

**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**

Form C-101  
August 1, 2011

Permit 328042

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

1. Operator Name and Address NOVO OIL & GAS NORTHERN DELAWARE, LLC 1001 West Wilshire Blvd Oklahoma City, OK 73116		2. OGRID Number 372920
		3. API Number 30-015-50127
4. Property Code 327177	5. Property Name Astrodog Fee 0809	6. Well No. 014H

**7. Surface Location**

UL - Lot I	Section 7	Township 23S	Range 29E	Lot Idn	Feet From 2370	N/S Line S	Feet From 940	E/W Line E	County Eddy
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**8. Proposed Bottom Hole Location**

UL - Lot P	Section 9	Township 23S	Range 29E	Lot Idn P	Feet From 330	N/S Line S	Feet From 10	E/W Line E	County Eddy
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**9. Pool Information**

HARROUN RANCH;DELAWARE, NE	96878
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**Additional Well Information**

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type Private	15. Ground Level Elevation 3009
16. Multiple N	17. Proposed Depth 17097	18. Formation Delaware	19. Contractor	20. Spud Date 11/15/2022
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

**21. Proposed Casing and Cement Program**

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	390	334	0
Int1	9.875	8.625	32	3630	345	0
Prod	7.875	5.5	20	17097	1928	0

**Casing/Cement Program: Additional Comments**

Intermediate casing grade is P-110 HP; Production casing grade is P110-EC
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**22. Proposed Blowout Prevention Program**

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	5000	TBD
Double Ram	5000	5000	TBD

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief. I further certify I have complied with 19.15.14.9 (A) NMAC <input checked="" type="checkbox"/> and/or 19.15.14.9 (B) NMAC <input checked="" type="checkbox"/> if applicable.	<b>OIL CONSERVATION DIVISION</b>	
Signature:		
Printed Name: Electronically filed by Kurt Shipley	Approved By: Katherine Pickford	
Title: Chief Operating Officer	Title: Geoscientist	
Email Address: kshipley@novoog.com	Approved Date: 11/2/2022	Expiration Date: 11/2/2024
Date: 11/1/2022	Phone: 405-286-3916	Conditions of Approval Attached

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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

<sup>1</sup> API Number <b>30-015- 50127</b>	<sup>2</sup> Pool Code <b>96878</b>	<sup>3</sup> Pool Name <b>HARROUN RANCH; DELAWARE, NE</b>
<sup>4</sup> Property Code <b>327177</b>	<sup>5</sup> Property Name <b>ASTRODOG FEE 0809</b>	<sup>6</sup> Well Number <b>014H</b>
<sup>7</sup> OGRID No. <b>372920</b>	<sup>8</sup> Operator Name <b>NOVO OIL &amp; GAS NORTHERN DELAWARE, LLC</b>	<sup>9</sup> Elevation <b>3009.1</b>

<sup>10</sup> Surface Location

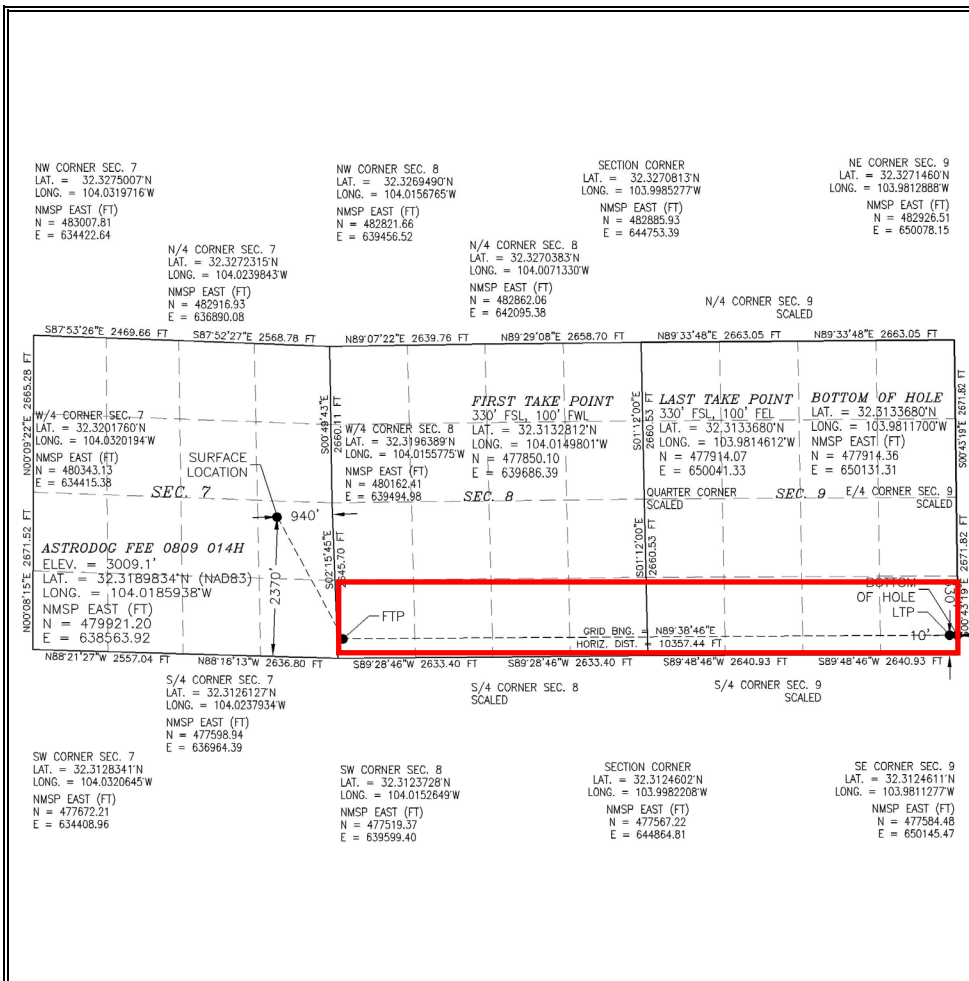
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>I</b>	<b>7</b>	<b>23 S</b>	<b>29 E</b>		<b>2370</b>	<b>SOUTH</b>	<b>940</b>	<b>EAST</b>	<b>EDDY</b>

<sup>11</sup> 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
<b>P</b>	<b>9</b>	<b>23 S</b>	<b>29 E</b>		<b>330</b>	<b>SOUTH</b>	<b>10</b>	<b>EAST</b>	<b>EDDY</b>

<sup>12</sup> Dedicated Acres <b>320</b>	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<sup>17</sup> 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.

*Cory Walk* **10-24-2022**  
Signature Date

**Cory Walk**

Printed Name  
**cory@permitswest.com**

E-mail Address

<sup>18</sup> 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.

