SEC 08-T23S-R29E						
1 Teledyne 8 Gas Com - Wellbore #1 - No Surveys	9,286.3	9,047.2	1,002.4	948.8	18.723	CC
1 Teledyne 8 Gas Com - Wellbore #1 - No Surveys	10,500.0	10,260.9	1,002.6	944.8	17.360	ES
1 Teledyne 8 Gas Com - Wellbore #1 - No Surveys	11,100.0	10,738.1	1,089.7	1,022.6	16.243	SF
Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1	1,416.5	1,417.1	40.0	33.6	6.305	CC
Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1	1,600.0	1,600.3	40.3	33.1	5.639	ES
Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1	21,580.3	21,454.3	1,760.4	1,135.4	2.817	SF
Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1	1,800.0	1,800.1	20.0	12.0	2.492	CC, ES
Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1	21,580.3	21,416.9	880.2	253.6	1.405	Collision Avoidance Req., SF
Road Lizard 5 Fed Com 002H - Wellbore #1 - Wellbore #	8,921.8	14,229.7	958.7	824.3	7.133	CC, ES, SF
USP FEE #002 (Active) - Wellbore #1 - Wellbore #1	15,503.0	11,188.7	2,080.6	1,905.0	11.848	CC
USP FEE #002 (Active) - Wellbore #1 - Wellbore #1	15,600.0	11,195.8	2,082.9	1,904.6	11.679	ES
USP FEE #002 (Active) - Wellbore #1 - Wellbore #1	15,900.0	11,215.0	2,118.2	1,933.4	11.459	SF

Offset Design: SEC 02-T23S-R28E - Offset-Culebra `BLV` Federal 1H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 200-MWD

Offset Well Error: 0.0 usft

Rule Assigned:

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,100.0	4,041.7	11,806.8	6,070.1	12.6	164.7	-151.90	458.6	339.9	2,242.0	2,165.5	76.46	29.322	
4,200.0	4,138.5	11,817.8	6,070.3	13.1	165.0	-151.41	458.4	350.9	2,158.3	2,078.6	79.67	27.091	
4,300.0	4,235.3	11,830.0	6,070.5	13.6	165.3	-150.87	458.1	363.1	2,075.9	1,992.7	83.18	24.956	
4,400.0	4,332.0	11,830.0	6,070.5	14.1	165.3	-150.87	458.1	363.1	1,995.0	1,908.1	86.83	22.974	
4,500.0	4,428.8	11,843.7	6,071.0	14.6	165.7	-150.26	457.9	376.7	1,915.8	1,824.8	91.01	21.050	
4,600.0	4,525.6	11,861.0	6,071.7	15.1	166.2	-149.48	457.8	394.1	1,838.6	1,743.0	95.61	19.229	
4,700.0	4,622.4	11,861.0	6,071.7	15.6	166.2	-149.48	457.8	394.1	1,763.5	1,663.2	100.29	17.584	
4,800.0	4,719.2	11,877.4	6,072.5	16.1	166.6	-148.73	457.9	410.4	1,690.9	1,585.2	105.65	16.005	
4,900.0	4,816.0	11,902.4	6,073.7	16.6	167.3	-147.58	458.0	435.4	1,620.8	1,509.2	111.60	14.523	
5,000.0	4,912.8	11,925.0	6,074.7	17.1	167.9	-146.53	458.2	458.0	1,553.7	1,435.8	117.94	13.174	
5,100.0	5,009.5	11,944.5	6,075.4	17.6	168.4	-145.62	458.5	477.5	1,489.9	1,365.3	124.62	11.955	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 02-T23S-R28E - Offset-Culebra `BLV` Federal 1H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 200-MWD

Offset Well Error: 0.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,200.0	5,106.3	11,956.0	6,075.9	18.1	168.8	-145.08	458.7	489.0	1,430.1	1,298.7	131.46	10.878	
5,300.0	5,203.1	11,976.1	6,076.7	18.6	169.3	-144.13	459.2	509.0	1,374.7	1,235.9	138.83	9.902	
5,400.0	5,299.9	12,052.7	6,078.6	19.1	171.4	-140.45	460.5	585.6	1,323.9	1,175.7	148.13	8.937	
5,500.0	5,396.7	12,051.0	6,078.6	19.7	171.4	-140.54	460.5	583.9	1,278.2	1,123.0	155.22	8.235	
5,600.0	5,493.5	12,066.9	6,078.9	20.2	171.8	-139.77	460.6	599.8	1,238.7	1,076.0	162.72	7.613	
5,700.0	5,590.3	12,082.0	6,079.4	20.7	172.2	-139.04	460.9	614.9	1,206.2	1,036.3	169.85	7.102	
5,800.0	5,687.1	12,089.0	6,079.6	21.2	172.4	-138.70	461.1	621.9	1,181.0	1,004.9	176.11	6.706	
5,900.0	5,783.8	12,109.6	6,080.3	21.7	173.0	-137.70	461.7	642.5	1,163.6	981.5	182.08	6.390	
6,000.0	5,880.6	12,129.2	6,080.7	22.2	173.5	-136.75	462.3	662.0	1,154.2	967.2	187.03	6.171	
6,062.2	5,940.8	12,140.2	6,080.9	22.5	173.8	-136.21	462.7	673.1	1,152.6	963.1	189.49	6.083	CC
6,100.0	5,977.4	12,145.0	6,080.9	22.7	173.9	-135.97	462.9	677.8	1,153.2	962.5	190.66	6.048	ES
6,200.0	6,074.2	12,164.2	6,081.1	23.3	174.5	-135.04	463.6	697.0	1,160.5	967.4	193.17	6.008	SF
6,300.0	6,171.0	12,182.4	6,081.7	23.8	175.0	-134.15	464.3	715.2	1,176.1	981.7	194.37	6.051	
6,400.0	6,267.8	12,197.4	6,082.1	24.3	175.4	-133.42	464.9	730.2	1,199.5	1,005.2	194.24	6.175	
6,500.0	6,364.6	12,217.2	6,082.6	24.8	175.9	-132.46	465.7	749.9	1,230.3	1,037.1	193.27	6.366	
6,600.0	6,461.3	12,245.3	6,083.0	25.3	176.7	-131.10	466.8	778.0	1,267.9	1,076.1	191.78	6.612	
6,700.0	6,558.1	12,270.8	6,083.8	25.8	177.4	-129.87	467.7	803.5	1,311.7	1,122.2	189.47	6.923	
6,800.0	6,654.9	12,296.5	6,085.1	26.4	178.1	-128.65	468.7	829.1	1,361.0	1,174.3	186.68	7.290	
6,900.0	6,751.7	12,321.2	6,086.5	26.9	178.8	-127.48	469.7	853.7	1,415.3	1,231.8	183.51	7.712	
7,000.0	6,848.5	12,360.7	6,088.8	27.4	179.8	-125.63	471.1	893.2	1,473.9	1,293.2	180.69	8.157	
7,100.0	6,945.3	12,382.7	6,090.0	27.9	180.4	-124.61	471.7	915.1	1,536.2	1,359.2	177.08	8.675	
7,200.0	7,042.1	12,401.7	6,091.1	28.4	181.0	-123.73	472.2	934.1	1,602.1	1,428.8	173.34	9.243	
7,300.0	7,138.9	12,420.0	6,091.9	28.9	181.5	-122.89	472.7	952.4	1,671.1	1,501.5	169.63	9.852	
7,400.0	7,235.6	12,442.7	6,092.9	29.5	182.1	-121.85	473.2	975.1	1,742.9	1,576.7	166.16	10.489	
7,500.0	7,332.4	12,468.0	6,093.6	30.0	182.8	-120.70	473.5	1,000.3	1,817.1	1,654.2	162.88	11.156	
7,600.0	7,429.2	12,506.5	6,094.4	30.5	183.8	-118.95	473.5	1,038.9	1,893.3	1,733.2	160.12	11.824	
7,700.0	7,526.0	12,535.0	6,095.3	31.0	184.6	-117.69	473.3	1,067.3	1,971.2	1,814.0	157.20	12.539	
7,800.0	7,622.8	12,550.7	6,095.7	31.5	185.1	-116.99	473.2	1,083.0	2,050.8	1,896.7	154.09	13.309	
7,900.0	7,719.6	12,566.2	6,096.2	32.1	185.5	-116.32	473.1	1,098.5	2,132.0	1,980.9	151.15	14.105	
8,000.0	7,816.4	12,581.3	6,096.6	32.6	185.9	-115.66	473.1	1,113.6	2,214.6	2,066.2	148.38	14.925	
8,100.0	7,913.2	12,596.3	6,096.9	33.1	186.3	-115.01	473.1	1,128.6	2,298.5	2,152.7	145.77	15.768	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - 1 Teledyne 8 Gas Com - Wellbore #1 - No Surveys

Offset Site Error: 0.0 usft

Survey Program: 100-MWD

Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,700.0	2,686.7	2,654.5	2,654.5	6.3	7.8	21.39	-2,143.0	1,105.8	2,284.5	2,270.9	13.62	167.688	
2,800.0	2,783.5	2,751.3	2,751.3	6.6	7.9	21.62	-2,143.0	1,105.8	2,261.0	2,246.9	14.03	161.126	
2,900.0	2,880.2	2,848.0	2,848.0	7.0	8.1	21.85	-2,143.0	1,105.8	2,237.5	2,223.1	14.45	154.828	
3,000.0	2,977.0	2,944.8	2,944.8	7.5	8.3	22.09	-2,143.0	1,105.8	2,214.1	2,199.2	14.88	148.791	
3,100.0	3,073.8	3,041.6	3,041.6	7.9	8.4	22.34	-2,143.0	1,105.8	2,190.7	2,175.4	15.32	143.012	
3,200.0	3,170.6	3,138.4	3,138.4	8.3	8.6	22.59	-2,143.0	1,105.8	2,167.4	2,151.6	15.76	137.485	
3,300.0	3,267.4	3,235.2	3,235.2	8.8	8.8	22.85	-2,143.0	1,105.8	2,144.1	2,127.8	16.22	132.200	
3,400.0	3,364.2	3,332.0	3,332.0	9.2	9.0	23.11	-2,143.0	1,105.8	2,120.8	2,104.1	16.68	127.148	
3,500.0	3,461.0	3,428.8	3,428.8	9.7	9.1	23.38	-2,143.0	1,105.8	2,097.6	2,080.4	17.15	122.322	
3,600.0	3,557.7	3,525.5	3,525.5	10.2	9.3	23.65	-2,143.0	1,105.8	2,074.4	2,056.8	17.62	117.709	
3,700.0	3,654.5	3,622.3	3,622.3	10.7	9.5	23.93	-2,143.0	1,105.8	2,051.3	2,033.2	18.10	113.301	
3,800.0	3,751.3	3,719.1	3,719.1	11.1	9.7	24.22	-2,143.0	1,105.8	2,028.2	2,009.6	18.59	109.088	
3,900.0	3,848.1	3,815.9	3,815.9	11.6	9.9	24.51	-2,143.0	1,105.8	2,005.2	1,986.1	19.09	105.060	
4,000.0	3,944.9	3,912.7	3,912.7	12.1	10.1	24.81	-2,143.0	1,105.8	1,982.2	1,962.6	19.59	101.207	
4,100.0	4,041.7	4,009.5	4,009.5	12.6	10.3	25.12	-2,143.0	1,105.8	1,959.3	1,939.2	20.09	97.521	
4,200.0	4,138.5	4,106.3	4,106.3	13.1	10.5	25.43	-2,143.0	1,105.8	1,936.4	1,915.8	20.60	93.993	
4,300.0	4,235.3	4,203.1	4,203.1	13.6	10.6	25.76	-2,143.0	1,105.8	1,913.6	1,892.5	21.12	90.614	
4,400.0	4,332.0	4,299.8	4,299.8	14.1	10.8	26.09	-2,143.0	1,105.8	1,890.8	1,869.2	21.64	87.378	
4,500.0	4,428.8	4,396.6	4,396.6	14.6	11.0	26.42	-2,143.0	1,105.8	1,868.1	1,846.0	22.17	84.275	
4,600.0	4,525.6	4,493.4	4,493.4	15.1	11.2	26.77	-2,143.0	1,105.8	1,845.5	1,822.8	22.70	81.301	
4,700.0	4,622.4	4,590.2	4,590.2	15.6	11.4	27.12	-2,143.0	1,105.8	1,822.9	1,799.7	23.24	78.447	
4,800.0	4,719.2	4,687.0	4,687.0	16.1	11.6	27.48	-2,143.0	1,105.8	1,800.4	1,776.7	23.78	75.707	
4,900.0	4,816.0	4,783.8	4,783.8	16.6	11.8	27.85	-2,143.0	1,105.8	1,778.0	1,753.7	24.33	73.077	
5,000.0	4,912.8	4,880.6	4,880.6	17.1	12.0	28.24	-2,143.0	1,105.8	1,755.7	1,730.8	24.89	70.549	
5,100.0	5,009.5	4,977.3	4,977.3	17.6	12.2	28.63	-2,143.0	1,105.8	1,733.4	1,708.0	25.45	68.120	
5,200.0	5,106.3	5,074.1	5,074.1	18.1	12.4	29.03	-2,143.0	1,105.8	1,711.2	1,685.2	26.01	65.784	
5,300.0	5,203.1	5,170.9	5,170.9	18.6	12.6	29.44	-2,143.0	1,105.8	1,689.1	1,662.5	26.58	63.536	
5,400.0	5,299.9	5,267.7	5,267.7	19.1	12.8	29.86	-2,143.0	1,105.8	1,667.1	1,639.9	27.16	61.373	
5,500.0	5,396.7	5,364.5	5,364.5	19.7	13.0	30.29	-2,143.0	1,105.8	1,645.1	1,617.4	27.75	59.290	
5,600.0	5,493.5	5,461.3	5,461.3	20.2	13.2	30.73	-2,143.0	1,105.8	1,623.3	1,595.0	28.34	57.283	
5,700.0	5,590.3	5,558.1	5,558.1	20.7	13.4	31.19	-2,143.0	1,105.8	1,601.5	1,572.6	28.94	55.349	
5,800.0	5,687.1	5,654.9	5,654.9	21.2	13.6	31.66	-2,143.0	1,105.8	1,579.9	1,550.4	29.54	53.485	
5,900.0	5,783.8	5,751.6	5,751.6	21.7	13.8	32.14	-2,143.0	1,105.8	1,558.4	1,528.2	30.15	51.688	
6,000.0	5,880.6	5,848.4	5,848.4	22.2	14.0	32.63	-2,143.0	1,105.8	1,536.9	1,506.2	30.77	49.953	
6,100.0	5,977.4	5,945.2	5,945.2	22.7	14.2	33.14	-2,143.0	1,105.8	1,515.6	1,484.2	31.39	48.280	
6,200.0	6,074.2	6,042.0	6,042.0	23.3	14.4	33.66	-2,143.0	1,105.8	1,494.4	1,462.4	32.02	46.665	
6,300.0	6,171.0	6,138.8	6,138.8	23.8	14.6	34.20	-2,143.0	1,105.8	1,473.4	1,440.7	32.66	45.105	
6,400.0	6,267.8	6,235.6	6,235.6	24.3	14.8	34.75	-2,143.0	1,105.8	1,452.4	1,419.1	33.31	43.599	
6,500.0	6,364.6	6,332.4	6,332.4	24.8	15.0	35.32	-2,143.0	1,105.8	1,431.6	1,397.6	33.97	42.144	
6,600.0	6,461.3	6,429.1	6,429.1	25.3	15.2	35.90	-2,143.0	1,105.8	1,410.9	1,376.3	34.63	40.738	
6,700.0	6,558.1	6,525.9	6,525.9	25.8	15.5	36.50	-2,143.0	1,105.8	1,390.4	1,355.1	35.31	39.380	
6,800.0	6,654.9	6,622.7	6,622.7	26.4	15.7	37.12	-2,143.0	1,105.8	1,370.1	1,334.1	35.99	38.067	
6,900.0	6,751.7	6,719.5	6,719.5	26.9	15.9	37.76	-2,143.0	1,105.8	1,349.8	1,313.2	36.68	36.798	
7,000.0	6,848.5	6,816.3	6,816.3	27.4	16.1	38.41	-2,143.0	1,105.8	1,329.8	1,292.4	37.38	35.571	
7,100.0	6,945.3	6,913.1	6,913.1	27.9	16.3	39.09	-2,143.0	1,105.8	1,310.0	1,271.9	38.10	34.385	
7,200.0	7,042.1	7,009.9	7,009.9	28.4	16.5	39.78	-2,143.0	1,105.8	1,290.3	1,251.5	38.82	33.239	
7,300.0	7,138.9	7,106.7	7,106.7	28.9	16.7	40.50	-2,143.0	1,105.8	1,270.8	1,231.3	39.55	32.131	
7,400.0	7,235.6	7,203.4	7,203.4	29.5	16.9	41.24	-2,143.0	1,105.8	1,251.5	1,211.2	40.29	31.060	
7,500.0	7,332.4	7,300.2	7,300.2	30.0	17.1	42.00	-2,143.0	1,105.8	1,232.5	1,191.4	41.05	30.024	
7,600.0	7,429.2	7,397.0	7,397.0	30.5	17.3	42.78	-2,143.0	1,105.8	1,213.6	1,171.8	41.81	29.024	
7,700.0	7,526.0	7,493.8	7,493.8	31.0	17.5	43.59	-2,143.0	1,105.8	1,195.0	1,152.4	42.59	28.057	
7,800.0	7,622.8	7,590.6	7,590.6	31.5	17.7	44.42	-2,143.0	1,105.8	1,176.6	1,133.2	43.38	27.123	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - 1 Teledyne 8 Gas Com - Wellbore #1 - No Surveys

