Project: Mustang
Site: C Section 33
Well: Guttersen C28-745
Wellbore: Guttersen C28-745
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

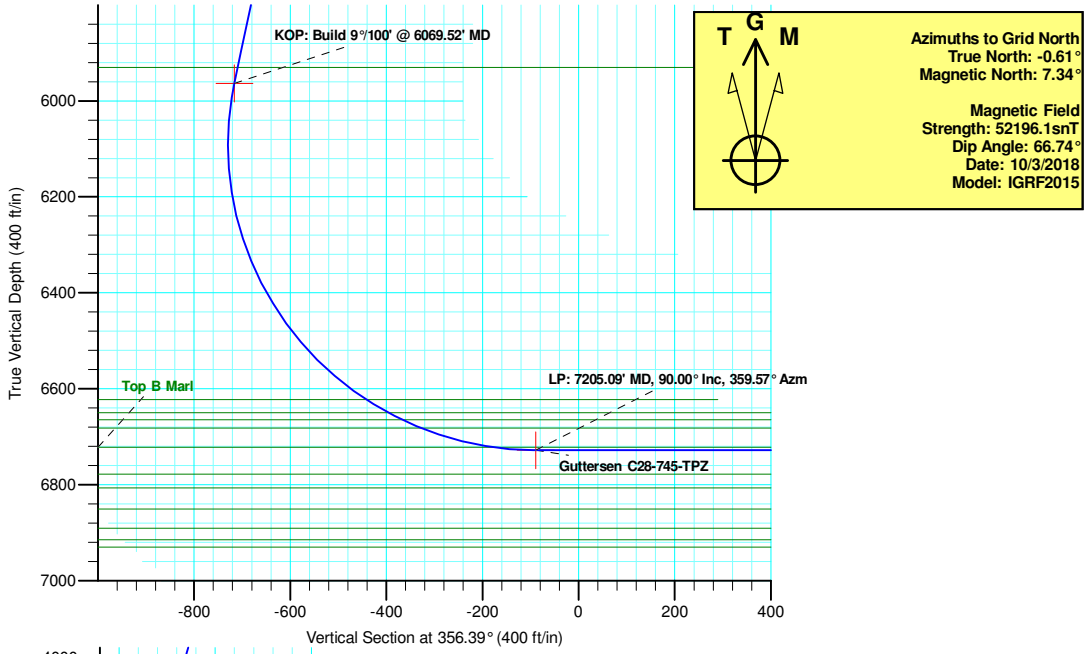
SECTION DETAILS

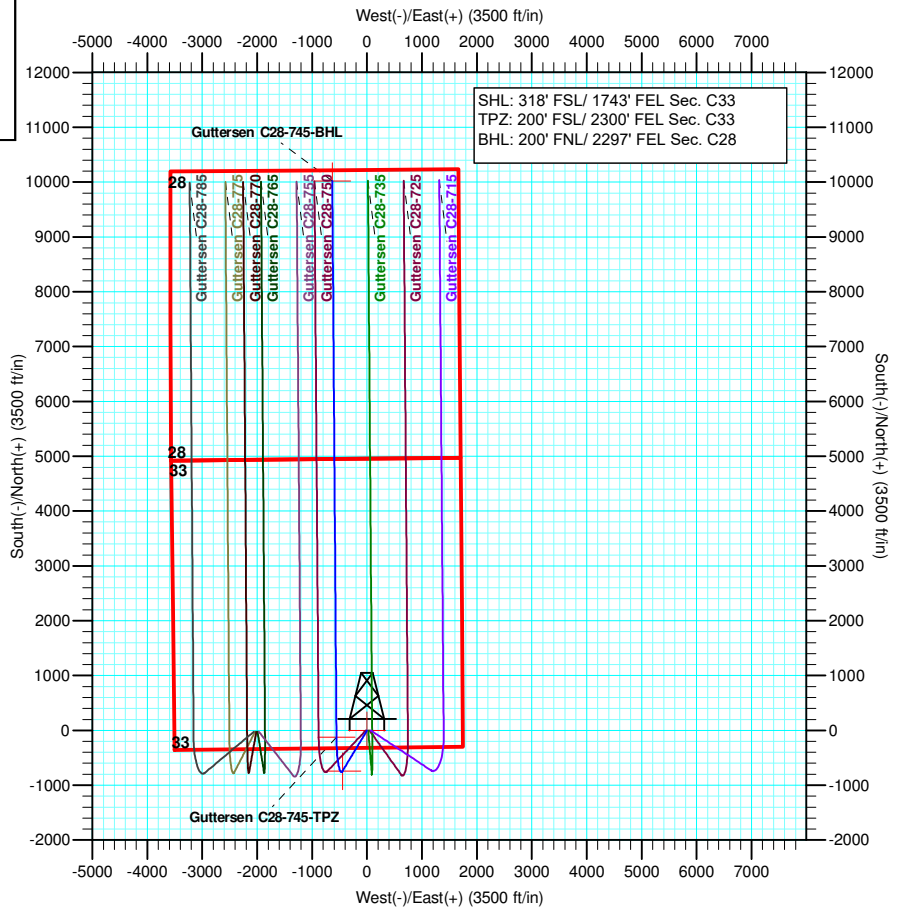
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2917.69	14.35	211.08	2910.21	-76.59	-46.17	2.00	211.08	-73.53	
4	6069.52	14.35	211.08	5963.64	-745.77	-449.57	0.00	0.00	-715.95	
5	7205.09	90.00	359.57	6728.00	-124.31	-556.48	9.00	147.67	-89.00	Guttersen C28-745-TPZ
6	11580.09	90.00	359.57	6728.00	4250.56	-589.31	0.00	0.00	4279.25	
7	11655.09	88.50	359.57	6728.99	4325.55	-589.87	2.00	180.00	4354.13	Guttersen C28-745-BHL
8	12355.09	88.50	359.57	6747.31	5025.29	-595.12	0.00	0.00	5052.81	
9	12505.09	91.50	359.57	6747.31	5175.27	-596.24	2.00	0.00	5202.56	Guttersen C28-745-BHL
10	13205.09	91.50	359.57	6728.99	5875.01	-601.50	0.00	0.00	5901.24	
11	13280.09	90.00	359.57	6728.00	5950.00	-602.06	2.00	180.00	5976.12	
12	17347.59	90.00	359.57	6728.00	10017.39	-632.58	0.00	0.00	10037.34	Guttersen C28-745-BHL

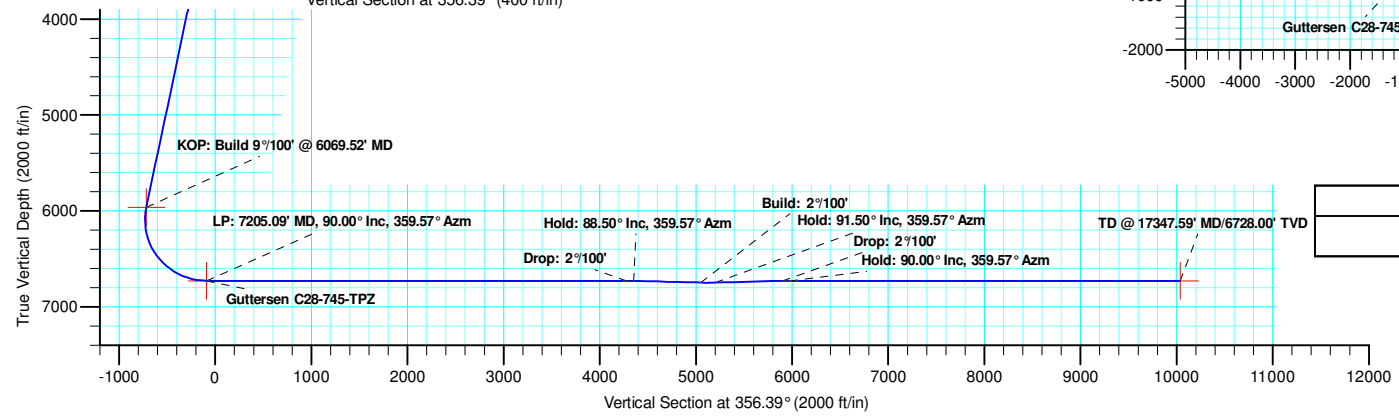
WELL DETAILS: Guttersen C28-745

Ground Level: 4714.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	1339924.71	3264337.09	40.2626170	-104.5527910	







Plan: Plan #1 (Guttersen C28-745/Guttersen C28-745)

Created By: Keith Noack Date: 11:15, October 04 2018

Northern Region - DJ Basin

Mustang
C Section 33
Guttersen C28-745

Guttersen C28-745

Plan: Plan #1

Standard Planning Report

04 October, 2018

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4744.00ft
Project:	Mustang	**MD Reference:**	Well @ 4744.00ft
Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
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 C Section 33

Site Position:		**Northing:**	1,339,901.69 usft	**Latitude:**	40.2626140
From:	Lat/Long	**Easting:**	3,262,275.97 usft	**Longitude:**	-104.5601770
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.61 °

Well Guttersen C28-745

Well Position	**+N/-S**	23.02 ft	**Northing:**	1,339,924.71 usft	**Latitude:**	40.2626170
	+E/-W	2,061.12 ft	**Easting:**	3,264,337.09 usft	**Longitude:**	-104.5527910
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	4,714.00 ft

Wellbore Guttersen C28-745

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/3/2018	7.95	66.74	52,196.08194620

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	356.39

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	
2,917.69	14.35	211.08	2,910.21	-76.59	-46.17	2.00	2.00	0.00	211.08	
6,069.52	14.35	211.08	5,963.64	-745.77	-449.57	0.00	0.00	0.00	0.00	
7,205.09	90.00	359.57	6,728.00	-124.31	-556.48	9.00	6.66	13.08	147.67	Guttersen C28-745
11,580.09	90.00	359.57	6,728.00	4,250.56	-589.31	0.00	0.00	0.00	0.00	
11,655.09	88.50	359.57	6,728.99	4,325.55	-589.87	2.00	-2.00	0.00	180.00	Guttersen C28-745
12,355.09	88.50	359.57	6,747.31	5,025.29	-595.12	0.00	0.00	0.00	0.00	
12,505.09	91.50	359.57	6,747.31	5,175.27	-596.24	2.00	2.00	0.00	0.00	Guttersen C28-745
13,205.09	91.50	359.57	6,728.99	5,875.01	-601.50	0.00	0.00	0.00	0.00	
13,280.09	90.00	359.57	6,728.00	5,950.00	-602.06	2.00	-2.00	0.00	180.00	
17,347.59	90.00	359.57	6,728.00	10,017.39	-632.58	0.00	0.00	0.00	0.00	Guttersen C28-745

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Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
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
461.00	0.00	0.00	461.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
594.00	0.00	0.00	594.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,514.00	0.00	0.00	1,514.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
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
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	211.08	2,299.98	-1.49	-0.90	-1.43	2.00	2.00	0.00
2,400.00	4.00	211.08	2,399.84	-5.98	-3.60	-5.74	2.00	2.00	0.00
2,500.00	6.00	211.08	2,499.45	-13.44	-8.10	-12.90	2.00	2.00	0.00
2,600.00	8.00	211.08	2,598.70	-23.88	-14.39	-22.92	2.00	2.00	0.00
2,700.00	10.00	211.08	2,697.47	-37.27	-22.47	-35.78	2.00	2.00	0.00
2,800.00	12.00	211.08	2,795.62	-53.61	-32.32	-51.47	2.00	2.00	0.00
2,900.00	14.00	211.08	2,893.06	-72.88	-43.93	-69.96	2.00	2.00	0.00
2,917.69	14.35	211.08	2,910.21	-76.59	-46.17	-73.53	2.00	2.00	0.00
Hold: 14.35° Inc, 211.08° Azm									
3,000.00	14.35	211.08	2,989.95	-94.06	-56.71	-90.30	0.00	0.00	0.00
3,100.00	14.35	211.08	3,086.83	-115.30	-69.50	-110.69	0.00	0.00	0.00
3,200.00	14.35	211.08	3,183.70	-136.53	-82.30	-131.07	0.00	0.00	0.00
3,300.00	14.35	211.08	3,280.58	-157.76	-95.10	-151.45	0.00	0.00	0.00
3,400.00	14.35	211.08	3,377.46	-178.99	-107.90	-171.83	0.00	0.00	0.00
3,500.00	14.35	211.08	3,474.34	-200.22	-120.70	-192.22	0.00	0.00	0.00
3,600.00	14.35	211.08	3,571.22	-221.45	-133.50	-212.60	0.00	0.00	0.00
3,622.49	14.35	211.08	3,593.00	-226.23	-136.38	-217.18	0.00	0.00	0.00
Parkman									
3,700.00	14.35	211.08	3,668.10	-242.69	-146.30	-232.98	0.00	0.00	0.00
3,800.00	14.35	211.08	3,764.97	-263.92	-159.10	-253.37	0.00	0.00	0.00
3,900.00	14.35	211.08	3,861.85	-285.15	-171.90	-273.75	0.00	0.00	0.00
4,000.00	14.35	211.08	3,958.73	-306.38	-184.69	-294.13	0.00	0.00	0.00
4,040.54	14.35	211.08	3,998.00	-314.99	-189.88	-302.39	0.00	0.00	0.00

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Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
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)
Sussex									
4,100.00	14.35	211.08	4,055.61	-327.61	-197.49	-314.51	0.00	0.00	0.00
4,200.00	14.35	211.08	4,152.49	-348.84	-210.29	-334.90	0.00	0.00	0.00
4,300.00	14.35	211.08	4,249.37	-370.07	-223.09	-355.28	0.00	0.00	0.00
4,400.00	14.35	211.08	4,346.24	-391.31	-235.89	-375.66	0.00	0.00	0.00
4,500.00	14.35	211.08	4,443.12	-412.54	-248.69	-396.04	0.00	0.00	0.00
4,600.00	14.35	211.08	4,540.00	-433.77	-261.49	-416.43	0.00	0.00	0.00
4,610.32	14.35	211.08	4,550.00	-435.96	-262.81	-418.53	0.00	0.00	0.00
Shannon									
4,700.00	14.35	211.08	4,636.88	-455.00	-274.29	-436.81	0.00	0.00	0.00
4,800.00	14.35	211.08	4,733.76	-476.23	-287.09	-457.19	0.00	0.00	0.00
4,900.00	14.35	211.08	4,830.64	-497.46	-299.89	-477.57	0.00	0.00	0.00
5,000.00	14.35	211.08	4,927.51	-518.69	-312.68	-497.96	0.00	0.00	0.00
5,100.00	14.35	211.08	5,024.39	-539.93	-325.48	-518.34	0.00	0.00	0.00
5,200.00	14.35	211.08	5,121.27	-561.16	-338.28	-538.72	0.00	0.00	0.00
5,300.00	14.35	211.08	5,218.15	-582.39	-351.08	-559.10	0.00	0.00	0.00
5,400.00	14.35	211.08	5,315.03	-603.62	-363.88	-579.49	0.00	0.00	0.00
5,500.00	14.35	211.08	5,411.91	-624.85	-376.68	-599.87	0.00	0.00	0.00
5,600.00	14.35	211.08	5,508.78	-646.08	-389.48	-620.25	0.00	0.00	0.00
5,700.00	14.35	211.08	5,605.66	-667.31	-402.28	-640.64	0.00	0.00	0.00
5,800.00	14.35	211.08	5,702.54	-688.55	-415.08	-661.02	0.00	0.00	0.00
5,900.00	14.35	211.08	5,799.42	-709.78	-427.88	-681.40	0.00	0.00	0.00
6,000.00	14.35	211.08	5,896.30	-731.01	-440.67	-701.78	0.00	0.00	0.00
6,034.79	14.35	211.08	5,930.00	-738.40	-445.13	-708.87	0.00	0.00	0.00
Teepee Buttes									
6,069.52	14.35	211.08	5,963.64	-745.77	-449.57	-715.95	0.00	0.00	0.00
KOP: Build 9°/100' @ 6069.52' MD									
6,100.00	12.12	218.08	5,993.32	-751.53	-453.50	-721.45	9.00	-7.32	22.97
6,150.00	9.08	236.37	6,042.47	-757.85	-460.03	-727.35	9.00	-6.08	36.58
6,200.00	7.63	266.12	6,091.96	-760.26	-466.63	-729.34	9.00	-2.90	59.50
6,250.00	8.62	297.63	6,141.48	-758.74	-473.26	-727.41	9.00	1.97	63.02
6,300.00	11.43	318.14	6,190.73	-753.31	-479.89	-721.57	9.00	5.62	41.02
6,350.00	15.07	329.79	6,239.40	-744.00	-486.47	-711.87	9.00	7.29	23.30
6,400.00	19.08	336.82	6,287.19	-730.87	-492.96	-698.35	9.00	8.01	14.06
6,450.00	23.26	341.44	6,333.81	-713.99	-499.32	-681.10	9.00	8.36	9.24
6,500.00	27.54	344.71	6,378.97	-693.47	-505.52	-660.23	9.00	8.56	6.53
6,550.00	31.87	347.15	6,422.39	-669.44	-511.51	-635.87	9.00	8.67	4.88
6,600.00	36.24	349.06	6,463.81	-642.04	-517.25	-608.17	9.00	8.74	3.82
6,650.00	40.64	350.60	6,502.96	-611.45	-522.72	-577.29	9.00	8.79	3.10
6,700.00	45.05	351.90	6,539.61	-577.85	-527.87	-543.44	9.00	8.83	2.59
6,750.00	49.48	353.01	6,573.53	-541.45	-532.68	-506.81	9.00	8.85	2.22
6,800.00	53.91	353.98	6,604.51	-502.48	-537.12	-467.63	9.00	8.87	1.94
6,832.53	56.80	354.55	6,623.00	-475.86	-539.79	-440.89	9.00	8.88	1.76
Sharon Springs									
6,850.00	58.36	354.84	6,632.37	-461.17	-541.16	-426.15	9.00	8.89	1.67
6,885.18	61.49	355.40	6,650.00	-430.84	-543.74	-395.71	9.00	8.89	1.59
Top A Chalk									
6,900.00	62.80	355.63	6,656.92	-417.78	-544.77	-382.61	9.00	8.90	1.53
6,918.18	64.42	355.90	6,665.00	-401.54	-545.97	-366.33	9.00	8.90	1.49
Top A Marl									
6,950.00	67.26	356.36	6,678.02	-372.57	-547.93	-337.30	9.00	8.90	1.43
6,960.49	68.19	356.50	6,682.00	-362.89	-548.53	-327.59	9.00	8.91	1.39
Top B Chalk									

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7,000.00	71.71	357.04	6,695.54	-325.83	-550.62	-290.48	9.00	8.91	1.35
7,050.00	76.17	357.68	6,709.37	-277.85	-552.83	-242.46	9.00	8.91	1.29
7,100.00	80.63	358.30	6,719.43	-228.91	-554.54	-193.51	9.00	8.92	1.24
7,117.20	82.16	358.51	6,722.00	-211.92	-555.02	-176.52	9.00	8.92	1.22
Top B Marl									
7,150.00	85.09	358.91	6,725.64	-179.33	-555.75	-143.95	9.00	8.92	1.21
7,200.00	89.55	359.51	6,727.98	-129.40	-556.43	-94.08	9.00	8.92	1.20
7,205.09	90.00	359.57	6,728.00	-124.31	-556.48	-89.00	9.00	8.92	1.19
LP: 7205.09' MD, 90.00° Inc, 359.57° Azm									
7,300.00	90.00	359.57	6,728.00	-29.40	-557.19	5.77	0.00	0.00	0.00
7,400.00	90.00	359.57	6,728.00	70.59	-557.94	105.62	0.00	0.00	0.00
7,500.00	90.00	359.57	6,728.00	170.59	-558.69	205.46	0.00	0.00	0.00
7,600.00	90.00	359.57	6,728.00	270.59	-559.44	305.31	0.00	0.00	0.00
7,700.00	90.00	359.57	6,728.00	370.58	-560.19	405.15	0.00	0.00	0.00
7,800.00	90.00	359.57	6,728.00	470.58	-560.94	505.00	0.00	0.00	0.00
7,900.00	90.00	359.57	6,728.00	570.58	-561.69	604.84	0.00	0.00	0.00
8,000.00	90.00	359.57	6,728.00	670.58	-562.44	704.69	0.00	0.00	0.00
8,100.00	90.00	359.57	6,728.00	770.57	-563.19	804.54	0.00	0.00	0.00
8,200.00	90.00	359.57	6,728.00	870.57	-563.94	904.38	0.00	0.00	0.00
8,300.00	90.00	359.57	6,728.00	970.57	-564.69	1,004.23	0.00	0.00	0.00
8,400.00	90.00	359.57	6,728.00	1,070.57	-565.44	1,104.07	0.00	0.00	0.00
8,500.00	90.00	359.57	6,728.00	1,170.56	-566.19	1,203.92	0.00	0.00	0.00
8,600.00	90.00	359.57	6,728.00	1,270.56	-566.94	1,303.76	0.00	0.00	0.00
8,700.00	90.00	359.57	6,728.00	1,370.56	-567.69	1,403.61	0.00	0.00	0.00
8,800.00	90.00	359.57	6,728.00	1,470.55	-568.44	1,503.46	0.00	0.00	0.00
8,900.00	90.00	359.57	6,728.00	1,570.55	-569.19	1,603.30	0.00	0.00	0.00
9,000.00	90.00	359.57	6,728.00	1,670.55	-569.94	1,703.15	0.00	0.00	0.00
9,100.00	90.00	359.57	6,728.00	1,770.55	-570.70	1,802.99	0.00	0.00	0.00
9,200.00	90.00	359.57	6,728.00	1,870.54	-571.45	1,902.84	0.00	0.00	0.00
9,300.00	90.00	359.57	6,728.00	1,970.54	-572.20	2,002.68	0.00	0.00	0.00
9,400.00	90.00	359.57	6,728.00	2,070.54	-572.95	2,102.53	0.00	0.00	0.00
9,500.00	90.00	359.57	6,728.00	2,170.53	-573.70	2,202.38	0.00	0.00	0.00
9,600.00	90.00	359.57	6,728.00	2,270.53	-574.45	2,302.22	0.00	0.00	0.00
9,700.00	90.00	359.57	6,728.00	2,370.53	-575.20	2,402.07	0.00	0.00	0.00
9,800.00	90.00	359.57	6,728.00	2,470.53	-575.95	2,501.91	0.00	0.00	0.00
9,900.00	90.00	359.57	6,728.00	2,570.52	-576.70	2,601.76	0.00	0.00	0.00
10,000.00	90.00	359.57	6,728.00	2,670.52	-577.45	2,701.60	0.00	0.00	0.00
10,100.00	90.00	359.57	6,728.00	2,770.52	-578.20	2,801.45	0.00	0.00	0.00
10,200.00	90.00	359.57	6,728.00	2,870.51	-578.95	2,901.30	0.00	0.00	0.00
10,300.00	90.00	359.57	6,728.00	2,970.51	-579.70	3,001.14	0.00	0.00	0.00
10,400.00	90.00	359.57	6,728.00	3,070.51	-580.45	3,100.99	0.00	0.00	0.00
10,500.00	90.00	359.57	6,728.00	3,170.51	-581.20	3,200.83	0.00	0.00	0.00
10,600.00	90.00	359.57	6,728.00	3,270.50	-581.95	3,300.68	0.00	0.00	0.00
10,700.00	90.00	359.57	6,728.00	3,370.50	-582.70	3,400.52	0.00	0.00	0.00
10,800.00	90.00	359.57	6,728.00	3,470.50	-583.45	3,500.37	0.00	0.00	0.00
10,900.00	90.00	359.57	6,728.00	3,570.49	-584.20	3,600.22	0.00	0.00	0.00
11,000.00	90.00	359.57	6,728.00	3,670.49	-584.95	3,700.06	0.00	0.00	0.00
11,100.00	90.00	359.57	6,728.00	3,770.49	-585.70	3,799.91	0.00	0.00	0.00
11,200.00	90.00	359.57	6,728.00	3,870.49	-586.45	3,899.75	0.00	0.00	0.00
11,300.00	90.00	359.57	6,728.00	3,970.48	-587.20	3,999.60	0.00	0.00	0.00
11,400.00	90.00	359.57	6,728.00	4,070.48	-587.95	4,099.44	0.00	0.00	0.00
11,500.00	90.00	359.57	6,728.00	4,170.48	-588.70	4,199.29	0.00	0.00	0.00
11,580.09	90.00	359.57	6,728.00	4,250.56	-589.31	4,279.25	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4744.00ft
Project:	Mustang	**MD Reference:**	Well @ 4744.00ft
Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
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)
Drop: 2°/100'									
11,600.00	89.60	359.57	6,728.07	4,270.48	-589.46	4,299.13	2.00	-2.00	0.00
11,655.09	88.50	359.57	6,728.99	4,325.55	-589.87	4,354.13	2.00	-2.00	0.00
Hold: 88.50° Inc, 359.57° Azm									
11,700.00	88.50	359.57	6,730.16	4,370.45	-590.21	4,398.96	0.00	0.00	0.00
11,800.00	88.50	359.57	6,732.78	4,470.41	-590.96	4,498.77	0.00	0.00	0.00
11,900.00	88.50	359.57	6,735.40	4,570.37	-591.71	4,598.58	0.00	0.00	0.00
12,000.00	88.50	359.57	6,738.01	4,670.34	-592.46	4,698.39	0.00	0.00	0.00
12,100.00	88.50	359.57	6,740.63	4,770.30	-593.21	4,798.20	0.00	0.00	0.00
12,200.00	88.50	359.57	6,743.25	4,870.26	-593.96	4,898.01	0.00	0.00	0.00
12,300.00	88.50	359.57	6,745.87	4,970.23	-594.71	4,997.83	0.00	0.00	0.00
12,355.09	88.50	359.57	6,747.31	5,025.29	-595.12	5,052.81	0.00	0.00	0.00
Build: 2°/100'									
12,400.00	89.40	359.57	6,748.13	5,070.20	-595.46	5,097.64	2.00	2.00	0.00
12,505.09	91.50	359.57	6,747.31	5,175.27	-596.24	5,202.56	2.00	2.00	0.00
Hold: 91.50° Inc, 359.57° Azm									
12,600.00	91.50	359.57	6,744.83	5,270.15	-596.96	5,297.29	0.00	0.00	0.00
12,700.00	91.50	359.57	6,742.21	5,370.11	-597.71	5,397.11	0.00	0.00	0.00
12,800.00	91.50	359.57	6,739.59	5,470.07	-598.46	5,496.92	0.00	0.00	0.00
12,900.00	91.50	359.57	6,736.97	5,570.04	-599.21	5,596.73	0.00	0.00	0.00
13,000.00	91.50	359.57	6,734.35	5,670.00	-599.96	5,696.54	0.00	0.00	0.00
13,100.00	91.50	359.57	6,731.74	5,769.96	-600.71	5,796.35	0.00	0.00	0.00
13,205.09	91.50	359.57	6,728.99	5,875.01	-601.50	5,901.24	0.00	0.00	0.00
Drop: 2°/100'									
13,280.09	90.00	359.57	6,728.00	5,950.00	-602.06	5,976.12	2.00	-2.00	0.00
Hold: 90.00° Inc, 359.57° Azm									
13,300.00	90.00	359.57	6,728.00	5,969.91	-602.21	5,996.00	0.00	0.00	0.00
13,400.00	90.00	359.57	6,728.00	6,069.91	-602.96	6,095.84	0.00	0.00	0.00
13,500.00	90.00	359.57	6,728.00	6,169.91	-603.71	6,195.69	0.00	0.00	0.00
13,600.00	90.00	359.57	6,728.00	6,269.90	-604.46	6,295.54	0.00	0.00	0.00
13,700.00	90.00	359.57	6,728.00	6,369.90	-605.21	6,395.38	0.00	0.00	0.00
13,800.00	90.00	359.57	6,728.00	6,469.90	-605.96	6,495.23	0.00	0.00	0.00
13,900.00	90.00	359.57	6,728.00	6,569.90	-606.71	6,595.07	0.00	0.00	0.00
14,000.00	90.00	359.57	6,728.00	6,669.89	-607.46	6,694.92	0.00	0.00	0.00
14,100.00	90.00	359.57	6,728.00	6,769.89	-608.21	6,794.76	0.00	0.00	0.00
14,200.00	90.00	359.57	6,728.00	6,869.89	-608.96	6,894.61	0.00	0.00	0.00
14,300.00	90.00	359.57	6,728.00	6,969.89	-609.71	6,994.46	0.00	0.00	0.00
14,400.00	90.00	359.57	6,728.00	7,069.88	-610.46	7,094.30	0.00	0.00	0.00
14,500.00	90.00	359.57	6,728.00	7,169.88	-611.21	7,194.15	0.00	0.00	0.00
14,600.00	90.00	359.57	6,728.00	7,269.88	-611.96	7,293.99	0.00	0.00	0.00
14,700.00	90.00	359.57	6,728.00	7,369.87	-612.71	7,393.84	0.00	0.00	0.00
14,800.00	90.00	359.57	6,728.00	7,469.87	-613.46	7,493.68	0.00	0.00	0.00
14,900.00	90.00	359.57	6,728.00	7,569.87	-614.21	7,593.53	0.00	0.00	0.00
15,000.00	90.00	359.57	6,728.00	7,669.87	-614.96	7,693.38	0.00	0.00	0.00
15,100.00	90.00	359.57	6,728.00	7,769.86	-615.72	7,793.22	0.00	0.00	0.00
15,200.00	90.00	359.57	6,728.00	7,869.86	-616.47	7,893.07	0.00	0.00	0.00
15,300.00	90.00	359.57	6,728.00	7,969.86	-617.22	7,992.91	0.00	0.00	0.00
15,400.00	90.00	359.57	6,728.00	8,069.85	-617.97	8,092.76	0.00	0.00	0.00
15,500.00	90.00	359.57	6,728.00	8,169.85	-618.72	8,192.60	0.00	0.00	0.00
15,600.00	90.00	359.57	6,728.00	8,269.85	-619.47	8,292.45	0.00	0.00	0.00
15,700.00	90.00	359.57	6,728.00	8,369.85	-620.22	8,392.30	0.00	0.00	0.00
15,800.00	90.00	359.57	6,728.00	8,469.84	-620.97	8,492.14	0.00	0.00	0.00
15,900.00	90.00	359.57	6,728.00	8,569.84	-621.72	8,591.99	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4744.00ft
Project:	Mustang	**MD Reference:**	Well @ 4744.00ft
Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
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)
16,000.00	90.00	359.57	6,728.00	8,669.84	-622.47	8,691.83	0.00	0.00	0.00
16,100.00	90.00	359.57	6,728.00	8,769.83	-623.22	8,791.68	0.00	0.00	0.00
16,200.00	90.00	359.57	6,728.00	8,869.83	-623.97	8,891.52	0.00	0.00	0.00
16,300.00	90.00	359.57	6,728.00	8,969.83	-624.72	8,991.37	0.00	0.00	0.00
16,400.00	90.00	359.57	6,728.00	9,069.83	-625.47	9,091.22	0.00	0.00	0.00
16,500.00	90.00	359.57	6,728.00	9,169.82	-626.22	9,191.06	0.00	0.00	0.00
16,600.00	90.00	359.57	6,728.00	9,269.82	-626.97	9,290.91	0.00	0.00	0.00
16,700.00	90.00	359.57	6,728.00	9,369.82	-627.72	9,390.75	0.00	0.00	0.00
16,800.00	90.00	359.57	6,728.00	9,469.81	-628.47	9,490.60	0.00	0.00	0.00
16,900.00	90.00	359.57	6,728.00	9,569.81	-629.22	9,590.44	0.00	0.00	0.00
17,000.00	90.00	359.57	6,728.00	9,669.81	-629.97	9,690.29	0.00	0.00	0.00
17,100.00	90.00	359.57	6,728.00	9,769.81	-630.72	9,790.13	0.00	0.00	0.00
17,200.00	90.00	359.57	6,728.00	9,869.80	-631.47	9,889.98	0.00	0.00	0.00
17,300.00	90.00	359.57	6,728.00	9,969.80	-632.22	9,989.83	0.00	0.00	0.00
17,347.59	90.00	359.57	6,728.00	10,017.39	-632.58	10,037.34	0.00	0.00	0.00
TD @ 17347.59' MD/6728.00' 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
Guttersen C28-745-SI - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,339,924.71	3,264,337.09	40.2626170	-104.5527910
Guttersen C28-745-K - plan hits target center - Point	0.00	0.00	5,963.65	-745.77	-449.57	1,339,178.94	3,263,887.52	40.2605831	-104.5544303
Guttersen C28-745-BI - plan hits target center - Point	0.00	0.00	6,728.00	10,017.39	-632.58	1,349,942.08	3,263,704.51	40.2901325	-104.5546749
Guttersen C28-745-TI - plan hits target center - Point	0.00	0.00	6,728.00	-124.31	-556.48	1,339,800.40	3,263,780.62	40.2622921	-104.5547896

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4744.00ft
Project:	Mustang	**MD Reference:**	Well @ 4744.00ft
Site:	C Section 33	**North Reference:**	Grid
Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen C28-745		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
461.00	461.00	Pierre			
594.00	594.00	Upper Pierre Aquifer Top			
1,514.00	1,514.00	Upper Pierre Aquifer Base			
3,622.49	3,593.00	Parkman			
4,040.54	3,998.00	Sussex			
4,610.32	4,550.00	Shannon			
6,034.79	5,930.00	Teepee Buttes			
6,832.53	6,623.00	Sharon Springs			
6,885.18	6,650.00	Top A Chalk			
6,918.18	6,665.00	Top A Marl			
6,960.49	6,682.00	Top B Chalk			
7,117.20	6,722.00	Top B Marl			

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'
2,917.69	2,910.21	-76.59	-46.17	Hold: 14.35° Inc, 211.08° Azm
6,069.52	5,963.64	-745.77	-449.57	KOP: Build 9°/100' @ 6069.52' MD
7,205.09	6,728.00	-124.31	-556.48	LP: 7205.09' MD, 90.00° Inc, 359.57° Azm
11,580.09	6,728.00	4,250.56	-589.31	Drop: 2°/100'
11,655.09	6,728.99	4,325.55	-589.87	Hold: 88.50° Inc, 359.57° Azm
12,355.09	6,747.31	5,025.29	-595.12	Build: 2°/100'
12,505.09	6,747.31	5,175.27	-596.24	Hold: 91.50° Inc, 359.57° Azm
13,205.09	6,728.99	5,875.01	-601.50	Drop: 2°/100'
13,280.09	6,728.00	5,950.00	-602.06	Hold: 90.00° Inc, 359.57° Azm
17,347.59	6,728.00	10,017.39	-632.58	TD @ 17347.59' MD/6728.00' TVD

Northern Region - DJ Basin

Mustang
C Section 33
Guttersen C28-745

Guttersen C28-745
Plan #1

Anticollision Summary Report

04 October, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**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** 10/4/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,347.59	Plan #1 (Guttersen C28-745)	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
C Section 21						
Hanscome C21-79HN - Original Drilling - Original Drilling	17,347.59	6,553.01	3,113.80	3,004.34	28.446	CC, ES, SF
NOVACEK C #28-27D - NOVACEK C #28-27D OH - As-	17,347.59	6,795.95	977.01	861.99	8.494	CC, ES, SF
C Section 27						
HERBST #C27-31D - HERBST #C27-31D - As-Drilled	16,103.32	7,098.26	2,232.38	2,114.10	18.875	CC, ES
HERBST #C27-31D - HERBST #C27-31D - As-Drilled	16,200.00	7,099.58	2,234.47	2,115.97	18.857	SF
C Section 28						
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	12,381.75	6,865.64	2,200.65	2,124.99	29.085	CC
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	12,400.00	6,866.06	2,200.72	2,124.97	29.050	ES
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	12,600.00	6,864.57	2,211.51	2,134.92	28.876	SF
HANSCOME #28-4 - Wellbore #1 - No Surveys	16,724.27	6,769.00	2,412.27	2,059.05	6.829	CC, ES
HANSCOME #28-4 - Wellbore #1 - No Surveys	16,800.00	6,769.00	2,413.45	2,059.63	6.821	SF
HANSCOME #28-6 - Wellbore #1 - No Surveys	15,584.07	6,734.00	986.24	643.36	2.876	CC
HANSCOME #28-6 - Wellbore #1 - No Surveys	15,600.00	6,734.00	986.37	643.35	2.876	ES, SF
HANSCOME C #28-18 - Wellbore #1 - No Surveys	16,230.69	6,717.00	401.85	54.59	1.157	Level 2, CC, ES, SF
HANSCOME C #28-19 - Wellbore #1 - No Surveys	16,305.65	6,747.00	1,715.22	1,366.18	4.914	CC, ES
HANSCOME C #28-19 - Wellbore #1 - No Surveys	16,400.00	6,747.00	1,717.81	1,368.05	4.911	SF
HANSCOME C #28-20 - Wellbore #1 - No Surveys	14,999.87	6,748.00	1,648.98	1,310.07	4.866	CC
HANSCOME C #28-20 - Wellbore #1 - No Surveys	15,000.00	6,748.00	1,648.98	1,310.07	4.866	ES
HANSCOME C #28-20 - Wellbore #1 - No Surveys	15,100.00	6,748.00	1,652.01	1,312.35	4.864	SF
HANSCOME C #28-21 - Wellbore #1 - No Surveys	15,047.68	6,732.00	451.98	113.35	1.335	Level 3, CC, ES, SF
HANSCOME C #28-28D - HANSCOME C #28-28D OH -	17,347.59	6,751.40	272.62	173.54	2.752	CC, ES, SF
HANSCOME C #28-29D - HANSCOME C #28-29D OH -	17,347.59	6,952.98	1,616.54	1,505.18	14.516	CC, ES, SF
HANSCOME, C #2 - Wellbore #1 - No Surveys	15,569.07	6,770.00	2,303.00	1,958.80	6.691	CC
HANSCOME, C #2 - Wellbore #1 - No Surveys	15,600.00	6,770.00	2,303.21	1,958.75	6.686	ES
HANSCOME, C #2 - Wellbore #1 - No Surveys	15,700.00	6,770.00	2,306.72	1,961.51	6.682	SF
HANSCOME, C #28-1 - Wellbore #1 - No Surveys	16,879.85	6,729.00	987.77	634.93	2.799	CC, ES
HANSCOME, C #28-1 - Wellbore #1 - No Surveys	16,900.00	6,729.00	987.97	634.96	2.799	SF
NIX #1 - Wellbore #1 - No Surveys	16,758.02	6,664.00	1,607.31	1,258.03	4.602	CC, ES
NIX #1 - Wellbore #1 - No Surveys	16,800.00	6,664.00	1,607.86	1,258.32	4.600	SF
NIX #28-8I4 - Wellbore #1 - No Surveys	15,396.29	6,687.00	1,832.10	1,492.56	5.396	CC
NIX #28-8I4 - Wellbore #1 - No Surveys	15,400.00	6,687.00	1,832.10	1,492.54	5.395	ES
NIX #28-8I4 - Wellbore #1 - No Surveys	15,500.00	6,687.00	1,835.03	1,494.88	5.395	SF
NOVACEK #1 - Wellbore #1 - No Surveys	16,881.46	6,702.00	337.61	-14.17	0.960	Level 1, CC, ES, SF
NOVACEK C #28-17 - Wellbore #1 - No Surveys	16,230.96	6,706.00	833.46	486.64	2.403	CC, ES, SF
NOVACEK C #28-7 - Wellbore #1 - No Surveys	15,399.04	6,711.00	414.84	74.32	1.218	Level 3, CC

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**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
C Section 28						
NOVACEK C #28-7 - Wellbore #1 - No Surveys	15,400.00	6,711.00	414.84	74.32	1.218	Level 3, ES, SF
THOMPSON #1 - Wellbore #1 - As-Drilled	14,226.36	6,669.34	1,640.90	1,552.85	18.635	CC, ES
THOMPSON #1 - Wellbore #1 - As-Drilled	14,400.00	6,666.77	1,650.06	1,561.15	18.559	SF
THOMPSON #2 - Wellbore #1 - No Surveys	14,265.22	6,737.00	1,023.98	691.16	3.077	CC, ES
THOMPSON #2 - Wellbore #1 - No Surveys	14,300.00	6,737.00	1,024.57	691.47	3.076	SF
THOMPSON #28-10 - Wellbore #1 - No Surveys	14,258.31	6,738.00	256.64	-76.16	0.771	Level 1, CC, ES, SF
THOMPSON #28-12 - Wellbore #1 - No Surveys	14,213.78	6,762.00	2,343.49	2,010.06	7.029	CC, ES
THOMPSON #28-12 - Wellbore #1 - No Surveys	14,300.00	6,762.00	2,345.07	2,010.97	7.019	SF
THOMPSON #28-14 - Wellbore #1 - No Surveys	12,931.75	6,748.14	1,042.15	718.93	3.224	CC, ES, SF
THOMPSON #28-16 - Wellbore #1 - No Surveys	12,936.62	6,740.01	1,641.94	1,319.02	5.085	CC, ES
THOMPSON #28-16 - Wellbore #1 - No Surveys	13,000.00	6,738.35	1,643.17	1,319.92	5.083	SF
THOMPSON #3 - Wellbore #1 - No Surveys	12,931.40	6,743.15	2,339.56	2,016.55	7.243	CC, ES
THOMPSON #3 - Wellbore #1 - No Surveys	13,000.00	6,741.35	2,340.57	2,017.09	7.236	SF
THOMPSON #4 - Wellbore #1 - No Surveys	12,870.48	6,749.74	330.79	7.97	1.025	Level 2, CC, ES, SF
THOMPSON #C33-30D - THOMPSON #C33-30D OH - A	12,228.92	6,872.74	3,051.36	2,977.77	41.464	CC, ES
THOMPSON #C33-30D - THOMPSON #C33-30D OH - A	12,800.00	6,870.10	3,104.56	3,027.62	40.354	SF
THOMPSON C #28-22 - Wellbore #1 - No Surveys	14,747.09	6,711.00	1,028.19	692.71	3.065	CC, ES, SF
THOMPSON C #28-23 - Wellbore #1 - No Surveys	13,670.83	6,729.00	981.68	653.70	2.993	CC, ES
THOMPSON C #28-23 - Wellbore #1 - No Surveys	13,700.00	6,729.00	982.12	653.98	2.993	SF
THOMPSON C #28-24 - Wellbore #1 - No Surveys	13,480.75	6,745.00	257.06	-70.14	0.786	Level 1, CC, ES, SF
THOMPSON C #28-25 - Wellbore #1 - No Surveys	13,596.62	6,752.00	1,649.66	1,321.32	5.024	CC
THOMPSON C #28-25 - Wellbore #1 - No Surveys	13,600.00	6,752.00	1,649.67	1,321.29	5.024	ES
THOMPSON C #28-25 - Wellbore #1 - No Surveys	13,700.00	6,752.00	1,652.90	1,323.78	5.022	SF
Thompson C28-79HN - Thompson C28-79HN OH - Origi	16,442.79	10,308.60	2,867.76	2,714.18	18.673	CC
Thompson C28-79HN - Thompson C28-79HN OH - Origi	16,500.00	10,330.36	2,868.31	2,713.88	18.573	ES
Thompson C28-79HN - Thompson C28-79HN OH - Origi	17,300.00	10,884.02	2,906.93	2,737.11	17.117	SF
Thompson C33-69HN - Thompson C33-69HN OH - Origi	12,355.09	9,046.42	32.65	-33.12	0.496	Level 1, SF
Thompson C33-69HN - Thompson C33-69HN OH - Origi	12,357.58	9,046.49	32.56	-32.95	0.497	Level 1, CC
Thompson C33-69HN - Thompson C33-69HN OH - Origi	12,400.00	9,047.84	53.26	-35.71	0.599	Level 1, ES
C Section 32						
Becker #1 - Wellbore #1 - Plan #1	6,896.39	6,499.46	7,870.81	7,823.08	164.917	CC
Becker #1 - Wellbore #1 - Plan #1	17,347.59	17,647.88	7,885.74	7,707.23	44.176	ES, SF
Becker #2 - Wellbore #1 - Plan #1	7,200.66	7,550.06	7,221.70	7,171.66	144.313	CC
Becker #2 - Wellbore #1 - Plan #1	17,347.59	17,664.97	7,233.13	7,054.65	40.525	ES, SF
Becker #3 - Wellbore #1 - Plan #1	7,200.74	7,656.08	6,569.15	6,518.38	129.378	CC
Becker #3 - Wellbore #1 - Plan #1	17,347.59	17,776.56	6,580.58	6,402.25	36.902	ES, SF
Becker #4 - Wellbore #1 - Plan #1	7,201.03	7,877.21	5,917.20	5,865.32	114.058	CC
Becker #4 - Wellbore #1 - Plan #1	17,347.59	18,007.80	5,928.09	5,749.57	33.207	ES, SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**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
C Section 33						
GUTTERSEN C #33-31D - GUTTERSEN C #33-31D OH	10,954.48	6,947.38	3,057.54	2,982.43	40.708	CC
GUTTERSEN C #33-31D - GUTTERSEN C #33-31D OH	11,000.00	6,948.33	3,057.88	2,982.40	40.512	ES
GUTTERSEN C #33-31D - GUTTERSEN C #33-31D OH	11,600.00	6,960.99	3,124.92	3,045.41	39.302	SF
GUTTERSEN C #33-32 - Wellbore #1 - No Surveys	9,479.91	6,748.00	2,747.57	2,447.75	9.164	CC
GUTTERSEN C #33-32 - Wellbore #1 - No Surveys	9,500.00	6,748.00	2,747.65	2,447.71	9.161	ES
GUTTERSEN C #33-32 - Wellbore #1 - No Surveys	9,600.00	6,748.00	2,750.20	2,449.70	9.152	SF
GUTTERSEN C #33-33D - GUTTERSEN C #33-33D OH	8,317.35	6,928.14	3,053.54	2,995.93	52.998	CC, ES
GUTTERSEN C #33-33D - GUTTERSEN C #33-33D OH	8,700.00	6,926.87	3,077.42	3,018.83	52.523	SF
Guttersen C28-715 - Guttersen C28-715 - Plan #1	2,200.00	2,204.00	67.54	52.22	4.408	CC, ES
Guttersen C28-715 - Guttersen C28-715 - Plan #1	2,300.00	2,301.94	69.98	53.99	4.376	SF
Guttersen C28-725 - Guttersen C28-725 - Plan #1	2,200.00	2,202.00	45.21	29.90	2.952	CC, ES
Guttersen C28-725 - Guttersen C28-725 - Plan #1	2,300.00	2,301.04	47.15	31.16	2.949	SF
Guttersen C28-735 - Guttersen C28-735 - Plan #1	2,200.00	2,201.00	22.60	7.29	1.476	Level 3, CC, ES, SF
Guttersen C28-750 - Guttersen C28-750 - Plan #1	2,200.00	2,200.00	22.33	7.02	1.459	Level 3, CC
Guttersen C28-750 - Guttersen C28-750 - Plan #1	2,300.00	2,299.47	22.62	6.63	1.415	Level 3, ES
Guttersen C28-750 - Guttersen C28-750 - Plan #1	2,400.00	2,398.94	23.50	6.87	1.413	Level 3, SF
Guttersen C28-755 - Guttersen C28-755 - Plan #1	12,432.78	12,652.81	653.42	549.52	6.289	CC
Guttersen C28-755 - Guttersen C28-755 - Plan #1	17,347.59	17,567.37	655.43	476.09	3.655	ES, SF
Guttersen C28-765 - Guttersen C28-765 - Plan #1	17,347.59	17,332.10	1,298.17	1,119.09	7.249	CC, ES, SF
Guttersen C28-770 - Guttersen C28-770 - Plan #1	12,437.18	12,602.81	1,632.59	1,529.39	15.820	CC
Guttersen C28-770 - Guttersen C28-770 - Plan #1	17,347.59	17,510.06	1,633.55	1,455.01	9.149	ES, SF
Guttersen C28-775 - Guttersen C28-775 - Plan #1	6,525.95	6,298.76	1,939.00	1,893.06	42.201	CC
Guttersen C28-775 - Guttersen C28-775 - Plan #1	17,347.59	17,442.46	1,949.36	1,770.76	10.915	ES, SF
Guttersen C28-785 - Guttersen C28-785 - Plan #1	2,942.72	2,683.99	2,060.01	2,040.74	106.897	CC
Guttersen C28-785 - Guttersen C28-785 - Plan #1	3,000.00	2,720.88	2,060.30	2,040.72	105.272	ES
Guttersen C28-785 - Guttersen C28-785 - Plan #1	17,347.59	17,486.81	2,596.36	2,417.99	14.556	SF
GUTTERSEN D #03-30D - Wellbore #1 - No Surveys	7,656.63	6,702.00	975.49	684.41	3.351	CC, ES, SF
LINDSAY #33-1 - LINDSAY #33-1 OH - As-Drilled	7,662.11	6,702.94	288.40	240.13	5.974	CC, ES, SF
LINDSAY #33-3 - Wellbore #1 - No Surverys	10,304.97	6,705.00	992.11	688.86	3.272	CC, ES, SF
LINDSAY #33-4 - Wellbore #1 - No Surveys	10,316.43	6,705.00	338.88	35.56	1.117	Level 2, CC, ES, SF
LINDSAY #33-5 - Wellbore #1 - No Surveys	8,990.42	6,710.00	340.30	44.18	1.149	Level 2, CC, ES, SF
LINDSAY #33-6 - Wellbore #1 - No Surveys	8,986.25	6,313.00	985.22	705.00	3.516	CC, ES
LINDSAY #33-6 - Wellbore #1 - No Surveys	9,000.00	6,313.00	985.31	705.02	3.515	SF
LINDSAY #33-7 - Wellbore #1 - No Surveys	11,623.68	6,713.34	996.22	683.87	3.189	CC, ES
LINDSAY #33-7 - Wellbore #1 - No Surveys	11,655.09	6,713.99	996.72	684.10	3.188	SF
LINDSAY #33-8 - Wellbore #1 - No Surveys	11,624.16	6,716.34	318.00	5.52	1.018	Level 2, CC, ES, SF
LINDSAY #C33-10 - Wellbore #1 - No Surveys	11,659.56	6,730.10	2,357.99	2,044.72	7.527	CC, ES
LINDSAY #C33-10 - Wellbore #1 - No Surveys	11,800.00	6,733.78	2,362.17	2,047.74	7.513	SF
LINDSAY #C33-11 - LINDSAY #C33-11 OH - As-Drilled	10,372.37	6,745.74	2,398.29	2,337.36	39.360	CC
LINDSAY #C33-11 - LINDSAY #C33-11 OH - As-Drilled	10,400.00	6,746.21	2,398.45	2,337.33	39.243	ES
LINDSAY #C33-11 - LINDSAY #C33-11 OH - As-Drilled	10,800.00	6,753.01	2,436.11	2,372.60	38.356	SF
LINDSAY #C33-12 - Wellbore #1 - No Surveys	8,985.85	6,716.00	2,296.79	2,000.45	7.751	CC
LINDSAY #C33-12 - Wellbore #1 - No Surveys	9,000.00	6,716.00	2,296.83	2,000.43	7.749	ES
LINDSAY #C33-12 - Wellbore #1 - No Surveys	9,100.00	6,716.00	2,299.62	2,002.72	7.745	SF
LINDSAY #C33-13 - LINDSAY #C33-13 OH - As-Drilled	7,669.61	6,699.56	2,337.57	2,289.24	48.360	CC, ES
LINDSAY #C33-13 - LINDSAY #C33-13 OH - As-Drilled	8,000.00	6,696.00	2,360.80	2,311.67	48.044	SF
LINDSAY #C33-14 - Wellbore #1 - No Surveys	11,618.18	6,715.26	1,635.59	1,323.20	5.236	CC, ES
LINDSAY #C33-14 - Wellbore #1 - No Surveys	11,655.09	6,715.99	1,636.00	1,323.36	5.233	SF
LINDSAY #C33-15 - Wellbore #1 - No Surveys	10,303.47	6,701.00	1,641.50	1,338.62	5.420	CC, ES, SF
LINDSAY #C33-16 - Wellbore #1 - No Surveys	2,200.00	2,160.00	1,151.63	1,059.58	12.511	CC
LINDSAY #C33-16 - Wellbore #1 - No Surveys	2,400.00	2,359.84	1,157.08	1,056.36	11.489	ES
LINDSAY #C33-16 - Wellbore #1 - No Surveys	7,712.28	6,688.00	1,642.03	1,351.39	5.650	SF
LINDSAY #C33-9 - Wellbore #1 - No Surveys	9,031.01	6,683.00	1,640.58	1,345.34	5.557	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 Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**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
C Section 33						
LINDSAY #C33-9 - Wellbore #1 - No Surveys	9,100.00	6,683.00	1,642.03	1,346.50	5.556	SF
LINDSAY C #33-17 - Wellbore #1 - No Surveys	10,961.66	6,714.00	818.45	510.60	2.659	CC, ES, SF
LINDSAY C #33-18 - Wellbore #1 - As-Drilled	10,966.47	6,821.59	354.61	221.92	2.673	CC, ES
LINDSAY C #33-18 - Wellbore #1 - As-Drilled	11,000.00	6,821.71	356.19	221.96	2.654	SF
LINDSAY C #33-19 - Wellbore #1 - No Surveys	10,907.35	6,722.00	1,744.60	1,436.79	5.668	CC, ES
LINDSAY C #33-19 - Wellbore #1 - No Surveys	11,000.00	6,722.00	1,747.06	1,438.60	5.664	SF
LINDSAY C #33-20 - Wellbore #1 - No Surveys	9,455.97	6,718.00	1,642.45	1,343.64	5.497	CC, ES
LINDSAY C #33-20 - Wellbore #1 - No Surveys	9,500.00	6,718.00	1,643.04	1,343.98	5.494	SF
LINDSAY C #33-21 - Wellbore #1 - No Surveys	9,477.56	6,701.00	325.95	27.70	1.093	Level 2, CC, ES, SF
LINDSAY C #33-22 - Wellbore #1 - No Surveys	9,489.71	6,702.00	977.46	679.11	3.276	CC, ES
LINDSAY C #33-22 - Wellbore #1 - No Surveys	9,500.00	6,702.00	977.52	679.12	3.276	SF
LINDSAY C #33-23 - Wellbore #1 - No Surveys	8,314.78	6,687.00	953.59	661.24	3.262	CC, ES, SF
LINDSAY C #33-24 - Wellbore #1 - No Surveys	8,305.92	6,702.00	352.97	60.04	1.205	Level 3, CC, ES, SF
LINDSAY C #33-25 - Wellbore #1 - No Surveys	8,235.04	6,710.00	1,589.01	1,296.01	5.423	CC, ES, SF
C Section 34						
Aloysius C34-99HZ - Original Drilling - Original Drilling - A	8,174.53	10,570.00	2,845.86	2,788.02	49.196	CC
Aloysius C34-99HZ - Original Drilling - Original Drilling - A	8,200.00	10,570.00	2,845.98	2,787.57	48.725	ES
Aloysius C34-99HZ - Original Drilling - Original Drilling - A	10,100.00	10,570.00	3,436.04	3,330.65	32.602	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**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 04						
Burghart D04-22 - Wellbore #1 - Wellbore #1- As Drilled	6,178.94	6,076.30	2,255.65	2,212.40	52.161	CC, ES
Burghart D04-22 - Wellbore #1 - Wellbore #1- As Drilled	6,400.00	6,296.02	2,290.36	2,245.65	51.227	SF
Gittlein Blue D04-08 - Wellbore #1 - Wellbore #1- As Dril	6,131.73	5,997.50	2,197.11	2,154.19	51.182	CC, ES
Gittlein Blue D04-08 - Wellbore #1 - Wellbore #1- As Dril	6,400.00	6,259.59	2,239.30	2,194.58	50.073	SF
Guttersen D03-33D - Wellbore #1 - Wellbore #1- As Drill	6,152.05	6,088.24	3,955.28	3,907.76	83.233	CC, ES
Guttersen D03-33D - Wellbore #1 - Wellbore #1- As Drill	6,450.00	6,418.16	4,013.06	3,963.65	81.217	SF
Guttersen D04-30D - Plan B - Plan B	7,114.11	6,775.70	3,025.85	2,978.49	63.888	CC, ES
Guttersen D04-30D - Plan B - Plan B	7,400.00	6,783.32	3,043.75	2,995.96	63.686	SF
Guttersen D04-31D - Plan B - Plan B	6,500.29	6,651.78	3,240.11	3,190.22	64.950	CC, ES
Guttersen D04-31D - Plan B - Plan B	6,700.00	6,838.75	3,252.16	3,201.64	64.383	SF
Guttersen D04-69HN - Original Drilling - Original Drilling	7,088.04	9,154.71	72.48	38.51	2.134	CC
Guttersen D04-69HN - Original Drilling - Original Drilling	7,150.00	9,154.22	97.57	27.20	1.387	Level 3, ES, SF
Karch Blue D04-02 - Wellbore #1 - Wellbore #1- As Drille	6,098.25	5,947.66	459.26	416.44	10.725	CC
Karch Blue D04-02 - Wellbore #1 - Wellbore #1- As Drille	6,100.00	5,949.30	459.26	416.43	10.722	ES
Karch Blue D04-02 - Wellbore #1 - Wellbore #1- As Drille	6,150.00	5,996.22	461.14	417.94	10.676	SF
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,199.78	6,071.56	1,676.82	1,633.66	38.850	CC
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,200.00	6,071.78	1,676.82	1,633.66	38.848	ES
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,350.00	6,218.99	1,694.46	1,650.29	38.362	SF
Karch D04-17 - Wellbore #1 - Wellbore #1- As Drilled	6,127.28	5,985.67	1,294.40	1,251.51	30.177	CC, ES
Karch D04-17 - Wellbore #1 - Wellbore #1- As Drilled	6,300.00	6,166.67	1,311.05	1,266.93	29.712	SF
Marie D04-09 - Wellbore #1 - Wellbore #1- As Drilled	6,157.96	6,010.82	3,218.14	3,175.14	74.844	CC, ES
Marie D04-09 - Wellbore #1 - Wellbore #1- As Drilled	6,450.00	6,288.30	3,276.79	3,231.92	73.027	SF
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,199.33	6,077.98	3,013.51	2,970.34	69.815	CC
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,200.00	6,078.76	3,013.51	2,970.34	69.807	ES
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,450.00	6,320.15	3,061.98	3,017.22	68.417	SF
Marie D04-15 - Wellbore #1 - Wellbore #1- As Drilled	6,198.79	6,054.26	4,185.35	4,142.30	97.202	CC
Marie D04-15 - Wellbore #1 - Wellbore #1- As Drilled	6,200.00	6,055.06	4,185.35	4,142.29	97.185	ES
Marie D04-15 - Wellbore #1 - Wellbore #1- As Drilled	6,500.00	6,289.71	4,257.35	4,212.59	95.113	SF
Marie D04-16 - Wellbore #1 - Wellbore #1- As Drilled	6,182.87	6,100.78	4,383.36	4,340.04	101.192	CC, ES
Marie D04-16 - Wellbore #1 - Wellbore #1- As Drilled	6,500.00	6,365.04	4,457.28	4,412.10	98.655	SF
Marie D04-23 - Wellbore #1 - Wellbore #1-As Drilled	6,195.97	6,130.51	3,632.26	3,588.86	83.685	CC
Marie D04-23 - Wellbore #1 - Wellbore #1-As Drilled	6,200.00	6,133.15	3,632.28	3,588.85	83.638	ES
Marie D04-23 - Wellbore #1 - Wellbore #1-As Drilled	6,500.00	6,361.11	3,704.44	3,659.32	82.104	SF
Marie D04-72-1HN - Original Drilling - Original Drilling - A	6,560.79	11,395.00	1,975.96	1,867.70	18.252	CC, ES
Marie D04-72-1HN - Original Drilling - Original Drilling - A	6,750.00	11,395.00	1,988.04	1,877.81	18.036	SF
Marie D04-73-1HN - Original Drilling - Original Drilling - A	6,562.94	11,120.00	1,170.65	1,064.80	11.059	CC, ES
Marie D04-73-1HN - Original Drilling - Original Drilling - A	6,650.00	11,120.00	1,175.01	1,068.15	10.996	SF
Marie D04-74-1HN - Original Drilling - Original Drilling - P	6,187.48	6,038.60	4,796.15	4,755.33	117.509	CC, ES
Marie D04-74-1HN - Original Drilling - Original Drilling - P	6,550.00	6,463.99	4,891.60	4,848.37	113.168	SF
Marie D04-74-1HN - Original Drilling - ST01 - ST-01- As	6,639.33	11,217.00	718.18	657.23	11.783	CC, ES
Marie D04-74-1HN - Original Drilling - ST01 - ST-01- As	6,650.00	11,217.00	718.30	657.26	11.768	SF
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	4,647.21	4,548.85	1,204.00	1,171.86	37.470	CC
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	4,700.00	4,596.24	1,204.15	1,171.65	37.052	ES
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	6,400.00	6,249.94	1,304.61	1,259.92	29.191	SF

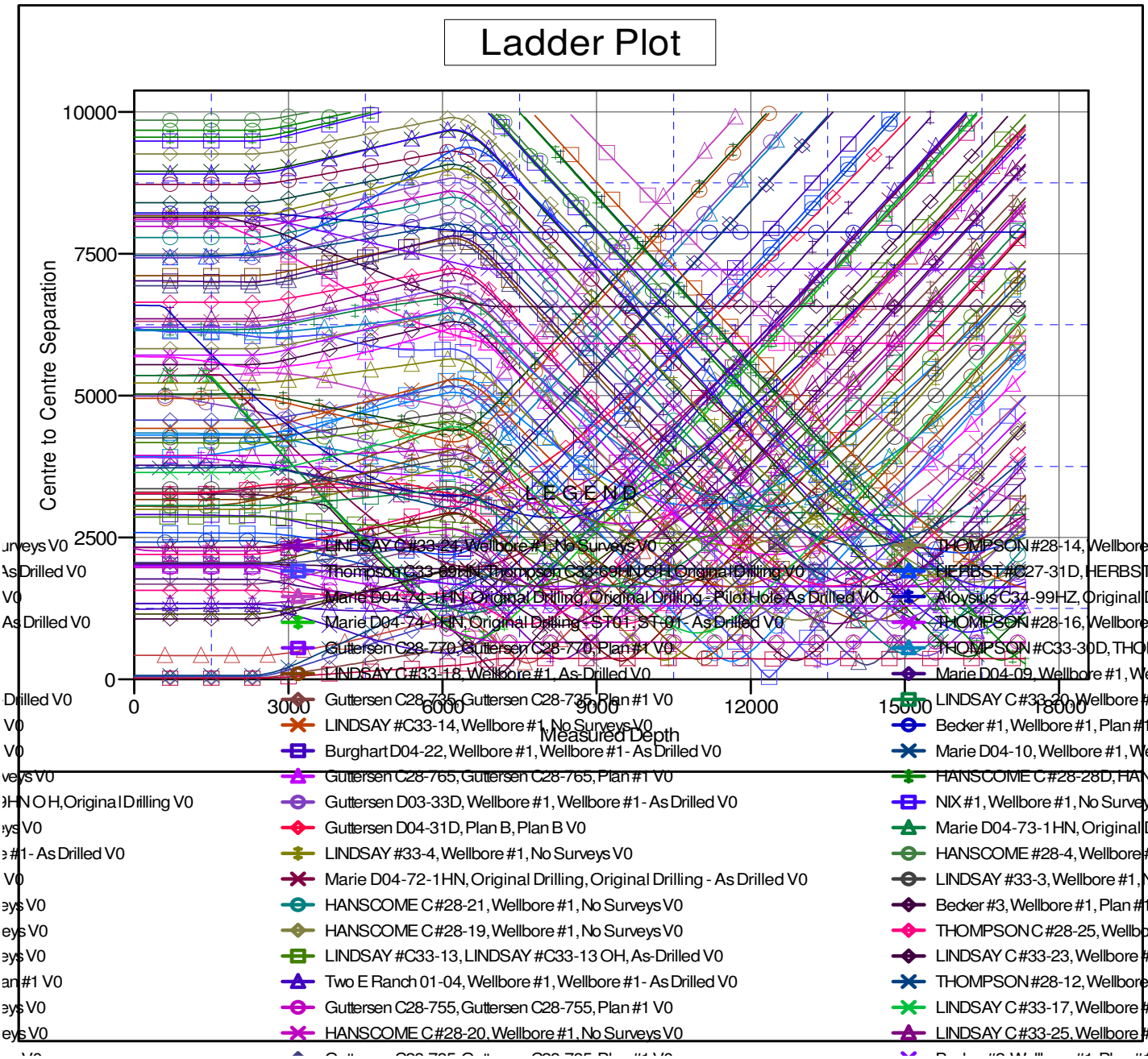
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4744.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen C28-745
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°



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 Guttersen C28-745
Project:	Mustang	**TVD Reference:**	Well @ 4744.00ft
Reference Site:	C Section 33	**MD Reference:**	Well @ 4744.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen C28-745	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen C28-745	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4744.00ft	Coordinates are relative to: Guttersen C28-745
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.5000000	Grid Convergence at Surface is: 0.61°