OCTOBER 19, 2022

Date of Survey

*Philip M. F. Jaramila*  
Signature and Seal of Professional Surveyor

Certificate Number: **PHILIP M. F. JARAMILA, PLS 12797**  
SURVEY NO. 9563A

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**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

Form APD Conditions

Permit 328042

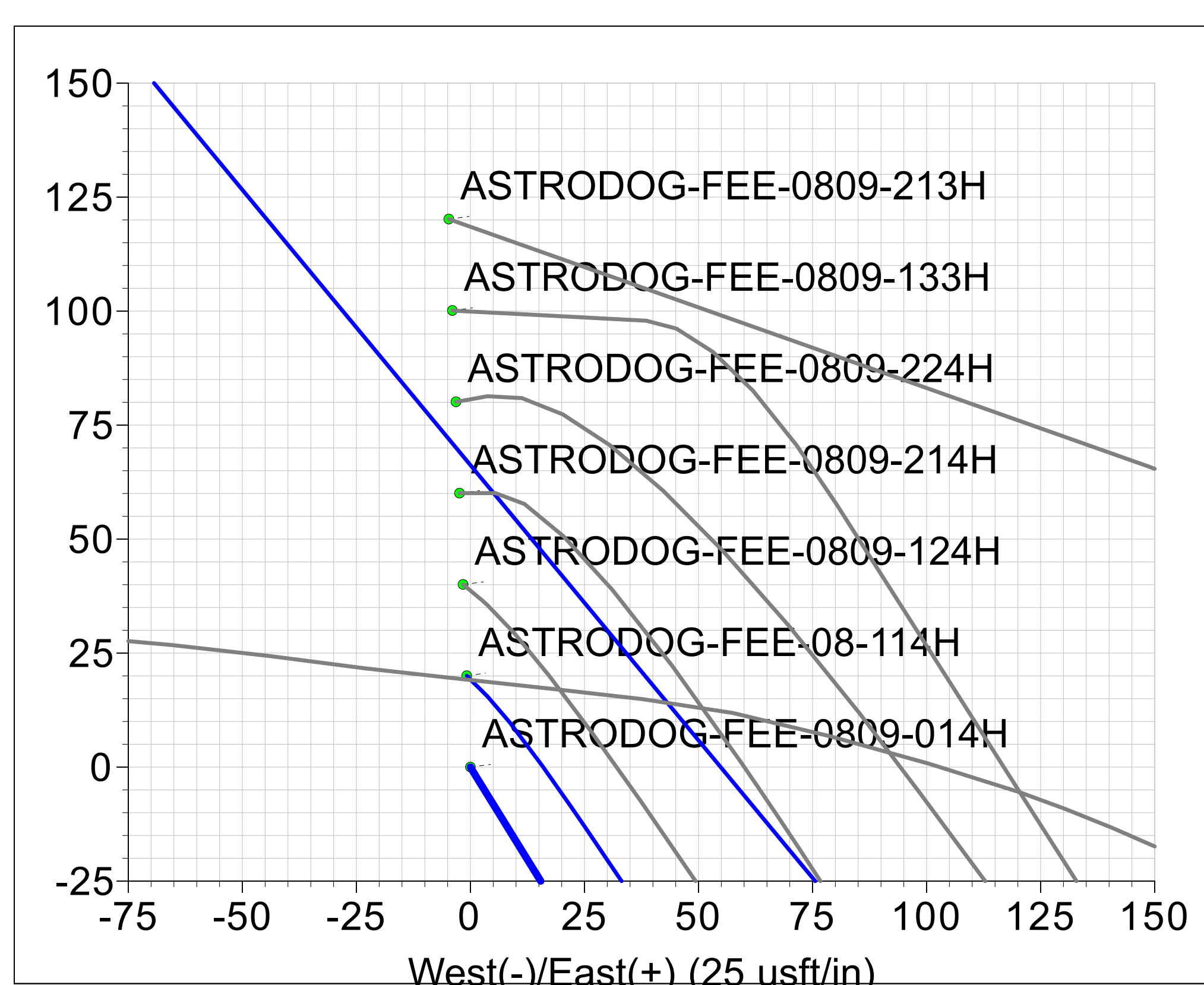
**PERMIT CONDITIONS OF APPROVAL**

Operator Name and Address: NOVO OIL & GAS NORTHERN DELAWARE, LLC [372920] 1001 West Wilshire Blvd Oklahoma City, OK 73116	API Number: 30-015-50127
	Well: Astrodog Fee 0809 #014H

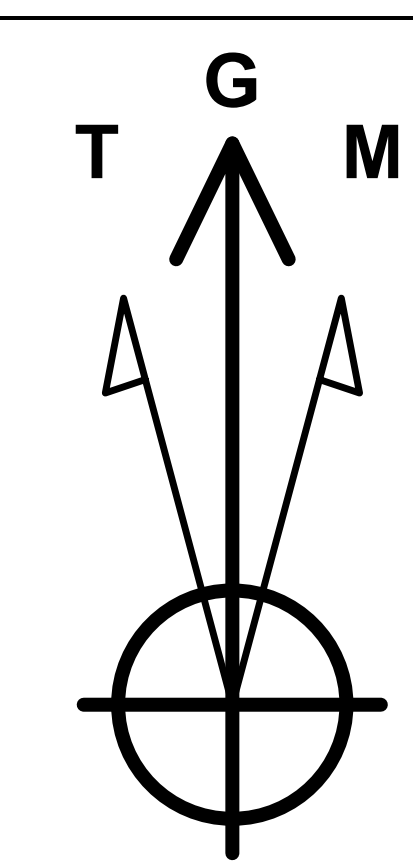
OCD Reviewer	Condition
kpickford	Notify OCD 24 hours prior to casing & cement
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104
kpickford	The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system



# ASTRODOG-FEE-0809-014H



WELL DETAILS: ASTRODOG-FEE-0809-014H									
Plan 1									
GL Elev (ft).: 3009.10									
+N/-S	+E/-W	Northing		Easting		Latitude		Longitude	
0.00	0.00	479921.20		638563.92		32.31898339		-104.01859380	
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
1981.20	29.44	148.33	1938.61	-209.83	129.46	3.00	148.33	163.42	
5832.38	29.44	148.33	5292.61	-1820.60	1123.25	0.00	0.00	1417.91	
6480.70	10.00	150.77	5900.00	-2007.10	1235.47	3.00	178.73	1560.35	
6571.19	10.00	150.77	5989.12	-2020.81	1243.14	0.00	0.00	1570.25	
7172.87	89.00	89.40	6360.00	-2072.99	1644.46	14.00	-61.90	1974.58	
11825.38	89.00	89.40	6441.57	-2024.00	6296.00	0.00	0.00	6549.30	
11846.16	89.00	89.81	6441.93	-2023.86	6316.77	2.00	90.00	6569.74	
17097.61	89.00	89.81	6534.00	-2006.64	11567.39	0.00	0.00	11740.15	



