Project: Mustang
Site: Y Section 07
Well: Pioneer Y18-730
Wellbore: Pioneer Y18-730
Design: Plan #1

Northern Region - DJ Basin

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

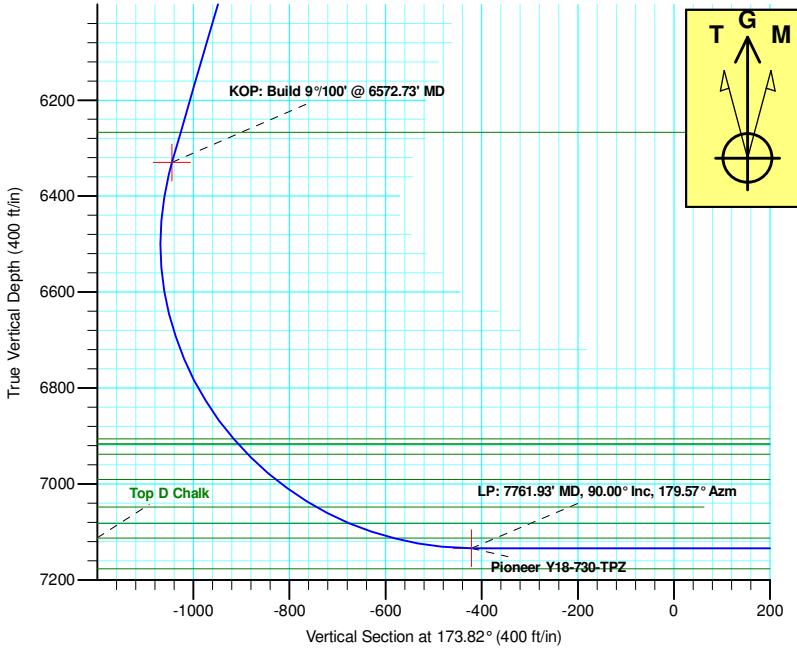
SECTION DETAILS

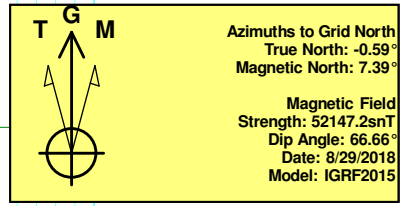
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	3246.72	20.93	34.53	3223.59	155.79	107.19	2.00	34.53	-143.35	
4	6572.73	20.93	34.53	6330.04	1134.84	780.78	0.00	0.00	-1044.20	
5	7761.93	90.00	179.57	7134.00	527.46	961.57	9.00	143.18	-420.89	Pioneer Y18-730-TPZ
6	17871.13	90.00	179.57	7134.00	-9581.46	1037.41	0.00	0.00	9637.45	Pioneer Y18-730-BHL

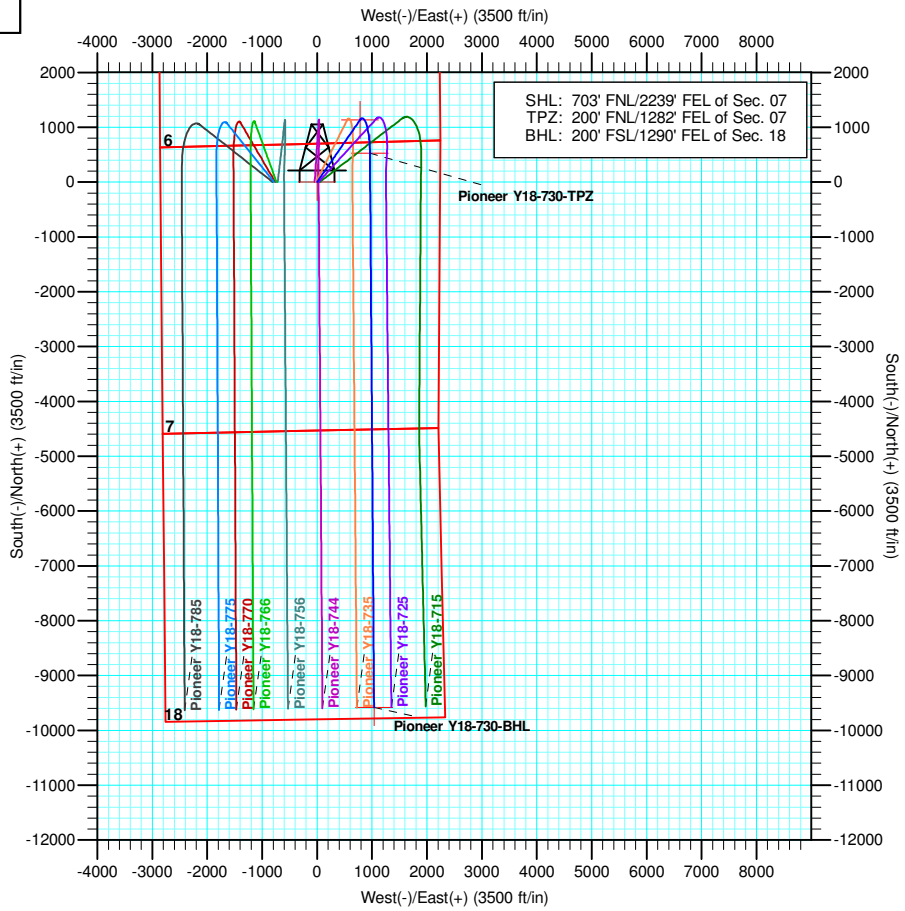
WELL DETAILS: Pioneer Y18-730

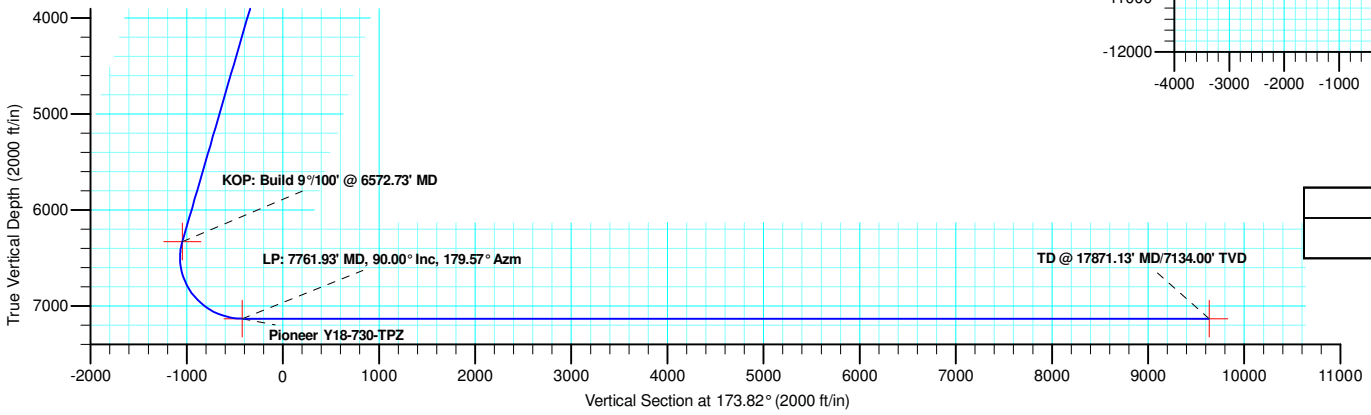
Ground Level: 4884.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	1301718.13	3253585.37	40.1580500	-104.5927160	









Plan: Plan #1 (Pioneer Y18-730/Pioneer Y18-730)

Created By: Keith Noack Date: 7:47, September 27 2018

Northern Region - DJ Basin

Mustang
Y Section 07
Pioneer Y18-730

Pioneer Y18-730

Plan: Plan #1

Standard Planning Report

26 September, 2018

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
Project:	Mustang	**MD Reference:**	Well @ 4914.00ft
Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Project Mustang, Weld County Colorado

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site Y Section 07

Site Position:		**Northing:**	1,301,764.67 usft	**Latitude:**	40.1582400
From:	Lat/Long	**Easting:**	3,251,358.82 usft	**Longitude:**	-104.6006800
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.58 °

Well Pioneer Y18-730

Well Position	**+N/-S**	-46.54 ft	**Northing:**	1,301,718.13 usft	**Latitude:**	40.1580500
	+E/-W	2,226.56 ft	**Easting:**	3,253,585.38 usft	**Longitude:**	-104.5927160
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	4,884.00 ft

Wellbore Pioneer Y18-730

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/29/2018	7.97	66.66	52,147.15023880

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	173.82

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,246.72	20.93	34.53	3,223.59	155.79	107.19	2.00	2.00	0.00	34.53	
6,572.73	20.93	34.53	6,330.04	1,134.84	780.78	0.00	0.00	0.00	0.00	
7,761.93	90.00	179.57	7,134.00	527.46	961.57	9.00	5.81	12.20	143.18	Pioneer Y18-730-TI
17,871.13	90.00	179.57	7,134.00	-9,581.46	1,037.41	0.00	0.00	0.00	0.00	Pioneer Y18-730-BI

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
Project:	Mustang	**MD Reference:**	Well @ 4914.00ft
Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
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
755.00	0.00	0.00	755.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills - Pierre									
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,103.00	0.00	0.00	1,103.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,912.00	0.00	0.00	1,912.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100'									
2,300.00	2.00	34.53	2,299.98	1.44	0.99	-1.32	2.00	2.00	0.00
2,400.00	4.00	34.53	2,399.84	5.75	3.96	-5.29	2.00	2.00	0.00
2,500.00	6.00	34.53	2,499.45	12.93	8.90	-11.90	2.00	2.00	0.00
2,600.00	8.00	34.53	2,598.70	22.97	15.80	-21.13	2.00	2.00	0.00
2,700.00	10.00	34.53	2,697.47	35.86	24.67	-32.99	2.00	2.00	0.00
2,800.00	12.00	34.53	2,795.62	51.57	35.48	-47.46	2.00	2.00	0.00
2,900.00	14.00	34.53	2,893.06	70.11	48.23	-64.51	2.00	2.00	0.00
3,000.00	16.00	34.53	2,989.64	91.43	62.90	-84.13	2.00	2.00	0.00
3,100.00	18.00	34.53	3,085.27	115.51	79.47	-106.29	2.00	2.00	0.00
3,200.00	20.00	34.53	3,179.82	142.33	97.93	-130.97	2.00	2.00	0.00
3,246.72	20.93	34.53	3,223.59	155.79	107.19	-143.35	2.00	2.00	0.00
Hold: 20.93° Inc, 34.53° Azm									
3,300.00	20.93	34.53	3,273.35	171.48	117.98	-157.78	0.00	0.00	0.00
3,400.00	20.93	34.53	3,366.75	200.91	138.23	-184.87	0.00	0.00	0.00
3,500.00	20.93	34.53	3,460.15	230.35	158.48	-211.95	0.00	0.00	0.00
3,600.00	20.93	34.53	3,553.55	259.78	178.73	-239.03	0.00	0.00	0.00
3,700.00	20.93	34.53	3,646.94	289.22	198.99	-266.12	0.00	0.00	0.00
3,800.00	20.93	34.53	3,740.34	318.66	219.24	-293.20	0.00	0.00	0.00
3,900.00	20.93	34.53	3,833.74	348.09	239.49	-320.29	0.00	0.00	0.00
4,000.00	20.93	34.53	3,927.14	377.53	259.74	-347.37	0.00	0.00	0.00
4,068.37	20.93	34.53	3,991.00	397.65	273.59	-365.89	0.00	0.00	0.00
Parkman									
4,100.00	20.93	34.53	4,020.54	406.96	280.00	-374.46	0.00	0.00	0.00