Offset Site Error: 0.0 usft

Survey Program: 100-MWD

Offset Well Error: 5.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
7,900.0	7,719.6	7,687.4	7,687.4	32.1	17.9	45.27	-2,143.0	1,105.8	1,158.5	1,114.3	44.18	26.221	
8,000.0	7,816.4	7,784.2	7,784.2	32.6	18.2	46.16	-2,143.0	1,105.8	1,140.7	1,095.7	45.00	25.350	
8,100.0	7,913.2	7,881.0	7,881.0	33.1	18.4	47.07	-2,143.0	1,105.8	1,123.1	1,077.3	45.82	24.509	
8,200.0	8,009.9	7,977.7	7,977.7	33.6	18.6	48.00	-2,143.0	1,105.8	1,105.8	1,059.2	46.66	23.698	
8,300.0	8,106.7	8,074.5	8,074.5	34.1	18.8	48.97	-2,143.0	1,105.8	1,088.8	1,041.3	47.51	22.916	
8,400.0	8,203.5	8,171.3	8,171.3	34.7	19.0	49.96	-2,143.0	1,105.8	1,072.2	1,023.8	48.38	22.163	
8,500.0	8,300.3	8,268.1	8,268.1	35.2	19.2	50.93	-2,143.0	1,105.8	1,055.9	1,006.7	49.25	21.442	
8,600.0	8,397.7	8,365.5	8,365.5	35.6	19.4	51.66	-2,143.0	1,105.8	1,041.5	991.5	50.01	20.826	
8,700.0	8,495.8	8,463.6	8,463.6	35.9	19.6	52.30	-2,143.0	1,105.8	1,029.4	978.7	50.71	20.300	
8,800.0	8,594.5	8,562.3	8,562.3	36.2	19.8	52.84	-2,143.0	1,105.8	1,019.7	968.4	51.35	19.857	
8,900.0	8,693.8	8,661.6	8,661.6	36.4	20.1	53.28	-2,143.0	1,105.8	1,012.2	960.3	51.93	19.493	
9,000.0	8,793.3	8,761.1	8,761.1	36.6	20.3	53.60	-2,143.0	1,105.8	1,006.9	954.4	52.43	19.202	
9,100.0	8,893.2	8,861.0	8,861.0	36.8	20.5	53.80	-2,143.0	1,105.8	1,003.6	950.8	52.87	18.982	
9,200.0	8,993.2	8,961.0	8,961.0	36.9	20.7	53.87	-2,143.0	1,105.8	1,002.5	949.2	53.24	18.827	
9,286.3	9,079.4	9,047.2	9,047.2	37.0	20.9	53.88	-2,143.0	1,105.8	1,002.4	948.8	53.54	18.723 CC	
9,300.0	9,093.2	9,061.0	9,061.0	37.0	20.9	-173.04	-2,143.0	1,105.8	1,002.4	948.9	53.58	18.708	
9,400.0	9,193.2	9,161.0	9,161.0	37.1	21.1	-173.04	-2,143.0	1,105.8	1,002.4	948.5	53.92	18.591	
9,500.0	9,293.2	9,261.0	9,261.0	37.2	21.4	-173.04	-2,143.0	1,105.8	1,002.4	948.2	54.26	18.474	
9,600.0	9,393.2	9,361.0	9,361.0	37.3	21.6	-173.04	-2,143.0	1,105.8	1,002.4	947.8	54.60	18.359	
9,700.0	9,493.2	9,461.0	9,461.0	37.5	21.8	-173.04	-2,143.0	1,105.8	1,002.4	947.5	54.95	18.244	
9,800.0	9,593.2	9,561.0	9,561.0	37.6	22.0	-173.04	-2,143.0	1,105.8	1,002.4	947.2	55.29	18.131	
9,900.0	9,693.2	9,661.0	9,661.0	37.7	22.2	-173.04	-2,143.0	1,105.8	1,002.4	946.8	55.63	18.019	
10,000.0	9,793.2	9,761.0	9,761.0	37.8	22.5	-173.04	-2,143.0	1,105.8	1,002.4	946.5	55.98	17.908	
10,100.0	9,893.2	9,861.0	9,861.0	37.9	22.7	-173.04	-2,143.0	1,105.8	1,002.4	946.1	56.33	17.797	
10,200.0	9,993.2	9,961.0	9,961.0	38.0	22.9	-173.04	-2,143.0	1,105.8	1,002.4	945.8	56.67	17.688	
10,300.0	10,093.2	10,061.0	10,061.0	38.1	23.1	-173.04	-2,143.0	1,105.8	1,002.4	945.4	57.02	17.580	
10,400.0	10,193.2	10,161.0	10,161.0	38.2	23.3	-173.04	-2,143.0	1,105.8	1,002.4	945.1	57.37	17.473	
10,402.4	10,195.5	10,163.3	10,163.3	38.2	23.3	97.30	-2,143.0	1,105.8	1,002.4	945.1	57.38	17.470	
10,500.0	10,293.1	10,260.9	10,260.9	38.4	23.6	97.35	-2,143.0	1,105.8	1,002.6	944.8	57.75	17.360 ES	
10,600.0	10,391.9	10,359.7	10,359.7	38.7	23.8	97.99	-2,143.0	1,105.8	1,004.6	946.1	58.48	17.179	
10,700.0	10,486.5	10,454.3	10,454.3	39.1	24.0	99.18	-2,143.0	1,105.8	1,009.7	950.1	59.62	16.936	
10,800.0	10,574.2	10,542.0	10,542.0	39.8	24.2	100.59	-2,143.0	1,105.8	1,019.1	957.9	61.13	16.670	
10,900.0	10,652.3	10,620.1	10,620.1	40.7	24.3	101.75	-2,143.0	1,105.8	1,034.5	971.5	62.96	16.431	
11,000.0	10,718.3	10,686.1	10,686.1	41.8	24.5	102.14	-2,143.0	1,105.8	1,057.6	992.7	64.99	16.274	
11,100.0	10,770.3	10,738.1	10,738.1	43.1	24.6	101.27	-2,143.0	1,105.8	1,089.7	1,022.6	67.08	16.243 SF	
11,200.0	10,806.7	10,774.5	10,774.5	44.6	24.7	98.69	-2,143.0	1,105.8	1,130.9	1,061.8	69.10	16.366	
11,300.0	10,826.4	10,794.2	10,794.2	46.2	24.7	94.07	-2,143.0	1,105.8	1,180.7	1,109.8	70.91	16.650	
11,400.0	10,830.0	10,797.8	10,797.8	47.9	24.7	90.00	-2,143.0	1,105.8	1,237.4	1,164.9	72.43	17.084	
11,500.0	10,830.0	10,797.8	10,797.8	49.7	24.7	90.00	-2,143.0	1,105.8	1,299.4	1,225.7	73.70	17.631	
11,600.0	10,830.0	10,797.8	10,797.8	51.6	24.7	90.00	-2,143.0	1,105.8	1,365.9	1,291.2	74.75	18.272	
11,700.0	10,830.0	10,797.8	10,797.8	53.6	24.7	90.00	-2,143.0	1,105.8	1,436.3	1,360.7	75.63	18.992	
11,800.0	10,830.0	10,797.8	10,797.8	55.6	24.7	90.00	-2,143.0	1,105.8	1,510.1	1,433.7	76.35	19.779	
11,900.0	10,830.0	10,797.8	10,797.8	57.7	24.7	90.00	-2,143.0	1,105.8	1,586.7	1,509.8	76.94	20.623	
12,000.0	10,830.0	10,797.8	10,797.8	59.8	24.7	90.00	-2,143.0	1,105.8	1,665.8	1,588.4	77.42	21.516	
12,100.0	10,830.0	10,797.8	10,797.8	62.0	24.7	90.00	-2,143.0	1,105.8	1,747.1	1,669.2	77.82	22.450	
12,200.0	10,830.0	10,797.8	10,797.8	64.3	24.7	90.00	-2,143.0	1,105.8	1,830.2	1,752.0	78.14	23.420	
12,300.0	10,830.0	10,797.8	10,797.8	66.6	24.7	90.00	-2,143.0	1,105.8	1,914.9	1,836.5	78.41	24.421	
12,400.0	10,830.0	10,797.8	10,797.8	68.9	24.7	90.00	-2,143.0	1,105.8	2,001.0	1,922.4	78.63	25.449	
12,500.0	10,830.0	10,797.8	10,797.8	71.3	24.7	90.00	-2,143.0	1,105.8	2,088.4	2,009.6	78.81	26.500	
12,600.0	10,830.0	10,797.8	10,797.8	73.7	24.7	90.00	-2,143.0	1,105.8	2,176.9	2,097.9	78.96	27.571	
12,700.0	10,830.0	10,797.8	10,797.8	76.1	24.7	90.00	-2,143.0	1,105.8	2,266.3	2,187.2	79.08	28.659	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.6	0.6	0.5	0.5	-0.04	39.9	0.0	40.0				
100.0	100.0	100.6	100.6	0.5	0.5	-0.04	39.9	0.0	40.0	38.9	1.06	37.841	
200.0	200.0	200.6	200.6	0.6	0.6	-0.04	39.9	0.0	40.0	38.7	1.27	31.378	
300.0	300.0	300.6	300.6	0.8	0.8	-0.04	39.9	0.0	40.0	38.4	1.59	25.109	
400.0	400.0	400.6	400.6	1.0	1.0	-0.04	39.9	0.0	40.0	38.0	1.96	20.370	
500.0	500.0	500.6	500.6	1.2	1.2	-0.04	39.9	0.0	40.0	37.6	2.36	16.935	
600.0	600.0	600.6	600.6	1.4	1.4	-0.04	39.9	0.0	40.0	37.2	2.77	14.408	
700.0	700.0	700.6	700.6	1.6	1.6	-0.04	39.9	0.0	40.0	36.8	3.20	12.499	
800.0	800.0	800.6	800.6	1.8	1.8	-0.04	39.9	0.0	40.0	36.3	3.63	11.018	
900.0	900.0	900.6	900.6	2.0	2.0	-0.04	39.9	0.0	40.0	35.9	4.06	9.840	
1,000.0	1,000.0	1,000.6	1,000.6	2.2	2.2	-0.04	39.9	0.0	40.0	35.5	4.50	8.884	
1,100.0	1,100.0	1,100.6	1,100.6	2.5	2.5	-0.04	39.9	0.0	40.0	35.0	4.94	8.093	
1,200.0	1,200.0	1,200.6	1,200.6	2.7	2.7	-0.04	39.9	0.0	40.0	34.6	5.38	7.430	
1,300.0	1,300.0	1,300.6	1,300.6	2.9	2.9	-0.04	39.9	0.0	40.0	34.1	5.82	6.865	
1,400.0	1,400.0	1,400.6	1,400.6	3.1	3.1	-0.04	39.9	0.0	40.0	33.7	6.26	6.379	
1,416.5	1,416.5	1,417.1	1,417.1	3.2	3.2	-0.04	39.9	0.0	40.0	33.6	6.34	6.305 CC	
1,500.0	1,500.0	1,500.6	1,500.6	3.4	3.4	-0.04	40.0	0.0	40.0	33.2	6.71	5.957	
1,600.0	1,600.0	1,600.3	1,600.3	3.6	3.6	2.43	40.2	1.7	40.3	33.1	7.14	5.639 ES	
1,700.0	1,700.0	1,700.0	1,699.8	3.8	3.8	9.50	41.0	6.9	41.6	34.0	7.57	5.500	
1,800.0	1,800.0	1,798.9	1,798.3	4.0	4.0	19.92	42.4	15.4	45.1	37.1	7.99	5.646	
1,900.0	1,900.0	1,897.3	1,896.0	4.2	4.2	-103.24	44.2	27.1	52.5	44.1	8.39	6.250	
2,000.0	1,999.8	1,995.1	1,992.7	4.4	4.4	-96.78	46.6	42.1	63.8	55.0	8.78	7.268	
2,100.0	2,099.5	2,094.0	2,090.0	4.6	4.7	-93.73	49.3	59.2	77.4	68.2	9.19	8.413	
2,200.0	2,198.7	2,193.0	2,187.5	4.8	5.0	-93.71	52.0	76.4	91.2	81.6	9.65	9.453	
2,300.0	2,297.5	2,291.9	2,284.9	5.0	5.3	-95.53	54.7	93.6	105.4	95.3	10.15	10.386	
2,400.0	2,395.6	2,390.6	2,382.0	5.3	5.6	-98.49	57.3	110.7	120.2	109.5	10.70	11.233	
2,500.0	2,493.1	2,489.0	2,478.8	5.6	5.9	-102.17	60.0	127.7	135.9	124.6	11.30	12.029	
2,600.0	2,589.9	2,587.0	2,575.3	5.9	6.2	-106.17	62.7	144.7	152.9	141.0	11.95	12.797	
2,700.0	2,686.7	2,685.0	2,671.8	6.3	6.6	-109.48	65.4	161.7	170.5	157.9	12.62	13.515	
2,800.0	2,783.5	2,783.0	2,768.3	6.6	6.9	-112.17	68.0	178.7	188.6	175.3	13.30	14.179	
2,900.0	2,880.2	2,881.0	2,864.8	7.0	7.3	-114.38	70.7	195.7	207.0	193.0	14.00	14.788	
3,000.0	2,977.0	2,979.0	2,961.3	7.5	7.6	-116.24	73.4	212.6	225.7	211.0	14.71	15.346	
3,100.0	3,073.8	3,077.0	3,057.7	7.9	7.9	-117.81	76.0	229.6	244.6	229.1	15.42	15.857	
3,200.0	3,170.6	3,175.0	3,154.2	8.3	8.3	-119.15	78.7	246.6	263.6	247.4	16.15	16.325	
3,300.0	3,267.4	3,273.0	3,250.7	8.8	8.6	-120.32	81.4	263.6	282.7	265.8	16.87	16.753	
3,400.0	3,364.2	3,371.0	3,347.2	9.2	9.0	-121.34	84.0	280.6	301.9	284.3	17.61	17.147	
3,500.0	3,461.0	3,469.0	3,443.7	9.7	9.4	-122.23	86.7	297.6	321.2	302.9	18.35	17.508	
3,600.0	3,557.7	3,567.0	3,540.1	10.2	9.7	-123.03	89.4	314.6	340.6	321.5	19.09	17.842	
3,700.0	3,654.5	3,665.0	3,636.6	10.7	10.1	-123.73	92.0	331.6	360.1	340.2	19.84	18.150	
3,800.0	3,751.3	3,763.0	3,733.1	11.1	10.5	-124.37	94.7	348.5	379.5	359.0	20.59	18.434	
3,900.0	3,848.1	3,861.0	3,829.6	11.6	10.8	-124.94	97.4	365.5	399.1	377.7	21.34	18.699	
4,000.0	3,944.9	3,959.0	3,926.1	12.1	11.2	-125.46	100.1	382.5	418.6	396.5	22.10	18.944	
4,100.0	4,041.7	4,057.0	4,022.5	12.6	11.5	-125.94	102.7	399.5	438.2	415.4	22.86	19.172	
4,200.0	4,138.5	4,155.0	4,119.0	13.1	11.9	-126.37	105.4	416.5	457.8	434.2	23.62	19.386	
4,300.0	4,235.3	4,253.0	4,215.5	13.6	12.3	-126.77	108.1	433.5	477.5	453.1	24.38	19.585	
4,400.0	4,332.0	4,351.0	4,312.0	14.1	12.7	-127.14	110.7	450.5	497.1	472.0	25.14	19.771	
4,500.0	4,428.8	4,449.0	4,408.5	14.6	13.0	-127.47	113.4	467.4	516.8	490.9	25.91	19.946	
4,600.0	4,525.6	4,547.0	4,505.0	15.1	13.4	-127.79	116.1	484.4	536.5	509.8	26.68	20.110	
4,700.0	4,622.4	4,645.0	4,601.4	15.6	13.8	-128.08	118.7	501.4	556.2	528.8	27.45	20.265	
4,800.0	4,719.2	4,743.0	4,697.9	16.1	14.1	-128.35	121.4	518.4	575.9	547.7	28.22	20.411	
4,900.0	4,816.0	4,841.0	4,794.4	16.6	14.5	-128.60	124.1	535.4	595.7	566.7	28.99	20.548	
5,000.0	4,912.8	4,939.0	4,890.9	17.1	14.9	-128.84	126.7	552.4	615.4	585.7	29.76	20.678	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
5,100.0	5,009.5	5,037.0	4,987.4	17.6	15.3	-129.06	129.4	569.4	635.2	604.6	30.54	20.801	
5,200.0	5,106.3	5,135.0	5,083.8	18.1	15.6	-129.27	132.1	586.4	654.9	623.6	31.31	20.918	
5,300.0	5,203.1	5,233.0	5,180.3	18.6	16.0	-129.47	134.7	603.3	674.7	642.6	32.09	21.028	
5,400.0	5,299.9	5,331.0	5,276.8	19.1	16.4	-129.66	137.4	620.3	694.5	661.6	32.86	21.134	
5,500.0	5,396.7	5,429.0	5,373.3	19.7	16.8	-129.83	140.1	637.3	714.3	680.6	33.64	21.234	
5,600.0	5,493.5	5,527.0	5,469.8	20.2	17.1	-130.00	142.8	654.3	734.1	699.6	34.42	21.329	
5,700.0	5,590.3	5,625.0	5,566.2	20.7	17.5	-130.15	145.4	671.3	753.8	718.7	35.19	21.419	
5,800.0	5,687.1	5,723.0	5,662.7	21.2	17.9	-130.30	148.1	688.3	773.7	737.7	35.97	21.506	
5,900.0	5,783.8	5,821.0	5,759.2	21.7	18.3	-130.45	150.8	705.3	793.5	756.7	36.75	21.589	
6,000.0	5,880.6	5,919.0	5,855.7	22.2	18.7	-130.58	153.4	722.2	813.3	775.7	37.53	21.668	
6,100.0	5,977.4	6,017.0	5,952.2	22.7	19.0	-130.71	156.1	739.2	833.1	794.8	38.31	21.743	
6,200.0	6,074.2	6,115.0	6,048.6	23.3	19.4	-130.83	158.8	756.2	852.9	813.8	39.10	21.816	
6,300.0	6,171.0	6,213.0	6,145.1	23.8	19.8	-130.95	161.4	773.2	872.7	832.8	39.88	21.885	
6,400.0	6,267.8	6,311.0	6,241.6	24.3	20.2	-131.06	164.1	790.2	892.5	851.9	40.66	21.952	
6,500.0	6,364.6	6,409.0	6,338.1	24.8	20.6	-131.17	166.8	807.2	912.4	870.9	41.44	22.016	
6,600.0	6,461.3	6,507.0	6,434.6	25.3	20.9	-131.27	169.4	824.2	932.2	890.0	42.23	22.077	
6,700.0	6,558.1	6,605.0	6,531.0	25.8	21.3	-131.37	172.1	841.1	952.0	909.0	43.01	22.136	
6,800.0	6,654.9	6,703.0	6,627.5	26.4	21.7	-131.46	174.8	858.1	971.9	928.1	43.79	22.193	
6,900.0	6,751.7	6,801.0	6,724.0	26.9	22.1	-131.55	177.4	875.1	991.7	947.1	44.58	22.247	
7,000.0	6,848.5	6,899.0	6,820.5	27.4	22.4	-131.64	180.1	892.1	1,011.6	966.2	45.36	22.300	
7,100.0	6,945.3	6,997.0	6,917.0	27.9	22.8	-131.72	182.8	909.1	1,031.4	985.2	46.15	22.351	
7,200.0	7,042.1	7,095.0	7,013.4	28.4	23.2	-131.80	185.5	926.1	1,051.2	1,004.3	46.93	22.400	
7,300.0	7,138.9	7,193.0	7,109.9	28.9	23.6	-131.88	188.1	943.1	1,071.1	1,023.4	47.72	22.447	
7,400.0	7,235.6	7,291.0	7,206.4	29.5	24.0	-131.95	190.8	960.1	1,090.9	1,042.4	48.50	22.493	
7,500.0	7,332.4	7,389.0	7,302.9	30.0	24.3	-132.03	193.5	977.0	1,110.8	1,061.5	49.29	22.537	
7,600.0	7,429.2	7,487.0	7,399.4	30.5	24.7	-132.10	196.1	994.0	1,130.6	1,080.6	50.07	22.579	
7,700.0	7,526.0	7,585.0	7,495.8	31.0	25.1	-132.16	198.8	1,011.0	1,150.5	1,099.6	50.86	22.620	
7,800.0	7,622.8	7,683.0	7,592.3	31.5	25.5	-132.23	201.5	1,028.0	1,170.3	1,118.7	51.65	22.660	
7,900.0	7,719.6	7,781.0	7,688.8	32.1	25.9	-132.29	204.1	1,045.0	1,190.2	1,137.8	52.43	22.699	
8,000.0	7,816.4	7,879.0	7,785.3	32.6	26.3	-132.35	206.8	1,062.0	1,210.1	1,156.8	53.22	22.736	
8,100.0	7,913.2	7,977.0	7,881.8	33.1	26.6	-132.41	209.5	1,079.0	1,229.9	1,175.9	54.01	22.772	
8,200.0	8,009.9	8,075.0	7,978.2	33.6	27.0	-132.46	212.1	1,095.9	1,249.8	1,195.0	54.80	22.808	
8,300.0	8,106.7	8,173.0	8,074.7	34.1	27.4	-132.52	214.8	1,112.9	1,269.6	1,214.1	55.58	22.842	
8,400.0	8,203.5	8,271.0	8,171.2	34.7	27.8	-132.57	217.5	1,129.9	1,289.5	1,233.1	56.37	22.875	
8,500.0	8,300.3	8,369.0	8,267.7	35.2	28.2	-132.68	220.1	1,146.9	1,309.3	1,252.2	57.15	22.909	
8,600.0	8,397.7	8,467.4	8,364.5	35.6	28.5	-132.93	222.8	1,163.9	1,327.5	1,269.7	57.86	22.942	
8,700.0	8,495.8	8,566.0	8,461.6	35.9	28.9	-133.02	225.5	1,181.1	1,343.4	1,284.8	58.57	22.938	
8,800.0	8,594.5	8,664.9	8,559.0	36.2	29.3	-132.98	228.2	1,198.2	1,356.9	1,297.6	59.26	22.898	
8,900.0	8,693.8	8,764.0	8,656.5	36.4	29.7	-132.79	230.9	1,215.4	1,368.1	1,308.2	59.94	22.824	
9,000.0	8,793.3	8,864.7	8,755.7	36.6	30.1	-132.47	233.6	1,232.7	1,377.0	1,316.4	60.61	22.719	
9,100.0	8,893.2	8,972.7	8,862.5	36.8	30.4	-132.08	236.1	1,248.7	1,383.2	1,322.0	61.20	22.602	
9,200.0	8,993.2	9,081.5	8,970.6	36.9	30.6	-131.70	238.0	1,260.7	1,386.5	1,324.8	61.69	22.474	
9,300.0	9,093.2	9,190.9	9,079.7	37.0	30.9	1.71	239.3	1,268.7	1,387.9	1,325.8	62.11	22.346	
9,400.0	9,193.2	9,300.8	9,189.5	37.1	31.0	1.87	239.9	1,272.6	1,388.5	1,326.1	62.44	22.237	
9,500.0	9,293.2	9,405.1	9,293.8	37.2	31.2	1.89	239.9	1,273.0	1,388.6	1,325.9	62.71	22.143	
9,600.0	9,393.2	9,505.1	9,393.8	37.3	31.3	1.89	239.9	1,273.0	1,388.6	1,325.6	62.98	22.049	
9,700.0	9,493.2	9,605.1	9,493.8	37.5	31.5	1.89	239.9	1,273.0	1,388.6	1,325.4	63.25	21.955	
9,800.0	9,593.2	9,705.1	9,593.8	37.6	31.6	1.89	239.9	1,273.0	1,388.6	1,325.1	63.52	21.861	
9,900.0	9,693.2	9,805.1	9,693.8	37.7	31.7	1.89	239.9	1,273.0	1,388.6	1,324.8	63.79	21.767	
10,000.0	9,793.2	9,905.1	9,793.8	37.8	31.9	1.89	239.9	1,273.0	1,388.6	1,324.5	64.07	21.673	
10,100.0	9,893.2	10,005.1	9,893.8	37.9	32.0	1.89	239.9	1,273.0	1,388.6	1,324.3	64.35	21.579	
10,200.0	9,993.2	10,105.1	9,993.8	38.0	32.2	1.89	239.9	1,273.0	1,388.6	1,324.0	64.63	21.486	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,300.0	10,093.2	10,205.1	10,093.8	38.1	32.3	1.89	239.9	1,273.0	1,388.6	1,323.7	64.91	21.393	
10,400.0	10,193.2	10,305.1	10,193.8	38.2	32.5	1.89	239.9	1,273.0	1,388.6	1,323.4	65.19	21.299	
10,446.5	10,239.7	10,350.0	10,238.7	38.3	32.5	-87.79	240.0	1,273.0	1,388.6	1,323.3	65.33	21.256	
10,500.0	10,293.1	10,378.1	10,266.8	38.4	32.6	-87.72	240.2	1,273.7	1,389.1	1,323.7	65.44	21.227	
10,600.0	10,391.9	10,430.6	10,319.0	38.7	32.7	-87.54	242.0	1,278.5	1,392.2	1,326.4	65.74	21.175	
10,700.0	10,486.5	10,482.9	10,370.3	39.1	32.9	-87.29	245.3	1,287.7	1,397.9	1,331.7	66.19	21.121	
10,800.0	10,574.2	10,534.9	10,420.3	39.8	33.2	-86.95	250.2	1,301.3	1,406.3	1,339.5	66.79	21.056	
10,900.0	10,652.3	10,586.6	10,468.5	40.7	33.5	-86.53	256.6	1,318.8	1,417.2	1,349.7	67.56	20.976	
11,000.0	10,718.3	10,637.8	10,514.4	41.8	33.9	-86.01	264.4	1,340.2	1,430.7	1,362.2	68.54	20.874	
11,100.0	10,770.3	10,688.5	10,557.6	43.1	34.4	-85.38	273.5	1,365.1	1,446.7	1,377.0	69.72	20.749	
11,200.0	10,806.7	10,738.7	10,597.9	44.6	34.9	-84.64	283.7	1,393.2	1,465.1	1,394.0	71.11	20.603	
11,300.0	10,826.4	10,788.3	10,635.0	46.2	35.4	-83.78	294.9	1,424.0	1,485.7	1,413.1	72.68	20.442	
11,400.0	10,830.0	10,837.8	10,669.1	47.9	36.0	-83.66	307.2	1,457.7	1,508.7	1,434.3	74.39	20.279	
11,500.0	10,830.0	10,893.7	10,703.7	49.7	36.8	-85.06	322.2	1,499.0	1,535.0	1,458.6	76.37	20.098	
11,600.0	10,830.0	10,958.6	10,738.3	51.6	37.7	-86.45	341.0	1,550.5	1,564.2	1,485.5	78.72	19.870	
11,700.0	10,830.0	11,032.7	10,769.9	53.6	38.9	-87.70	363.9	1,613.5	1,595.6	1,514.1	81.51	19.576	
11,800.0	10,830.0	11,115.3	10,794.6	55.6	40.3	-88.66	390.8	1,687.5	1,628.4	1,543.6	84.74	19.215	
11,900.0	10,830.0	11,203.9	10,808.3	57.7	41.9	-89.18	420.7	1,769.6	1,661.7	1,573.4	88.33	18.812	
12,000.0	10,830.0	11,300.7	10,810.0	59.8	43.7	-89.26	453.8	1,860.5	1,695.3	1,603.0	92.34	18.360	
12,100.0	10,830.0	11,537.8	10,810.0	62.0	48.6	-89.29	525.0	2,086.7	1,724.8	1,622.9	101.93	16.922	
12,200.0	10,830.0	11,785.7	10,810.0	64.3	54.1	-89.31	579.2	2,328.5	1,746.1	1,634.2	111.88	15.607	
12,300.0	10,830.0	12,041.2	10,810.0	66.6	60.0	-89.33	613.0	2,581.7	1,758.8	1,636.9	121.83	14.436	
12,400.0	10,830.0	12,262.3	10,810.0	68.9	65.2	-89.33	623.7	2,802.5	1,762.4	1,632.1	130.32	13.524	
12,500.0	10,830.0	12,386.0	10,810.0	71.3	68.1	-89.33	624.7	2,926.1	1,762.5	1,626.6	135.89	12.970	
12,536.0	10,830.0	12,422.0	10,810.0	72.1	69.0	-89.33	624.9	2,962.1	1,762.4	1,624.8	137.67	12.802	
12,600.0	10,830.0	12,486.0	10,810.0	73.7	70.6	-89.33	625.2	3,026.1	1,762.4	1,621.6	140.83	12.514	
12,629.9	10,830.0	12,515.9	10,810.0	74.4	71.3	-89.33	625.4	3,056.0	1,762.4	1,620.1	142.33	12.383	
12,700.0	10,830.0	12,586.0	10,810.0	76.1	73.0	-89.33	625.8	3,126.1	1,762.4	1,616.6	145.82	12.086	
12,729.9	10,830.0	12,615.9	10,810.0	76.8	73.8	-89.33	626.0	3,156.0	1,762.4	1,615.1	147.33	11.963	
12,800.0	10,830.0	12,686.0	10,810.0	78.5	75.5	-89.33	626.4	3,226.1	1,762.4	1,611.5	150.85	11.683	
12,829.9	10,830.0	12,715.9	10,810.0	79.2	76.2	-89.33	626.6	3,256.0	1,762.4	1,610.0	152.36	11.567	
12,900.0	10,830.0	12,786.0	10,810.0	81.0	78.0	-89.33	627.0	3,326.1	1,762.4	1,606.5	155.91	11.304	
12,929.9	10,830.0	12,815.9	10,810.0	81.7	78.7	-89.33	627.1	3,356.0	1,762.4	1,604.9	157.43	11.195	
13,000.0	10,830.0	12,886.0	10,810.0	83.4	80.5	-89.33	627.5	3,426.1	1,762.3	1,601.3	161.00	10.946	