Azimuths to Grid North

Magnetic North: 6.43°

Magnetic Field

Strength: 47366.9nT

Dip Angle: 59.88°

Date: 10/19/2022

Model: IGRF2020

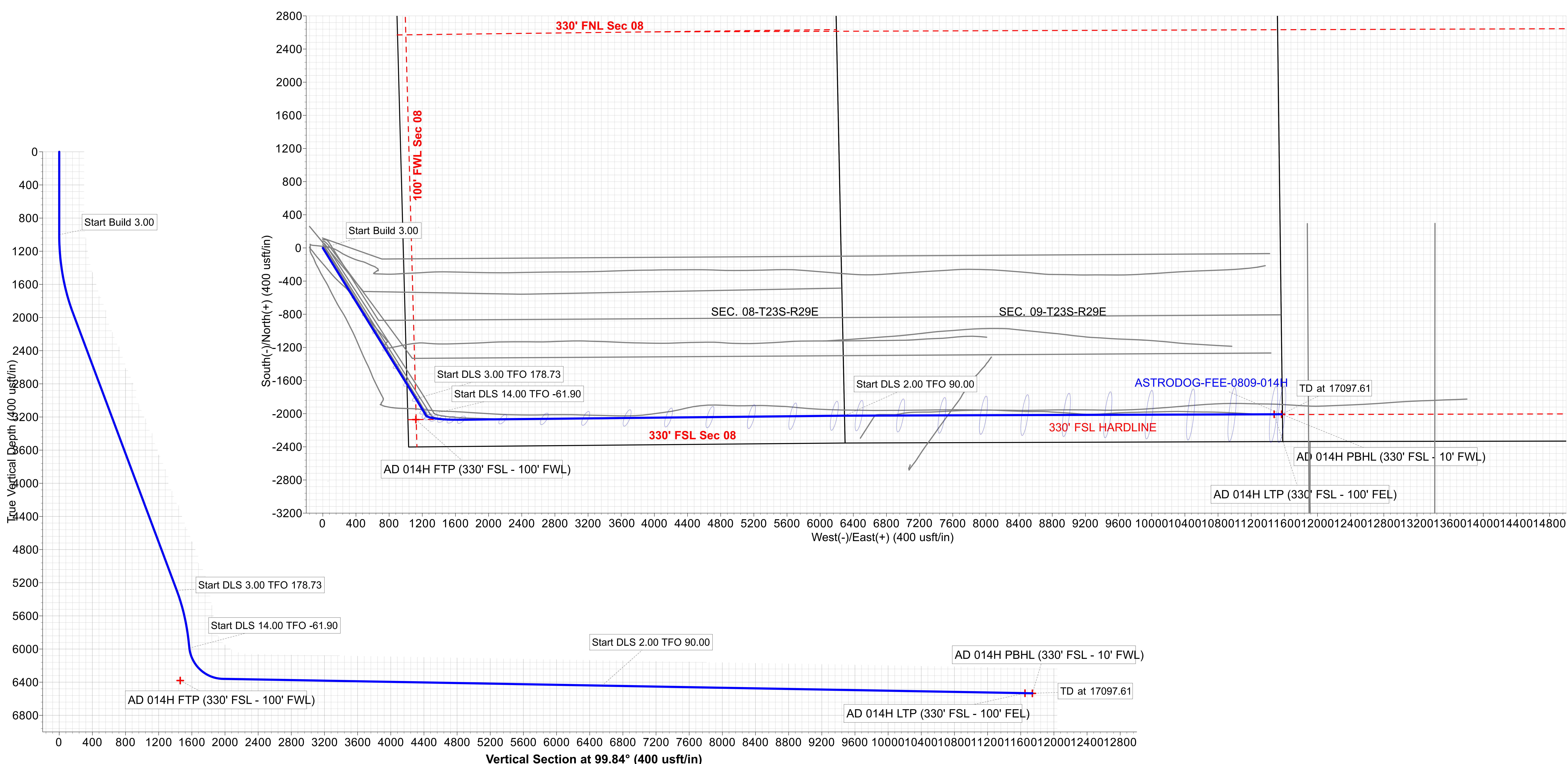
Project: EDDY CO., NM (NAD83)

Site: SEC 08-T23S-R29E

Well: ASTRODOG-FEE-0809-014H

Wellbore: Wellbore #1

Design: Plan 1





## **NOVO Oil & Gas**

**EDDY CO., NM (NAD83)**

**SEC 08-T23S-R29E**

**ASTRODOG-FEE-0809-014H**

**Wellbore #1**

**Plan: Plan 1**

## **Standard Planning Report**

**20 October, 2022**





## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 1		

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

Site		SEC 08-T23S-R29E				
Site Position:		Northing:	482,885.93	usft	Latitude:	32.32708133
From:	Map	Easting:	644,753.39	usft	Longitude:	-103.99852767
Position Uncertainty:		0.00	usft	Slot Radius:	13-3/16	"

Well	ASTRODOG-FEE-0809-014H					
Well Position	+N/-S	0.00 usft	Northing:	479,921.20 usft	Latitude:	32.31898339
	+E/-W	0.00 usft	Easting:	638,563.92 usft	Longitude:	-104.01859381
Position Uncertainty		0.50 usft	Wellhead Elevation:	usft	Ground Level:	3,009.10 usft
Grid Convergence:		0.17 °				

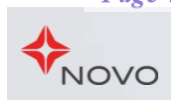
<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	10/19/2022	6.60	59.88	47,366.86451585

<b>Design</b>	Plan 1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	99.84	

<b>Plan Survey Tool Program</b>	<b>Date</b>	10/19/2022			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	17,097.61	Plan 1 (Wellbore #1)	MWD+IGRF	
				OWSG MWD + IGRF or WMM	



## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,981.20	29.44	148.33	1,938.61	-209.83	129.46	3.00	3.00	0.00	148.33	
5,832.38	29.44	148.33	5,292.61	-1,820.60	1,123.25	0.00	0.00	0.00	0.00	
6,480.70	10.00	150.77	5,900.00	-2,007.10	1,235.47	3.00	-3.00	0.38	178.73	
6,571.19	10.00	150.77	5,989.12	-2,020.81	1,243.14	0.00	0.00	0.00	0.00	
7,172.87	89.00	89.40	6,360.00	-2,072.99	1,644.46	14.00	13.13	-10.20	-61.90	
11,825.38	89.00	89.40	6,441.57	-2,024.00	6,296.00	0.00	0.00	0.00	0.00	
11,846.16	89.00	89.81	6,441.93	-2,023.86	6,316.77	2.00	0.00	2.00	90.00	
17,097.61	89.00	89.81	6,534.00	-2,006.64	11,567.39	0.00	0.00	0.00	0.00	





## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	3.00	148.33	1,099.95	-2.23	1.37	1.73	3.00	3.00	0.00
1,200.00	6.00	148.33	1,199.63	-8.90	5.49	6.93	3.00	3.00	0.00
1,300.00	9.00	148.33	1,298.77	-20.01	12.35	15.59	3.00	3.00	0.00
1,400.00	12.00	148.33	1,397.08	-35.52	21.91	27.66	3.00	3.00	0.00
1,500.00	15.00	148.33	1,494.31	-55.38	34.17	43.13	3.00	3.00	0.00
1,600.00	18.00	148.33	1,590.18	-79.55	49.08	61.96	3.00	3.00	0.00
1,700.00	21.00	148.33	1,684.43	-107.96	66.61	84.08	3.00	3.00	0.00
1,800.00	24.00	148.33	1,776.81	-140.52	86.70	109.44	3.00	3.00	0.00
1,900.00	27.00	148.33	1,867.06	-177.16	109.30	137.97	3.00	3.00	0.00
1,981.20	29.44	148.33	1,938.61	-209.83	129.46	163.42	3.00	3.00	0.00
2,000.00	29.44	148.33	1,954.98	-217.69	134.31	169.54	0.00	0.00	0.00
2,100.00	29.44	148.33	2,042.07	-259.52	160.11	202.12	0.00	0.00	0.00
2,200.00	29.44	148.33	2,129.16	-301.34	185.92	234.69	0.00	0.00	0.00
2,300.00	29.44	148.33	2,216.25	-343.17	211.72	267.26	0.00	0.00	0.00
2,400.00	29.44	148.33	2,303.34	-385.00	237.53	299.84	0.00	0.00	0.00
2,500.00	29.44	148.33	2,390.43	-426.82	263.33	332.41	0.00	0.00	0.00
2,600.00	29.44	148.33	2,477.52	-468.65	289.14	364.99	0.00	0.00	0.00
2,700.00	29.44	148.33	2,564.61	-510.47	314.94	397.56	0.00	0.00	0.00
2,800.00	29.44	148.33	2,651.70	-552.30	340.75	430.13	0.00	0.00	0.00
2,900.00	29.44	148.33	2,738.79	-594.12	366.55	462.71	0.00	0.00	0.00
3,000.00	29.44	148.33	2,825.88	-635.95	392.36	495.28	0.00	0.00	0.00
3,100.00	29.44	148.33	2,912.97	-677.77	418.16	527.86	0.00	0.00	0.00
3,200.00	29.44	148.33	3,000.06	-719.60	443.97	560.43	0.00	0.00	0.00
3,300.00	29.44	148.33	3,087.15	-761.42	469.77	593.01	0.00	0.00	0.00
3,400.00	29.44	148.33	3,174.24	-803.25	495.58	625.58	0.00	0.00	0.00
3,500.00	29.44	148.33	3,261.33	-845.07	521.38	658.15	0.00	0.00	0.00
3,600.00	29.44	148.33	3,348.42	-886.90	547.19	690.73	0.00	0.00	0.00
3,700.00	29.44	148.33	3,435.51	-928.73	572.99	723.30	0.00	0.00	0.00
3,800.00	29.44	148.33	3,522.60	-970.55	598.80	755.88	0.00	0.00	0.00
3,900.00	29.44	148.33	3,609.69	-1,012.38	624.60	788.45	0.00	0.00	0.00
4,000.00	29.44	148.33	3,696.78	-1,054.20	650.41	821.02	0.00	0.00	0.00
4,100.00	29.44	148.33	3,783.87	-1,096.03	676.21	853.60	0.00	0.00	0.00
4,200.00	29.44	148.33	3,870.96	-1,137.85	702.02	886.17	0.00	0.00	0.00
4,300.00	29.44	148.33	3,958.05	-1,179.68	727.82	918.75	0.00	0.00	0.00
4,400.00	29.44	148.33	4,045.15	-1,221.50	753.63	951.32	0.00	0.00	0.00
4,500.00	29.44	148.33	4,132.24	-1,263.33	779.43	983.89	0.00	0.00	0.00
4,600.00	29.44	148.33	4,219.33	-1,305.15	805.24	1,016.47	0.00	0.00	0.00
4,700.00	29.44	148.33	4,306.42	-1,346.98	831.04	1,049.04	0.00	0.00	0.00
4,800.00	29.44	148.33	4,393.51	-1,388.81	856.85	1,081.62	0.00	0.00	0.00
4,900.00	29.44	148.33	4,480.60	-1,430.63	882.65	1,114.19	0.00	0.00	0.00
5,000.00	29.44	148.33	4,567.69	-1,472.46	908.46	1,146.76	0.00	0.00	0.00
5,100.00	29.44	148.33	4,654.78	-1,514.28	934.26	1,179.34	0.00	0.00	0.00
5,200.00	29.44	148.33	4,741.87	-1,556.11	960.07	1,211.91	0.00	0.00	0.00





## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)
5,300.00	29.44	148.33	4,828.96	-1,597.93	985.87	1,244.49	0.00	0.00	0.00
5,400.00	29.44	148.33	4,916.05	-1,639.76	1,011.68	1,277.06	0.00	0.00	0.00
5,500.00	29.44	148.33	5,003.14	-1,681.58	1,037.48	1,309.63	0.00	0.00	0.00
5,600.00	29.44	148.33	5,090.23	-1,723.41	1,063.29	1,342.21	0.00	0.00	0.00
5,700.00	29.44	148.33	5,177.32	-1,765.23	1,089.09	1,374.78	0.00	0.00	0.00
5,800.00	29.44	148.33	5,264.41	-1,807.06	1,114.90	1,407.36	0.00	0.00	0.00
5,832.38	29.44	148.33	5,292.61	-1,820.60	1,123.25	1,417.91	0.00	0.00	0.00
5,900.00	27.41	148.42	5,352.08	-1,848.01	1,140.13	1,439.22	3.00	-3.00	0.14
6,000.00	24.41	148.60	5,442.02	-1,885.26	1,162.95	1,468.07	3.00	-3.00	0.17
6,100.00	21.41	148.81	5,534.12	-1,918.52	1,183.18	1,493.68	3.00	-3.00	0.22
6,200.00	18.41	149.10	5,628.13	-1,947.69	1,200.74	1,515.97	3.00	-3.00	0.28
6,300.00	15.41	149.49	5,723.79	-1,972.69	1,215.60	1,534.89	3.00	-3.00	0.39
6,400.00	12.42	150.06	5,820.85	-1,993.47	1,227.72	1,550.38	3.00	-3.00	0.57
6,480.70	10.00	150.77	5,900.00	-2,007.10	1,235.47	1,560.35	3.00	-3.00	0.88
6,500.00	10.00	150.77	5,919.01	-2,010.02	1,237.11	1,562.46	0.00	0.00	0.00
6,571.19	10.00	150.77	5,989.12	-2,020.81	1,243.14	1,570.25	0.00	0.00	0.00
6,575.00	10.26	148.13	5,992.87	-2,021.39	1,243.48	1,570.68	14.00	6.88	-69.34
6,600.00	12.42	134.00	6,017.38	-2,025.15	1,246.59	1,574.39	14.00	8.61	-56.53
6,625.00	15.08	124.37	6,041.67	-2,028.85	1,251.21	1,579.57	14.00	10.64	-38.51
6,650.00	18.02	117.70	6,065.63	-2,032.49	1,257.32	1,586.21	14.00	11.78	-26.70
6,675.00	21.13	112.89	6,089.19	-2,036.04	1,264.90	1,594.29	14.00	12.44	-19.24
6,700.00	24.34	109.28	6,112.24	-2,039.49	1,273.92	1,603.76	14.00	12.85	-14.43
6,725.00	27.62	106.47	6,134.71	-2,042.84	1,284.34	1,614.60	14.00	13.11	-11.22
6,750.00	30.94	104.23	6,156.52	-2,046.06	1,296.13	1,626.77	14.00	13.29	-8.99
6,775.00	34.30	102.38	6,177.57	-2,049.15	1,309.24	1,640.22	14.00	13.42	-7.40
6,800.00	37.68	100.82	6,197.80	-2,052.10	1,323.63	1,654.90	14.00	13.51	-6.22
6,825.00	41.07	99.49	6,217.12	-2,054.88	1,339.24	1,670.76	14.00	13.59	-5.34
6,850.00	44.48	98.32	6,235.47	-2,057.51	1,356.01	1,687.73	14.00	13.64	-4.66
6,875.00	47.90	97.29	6,252.77	-2,059.95	1,373.89	1,705.76	14.00	13.68	-4.12
6,900.00	51.33	96.37	6,268.97	-2,062.21	1,392.79	1,724.77	14.00	13.71	-3.70
6,925.00	54.77	95.53	6,283.99	-2,064.28	1,412.66	1,744.70	14.00	13.74	-3.36
6,950.00	58.21	94.75	6,297.79	-2,066.14	1,433.42	1,765.47	14.00	13.76	-3.09
6,975.00	61.65	94.04	6,310.32	-2,067.80	1,454.98	1,787.00	14.00	13.78	-2.87
7,000.00	65.10	93.37	6,321.52	-2,069.24	1,477.28	1,809.22	14.00	13.79	-2.68
7,025.00	68.55	92.73	6,331.36	-2,070.46	1,500.23	1,832.04	14.00	13.80	-2.54
7,050.00	72.00	92.13	6,339.79	-2,071.46	1,523.74	1,855.37	14.00	13.81	-2.42
7,075.00	75.46	91.55	6,346.80	-2,072.22	1,547.72	1,879.13	14.00	13.82	-2.33
7,100.00	78.92	90.98	6,352.34	-2,072.76	1,572.09	1,903.23	14.00	13.83	-2.26
7,125.00	82.37	90.43	6,356.40	-2,073.06	1,596.75	1,927.58	14.00	13.83	-2.20
7,150.00	85.83	89.89	6,358.97	-2,073.13	1,621.62	1,952.09	14.00	13.83	-2.17
7,172.87	89.00	89.40	6,360.00	-2,072.99	1,644.46	1,974.58	14.00	13.83	-2.15
7,200.00	89.00	89.40	6,360.48	-2,072.70	1,671.58	2,001.25	0.00	0.00	0.00
7,300.00	89.00	89.40	6,362.23	-2,071.65	1,771.56	2,099.58	0.00	0.00	0.00
7,400.00	89.00	89.40	6,363.99	-2,070.60	1,871.54	2,197.91	0.00	0.00	0.00
7,500.00	89.00	89.40	6,365.74	-2,069.54	1,971.52	2,296.24	0.00	0.00	0.00
7,600.00	89.00	89.40	6,367.49	-2,068.49	2,071.50	2,394.57	0.00	0.00	0.00
7,700.00	89.00	89.40	6,369.25	-2,067.44	2,171.48	2,492.89	0.00	0.00	0.00
7,800.00	89.00	89.40	6,371.00	-2,066.39	2,271.46	2,591.22	0.00	0.00	0.00
7,900.00	89.00	89.40	6,372.75	-2,065.33	2,371.44	2,689.55	0.00	0.00	0.00
8,000.00	89.00	89.40	6,374.51	-2,064.28	2,471.42	2,787.88	0.00	0.00	0.00
8,100.00	89.00	89.40	6,376.26	-2,063.23	2,571.39	2,886.20	0.00	0.00	0.00
8,200.00	89.00	89.40	6,378.01	-2,062.17	2,671.37	2,984.53	0.00	0.00	0.00
8,300.00	89.00	89.40	6,379.76	-2,061.12	2,771.35	3,082.86	0.00	0.00	0.00
8,400.00	89.00	89.40	6,381.52	-2,060.07	2,871.33	3,181.19	0.00	0.00	0.00



## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)
8,500.00	89.00	89.40	6,383.27	-2,059.01	2,971.31	3,279.52	0.00	0.00	0.00
8,600.00	89.00	89.40	6,385.02	-2,057.96	3,071.29	3,377.84	0.00	0.00	0.00
8,700.00	89.00	89.40	6,386.78	-2,056.91	3,171.27	3,476.17	0.00	0.00	0.00
8,800.00	89.00	89.40	6,388.53	-2,055.86	3,271.25	3,574.50	0.00	0.00	0.00
8,900.00	89.00	89.40	6,390.28	-2,054.80	3,371.23	3,672.83	0.00	0.00	0.00
9,000.00	89.00	89.40	6,392.04	-2,053.75	3,471.21	3,771.16	0.00	0.00	0.00
9,100.00	89.00	89.40	6,393.79	-2,052.70	3,571.19	3,869.48	0.00	0.00	0.00
9,200.00	89.00	89.40	6,395.54	-2,051.64	3,671.16	3,967.81	0.00	0.00	0.00
9,300.00	89.00	89.40	6,397.30	-2,050.59	3,771.14	4,066.14	0.00	0.00	0.00
9,400.00	89.00	89.40	6,399.05	-2,049.54	3,871.12	4,164.47	0.00	0.00	0.00
9,500.00	89.00	89.40	6,400.80	-2,048.49	3,971.10	4,262.80	0.00	0.00	0.00
9,600.00	89.00	89.40	6,402.56	-2,047.43	4,071.08	4,361.12	0.00	0.00	0.00
9,700.00	89.00	89.40	6,404.31	-2,046.38	4,171.06	4,459.45	0.00	0.00	0.00
9,800.00	89.00	89.40	6,406.06	-2,045.33	4,271.04	4,557.78	0.00	0.00	0.00
9,900.00	89.00	89.40	6,407.82	-2,044.27	4,371.02	4,656.11	0.00	0.00	0.00
10,000.00	89.00	89.40	6,409.57	-2,043.22	4,471.00	4,754.43	0.00	0.00	0.00
10,100.00	89.00	89.40	6,411.32	-2,042.17	4,570.98	4,852.76	0.00	0.00	0.00
10,200.00	89.00	89.40	6,413.07	-2,041.11	4,670.96	4,951.09	0.00	0.00	0.00
10,300.00	89.00	89.40	6,414.83	-2,040.06	4,770.93	5,049.42	0.00	0.00	0.00
10,400.00	89.00	89.40	6,416.58	-2,039.01	4,870.91	5,147.75	0.00	0.00	0.00
10,500.00	89.00	89.40	6,418.33	-2,037.96	4,970.89	5,246.07	0.00	0.00	0.00
10,600.00	89.00	89.40	6,420.09	-2,036.90	5,070.87	5,344.40	0.00	0.00	0.00
10,700.00	89.00	89.40	6,421.84	-2,035.85	5,170.85	5,442.73	0.00	0.00	0.00
10,800.00	89.00	89.40	6,423.59	-2,034.80	5,270.83	5,541.06	0.00	0.00	0.00
10,900.00	89.00	89.40	6,425.35	-2,033.74	5,370.81	5,639.39	0.00	0.00	0.00
11,000.00	89.00	89.40	6,427.10	-2,032.69	5,470.79	5,737.71	0.00	0.00	0.00
11,100.00	89.00	89.40	6,428.85	-2,031.64	5,570.77	5,836.04	0.00	0.00	0.00
11,200.00	89.00	89.40	6,430.61	-2,030.59	5,670.75	5,934.37	0.00	0.00	0.00
11,300.00	89.00	89.40	6,432.36	-2,029.53	5,770.73	6,032.70	0.00	0.00	0.00
11,400.00	89.00	89.40	6,434.11	-2,028.48	5,870.70	6,131.03	0.00	0.00	0.00
11,500.00	89.00	89.40	6,435.87	-2,027.43	5,970.68	6,229.35	0.00	0.00	0.00
11,600.00	89.00	89.40	6,437.62	-2,026.37	6,070.66	6,327.68	0.00	0.00	0.00
11,700.00	89.00	89.40	6,439.37	-2,025.32	6,170.64	6,426.01	0.00	0.00	0.00
11,800.00	89.00	89.40	6,441.13	-2,024.27	6,270.62	6,524.34	0.00	0.00	0.00
11,825.38	89.00	89.40	6,441.57	-2,024.00	6,296.00	6,549.30	0.00	0.00	0.00
11,846.16	89.00	89.81	6,441.93	-2,023.86	6,316.77	6,569.74	2.00	0.00	2.00
11,900.00	89.00	89.81	6,442.88	-2,023.68	6,370.60	6,622.75	0.00	0.00	0.00
12,000.00	89.00	89.81	6,444.63	-2,023.35	6,470.59	6,721.20	0.00	0.00	0.00
12,100.00	89.00	89.81	6,446.38	-2,023.02	6,570.57	6,819.66	0.00	0.00	0.00
12,200.00	89.00	89.81	6,448.14	-2,022.70	6,670.56	6,918.12	0.00	0.00	0.00
12,300.00	89.00	89.81	6,449.89	-2,022.37	6,770.54	7,016.57	0.00	0.00	0.00
12,400.00	89.00	89.81	6,451.64	-2,022.04	6,870.52	7,115.03	0.00	0.00	0.00
12,500.00	89.00	89.81	6,453.40	-2,021.71	6,970.51	7,213.49	0.00	0.00	0.00
12,600.00	89.00	89.81	6,455.15	-2,021.39	7,070.49	7,311.94	0.00	0.00	0.00
12,700.00	89.00	89.81	6,456.90	-2,021.06	7,170.48	7,410.40	0.00	0.00	0.00
12,800.00	89.00	89.81	6,458.66	-2,020.73	7,270.46	7,508.86	0.00	0.00	0.00
12,900.00	89.00	89.81	6,460.41	-2,020.40	7,370.44	7,607.32	0.00	0.00	0.00
13,000.00	89.00	89.81	6,462.16	-2,020.07	7,470.43	7,705.77	0.00	0.00	0.00
13,100.00	89.00	89.81	6,463.92	-2,019.75	7,570.41	7,804.23	0.00	0.00	0.00
13,200.00	89.00	89.81	6,465.67	-2,019.42	7,670.40	7,902.69	0.00	0.00	0.00
13,300.00	89.00	89.81	6,467.42	-2,019.09	7,770.38	8,001.14	0.00	0.00	0.00
13,400.00	89.00	89.81	6,469.18	-2,018.76	7,870.36	8,099.60	0.00	0.00	0.00
13,500.00	89.00	89.81	6,470.93	-2,018.43	7,970.35	8,198.06	0.00	0.00	0.00
13,600.00	89.00	89.81	6,472.68	-2,018.11	8,070.33	8,296.51	0.00	0.00	0.00



## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	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)	
13,700.00	89.00	89.81	6,474.43	-2,017.78	8,170.32	8,394.97	0.00	0.00	0.00	
13,800.00	89.00	89.81	6,476.19	-2,017.45	8,270.30	8,493.43	0.00	0.00	0.00	
13,900.00	89.00	89.81	6,477.94	-2,017.12	8,370.29	8,591.88	0.00	0.00	0.00	
14,000.00	89.00	89.81	6,479.69	-2,016.80	8,470.27	8,690.34	0.00	0.00	0.00	
14,100.00	89.00	89.81	6,481.45	-2,016.47	8,570.25	8,788.80	0.00	0.00	0.00	
14,200.00	89.00	89.81	6,483.20	-2,016.14	8,670.24	8,887.25	0.00	0.00	0.00	
14,300.00	89.00	89.81	6,484.95	-2,015.81	8,770.22	8,985.71	0.00	0.00	0.00	
14,400.00	89.00	89.81	6,486.71	-2,015.48	8,870.21	9,084.17	0.00	0.00	0.00	
14,500.00	89.00	89.81	6,488.46	-2,015.16	8,970.19	9,182.62	0.00	0.00	0.00	
14,600.00	89.00	89.81	6,490.21	-2,014.83	9,070.17	9,281.08	0.00	0.00	0.00	
14,700.00	89.00	89.81	6,491.97	-2,014.50	9,170.16	9,379.54	0.00	0.00	0.00	
14,800.00	89.00	89.81	6,493.72	-2,014.17	9,270.14	9,477.99	0.00	0.00	0.00	
14,900.00	89.00	89.81	6,495.47	-2,013.84	9,370.13	9,576.45	0.00	0.00	0.00	
15,000.00	89.00	89.81	6,497.23	-2,013.52	9,470.11	9,674.91	0.00	0.00	0.00	
15,100.00	89.00	89.81	6,498.98	-2,013.19	9,570.09	9,773.36	0.00	0.00	0.00	
15,200.00	89.00	89.81	6,500.73	-2,012.86	9,670.08	9,871.82	0.00	0.00	0.00	
15,300.00	89.00	89.81	6,502.49	-2,012.53	9,770.06	9,970.28	0.00	0.00	0.00	
15,400.00	89.00	89.81	6,504.24	-2,012.21	9,870.05	10,068.73	0.00	0.00	0.00	
15,500.00	89.00	89.81	6,505.99	-2,011.88	9,970.03	10,167.19	0.00	0.00	0.00	
15,600.00	89.00	89.81	6,507.74	-2,011.55	10,070.01	10,265.65	0.00	0.00	0.00	
15,700.00	89.00	89.81	6,509.50	-2,011.22	10,170.00	10,364.10	0.00	0.00	0.00	
15,800.00	89.00	89.81	6,511.25	-2,010.89	10,269.98	10,462.56	0.00	0.00	0.00	
15,900.00	89.00	89.81	6,513.00	-2,010.57	10,369.97	10,561.02	0.00	0.00	0.00	
16,000.00	89.00	89.81	6,514.76	-2,010.24	10,469.95	10,659.48	0.00	0.00	0.00	
16,100.00	89.00	89.81	6,516.51	-2,009.91	10,569.94	10,757.93	0.00	0.00	0.00	
16,200.00	89.00	89.81	6,518.26	-2,009.58	10,669.92	10,856.39	0.00	0.00	0.00	
16,300.00	89.00	89.81	6,520.02	-2,009.25	10,769.90	10,954.85	0.00	0.00	0.00	
16,400.00	89.00	89.81	6,521.77	-2,008.93	10,869.89	11,053.30	0.00	0.00	0.00	
16,500.00	89.00	89.81	6,523.52	-2,008.60	10,969.87	11,151.76	0.00	0.00	0.00	
16,600.00	89.00	89.81	6,525.28	-2,008.27	11,069.86	11,250.22	0.00	0.00	0.00	
16,700.00	89.00	89.81	6,527.03	-2,007.94	11,169.84	11,348.67	0.00	0.00	0.00	
16,800.00	89.00	89.81	6,528.78	-2,007.62	11,269.82	11,447.13	0.00	0.00	0.00	
16,900.00	89.00	89.81	6,530.54	-2,007.29	11,369.81	11,545.59	0.00	0.00	0.00	
17,000.00	89.00	89.81	6,532.29	-2,006.96	11,469.79	11,644.04	0.00	0.00	0.00	
17,097.61	89.00	89.81	6,534.00	-2,006.64	11,567.39	11,740.15	0.00	0.00	0.00	