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Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.00	20.93	34.53	4,113.94	436.40	300.25	-401.54	0.00	0.00	0.00
4,300.00	20.93	34.53	4,207.34	465.84	320.50	-428.63	0.00	0.00	0.00
4,400.00	20.93	34.53	4,300.74	495.27	340.75	-455.71	0.00	0.00	0.00
4,500.00	20.93	34.53	4,394.14	524.71	361.01	-482.80	0.00	0.00	0.00
4,600.00	20.93	34.53	4,487.54	554.14	381.26	-509.88	0.00	0.00	0.00
4,675.44	20.93	34.53	4,558.00	576.35	396.54	-530.32	0.00	0.00	0.00
Sussex									
4,700.00	20.93	34.53	4,580.93	583.58	401.51	-536.97	0.00	0.00	0.00
4,800.00	20.93	34.53	4,674.33	613.02	421.76	-564.05	0.00	0.00	0.00
4,900.00	20.93	34.53	4,767.73	642.45	442.02	-591.14	0.00	0.00	0.00
5,000.00	20.93	34.53	4,861.13	671.89	462.27	-618.22	0.00	0.00	0.00
5,100.00	20.93	34.53	4,954.53	701.32	482.52	-645.31	0.00	0.00	0.00
5,200.00	20.93	34.53	5,047.93	730.76	502.77	-672.39	0.00	0.00	0.00
5,300.00	20.93	34.53	5,141.33	760.20	523.02	-699.48	0.00	0.00	0.00
5,400.00	20.93	34.53	5,234.73	789.63	543.28	-726.56	0.00	0.00	0.00
5,500.00	20.93	34.53	5,328.13	819.07	563.53	-753.65	0.00	0.00	0.00
5,511.64	20.93	34.53	5,339.00	822.49	565.89	-756.80	0.00	0.00	0.00
Shannon									
5,600.00	20.93	34.53	5,421.53	848.50	583.78	-780.73	0.00	0.00	0.00
5,700.00	20.93	34.53	5,514.92	877.94	604.03	-807.82	0.00	0.00	0.00
5,800.00	20.93	34.53	5,608.32	907.38	624.29	-834.90	0.00	0.00	0.00
5,900.00	20.93	34.53	5,701.72	936.81	644.54	-861.99	0.00	0.00	0.00
6,000.00	20.93	34.53	5,795.12	966.25	664.79	-889.07	0.00	0.00	0.00
6,100.00	20.93	34.53	5,888.52	995.68	685.04	-916.16	0.00	0.00	0.00
6,200.00	20.93	34.53	5,981.92	1,025.12	705.30	-943.24	0.00	0.00	0.00
6,300.00	20.93	34.53	6,075.32	1,054.56	725.55	-970.33	0.00	0.00	0.00
6,400.00	20.93	34.53	6,168.72	1,083.99	745.80	-997.41	0.00	0.00	0.00
6,500.00	20.93	34.53	6,262.12	1,113.43	766.05	-1,024.50	0.00	0.00	0.00
6,505.23	20.93	34.53	6,267.00	1,114.97	767.11	-1,025.91	0.00	0.00	0.00
Teepee Buttes									
6,572.73	20.93	34.53	6,330.04	1,134.84	780.78	-1,044.20	0.00	0.00	0.00
KOP: Build 9°/100' @ 6572.73' MD									
6,600.00	19.02	39.04	6,355.67	1,142.30	786.34	-1,051.02	9.00	-7.01	16.56
6,650.00	15.90	49.89	6,403.38	1,153.05	796.72	-1,060.59	9.00	-6.25	21.69
6,700.00	13.54	65.07	6,451.75	1,159.93	807.27	-1,066.30	9.00	-4.71	30.36
6,750.00	12.41	84.57	6,500.50	1,162.91	817.93	-1,068.11	9.00	-2.27	39.00
6,800.00	12.82	105.19	6,549.31	1,161.96	828.64	-1,066.01	9.00	0.83	41.25
6,850.00	14.65	122.61	6,597.90	1,157.10	839.33	-1,060.03	9.00	3.66	34.82
6,900.00	17.46	135.39	6,645.96	1,148.35	849.93	-1,050.19	9.00	5.62	25.57
6,950.00	20.85	144.44	6,693.20	1,135.76	860.38	-1,036.55	9.00	6.79	18.10
7,000.00	24.59	150.95	6,739.31	1,119.42	870.61	-1,019.20	9.00	7.48	13.02
7,050.00	28.54	155.80	6,784.03	1,099.42	880.56	-998.24	9.00	7.89	9.69
7,100.00	32.62	159.54	6,827.07	1,075.88	890.17	-973.81	9.00	8.16	7.48
7,150.00	36.79	162.52	6,868.17	1,048.97	899.38	-946.06	9.00	8.34	5.97
7,198.57	40.89	164.91	6,906.00	1,019.73	907.90	-916.07	9.00	8.46	4.91
Sharon Springs									
7,200.00	41.02	164.97	6,907.08	1,018.82	908.14	-915.15	9.00	8.51	4.49
7,213.26	42.15	165.55	6,917.00	1,010.31	910.38	-906.44	9.00	8.52	4.38
Top A Chalk - Top A Marl									
7,242.16	44.62	166.74	6,938.00	991.04	915.13	-886.78	9.00	8.55	4.09
Top B Chalk									
7,250.00	45.29	167.04	6,943.55	985.65	916.38	-881.28	9.00	8.58	3.86
7,300.00	49.59	168.82	6,977.36	949.64	924.06	-844.65	9.00	8.61	3.56