13,029.9	10,830.0	12,915.9	10,810.0	84.2	81.2	-89.33	627.7	3,456.0	1,762.3	1,599.8	162.53	10.843	
13,100.0	10,830.0	12,986.0	10,810.0	85.9	83.0	-89.33	628.1	3,526.1	1,762.3	1,596.2	166.11	10.609	
13,129.9	10,830.0	13,015.9	10,810.0	86.7	83.7	-89.33	628.3	3,556.0	1,762.3	1,594.7	167.65	10.512	
13,200.0	10,830.0	13,086.0	10,810.0	88.4	85.5	-89.33	628.7	3,626.1	1,762.3	1,591.0	171.25	10.291	
13,229.9	10,830.0	13,115.9	10,810.0	89.2	86.3	-89.33	628.9	3,656.0	1,762.3	1,589.5	172.80	10.198	
13,300.0	10,830.0	13,186.0	10,810.0	91.0	88.1	-89.33	629.3	3,726.1	1,762.3	1,585.8	176.42	9.989	
13,329.9	10,830.0	13,215.9	10,810.0	91.7	88.8	-89.33	629.4	3,756.0	1,762.3	1,584.3	177.97	9.902	
13,400.0	10,830.0	13,286.0	10,810.0	93.5	90.6	-89.33	629.8	3,826.1	1,762.2	1,580.6	181.60	9.704	
13,429.9	10,830.0	13,315.9	10,810.0	94.3	91.4	-89.33	630.0	3,856.0	1,762.2	1,579.1	183.16	9.621	
13,500.0	10,830.0	13,386.0	10,810.0	96.1	93.2	-89.33	630.4	3,926.1	1,762.2	1,575.4	186.81	9.433	
13,529.9	10,830.0	13,415.9	10,810.0	96.8	94.0	-89.33	630.6	3,956.0	1,762.2	1,573.8	188.37	9.355	
13,600.0	10,830.0	13,486.0	10,810.0	98.6	95.8	-89.33	631.0	4,026.1	1,762.2	1,570.2	192.03	9.177	
13,629.9	10,830.0	13,515.9	10,810.0	99.4	96.6	-89.33	631.2	4,056.0	1,762.2	1,568.6	193.60	9.102	
13,700.0	10,830.0	13,586.0	10,810.0	101.2	98.4	-89.33	631.6	4,126.1	1,762.2	1,564.9	197.27	8.933	
13,729.9	10,830.0	13,615.9	10,810.0	102.0	99.2	-89.33	631.7	4,156.0	1,762.2	1,563.3	198.84	8.862	
13,800.0	10,830.0	13,686.0	10,810.0	103.8	101.0	-89.33	632.1	4,226.1	1,762.2	1,559.6	202.52	8.701	
13,829.9	10,830.0	13,715.9	10,810.0	104.6	101.8	-89.33	632.3	4,256.0	1,762.1	1,558.0	204.09	8.634	
13,900.0	10,830.0	13,786.0	10,810.0	106.4	103.6	-89.33	632.7	4,326.1	1,762.1	1,554.3	207.79	8.481	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
13,929.9	10,830.0	13,815.9	10,810.0	107.2	104.4	-89.33	632.9	4,356.0	1,762.1	1,552.8	209.36	8.417	
14,000.0	10,830.0	13,886.0	10,810.0	109.0	106.2	-89.33	633.3	4,426.1	1,762.1	1,549.0	213.06	8.270	
14,029.9	10,830.0	13,915.9	10,810.0	109.8	107.0	-89.33	633.5	4,456.0	1,762.1	1,547.5	214.65	8.209	
14,100.0	10,830.0	13,986.0	10,810.0	111.6	108.8	-89.33	633.9	4,526.1	1,762.1	1,543.7	218.35	8.070	
14,129.9	10,830.0	14,015.9	10,810.0	112.4	109.6	-89.33	634.1	4,556.0	1,762.1	1,542.1	219.94	8.012	
14,200.0	10,830.0	14,086.0	10,810.0	114.2	111.5	-89.33	634.5	4,626.1	1,762.1	1,538.4	223.66	7.878	
14,229.9	10,830.0	14,115.9	10,810.0	115.0	112.2	-89.33	634.6	4,656.0	1,762.1	1,536.8	225.25	7.823	
14,300.0	10,830.0	14,186.0	10,810.0	116.9	114.1	-89.33	635.0	4,726.1	1,762.0	1,533.1	228.97	7.696	
14,329.9	10,830.0	14,215.9	10,810.0	117.6	114.9	-89.33	635.2	4,756.0	1,762.0	1,531.5	230.56	7.642	
14,400.0	10,830.0	14,286.0	10,810.0	119.5	116.7	-89.33	635.6	4,826.1	1,762.0	1,527.7	234.29	7.521	
14,429.9	10,830.0	14,315.9	10,810.0	120.3	117.5	-89.33	635.8	4,856.0	1,762.0	1,526.1	235.89	7.470	
14,500.0	10,830.0	14,386.0	10,810.0	122.1	119.4	-89.33	636.2	4,926.1	1,762.0	1,522.4	239.62	7.353	
14,529.9	10,830.0	14,415.9	10,810.0	122.9	120.2	-89.33	636.4	4,956.0	1,762.0	1,520.8	241.22	7.304	
14,600.0	10,830.0	14,486.0	10,810.0	124.8	122.0	-89.33	636.8	5,026.1	1,762.0	1,517.0	244.96	7.193	
14,629.9	10,830.0	14,515.9	10,810.0	125.6	122.8	-89.33	636.9	5,056.0	1,762.0	1,515.4	246.56	7.146	
14,700.0	10,830.0	14,586.0	10,810.0	127.4	124.7	-89.33	637.3	5,126.1	1,761.9	1,511.6	250.31	7.039	
14,729.9	10,830.0	14,615.9	10,810.0	128.2	125.5	-89.33	637.5	5,156.0	1,761.9	1,510.0	251.91	6.994	
14,800.0	10,830.0	14,686.0	10,810.0	130.1	127.3	-89.33	637.9	5,226.1	1,761.9	1,506.3	255.66	6.892	
14,829.9	10,830.0	14,715.9	10,810.0	130.9	128.1	-89.33	638.1	5,256.0	1,761.9	1,504.6	257.26	6.849	
14,900.0	10,830.0	14,786.0	10,810.0	132.7	130.0	-89.33	638.5	5,326.1	1,761.9	1,500.9	261.02	6.750	
14,929.9	10,830.0	14,815.9	10,810.0	133.5	130.8	-89.33	638.7	5,356.0	1,761.9	1,499.3	262.63	6.709	
15,000.0	10,830.0	14,886.0	10,810.0	135.4	132.7	-89.33	639.1	5,426.1	1,761.9	1,495.5	266.39	6.614	
15,029.9	10,830.0	14,915.9	10,810.0	136.2	133.5	-89.33	639.2	5,456.0	1,761.9	1,493.9	268.00	6.574	
15,100.0	10,830.0	14,986.0	10,810.0	138.0	135.4	-89.33	639.6	5,526.1	1,761.8	1,490.1	271.76	6.483	
15,129.9	10,830.0	15,015.9	10,810.0	138.8	136.2	-89.33	639.8	5,556.0	1,761.8	1,488.5	273.37	6.445	
15,200.0	10,830.0	15,086.0	10,810.0	140.7	138.0	-89.33	640.2	5,626.1	1,761.8	1,484.7	277.14	6.357	
15,229.9	10,830.0	15,115.9	10,810.0	141.5	138.8	-89.33	640.4	5,656.0	1,761.8	1,483.1	278.75	6.320	
15,300.0	10,830.0	15,186.0	10,810.0	143.4	140.7	-89.33	640.8	5,726.0	1,761.8	1,479.3	282.52	6.236	
15,329.9	10,830.0	15,215.9	10,810.0	144.2	141.5	-89.33	641.0	5,756.0	1,761.8	1,477.7	284.14	6.201	
15,400.0	10,830.0	15,286.0	10,810.0	146.1	143.4	-89.33	641.4	5,826.0	1,761.8	1,473.9	287.91	6.119	
15,429.9	10,830.0	15,315.9	10,810.0	146.9	144.2	-89.33	641.5	5,856.0	1,761.8	1,472.2	289.53	6.085	
15,500.0	10,830.0	15,386.0	10,810.0	148.7	146.1	-89.33	642.0	5,926.0	1,761.8	1,468.4	293.31	6.007	
15,529.9	10,830.0	15,415.9	10,810.0	149.5	146.9	-89.33	642.1	5,956.0	1,761.8	1,466.8	294.92	5.974	
15,600.0	10,830.0	15,486.0	10,810.0	151.4	148.8	-89.33	642.5	6,026.0	1,761.7	1,463.0	298.71	5.898	
15,629.9	10,830.0	15,515.9	10,810.0	152.2	149.6	-89.33	642.7	6,056.0	1,761.7	1,461.4	300.32	5.866	
15,700.0	10,830.0	15,586.0	10,810.0	154.1	151.5	-89.33	643.1	6,126.0	1,761.7	1,457.6	304.11	5.793	
15,729.9	10,830.0	15,615.9	10,810.0	154.9	152.3	-89.33	643.3	6,156.0	1,761.7	1,456.0	305.73	5.762	
15,800.0	10,830.0	15,686.0	10,810.0	156.8	154.1	-89.33	643.7	6,226.0	1,761.7	1,452.2	309.52	5.692	
15,829.9	10,830.0	15,715.9	10,810.0	157.6	154.9	-89.33	643.9	6,256.0	1,761.7	1,450.5	311.14	5.662	
15,900.0	10,830.0	15,786.0	10,810.0	159.5	156.8	-89.33	644.3	6,326.0	1,761.7	1,446.7	314.93	5.594	
15,929.9	10,830.0	15,815.9	10,810.0	160.3	157.6	-89.33	644.4	6,356.0	1,761.7	1,445.1	316.55	5.565	
16,000.0	10,830.0	15,886.0	10,810.0	162.2	159.5	-89.33	644.8	6,426.0	1,761.6	1,441.3	320.34	5.499	
16,029.9	10,830.0	15,915.9	10,810.0	163.0	160.3	-89.33	645.0	6,456.0	1,761.6	1,439.7	321.96	5.472	
16,100.0	10,830.0	15,986.0	10,810.0	164.9	162.2	-89.33	645.4	6,526.0	1,761.6	1,435.9	325.76	5.408	
16,129.9	10,830.0	16,015.9	10,810.0	165.7	163.0	-89.33	645.6	6,556.0	1,761.6	1,434.2	327.38	5.381	
16,200.0	10,830.0	16,086.0	10,810.0	167.6	164.9	-89.33	646.0	6,626.0	1,761.6	1,430.4	331.18	5.319	
16,229.9	10,830.0	16,115.9	10,810.0	168.4	165.7	-89.33	646.2	6,656.0	1,761.6	1,428.8	332.80	5.293	
16,300.0	10,830.0	16,186.0	10,810.0	170.3	167.6	-89.33	646.6	6,726.0	1,761.6	1,425.0	336.60	5.233	
16,329.9	10,830.0	16,215.9	10,810.0	171.1	168.4	-89.33	646.7	6,756.0	1,761.6	1,423.3	338.23	5.208	
16,400.0	10,830.0	16,286.0	10,810.0	173.0	170.3	-89.33	647.1	6,826.0	1,761.5	1,419.5	342.03	5.150	
16,429.9	10,830.0	16,315.9	10,810.0	173.8	171.2	-89.33	647.3	6,856.0	1,761.5	1,417.9	343.66	5.126	
16,500.0	10,830.0	16,386.0	10,810.0	175.7	173.1	-89.33	647.7	6,926.0	1,761.5	1,414.1	347.46	5.070	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
16,529.9	10,830.0	16,415.9	10,810.0	176.5	173.9	-89.33	647.9	6,956.0	1,761.5	1,412.4	349.09	5.046	
16,600.0	10,830.0	16,486.0	10,810.0	178.4	175.8	-89.33	648.3	7,026.0	1,761.5	1,408.6	352.89	4.992	
16,629.9	10,830.0	16,515.9	10,810.0	179.2	176.6	-89.33	648.5	7,056.0	1,761.5	1,407.0	354.52	4.969	
16,700.0	10,830.0	16,586.0	10,810.0	181.1	178.5	-89.33	648.9	7,126.0	1,761.5	1,403.1	358.33	4.916	
16,729.9	10,830.0	16,615.9	10,810.0	181.9	179.3	-89.33	649.0	7,156.0	1,761.5	1,401.5	359.96	4.894	
16,800.0	10,830.0	16,686.0	10,810.0	183.8	181.2	-89.33	649.4	7,226.0	1,761.5	1,397.7	363.77	4.842	
16,829.9	10,830.0	16,715.9	10,810.0	184.6	182.0	-89.33	649.6	7,256.0	1,761.4	1,396.1	365.40	4.821	
16,900.0	10,830.0	16,786.0	10,810.0	186.5	183.9	-89.33	650.0	7,326.0	1,761.4	1,392.2	369.21	4.771	
16,929.9	10,830.0	16,815.9	10,810.0	187.3	184.7	-89.33	650.2	7,356.0	1,761.4	1,390.6	370.84	4.750	
17,000.0	10,830.0	16,886.0	10,810.0	189.2	186.6	-89.33	650.6	7,426.0	1,761.4	1,386.8	374.65	4.701	
17,029.9	10,830.0	16,915.9	10,810.0	190.0	187.4	-89.33	650.8	7,456.0	1,761.4	1,385.1	376.28	4.681	
17,100.0	10,830.0	16,986.0	10,810.0	191.9	189.3	-89.33	651.2	7,526.0	1,761.4	1,381.3	380.10	4.634	
17,129.9	10,830.0	17,015.9	10,810.0	192.7	190.1	-89.33	651.3	7,556.0	1,761.4	1,379.7	381.73	4.614	
17,200.0	10,830.0	17,086.0	10,810.0	194.6	192.0	-89.33	651.8	7,626.0	1,761.4	1,375.8	385.54	4.569	
17,229.9	10,830.0	17,115.9	10,810.0	195.5	192.9	-89.33	651.9	7,656.0	1,761.4	1,374.2	387.17	4.549	
17,300.0	10,830.0	17,186.0	10,810.0	197.4	194.8	-89.33	652.3	7,726.0	1,761.3	1,370.3	390.99	4.505	
17,329.9	10,830.0	17,215.9	10,810.0	198.2	195.6	-89.33	652.5	7,756.0	1,761.3	1,368.7	392.62	4.486	
17,400.0	10,830.0	17,286.0	10,810.0	200.1	197.5	-89.33	652.9	7,826.0	1,761.3	1,364.9	396.44	4.443	
17,429.9	10,830.0	17,315.9	10,810.0	200.9	198.3	-89.33	653.1	7,855.9	1,761.3	1,363.2	398.07	4.425	
17,500.0	10,830.0	17,386.0	10,810.0	202.8	200.2	-89.33	653.5	7,926.0	1,761.3	1,359.4	401.90	4.382	
17,529.9	10,830.0	17,415.9	10,810.0	203.6	201.0	-89.33	653.7	7,955.9	1,761.3	1,357.8	403.53	4.365	
17,600.0	10,830.0	17,486.0	10,810.0	205.5	202.9	-89.33	654.1	8,026.0	1,761.3	1,353.9	407.35	4.324	
17,629.9	10,830.0	17,515.9	10,810.0	206.3	203.7	-89.33	654.2	8,055.9	1,761.3	1,352.3	408.98	4.306	
17,700.0	10,830.0	17,586.0	10,810.0	208.2	205.6	-89.33	654.6	8,126.0	1,761.2	1,348.4	412.81	4.267	
17,729.9	10,830.0	17,615.9	10,810.0	209.0	206.5	-89.33	654.8	8,155.9	1,761.2	1,346.8	414.44	4.250	
17,800.0	10,830.0	17,686.0	10,810.0	210.9	208.4	-89.33	655.2	8,226.0	1,761.2	1,343.0	418.26	4.211	
17,829.9	10,830.0	17,715.9	10,810.0	211.8	209.2	-89.33	655.4	8,255.9	1,761.2	1,341.3	419.90	4.194	
17,900.0	10,830.0	17,786.0	10,810.0	213.7	211.1	-89.33	655.8	8,326.0	1,761.2	1,337.5	423.72	4.156	
17,929.9	10,830.0	17,815.9	10,810.0	214.5	211.9	-89.33	656.0	8,355.9	1,761.2	1,335.8	425.36	4.141	
18,000.0	10,830.0	17,886.0	10,810.0	216.4	213.8	-89.33	656.4	8,426.0	1,761.2	1,332.0	429.18	4.104	
18,029.9	10,830.0	17,915.9	10,810.0	217.2	214.6	-89.33	656.5	8,455.9	1,761.2	1,330.4	430.82	4.088	
18,100.0	10,830.0	17,986.0	10,810.0	219.1	216.5	-89.33	656.9	8,526.0	1,761.2	1,326.5	434.65	4.052	
18,129.9	10,830.0	18,015.9	10,810.0	219.9	217.4	-89.33	657.1	8,555.9	1,761.1	1,324.9	436.28	4.037	
18,200.0	10,830.0	18,086.0	10,810.0	221.8	219.3	-89.33	657.5	8,626.0	1,761.1	1,321.0	440.11	4.002	
18,229.9	10,830.0	18,115.9	10,810.0	222.7	220.1	-89.33	657.7	8,655.9	1,761.1	1,319.4	441.75	3.987	
18,300.0	10,830.0	18,186.0	10,810.0	224.6	222.0	-89.33	658.1	8,726.0	1,761.1	1,315.5	445.57	3.952	
18,329.9	10,830.0	18,215.9	10,810.0	225.4	222.8	-89.33	658.3	8,755.9	1,761.1	1,313.9	447.21	3.938	
18,400.0	10,830.0	18,286.0	10,810.0	227.3	224.7	-89.33	658.7	8,826.0	1,761.1	1,310.0	451.04	3.904	
18,429.9	10,830.0	18,315.9	10,810.0	228.1	225.5	-89.33	658.8	8,855.9	1,761.1	1,308.4	452.68	3.890	
18,500.0	10,830.0	18,386.0	10,810.0	230.0	227.4	-89.33	659.2	8,926.0	1,761.1	1,304.6	456.51	3.858	
18,529.9	10,830.0	18,415.9	10,810.0	230.8	228.3	-89.33	659.4	8,955.9	1,761.1	1,302.9	458.14	3.844	
18,600.0	10,830.0	18,486.0	10,810.0	232.7	230.2	-89.33	659.8	9,026.0	1,761.0	1,299.1	461.98	3.812	
18,629.9	10,830.0	18,515.9	10,810.0	233.6	231.0	-89.33	660.0	9,055.9	1,761.0	1,297.4	463.61	3.798	
18,700.0	10,830.0	18,586.0	10,810.0	235.5	232.9	-89.33	660.4	9,126.0	1,761.0	1,293.6	467.45	3.767	
18,729.9	10,830.0	18,615.9	10,810.0	236.3	233.7	-89.33	660.6	9,155.9	1,761.0	1,291.9	469.08	3.754	
18,800.0	10,830.0	18,686.0	10,810.0	238.2	235.6	-89.33	661.0	9,226.0	1,761.0	1,288.1	472.92	3.724	
18,829.9	10,830.0	18,715.9	10,810.0	239.0	236.5	-89.33	661.1	9,255.9	1,761.0	1,286.4	474.56	3.711	
18,900.0	10,830.0	18,786.0	10,810.0	240.9	238.4	-89.33	661.6	9,326.0	1,761.0	1,282.6	478.39	3.681	
18,929.9	10,830.0	18,815.9	10,810.0	241.7	239.2	-89.33	661.7	9,355.9	1,761.0	1,280.9	480.03	3.668	
19,000.0	10,830.0	18,886.0	10,810.0	243.7	241.1	-89.33	662.1	9,426.0	1,760.9	1,277.1	483.86	3.639	
19,029.9	10,830.0	18,915.9	10,810.0	244.5	241.9	-89.33	662.3	9,455.9	1,760.9	1,275.4	485.50	3.627	
19,100.0	10,830.0	18,986.0	10,810.0	246.4	243.8	-89.33	662.7	9,526.0	1,760.9	1,271.6	489.34	3.599	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 231H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
19,129.9	10,830.0	19,015.9	10,810.0	247.2	244.7	-89.33	662.9	9,555.9	1,760.9	1,269.9	490.98	3.587	
19,200.0	10,830.0	19,086.0	10,810.0	249.1	246.6	-89.33	663.3	9,626.0	1,760.9	1,266.1	494.81	3.559	
19,229.9	10,830.0	19,115.9	10,810.0	249.9	247.4	-89.33	663.5	9,655.9	1,760.9	1,264.4	496.45	3.547	
19,300.0	10,830.0	19,186.0	10,810.0	251.9	249.3	-89.33	663.9	9,726.0	1,760.9	1,260.6	500.29	3.520	
19,329.9	10,830.0	19,215.9	10,810.0	252.7	250.1	-89.33	664.0	9,755.9	1,760.9	1,258.9	501.93	3.508	
19,400.0	10,830.0	19,286.0	10,810.0	254.6	252.0	-89.33	664.4	9,826.0	1,760.9	1,255.1	505.76	3.482	
19,429.9	10,830.0	19,315.9	10,810.0	255.4	252.9	-89.33	664.6	9,855.9	1,760.8	1,253.4	507.40	3.470	
19,500.0	10,830.0	19,386.0	10,810.0	257.3	254.8	-89.33	665.0	9,926.0	1,760.8	1,249.6	511.24	3.444	
19,529.9	10,830.0	19,415.9	10,810.0	258.1	255.6	-89.33	665.2	9,955.9	1,760.8	1,247.9	512.88	3.433	
19,600.0	10,830.0	19,486.0	10,810.0	260.1	257.5	-89.33	665.6	10,026.0	1,760.8	1,244.1	516.72	3.408	
19,629.9	10,830.0	19,515.9	10,810.0	260.9	258.3	-89.33	665.8	10,055.9	1,760.8	1,242.4	518.36	3.397	
19,700.0	10,830.0	19,586.0	10,810.0	262.8	260.2	-89.33	666.2	10,126.0	1,760.8	1,238.6	522.20	3.372	
19,729.9	10,830.0	19,615.9	10,810.0	263.6	261.1	-89.33	666.3	10,155.9	1,760.8	1,236.9	523.84	3.361	
19,800.0	10,830.0	19,686.0	10,810.0	265.5	263.0	-89.33	666.7	10,226.0	1,760.8	1,233.1	527.68	3.337	
19,829.9	10,830.0	19,715.9	10,810.0	266.3	263.8	-89.33	666.9	10,255.9	1,760.8	1,231.4	529.32	3.326	
19,900.0	10,830.0	19,786.0	10,810.0	268.3	265.7	-89.33	667.3	10,326.0	1,760.7	1,227.6	533.16	3.302	
19,929.9	10,830.0	19,815.9	10,810.0	269.1	266.5	-89.33	667.5	10,355.9	1,760.7	1,225.9	534.80	3.292	
20,000.0	10,830.0	19,886.0	10,810.0	271.0	268.5	-89.33	667.9	10,426.0	1,760.7	1,222.1	538.64	3.269	
20,029.9	10,830.0	19,915.9	10,810.0	271.8	269.3	-89.33	668.1	10,455.9	1,760.7	1,220.4	540.28	3.259	
20,100.0	10,830.0	19,986.0	10,810.0	273.7	271.2	-89.33	668.5	10,526.0	1,760.7	1,216.6	544.13	3.236	
20,129.9	10,830.0	20,015.9	10,810.0	274.6	272.0	-89.33	668.6	10,555.9	1,760.7	1,214.9	545.77	3.226	
20,200.0	10,830.0	20,086.0	10,810.0	276.5	273.9	-89.33	669.0	10,626.0	1,760.7	1,211.1	549.61	3.203	
20,229.9	10,830.0	20,115.9	10,810.0	277.3	274.8	-89.33	669.2	10,655.9	1,760.7	1,209.4	551.25	3.194	
20,300.0	10,830.0	20,186.0	10,810.0	279.2	276.7	-89.33	669.6	10,726.0	1,760.6	1,205.6	555.09	3.172	
20,329.9	10,830.0	20,215.9	10,810.0	280.0	277.5	-89.33	669.8	10,755.9	1,760.6	1,203.9	556.73	3.162	
20,400.0	10,830.0	20,286.0	10,810.0	281.9	279.4	-89.33	670.2	10,826.0	1,760.6	1,200.0	560.58	3.141	
20,429.9	10,830.0	20,315.9	10,810.0	282.8	280.2	-89.33	670.4	10,855.9	1,760.6	1,198.4	562.22	3.132	
20,500.0	10,830.0	20,386.0	10,810.0	284.7	282.1	-89.33	670.8	10,926.0	1,760.6	1,194.5	566.06	3.110	
20,529.9	10,830.0	20,415.9	10,810.0	285.5	283.0	-89.33	671.0	10,955.9	1,760.6	1,192.9	567.70	3.101	
20,600.0	10,830.0	20,486.0	10,810.0	287.4	284.9	-89.33	671.4	11,026.0	1,760.6	1,189.0	571.55	3.080	
20,629.9	10,830.0	20,515.9	10,810.0	288.2	285.7	-89.33	671.5	11,055.9	1,760.6	1,187.4	573.19	3.072	
20,700.0	10,830.0	20,586.0	10,810.0	290.2	287.6	-89.33	671.9	11,126.0	1,760.6	1,183.5	577.03	3.051	
20,729.9	10,830.0	20,615.9	10,810.0	291.0	288.4	-89.33	672.1	11,155.9	1,760.5	1,181.9	578.68	3.042	
20,800.0	10,830.0	20,686.0	10,810.0	292.9	290.4	-89.33	672.5	11,226.0	1,760.5	1,178.0	582.52	3.022	
20,829.9	10,830.0	20,715.9	10,810.0	293.7	291.2	-89.33	672.7	11,255.9	1,760.5	1,176.4	584.16	3.014	
20,900.0	10,830.0	20,786.0	10,810.0	295.6	293.1	-89.33	673.1	11,326.0	1,760.5	1,172.5	588.01	2.994	
20,929.9	10,830.0	20,815.9	10,810.0	296.5	293.9	-89.33	673.3	11,355.9	1,760.5	1,170.8	589.65	2.986	
21,000.0	10,830.0	20,886.0	10,810.0	298.4	295.9	-89.33	673.7	11,426.0	1,760.5	1,167.0	593.50	2.966	
21,029.9	10,830.0	20,915.9	10,810.0	299.2	296.7	-89.33	673.8	11,455.9	1,760.5	1,165.3	595.14	2.958	
21,100.0	10,830.0	20,986.0	10,810.0	301.1	298.6	-89.33	674.2	11,526.0	1,760.5	1,161.5	598.99	2.939	
21,129.9	10,830.0	21,015.9	10,810.0	301.9	299.4	-89.33	674.4	11,555.9	1,760.5	1,159.8	600.63	2.931	
21,200.0	10,830.0	21,086.0	10,810.0	303.9	301.3	-89.33	674.8	11,626.0	1,760.4	1,156.0	604.48	2.912	
21,229.9	10,830.0	21,115.9	10,810.0	304.7	302.2	-89.33	675.0	11,655.9	1,760.4	1,154.3	606.12	2.904	
21,300.0	10,830.0	21,186.0	10,810.0	306.6	304.1	-89.33	675.4	11,725.9	1,760.4	1,150.4	609.97	2.886	
21,329.9	10,830.0	21,215.9	10,810.0	307.4	304.9	-89.33	675.6	11,755.9	1,760.4	1,148.8	611.61	2.878	
21,400.0	10,830.0	21,286.0	10,810.0	309.3	306.8	-89.33	676.0	11,825.9	1,760.4	1,144.9	615.46	2.860	
21,429.9	10,830.0	21,315.9	10,810.0	310.2	307.6	-89.33	676.1	11,855.9	1,760.4	1,143.3	617.10	2.853	
21,500.0	10,830.0	21,386.0	10,810.0	312.1	309.6	-89.33	676.5	11,925.9	1,760.4	1,139.4	620.95	2.835	
21,529.9	10,830.0	21,415.9	10,810.0	312.9	310.4	-89.33	676.7	11,955.9	1,760.4	1,137.8	622.59	2.827	
21,568.7	10,830.0	21,454.3	10,810.0	314.0	311.4	-89.33	676.9	11,994.2	1,760.3	1,135.6	624.71	2.818	
21,580.3	10,830.0	21,454.3	10,810.0	314.3	311.4	-89.33	676.9	11,994.2	1,760.4	1,135.4	624.98	2.817 SF	

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Rule Assigned:

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.0	0.0	0.1	0.1	0.5	0.5	0.29	20.0	0.1	20.0				
100.0	100.0	100.1	100.1	0.5	0.5	0.29	20.0	0.1	20.0	19.0	1.06	18.989	
200.0	200.0	200.1	200.1	0.6	0.6	0.29	20.0	0.1	20.0	18.8	1.27	15.749	
300.0	300.0	300.1	300.1	0.8	0.8	0.29	20.0	0.1	20.0	18.5	1.59	12.602	
400.0	400.0	400.1	400.1	1.0	1.0	0.29	20.0	0.1	20.0	18.1	1.96	10.223	
500.0	500.0	500.1	500.1	1.2	1.2	0.29	20.0	0.1	20.0	17.7	2.36	8.499	
600.0	600.0	600.1	600.1	1.4	1.4	0.29	20.0	0.1	20.0	17.3	2.77	7.230	
700.0	700.0	700.1	700.1	1.6	1.6	0.29	20.0	0.1	20.0	16.8	3.20	6.272	
800.0	800.0	800.1	800.1	1.8	1.8	0.29	20.0	0.1	20.0	16.4	3.62	5.529	
900.0	900.0	900.1	900.1	2.0	2.0	0.29	20.0	0.1	20.0	16.0	4.06	4.938	
1,000.0	1,000.0	1,000.1	1,000.1	2.2	2.2	0.29	20.0	0.1	20.0	15.5	4.50	4.458	
1,100.0	1,100.0	1,100.1	1,100.1	2.5	2.5	0.29	20.0	0.1	20.0	15.1	4.94	4.061	
1,200.0	1,200.0	1,200.1	1,200.1	2.7	2.7	0.29	20.0	0.1	20.0	14.7	5.38	3.728	
1,300.0	1,300.0	1,300.1	1,300.1	2.9	2.9	0.29	20.0	0.1	20.0	14.2	5.82	3.444	
1,400.0	1,400.0	1,400.1	1,400.1	3.1	3.1	0.29	20.0	0.1	20.0	13.8	6.26	3.200	
1,500.0	1,500.0	1,500.1	1,500.1	3.4	3.4	0.29	20.0	0.1	20.0	13.3	6.71	2.988	
1,600.0	1,600.0	1,600.1	1,600.1	3.6	3.6	0.29	20.0	0.1	20.0	12.9	7.15	2.803	
1,700.0	1,700.0	1,700.1	1,700.1	3.8	3.8	0.29	20.0	0.1	20.0	12.4	7.60	2.638	
1,800.0	1,800.0	1,800.1	1,800.1	4.0	4.0	0.29	20.0	0.1	20.0	12.0	8.04	2.492	CC, ES
1,900.0	1,900.0	1,900.1	1,900.1	4.2	4.2	-136.24	20.0	0.1	21.3	12.8	8.46	2.512	
2,000.0	1,999.8	1,999.9	1,999.9	4.4	4.5	-144.41	20.0	0.1	25.3	16.4	8.87	2.853	
2,100.0	2,099.5	2,099.6	2,099.6	4.6	4.7	-153.23	20.0	0.1	32.8	23.5	9.28	3.534	
2,200.0	2,198.7	2,198.8	2,198.8	4.8	4.9	-160.31	20.0	0.1	44.0	34.3	9.69	4.542	
2,300.0	2,297.5	2,299.0	2,298.9	5.0	5.1	-164.20	19.7	1.8	57.8	47.7	10.09	5.729	
2,400.0	2,395.6	2,399.4	2,399.3	5.3	5.3	-165.27	18.6	6.9	72.7	62.2	10.48	6.933	
2,500.0	2,493.1	2,500.2	2,499.6	5.6	5.5	-164.89	16.7	15.5	88.4	77.6	10.88	8.126	
2,600.0	2,589.9	2,601.2	2,599.9	5.9	5.7	-163.62	14.1	27.5	104.3	93.0	11.30	9.225	
2,700.0	2,686.7	2,702.9	2,700.3	6.3	6.0	-161.43	10.7	43.1	117.9	106.2	11.75	10.039	
2,800.0	2,783.5	2,804.8	2,800.3	6.6	6.2	-158.45	6.5	62.3	129.5	117.3	12.24	10.582	
2,900.0	2,880.2	2,904.0	2,897.3	7.0	6.5	-155.44	2.1	82.6	140.3	127.5	12.80	10.965	
3,000.0	2,977.0	3,003.2	2,994.3	7.5	6.8	-152.86	-2.3	102.9	151.5	138.1	13.39	11.313	
3,100.0	3,073.8	3,102.3	3,091.2	7.9	7.1	-150.64	-6.7	123.3	162.9	148.9	14.01	11.622	
3,200.0	3,170.6	3,201.5	3,188.2	8.3	7.5	-148.72	-11.1	143.6	174.5	159.8	14.67	11.897	
3,300.0	3,267.4	3,300.7	3,285.1	8.8	7.8	-147.03	-15.5	164.0	186.3	170.9	15.35	12.139	
3,400.0	3,364.2	3,399.8	3,382.1	9.2	8.1	-145.55	-20.0	184.3	198.2	182.2	16.05	12.352	
3,500.0	3,461.0	3,499.0	3,479.0	9.7	8.5	-144.23	-24.4	204.7	210.3	193.5	16.77	12.539	
3,600.0	3,557.7	3,598.1	3,576.0	10.2	8.9	-143.06	-28.8	225.0	222.4	204.9	17.51	12.703	
3,700.0	3,654.5	3,697.3	3,672.9	10.7	9.2	-142.01	-33.2	245.3	234.6	216.4	18.26	12.848	
3,800.0	3,751.3	3,796.5	3,769.9	11.1	9.6	-141.06	-37.6	265.7	246.9	227.9	19.03	12.975	
3,900.0	3,848.1	3,895.6	3,866.8	11.6	10.0	-140.20	-42.0	286.0	259.3	239.5	19.81	13.088	
4,000.0	3,944.9	3,994.8	3,963.8	12.1	10.4	-139.42	-46.5	306.4	271.7	251.1	20.60	13.188	
4,100.0	4,041.7	4,094.0	4,060.7	12.6	10.8	-138.71	-50.9	326.7	284.1	262.7	21.40	13.277	
4,200.0	4,138.5	4,193.1	4,157.7	13.1	11.2	-138.06	-55.3	347.0	296.6	274.4	22.21	13.356	
4,300.0	4,235.3	4,292.3	4,254.7	13.6	11.6	-137.46	-59.7	367.4	309.2	286.1	23.03	13.426	
4,400.0	4,332.0	4,391.4	4,351.6	14.1	12.0	-136.91	-64.1	387.7	321.7	297.9	23.85	13.490	
4,500.0	4,428.8	4,490.6	4,448.6	14.6	12.4	-136.40	-68.6	408.1	334.3	309.6	24.68	13.547	
4,600.0	4,525.6	4,589.8	4,545.5	15.1	12.8	-135.93	-73.0	428.4	346.9	321.4	25.51	13.598	
4,700.0	4,622.4	4,688.9	4,642.5	15.6	13.2	-135.49	-77.4	448.8	359.5	333.2	26.35	13.644	
4,800.0	4,719.2	4,788.1	4,739.4	16.1	13.7	-135.08	-81.8	469.1	372.2	345.0	27.19	13.686	
4,900.0	4,816.0	4,887.3	4,836.4	16.6	14.1	-134.69	-86.2	489.4	384.8	356.8	28.04	13.724	
5,000.0	4,912.8	4,986.4	4,933.3	17.1	14.5	-134.33	-90.6	509.8	397.5	368.6	28.89	13.758	
5,100.0	5,009.5	5,085.6	5,030.3	17.6	14.9	-134.00	-95.1	530.1	410.2	380.5	29.75	13.790	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
5,200.0	5,106.3	5,184.7	5,127.2	18.1	15.3	-133.68	-99.5	550.5	422.9	392.3	30.61	13.819	
5,300.0	5,203.1	5,283.9	5,224.2	18.6	15.8	-133.38	-103.9	570.8	435.7	404.2	31.47	13.845	
5,400.0	5,299.9	5,383.1	5,321.1	19.1	16.2	-133.10	-108.3	591.1	448.4	416.1	32.33	13.869	
5,500.0	5,396.7	5,482.2	5,418.1	19.7	16.6	-132.84	-112.7	611.5	461.1	427.9	33.20	13.891	
5,600.0	5,493.5	5,581.4	5,515.0	20.2	17.0	-132.58	-117.1	631.8	473.9	439.8	34.06	13.912	
5,700.0	5,590.3	5,680.6	5,612.0	20.7	17.5	-132.35	-121.6	652.2	486.6	451.7	34.93	13.931	
5,800.0	5,687.1	5,779.7	5,709.0	21.2	17.9	-132.12	-126.0	672.5	499.4	463.6	35.80	13.948	
5,900.0	5,783.8	5,878.9	5,805.9	21.7	18.3	-131.91	-130.4	692.9	512.2	475.5	36.68	13.964	
6,000.0	5,880.6	5,978.0	5,902.9	22.2	18.8	-131.70	-134.8	713.2	525.0	487.4	37.55	13.979	
6,100.0	5,977.4	6,077.2	5,999.8	22.7	19.2	-131.51	-139.2	733.5	537.8	499.3	38.43	13.993	
6,200.0	6,074.2	6,176.4	6,096.8	23.3	19.6	-131.32	-143.6	753.9	550.6	511.3	39.31	14.006	
6,300.0	6,171.0	6,275.5	6,193.7	23.8	20.1	-131.14	-148.1	774.2	563.4	523.2	40.19	14.018	
6,400.0	6,267.8	6,374.7	6,290.7	24.3	20.5	-130.97	-152.5	794.6	576.2	535.1	41.07	14.030	
6,500.0	6,364.6	6,473.9	6,387.6	24.8	20.9	-130.81	-156.9	814.9	589.0	547.0	41.95	14.040	
6,600.0	6,461.3	6,573.0	6,484.6	25.3	21.4	-130.66	-161.3	835.2	601.8	559.0	42.83	14.050	
6,700.0	6,558.1	6,672.2	6,581.5	25.8	21.8	-130.51	-165.7	855.6	614.6	570.9	43.72	14.059	
6,800.0	6,654.9	6,771.3	6,678.5	26.4	22.2	-130.37	-170.1	875.9	627.4	582.8	44.60	14.068	
6,900.0	6,751.7	6,870.5	6,775.4	26.9	22.7	-130.23	-174.6	896.3	640.3	594.8	45.49	14.076	
7,000.0	6,848.5	6,969.7	6,872.4	27.4	23.1	-130.10	-179.0	916.6	653.1	606.7	46.37	14.084	
7,100.0	6,945.3	7,068.8	6,969.3	27.9	23.6	-129.97	-183.4	936.9	665.9	618.7	47.26	14.091	
7,200.0	7,042.1	7,168.0	7,066.3	28.4	24.0	-129.85	-187.8	957.3	678.8	630.6	48.15	14.098	
7,300.0	7,138.9	7,267.2	7,163.3	28.9	24.4	-129.73	-192.2	977.6	691.6	642.6	49.04	14.104	
7,400.0	7,235.6	7,366.3	7,260.2	29.5	24.9	-129.62	-196.6	998.0	704.4	654.5	49.92	14.110	
7,500.0	7,332.4	7,465.5	7,357.2	30.0	25.3	-129.51	-201.1	1,018.3	717.3	666.5	50.81	14.116	
7,600.0	7,429.2	7,564.6	7,454.1	30.5	25.7	-129.41	-205.5	1,038.7	730.1	678.4	51.70	14.121	
7,700.0	7,526.0	7,663.8	7,551.1	31.0	26.2	-129.31	-209.9	1,059.0	743.0	690.4	52.60	14.126	
7,800.0	7,622.8	7,763.0	7,648.0	31.5	26.6	-129.21	-214.3	1,079.3	755.8	702.3	53.49	14.131	
7,900.0	7,719.6	7,862.1	7,745.0	32.1	27.1	-129.11	-218.7	1,099.7	768.7	714.3	54.38	14.136	
8,000.0	7,816.4	7,961.3	7,841.9	32.6	27.5	-129.02	-223.2	1,120.0	781.5	726.3	55.27	14.140	
8,100.0	7,913.2	8,060.5	7,938.9	33.1	27.9	-128.93	-227.6	1,140.4	794.4	738.2	56.16	14.144	
8,200.0	8,009.9	8,159.6	8,035.8	33.6	28.4	-128.85	-232.0	1,160.7	807.3	750.2	57.06	14.148	
8,300.0	8,106.7	8,258.8	8,132.8	34.1	28.8	-128.77	-236.4	1,181.0	820.1	762.2	57.95	14.152	
8,400.0	8,203.5	8,357.9	8,229.7	34.7	29.3	-128.68	-240.8	1,201.4	833.0	774.1	58.85	14.155	
8,500.0	8,300.3	8,457.1	8,326.7	35.2	29.7	-128.65	-245.2	1,221.7	845.8	786.1	59.73	14.159	
8,600.0	8,397.7	8,555.4	8,422.8	35.6	30.1	-128.63	-249.6	1,241.8	857.1	796.6	60.53	14.159	
8,700.0	8,495.8	8,650.7	8,516.5	35.9	30.5	-128.57	-253.3	1,259.0	866.7	805.5	61.20	14.160	
8,800.0	8,594.5	8,746.4	8,611.0	36.2	30.7	-128.52	-256.4	1,273.3	874.5	812.7	61.78	14.155	
8,900.0	8,693.8	8,842.1	8,706.1	36.4	31.0	-128.49	-258.9	1,284.4	880.6	818.4	62.27	14.141	
9,000.0	8,793.3	8,938.0	8,801.6	36.6	31.2	-128.46	-260.6	1,292.5	885.1	822.4	62.69	14.118	
9,100.0	8,893.2	9,034.1	8,897.5	36.8	31.3	-128.45	-261.7	1,297.4	887.8	824.7	63.03	14.085	
9,200.0	8,993.2	9,130.1	8,993.5	36.9	31.5	-128.44	-262.1	1,299.2	888.8	825.5	63.30	14.041	
9,300.0	9,093.2	9,229.8	9,093.3	37.0	31.6	4.65	-262.1	1,299.2	888.8	825.2	63.55	13.986	
9,400.0	9,193.2	9,329.8	9,193.3	37.1	31.7	4.65	-262.1	1,299.2	888.8	825.0	63.80	13.930	
9,500.0	9,293.2	9,429.8	9,293.3	37.2	31.9	4.65	-262.1	1,299.2	888.8	824.7	64.06	13.874	
9,600.0	9,393.2	9,529.8	9,393.3	37.3	32.0	4.65	-262.1	1,299.2	888.8	824.4	64.32	13.818	
9,700.0	9,493.2	9,629.8	9,493.3	37.5	32.1	4.65	-262.1	1,299.2	888.8	824.2	64.58	13.762	
9,800.0	9,593.2	9,729.8	9,593.3	37.6	32.3	4.65	-262.1	1,299.2	888.8	823.9	64.85	13.706	
9,900.0	9,693.2	9,829.8	9,693.3	37.7	32.4	4.65	-262.1	1,299.2	888.8	823.6	65.11	13.650	
10,000.0	9,793.2	9,929.8	9,793.3	37.8	32.5	4.65	-262.1	1,299.2	888.8	823.4	65.38	13.594	
10,100.0	9,893.2	10,029.8	9,893.3	37.9	32.7	4.65	-262.1	1,299.2	888.8	823.1	65.65	13.538	
10,200.0	9,993.2	10,129.8	9,993.3	38.0	32.8	4.65	-262.1	1,299.2	888.8	822.8	65.92	13.482	
10,300.0	10,093.2	10,229.8	10,093.3	38.1	33.0	4.65	-262.1	1,299.2	888.8	822.6	66.20	13.426	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Rule Assigned:

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
10,400.0	10,193.2	10,329.8	10,193.3	38.2	33.1	4.65	-262.1	1,299.2	888.8	822.3	66.47	13.370	
10,500.0	10,293.1	10,424.3	10,287.7	38.4	33.3	-84.98	-262.1	1,300.6	888.8	822.0	66.78	13.309	
10,600.0	10,391.9	10,512.4	10,374.8	38.7	33.6	-84.99	-262.0	1,313.6	888.8	821.4	67.36	13.195	
10,700.0	10,486.5	10,600.0	10,458.3	39.1	34.0	-85.14	-261.8	1,339.6	888.6	820.3	68.27	13.015	
10,747.1	10,528.9	10,642.3	10,497.1	39.5	34.4	-85.26	-261.7	1,356.6	888.4	819.5	68.89	12.896	
10,800.0	10,574.2	10,689.3	10,538.5	39.8	34.7	-85.43	-261.6	1,378.8	888.2	818.6	69.61	12.760	
10,843.0	10,609.1	10,727.6	10,570.8	40.2	35.1	-85.59	-261.5	1,399.4	888.0	817.7	70.33	12.626	
10,900.0	10,652.3	10,778.6	10,611.5	40.7	35.6	-85.84	-261.3	1,430.0	887.7	816.4	71.33	12.444	
10,937.7	10,678.7	10,812.5	10,637.0	41.1	36.0	-86.02	-261.2	1,452.3	887.5	815.3	72.12	12.306	
11,000.0	10,718.3	10,868.8	10,676.3	41.8	36.7	-86.36	-261.0	1,492.6	887.1	813.6	73.49	12.071	
11,035.4	10,738.4	10,900.0	10,696.3	42.2	37.2	-86.57	-260.9	1,516.6	886.9	812.5	74.35	11.929	
11,100.0	10,770.3	10,960.1	10,731.1	43.1	38.0	-86.99	-260.6	1,565.6	886.5	810.4	76.10	11.650	
11,134.4	10,784.7	10,991.8	10,747.3	43.6	38.5	-87.23	-260.4	1,592.8	886.3	809.2	77.12	11.493	
11,200.0	10,806.7	11,052.8	10,774.1	44.6	39.6	-87.71	-260.1	1,647.6	885.9	806.8	79.15	11.194	
11,234.3	10,815.4	11,084.9	10,785.9	45.1	40.1	-87.97	-260.0	1,677.5	885.8	805.5	80.31	11.030	
11,300.0	10,826.4	11,147.2	10,803.8	46.2	41.3	-88.50	-259.6	1,737.0	885.5	802.9	82.60	10.720	
11,335.1	10,829.7	11,180.8	10,810.8	46.8	41.9	-88.76	-259.5	1,769.9	885.4	801.5	83.91	10.552	
11,400.0	10,830.0	11,243.6	10,818.6	47.9	43.1	-89.26	-259.1	1,832.2	885.2	798.8	86.39	10.247	
11,437.1	10,830.0	11,280.1	10,820.0	48.6	43.9	-89.35	-258.9	1,868.6	885.2	797.3	87.86	10.074	
11,500.0	10,830.0	11,342.9	10,820.0	49.7	45.1	-89.35	-258.6	1,931.4	885.1	794.7	90.43	9.788	
11,531.4	10,830.0	11,374.3	10,820.0	50.3	45.8	-89.35	-258.4	1,962.8	885.1	793.4	91.74	9.648	
11,600.0	10,830.0	11,442.9	10,820.0	51.6	47.2	-89.35	-258.0	2,031.4	885.1	790.5	94.64	9.352	
11,630.6	10,830.0	11,473.4	10,820.0	52.2	47.9	-89.35	-257.9	2,062.0	885.1	789.1	95.96	9.224	
11,700.0	10,830.0	11,542.9	10,820.0	53.6	49.4	-89.35	-257.5	2,131.4	885.0	786.1	98.98	8.942	
11,730.6	10,830.0	11,573.4	10,820.0	54.2	50.0	-89.35	-257.3	2,162.0	885.0	784.7	100.33	8.821	
11,800.0	10,830.0	11,642.9	10,820.0	55.6	51.6	-89.35	-256.9	2,231.4	885.0	781.6	103.42	8.557	
11,830.6	10,830.0	11,673.4	10,820.0	56.2	52.3	-89.35	-256.8	2,262.0	885.0	780.2	104.81	8.444	
11,900.0	10,830.0	11,742.9	10,820.0	57.7	53.8	-89.35	-256.4	2,331.4	884.9	777.0	107.97	8.196	
11,930.6	10,830.0	11,773.4	10,820.0	58.3	54.5	-89.35	-256.2	2,362.0	884.9	775.5	109.38	8.090	
12,000.0	10,830.0	11,842.9	10,820.0	59.8	56.1	-89.35	-255.8	2,431.4	884.9	772.3	112.61	7.858	
12,030.6	10,830.0	11,873.4	10,820.0	60.5	56.8	-89.35	-255.7	2,462.0	884.9	770.8	114.04	7.759	
12,100.0	10,830.0	11,942.9	10,820.0	62.0	58.5	-89.35	-255.3	2,531.4	884.8	767.5	117.32	7.542	
12,130.6	10,830.0	11,973.4	10,820.0	62.7	59.2	-89.35	-255.1	2,562.0	884.8	766.1	118.78	7.450	
12,200.0	10,830.0	12,042.9	10,820.0	64.3	60.9	-89.35	-254.7	2,631.4	884.8	762.7	122.10	7.247	
12,230.6	10,830.0	12,073.4	10,820.0	65.0	61.6	-89.35	-254.6	2,662.0	884.8	761.2	123.57	7.160	
12,300.0	10,830.0	12,142.9	10,820.0	66.6	63.3	-89.35	-254.2	2,731.4	884.7	757.8	126.94	6.970	
12,330.6	10,830.0	12,173.4	10,820.0	67.3	64.0	-89.35	-254.0	2,762.0	884.7	756.3	128.43	6.889	
12,400.0	10,830.0	12,242.9	10,820.0	68.9	65.7	-89.35	-253.6	2,831.4	884.7	752.9	131.83	6.711	
12,430.6	10,830.0	12,273.4	10,820.0	69.6	66.4	-89.35	-253.5	2,862.0	884.7	751.3	133.34	6.635	
12,500.0	10,830.0	12,342.9	10,820.0	71.3	68.2	-89.35	-253.1	2,931.4	884.6	747.9	136.77	6.468	
12,530.6	10,830.0	12,373.4	10,820.0	72.0	68.9	-89.35	-252.9	2,962.0	884.6	746.3	138.29	6.397	
12,600.0	10,830.0	12,442.9	10,820.0	73.7	70.6	-89.35	-252.5	3,031.4	884.6	742.8	141.75	6.241	
12,630.6	10,830.0	12,473.4	10,820.0	74.4	71.4	-89.35	-252.4	3,062.0	884.6	741.3	143.28	6.174	
12,700.0	10,830.0	12,542.9	10,820.0	76.1	73.1	-89.35	-252.0	3,131.4	884.5	737.8	146.77	6.027	
12,730.6	10,830.0	12,573.4	10,820.0	76.8	73.9	-89.35	-251.8	3,162.0	884.5	736.2	148.32	5.964	
12,800.0	10,830.0	12,642.9	10,820.0	78.5	75.7	-89.35	-251.4	3,231.4	884.5	732.7	151.83	5.826	
12,830.6	10,830.0	12,673.4	10,820.0	79.3	76.4	-89.35	-251.3	3,262.0	884.5	731.1	153.38	5.767	
12,900.0	10,830.0	12,742.9	10,820.0	81.0	78.2	-89.35	-250.9	3,331.4	884.4	727.5	156.91	5.637	
12,930.6	10,830.0	12,773.4	10,820.0	81.7	79.0	-89.35	-250.7	3,362.0	884.4	726.0	158.48	5.581	
13,000.0	10,830.0	12,842.9	10,820.0	83.4	80.8	-89.35	-250.3	3,431.4	884.4	722.4	162.03	5.458	
13,030.6	10,830.0	12,873.4	10,820.0	84.2	81.5	-89.35	-250.2	3,462.0	884.4	720.8	163.60	5.406	
13,100.0	10,830.0	12,942.9	10,820.0	85.9	83.3	-89.35	-249.8	3,531.4	884.4	717.2	167.17	5.290	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Rule Assigned: Warning
13,130.6	10,830.0	12,973.4	10,820.0	86.7	84.1	-89.35	-249.6	3,562.0	884.3	715.6	168.75	5.241	
13,200.0	10,830.0	13,042.9	10,820.0	88.4	85.9	-89.35	-249.2	3,631.4	884.3	712.0	172.33	5.131	
13,230.6	10,830.0	13,073.4	10,820.0	89.2	86.7	-89.35	-249.1	3,662.0	884.3	710.4	173.92	5.085	
13,300.0	10,830.0	13,142.9	10,820.0	91.0	88.5	-89.35	-248.7	3,731.4	884.3	706.7	177.52	4.981	
13,330.6	10,830.0	13,173.4	10,820.0	91.8	89.3	-89.35	-248.5	3,762.0	884.2	705.1	179.11	4.937	
13,400.0	10,830.0	13,242.9	10,820.0	93.5	91.1	-89.35	-248.1	3,831.4	884.2	701.5	182.72	4.839	
13,430.6	10,830.0	13,273.4	10,820.0	94.3	91.9	-89.35	-248.0	3,862.0	884.2	699.9	184.32	4.797	
13,500.0	10,830.0	13,342.9	10,820.0	96.1	93.7	-89.35	-247.6	3,931.4	884.2	696.2	187.95	4.704	
13,530.6	10,830.0	13,373.4	10,820.0	96.9	94.5	-89.35	-247.4	3,962.0	884.1	694.6	189.55	4.664	
13,600.0	10,830.0	13,442.9	10,820.0	98.6	96.3	-89.35	-247.0	4,031.4	884.1	690.9	193.18	4.576	
13,630.6	10,830.0	13,473.4	10,820.0	99.4	97.1	-89.35	-246.9	4,062.0	884.1	689.3	194.79	4.539	
13,700.0	10,830.0	13,542.9	10,820.0	101.2	98.9	-89.35	-246.5	4,131.4	884.1	685.6	198.44	4.455	
13,730.6	10,830.0	13,573.4	10,820.0	102.0	99.7	-89.35	-246.3	4,162.0	884.0	684.0	200.05	4.419	
13,800.0	10,830.0	13,642.9	10,820.0	103.8	101.6	-89.35	-245.9	4,231.4	884.0	680.3	203.71	4.340	
13,830.6	10,830.0	13,673.4	10,820.0	104.6	102.4	-89.35	-245.7	4,262.0	884.0	678.7	205.32	4.305	
13,900.0	10,830.0	13,742.9	10,820.0	106.4	104.2	-89.35	-245.4	4,331.4	884.0	675.0	208.99	4.230	
13,930.6	10,830.0	13,773.4	10,820.0	107.2	105.0	-89.35	-245.2	4,362.0	883.9	673.3	210.61	4.197	
14,000.0	10,830.0	13,842.9	10,820.0	109.0	106.8	-89.35	-244.8	4,431.4	883.9	669.6	214.28	4.125	
14,030.6	10,830.0	13,873.4	10,820.0	109.8	107.7	-89.35	-244.6	4,461.9	883.9	668.0	215.90	4.094	
14,100.0	10,830.0	13,942.9	10,820.0	111.6	109.5	-89.35	-244.3	4,531.4	883.9	664.3	219.58	4.025	
14,130.6	10,830.0	13,973.4	10,820.0	112.4	110.3	-89.35	-244.1	4,561.9	883.8	662.6	221.21	3.996	
14,200.0	10,830.0	14,042.9	10,820.0	114.2	112.2	-89.35	-243.7	4,631.4	883.8	658.9	224.90	3.930	
14,230.6	10,830.0	14,073.4	10,820.0	115.0	113.0	-89.35	-243.5	4,661.9	883.8	657.3	226.53	3.902	
14,300.0	10,830.0	14,142.9	10,820.0	116.9	114.8	-89.35	-243.2	4,731.4	883.8	653.5	230.22	3.839	
14,330.6	10,830.0	14,173.4	10,820.0	117.7	115.6	-89.35	-243.0	4,761.9	883.7	651.9	231.85	3.812	
14,400.0	10,830.0	14,242.9	10,820.0	119.5	117.5	-89.35	-242.6	4,831.4	883.7	648.2	235.56	3.752	
14,430.6	10,830.0	14,273.4	10,820.0	120.3	118.3	-89.35	-242.4	4,861.9	883.7	646.5	237.19	3.726	
14,500.0	10,830.0	14,342.9	10,820.0	122.1	120.1	-89.35	-242.1	4,931.4	883.7	642.8	240.90	3.668	
14,530.6	10,830.0	14,373.4	10,820.0	122.9	121.0	-89.35	-241.9	4,961.9	883.6	641.1	242.53	3.643	
14,600.0	10,830.0	14,442.9	10,820.0	124.8	122.8	-89.35	-241.5	5,031.4	883.6	637.4	246.25	3.588	
14,630.6	10,830.0	14,473.4	10,820.0	125.6	123.6	-89.35	-241.3	5,061.9	883.6	635.7	247.88	3.565	
14,700.0	10,830.0	14,542.9	10,820.0	127.4	125.5	-89.35	-241.0	5,131.4	883.6	632.0	251.60	3.512	
14,730.6	10,830.0	14,573.4	10,820.0	128.2	126.3	-89.35	-240.8	5,161.9	883.5	630.3	253.24	3.489	
14,800.0	10,830.0	14,642.9	10,820.0	130.1	128.2	-89.35	-240.4	5,231.4	883.5	626.5	256.96	3.438	
14,830.6	10,830.0	14,673.4	10,820.0	130.9	129.0	-89.34	-240.2	5,261.9	883.5	624.9	258.61	3.416	
14,900.0	10,830.0	14,742.9	10,820.0	132.7	130.9	-89.34	-239.9	5,331.4	883.5	621.1	262.33	3.368	
14,930.6	10,830.0	14,773.4	10,820.0	133.5	131.7	-89.34	-239.7	5,361.9	883.4	619.5	263.98	3.347	
15,000.0	10,830.0	14,842.9	10,820.0	135.4	133.5	-89.34	-239.3	5,431.3	883.4	615.7	267.71	3.300	
15,030.6	10,830.0	14,873.4	10,820.0	136.2	134.4	-89.34	-239.1	5,461.9	883.4	614.0	269.36	3.280	
15,100.0	10,830.0	14,942.9	10,820.0	138.0	136.2	-89.34	-238.8	5,531.3	883.4	610.3	273.09	3.235	
15,130.6	10,830.0	14,973.4	10,820.0	138.9	137.1	-89.34	-238.6	5,561.9	883.4	608.6	274.74	3.215	
15,200.0	10,830.0	15,042.9	10,820.0	140.7	138.9	-89.34	-238.2	5,631.3	883.3	604.8	278.48	3.172	
15,230.6	10,830.0	15,073.4	10,820.0	141.5	139.8	-89.34	-238.0	5,661.9	883.3	603.2	280.13	3.153	
15,300.0	10,830.0	15,142.9	10,820.0	143.4	141.6	-89.34	-237.7	5,731.3	883.3	599.4	283.87	3.112	
15,330.6	10,830.0	15,173.4	10,820.0	144.2	142.4	-89.34	-237.5	5,761.9	883.3	597.7	285.52	3.093	
15,400.0	10,830.0	15,242.9	10,820.0	146.1	144.3	-89.34	-237.1	5,831.3	883.2	594.0	289.27	3.053	
15,430.6	10,830.0	15,273.4	10,820.0	146.9	145.1	-89.34	-236.9	5,861.9	883.2	592.3	290.92	3.036	
15,500.0	10,830.0	15,342.9	10,820.0	148.7	147.0	-89.34	-236.6	5,931.3	883.2	588.5	294.67	2.997	
15,530.6	10,830.0	15,373.4	10,820.0	149.6	147.8	-89.34	-236.4	5,961.9	883.2	586.8	296.32	2.980	
15,600.0	10,830.0	15,442.9	10,820.0	151.4	149.7	-89.34	-236.0	6,031.3	883.1	583.0	300.07	2.943	
15,630.6	10,830.0	15,473.4	10,820.0	152.2	150.5	-89.34	-235.8	6,061.9	883.1	581.4	301.73	2.927	
15,700.0	10,830.0	15,542.9	10,820.0	154.1	152.4	-89.34	-235.5	6,131.3	883.1	577.6	305.48	2.891	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
15,730.6	10,830.0	15,573.4	10,820.0	154.9	153.3	-89.34	-235.3	6,161.9	883.1	575.9	307.14	2.875	
15,800.0	10,830.0	15,642.9	10,820.0	156.8	155.1	-89.34	-234.9	6,231.3	883.0	572.1	310.89	2.840	
15,830.6	10,830.0	15,673.4	10,820.0	157.6	156.0	-89.34	-234.7	6,261.9	883.0	570.5	312.55	2.825	
15,900.0	10,830.0	15,742.9	10,820.0	159.5	157.8	-89.34	-234.4	6,331.3	883.0	566.7	316.31	2.791	
15,930.6	10,830.0	15,773.4	10,820.0	160.3	158.7	-89.34	-234.2	6,361.9	883.0	565.0	317.97	2.777	
16,000.0	10,830.0	15,842.9	10,820.0	162.2	160.5	-89.34	-233.8	6,431.3	882.9	561.2	321.73	2.744	
16,030.6	10,830.0	15,873.4	10,820.0	163.0	161.4	-89.34	-233.6	6,461.9	882.9	559.5	323.39	2.730	
16,100.0	10,830.0	15,942.9	10,820.0	164.9	163.3	-89.34	-233.3	6,531.3	882.9	555.7	327.15	2.699	
16,130.6	10,830.0	15,973.4	10,820.0	165.7	164.1	-89.34	-233.1	6,561.9	882.9	554.0	328.81	2.685	
16,200.0	10,830.0	16,042.9	10,820.0	167.6	166.0	-89.34	-232.7	6,631.3	882.8	550.2	332.58	2.654	
16,230.6	10,830.0	16,073.4	10,820.0	168.4	166.8	-89.34	-232.5	6,661.9	882.8	548.6	334.24	2.641	
16,300.0	10,830.0	16,142.9	10,820.0	170.3	168.7	-89.34	-232.2	6,731.3	882.8	544.8	338.01	2.612	
16,330.6	10,830.0	16,173.4	10,820.0	171.1	169.5	-89.34	-232.0	6,761.9	882.8	543.1	339.67	2.599	
16,400.0	10,830.0	16,242.9	10,820.0	173.0	171.4	-89.34	-231.6	6,831.3	882.7	539.3	343.44	2.570	
16,430.6	10,830.0	16,273.4	10,820.0	173.8	172.2	-89.34	-231.4	6,861.9	882.7	537.6	345.10	2.558	
16,500.0	10,830.0	16,342.9	10,820.0	175.7	174.1	-89.34	-231.1	6,931.3	882.7	533.8	348.88	2.530	
16,530.6	10,830.0	16,373.4	10,820.0	176.5	175.0	-89.34	-230.9	6,961.9	882.7	532.1	350.54	2.518	
16,600.0	10,830.0	16,442.9	10,820.0	178.4	176.8	-89.34	-230.5	7,031.3	882.6	528.3	354.31	2.491	
16,630.6	10,830.0	16,473.4	10,820.0	179.2	177.7	-89.34	-230.3	7,061.9	882.6	526.6	355.98	2.479	
16,700.0	10,830.0	16,542.9	10,820.0	181.1	179.6	-89.34	-230.0	7,131.3	882.6	522.8	359.75	2.453	
16,730.6	10,830.0	16,573.4	10,820.0	181.9	180.4	-89.34	-229.8	7,161.9	882.6	521.1	361.42	2.442	
16,800.0	10,830.0	16,642.9	10,820.0	183.8	182.3	-89.34	-229.4	7,231.3	882.5	517.3	365.20	2.417	
16,830.6	10,830.0	16,673.4	10,820.0	184.6	183.1	-89.34	-229.2	7,261.9	882.5	515.7	366.86	2.406	
16,900.0	10,830.0	16,742.9	10,820.0	186.5	185.0	-89.34	-228.9	7,331.3	882.5	511.8	370.64	2.381	
16,930.6	10,830.0	16,773.4	10,820.0	187.3	185.8	-89.34	-228.7	7,361.9	882.5	510.2	372.31	2.370	
17,000.0	10,830.0	16,842.9	10,820.0	189.2	187.7	-89.34	-228.3	7,431.3	882.4	506.3	376.09	2.346	
17,030.6	10,830.0	16,873.4	10,820.0	190.0	188.6	-89.34	-228.1	7,461.9	882.4	504.7	377.75	2.336	
17,100.0	10,830.0	16,942.9	10,820.0	191.9	190.4	-89.34	-227.8	7,531.3	882.4	500.8	381.54	2.313	
17,130.6	10,830.0	16,973.4	10,820.0	192.8	191.3	-89.34	-227.6	7,561.9	882.4	499.2	383.20	2.303	
17,200.0	10,830.0	17,042.9	10,820.0	194.6	193.2	-89.34	-227.2	7,631.3	882.3	495.3	386.99	2.280	
17,230.6	10,830.0	17,073.4	10,820.0	195.5	194.0	-89.34	-227.0	7,661.9	882.3	493.7	388.66	2.270	
17,300.0	10,830.0	17,142.9	10,820.0	197.4	195.9	-89.34	-226.7	7,731.3	882.3	489.8	392.44	2.248	
17,330.6	10,830.0	17,173.4	10,820.0	198.2	196.7	-89.34	-226.5	7,761.9	882.3	488.2	394.11	2.239	
17,400.0	10,830.0	17,242.9	10,820.0	200.1	198.6	-89.34	-226.1	7,831.3	882.2	484.3	397.89	2.217	
17,430.6	10,830.0	17,273.4	10,820.0	200.9	199.5	-89.34	-225.9	7,861.9	882.2	482.7	399.56	2.208	
17,500.0	10,830.0	17,342.9	10,820.0	202.8	201.4	-89.34	-225.5	7,931.3	882.2	478.8	403.35	2.187	
17,530.6	10,830.0	17,373.4	10,820.0	203.6	202.2	-89.34	-225.4	7,961.9	882.2	477.1	405.02	2.178	
17,600.0	10,830.0	17,442.9	10,820.0	205.5	204.1	-89.34	-225.0	8,031.3	882.1	473.3	408.81	2.158	
17,630.6	10,830.0	17,473.4	10,820.0	206.3	204.9	-89.34	-224.8	8,061.9	882.1	471.6	410.48	2.149	
17,700.0	10,830.0	17,542.9	10,820.0	208.2	206.8	-89.34	-224.4	8,131.3	882.1	467.8	414.27	2.129	
17,730.6	10,830.0	17,573.4	10,820.0	209.1	207.6	-89.34	-224.3	8,161.9	882.1	466.1	415.94	2.121	
17,800.0	10,830.0	17,642.9	10,820.0	210.9	209.5	-89.34	-223.9	8,231.3	882.0	462.3	419.73	2.101	
17,830.6	10,830.0	17,673.4	10,820.0	211.8	210.4	-89.34	-223.7	8,261.9	882.0	460.6	421.40	2.093	
17,900.0	10,830.0	17,742.9	10,820.0	213.7	212.3	-89.34	-223.3	8,331.3	882.0	456.8	425.19	2.074	
17,930.6	10,830.0	17,773.4	10,820.0	214.5	213.1	-89.34	-223.2	8,361.9	882.0	455.1	426.86	2.066	
18,000.0	10,830.0	17,842.9	10,820.0	216.4	215.0	-89.34	-222.8	8,431.3	881.9	451.3	430.65	2.048	
18,030.6	10,830.0	17,873.4	10,820.0	217.2	215.8	-89.34	-222.6	8,461.9	881.9	449.6	432.33	2.040	
18,100.0	10,830.0	17,942.9	10,820.0	219.1	217.7	-89.34	-222.2	8,531.3	881.9	445.8	436.12	2.022	
18,130.6	10,830.0	17,973.4	10,820.0	219.9	218.6	-89.34	-222.1	8,561.9	881.9	444.1	437.79	2.014	
18,200.0	10,830.0	18,042.9	10,820.0	221.8	220.5	-89.34	-221.7	8,631.3	881.8	440.3	441.59	1.997	Collision Risk Procedures Req.
18,230.6	10,830.0	18,073.4	10,820.0	222.7	221.3	-89.34	-221.5	8,661.9	881.8	438.6	443.26	1.989	Collision Risk Procedures Req.
18,300.0	10,830.0	18,142.9	10,820.0	224.6	223.2	-89.34	-221.1	8,731.3	881.8	434.7	447.05	1.972	Collision Risk Procedures Req.

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
18,330.6	10,830.0	18,173.4	10,820.0	225.4	224.0	-89.34	-221.0	8,761.9	881.8	433.0	448.73	1.965	Collision Risk Procedures Req.
18,400.0	10,830.0	18,242.9	10,820.0	227.3	225.9	-89.34	-220.6	8,831.3	881.7	429.2	452.52	1.948	Collision Risk Procedures Req.
18,430.6	10,830.0	18,273.4	10,820.0	228.1	226.8	-89.34	-220.4	8,861.9	881.7	427.5	454.20	1.941	Collision Risk Procedures Req.
18,500.0	10,830.0	18,342.9	10,820.0	230.0	228.7	-89.34	-220.0	8,931.3	881.7	423.7	457.99	1.925	Collision Risk Procedures Req.
18,530.6	10,830.0	18,373.4	10,820.0	230.9	229.5	-89.34	-219.9	8,961.9	881.7	422.0	459.67	1.918	Collision Risk Procedures Req.
18,600.0	10,830.0	18,442.9	10,820.0	232.7	231.4	-89.34	-219.5	9,031.3	881.6	418.2	463.46	1.902	Collision Risk Procedures Req.
18,630.6	10,830.0	18,473.4	10,820.0	233.6	232.2	-89.34	-219.3	9,061.9	881.6	416.5	465.14	1.895	Collision Risk Procedures Req.
18,700.0	10,830.0	18,542.9	10,820.0	235.5	234.1	-89.34	-218.9	9,131.3	881.6	412.7	468.94	1.880	Collision Risk Procedures Req.
18,730.6	10,830.0	18,573.4	10,820.0	236.3	235.0	-89.34	-218.8	9,161.9	881.6	411.0	470.61	1.873	Collision Risk Procedures Req.
18,800.0	10,830.0	18,642.9	10,820.0	238.2	236.9	-89.34	-218.4	9,231.3	881.5	407.1	474.41	1.858	Collision Risk Procedures Req.
18,830.6	10,830.0	18,673.4	10,820.0	239.0	237.7	-89.34	-218.2	9,261.9	881.5	405.4	476.08	1.852	Collision Risk Procedures Req.
18,900.0	10,830.0	18,742.9	10,820.0	240.9	239.6	-89.34	-217.8	9,331.3	881.5	401.6	479.88	1.837	Collision Risk Procedures Req.
18,930.6	10,830.0	18,773.4	10,820.0	241.8	240.5	-89.34	-217.7	9,361.9	881.5	399.9	481.56	1.830	Collision Risk Procedures Req.
19,000.0	10,830.0	18,842.9	10,820.0	243.7	242.4	-89.34	-217.3	9,431.3	881.4	396.1	485.36	1.816	Collision Risk Procedures Req.
19,030.6	10,830.0	18,873.4	10,820.0	244.5	243.2	-89.34	-217.1	9,461.9	881.4	394.4	487.03	1.810	Collision Risk Procedures Req.
19,100.0	10,830.0	18,942.9	10,820.0	246.4	245.1	-89.34	-216.7	9,531.3	881.4	390.6	490.84	1.796	Collision Risk Procedures Req.
19,130.6	10,830.0	18,973.4	10,820.0	247.2	245.9	-89.34	-216.6	9,561.9	881.4	388.9	492.51	1.790	Collision Risk Procedures Req.
19,200.0	10,830.0	19,042.9	10,820.0	249.1	247.8	-89.34	-216.2	9,631.3	881.3	385.0	496.31	1.776	Collision Risk Procedures Req.
19,230.6	10,830.0	19,073.4	10,820.0	250.0	248.7	-89.34	-216.0	9,661.9	881.3	383.3	497.99	1.770	Collision Risk Procedures Req.
19,300.0	10,830.0	19,142.9	10,820.0	251.9	250.6	-89.34	-215.6	9,731.3	881.3	379.5	501.79	1.756	Collision Risk Procedures Req.
19,330.6	10,830.0	19,173.4	10,820.0	252.7	251.4	-89.34	-215.5	9,761.9	881.3	377.8	503.47	1.750	Collision Risk Procedures Req.
19,400.0	10,830.0	19,242.9	10,820.0	254.6	253.3	-89.34	-215.1	9,831.3	881.2	374.0	507.27	1.737	Collision Risk Procedures Req.
19,430.6	10,830.0	19,273.4	10,820.0	255.4	254.1	-89.34	-214.9	9,861.9	881.2	372.3	508.95	1.731	Collision Risk Procedures Req.
19,500.0	10,830.0	19,342.9	10,820.0	257.3	256.0	-89.34	-214.5	9,931.3	881.2	368.4	512.75	1.719	Collision Risk Procedures Req.
19,530.6	10,830.0	19,373.4	10,820.0	258.2	256.9	-89.34	-214.4	9,961.9	881.2	366.8	514.43	1.713	Collision Risk Procedures Req.
19,600.0	10,830.0	19,442.9	10,820.0	260.1	258.8	-89.34	-214.0	10,031.3	881.1	362.9	518.23	1.700	Collision Risk Procedures Req.
19,630.6	10,830.0	19,473.4	10,820.0	260.9	259.6	-89.34	-213.8	10,061.9	881.1	361.2	519.91	1.695	Collision Risk Procedures Req.
19,700.0	10,830.0	19,542.9	10,820.0	262.8	261.5	-89.34	-213.4	10,131.3	881.1	357.4	523.71	1.682	Collision Risk Procedures Req.
19,730.6	10,830.0	19,573.4	10,820.0	263.6	262.4	-89.34	-213.3	10,161.9	881.1	355.7	525.39	1.677	Collision Risk Procedures Req.
19,800.0	10,830.0	19,642.9	10,820.0	265.5	264.3	-89.34	-212.9	10,231.3	881.1	351.9	529.19	1.665	Collision Risk Procedures Req.
19,830.6	10,830.0	19,673.4	10,820.0	266.4	265.1	-89.34	-212.7	10,261.9	881.0	350.2	530.87	1.660	Collision Risk Procedures Req.
19,900.0	10,830.0	19,742.9	10,820.0	268.3	267.0	-89.34	-212.3	10,331.3	881.0	346.3	534.68	1.648	Collision Risk Procedures Req.
19,930.6	10,830.0	19,773.4	10,820.0	269.1	267.9	-89.34	-212.2	10,361.9	881.0	344.6	536.35	1.643	Collision Risk Procedures Req.
20,000.0	10,830.0	19,842.9	10,820.0	271.0	269.8	-89.34	-211.8	10,431.3	881.0	340.8	540.16	1.631	Collision Risk Procedures Req.
20,030.6	10,830.0	19,873.4	10,820.0	271.8	270.6	-89.34	-211.6	10,461.9	880.9	339.1	541.84	1.626	Collision Risk Procedures Req.
20,100.0	10,830.0	19,942.9	10,820.0	273.7	272.5	-89.34	-211.2	10,531.3	880.9	335.3	545.65	1.614	Collision Risk Procedures Req.
20,130.6	10,830.0	19,973.4	10,820.0	274.6	273.3	-89.34	-211.1	10,561.9	880.9	333.6	547.32	1.609	Collision Risk Procedures Req.
20,200.0	10,830.0	20,042.9	10,820.0	276.5	275.2	-89.34	-210.7	10,631.3	880.9	329.7	551.13	1.598	Collision Risk Procedures Req.
20,230.6	10,830.0	20,073.4	10,820.0	277.3	276.1	-89.34	-210.5	10,661.9	880.8	328.0	552.81	1.593	Collision Risk Procedures Req.
20,300.0	10,830.0	20,142.9	10,820.0	279.2	278.0	-89.34	-210.1	10,731.3	880.8	324.2	556.62	1.582	Collision Risk Procedures Req.
20,330.6	10,830.0	20,173.4	10,820.0	280.0	278.8	-89.34	-210.0	10,761.8	880.8	322.5	558.29	1.578	Collision Risk Procedures Req.
20,400.0	10,830.0	20,242.9	10,820.0	281.9	280.7	-89.34	-209.6	10,831.3	880.8	318.7	562.10	1.567	Collision Risk Procedures Req.
20,430.6	10,830.0	20,273.4	10,820.0	282.8	281.6	-89.34	-209.4	10,861.8	880.7	317.0	563.78	1.562	Collision Risk Procedures Req.
20,500.0	10,830.0	20,342.9	10,820.0	284.7	283.5	-89.34	-209.0	10,931.3	880.7	313.1	567.59	1.552	Collision Risk Procedures Req.
20,530.6	10,830.0	20,373.4	10,820.0	285.5	284.3	-89.34	-208.9	10,961.8	880.7	311.4	569.27	1.547	Collision Risk Procedures Req.
20,600.0	10,830.0	20,442.9	10,820.0	287.4	286.2	-89.34	-208.5	11,031.3	880.7	307.6	573.08	1.537	Collision Risk Procedures Req.
20,630.6	10,830.0	20,473.4	10,820.0	288.3	287.1	-89.34	-208.3	11,061.8	880.6	305.9	574.76	1.532	Collision Risk Procedures Req.
20,700.0	10,830.0	20,542.9	10,820.0	290.2	289.0	-89.34	-207.9	11,131.3	880.6	302.0	578.57	1.522	Collision Risk Procedures Req.
20,730.6	10,830.0	20,573.4	10,820.0	291.0	289.8	-89.34	-207.8	11,161.8	880.6	300.3	580.24	1.518	Collision Risk Procedures Req.
20,800.0	10,830.0	20,642.9	10,820.0	292.9	291.7	-89.34	-207.4	11,231.3	880.6	296.5	584.05	1.508	Collision Risk Procedures Req.
20,830.6	10,830.0	20,673.4	10,820.0	293.7	292.5	-89.34	-207.2	11,261.8	880.5	294.8	585.73	1.503	Collision Risk Procedures Req.
20,900.0	10,830.0	20,742.9	10,820.0	295.6	294.4	-89.34	-206.8	11,331.3	880.5	291.0	589.54	1.494	Collision Avoidance Req.

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Astrodog Fed Com 0810 232H - Wellbore #1 - Plan 1

Offset Site Error: 0.0 usft

Survey Program: 0-MWD

Rule Assigned:

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
20,930.6	10,830.0	20,773.4	10,820.0	296.5	295.3	-89.34	-206.7	11,361.8	880.5	289.3	591.22	1.489	Collision Avoidance Req.
21,000.0	10,830.0	20,842.9	10,820.0	298.4	297.2	-89.34	-206.3	11,431.3	880.5	285.4	595.03	1.480	Collision Avoidance Req.
21,030.6	10,830.0	20,873.4	10,820.0	299.2	298.0	-89.34	-206.1	11,461.8	880.4	283.7	596.71	1.475	Collision Avoidance Req.
21,100.0	10,830.0	20,942.9	10,820.0	301.1	299.9	-89.34	-205.7	11,531.3	880.4	279.9	600.52	1.466	Collision Avoidance Req.
21,130.6	10,830.0	20,973.4	10,820.0	302.0	300.8	-89.34	-205.6	11,561.8	880.4	278.2	602.20	1.462	Collision Avoidance Req.
21,200.0	10,830.0	21,042.9	10,820.0	303.9	302.7	-89.34	-205.2	11,631.3	880.4	274.3	606.01	1.453	Collision Avoidance Req.
21,230.6	10,830.0	21,073.4	10,820.0	304.7	303.5	-89.34	-205.0	11,661.8	880.3	272.7	607.69	1.449	Collision Avoidance Req.
21,300.0	10,830.0	21,142.9	10,820.0	306.6	305.4	-89.34	-204.6	11,731.3	880.3	268.8	611.51	1.440	Collision Avoidance Req.
21,330.6	10,830.0	21,173.4	10,820.0	307.4	306.3	-89.34	-204.5	11,761.8	880.3	267.1	613.18	1.436	Collision Avoidance Req.
21,400.0	10,830.0	21,242.9	10,820.0	309.3	308.2	-89.34	-204.1	11,831.3	880.3	263.3	617.00	1.427	Collision Avoidance Req.
21,430.6	10,830.0	21,273.4	10,820.0	310.2	309.0	-89.34	-203.9	11,861.8	880.2	261.6	618.68	1.423	Collision Avoidance Req.
21,500.0	10,830.0	21,342.9	10,820.0	312.1	310.9	-89.34	-203.5	11,931.2	880.2	257.7	622.49	1.414	Collision Avoidance Req.
21,530.6	10,830.0	21,373.4	10,820.0	312.9	311.8	-89.34	-203.4	11,961.8	880.2	256.0	624.17	1.410	Collision Avoidance Req.
21,572.7	10,830.0	21,415.6	10,820.0	314.1	312.9	-89.34	-203.1	12,004.0	880.2	253.7	626.48	1.405	Collision Avoidance Req.
21,580.3	10,830.0	21,416.9	10,820.0	314.3	313.0	-89.34	-203.1	12,005.3	880.2	253.6	626.57	1.405	Collision Avoidance Req., SF

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Road Lizard 5 Fed Com 002H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 100-GYRO-NS, 2922-MWD

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,900.0	6,751.7	13,935.8	8,662.5	26.9	98.9	-65.73	-779.3	2,153.3	2,292.2	2,214.0	78.18	29.318	
7,000.0	6,848.5	13,949.0	8,662.3	27.4	99.1	-65.02	-792.5	2,153.9	2,202.3	2,122.4	79.92	27.555	
7,100.0	6,945.3	13,963.2	8,662.2	27.9	99.3	-64.25	-806.7	2,154.6	2,113.3	2,031.5	81.80	25.835	
7,200.0	7,042.1	13,976.3	8,662.0	28.4	99.6	-63.53	-819.8	2,155.3	2,025.2	1,941.4	83.80	24.166	
7,300.0	7,138.9	13,989.7	8,661.9	28.9	99.8	-62.80	-833.1	2,155.9	1,938.1	1,852.1	85.96	22.546	
7,400.0	7,235.6	14,003.4	8,661.8	29.5	100.0	-62.03	-846.8	2,156.6	1,852.2	1,763.9	88.28	20.980	
7,500.0	7,332.4	14,012.0	8,661.7	30.0	100.2	-61.55	-855.4	2,157.1	1,767.6	1,676.9	90.75	19.477	
7,600.0	7,429.2	14,029.2	8,661.7	30.5	100.5	-60.58	-872.6	2,158.0	1,684.6	1,591.2	93.47	18.023	
7,700.0	7,526.0	14,041.9	8,661.6	31.0	100.7	-59.86	-885.2	2,158.8	1,603.4	1,507.1	96.37	16.639	
7,800.0	7,622.8	14,054.8	8,661.6	31.5	100.9	-59.12	-898.1	2,159.6	1,524.3	1,424.8	99.48	15.323	
7,900.0	7,719.6	14,076.0	8,661.6	32.1	101.3	-57.90	-919.3	2,161.0	1,447.7	1,344.8	102.87	14.073	
8,000.0	7,816.4	14,083.9	8,661.6	32.6	101.4	-57.44	-927.2	2,161.5	1,373.8	1,267.4	106.38	12.914	
8,100.0	7,913.2	14,103.7	8,661.6	33.1	101.8	-56.28	-946.9	2,162.9	1,303.1	1,192.9	110.16	11.829	
8,200.0	8,009.9	14,123.6	8,661.6	33.6	102.1	-55.11	-966.8	2,164.2	1,236.2	1,122.1	114.10	10.834	
8,300.0	8,106.7	14,142.9	8,661.6	34.1	102.4	-53.97	-986.0	2,165.5	1,173.8	1,055.6	118.13	9.936	
8,400.0	8,203.5	14,160.7	8,661.7	34.7	102.7	-52.91	-1,003.9	2,166.6	1,116.4	994.3	122.12	9.142	
8,500.0	8,300.3	14,178.9	8,661.8	35.2	103.0	-51.64	-1,021.9	2,167.8	1,065.2	939.2	125.96	8.457	
8,600.0	8,397.7	14,195.6	8,661.9	35.6	103.3	-49.90	-1,038.6	2,168.9	1,022.2	892.9	129.34	7.903	
8,700.0	8,495.8	14,209.0	8,661.9	35.9	103.5	-48.57	-1,052.0	2,169.7	989.5	857.4	132.07	7.492	
8,800.0	8,594.5	14,219.6	8,662.0	36.2	103.7	-47.62	-1,062.6	2,170.4	968.1	834.3	133.84	7.234	
8,900.0	8,693.8	14,228.1	8,662.1	36.4	103.9	-46.97	-1,071.1	2,171.0	959.0	824.6	134.44	7.134	
8,921.8	8,715.4	14,229.7	8,662.1	36.5	103.9	-46.88	-1,072.7	2,171.1	958.7	824.3	134.40	7.133	CC, ES, SF
9,000.0	8,793.3	14,234.5	8,662.2	36.6	104.0	-46.64	-1,077.5	2,171.5	962.6	828.9	133.78	7.196	
9,100.0	8,893.2	14,238.8	8,662.2	36.8	104.1	-46.63	-1,081.7	2,171.8	978.8	846.9	131.90	7.421	
9,200.0	8,993.2	14,240.9	8,662.2	36.9	104.1	-46.93	-1,083.8	2,171.9	1,007.0	878.0	129.04	7.804	
9,300.0	9,093.2	14,241.7	8,662.2	37.0	104.1	86.17	-1,084.6	2,172.0	1,045.3	919.8	125.50	8.329	
9,400.0	9,193.2	14,242.5	8,662.2	37.1	104.1	86.22	-1,085.4	2,172.0	1,091.4	969.9	121.54	8.980	
9,500.0	9,293.2	14,243.3	8,662.2	37.2	104.1	86.27	-1,086.3	2,172.1	1,144.4	1,027.0	117.41	9.748	
9,600.0	9,393.2	14,244.1	8,662.2	37.3	104.2	86.32	-1,087.1	2,172.2	1,203.4	1,090.2	113.27	10.624	
9,700.0	9,493.2	14,245.0	8,662.2	37.5	104.2	86.37	-1,087.9	2,172.2	1,267.6	1,158.3	109.27	11.601	
9,800.0	9,593.2	14,245.8	8,662.3	37.6	104.2	86.42	-1,088.8	2,172.3	1,336.2	1,230.7	105.47	12.668	
9,900.0	9,693.2	14,246.7	8,662.3	37.7	104.2	86.47	-1,089.6	2,172.3	1,408.5	1,306.6	101.94	13.817	
10,000.0	9,793.2	14,247.6	8,662.3	37.8	104.2	86.52	-1,090.5	2,172.4	1,484.1	1,385.4	98.69	15.038	
10,100.0	9,893.2	14,248.4	8,662.3	37.9	104.2	86.58	-1,091.3	2,172.5	1,562.4	1,466.6	95.72	16.322	
10,200.0	9,993.2	14,249.3	8,662.3	38.0	104.2	86.63	-1,092.2	2,172.5	1,643.0	1,550.0	93.03	17.660	
10,300.0	10,093.2	14,250.2	8,662.3	38.1	104.3	86.68	-1,093.1	2,172.6	1,725.7	1,635.1	90.61	19.045	
10,400.0	10,193.2	14,251.1	8,662.3	38.2	104.3	86.74	-1,094.0	2,172.7	1,810.1	1,721.7	88.43	20.469	
10,500.0	10,293.1	14,252.1	8,662.3	38.4	104.3	-2.58	-1,095.0	2,172.7	1,895.5	1,809.0	86.44	21.928	
10,600.0	10,391.9	14,253.9	8,662.3	38.7	104.3	-1.98	-1,096.8	2,172.9	1,974.6	1,890.4	84.24	23.441	
10,700.0	10,486.5	14,256.9	8,662.4	39.1	104.4	-1.56	-1,099.8	2,173.1	2,044.3	1,962.5	81.79	24.994	
10,800.0	10,574.2	14,260.8	8,662.4	39.8	104.4	-1.24	-1,103.7	2,173.4	2,103.6	2,024.4	79.21	26.559	
10,900.0	10,652.3	14,266.2	8,662.5	40.7	104.5	-0.97	-1,109.1	2,173.8	2,151.6	2,075.1	76.56	28.103	
11,000.0	10,718.3	14,274.5	8,662.5	41.8	104.7	-0.68	-1,117.3	2,174.4	2,187.6	2,113.6	73.96	29.578	
11,100.0	10,770.3	14,282.9	8,662.6	43.1	104.8	-0.43	-1,125.7	2,175.0	2,211.1	2,139.6	71.47	30.937	
11,200.0	10,806.7	14,291.1	8,662.7	44.6	105.0	-0.21	-1,133.9	2,175.5	2,221.7	2,152.5	69.17	32.118	
11,300.0	10,826.4	14,298.8	8,662.8	46.2	105.1	-0.01	-1,141.6	2,176.0	2,219.4	2,152.2	67.16	33.048	
11,329.5	10,829.2	14,301.0	8,662.8	46.7	105.1	0.04	-1,143.8	2,176.2	2,216.5	2,149.9	66.63	33.268	
11,400.0	10,830.0	14,305.9	8,662.9	47.9	105.2	0.17	-1,148.6	2,176.5	2,205.3	2,139.8	65.49	33.674	
11,432.3	10,830.0	14,308.0	8,662.9	48.5	105.3	0.23	-1,150.8	2,176.6	2,200.6	2,135.5	65.03	33.837	
11,500.0	10,830.0	14,312.3	8,663.0	49.7	105.3	0.34	-1,155.1	2,176.9	2,192.1	2,127.9	64.21	34.137	
11,531.8	10,830.0	14,314.3	8,663.0	50.3	105.4	0.39	-1,157.0	2,177.0	2,188.8	2,124.9	63.91	34.251	
11,600.0	10,830.0	14,318.3	8,663.0	51.6	105.4	0.50	-1,161.0	2,177.2	2,183.4	2,120.0	63.40	34.438	

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

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - Road Lizard 5 Fed Com 002H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 100-GYRO-NS, 2922-MWD

Rule Assigned:

Offset Well Error: 0.5 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
11,630.5	10,830.0	14,320.0	8,663.1	52.2	105.5	0.54	-1,162.8	2,177.3	2,181.6	2,118.4	63.25	34.490	
11,700.0	10,830.0	14,323.8	8,663.1	53.6	105.5	0.64	-1,166.6	2,177.5	2,179.2	2,116.1	63.09	34.539	
11,729.2	10,830.0	14,325.4	8,663.1	54.2	105.6	0.68	-1,168.1	2,177.6	2,178.9	2,115.7	63.11	34.527	
11,800.0	10,830.0	14,329.0	8,663.2	55.6	105.6	0.78	-1,171.7	2,177.8	2,179.6	2,116.3	63.32	34.423	
11,900.0	10,830.0	14,333.9	8,663.2	57.7	105.7	0.90	-1,176.6	2,178.1	2,184.6	2,120.5	64.07	34.095	
12,000.0	10,830.0	14,338.9	8,663.3	59.8	105.8	1.04	-1,181.7	2,178.3	2,194.1	2,128.8	65.33	33.585	
12,100.0	10,830.0	14,344.2	8,663.4	62.0	105.9	1.17	-1,186.9	2,178.6	2,208.1	2,141.1	67.04	32.939	
12,200.0	10,830.0	14,349.5	8,663.4	64.3	106.0	1.32	-1,192.2	2,178.9	2,226.5	2,157.4	69.13	32.208	
12,300.0	10,830.0	14,355.0	8,663.5	66.6	106.1	1.46	-1,197.7	2,179.3	2,249.2	2,177.6	71.53	31.443	
12,400.0	10,830.0	14,360.7	8,663.6	68.9	106.2	1.61	-1,203.4	2,179.6	2,276.0	2,201.8	74.17	30.685	

SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Offset Design: SEC 08-T23S-R29E - USP FEE #002 (Active) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 usft

Survey Program: 100-GYRO-NS, 2922-MWD

Offset Well Error: 10.0 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Rule Assigned: Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
14,600.0	10,830.0	11,111.1	10,915.6	124.8	34.6	93.49	-3,197.8	5,944.1	2,266.4	2,127.0	139.41	16.258	
14,700.0	10,830.0	11,120.8	10,925.2	127.4	34.6	93.76	-3,196.9	5,944.8	2,228.8	2,084.8	143.95	15.483	
14,800.0	10,830.0	11,130.3	10,934.7	130.1	34.6	94.02	-3,196.0	5,945.6	2,195.0	2,046.6	148.44	14.787	
14,900.0	10,830.0	11,139.8	10,944.1	132.7	34.7	94.28	-3,195.0	5,946.4	2,165.3	2,012.5	152.86	14.166	
15,000.0	10,830.0	11,148.6	10,952.8	135.4	34.7	94.52	-3,194.2	5,947.1	2,139.9	1,982.7	157.16	13.616	
15,100.0	10,830.0	11,157.0	10,961.1	138.0	34.7	94.75	-3,193.4	5,947.8	2,118.8	1,957.5	161.30	13.136	
15,200.0	10,830.0	11,165.2	10,969.2	140.7	34.7	94.97	-3,192.6	5,948.4	2,102.2	1,937.0	165.24	12.723	
15,300.0	10,830.0	11,173.1	10,977.1	143.4	34.8	95.19	-3,191.8	5,949.0	2,090.3	1,921.4	168.94	12.373	
15,400.0	10,830.0	11,180.9	10,984.8	146.1	34.8	95.41	-3,191.0	5,949.6	2,083.1	1,910.7	172.38	12.084	
15,500.0	10,830.0	11,188.5	10,992.3	148.7	34.8	95.61	-3,190.3	5,950.2	2,080.6	1,905.1	175.52	11.854	
15,503.0	10,830.0	11,188.7	10,992.6	148.8	34.8	95.62	-3,190.2	5,950.2	2,080.6	1,905.0	175.62	11.848 CC	
15,600.0	10,830.0	11,195.8	10,999.6	151.4	34.8	95.82	-3,189.5	5,950.7	2,082.9	1,904.6	178.35	11.679 ES	
15,603.4	10,830.0	11,196.1	10,999.9	151.5	34.8	95.82	-3,189.5	5,950.7	2,083.1	1,904.7	178.44	11.674	
15,700.0	10,830.0	11,203.0	11,006.8	154.1	34.8	96.01	-3,188.8	5,951.2	2,090.0	1,909.2	180.85	11.556	
15,700.0	10,830.0	11,203.0	11,006.8	154.1	34.8	96.01	-3,188.8	5,951.2	2,090.0	1,909.2	180.85	11.556	
15,800.0	10,830.0	11,205.0	11,008.7	156.8	34.8	96.07	-3,188.6	5,951.4	2,101.8	1,918.8	183.05	11.483	
15,900.0	10,830.0	11,215.0	11,018.7	159.5	34.9	96.34	-3,187.7	5,952.1	2,118.2	1,933.4	184.85	11.459 SF	
16,000.0	10,830.0	11,220.7	11,024.3	162.2	34.9	96.50	-3,187.1	5,952.5	2,139.2	1,952.9	186.35	11.479	
16,100.0	10,830.0	11,226.3	11,029.9	164.9	34.9	96.65	-3,186.6	5,952.9	2,164.6	1,977.0	187.53	11.542	
16,200.0	10,830.0	11,231.9	11,035.4	167.6	34.9	96.81	-3,186.0	5,953.3	2,194.2	2,005.8	188.41	11.646	
16,300.0	10,830.0	11,237.3	11,040.9	170.3	34.9	96.96	-3,185.5	5,953.7	2,227.9	2,038.9	189.01	11.787	
16,400.0	10,830.0	11,242.7	11,046.2	173.0	34.9	97.10	-3,185.0	5,954.1	2,265.5	2,076.1	189.35	11.965	

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

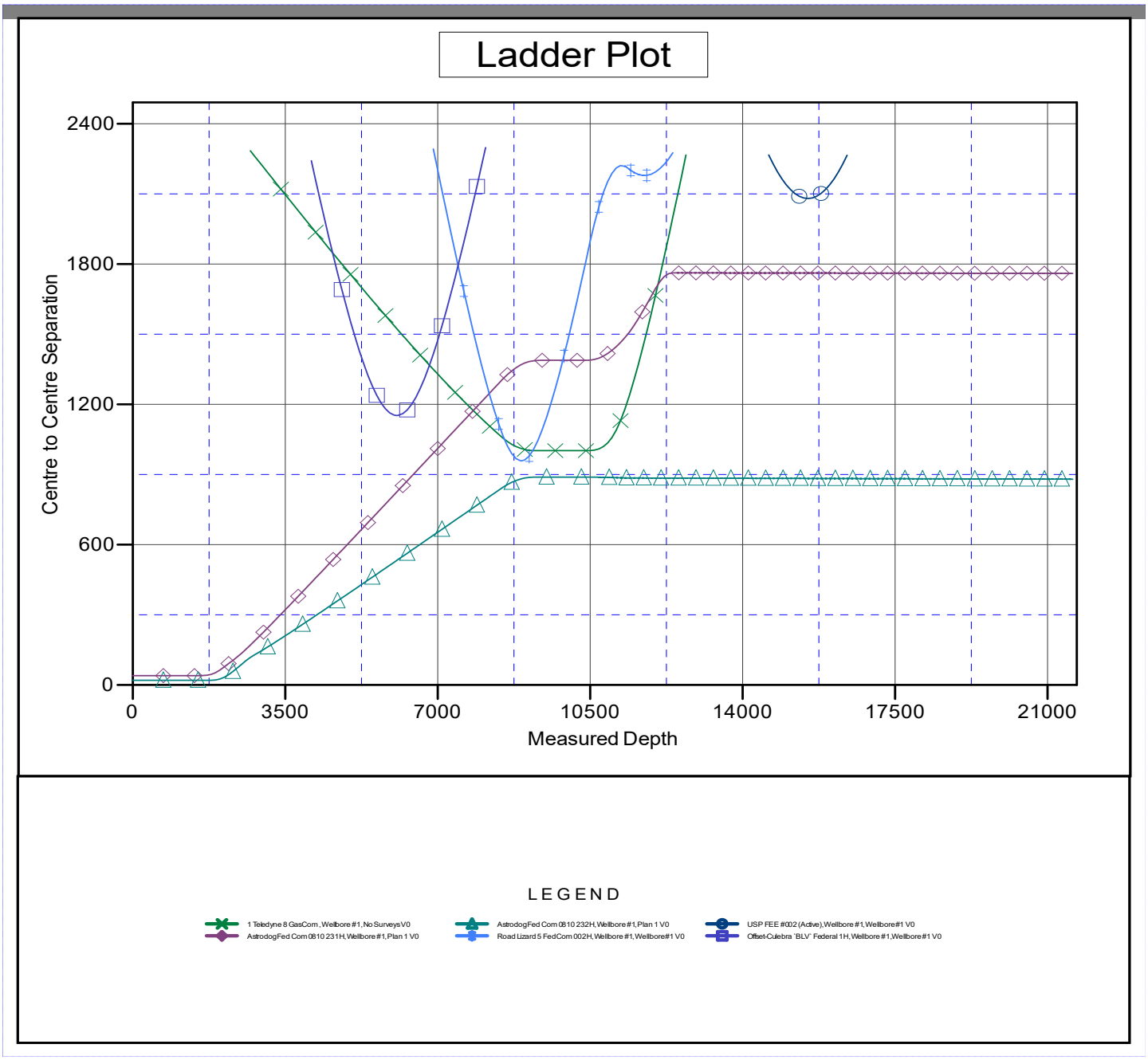
SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB 25' + GL 2988.2 @ 3013.2usft
Offset Depths are relative to Offset Datum
Central Meridian is -104.333334

Coordinates are relative to: Astrodog Fed Com 0810 235H
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 covergent point, SF - min separation factor, ES - min ellipse separation

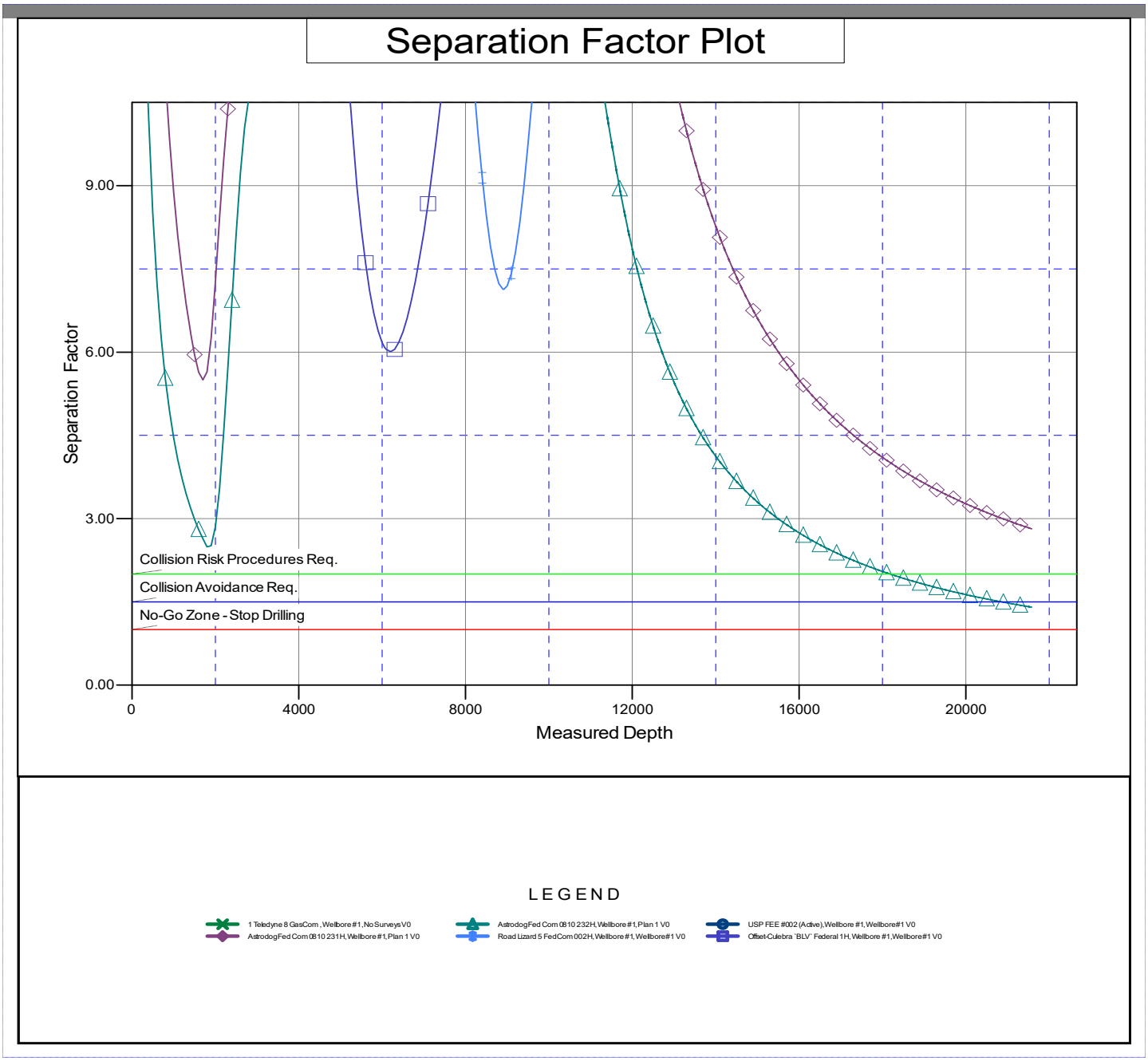
SB Directional Services

Anticollision Report

Company:	NOVO Oil & Gas	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Project:	EDDY CO., NM (NAD83)	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Reference Site:	SEC 08-T23S-R29E	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site Error:	0.0 usft	**North Reference:**	Grid
Reference Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.5 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM 5000.16 Single User Db
Reference Design:	Plan 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB 25' + GL 2988.2 @ 3013.2usft
Offset Depths are relative to Offset Datum
Central Meridian is -104.333334

Coordinates are relative to: Astrodog Fed Com 0810 235H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.17°



NOVO Oil & Gas

EDDY CO., NM (NAD83)
SEC 08-T23S-R29E
Astrodog Fed Com 0810 235H

Wellbore #1

Plan: Plan 1

Standard Planning Report

05 July, 2021

SB Directional Services
Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Project EDDY CO., NM (NAD83)

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site SEC 08-T23S-R29E

Site Position:		**Northing:**	482,885.93 usft	**Latitude:**	32.327081
From:	Map	**Easting:**	644,753.39 usft	**Longitude:**	-103.998528
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "		

Well Astrodog Fed Com 0810 235H

Well Position	**+N/-S**	0.0 usft	**Northing:**	481,688.17 usft	**Latitude:**	32.323824
	+E/-W	0.0 usft	**Easting:**	640,601.18 usft	**Longitude:**	-104.011982
Position Uncertainty		0.5 usft	**Wellhead Elevation:**	usft	**Ground Level:**	2,988.2 usft
Grid Convergence:		0.17 °				

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	3/29/2021	6.78	59.93	47,533.17920098

Design Plan 1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	90.00

Plan Survey Tool Program **Date** 7/5/2021

	Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	21,580.3	Plan 1 (Wellbore #1)	MWD	
				MWD - Standard	

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,528.2	14.56	133.09	2,520.4	-62.9	67.2	2.00	2.00	0.00	133.09	
8,478.6	14.56	133.09	8,279.6	-1,085.0	1,160.0	0.00	0.00	0.00	0.00	
9,206.8	0.00	0.00	9,000.0	-1,147.9	1,227.2	2.00	-2.00	0.00	180.00	
10,463.9	0.00	0.00	10,257.0	-1,147.9	1,227.2	0.00	0.00	0.00	0.00	
11,363.9	90.00	89.66	10,830.0	-1,144.5	1,800.1	10.00	10.00	0.00	89.66	PBHL - AD 235H 231
21,580.3	90.00	89.66	10,830.0	-1,083.2	12,016.4	0.00	0.00	0.00	0.00	PBHL - AD 235H 231

SB Directional Services

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
Begin Nudge									
1,900.0	2.00	133.09	1,900.0	-1.2	1.3	1.3	2.00	2.00	0.00
2,000.0	4.00	133.09	1,999.8	-4.8	5.1	5.1	2.00	2.00	0.00
2,100.0	6.00	133.09	2,099.5	-10.7	11.5	11.5	2.00	2.00	0.00
2,200.0	8.00	133.09	2,198.7	-19.0	20.4	20.4	2.00	2.00	0.00
2,300.0	10.00	133.09	2,297.5	-29.7	31.8	31.8	2.00	2.00	0.00
2,400.0	12.00	133.09	2,395.6	-42.8	45.7	45.7	2.00	2.00	0.00
2,500.0	14.00	133.09	2,493.1	-58.1	62.1	62.1	2.00	2.00	0.00
2,528.2	14.56	133.09	2,520.4	-62.9	67.2	67.2	2.00	2.00	0.00
EOB									
2,600.0	14.56	133.09	2,589.9	-75.2	80.4	80.4	0.00	0.00	0.00
2,700.0	14.56	133.09	2,686.7	-92.4	98.8	98.8	0.00	0.00	0.00
2,800.0	14.56	133.09	2,783.5	-109.6	117.1	117.1	0.00	0.00	0.00
2,900.0	14.56	133.09	2,880.2	-126.7	135.5	135.5	0.00	0.00	0.00
3,000.0	14.56	133.09	2,977.0	-143.9	153.9	153.9	0.00	0.00	0.00
3,100.0	14.56	133.09	3,073.8	-161.1	172.2	172.2	0.00	0.00	0.00
3,200.0	14.56	133.09	3,170.6	-178.3	190.6	190.6	0.00	0.00	0.00
3,300.0	14.56	133.09	3,267.4	-195.5	209.0	209.0	0.00	0.00	0.00
3,400.0	14.56	133.09	3,364.2	-212.6	227.3	227.3	0.00	0.00	0.00
3,500.0	14.56	133.09	3,461.0	-229.8	245.7	245.7	0.00	0.00	0.00
3,600.0	14.56	133.09	3,557.7	-247.0	264.1	264.1	0.00	0.00	0.00
3,700.0	14.56	133.09	3,654.5	-264.2	282.4	282.4	0.00	0.00	0.00
3,800.0	14.56	133.09	3,751.3	-281.3	300.8	300.8	0.00	0.00	0.00
3,900.0	14.56	133.09	3,848.1	-298.5	319.1	319.1	0.00	0.00	0.00
4,000.0	14.56	133.09	3,944.9	-315.7	337.5	337.5	0.00	0.00	0.00
4,100.0	14.56	133.09	4,041.7	-332.9	355.9	355.9	0.00	0.00	0.00
4,200.0	14.56	133.09	4,138.5	-350.1	374.2	374.2	0.00	0.00	0.00
4,300.0	14.56	133.09	4,235.3	-367.2	392.6	392.6	0.00	0.00	0.00
4,400.0	14.56	133.09	4,332.0	-384.4	411.0	411.0	0.00	0.00	0.00
4,500.0	14.56	133.09	4,428.8	-401.6	429.3	429.3	0.00	0.00	0.00
4,600.0	14.56	133.09	4,525.6	-418.8	447.7	447.7	0.00	0.00	0.00
4,700.0	14.56	133.09	4,622.4	-435.9	466.1	466.1	0.00	0.00	0.00
4,800.0	14.56	133.09	4,719.2	-453.1	484.4	484.4	0.00	0.00	0.00
4,900.0	14.56	133.09	4,816.0	-470.3	502.8	502.8	0.00	0.00	0.00

SB Directional Services
Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	14.56	133.09	4,912.8	-487.5	521.2	521.2	0.00	0.00	0.00
5,100.0	14.56	133.09	5,009.5	-504.7	539.5	539.5	0.00	0.00	0.00
5,200.0	14.56	133.09	5,106.3	-521.8	557.9	557.9	0.00	0.00	0.00
5,300.0	14.56	133.09	5,203.1	-539.0	576.2	576.2	0.00	0.00	0.00
5,400.0	14.56	133.09	5,299.9	-556.2	594.6	594.6	0.00	0.00	0.00
5,500.0	14.56	133.09	5,396.7	-573.4	613.0	613.0	0.00	0.00	0.00
5,600.0	14.56	133.09	5,493.5	-590.5	631.3	631.3	0.00	0.00	0.00
5,700.0	14.56	133.09	5,590.3	-607.7	649.7	649.7	0.00	0.00	0.00
5,800.0	14.56	133.09	5,687.1	-624.9	668.1	668.1	0.00	0.00	0.00
5,900.0	14.56	133.09	5,783.8	-642.1	686.4	686.4	0.00	0.00	0.00
6,000.0	14.56	133.09	5,880.6	-659.3	704.8	704.8	0.00	0.00	0.00
6,100.0	14.56	133.09	5,977.4	-676.4	723.2	723.2	0.00	0.00	0.00
6,200.0	14.56	133.09	6,074.2	-693.6	741.5	741.5	0.00	0.00	0.00
6,300.0	14.56	133.09	6,171.0	-710.8	759.9	759.9	0.00	0.00	0.00
6,400.0	14.56	133.09	6,267.8	-728.0	778.3	778.3	0.00	0.00	0.00
6,500.0	14.56	133.09	6,364.6	-745.1	796.6	796.6	0.00	0.00	0.00
6,600.0	14.56	133.09	6,461.3	-762.3	815.0	815.0	0.00	0.00	0.00
6,700.0	14.56	133.09	6,558.1	-779.5	833.3	833.3	0.00	0.00	0.00
6,800.0	14.56	133.09	6,654.9	-796.7	851.7	851.7	0.00	0.00	0.00
6,900.0	14.56	133.09	6,751.7	-813.8	870.1	870.1	0.00	0.00	0.00
7,000.0	14.56	133.09	6,848.5	-831.0	888.4	888.4	0.00	0.00	0.00
7,100.0	14.56	133.09	6,945.3	-848.2	906.8	906.8	0.00	0.00	0.00
7,200.0	14.56	133.09	7,042.1	-865.4	925.2	925.2	0.00	0.00	0.00
7,300.0	14.56	133.09	7,138.9	-882.6	943.5	943.5	0.00	0.00	0.00
7,400.0	14.56	133.09	7,235.6	-899.7	961.9	961.9	0.00	0.00	0.00
7,500.0	14.56	133.09	7,332.4	-916.9	980.3	980.3	0.00	0.00	0.00
7,600.0	14.56	133.09	7,429.2	-934.1	998.6	998.6	0.00	0.00	0.00
7,700.0	14.56	133.09	7,526.0	-951.3	1,017.0	1,017.0	0.00	0.00	0.00
7,800.0	14.56	133.09	7,622.8	-968.4	1,035.3	1,035.3	0.00	0.00	0.00
7,900.0	14.56	133.09	7,719.6	-985.6	1,053.7	1,053.7	0.00	0.00	0.00
8,000.0	14.56	133.09	7,816.4	-1,002.8	1,072.1	1,072.1	0.00	0.00	0.00
8,100.0	14.56	133.09	7,913.2	-1,020.0	1,090.4	1,090.4	0.00	0.00	0.00
8,200.0	14.56	133.09	8,009.9	-1,037.2	1,108.8	1,108.8	0.00	0.00	0.00
8,300.0	14.56	133.09	8,106.7	-1,054.3	1,127.2	1,127.2	0.00	0.00	0.00
8,400.0	14.56	133.09	8,203.5	-1,071.5	1,145.5	1,145.5	0.00	0.00	0.00
8,478.6	14.56	133.09	8,279.6	-1,085.0	1,160.0	1,160.0	0.00	0.00	0.00
EOH									
8,500.0	14.14	133.09	8,300.3	-1,088.6	1,163.8	1,163.8	2.00	-2.00	0.00
8,600.0	12.14	133.09	8,397.7	-1,104.2	1,180.4	1,180.4	2.00	-2.00	0.00
8,700.0	10.14	133.09	8,495.8	-1,117.4	1,194.5	1,194.5	2.00	-2.00	0.00
8,800.0	8.14	133.09	8,594.5	-1,128.2	1,206.1	1,206.1	2.00	-2.00	0.00
8,900.0	6.14	133.09	8,693.8	-1,136.7	1,215.2	1,215.2	2.00	-2.00	0.00
9,000.0	4.14	133.09	8,793.3	-1,142.8	1,221.7	1,221.7	2.00	-2.00	0.00
9,100.0	2.14	133.09	8,893.2	-1,146.5	1,225.7	1,225.7	2.00	-2.00	0.00
9,206.8	0.00	0.00	9,000.0	-1,147.9	1,227.2	1,227.2	2.00	-2.00	0.00
Vertical Point									
9,300.0	0.00	0.00	9,093.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,400.0	0.00	0.00	9,193.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,500.0	0.00	0.00	9,293.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,600.0	0.00	0.00	9,393.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,700.0	0.00	0.00	9,493.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,800.0	0.00	0.00	9,593.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
9,900.0	0.00	0.00	9,693.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
10,000.0	0.00	0.00	9,793.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00

SB Directional Services

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,100.0	0.00	0.00	9,893.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
10,200.0	0.00	0.00	9,993.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
10,300.0	0.00	0.00	10,093.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
10,400.0	0.00	0.00	10,193.2	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
10,463.9	0.00	0.00	10,257.0	-1,147.9	1,227.2	1,227.2	0.00	0.00	0.00
KOP 10°/100'									
10,500.0	3.61	89.66	10,293.1	-1,147.9	1,228.3	1,228.3	10.00	10.00	0.00
10,550.0	8.61	89.66	10,342.8	-1,147.9	1,233.7	1,233.7	10.00	10.00	0.00
10,600.0	13.61	89.66	10,391.9	-1,147.8	1,243.3	1,243.3	10.00	10.00	0.00
10,650.0	18.61	89.66	10,439.9	-1,147.7	1,257.2	1,257.2	10.00	10.00	0.00
10,700.0	23.61	89.66	10,486.5	-1,147.6	1,275.2	1,275.2	10.00	10.00	0.00
10,750.0	28.61	89.66	10,531.4	-1,147.5	1,297.2	1,297.2	10.00	10.00	0.00
10,800.0	33.61	89.66	10,574.2	-1,147.3	1,323.0	1,323.0	10.00	10.00	0.00
10,850.0	38.61	89.66	10,614.6	-1,147.1	1,352.5	1,352.5	10.00	10.00	0.00
10,900.0	43.61	89.66	10,652.3	-1,147.0	1,385.3	1,385.3	10.00	10.00	0.00
10,950.0	48.61	89.66	10,686.9	-1,146.7	1,421.3	1,421.3	10.00	10.00	0.00
11,000.0	53.61	89.66	10,718.3	-1,146.5	1,460.3	1,460.3	10.00	10.00	0.00
11,050.0	58.61	89.66	10,746.2	-1,146.3	1,501.7	1,501.7	10.00	10.00	0.00
11,100.0	63.61	89.66	10,770.3	-1,146.0	1,545.5	1,545.5	10.00	10.00	0.00
11,150.0	68.61	89.66	10,790.5	-1,145.7	1,591.2	1,591.2	10.00	10.00	0.00
11,200.0	73.61	89.66	10,806.7	-1,145.4	1,638.5	1,638.5	10.00	10.00	0.00
11,250.0	78.61	89.66	10,818.7	-1,145.1	1,687.0	1,687.0	10.00	10.00	0.00
11,300.0	83.61	89.66	10,826.4	-1,144.8	1,736.4	1,736.4	10.00	10.00	0.00
11,350.0	88.61	89.66	10,829.8	-1,144.5	1,786.3	1,786.3	10.00	10.00	0.00
11,363.9	90.00	89.66	10,830.0	-1,144.5	1,800.1	1,800.1	10.00	10.00	0.00
Landing Point									
11,400.0	90.00	89.66	10,830.0	-1,144.2	1,836.3	1,836.3	0.00	0.00	0.00
11,500.0	90.00	89.66	10,830.0	-1,143.6	1,936.3	1,936.3	0.00	0.00	0.00
11,600.0	90.00	89.66	10,830.0	-1,143.0	2,036.3	2,036.3	0.00	0.00	0.00
11,700.0	90.00	89.66	10,830.0	-1,142.4	2,136.3	2,136.3	0.00	0.00	0.00
11,800.0	90.00	89.66	10,830.0	-1,141.8	2,236.3	2,236.3	0.00	0.00	0.00
11,900.0	90.00	89.66	10,830.0	-1,141.2	2,336.3	2,336.3	0.00	0.00	0.00
12,000.0	90.00	89.66	10,830.0	-1,140.6	2,436.3	2,436.3	0.00	0.00	0.00
12,100.0	90.00	89.66	10,830.0	-1,140.0	2,536.3	2,536.3	0.00	0.00	0.00
12,200.0	90.00	89.66	10,830.0	-1,139.4	2,636.3	2,636.3	0.00	0.00	0.00
12,300.0	90.00	89.66	10,830.0	-1,138.8	2,736.3	2,736.3	0.00	0.00	0.00
12,400.0	90.00	89.66	10,830.0	-1,138.2	2,836.3	2,836.3	0.00	0.00	0.00
12,500.0	90.00	89.66	10,830.0	-1,137.6	2,936.3	2,936.3	0.00	0.00	0.00
12,600.0	90.00	89.66	10,830.0	-1,137.0	3,036.3	3,036.3	0.00	0.00	0.00
12,700.0	90.00	89.66	10,830.0	-1,136.5	3,136.3	3,136.3	0.00	0.00	0.00
12,800.0	90.00	89.66	10,830.0	-1,135.9	3,236.3	3,236.3	0.00	0.00	0.00
12,900.0	90.00	89.66	10,830.0	-1,135.3	3,336.3	3,336.3	0.00	0.00	0.00
13,000.0	90.00	89.66	10,830.0	-1,134.7	3,436.2	3,436.2	0.00	0.00	0.00
13,100.0	90.00	89.66	10,830.0	-1,134.1	3,536.2	3,536.2	0.00	0.00	0.00
13,200.0	90.00	89.66	10,830.0	-1,133.5	3,636.2	3,636.2	0.00	0.00	0.00
13,300.0	90.00	89.66	10,830.0	-1,132.9	3,736.2	3,736.2	0.00	0.00	0.00
13,400.0	90.00	89.66	10,830.0	-1,132.3	3,836.2	3,836.2	0.00	0.00	0.00
13,500.0	90.00	89.66	10,830.0	-1,131.7	3,936.2	3,936.2	0.00	0.00	0.00
13,600.0	90.00	89.66	10,830.0	-1,131.1	4,036.2	4,036.2	0.00	0.00	0.00
13,700.0	90.00	89.66	10,830.0	-1,130.5	4,136.2	4,136.2	0.00	0.00	0.00
13,800.0	90.00	89.66	10,830.0	-1,129.9	4,236.2	4,236.2	0.00	0.00	0.00
13,900.0	90.00	89.66	10,830.0	-1,129.3	4,336.2	4,336.2	0.00	0.00	0.00
14,000.0	90.00	89.66	10,830.0	-1,128.7	4,436.2	4,436.2	0.00	0.00	0.00
14,100.0	90.00	89.66	10,830.0	-1,128.1	4,536.2	4,536.2	0.00	0.00	0.00

SB Directional Services

Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,200.0	90.00	89.66	10,830.0	-1,127.5	4,636.2	4,636.2	0.00	0.00	0.00
14,300.0	90.00	89.66	10,830.0	-1,126.9	4,736.2	4,736.2	0.00	0.00	0.00
14,400.0	90.00	89.66	10,830.0	-1,126.3	4,836.2	4,836.2	0.00	0.00	0.00
14,500.0	90.00	89.66	10,830.0	-1,125.7	4,936.2	4,936.2	0.00	0.00	0.00
14,600.0	90.00	89.66	10,830.0	-1,125.1	5,036.2	5,036.2	0.00	0.00	0.00
14,700.0	90.00	89.66	10,830.0	-1,124.5	5,136.2	5,136.2	0.00	0.00	0.00
14,800.0	90.00	89.66	10,830.0	-1,123.9	5,236.2	5,236.2	0.00	0.00	0.00
14,900.0	90.00	89.66	10,830.0	-1,123.3	5,336.2	5,336.2	0.00	0.00	0.00
15,000.0	90.00	89.66	10,830.0	-1,122.7	5,436.2	5,436.2	0.00	0.00	0.00
15,100.0	90.00	89.66	10,830.0	-1,122.1	5,536.2	5,536.2	0.00	0.00	0.00
15,200.0	90.00	89.66	10,830.0	-1,121.5	5,636.2	5,636.2	0.00	0.00	0.00
15,300.0	90.00	89.66	10,830.0	-1,120.9	5,736.2	5,736.2	0.00	0.00	0.00
15,400.0	90.00	89.66	10,830.0	-1,120.3	5,836.2	5,836.2	0.00	0.00	0.00
15,500.0	90.00	89.66	10,830.0	-1,119.7	5,936.2	5,936.2	0.00	0.00	0.00
15,600.0	90.00	89.66	10,830.0	-1,119.1	6,036.2	6,036.2	0.00	0.00	0.00
15,700.0	90.00	89.66	10,830.0	-1,118.5	6,136.2	6,136.2	0.00	0.00	0.00
15,800.0	90.00	89.66	10,830.0	-1,117.9	6,236.2	6,236.2	0.00	0.00	0.00
15,900.0	90.00	89.66	10,830.0	-1,117.3	6,336.2	6,336.2	0.00	0.00	0.00
16,000.0	90.00	89.66	10,830.0	-1,116.7	6,436.2	6,436.2	0.00	0.00	0.00
16,100.0	90.00	89.66	10,830.0	-1,116.1	6,536.2	6,536.2	0.00	0.00	0.00
16,200.0	90.00	89.66	10,830.0	-1,115.5	6,636.2	6,636.2	0.00	0.00	0.00
16,300.0	90.00	89.66	10,830.0	-1,114.9	6,736.2	6,736.2	0.00	0.00	0.00
16,400.0	90.00	89.66	10,830.0	-1,114.3	6,836.2	6,836.2	0.00	0.00	0.00
16,500.0	90.00	89.66	10,830.0	-1,113.7	6,936.2	6,936.2	0.00	0.00	0.00
16,600.0	90.00	89.66	10,830.0	-1,113.1	7,036.2	7,036.2	0.00	0.00	0.00
16,700.0	90.00	89.66	10,830.0	-1,112.5	7,136.2	7,136.2	0.00	0.00	0.00
16,800.0	90.00	89.66	10,830.0	-1,111.9	7,236.2	7,236.2	0.00	0.00	0.00
16,900.0	90.00	89.66	10,830.0	-1,111.3	7,336.2	7,336.2	0.00	0.00	0.00
17,000.0	90.00	89.66	10,830.0	-1,110.7	7,436.2	7,436.2	0.00	0.00	0.00
17,100.0	90.00	89.66	10,830.0	-1,110.1	7,536.2	7,536.2	0.00	0.00	0.00
17,200.0	90.00	89.66	10,830.0	-1,109.5	7,636.2	7,636.2	0.00	0.00	0.00
17,300.0	90.00	89.66	10,830.0	-1,108.9	7,736.2	7,736.2	0.00	0.00	0.00
17,400.0	90.00	89.66	10,830.0	-1,108.3	7,836.2	7,836.2	0.00	0.00	0.00
17,500.0	90.00	89.66	10,830.0	-1,107.7	7,936.2	7,936.2	0.00	0.00	0.00
17,600.0	90.00	89.66	10,830.0	-1,107.1	8,036.2	8,036.2	0.00	0.00	0.00
17,700.0	90.00	89.66	10,830.0	-1,106.5	8,136.2	8,136.2	0.00	0.00	0.00
17,800.0	90.00	89.66	10,830.0	-1,105.9	8,236.2	8,236.2	0.00	0.00	0.00
17,900.0	90.00	89.66	10,830.0	-1,105.3	8,336.2	8,336.2	0.00	0.00	0.00
18,000.0	90.00	89.66	10,830.0	-1,104.7	8,436.2	8,436.2	0.00	0.00	0.00
18,100.0	90.00	89.66	10,830.0	-1,104.1	8,536.2	8,536.2	0.00	0.00	0.00
18,200.0	90.00	89.66	10,830.0	-1,103.5	8,636.2	8,636.2	0.00	0.00	0.00
18,300.0	90.00	89.66	10,830.0	-1,102.9	8,736.2	8,736.2	0.00	0.00	0.00
18,400.0	90.00	89.66	10,830.0	-1,102.3	8,836.2	8,836.2	0.00	0.00	0.00
18,500.0	90.00	89.66	10,830.0	-1,101.7	8,936.1	8,936.1	0.00	0.00	0.00
18,600.0	90.00	89.66	10,830.0	-1,101.1	9,036.1	9,036.1	0.00	0.00	0.00
18,700.0	90.00	89.66	10,830.0	-1,100.5	9,136.1	9,136.1	0.00	0.00	0.00
18,800.0	90.00	89.66	10,830.0	-1,099.9	9,236.1	9,236.1	0.00	0.00	0.00
18,900.0	90.00	89.66	10,830.0	-1,099.3	9,336.1	9,336.1	0.00	0.00	0.00
19,000.0	90.00	89.66	10,830.0	-1,098.7	9,436.1	9,436.1	0.00	0.00	0.00
19,100.0	90.00	89.66	10,830.0	-1,098.1	9,536.1	9,536.1	0.00	0.00	0.00
19,200.0	90.00	89.66	10,830.0	-1,097.5	9,636.1	9,636.1	0.00	0.00	0.00
19,300.0	90.00	89.66	10,830.0	-1,096.9	9,736.1	9,736.1	0.00	0.00	0.00
19,400.0	90.00	89.66	10,830.0	-1,096.3	9,836.1	9,836.1	0.00	0.00	0.00
19,500.0	90.00	89.66	10,830.0	-1,095.7	9,936.1	9,936.1	0.00	0.00	0.00

SB Directional Services
Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
19,600.0	90.00	89.66	10,830.0	-1,095.1	10,036.1	10,036.1	0.00	0.00	0.00
19,700.0	90.00	89.66	10,830.0	-1,094.5	10,136.1	10,136.1	0.00	0.00	0.00
19,800.0	90.00	89.66	10,830.0	-1,093.9	10,236.1	10,236.1	0.00	0.00	0.00
19,900.0	90.00	89.66	10,830.0	-1,093.3	10,336.1	10,336.1	0.00	0.00	0.00
20,000.0	90.00	89.66	10,830.0	-1,092.7	10,436.1	10,436.1	0.00	0.00	0.00
20,100.0	90.00	89.66	10,830.0	-1,092.1	10,536.1	10,536.1	0.00	0.00	0.00
20,200.0	90.00	89.66	10,830.0	-1,091.5	10,636.1	10,636.1	0.00	0.00	0.00
20,300.0	90.00	89.66	10,830.0	-1,090.9	10,736.1	10,736.1	0.00	0.00	0.00
20,400.0	90.00	89.66	10,830.0	-1,090.3	10,836.1	10,836.1	0.00	0.00	0.00
20,500.0	90.00	89.66	10,830.0	-1,089.7	10,936.1	10,936.1	0.00	0.00	0.00
20,600.0	90.00	89.66	10,830.0	-1,089.1	11,036.1	11,036.1	0.00	0.00	0.00
20,700.0	90.00	89.66	10,830.0	-1,088.5	11,136.1	11,136.1	0.00	0.00	0.00
20,800.0	90.00	89.66	10,830.0	-1,087.9	11,236.1	11,236.1	0.00	0.00	0.00
20,900.0	90.00	89.66	10,830.0	-1,087.3	11,336.1	11,336.1	0.00	0.00	0.00
21,000.0	90.00	89.66	10,830.0	-1,086.7	11,436.1	11,436.1	0.00	0.00	0.00
21,100.0	90.00	89.66	10,830.0	-1,086.1	11,536.1	11,536.1	0.00	0.00	0.00
21,200.0	90.00	89.66	10,830.0	-1,085.5	11,636.1	11,636.1	0.00	0.00	0.00
21,300.0	90.00	89.66	10,830.0	-1,084.9	11,736.1	11,736.1	0.00	0.00	0.00
21,398.1	90.00	89.66	10,830.0	-1,084.3	11,834.2	11,834.2	0.00	0.00	0.00
20" Casing									
21,400.0	90.00	89.66	10,830.0	-1,084.3	11,836.1	11,836.1	0.00	0.00	0.00
21,500.0	90.00	89.66	10,830.0	-1,083.7	11,936.1	11,936.1	0.00	0.00	0.00
21,580.3	90.00	89.66	10,830.0	-1,083.2	12,016.4	12,016.4	0.00	0.00	0.00
TD at 21580.3									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP - AD 235H 2310' FN	0.00	0.00	10,830.0	-1,139.9	1,890.7	480,548.32	642,491.86	32.320675	-104.005873
- plan misses target center by 4.1usft at 11454.4usft MD (10830.0 TVD, -1143.9 N, 1890.7 E)									
- Point									
PBHL - AD 235H 2310' F	0.00	0.00	10,830.0	-1,083.2	12,016.4	480,604.98	652,617.60	32.320741	-103.973093
- plan hits target center									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
21,398.1	10,830.0	20" Casing	20	24

SB Directional Services
Planning Report

Database:	EDM 5000.16 Single User Db	**Local Co-ordinate Reference:**	Well Astrodog Fed Com 0810 235H
Company:	NOVO Oil & Gas	**TVD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Project:	EDDY CO., NM (NAD83)	**MD Reference:**	RKB 25' + GL 2988.2 @ 3013.2usft
Site:	SEC 08-T23S-R29E	**North Reference:**	Grid
Well:	Astrodog Fed Com 0810 235H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan 1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,800.0	1,800.0	0.0	0.0	Begin Nudge
2,528.2	2,520.4	-62.9	67.2	EOB
8,478.6	8,279.6	-1,085.0	1,160.0	EOH
9,206.8	9,000.0	-1,147.9	1,227.2	Vertical Point
10,463.9	10,257.0	-1,147.9	1,227.2	KOP 10°/100'
11,363.9	10,830.0	-1,144.5	1,800.1	Landing Point
21,580.3	10,830.0	-1,083.2	12,016.4	TD at 21580.3

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

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

COMMENTS

Action 41381

COMMENTS

Operator: NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116	OGRID: 372920
	Action Number: 41381
	Action Type: [C-103] NOI Change of Plans (C-103A)

COMMENTS

Created By	Comment	Comment Date
kpickford	KP GEO Review 8/13/2021	8/13/2021

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CONDITIONS

Action 41381

CONDITIONS

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	Action Number: 41381
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CONDITIONS

Created By	Condition	Condition Date
kpickford	Adhere to previous NMOCD Conditions of Approval	8/13/2021