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
- hit/miss target										
- Shape										
AD 014H LTP (330' FSL	0.00	0.00	0.00	-2,007.13	11,477.41	477,914.07	650,041.33	32.31336803	-103.98146125	
- plan misses target center by 6531.42usft at 16893.10usft MD (6530.41 TVD, -2007.31 N, 11362.90 E)										
- Point										
AD 014H FTP (330' FSL	0.00	0.00	0.00	-2,071.10	1,122.47	477,850.10	639,686.39	32.31328118	-104.01498013	
- plan misses target center by 2355.72usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)										
- Point										
AD 014H PBHL (330' FS	0.00	0.00	0.00	-2,006.64	11,567.39	477,914.56	650,131.31	32.31336857	-103.98116999	
- plan misses target center by 6533.00usft at 16983.06usft MD (6531.99 TVD, -2007.02 N, 11452.86 E)										
- Point										



## Planning Report



<b>Database:</b>	1 - EDM Production	<b>Local Co-ordinate Reference:</b>	Well ASTRODOG-FEE-0809-014H
<b>Company:</b>	NOVO Oil & Gas	<b>TVD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Project:</b>	EDDY CO., NM (NAD83)	<b>MD Reference:</b>	RKB 25' + GL 3009.1' @ 3034.10usft
<b>Site:</b>	SEC 08-T23S-R29E	<b>North Reference:</b>	Grid
<b>Well:</b>	ASTRODOG-FEE-0809-014H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan 1		

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
17,183.16	20" Casing		20	24

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### Section 1 – Plan Description

Effective May 25, 2021

**I. Operator:** \_Novo Oil & Gas Northern Delaware, LLC\_\_\_\_\_ **OGRID:** \_\_372920\_\_\_\_\_ **Date:** \_\_10\_\_/\_28\_\_/\_22\_\_\_\_\_

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water
Astrodog Fee 0809 213H	30-015-49227	I-7-23S-29E	2,490' FSL & 940' FEL	1,800	3,700	6,400
Astrodog Fee 0809 133H	30-015-49225	I-7-23S-29E	2,470' FSL & 940' FEL	1,800	3,700	6,400
Astrodog Fee 0809 224H	30-015-49224	I-7-23S-29E	2,450' FSL & 940' FEL	1,800	3,700	6,400
Astrodog Fee 0809 214H	30-015-49226	I-7-23S-29E	2,430' FSL & 940' FEL	1,800	3,700	6,400
Astrodog Fee 0809 124H	30-015-49228	I-7-23S-29E	2,410' FSL & 940' FEL	1,700	4,100	3,700
Astrodog Fee 08 114H	30-015-49216	I-7-23S-29E	2,390' FSL & 940' FEL	1,100	1,800	3,400
Astrodog Fee 0809 014H	30-015-xxxxx	I-7-23S-29E	2,370' FSL & 940' FEL	700	2,100	2,400

**IV. Central Delivery Point Name:** \_CTB Name: Astrodog Pad S / CTB\_\_\_\_\_ [See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Astrodog Fee 0809 213H	30-015-49227	11/10/2022	12/5/2022	5/29/2023	6/15/2023	7/1/2023
Astrodog Fee 0809 133H	30-015-49225	11/12/2022	12/30/2022	5/29/2023	6/15/2023	7/1/2023
Astrodog Fee 0809 224H	30-015-49224	11/14/2022	1/24/2023	5/29/2023	6/29/2023	7/1/2023
Astrodog Fee 0809 214H	30-015-49226	11/15/2022	2/18/2023	5/29/2023	6/29/2023	7/1/2023
Astrodog Fee 0809 124H	30-015-49228	11/17/2022	3/15/2023	5/29/2023	6/29/2023	7/1/2023



Astrodog Fee 08 114H	30-015-49216	11/19/2022	4/1/2023	5/29/2023	6/29/2023	7/1/2023
Astrodog Fee 0809 014H	30-015-xxxxx	11/21/2022	4/26/2023	5/29/2023	6/29/2023	7/1/2023

**VI. Separation Equipment:** ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

## **Section 2 – Enhanced Plan** **EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

### **IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

### **X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### **Section 3 - Certifications**

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

*If Operator checks this box, Operator will select one of the following:*

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☒ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### **Section 4 - Notices**


1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature:	
Printed Name:	Jushn Carler
Title:	Landman
E-mail Address:	jcarler@novooil.com
Date:	10/26/22
Phone:	405.406.0737

**OIL CONSERVATION DIVISION**  
(Only applicable when submitted as a standalone form)

Approved By:
Title:
Approval Date:
Conditions of Approval:

## APPENDIX A



## **Separation Equipment**

Novo Oil & Gas Northern Delaware, LLC (Novo) has pulled representative pressurized samples from wells in the same producing formation. Novo has utilized these samples in process simulations to determine the amount of gas anticipated in each stage of the process and utilized this information with a safety factor to size the equipment listed below:

- Separation equipment will be set as follows:
  - Individual 3 Phase separators will be set for each individual well.
    - The separators will be sized based on the anticipated volume of the well and the pressure of the lines utilized for oil, gas, and water takeaway.
  - Individual Heater treaters will be set for each individual well.
    - The heater treaters are sized based on the anticipated combined volume of oil and water predicted to come from the initial 3 phase separator.
    - Oil will be separated from the water and water will be sent to its respective tanks
    - The combined oil and natural gas stream is routed to the Vapor Recovery Tower.
  - The oil and water tanks utilize a closed vent capture system to ensure all breathing, working and flashing losses are routed to the Vapor Recovery Tower (VRT) and Vapor Recovery Unit (VRU)
  - The Vapor Recovery Tower has been sized, based on the anticipated volume of gas from the heater treater and oil and water tanks. A VRU is then utilized to push the recovered gas into the sales pipeline.
    - The VRU will be sized based on the anticipated gas volume and the gas pressure for the line utilized for takeaway.

All equipment has been sized based on the modeled projected need and a safety factor of at least 10%. This is ensuring that the capture of methane gas and VOC will minimize flaring below 50mcf/d per facility.



## **Operational Practices**

### ***19.15.27.8 (A) Venting and Flaring of Natural Gas***

Novo Oil & Gas Northern Delaware, LLC (Novo) understands the requirements of NMAC 19.15.27.8 which states that the venting and flaring of natural gas during drilling, completion or production that constitutes waste as defined in 19.15.2 are prohibited.

### ***19.15.27.8 (B) Venting and flaring during drilling operations***

1. Novo shall capture or combust natural gas if technically feasible during drilling operations using best industry practices.
2. A flare stack with a 100 percent capacity for expected volumes will be set on location of the CTB at least 100 feet from the nearest surface hole location, well heads, and storage tanks.
3. In the event of an emergency, Novo will vent natural gas in order to avoid substantial impact. Novo shall report the vented or flared gas to the NMOCD.

### ***19.15.27.8 (C) Venting and flaring during completion or recompletion***

During completion operations, Novo utilizes the following:

1. Novo facilities are built and ready from day 1 of flowback
2. Individual well test separators will be set to properly separate gas and liquids. Temporary test separator will be utilized initially to process volumes. In addition, separators will be tied into flowback tanks which will be tied into the gas processing equipment for sales down a pipeline. See **Appendix A** for details on Separation Equipment used by Novo.
3. Should the facility not yet be capable of processing gas, or the gas does not meet quality standards, then storage tanks will be set that are tied into gas busters or a temporary flare to manage all natural gas. This flare would meet the following requirements:
  - a) An appropriately sized flare stack with an automatic igniter
  - b) Novo analyzes the natural gas samples twice per week



- c) Novo routes the natural gas into a gathering pipeline as soon as the pipeline specifications are met
- d) Novo provides the NMOCD with pipeline specifications and natural gas data.