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
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Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,321.46	51.45	169.51	6,991.00	933.37	927.18	-828.15	9.00	8.65	3.24
Top B Marl									
7,350.00	53.92	170.38	7,008.30	911.02	931.14	-805.50	9.00	8.67	3.05
7,400.00	58.27	171.78	7,036.18	870.03	937.56	-764.06	9.00	8.70	2.80
7,423.13	60.29	172.38	7,048.00	850.34	940.29	-744.18	9.00	8.72	2.61
Top C Chalk									
7,450.00	62.63	173.06	7,060.84	826.93	943.28	-720.58	9.00	8.73	2.50
7,499.73	66.98	174.23	7,082.00	782.22	948.26	-675.60	9.00	8.74	2.36
Top C Marl									
7,500.00	67.01	174.23	7,082.11	781.97	948.28	-675.35	9.00	8.75	2.27
7,550.00	71.39	175.34	7,099.86	735.43	952.52	-628.63	9.00	8.76	2.21
7,596.01	75.42	176.30	7,113.00	691.47	955.73	-584.57	9.00	8.77	2.10
Top D Chalk									
7,600.00	75.77	176.38	7,113.99	687.61	955.98	-580.71	9.00	8.78	2.05
7,650.00	80.16	177.39	7,124.41	638.79	958.63	-531.89	9.00	8.78	2.02
7,700.00	84.56	178.37	7,131.06	589.28	960.46	-482.47	9.00	8.79	1.96
7,750.00	88.95	179.34	7,133.89	539.39	961.45	-432.76	9.00	8.79	1.93
7,761.93	90.00	179.57	7,134.00	527.46	961.57	-420.89	9.00	8.79	1.93
LP: 7761.93' MD, 90.00° Inc, 179.57° Azm									
7,800.00	90.00	179.57	7,134.00	489.39	961.85	-383.01	0.00	0.00	0.00
7,900.00	90.00	179.57	7,134.00	389.39	962.60	-283.51	0.00	0.00	0.00
8,000.00	90.00	179.57	7,134.00	289.39	963.35	-184.01	0.00	0.00	0.00
8,100.00	90.00	179.57	7,134.00	189.40	964.10	-84.52	0.00	0.00	0.00
8,200.00	90.00	179.57	7,134.00	89.40	964.85	14.98	0.00	0.00	0.00
8,300.00	90.00	179.57	7,134.00	-10.60	965.60	114.48	0.00	0.00	0.00
8,400.00	90.00	179.57	7,134.00	-110.59	966.35	213.97	0.00	0.00	0.00
8,500.00	90.00	179.57	7,134.00	-210.59	967.10	313.47	0.00	0.00	0.00
8,600.00	90.00	179.57	7,134.00	-310.59	967.85	412.97	0.00	0.00	0.00
8,700.00	90.00	179.57	7,134.00	-410.59	968.60	512.46	0.00	0.00	0.00
8,800.00	90.00	179.57	7,134.00	-510.58	969.35	611.96	0.00	0.00	0.00
8,900.00	90.00	179.57	7,134.00	-610.58	970.11	711.46	0.00	0.00	0.00
9,000.00	90.00	179.57	7,134.00	-710.58	970.86	810.96	0.00	0.00	0.00
9,100.00	90.00	179.57	7,134.00	-810.57	971.61	910.45	0.00	0.00	0.00
9,200.00	90.00	179.57	7,134.00	-910.57	972.36	1,009.95	0.00	0.00	0.00
9,300.00	90.00	179.57	7,134.00	-1,010.57	973.11	1,109.45	0.00	0.00	0.00
9,400.00	90.00	179.57	7,134.00	-1,110.57	973.86	1,208.94	0.00	0.00	0.00
9,500.00	90.00	179.57	7,134.00	-1,210.56	974.61	1,308.44	0.00	0.00	0.00
9,600.00	90.00	179.57	7,134.00	-1,310.56	975.36	1,407.94	0.00	0.00	0.00
9,700.00	90.00	179.57	7,134.00	-1,410.56	976.11	1,507.43	0.00	0.00	0.00
9,800.00	90.00	179.57	7,134.00	-1,510.56	976.86	1,606.93	0.00	0.00	0.00
9,900.00	90.00	179.57	7,134.00	-1,610.55	977.61	1,706.43	0.00	0.00	0.00
10,000.00	90.00	179.57	7,134.00	-1,710.55	978.36	1,805.92	0.00	0.00	0.00
10,100.00	90.00	179.57	7,134.00	-1,810.55	979.11	1,905.42	0.00	0.00	0.00
10,200.00	90.00	179.57	7,134.00	-1,910.54	979.86	2,004.92	0.00	0.00	0.00
10,300.00	90.00	179.57	7,134.00	-2,010.54	980.61	2,104.42	0.00	0.00	0.00
10,400.00	90.00	179.57	7,134.00	-2,110.54	981.36	2,203.91	0.00	0.00	0.00
10,500.00	90.00	179.57	7,134.00	-2,210.54	982.11	2,303.41	0.00	0.00	0.00
10,600.00	90.00	179.57	7,134.00	-2,310.53	982.86	2,402.91	0.00	0.00	0.00
10,700.00	90.00	179.57	7,134.00	-2,410.53	983.61	2,502.40	0.00	0.00	0.00
10,800.00	90.00	179.57	7,134.00	-2,510.53	984.36	2,601.90	0.00	0.00	0.00
10,900.00	90.00	179.57	7,134.00	-2,610.52	985.11	2,701.40	0.00	0.00	0.00
11,000.00	90.00	179.57	7,134.00	-2,710.52	985.86	2,800.89	0.00	0.00	0.00
11,100.00	90.00	179.57	7,134.00	-2,810.52	986.61	2,900.39	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
Project:	Mustang	**MD Reference:**	Well @ 4914.00ft
Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,200.00	90.00	179.57	7,134.00	-2,910.52	987.36	2,999.89	0.00	0.00	0.00
11,300.00	90.00	179.57	7,134.00	-3,010.51	988.11	3,099.38	0.00	0.00	0.00
11,400.00	90.00	179.57	7,134.00	-3,110.51	988.86	3,198.88	0.00	0.00	0.00
11,500.00	90.00	179.57	7,134.00	-3,210.51	989.61	3,298.38	0.00	0.00	0.00
11,600.00	90.00	179.57	7,134.00	-3,310.50	990.36	3,397.88	0.00	0.00	0.00
11,700.00	90.00	179.57	7,134.00	-3,410.50	991.11	3,497.37	0.00	0.00	0.00
11,800.00	90.00	179.57	7,134.00	-3,510.50	991.86	3,596.87	0.00	0.00	0.00
11,900.00	90.00	179.57	7,134.00	-3,610.50	992.61	3,696.37	0.00	0.00	0.00
12,000.00	90.00	179.57	7,134.00	-3,710.49	993.36	3,795.86	0.00	0.00	0.00
12,100.00	90.00	179.57	7,134.00	-3,810.49	994.11	3,895.36	0.00	0.00	0.00
12,200.00	90.00	179.57	7,134.00	-3,910.49	994.86	3,994.86	0.00	0.00	0.00
12,300.00	90.00	179.57	7,134.00	-4,010.48	995.61	4,094.35	0.00	0.00	0.00
12,400.00	90.00	179.57	7,134.00	-4,110.48	996.36	4,193.85	0.00	0.00	0.00
12,500.00	90.00	179.57	7,134.00	-4,210.48	997.11	4,293.35	0.00	0.00	0.00
12,600.00	90.00	179.57	7,134.00	-4,310.48	997.86	4,392.84	0.00	0.00	0.00
12,700.00	90.00	179.57	7,134.00	-4,410.47	998.61	4,492.34	0.00	0.00	0.00
12,800.00	90.00	179.57	7,134.00	-4,510.47	999.36	4,591.84	0.00	0.00	0.00
12,900.00	90.00	179.57	7,134.00	-4,610.47	1,000.11	4,691.34	0.00	0.00	0.00
13,000.00	90.00	179.57	7,134.00	-4,710.47	1,000.86	4,790.83	0.00	0.00	0.00
13,100.00	90.00	179.57	7,134.00	-4,810.46	1,001.61	4,890.33	0.00	0.00	0.00
13,200.00	90.00	179.57	7,134.00	-4,910.46	1,002.36	4,989.83	0.00	0.00	0.00
13,300.00	90.00	179.57	7,134.00	-5,010.46	1,003.12	5,089.32	0.00	0.00	0.00
13,400.00	90.00	179.57	7,134.00	-5,110.45	1,003.87	5,188.82	0.00	0.00	0.00
13,500.00	90.00	179.57	7,134.00	-5,210.45	1,004.62	5,288.32	0.00	0.00	0.00
13,600.00	90.00	179.57	7,134.00	-5,310.45	1,005.37	5,387.81	0.00	0.00	0.00
13,700.00	90.00	179.57	7,134.00	-5,410.45	1,006.12	5,487.31	0.00	0.00	0.00
13,800.00	90.00	179.57	7,134.00	-5,510.44	1,006.87	5,586.81	0.00	0.00	0.00
13,900.00	90.00	179.57	7,134.00	-5,610.44	1,007.62	5,686.30	0.00	0.00	0.00
14,000.00	90.00	179.57	7,134.00	-5,710.44	1,008.37	5,785.80	0.00	0.00	0.00
14,100.00	90.00	179.57	7,134.00	-5,810.43	1,009.12	5,885.30	0.00	0.00	0.00
14,200.00	90.00	179.57	7,134.00	-5,910.43	1,009.87	5,984.79	0.00	0.00	0.00
14,300.00	90.00	179.57	7,134.00	-6,010.43	1,010.62	6,084.29	0.00	0.00	0.00
14,400.00	90.00	179.57	7,134.00	-6,110.43	1,011.37	6,183.79	0.00	0.00	0.00
14,500.00	90.00	179.57	7,134.00	-6,210.42	1,012.12	6,283.29	0.00	0.00	0.00
14,600.00	90.00	179.57	7,134.00	-6,310.42	1,012.87	6,382.78	0.00	0.00	0.00
14,700.00	90.00	179.57	7,134.00	-6,410.42	1,013.62	6,482.28	0.00	0.00	0.00
14,800.00	90.00	179.57	7,134.00	-6,510.41	1,014.37	6,581.78	0.00	0.00	0.00
14,900.00	90.00	179.57	7,134.00	-6,610.41	1,015.12	6,681.27	0.00	0.00	0.00
15,000.00	90.00	179.57	7,134.00	-6,710.41	1,015.87	6,780.77	0.00	0.00	0.00
15,100.00	90.00	179.57	7,134.00	-6,810.41	1,016.62	6,880.27	0.00	0.00	0.00
15,200.00	90.00	179.57	7,134.00	-6,910.40	1,017.37	6,979.76	0.00	0.00	0.00
15,300.00	90.00	179.57	7,134.00	-7,010.40	1,018.12	7,079.26	0.00	0.00	0.00
15,400.00	90.00	179.57	7,134.00	-7,110.40	1,018.87	7,178.76	0.00	0.00	0.00
15,500.00	90.00	179.57	7,134.00	-7,210.40	1,019.62	7,278.25	0.00	0.00	0.00
15,600.00	90.00	179.57	7,134.00	-7,310.39	1,020.37	7,377.75	0.00	0.00	0.00
15,700.00	90.00	179.57	7,134.00	-7,410.39	1,021.12	7,477.25	0.00	0.00	0.00
15,800.00	90.00	179.57	7,134.00	-7,510.39	1,021.87	7,576.75	0.00	0.00	0.00
15,900.00	90.00	179.57	7,134.00	-7,610.38	1,022.62	7,676.24	0.00	0.00	0.00
16,000.00	90.00	179.57	7,134.00	-7,710.38	1,023.37	7,775.74	0.00	0.00	0.00
16,100.00	90.00	179.57	7,134.00	-7,810.38	1,024.12	7,875.24	0.00	0.00	0.00
16,200.00	90.00	179.57	7,134.00	-7,910.38	1,024.87	7,974.73	0.00	0.00	0.00
16,300.00	90.00	179.57	7,134.00	-8,010.37	1,025.62	8,074.23	0.00	0.00	0.00
16,400.00	90.00	179.57	7,134.00	-8,110.37	1,026.37	8,173.73	0.00	0.00	0.00
16,500.00	90.00	179.57	7,134.00	-8,210.37	1,027.12	8,273.22	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
Project:	Mustang	**MD Reference:**	Well @ 4914.00ft
Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,600.00	90.00	179.57	7,134.00	-8,310.36	1,027.87	8,372.72	0.00	0.00	0.00
16,700.00	90.00	179.57	7,134.00	-8,410.36	1,028.62	8,472.22	0.00	0.00	0.00
16,800.00	90.00	179.57	7,134.00	-8,510.36	1,029.37	8,571.71	0.00	0.00	0.00
16,900.00	90.00	179.57	7,134.00	-8,610.36	1,030.12	8,671.21	0.00	0.00	0.00
17,000.00	90.00	179.57	7,134.00	-8,710.35	1,030.87	8,770.71	0.00	0.00	0.00
17,100.00	90.00	179.57	7,134.00	-8,810.35	1,031.62	8,870.21	0.00	0.00	0.00
17,200.00	90.00	179.57	7,134.00	-8,910.35	1,032.37	8,969.70	0.00	0.00	0.00
17,300.00	90.00	179.57	7,134.00	-9,010.34	1,033.12	9,069.20	0.00	0.00	0.00
17,400.00	90.00	179.57	7,134.00	-9,110.34	1,033.87	9,168.70	0.00	0.00	0.00
17,500.00	90.00	179.57	7,134.00	-9,210.34	1,034.62	9,268.19	0.00	0.00	0.00
17,600.00	90.00	179.57	7,134.00	-9,310.34	1,035.37	9,367.69	0.00	0.00	0.00
17,700.00	90.00	179.57	7,134.00	-9,410.33	1,036.13	9,467.19	0.00	0.00	0.00
17,800.00	90.00	179.57	7,134.00	-9,510.33	1,036.88	9,566.68	0.00	0.00	0.00
17,871.13	90.00	179.57	7,134.00	-9,581.46	1,037.41	9,637.45	0.00	0.00	0.00
TD @ 17871.13' MD/7134.00' TVD									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Pioneer Y18-730-SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,301,718.13	3,253,585.38	40.1580500	-104.5927160
Pioneer Y18-730-KOF - plan hits target center - Point	0.00	0.00	6,330.04	1,134.84	780.78	1,302,852.96	3,254,366.16	40.1611432	-104.5898810
Pioneer Y18-730-TPZ - plan hits target center - Point	0.00	0.00	7,134.00	527.46	961.57	1,302,245.59	3,254,546.94	40.1594708	-104.5892565
Pioneer Y18-730-BHL - plan hits target center - Point	0.00	0.00	7,134.00	-9,581.46	1,037.41	1,292,136.69	3,254,622.78	40.1317198	-104.5893566

Database:	EDMP	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4914.00ft
Project:	Mustang	**MD Reference:**	Well @ 4914.00ft
Site:	Y Section 07	**North Reference:**	Grid
Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Pioneer Y18-730		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
755.00	755.00	Fox Hills			
755.00	755.00	Pierre			
1,103.00	1,103.00	Upper Pierre Aquifer Top			
1,912.00	1,912.00	Upper Pierre Aquifer Base			
4,068.37	3,991.00	Parkman			
4,675.44	4,558.00	Sussex			
5,511.64	5,339.00	Shannon			
6,505.23	6,267.00	Teepee Buttes			
7,198.57	6,906.00	Sharon Springs			
7,213.26	6,917.00	Top A Chalk			
7,213.26	6,917.00	Top A Marl			
7,242.16	6,938.00	Top B Chalk			
7,321.46	6,991.00	Top B Marl			
7,423.13	7,048.00	Top C Chalk			
7,499.73	7,082.00	Top C Marl			
7,596.01	7,113.00	Top D Chalk			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,200.00	2,200.00	0.00	0.00	Build: 2°/100'
3,246.72	3,223.59	155.79	107.19	Hold: 20.93° Inc, 34.53° Azm
6,572.73	6,330.04	1,134.84	780.78	KOP: Build 9°/100' @ 6572.73' MD
7,761.93	7,134.00	527.46	961.57	LP: 7761.93' MD, 90.00° Inc, 179.57° Azm
17,871.13	7,134.00	-9,581.46	1,037.41	TD @ 17871.13' MD/7134.00' TVD

Northern Region - DJ Basin

Mustang
Y Section 07
Pioneer Y18-730

Pioneer Y18-730
Plan #1

Anticollision Summary Report

26 September, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 9/26/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,871.13	Plan #1 (Pioneer Y18-730)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 30						
Adams D30-27D - Adams D30-27D - Adams D30-27D - A						Out of range
Adams D30-29D - Wellbore #1 - Wellbore #1 - As Drilled						Out of range
Adams D30-30D - Adams D30-30D Gyros - Gyros						Out of range
Adams D30-30D - Adams D30-30D OH - As Drilled						Out of range
Adams D30-31D - Adams D30-31D Gyros - Gyros						Out of range
Adams D30-31D - Adams D30-31D OH - As-drilled						Out of range
Corbin D30-23D - Corbin D30-23D - Corbin D30-23D - A						Out of range
Corbin Red D30-04J - Corbin Red D30-04J - Corbin Red						Out of range
Corbin Red D30-09 - Corbin Red D30-09 - Corbin Red D						Out of range
Corbin Red D30-15 - Corbin Red D30-15 - Corbin Red D						Out of range
Corbin Red D30-16 - Corbin Red D30-16 - Corbin Red D						Out of range
Dechant D30-17D - Dechant D30-17D - Dechant D30-17						Out of range
Dechant D30-20D - Dechant D30-20D - Dechant D30-20						Out of range
Dechant D30-24D - Dechant D30-24D - Dechant D30-24						Out of range
Dechant D30-25D - Dechant D30-25D - Dechant D30-25						Out of range
Dechant D31-27D - Dechant D31-27D - Dechant D31-27						Out of range
Dechant D31-28D - Dechant D31-28D - Dechant D31-28						Out of range
Dechant D31-29D - Dechant D31-29D - Dechant D31-29						Out of range
Dechant D31-77HN - Original Drilling - Original Drilling - A	6,761.96	11,360.01	5,820.15	5,744.99	77.437	CC, ES
Dechant D31-77HN - Original Drilling - Original Drilling - A	6,950.00	11,360.01	5,848.32	5,772.19	76.820	SF
Hanson D30-11 - Hanson D30-11 - Hanson D30-11 - As						Out of range
Hanson D30-12 - Hanson D30-12 - Hanson D30-12 - As						Out of range
Hanson D30-13 - Hanson D30-13 - Hanson D30-13 - As						Out of range
Hanson D30-14 - Hanson D30-14 - Hanson D30-14 - As						Out of range
Hettinger C Unit 1 - Hettinger C Unit 1 - Hettinger C Unit						Out of range
Hettinger D30-02 - Hettinger D30-02 - Hettinger D30-02 -						Out of range
Hettinger D30-03 - Hettinger D30-03 - Hettinger D30-03 -						Out of range
Hettinger D30-04 - Hettinger D30-04 - Hettinger D30-04 -						Out of range
Hettinger D30-05 - Hettinger D30-05 - Hettinger D30-05 -						Out of range
Hettinger D30-06 - Hettinger D30-06 - Hettinger D30-06 -						Out of range
Hettinger D30-08 - Hettinger D30-08 - Hettinger D30-08 -						Out of range
Leslie E Hanson Gas Unit 1 - Leslie E Hanson Gas Unit						Out of range
McWilliams D29-32 - McWilliams D29-32 - McWilliams D						Out of range
McWilliams D30-07 - McWilliams D30-07 - McWilliams D						Out of range
McWilliams D30-18 - McWilliams D30-18 - McWilliams D						Out of range
McWilliams D30-19 - McWilliams D30-19 - McWilliams D						Out of range
McWilliams D30-21 - McWilliams D30-21 - McWilliams D						Out of range

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 30						
McWilliams D30-22 - McWilliams D30-22 - McWilliams D						Out of range

Noble Energy, Inc.

Anticollision Summary Report

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Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 31						
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	6,685.86	6,214.36	6,348.49	6,301.84	136.090	CC, ES
Dechant 1-31A (PR) - Wellbore #1 - Gyro Surveys	7,150.00	7,017.60	6,487.83	6,437.34	128.520	SF
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	6,772.00	6,772.00	7,512.49	7,460.23	143.751	CC, ES
Dechant D 31-22D (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,918.60	7,572.34	7,519.06	142.105	SF
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	103.38	0.00	8,102.48	8,102.35	10,000.000	CC
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	400.00	254.97	8,103.48	8,101.58	4,267.195	ES
Dechant D31-18D (PR) - Wellbore #1 - As Drilled	8,300.00	8,300.00	9,846.86	9,782.09	152.030	SF
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,713.87	6,200.00	6,344.79	6,296.27	130.770	CC
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	6,757.60	6,687.04	6,345.10	6,295.22	127.217	ES
Dechant D31-24D (PR) - Wellbore #1 - Gyro Surveys	7,150.00	7,150.00	6,461.97	6,409.70	123.634	SF
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	100.00	0.00	9,128.97	9,128.84	10,000.000	CC
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	200.00	60.25	9,129.19	9,128.60	10,000.000	ES
Dechant D31-31D (SI) - Wellbore #1 - Gyro Surveys	7,300.00	6,981.13	9,589.00	9,537.81	187.297	SF
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,740.25	6,451.10	7,663.11	7,614.07	156.289	CC
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	6,750.00	6,464.96	7,663.18	7,614.07	156.047	ES
Dechant D31-31D(PR) - Wellbore #1 - As Drilled	7,150.00	6,990.09	7,784.99	7,733.46	151.060	SF
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	6,709.33	6,437.20	8,312.51	8,275.73	225.982	CC, ES
Dechant State D31-32 (SI) - Wellbore #1 - Wellbore #1 -	7,250.00	7,250.00	8,513.78	8,474.41	216.231	SF
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	6,761.10	6,511.25	4,902.03	4,851.64	97.276	CC, ES
Dechant Y 06-27D (PR) - Wellbore #1 - As Drilled	7,050.00	6,862.87	4,964.26	4,912.09	95.157	SF
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	6,745.70	6,745.70	4,971.07	4,920.12	97.567	CC, ES
Dechant Y 06-28D (PR) - Wellbore #1 - As Drilled	7,150.00	7,099.19	5,089.36	5,036.31	95.944	SF
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,749.83	6,415.61	5,796.91	5,749.50	122.269	CC
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	6,750.00	6,415.73	5,796.91	5,749.49	122.266	ES
Riva Blue 31-15 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,704.16	5,891.96	5,842.64	119.452	SF
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	6,768.45	6,376.37	5,559.29	5,512.05	117.668	CC, ES
Riva Blue 31-16 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,705.42	5,642.72	5,593.51	114.661	SF
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	6,780.12	6,514.55	6,818.11	6,770.45	143.060	CC, ES
Riva Blue 31-9 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,808.93	6,897.22	6,847.74	139.394	SF
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,746.49	6,288.97	6,477.47	6,430.47	137.838	CC
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	6,800.00	6,800.00	6,478.93	6,430.11	132.733	ES
Riva Blue D 31-04J (PR) - Wellbore #1 - Gyro Surveys	7,250.00	7,218.00	6,640.35	6,588.82	128.855	SF
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	6,723.16	6,281.21	7,131.44	7,083.72	149.439	CC, ES
Riva Blue D 31-11 (PR) - Wellbore #1 - Gyro Surveys	7,200.00	6,712.68	7,298.16	7,247.23	143.283	SF
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	6,684.14	6,178.28	7,542.17	7,495.62	162.003	CC, ES
Riva Blue D 31-12 (SI) - Wellbore #1 - Gyro Surveys	7,200.00	6,915.20	7,711.89	7,661.61	153.397	SF
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,748.71	6,392.23	7,007.22	6,854.23	45.801	CC
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	6,750.00	6,393.50	7,007.22	6,854.20	45.792	ES
Riva D 31-10 (PR) - Wellbore #1 - No Surveys	7,250.00	6,836.55	7,194.21	7,031.28	44.156	SF
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	6,731.42	6,519.16	9,077.12	9,029.36	190.060	CC, ES
Riva Red D 31-2J (PA) - Wellbore #1 - Gyro Surveys	7,200.00	6,929.97	9,234.63	9,184.38	183.778	SF
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	6,729.65	6,244.75	9,876.39	9,829.55	210.861	CC, ES
Riva Red D 31-3 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	6,921.69	9,999.93	9,949.83	199.581	SF
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,732.86	6,377.77	8,159.81	8,007.09	53.432	CC
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	6,750.00	6,394.50	8,160.03	8,006.92	53.295	ES
Riva Red D 31-6 (PA) - Wellbore #1 - No Surveys	7,250.00	6,837.55	8,354.60	8,191.60	51.254	SF
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	6,751.23	6,655.57	8,414.75	8,366.58	174.693	CC, ES
Riva Red D31-06X (SI) - Wellbore #1 - Gyro Surveys	7,100.00	7,062.91	8,505.46	8,455.27	169.489	SF
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	6,757.67	6,189.86	9,475.85	9,429.25	203.361	CC, ES
Riva White D 31-1 (PR) - Wellbore #1 - Gyro Surveys	7,500.00	7,500.00	9,864.86	9,812.56	188.629	SF
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	6,756.20	6,415.59	8,224.43	8,177.06	173.606	CC, ES
Riva White D 31-7 (PR) - Wellbore #1 - Gyro Surveys	7,100.00	6,917.87	8,314.24	8,264.43	166.908	SF
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	6,803.37	6,848.98	8,057.86	8,009.15	165.422	CC, ES

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 31						
Riva White D 31-8 (PA) - Wellbore #1 - Gyro Surveys	7,150.00	7,158.33	8,150.52	8,100.27	162.207	SF
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	6,716.93	6,375.36	5,440.19	5,392.90	115.048	CC, ES
River Blue d31-14 (PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,622.25	5,523.32	5,474.23	112.518	SF
River Red D 31-4 (PA) - Wellbore #1 - Gyro Surveys						Out of range
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	6,763.00	6,400.19	8,771.88	8,618.75	57.282	CC, ES
UPRR 53 Pan Am UT R 1 (PA) - Wellbore #1 - No Surve	7,300.00	6,864.36	8,985.84	8,822.39	54.973	SF
D Section 32						
HP D32-21D - Wellbore #1 - MWD Surveys	6,849.39	6,820.11	8,594.97	8,542.29	163.155	CC
HP D32-21D - Wellbore #1 - MWD Surveys	6,850.00	6,820.58	8,594.97	8,542.28	163.144	ES
HP D32-21D - Wellbore #1 - MWD Surveys	7,300.00	7,373.18	8,730.85	8,676.03	159.282	SF
HP D32-23D - Wellbore #1 - MWD Surveys	6,859.43	6,482.31	8,343.60	8,292.54	163.393	CC, ES
HP D32-23D - Wellbore #1 - MWD Surveys	7,350.00	6,948.40	8,486.40	8,432.93	158.730	SF
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	6,650.59	4,073.22	9,213.68	9,171.02	215.979	CC, ES
HP Farms D 32-22D - Wellbore #1 - MWD Surveys	7,100.00	7,100.00	9,333.27	9,272.74	154.178	SF
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	6,821.28	6,599.38	9,962.64	9,914.73	207.944	CC, ES
HP Farms D32-03 - Wellbore #1 - Gyro Surveys	7,000.00	6,765.92	9,986.18	9,937.21	203.891	SF
HP Farms D32-18D - Wellbore #1 - MWD Surveys	6,822.59	6,644.08	9,722.49	9,664.80	168.527	CC, ES
HP Farms D32-18D - Wellbore #1 - MWD Surveys	7,200.00	7,083.33	9,818.97	9,759.31	164.574	SF
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,847.51	6,731.33	7,453.20	7,394.49	126.954	CC
HP Farms D32-24D - Wellbore #1 - MWD Surveys	6,850.00	6,737.27	7,453.21	7,394.48	126.911	ES
HP Farms D32-24D - Wellbore #1 - MWD Surveys	7,200.00	7,109.48	7,531.80	7,471.40	124.689	SF
Norris 14-32 - Wellbore #1 - Projection Survey	6,812.00	6,474.01	5,662.85	5,581.29	69.429	CC, ES
Norris 14-32 - Wellbore #1 - Projection Survey	7,200.00	6,820.08	5,772.01	5,686.57	67.560	SF
Norris A Unit 2 - Wellbore #1 - As-Drilled	6,811.89	6,400.00	6,569.43	6,522.11	138.841	CC, ES
Norris A Unit 2 - Wellbore #1 - As-Drilled	7,150.00	6,600.00	6,653.59	6,604.72	136.132	SF
Norris D32-1 (SI) - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,849.34	6,423.55	8,210.47	8,163.08	173.245	CC
Norris D32-10 - Wellbore #1 - Gyro Surveys	6,850.00	6,423.85	8,210.47	8,163.08	173.232	ES
Norris D32-10 - Wellbore #1 - Gyro Surveys	7,300.00	6,711.44	8,342.98	8,293.66	169.153	SF
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,829.52	6,053.50	7,179.69	7,133.49	155.414	CC
Norris D32-15 - Wellbore #1 - Gyro Surveys	6,900.00	6,900.00	7,182.59	7,133.26	145.589	ES, SF
Norris D32-1J - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-2 - Wellbore #1 - Gyro Surveys						Out of range
Norris D32-2J - Wellbore #1 - Gyro Surveys	6,776.43	6,036.30	9,427.70	9,381.64	204.668	CC, ES
Norris D32-2J - Wellbore #1 - Gyro Surveys	7,250.00	6,946.80	9,584.65	9,534.62	191.546	SF
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,791.36	6,436.89	9,666.21	9,512.38	62.838	CC
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	6,800.00	6,445.31	9,666.27	9,512.24	62.758	ES
Norris D32-4 (P&A) - Wellbore #1 - No Surveys	7,350.00	6,904.30	9,892.23	9,728.05	60.251	SF
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,787.41	6,318.57	8,364.85	8,317.84	177.954	CC
Norris D32-5 - Wellbore #1 - Gyro Surveys	6,800.00	6,355.02	8,364.95	8,317.78	177.358	ES
Norris D32-5 - Wellbore #1 - Gyro Surveys	7,150.00	6,774.81	8,458.07	8,408.68	171.257	SF
Norris D32-6 - Wellbore #1 - Gyro Surveys	6,829.61	6,665.43	8,734.24	8,686.12	181.479	CC, ES
Norris D32-6 - Wellbore #1 - Gyro Surveys	7,250.00	6,922.28	8,863.08	8,813.13	177.468	SF
Norris D32-7 - Wellbore #1 - Gyro Surveys	6,875.61	7,000.00	9,360.31	9,311.17	190.468	CC, ES
Norris D32-7 - Wellbore #1 - Gyro Surveys	7,150.00	7,000.00	9,415.47	9,365.55	188.621	SF
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	6,881.97	6,514.13	9,114.07	9,066.32	190.871	CC, ES
Norris D32-9 (SI) - Wellbore #1 - Gyro Surveys	7,450.00	6,942.52	9,299.36	9,249.18	185.337	SF

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Anticollision Summary Report

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Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
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Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
H Section 36						
Dechant 07-36 - Original Drilling - Original Drilling - As D	6,670.61	6,446.74	9,807.22	9,759.84	206.992	CC, ES
Dechant 07-36 - Original Drilling - Original Drilling - As D	7,200.00	6,959.39	9,974.70	9,924.24	197.665	SF
Dechant 13N-1HZ - Production Hole - Production Hole -	5,574.54	11,468.00	8,198.04	8,090.33	76.115	CC
Dechant 13N-1HZ - Production Hole - Production Hole -	5,600.00	11,468.00	8,198.08	8,090.21	76.005	ES
Dechant 13N-1HZ - Production Hole - Production Hole -	7,100.00	11,468.00	8,343.17	8,227.95	72.410	SF
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,177.34	9,177.22	10,000.000	CC
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	200.00	50.97	9,177.72	9,177.14	10,000.000	ES
Dechant 13N-1HZ - Surface Hole - Surface Hole - As Dri	4,900.00	600.00	9,989.36	9,970.79	537.927	SF
Dechant 14C-1HZ - Production Hole - Production Hole -	5,955.90	11,731.00	7,046.22	6,965.99	87.817	CC
Dechant 14C-1HZ - Production Hole - Production Hole -	6,000.00	11,731.00	7,046.36	6,965.90	87.579	ES
Dechant 14C-1HZ - Production Hole - Production Hole -	7,050.00	11,731.00	7,133.55	7,048.95	84.326	SF
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	100.00	0.00	9,111.18	9,111.06	10,000.000	CC
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	700.00	605.71	9,114.24	9,110.01	2,157.807	ES
Dechant 14C-1HZ - Surface Hole - Surface Hole - As Dri	5,100.00	610.00	9,995.68	9,976.44	519.325	SF
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,623.10	6,344.85	7,980.25	7,930.14	159.250	CC
Dechant 15-36 - Original Drilling - Original Drilling - As D	6,650.00	6,370.62	7,980.65	7,929.75	156.797	ES
Dechant 15-36 - Original Drilling - Original Drilling - As D	7,600.00	7,084.08	8,409.95	8,338.79	118.174	SF
Dechant 24-36 - Original Drilling - Original Drilling - As D	6,663.27	6,353.33	9,119.74	9,069.87	182.890	CC, ES
Dechant 24-36 - Original Drilling - Original Drilling - As D	7,450.00	7,450.00	9,477.11	9,422.44	173.349	SF
Dechant 35N-E1HZ - Production Hole - Production Hole	5,727.02	11,619.00	7,211.08	7,100.56	65.246	CC
Dechant 35N-E1HZ - Production Hole - Production Hole	5,800.00	11,619.00	7,211.45	7,100.46	64.974	ES
Dechant 35N-E1HZ - Production Hole - Production Hole	6,900.00	11,619.00	7,308.50	7,191.83	62.646	SF
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	100.00	13.01	9,133.17	9,133.02	10,000.000	CC
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	700.00	612.00	9,133.97	9,129.73	2,154.184	ES
Dechant 35N-E1HZ - Surface Hole - Surface Hole - As D	5,000.00	612.00	9,975.46	9,956.53	527.052	SF
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	5,684.97	11,494.00	7,675.66	7,566.87	70.552	CC
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	5,700.00	11,494.00	7,675.68	7,566.79	70.491	ES
Dechant 35N-W1HZ - Original Drilling - Original Drilling -	7,000.00	11,494.00	7,791.19	7,675.78	67.508	SF
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	5,885.77	11,651.36	6,541.84	6,429.85	58.419	CC
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	5,900.00	11,651.36	6,541.85	6,429.77	58.369	ES
Dechant 36N-W1HZ - Original Drilling - Original Drilling -	6,850.00	11,651.36	6,614.16	6,496.88	56.398	SF
Dechant 37N-E1HZ - Production Hole - Production Hole	6,177.88	11,723.00	4,735.28	4,622.04	41.816	CC
Dechant 37N-E1HZ - Production Hole - Production Hole	6,200.00	11,723.00	4,735.33	4,621.92	41.755	ES
Dechant 37N-E1HZ - Production Hole - Production Hole	6,750.00	11,723.00	4,770.41	4,653.62	40.846	SF
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	734.99	648.00	8,215.32	8,210.83	1,827.837	CC, ES
Dechant 37N-E1HZ - Surface Hole - Surface Hole - As D	6,800.00	648.00	9,904.60	9,880.41	409.398	SF
Dechant 37N-W1HZ - Production Hole - Production Hole	6,135.88	12,384.00	5,310.27	5,193.58	45.510	CC
Dechant 37N-W1HZ - Production Hole - Production Hole	6,200.00	12,384.00	5,310.66	5,193.52	45.337	ES
Dechant 37N-W1HZ - Production Hole - Production Hole	6,850.00	12,384.00	5,359.45	5,238.74	44.397	SF
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As D	412.99	325.99	8,186.67	8,184.46	3,699.279	CC
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As D	800.00	655.00	8,187.18	8,182.44	1,724.817	ES
Dechant 37N-W1HZ - Surface Hole - Surface Hole - As D	6,800.00	655.00	9,877.24	9,853.06	408.338	SF
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	6,294.61	16,665.00	5,763.73	5,631.51	43.592	CC
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	6,300.00	16,665.00	5,763.73	5,631.47	43.581	ES
Dechant State 15C-1HZ - Wellbore #1 - As Drilled	7,000.00	16,665.00	5,808.64	5,672.97	42.814	SF
Dechant State 16C-1HZ - Original Drilling - Original Drillir	6,449.72	16,814.17	4,641.01	4,444.65	23.635	CC
Dechant State 16C-1HZ - Original Drilling - Original Drillir	6,500.00	16,800.68	4,641.26	4,444.61	23.601	ES
Dechant State 16C-1HZ - Original Drilling - Original Drillir	7,100.00	16,839.03	4,687.72	4,485.90	23.227	SF
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	6,105.61	16,324.85	6,167.54	6,039.20	48.056	CC, ES
Dechant State 36N-E1HZ - Wellbore #1 - Wellbore #1	7,550.00	16,510.54	6,335.12	6,199.88	46.844	SF
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,697.38	11,466.00	7,094.74	7,027.40	105.349	CC
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,700.00	11,466.00	7,094.75	7,027.39	105.325	ES
Dechant State 37N-E36HZ - Wellbore #1 - As Drilled	6,950.00	11,466.00	7,135.91	7,067.45	104.238	SF

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
H Section 36						
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,695.74	11,490.00	7,471.57	7,403.99	110.554	CC
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,700.00	11,490.00	7,471.59	7,403.98	110.522	ES
Dechant State 37N-W36HZ - Wellbore #1 - As Drilled	6,900.00	11,490.00	7,497.28	7,428.98	109.766	SF
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	6,400.00	16,642.23	4,024.05	3,890.38	30.103	ES
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	6,454.57	16,579.18	4,023.82	3,890.47	30.174	CC
Dechant State 38N-1HZ - Wellbore #1 - As Drilled	7,200.00	16,676.40	4,095.97	3,958.31	29.755	SF
Dechant State H36-11D - Original Drilling - Original Drillir	6,613.40	6,185.77	9,674.35	9,628.09	209.123	CC, ES
Dechant State H36-11D - Original Drilling - Original Drillir	7,200.00	6,673.83	9,854.05	9,804.56	199.083	SF
Dechant State H36-18D - Dechant State H36-18D Gyros						Out of range
Dechant State H36-18D - Dechant State H36-18D OH - /						Out of range
Dechant State H36-19 - Original Drilling - Original Drilling						Out of range
Dechant State H36-20D - Dechant State H36-20D Gyros						Out of range
Dechant State H36-20D - Dechant State H36-20D OH - /						Out of range
Dechant State H36-21D - Dechant State H36-21D Gyros	6,642.32	6,365.72	9,730.10	9,671.13	164.997	CC
Dechant State H36-21D - Dechant State H36-21D Gyros	6,650.00	6,369.49	9,730.14	9,671.12	164.886	ES
Dechant State H36-21D - Dechant State H36-21D Gyros	7,100.00	6,826.23	9,850.58	9,789.22	160.539	SF
Dechant State H36-21D - Dechant State H36-21D OH - /	6,642.32	6,378.72	9,730.10	9,671.13	164.997	CC
Dechant State H36-21D - Dechant State H36-21D OH - /	6,650.00	6,382.49	9,730.14	9,671.13	164.886	ES
Dechant State H36-21D - Dechant State H36-21D OH - /	7,100.00	6,839.23	9,850.58	9,789.22	160.539	SF
Dechant State H36-24 - Original Drilling - Original Drilling	6,616.01	6,383.02	8,820.66	8,769.60	172.768	CC, ES
Dechant State H36-24 - Original Drilling - Original Drilling	7,100.00	6,903.30	8,942.17	8,888.08	165.327	SF
Dechant State H36-31D - Dechant State H36-31D OH - /						Out of range
Dechant State H36-32D - Dechant State H36-32D Gyros						Out of range
Dechant State H36-32D - Dechant State H36-32D OH - /						Out of range
Dechant State H36-33 - Dechant State H36-33D Gyros -	218.52	129.52	9,938.83	9,938.00	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D Gyros -	300.00	166.72	9,939.01	9,937.76	7,945.584	ES
Dechant State H36-33 - Dechant State H36-33D Gyros -	1,900.00	1,100.00	9,993.33	9,983.02	968.875	SF
Dechant State H36-33 - Dechant State H36-33D OH - As	218.52	142.52	9,938.80	9,937.98	10,000.000	CC
Dechant State H36-33 - Dechant State H36-33D OH - As	300.00	179.72	9,938.99	9,937.73	7,944.897	ES
Dechant State H36-33 - Dechant State H36-33D OH - As	1,900.00	1,113.00	9,993.31	9,983.00	968.870	SF
HSR Dechant State 01-36 - Wellbore #1 - As Drillied						Out of range
HSR Dechant State 02-36 - Original Drilling - Original Dri						Out of range
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	6,676.39	6,323.84	9,956.25	9,804.70	65.696	CC
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	6,700.00	6,346.75	9,956.62	9,804.52	65.461	ES
HSR Dechant/State 07-36 (PA) - Original Drilling - Origin	6,900.00	6,540.96	9,989.48	9,832.85	63.779	SF
Spike State GWS H36-03 - Original Drilling - Original Dri						Out of range
Spike State GWS H36-04 - Original Drilling - Original Dri						Out of range
Spike State GWS H36-13 - Original Drilling - Original Dri	4,389.48	4,100.01	9,954.65	9,924.78	333.281	CC
Spike State GWS H36-13 - Original Drilling - Original Dri	4,700.00	4,362.84	9,955.46	9,923.44	310.895	ES
Spike State GWS H36-13 - Original Drilling - Original Dri	6,800.00	7,124.05	9,993.21	9,942.39	196.629	SF
Spike State GWS H36-14 - Original Drilling - Original Dri	6,576.05	6,100.01	8,585.33	8,539.55	187.523	CC, ES
Spike State GWS H36-14 - Original Drilling - Original Dri	7,300.00	7,300.00	8,822.89	8,771.12	170.418	SF
Spike State H36-02J - Original Drilling - Original Drilling -						Out of range
Spike State H36-05 - Original Drilling - Original Drilling - /						Out of range
Spike State H36-11J - Original Drilling - Original Drilling -	6,603.67	6,362.10	9,731.36	9,684.57	207.958	CC, ES
Spike State H36-11J - Original Drilling - Original Drilling -	7,350.00	6,874.13	9,988.41	9,938.11	198.581	SF
Spike State H36-12 - Original Drilling - Original Drilling - /						Out of range

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 05						
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y	6,861.28	6,504.84	4,926.93	4,879.29	103.409	CC, ES
Olsen Red Y05-02D - Olsen Red Y05-02D - Olsen Red Y	7,300.00	7,300.00	5,047.30	4,996.09	98.559	SF
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	6,854.39	6,518.15	3,531.44	3,494.95	96.783	CC, ES
Olsen Y5-05JI - Olsen Y5-05JI - Olsen Y5-05JI - As Drille	7,100.00	6,743.07	3,571.53	3,534.05	95.284	SF
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	6,969.95	6,679.75	5,517.82	5,434.18	65.970	CC, ES
Perkins 32-05 - Perkins 32-05 - Perkins 32-05 - As Drille	7,400.00	7,004.18	5,602.61	5,515.43	64.266	SF
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,020.63	6,742.95	6,656.86	6,572.52	78.929	CC, ES
Perkins 42-05 - Perkins 42-05 - Perkins 42-05 - As Drille	7,450.00	7,045.84	6,730.49	6,642.88	76.816	SF
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,165.18	6,870.23	6,178.35	6,092.54	71.997	CC, ES
Perkins 43-05 - Perkins 43-05 - Perkins 43-05 - As Drille	7,550.00	7,089.86	6,225.07	6,136.93	70.625	SF
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	7,318.29	6,900.58	5,449.42	5,399.30	108.720	CC, ES
Perkins USX Y05-16 - Perkins USX Y05-16 - Perkins US	7,600.00	7,051.88	5,470.84	5,420.00	107.608	SF
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	4,361.28	2,931.98	5,272.57	5,247.31	208.723	CC
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	4,400.00	2,945.08	5,272.66	5,247.22	207.253	ES
Pioneer Y17-715 - Pioneer Y17-715 - Plan #1	17,871.13	17,689.55	6,239.01	6,059.28	34.714	SF
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	4,357.96	2,932.05	5,250.96	5,225.72	207.973	CC
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	4,400.00	2,946.32	5,251.08	5,225.63	206.383	ES
Pioneer Y17-725 - Pioneer Y17-725 - Plan #1	17,871.13	17,649.38	5,579.00	5,399.73	31.120	SF
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	7,753.04	7,317.72	4,883.56	4,831.93	94.593	CC
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,200.00	16,700.00	4,906.32	4,738.08	29.163	ES
Pioneer Y17-735 - Pioneer Y17-735 - Plan #1	17,871.13	17,304.77	4,925.85	4,747.49	27.618	SF
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	7,364.21	6,481.61	4,545.71	4,496.46	92.306	CC
Pioneer Y17-740 - Pioneer Y17-740 - Plan #1	17,871.13	17,587.51	4,593.29	4,415.06	25.771	ES, SF
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	7,748.89	7,340.88	4,231.70	4,180.34	82.391	CC
Pioneer Y17-745 - Pioneer Y17-745 - Plan #1	17,871.13	17,446.55	4,268.15	4,090.05	23.965	ES, SF
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	5,446.73	4,448.48	3,491.88	3,456.64	99.088	CC
Pioneer Y17-755 - Pioneer Y17-755 - Plan #1	17,871.13	17,471.02	3,618.07	3,438.36	20.133	ES, SF
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	7,753.96	7,405.49	2,932.67	2,880.95	56.707	CC
Pioneer Y17-765 - Pioneer Y17-765 - Plan #1	17,871.13	17,506.58	2,954.82	2,776.11	16.534	ES, SF
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	7,753.24	7,253.83	2,294.54	2,243.51	44.966	CC
Pioneer Y17-775 - Pioneer Y17-775 - Plan #1	17,871.13	17,357.35	2,309.46	2,131.16	12.953	ES, SF
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	7,758.54	7,517.04	1,956.68	1,904.81	37.724	CC
Pioneer Y17-780 - Pioneer Y17-780 - Plan #1	17,871.13	17,616.46	1,968.09	1,789.86	11.042	ES, SF
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	7,758.86	7,463.89	1,634.61	1,582.63	31.449	CC
Pioneer Y17-785 - Pioneer Y17-785 - Plan #1	17,871.13	17,564.41	1,642.43	1,463.96	9.203	ES, SF
Y Section 06						
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,704.66	6,345.45	1,638.74	1,591.49	34.681	CC, ES
Gray 10-6 (PA) - Wellbore #1 - Gyro Surveys	6,850.00	6,477.41	1,655.05	1,606.83	34.324	SF
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	3,473.59	3,376.13	2,491.09	2,467.28	104.633	CC
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	3,700.00	3,596.18	2,492.08	2,466.66	98.031	ES
Norris 14-6 (PA) - Wellbore #1 - Gyro Surveys	7,100.00	6,821.62	2,815.46	2,765.75	56.649	SF
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	6,788.80	6,510.59	3,872.13	3,824.50	81.310	CC, ES
Norris 41-6 (PA) - Wellbore #1 - Gyro Surveys	7,050.00	7,050.00	3,926.42	3,876.23	78.237	SF
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	6,660.19	6,387.81	4,307.48	4,260.37	91.419	CC, ES
Norris Y 6-5 (PA) - Wellbore #1 - Gyro Surveys	7,000.00	6,665.48	4,377.66	4,328.52	89.092	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 07						
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	2,022.83	2,009.35	2,208.33	2,194.45	159.170	CC, ES
Harkis 11-7 (PA) - Wellbore #1 - Gyro Surveys	8,500.00	7,165.25	3,186.02	3,134.17	61.456	SF
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,146.21	1,149.22	1,990.02	1,982.30	257.801	CC
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	1,900.00	1,891.90	1,992.67	1,979.66	153.191	ES
Harkis 1-7 (PA) - Wellbore #1 - Gyro Surveys	9,400.00	7,128.63	2,813.70	2,760.11	52.510	SF
HP Farms Y 7-15JI (PR) - Wellbore #1 - No Surveys	12,256.30	7,131.00	897.06	709.33	4.778	CC, ES, SF
HP Y07-09 (PR) - Wellbore #1 - No Surveys	10,907.76	7,080.00	673.04	494.73	3.775	CC, ES, SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,400.00	7,342.34	908.68	836.30	12.555	SF
HP Y07-10D (SI) - Wellbore #1 - Gyro Surveys	10,757.30	7,344.53	835.49	772.64	13.295	CC, ES
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,273.37	3,199.48	193.82	118.38	2.569	CC
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,300.00	3,224.35	194.05	118.01	2.552	ES
Perkins 31-7 (SI) - Wellbore #1 - No Surveys	3,400.00	3,317.75	199.03	120.74	2.542	SF
Perkins USX Y 7-17 (SI) - Wellbore #1 - Gyro Surveys	8,839.36	7,100.03	8.87	-43.40	0.170	Level 1, CC, ES, SF
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,200.00	2,173.00	1,702.85	1,651.74	33.315	CC
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	2,300.00	2,272.98	1,704.60	1,651.13	31.879	ES
Pioneer 22-7 (SI) - Wellbore #1 - No Surveys	9,800.00	7,107.00	1,849.76	1,676.63	10.684	SF
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,200.00	2,196.00	164.92	149.62	10.784	CC
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,300.00	2,290.87	165.42	149.45	10.355	ES
Pioneer D31-716 - Pioneer D31-716 - Plan #1	2,600.00	2,574.05	175.24	157.34	9.787	SF
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,200.00	2,197.00	142.28	126.98	9.301	CC
Pioneer D31-725 - Pioneer D31-725 - Plan #1	2,300.00	2,292.63	142.78	126.79	8.933	ES
Pioneer D31-725 - Pioneer D31-725 - Plan #1	7,450.00	7,382.20	275.09	221.94	5.176	SF
Pioneer D31-735 - Pioneer D31-735 - Plan #1	2,200.00	2,197.00	119.92	104.62	7.840	CC
Pioneer D31-735 - Pioneer D31-735 - Plan #1	2,300.00	2,293.84	120.21	104.22	7.517	ES
Pioneer D31-735 - Pioneer D31-735 - Plan #1	7,150.00	7,472.02	299.86	248.07	5.790	SF
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,762.55	2,755.94	80.19	60.91	4.158	CC, ES
Pioneer D31-744 - Pioneer D31-744 - Plan #1	2,800.00	2,807.38	80.55	60.94	4.108	SF
Pioneer D31-756 - Pioneer D31-756 - Plan #1	2,200.00	2,202.00	860.07	844.75	56.162	CC, ES
Pioneer D31-756 - Pioneer D31-756 - Plan #1	7,000.00	7,585.39	1,518.20	1,466.53	29.384	SF
Pioneer D31-761 - Pioneer D31-761 - Plan #1	2,200.00	2,202.00	882.73	867.41	57.642	CC, ES
Pioneer D31-761 - Pioneer D31-761 - Plan #1	7,150.00	7,708.71	1,895.28	1,842.98	36.239	SF
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,200.00	2,203.00	905.09	889.77	59.088	CC, ES
Pioneer D31-775 - Pioneer D31-775 - Plan #1	2,800.00	2,652.09	987.15	968.34	52.485	SF
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,200.00	2,203.00	926.33	911.01	60.475	CC, ES
Pioneer D31-785 - Pioneer D31-785 - Plan #1	2,800.00	2,646.48	1,009.08	990.30	53.740	SF
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,639.16	7,265.40	610.51	548.63	9.867	CC, ES
Pioneer USX Y07-08D (PR) - Wellbore #1 - As Drilled	9,700.00	7,266.35	613.53	551.24	9.849	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,200.00	7,511.58	745.39	644.92	7.420	SF
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,400.00	7,512.24	705.07	613.80	7.725	ES
Pioneer Y07-07D (PR) - Wellbore #1 - Gyro Surveys	9,446.18	7,512.39	703.56	615.11	7.954	CC
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,200.00	2,198.00	44.73	29.43	2.923	CC
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,300.00	2,296.81	45.05	29.05	2.816	ES
Pioneer Y18-715 - Pioneer Y18-715 - Plan #1	2,400.00	2,395.58	46.16	29.47	2.766	SF
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,200.00	2,199.00	22.36	7.06	1.461	Level 3, CC
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,400.00	2,397.96	23.06	6.35	1.380	Level 3, ES
Pioneer Y18-725 - Pioneer Y18-725 - Plan #1	2,500.00	2,497.44	23.98	6.59	1.379	Level 3, SF
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,204.00	2,205.02	22.64	7.30	1.476	Level 3, CC
Pioneer Y18-735 - Pioneer Y18-735 - Plan #1	2,400.00	2,401.72	23.42	6.69	1.400	Level 3, ES, SF
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,200.14	2,201.14	45.00	29.69	2.939	CC, ES
Pioneer Y18-744 - Pioneer Y18-744 - Plan #1	2,300.00	2,301.10	45.87	29.85	2.863	SF
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	2,200.00	2,199.00	717.53	702.23	46.888	CC, ES
Pioneer Y18-756 - Pioneer Y18-756 - Plan #1	17,871.13	17,592.11	1,575.60	1,403.01	9.129	SF
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	2,200.00	2,200.00	740.17	724.87	48.356	CC, ES

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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 07						
Pioneer Y18-766 - Pioneer Y18-766 - Plan #1	17,871.13	17,679.27	2,196.19	2,022.76	12.663	SF
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	2,200.00	2,200.00	762.53	747.22	49.817	CC, ES
Pioneer Y18-770 - Pioneer Y18-770 - Plan #1	17,871.13	17,790.21	2,508.86	2,335.20	14.447	SF
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	2,200.00	2,201.00	783.78	768.47	51.193	CC, ES
Pioneer Y18-775 - Pioneer Y18-775 - Plan #1	17,871.13	17,670.64	2,826.63	2,653.09	16.288	SF
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	2,200.00	2,201.00	807.54	792.23	52.745	CC, ES
Pioneer Y18-785 - Pioneer Y18-785 - Plan #1	17,871.13	17,881.06	3,450.49	3,276.71	19.855	SF
UPRC 7-10Q (PR) - Wellbore #1 - No Surveys	11,489.83	7,090.00	356.85	174.87	1.961	CC, ES, SF
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,507.15	7,153.22	2,759.76	2,694.67	42.403	CC, ES
UPRR 53 PAN AM E 1 (PA) - Wellbore #1 - Gyro Survey	11,900.00	7,150.12	2,787.57	2,720.80	41.749	SF
Y Section 08						
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	11,822.14	7,091.00	2,209.18	2,025.09	12.000	CC, ES
Alfred Krough 1 (PA) - Wellbore #1 - No Surveys	12,000.00	7,091.00	2,216.33	2,030.87	11.950	SF
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,654.07	7,216.03	4,935.43	4,869.61	74.990	CC
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	11,700.00	7,217.03	4,935.64	4,869.50	74.629	ES
Lazy 15-8 (PR) - Wellbore #1 - Gyro Surveys	13,400.00	7,254.16	5,235.00	5,158.28	68.235	SF
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	8,574.39	7,049.28	5,579.13	5,527.45	107.943	CC, ES
Norris C Unit 01 (SI) - Wellbore #1 - Gyro Surveys	11,300.00	7,055.23	6,209.32	6,146.36	98.628	SF
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,536.53	7,061.75	2,154.18	2,102.76	41.894	CC, ES
Norris C Unit 02 (PA) - Wellbore #1 - Gyro Surveys	8,800.00	7,064.42	2,170.23	2,118.11	41.634	SF
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	8,276.46	7,035.28	4,402.78	4,351.64	86.089	CC, ES
Pioneer Y 08-02 (PR) - Wellbore #1 - Gyro Surveys	9,900.00	7,025.53	4,692.57	4,636.30	83.398	SF
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	8,060.59	7,019.58	3,322.75	3,271.83	65.259	CC, ES
Pioneer Y 08-03 (SI) - Wellbore #1 - Gyro Surveys	8,600.00	7,022.21	3,366.25	3,314.44	64.971	SF
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,518.96	7,075.71	1,786.81	1,732.30	32.776	CC, ES
Pioneer Y 08-05 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	7,075.90	1,808.78	1,752.83	32.326	SF
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	9,604.62	7,132.00	5,858.43	5,685.52	33.882	CC, ES
Pioneer Y 08-08 (PR) - Wellbore #1 - No Surveys	10,700.00	7,132.00	5,959.95	5,781.46	33.391	SF
Y Section 09						
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,124.33	6,800.01	9,929.23	9,861.11	145.753	CC
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	12,200.00	6,800.01	9,929.52	9,860.86	144.629	ES
Perkins 34-09 - Wellbore #1 - Wellbore #1 - As Drilled	13,300.00	6,824.56	9,998.54	9,922.03	130.682	SF
Perkins USX Y09-23 - Original Drilling - Original Drilling -						Out of range

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 16						
Hullabaloo State Y21-716 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-726 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-736 - Original Drilling - Original Dril						Out of range
Hullabaloo State Y21-746 - Original Drilling - Original Dril	14,436.18	8,411.00	9,438.10	9,353.61	111.710	CC
Hullabaloo State Y21-746 - Original Drilling - Original Dril	17,400.00	11,250.78	9,455.95	9,332.44	76.563	ES
Hullabaloo State Y21-746 - Original Drilling - Original Dril	17,871.13	11,517.76	9,467.51	9,338.53	73.403	SF
Hullabaloo State Y21-756 - Original Drilling - Original Dril	16,499.41	10,396.00	8,788.84	8,678.24	79.462	CC
Hullabaloo State Y21-756 - Original Drilling - Original Dril	16,600.00	10,396.00	8,789.42	8,678.01	78.892	ES
Hullabaloo State Y21-756 - Original Drilling - Original Dril	17,871.13	12,088.35	8,831.62	8,698.25	66.218	SF
Hullabaloo State Y21-763 - Orignal Drilling - Orignal Drilli	13,401.46	7,654.00	8,297.18	8,223.70	112.920	CC
Hullabaloo State Y21-763 - Orignal Drilling - Orignal Drilli	13,800.00	8,031.00	8,300.43	8,223.27	107.571	ES
Hullabaloo State Y21-763 - Orignal Drilling - Orignal Drilli	17,871.13	11,850.00	8,419.64	8,289.47	64.682	SF
Hullabaloo State Y21-769 - Original Drilling - Original Dril	12,692.35	6,700.00	7,882.03	7,815.14	117.847	CC
Hullabaloo State Y21-769 - Original Drilling - Original Dril	16,300.00	16,300.00	7,942.19	7,794.47	53.767	ES
Hullabaloo State Y21-769 - Original Drilling - Original Dril	17,100.00	17,100.00	7,971.50	7,809.13	49.095	SF
Hullabaloo State Y21-775 - Original Drilling - Original Dril	13,250.18	7,232.58	7,486.88	7,415.93	105.530	CC
Hullabaloo State Y21-775 - Original Drilling - Original Dril	17,400.00	17,400.00	7,555.98	7,387.66	44.891	ES, SF
Hullabaloo State Y21-781 - Original Drilling - Original Dril	13,325.67	7,416.18	7,074.82	7,002.82	98.254	CC
Hullabaloo State Y21-781 - Original Drilling - Original Dril	14,100.00	14,100.00	7,084.99	6,987.58	72.728	ES
Hullabaloo State Y21-781 - Original Drilling - Original Dril	17,871.13	11,805.00	7,166.16	7,035.52	54.856	SF
Hullabaloo State Y21-787 - Original Drilling - Original Dril	13,173.75	7,225.63	6,642.65	6,571.75	93.684	CC
Hullabaloo State Y21-787 - Original Drilling - Original Dril	15,300.00	15,300.00	6,691.64	6,563.67	52.289	ES
Hullabaloo State Y21-787 - Original Drilling - Original Dril	17,871.13	12,252.00	6,736.02	6,601.95	50.243	SF
State 01 - Original Drilling - Original Drilling - As Drilled						Out of range
State 21 (PA) - Original Drilling - Original Drilling - As Dril	16,704.61	7,147.00	7,735.19	7,514.49	35.047	CC
State 21 (PA) - Original Drilling - Original Drilling - As Dril	16,800.00	7,147.00	7,735.78	7,514.29	34.925	ES
State 21 (PA) - Original Drilling - Original Drilling - As Dril	17,871.13	7,147.00	7,822.66	7,593.05	34.070	SF
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,661.21	7,131.35	7,238.34	7,150.92	82.794	CC
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	14,700.00	7,130.53	7,238.45	7,150.72	82.506	ES
State Y16-05D - Wellbore #1 - Wellbore #1 - As Drilled	17,300.00	7,075.59	7,704.14	7,599.66	73.737	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Y Section 17						
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,044.59	7,095.00	4,929.00	4,706.70	22.173	CC
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,100.00	7,095.00	4,929.31	4,706.54	22.127	ES
UPRC 17-15Q (PA) - Wellbore #1 - No Surveys	17,800.00	7,095.00	4,986.55	4,758.55	21.871	SF
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,311.61	7,095.00	2,221.05	2,019.51	11.020	CC, ES
UPRC 17-5Q (PR) - Wellbore #1 - No Surveys	14,500.00	7,095.00	2,229.02	2,025.90	10.974	SF
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,318.41	7,090.00	3,293.69	3,099.44	16.956	CC, ES
HP Farms Y 17-03 (PR) - Wellbore #1 - No Surveys	13,700.00	7,090.00	3,315.72	3,118.54	16.816	SF
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,221.35	7,138.49	2,109.93	2,033.57	27.629	CC, ES
HP Farms Y 17-04 (PR) - Wellbore #1 - Gyro Surveys	13,600.00	7,133.17	2,143.63	2,064.48	27.084	SF
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,749.94	7,020.64	3,427.86	3,340.41	39.197	CC
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	14,800.00	7,020.41	3,428.23	3,340.34	39.008	ES
HP Farms Y 17-06 (PR) - Wellbore #1 - Gyro Surveys	17,500.00	17,500.00	4,394.65	4,262.46	33.243	SF
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,525.77	7,064.88	3,148.01	3,039.16	28.919	CC, ES
Lana Y 17-14JI (SI) - Wellbore #1 - Gyro Surveys	17,871.13	7,064.22	3,166.90	3,055.28	28.373	SF
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,297.89	7,066.03	4,963.96	4,880.07	59.172	CC
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	14,300.00	7,066.06	4,963.96	4,880.05	59.159	ES
Semmen USX Y 17-07 (PR) - Wellbore #1 - Gyro Survey	15,700.00	7,084.56	5,158.14	5,064.76	55.235	SF
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,282.72	7,098.25	5,981.46	5,904.62	77.840	CC
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	13,300.00	7,097.64	5,981.49	5,904.51	77.706	ES
Sloan 41-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,400.00	7,024.01	6,344.70	6,254.15	70.067	SF
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	15,994.56	7,008.69	2,367.53	2,270.73	24.460	CC
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,000.00	7,008.65	2,367.53	2,270.69	24.447	ES
UPRC 17-12Q (SI) - Wellbore #1 - Gyro Surveys	16,300.00	7,006.48	2,387.15	2,287.94	24.062	SF
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,052.02	7,107.00	2,379.03	2,156.43	10.688	CC, ES
UPRC 17-13Q (SI) - Wellbore #1 - Wellbore #1	17,200.00	7,107.00	2,383.62	2,159.73	10.646	SF
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,237.55	7,106.36	4,317.82	4,241.32	56.440	CC
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	13,300.00	7,106.92	4,318.27	4,241.27	56.081	ES
UPRR USX Y 17-02 (PR) - Wellbore #1 - Gyro Surveys	14,500.00	7,100.00	4,498.62	4,413.71	52.984	SF
Y Section 18						
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	14,140.67	7,131.86	2,632.07	2,549.09	31.719	CC, ES
ADA Harkins Unit A1 (PA) - Wellbore #1 - Gyro Surveys	15,400.00	15,400.00	2,917.23	2,803.18	25.578	SF
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surve	16,610.36	7,268.98	2,806.61	2,704.15	27.391	CC, ES
Charles R Milliken Unit 1 (PR) - Wellbore #1 - Gyro Surve	16,900.00	7,271.17	2,821.52	2,717.65	27.164	SF
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,800.00	7,145.00	180.61	-40.82	0.816	Level 1, ES, SF
HSR Harkis 15-18 (PR) - Wellbore #1 - No Surveys	16,801.30	7,145.00	180.61	-40.80	0.816	Level 1, CC
Lyle V Cooksey Gas Unit 1 (PR) - Wellbore #1 - Gyro Su	14,529.84	7,121.26	223.36	137.38	2.598	CC, ES, SF

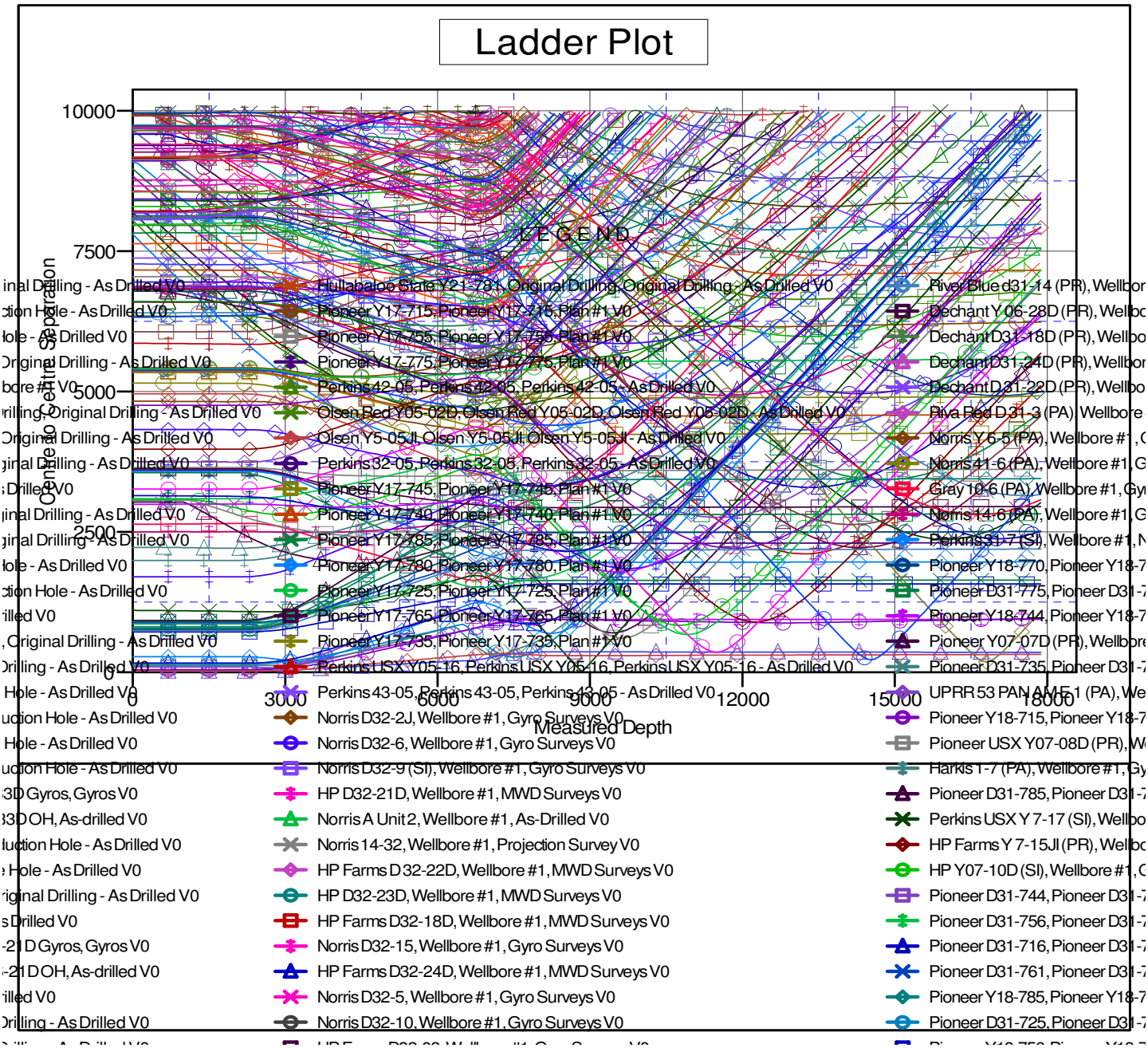
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4914.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-730
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°



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

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Pioneer Y18-730
Project:	Mustang	**TVD Reference:**	Well @ 4914.00ft
Reference Site:	Y Section 07	**MD Reference:**	Well @ 4914.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Pioneer Y18-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Pioneer Y18-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4914.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Pioneer Y18-730
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.59°