**19.15.27.8 (D) Venting and flaring during production operations.**

Novo will not vent or flare natural gas except under the following circumstances:

1. During an emergency or malfunction
2. To unload or clean-up liquid holdup in a well to atmospheric pressure, provided
  - a) Novo does not vent after the well achieves a stabilized rate and pressure
  - b) Novo will remain present on-site during liquids unloaded by manual purging and takes all reasonable actions to achieve a stabilized rate and pressure at the earliest practical time
  - c) Novo will optimize the system to minimize natural gas venting on any well equipped with a plunger lift or auto control system
  - d) Best management practices will be used during downhole well maintenance.
3. During the first year of production from an exploratory well provided
  - a) Novo receives approval from the NMOCD
  - b) Novo remains in compliance with NM gas capture requirements
  - c) Novo submits an updated C-129 from to the NMOCD.
4. During the following activities unless prohibited
  - a) Gauging or sampling a storage tank or low-pressure production vessel
  - b) Loading out liquids from a storage tank
  - c) Repair and maintenance
  - d) Normal operation of a gas-activated pneumatic controller or pump
  - e) Normal operation of a storage tank but not including venting from a thief hatch
  - f) Normal operation of dehydration units
  - g) Normal operations of compressors, compressor engines, turbines, valves, flanges, and connectors
  - h) During a bradenhead, packer leakage test, or production test lasting less than 24 hours
  - i) When natural gas does not meet the gathering pipeline specifications
  - j) Commissioning of pipelines, equipment, or facilities only for as long as necessary to purge introduced impurities.

In order to comply with these laws, see **Appendix B** for details on Novo Venting and Flaring.

**19.15.27.8 (E) Performance standards**

1. Novo has utilized process simulations with a safety factor to design all separation and storage equipment. The equipment is routed to a vapor recovery system and utilizes as a flare as back up for periods of startup, shutdown, maintenance or malfunction of the VRU system.
2. Novo will install a flare that designed to handle the full volume of vapors from the facility in case of VRU failure and it is designed with an auto-ignition system.
3. Flare stacks will be appropriately sized and designed to ensure proper combustion efficiency
  - a) Flare stacks installed or replaced will be equipped with an automatic ignitor or continuous pilot
  - b) Previously installed flare stacks will be retrofitted with an automatic ignitor, continuous pilot , or technology that alerts Novo of flare malfunction within 18 months after May 25, 2021.
  - c) Flare stacks replaced after May 25, 2021 will be equipped with an automatic ignitor or continuous pilot if located at a well or facility with an average daily production of 60,000 cubic feet of natural gas or less.
  - d) Flare stacks will be located at least 100 feet from well and storage tanks and securely anchored
4. Novo will conduct an AVO inspection on all components for leaks and defects at least weekly.
5. Novo will make and keep records of AVO inspections available to the NMOCD for at least 5 years.
6. Novo may use a remote or automated monitoring technology to detect leaks and releases in lieu of AVO inspections with prior NMOCD approval.
7. Facilities will be designed to minimize waste.
8. Novo will resolve emergencies as promptly as possible.

**19.15.27.8 (F) Measurement or estimation of vented and flared natural gas**

1. Novo will have meters on both the low pressure and high pressure sides of the flares and the volumes are recorded in the SCADA system.
2. Novo will install equipment to measure the volume of flared natural gas that has an average daily production of 60,000 cubic feet or greater of natural gas.
3. Novo's measuring equipment will conform to an industry standards.
4. The measurement system is designed such that it cannot be bypassed except for inspections and servicing the meters.
5. Novo will estimate the volume of vented or flared natural gas using a methodology that can be independently verified if metering is not practicable due to low flow rate or pressure.

6. Novo will estimate the volume of vented and flared natural gas based on the results of an annual GOR test for wells that do not require measuring equipment reported on form C-116.
7. Novo will install measuring equipment whenever the NMOCD determines that metering is necessary.

## APPENDIX A



## **Separation Equipment**

Novo Oil & Gas Northern Delaware, LLC (Novo) has pulled representative pressurized samples from wells in the same producing formation. Novo has utilized these samples in process simulations to determine the amount of gas anticipated in each stage of the process and utilized this information with a safety factor to size the equipment listed below:

- Separation equipment will be set as follows:
  - Individual 3 Phase separators will be set for each individual well.
    - The separators will be sized based on the anticipated volume of the well and the pressure of the lines utilized for oil, gas, and water takeaway.
  - Individual Heater treaters will be set for each individual well.
    - The heater treaters are sized based on the anticipated combined volume of oil and water predicted to come from the initial 3 phase separator.
    - Oil will be separated from the water and water will be sent to its respective tanks
    - The combined oil and natural gas stream is routed to the Vapor Recovery Tower.
  - The oil and water tanks utilize a closed vent capture system to ensure all breathing, working and flashing losses are routed to the Vapor Recovery Tower (VRT) and Vapor Recovery Unit (VRU)
  - The Vapor Recovery Tower has been sized, based on the anticipated volume of gas from the heater treater and oil and water tanks. A VRU is then utilized to push the recovered gas into the sales pipeline.
    - The VRU will be sized based on the anticipated gas volume and the gas pressure for the line utilized for takeaway.

All equipment has been sized based on the modeled projected need and a safety factor of at least 10%. This is ensuring that the capture of methane gas and VOC will minimize flaring below 50mcf/d per facility.

## APPENDIX B



## **Venting and Flaring**

Novo Oil & Gas Northern Delaware, LLC (Novo) has a natural gas system available prior to startup of completion operations. Novo utilizes a VRU system and sells all gas except during periods of startup, shutdown, maintenance, or malfunction for the gas capturing equipment, including the VRT, VRU, storage tanks, and pipelines.

Currently, Novo utilizes the following from list A-I of Section 3 for its operations to minimize flaring:

- a) Novo Oil & Gas utilizes Natural Gas (NG) powered generators to power it's leases where grid power isn't available.
- b) When electrical grid power is unavailable, NG generators will be used for major equipment onsite.
- c) Novo Oil & Gas compression in service will be NG powered.
- d) Should liquids removal – such as dehydration – be required, units will be powered by NG.

Additionally, Novo Oil & Gas will only flare gas during the following times:

- Scheduled maintenance for gas capturing equipment including:
  - VRT
  - VRU
  - Storage tanks
  - Pipelines
- Emergency flaring





## **Best Management Practices**

Novo Oil & Gas Northern Delaware, LLC (Novo) utilizes the following best management practices to minimize venting during active and planned maintenance.

Novo has a closed vent capture system to route emissions from the heater treater, tanks and vapor recovery to the VRU with a flare for backup. The system is designed such that if the VRU is taken out of service for any reason, the vapors will be routed to the flare for combustion.

Novo will isolate and attempt to route all vapors to the VRU or flare prior to opening any lines for maintenance to minimize venting from the equipment. Not limited to: