

Project: Mustang
Site: C Section 33
Well: Gutteresen C28-765
Wellbore: Gutteresen C28-765
Design: Plan #1

Northern Region - DJ Basin

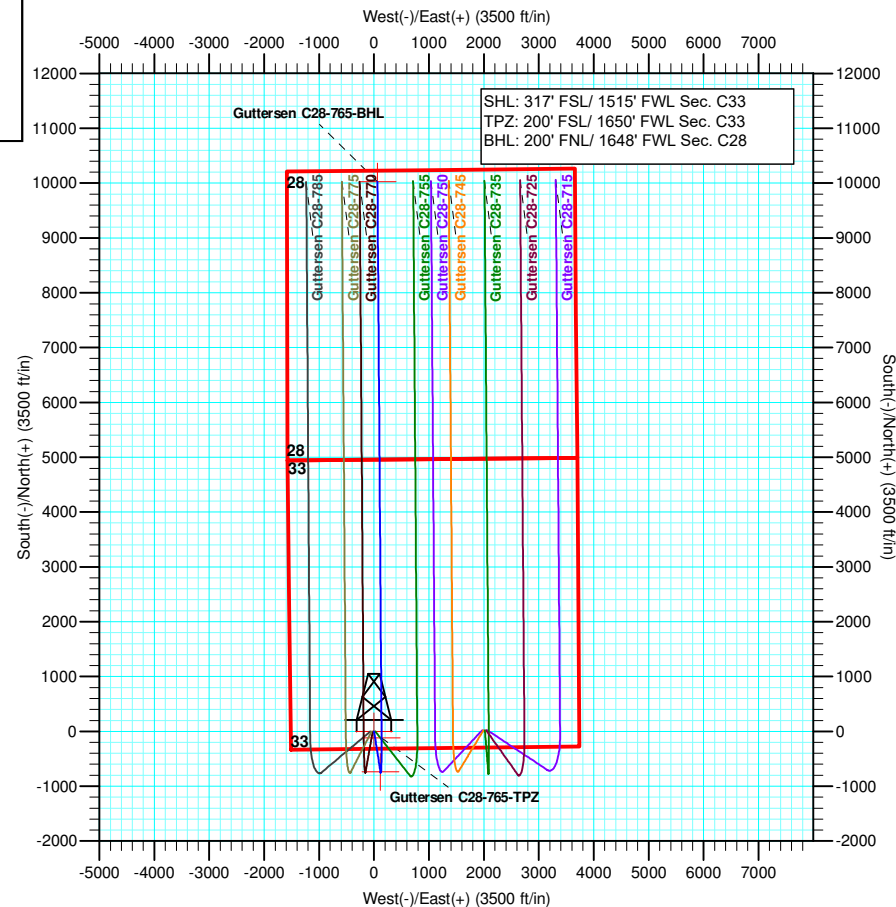
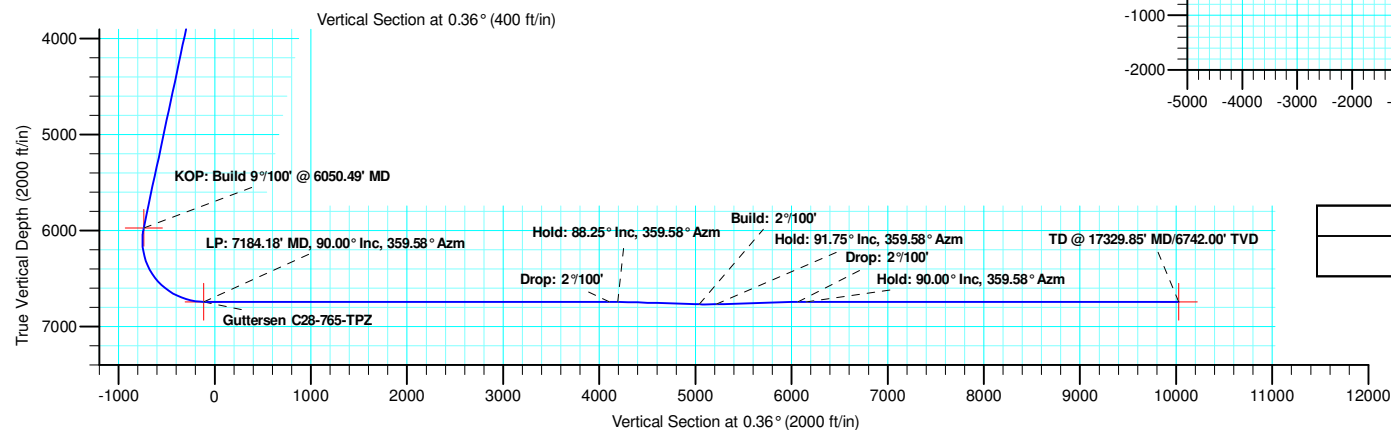
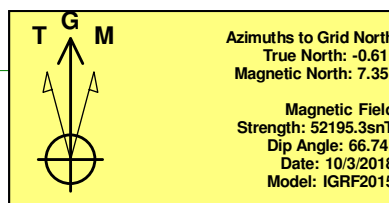
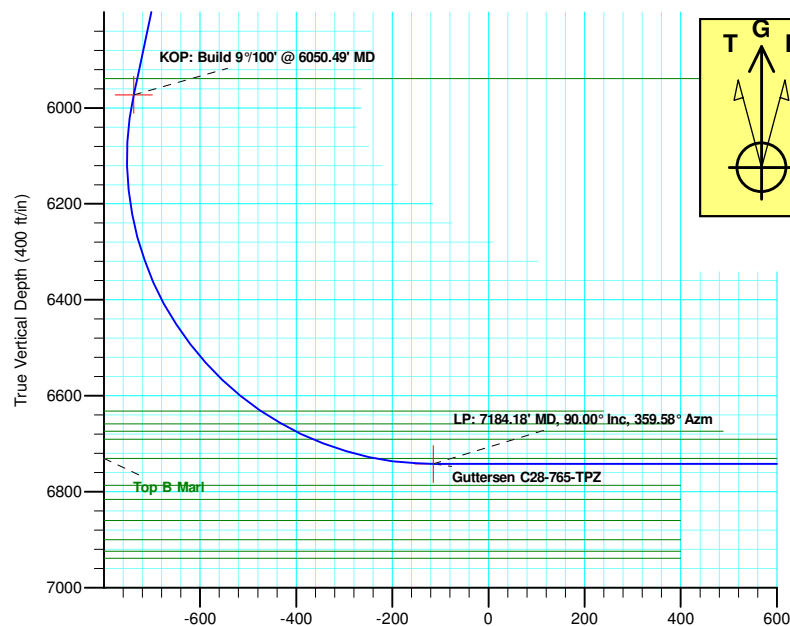
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

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	2808.49	12.17	171.01	2803.93	-63.59	10.05	2.00	171.01	-63.53	
4	6050.49	12.17	171.01	5973.07	-738.65	116.79	0.00	0.00	-737.90	
5	7184.18	90.00	359.58	6742.00	-115.85	136.95	9.09	-171.24	-114.99	Gutteresen C28-765-TPZ
6	11404.18	90.00	359.58	6742.00	4104.03	106.14	0.00	0.00	4104.62	
7	11491.68	88.25	359.58	6743.34	4191.52	105.51	2.00	180.00	4192.10	Gutteresen C28-765-BHL
8	12341.68	88.25	359.58	6769.30	5041.10	99.30	0.00	0.00	5041.62	
9	12516.68	91.75	359.58	6769.30	5216.07	98.03	2.00	0.00	5216.58	Gutteresen C28-765-BHL
10	13366.68	91.75	359.58	6743.34	6065.65	91.83	0.00	0.00	6066.11	
11	13454.18	90.00	359.58	6742.00	6153.13	91.19	2.00	180.00	6153.58	
12	17329.85	90.00	359.58	6742.00	10028.70	62.90	0.00	0.00	10028.89	Gutteresen C28-765-BHL

WELL DETAILS: Gutteresen C28-765

+N/-S	+E/-W	Northing	Ground Level: Easting	4723.00 Latitude	Longitude	Slot
0.00	0.00	1339901.67	3262343.51	40.2626120	-104.5599350	



Plan: Plan #1 (Gutteresen C28-765/Gutteresen C28-765)

Created By: Keith Noack Date: 12:02, October 04 2018

Northern Region - DJ Basin

Mustang

C Section 33

Guttersen C28-765

Guttersen C28-765

Plan: Plan #1

Standard Planning Report

04 October, 2018

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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 C28-765					
Well Position	+N/-S	-0.01 ft	Northing:	1,339,901.67 usft	Latitude:	40.2626120
	+E/-W	67.54 ft	Easting:	3,262,343.51 usft	Longitude:	-104.5599350
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,723.00 ft

Wellbore	Guttersen C28-765				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/3/2018	7.95	66.74	52,195.26789957

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	0.36

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	
2,808.49	12.17	171.01	2,803.93	-63.59	10.05	2.00	2.00	0.00	171.01	
6,050.50	12.17	171.01	5,973.07	-738.65	116.79	0.00	0.00	0.00	0.00	
7,184.18	90.00	359.58	6,742.00	-115.85	136.95	9.00	6.87	-15.12	-171.24	Guttersen C28-765
11,404.18	90.00	359.58	6,742.00	4,104.03	106.14	0.00	0.00	0.00	0.00	
11,491.68	88.25	359.58	6,743.34	4,191.52	105.51	2.00	-2.00	0.00	180.00	Guttersen C28-765
12,341.68	88.25	359.58	6,769.30	5,041.10	99.30	0.00	0.00	0.00	0.00	
12,516.68	91.75	359.58	6,769.30	5,216.07	98.03	2.00	2.00	0.00	0.00	Guttersen C28-765
13,366.68	91.75	359.58	6,743.34	6,065.65	91.83	0.00	0.00	0.00	0.00	
13,454.18	90.00	359.58	6,742.00	6,153.13	91.19	2.00	-2.00	0.00	180.00	
17,329.85	90.00	359.58	6,742.00	10,028.70	62.90	0.00	0.00	0.00	0.00	Guttersen C28-765

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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
470.00	0.00	0.00	470.00	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
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
603.00	0.00	0.00	603.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
1,523.00	0.00	0.00	1,523.00	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	171.01	2,299.98	-1.72	0.27	-1.72	2.00	2.00	0.00
2,400.00	4.00	171.01	2,399.84	-6.89	1.09	-6.89	2.00	2.00	0.00
2,500.00	6.00	171.01	2,499.45	-15.50	2.45	-15.49	2.00	2.00	0.00
2,600.00	8.00	171.01	2,598.70	-27.54	4.35	-27.51	2.00	2.00	0.00
2,700.00	10.00	171.01	2,697.47	-42.99	6.80	-42.95	2.00	2.00	0.00
2,808.49	12.17	171.01	2,803.93	-63.59	10.05	-63.53	2.00	2.00	0.00
Hold: 12.17° Inc, 171.01° Azm									
2,900.00	12.17	171.01	2,893.38	-82.64	13.07	-82.56	0.00	0.00	0.00
3,000.00	12.17	171.01	2,991.13	-103.47	16.36	-103.36	0.00	0.00	0.00
3,100.00	12.17	171.01	3,088.88	-124.29	19.65	-124.16	0.00	0.00	0.00
3,200.00	12.17	171.01	3,186.64	-145.11	22.94	-144.96	0.00	0.00	0.00
3,300.00	12.17	171.01	3,284.39	-165.93	26.24	-165.77	0.00	0.00	0.00
3,400.00	12.17	171.01	3,382.14	-186.76	29.53	-186.57	0.00	0.00	0.00
3,500.00	12.17	171.01	3,479.89	-207.58	32.82	-207.37	0.00	0.00	0.00
3,600.00	12.17	171.01	3,577.65	-228.40	36.11	-228.17	0.00	0.00	0.00
3,624.91	12.17	171.01	3,602.00	-233.59	36.93	-233.35	0.00	0.00	0.00
Parkman									
3,700.00	12.17	171.01	3,675.40	-249.22	39.41	-248.97	0.00	0.00	0.00
3,800.00	12.17	171.01	3,773.15	-270.05	42.70	-269.77	0.00	0.00	0.00
3,900.00	12.17	171.01	3,870.91	-290.87	45.99	-290.57	0.00	0.00	0.00
4,000.00	12.17	171.01	3,968.66	-311.69	49.28	-311.37	0.00	0.00	0.00
4,039.22	12.17	171.01	4,007.00	-319.86	50.57	-319.53	0.00	0.00	0.00
Sussex									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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)
4,100.00	12.17	171.01	4,066.41	-332.51	52.58	-332.18	0.00	0.00	0.00
4,200.00	12.17	171.01	4,164.16	-353.33	55.87	-352.98	0.00	0.00	0.00
4,300.00	12.17	171.01	4,261.92	-374.16	59.16	-373.78	0.00	0.00	0.00
4,400.00	12.17	171.01	4,359.67	-394.98	62.45	-394.58	0.00	0.00	0.00
4,500.00	12.17	171.01	4,457.42	-415.80	65.75	-415.38	0.00	0.00	0.00
4,600.00	12.17	171.01	4,555.17	-436.62	69.04	-436.18	0.00	0.00	0.00
4,603.91	12.17	171.01	4,559.00	-437.44	69.17	-437.00	0.00	0.00	0.00
Shannon									
4,700.00	12.17	171.01	4,652.93	-457.45	72.33	-456.98	0.00	0.00	0.00
4,800.00	12.17	171.01	4,750.68	-478.27	75.62	-477.79	0.00	0.00	0.00
4,900.00	12.17	171.01	4,848.43	-499.09	78.91	-498.59	0.00	0.00	0.00
5,000.00	12.17	171.01	4,946.19	-519.91	82.21	-519.39	0.00	0.00	0.00
5,100.00	12.17	171.01	5,043.94	-540.74	85.50	-540.19	0.00	0.00	0.00
5,200.00	12.17	171.01	5,141.69	-561.56	88.79	-560.99	0.00	0.00	0.00
5,300.00	12.17	171.01	5,239.44	-582.38	92.08	-581.79	0.00	0.00	0.00
5,400.00	12.17	171.01	5,337.20	-603.20	95.38	-602.59	0.00	0.00	0.00
5,500.00	12.17	171.01	5,434.95	-624.03	98.67	-623.39	0.00	0.00	0.00
5,600.00	12.17	171.01	5,532.70	-644.85	101.96	-644.20	0.00	0.00	0.00
5,700.00	12.17	171.01	5,630.45	-665.67	105.25	-665.00	0.00	0.00	0.00
5,800.00	12.17	171.01	5,728.21	-686.49	108.55	-685.80	0.00	0.00	0.00
5,900.00	12.17	171.01	5,825.96	-707.31	111.84	-706.60	0.00	0.00	0.00
6,000.00	12.17	171.01	5,923.71	-728.14	115.13	-727.40	0.00	0.00	0.00
6,015.64	12.17	171.01	5,939.00	-731.39	115.65	-730.65	0.00	0.00	0.00
Teepee Buttes									
6,050.50	12.17	171.01	5,973.07	-738.65	116.79	-737.90	0.00	0.00	0.00
KOP: Build 9°/100' @ 6050.49' MD									
6,100.00	7.80	166.01	6,021.82	-747.07	118.42	-746.31	9.00	-8.84	-10.11
6,150.00	3.58	148.73	6,071.56	-751.70	120.05	-750.93	9.00	-8.42	-34.56
6,200.00	2.33	51.84	6,121.52	-752.41	121.66	-751.63	9.00	-2.52	-193.77
6,250.00	6.20	16.78	6,171.38	-749.19	123.24	-748.40	9.00	7.75	-70.14
6,300.00	10.58	9.48	6,220.83	-742.07	124.78	-741.28	9.00	8.76	-14.59
6,350.00	15.03	6.45	6,269.58	-731.09	126.26	-730.29	9.00	8.90	-6.06
6,400.00	19.51	4.78	6,317.31	-716.32	127.69	-715.51	9.00	8.95	-3.33
6,450.00	23.99	3.72	6,363.74	-697.85	129.05	-697.03	9.00	8.97	-2.13
6,500.00	28.48	2.98	6,408.58	-675.79	130.32	-674.96	9.00	8.98	-1.49
6,550.00	32.97	2.42	6,451.55	-650.28	131.52	-649.45	9.00	8.98	-1.11
6,600.00	37.46	1.98	6,492.39	-621.48	132.62	-620.64	9.00	8.99	-0.87
6,650.00	41.96	1.63	6,530.84	-589.56	133.62	-588.71	9.00	8.99	-0.71
6,700.00	46.45	1.33	6,566.68	-554.72	134.52	-553.86	9.00	8.99	-0.60
6,750.00	50.95	1.08	6,599.67	-517.17	135.31	-516.32	9.00	8.99	-0.51
6,800.00	55.44	0.85	6,629.62	-477.16	135.98	-476.29	9.00	8.99	-0.45
6,804.23	55.82	0.83	6,632.00	-473.67	136.03	-472.81	9.00	8.99	-0.42
Sharon Springs									
6,850.00	59.94	0.65	6,656.33	-434.91	136.53	-434.05	9.00	8.99	-0.40
6,855.37	60.42	0.63	6,659.00	-430.26	136.58	-429.39	9.00	8.99	-0.38
Top A Chalk									
6,887.17	63.28	0.51	6,674.00	-402.22	136.85	-401.35	9.00	8.99	-0.37
Top A Marl									
6,900.00	64.44	0.46	6,679.65	-390.70	136.95	-389.83	9.00	8.99	-0.36
6,927.55	66.92	0.37	6,691.00	-365.60	137.13	-364.73	9.00	8.99	-0.35
Top B Chalk									
6,950.00	68.93	0.29	6,699.44	-344.79	137.25	-343.93	9.00	8.99	-0.34
7,000.00	73.43	0.13	6,715.56	-297.48	137.43	-296.61	9.00	8.99	-0.32

Noble Energy, Inc.

Planning Report

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Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
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Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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)
7,050.00	77.93	359.98	6,727.92	-249.05	137.47	-248.18	9.00	9.00	-0.31
7,065.62	79.33	359.93	6,731.00	-233.74	137.46	-232.87	9.00	9.00	-0.30
Top B Marl									
7,100.00	82.43	359.83	6,736.45	-199.79	137.38	-198.93	9.00	9.00	-0.30
7,150.00	86.93	359.68	6,741.09	-150.02	137.17	-149.16	9.00	9.00	-0.29
7,184.18	90.00	359.58	6,742.00	-115.85	136.95	-114.99	9.00	9.00	-0.29
LP: 7184.18' MD, 90.00° Inc, 359.58° Azm									
7,200.00	90.00	359.58	6,742.00	-100.04	136.83	-99.18	0.00	0.00	0.00
7,300.00	90.00	359.58	6,742.00	-0.04	136.10	0.81	0.00	0.00	0.00
7,400.00	90.00	359.58	6,742.00	99.96	135.37	100.80	0.00	0.00	0.00
7,500.00	90.00	359.58	6,742.00	199.95	134.64	200.80	0.00	0.00	0.00
7,600.00	90.00	359.58	6,742.00	299.95	133.91	300.79	0.00	0.00	0.00
7,700.00	90.00	359.58	6,742.00	399.95	133.18	400.78	0.00	0.00	0.00
7,800.00	90.00	359.58	6,742.00	499.95	132.45	500.77	0.00	0.00	0.00
7,900.00	90.00	359.58	6,742.00	599.94	131.72	600.76	0.00	0.00	0.00
8,000.00	90.00	359.58	6,742.00	699.94	130.99	700.75	0.00	0.00	0.00
8,100.00	90.00	359.58	6,742.00	799.94	130.26	800.74	0.00	0.00	0.00
8,200.00	90.00	359.58	6,742.00	899.94	129.53	900.73	0.00	0.00	0.00
8,300.00	90.00	359.58	6,742.00	999.93	128.80	1,000.72	0.00	0.00	0.00
8,400.00	90.00	359.58	6,742.00	1,099.93	128.07	1,100.71	0.00	0.00	0.00
8,500.00	90.00	359.58	6,742.00	1,199.93	127.34	1,200.70	0.00	0.00	0.00
8,600.00	90.00	359.58	6,742.00	1,299.93	126.61	1,300.69	0.00	0.00	0.00
8,700.00	90.00	359.58	6,742.00	1,399.92	125.88	1,400.68	0.00	0.00	0.00
8,800.00	90.00	359.58	6,742.00	1,499.92	125.15	1,500.68	0.00	0.00	0.00
8,900.00	90.00	359.58	6,742.00	1,599.92	124.42	1,600.67	0.00	0.00	0.00
9,000.00	90.00	359.58	6,742.00	1,699.91	123.69	1,700.66	0.00	0.00	0.00
9,100.00	90.00	359.58	6,742.00	1,799.91	122.96	1,800.65	0.00	0.00	0.00
9,200.00	90.00	359.58	6,742.00	1,899.91	122.23	1,900.64	0.00	0.00	0.00
9,300.00	90.00	359.58	6,742.00	1,999.91	121.50	2,000.63	0.00	0.00	0.00
9,400.00	90.00	359.58	6,742.00	2,099.90	120.77	2,100.62	0.00	0.00	0.00
9,500.00	90.00	359.58	6,742.00	2,199.90	120.04	2,200.61	0.00	0.00	0.00
9,600.00	90.00	359.58	6,742.00	2,299.90	119.31	2,300.60	0.00	0.00	0.00
9,700.00	90.00	359.58	6,742.00	2,399.90	118.58	2,400.59	0.00	0.00	0.00
9,800.00	90.00	359.58	6,742.00	2,499.89	117.85	2,500.58	0.00	0.00	0.00
9,900.00	90.00	359.58	6,742.00	2,599.89	117.12	2,600.57	0.00	0.00	0.00
10,000.00	90.00	359.58	6,742.00	2,699.89	116.39	2,700.56	0.00	0.00	0.00
10,100.00	90.00	359.58	6,742.00	2,799.89	115.66	2,800.56	0.00	0.00	0.00
10,200.00	90.00	359.58	6,742.00	2,899.88	114.93	2,900.55	0.00	0.00	0.00
10,300.00	90.00	359.58	6,742.00	2,999.88	114.20	3,000.54	0.00	0.00	0.00
10,400.00	90.00	359.58	6,742.00	3,099.88	113.47	3,100.53	0.00	0.00	0.00
10,500.00	90.00	359.58	6,742.00	3,199.87	112.74	3,200.52	0.00	0.00	0.00
10,600.00	90.00	359.58	6,742.00	3,299.87	112.01	3,300.51	0.00	0.00	0.00
10,700.00	90.00	359.58	6,742.00	3,399.87	111.28	3,400.50	0.00	0.00	0.00
10,800.00	90.00	359.58	6,742.00	3,499.87	110.56	3,500.49	0.00	0.00	0.00
10,900.00	90.00	359.58	6,742.00	3,599.86	109.83	3,600.48	0.00	0.00	0.00
11,000.00	90.00	359.58	6,742.00	3,699.86	109.10	3,700.47	0.00	0.00	0.00
11,100.00	90.00	359.58	6,742.00	3,799.86	108.37	3,800.46	0.00	0.00	0.00
11,200.00	90.00	359.58	6,742.00	3,899.86	107.64	3,900.45	0.00	0.00	0.00
11,300.00	90.00	359.58	6,742.00	3,999.85	106.91	4,000.45	0.00	0.00	0.00
11,404.18	90.00	359.58	6,742.00	4,104.03	106.14	4,104.62	0.00	0.00	0.00
Drop: 2°/100'									
11,491.68	88.25	359.58	6,743.34	4,191.52	105.51	4,192.10	2.00	-2.00	0.00
Hold: 88.25° Inc, 359.58° Azm									

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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)
11,500.00	88.25	359.58	6,743.59	4,199.83	105.45	4,200.41	0.00	0.00	0.00
11,600.00	88.25	359.58	6,746.65	4,299.78	104.72	4,300.35	0.00	0.00	0.00
11,700.00	88.25	359.58	6,749.70	4,399.73	103.99	4,400.30	0.00	0.00	0.00
11,800.00	88.25	359.58	6,752.76	4,499.68	103.26	4,500.24	0.00	0.00	0.00
11,900.00	88.25	359.58	6,755.81	4,599.63	102.53	4,600.19	0.00	0.00	0.00
12,000.00	88.25	359.58	6,758.86	4,699.58	101.80	4,700.13	0.00	0.00	0.00
12,100.00	88.25	359.58	6,761.92	4,799.53	101.07	4,800.07	0.00	0.00	0.00
12,200.00	88.25	359.58	6,764.97	4,899.49	100.34	4,900.02	0.00	0.00	0.00
12,300.00	88.25	359.58	6,768.03	4,999.44	99.61	4,999.96	0.00	0.00	0.00
12,341.68	88.25	359.58	6,769.30	5,041.10	99.30	5,041.62	0.00	0.00	0.00
Build: 2°/100'									
12,400.00	89.42	359.58	6,770.49	5,099.40	98.88	5,099.92	2.00	2.00	0.00
12,500.00	91.42	359.58	6,769.76	5,199.39	98.15	5,199.90	2.00	2.00	0.00
12,516.68	91.75	359.58	6,769.30	5,216.07	98.03	5,216.58	2.00	2.00	0.00
Hold: 91.75° Inc, 359.58° Azm									
12,600.00	91.75	359.58	6,766.75	5,299.34	97.42	5,299.85	0.00	0.00	0.00
12,700.00	91.75	359.58	6,763.70	5,399.29	96.69	5,399.79	0.00	0.00	0.00
12,800.00	91.75	359.58	6,760.65	5,499.24	95.96	5,499.74	0.00	0.00	0.00
12,900.00	91.75	359.58	6,757.59	5,599.19	95.23	5,599.68	0.00	0.00	0.00
13,000.00	91.75	359.58	6,754.54	5,699.15	94.50	5,699.63	0.00	0.00	0.00
13,100.00	91.75	359.58	6,751.48	5,799.10	93.77	5,799.57	0.00	0.00	0.00
13,200.00	91.75	359.58	6,748.43	5,899.05	93.04	5,899.51	0.00	0.00	0.00
13,300.00	91.75	359.58	6,745.38	5,999.00	92.31	5,999.46	0.00	0.00	0.00
13,366.68	91.75	359.58	6,743.34	6,065.65	91.83	6,066.11	0.00	0.00	0.00
Drop: 2°/100'									
13,400.00	91.08	359.58	6,742.52	6,098.95	91.58	6,099.41	2.00	-2.00	0.00
13,454.18	90.00	359.58	6,742.00	6,153.13	91.19	6,153.58	2.00	-2.00	0.00
Hold: 90.00° Inc, 359.58° Azm									
13,500.00	90.00	359.58	6,742.00	6,198.95	90.85	6,199.40	0.00	0.00	0.00
13,600.00	90.00	359.58	6,742.00	6,298.94	90.12	6,299.39	0.00	0.00	0.00
13,700.00	90.00	359.58	6,742.00	6,398.94	89.39	6,399.38	0.00	0.00	0.00
13,800.00	90.00	359.58	6,742.00	6,498.94	88.66	6,499.37	0.00	0.00	0.00
13,900.00	90.00	359.58	6,742.00	6,598.94	87.93	6,599.36	0.00	0.00	0.00
14,000.00	90.00	359.58	6,742.00	6,698.93	87.20	6,699.35	0.00	0.00	0.00
14,100.00	90.00	359.58	6,742.00	6,798.93	86.47	6,799.34	0.00	0.00	0.00
14,200.00	90.00	359.58	6,742.00	6,898.93	85.74	6,899.33	0.00	0.00	0.00
14,300.00	90.00	359.58	6,742.00	6,998.93	85.01	6,999.32	0.00	0.00	0.00
14,400.00	90.00	359.58	6,742.00	7,098.92	84.28	7,099.31	0.00	0.00	0.00
14,500.00	90.00	359.58	6,742.00	7,198.92	83.55	7,199.30	0.00	0.00	0.00
14,600.00	90.00	359.58	6,742.00	7,298.92	82.82	7,299.29	0.00	0.00	0.00
14,700.00	90.00	359.58	6,742.00	7,398.92	82.09	7,399.29	0.00	0.00	0.00
14,800.00	90.00	359.58	6,742.00	7,498.91	81.36	7,499.28	0.00	0.00	0.00
14,900.00	90.00	359.58	6,742.00	7,598.91	80.63	7,599.27	0.00	0.00	0.00
15,000.00	90.00	359.58	6,742.00	7,698.91	79.90	7,699.26	0.00	0.00	0.00
15,100.00	90.00	359.58	6,742.00	7,798.91	79.17	7,799.25	0.00	0.00	0.00
15,200.00	90.00	359.58	6,742.00	7,898.90	78.44	7,899.24	0.00	0.00	0.00
15,300.00	90.00	359.58	6,742.00	7,998.90	77.71	7,999.23	0.00	0.00	0.00
15,400.00	90.00	359.58	6,742.00	8,098.90	76.98	8,099.22	0.00	0.00	0.00
15,500.00	90.00	359.58	6,742.00	8,198.89	76.25	8,199.21	0.00	0.00	0.00
15,600.00	90.00	359.58	6,742.00	8,298.89	75.52	8,299.20	0.00	0.00	0.00
15,700.00	90.00	359.58	6,742.00	8,398.89	74.79	8,399.19	0.00	0.00	0.00
15,800.00	90.00	359.58	6,742.00	8,498.89	74.06	8,499.18	0.00	0.00	0.00
15,900.00	90.00	359.58	6,742.00	8,598.88	73.33	8,599.17	0.00	0.00	0.00

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
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	359.58	6,742.00	8,698.88	72.60	8,699.17	0.00	0.00	0.00
16,100.00	90.00	359.58	6,742.00	8,798.88	71.87	8,799.16	0.00	0.00	0.00
16,200.00	90.00	359.58	6,742.00	8,898.88	71.14	8,899.15	0.00	0.00	0.00
16,300.00	90.00	359.58	6,742.00	8,998.87	70.41	8,999.14	0.00	0.00	0.00
16,400.00	90.00	359.58	6,742.00	9,098.87	69.68	9,099.13	0.00	0.00	0.00
16,500.00	90.00	359.58	6,742.00	9,198.87	68.95	9,199.12	0.00	0.00	0.00
16,600.00	90.00	359.58	6,742.00	9,298.87	68.22	9,299.11	0.00	0.00	0.00
16,700.00	90.00	359.58	6,742.00	9,398.86	67.49	9,399.10	0.00	0.00	0.00
16,800.00	90.00	359.58	6,742.00	9,498.86	66.76	9,499.09	0.00	0.00	0.00
16,900.00	90.00	359.58	6,742.00	9,598.86	66.03	9,599.08	0.00	0.00	0.00
17,000.00	90.00	359.58	6,742.00	9,698.85	65.30	9,699.07	0.00	0.00	0.00
17,100.00	90.00	359.58	6,742.00	9,798.85	64.57	9,799.06	0.00	0.00	0.00
17,200.00	90.00	359.58	6,742.00	9,898.85	63.84	9,899.05	0.00	0.00	0.00
17,300.00	90.00	359.58	6,742.00	9,998.85	63.11	9,999.05	0.00	0.00	0.00
17,329.85	90.00	359.58	6,742.00	10,028.70	62.90	10,028.89	0.00	0.00	0.00
TD @ 17329.85' MD/6742.00' TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Guttersen C28-765-SI - hit/miss target - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,339,901.67	3,262,343.51	40.2626120	-104.5599350
Guttersen C28-765-KI - plan hits target center - Point	0.00	0.00	5,973.07	-738.65	116.79	1,339,163.02	3,262,460.31	40.2605811	-104.5595446
Guttersen C28-765-BI - plan hits target center - Point	0.00	0.01	6,742.00	10,028.70	62.90	1,349,930.35	3,262,406.41	40.2901382	-104.5593284
Guttersen C28-765-TI - plan hits target center - Point	0.00	0.00	6,742.00	-115.85	136.95	1,339,785.82	3,262,480.46	40.2622900	-104.5594487

Noble Energy, Inc.

Planning Report

Database:	EDMP	Local Co-ordinate Reference:	Well Guttersen C28-765
Company:	Northern Region - DJ Basin	TVD Reference:	Well @ 4753.00ft
Project:	Mustang	MD Reference:	Well @ 4753.00ft
Site:	C Section 33	North Reference:	Grid
Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Wellbore:	Guttersen C28-765		
Design:	Plan #1		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
470.00	470.00	Pierre				
603.00	603.00	Upper Pierre Aquifer Top				
1,523.00	1,523.00	Upper Pierre Aquifer Base				
3,624.91	3,602.00	Parkman				
4,039.22	4,007.00	Sussex				
4,603.91	4,559.00	Shannon				
6,015.64	5,939.00	Teepee Buttes				
6,804.23	6,632.00	Sharon Springs				
6,855.37	6,659.00	Top A Chalk				
6,887.17	6,674.00	Top A Marl				
6,927.55	6,691.00	Top B Chalk				
7,065.62	6,731.00	Top B Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2,200.00	2,200.00	0.00	0.00	Build: 2°/100'	
2,808.49	2,803.93	-63.59	10.05	Hold: 12.17° Inc, 171.01° Azm	
6,050.50	5,973.07	-738.65	116.79	KOP: Build 9°/100' @ 6050.49' MD	
7,184.18	6,742.00	-115.85	136.95	LP: 7184.18' MD, 90.00° Inc, 359.58° Azm	
11,404.18	6,742.00	4,104.03	106.14	Drop: 2°/100'	
11,491.68	6,743.34	4,191.52	105.51	Hold: 88.25° Inc, 359.58° Azm	
12,341.68	6,769.30	5,041.10	99.30	Build: 2°/100'	
12,516.68	6,769.30	5,216.07	98.03	Hold: 91.75° Inc, 359.58° Azm	
13,366.68	6,743.34	6,065.65	91.83	Drop: 2°/100'	
13,454.18	6,742.00	6,153.13	91.19	Hold: 90.00° Inc, 359.58° Azm	
17,329.85	6,742.00	10,028.70	62.90	TD @ 17329.85' MD/6742.00' TVD	

Northern Region - DJ Basin

Mustang

C Section 33

Guttersen C28-765

Guttersen C28-765

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 C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen C28-765	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	17,329.85	Plan #1 (Guttersen C28-765)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

Summary						
Site Name	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	17,329.85	6,528.37	1,889.74	1,783.98	17.869	CC, ES, SF
NOVACEK C #28-27D - NOVACEK C #28-27D OH - As-	17,329.85	6,801.20	2,271.23	2,155.39	19.606	CC, ES, SF
C Section 27						
HERBST #C27-31D - HERBST #C27-31D - As-Drilled	16,088.44	7,109.88	3,530.75	3,412.15	29.770	CC
HERBST #C27-31D - HERBST #C27-31D - As-Drilled	16,100.00	7,110.04	3,530.77	3,412.11	29.755	ES
HERBST #C27-31D - HERBST #C27-31D - As-Drilled	16,400.00	7,114.40	3,544.47	3,424.53	29.552	SF
C Section 28						
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	12,367.16	6,891.15	3,499.63	3,423.68	46.078	CC
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	12,400.00	6,891.98	3,499.79	3,423.63	45.952	ES
Aloysius C #34-30D - Aloysius C #34-30D OH - As-Drille	13,000.00	6,881.67	3,556.65	3,477.31	44.833	SF
HANSCOME #28-4 - Wellbore #1 - No Surveys	16,708.29	6,774.00	1,113.98	760.25	3.149	CC, ES, SF
HANSCOME #28-6 - Wellbore #1 - No Surveys	15,568.38	6,739.00	312.27	-31.12	0.909	Level 1, CC, ES, SF
HANSCOME C #28-18 - Wellbore #1 - No Surveys	16,215.12	6,722.00	896.54	548.76	2.578	CC, ES, SF
HANSCOME C #28-19 - Wellbore #1 - No Surveys	16,289.82	6,752.00	416.85	67.29	1.193	Level 2, CC, ES, SF
HANSCOME C #28-20 - Wellbore #1 - No Surveys	14,984.05	6,753.00	350.34	10.93	1.032	Level 2, CC, ES, SF
HANSCOME C #28-21 - Wellbore #1 - No Surveys	15,032.10	6,737.00	846.65	507.50	2.496	CC, ES, SF
HANSCOME C #28-28D - HANSCOME C #28-28D OH -	17,329.85	6,745.41	1,076.95	965.61	9.673	CC, ES, SF
HANSCOME C #28-29D - HANSCOME C #28-29D OH -	17,329.85	6,924.31	399.83	304.86	4.210	CC, ES, SF
HANSCOME, C #2 - Wellbore #1 - No Surveys	15,553.11	6,775.00	1,004.48	659.77	2.914	CC, ES, SF
HANSCOME, C #28-1 - Wellbore #1 - No Surveys	16,864.16	6,734.00	310.48	-42.88	0.879	Level 1, CC, ES, SF
NIX #1 - Wellbore #1 - No Surveys	16,742.86	6,669.00	2,905.59	2,555.78	8.306	CC, ES
NIX #1 - Wellbore #1 - No Surveys	16,900.00	6,669.00	2,909.84	2,558.88	8.291	SF
NIX #28-814 - Wellbore #1 - No Surveys	15,381.18	6,708.00	3,130.65	2,789.96	9.189	CC
NIX #28-814 - Wellbore #1 - No Surveys	15,400.00	6,708.00	3,130.71	2,789.87	9.185	ES
NIX #28-814 - Wellbore #1 - No Surveys	15,600.00	6,708.00	3,138.29	2,796.03	9.169	SF
NOVACEK #1 - Wellbore #1 - No Surveys	16,866.05	6,703.00	1,635.86	1,283.72	4.645	CC, ES
NOVACEK #1 - Wellbore #1 - No Surveys	16,900.00	6,703.00	1,636.21	1,283.81	4.643	SF
NOVACEK C #28-17 - Wellbore #1 - No Surveys	16,215.64	6,701.00	2,131.84	1,784.90	6.145	CC, ES
NOVACEK C #28-17 - Wellbore #1 - No Surveys	16,300.00	6,701.00	2,133.51	1,785.95	6.139	SF
NOVACEK C #28-7 - Wellbore #1 - No Surveys	15,383.64	6,716.00	1,713.40	1,372.36	5.024	CC
NOVACEK C #28-7 - Wellbore #1 - No Surveys	15,400.00	6,716.00	1,713.47	1,372.32	5.023	ES, SF
THOMPSON #1 - Wellbore #1 - As-Drilled	14,211.55	6,646.34	2,939.51	2,851.09	33.247	CC, ES
THOMPSON #1 - Wellbore #1 - As-Drilled	14,700.00	6,638.57	2,979.80	2,888.40	32.599	SF
THOMPSON #2 - Wellbore #1 - No Surveys	14,249.53	6,742.00	274.80	-58.51	0.824	Level 1, CC, ES, SF
THOMPSON #28-10 - Wellbore #1 - No Surveys	14,242.88	6,743.00	1,555.43	1,222.12	4.667	CC, ES

CC - Min centre to center distance or convergent 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 C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen C28-765	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						
THOMPSON #28-10 - Wellbore #1 - No Surveys	14,300.00	6,743.00	1,556.48	1,222.76	4.664	SF
THOMPSON #28-12 - Wellbore #1 - No Surveys	14,197.82	6,767.00	1,044.69	710.77	3.129	CC
THOMPSON #28-12 - Wellbore #1 - No Surveys	14,200.00	6,767.00	1,044.69	710.75	3.128	ES, SF
THOMPSON #28-14 - Wellbore #1 - No Surveys	12,915.93	6,760.11	256.91	-67.05	0.793	Level 1, CC, ES, SF
THOMPSON #28-16 - Wellbore #1 - No Surveys	12,921.35	6,751.94	2,941.00	2,617.33	9.086	CC, ES
THOMPSON #28-16 - Wellbore #1 - No Surveys	13,100.00	6,746.48	2,946.42	2,621.69	9.073	SF
THOMPSON #3 - Wellbore #1 - No Surveys	12,915.31	6,755.12	1,040.50	716.74	3.214	CC, ES, SF
THOMPSON #4 - Wellbore #1 - No Surveys	12,854.93	6,761.97	1,629.86	1,306.28	5.037	CC, ES
THOMPSON #4 - Wellbore #1 - No Surveys	12,900.00	6,760.59	1,630.48	1,306.63	5.035	SF
THOMPSON #C33-30D - THOMPSON #C33-30D OH - A	12,212.25	6,867.68	1,752.10	1,678.21	23.712	CC, ES
THOMPSON #C33-30D - THOMPSON #C33-30D OH - A	12,400.00	6,874.21	1,762.13	1,687.32	23.555	SF
THOMPSON C #28-22 - Wellbore #1 - No Surveys	14,731.82	6,716.00	2,326.87	1,990.89	6.926	CC, ES
THOMPSON C #28-22 - Wellbore #1 - No Surveys	14,800.00	6,716.00	2,327.87	1,991.38	6.918	SF
THOMPSON C #28-23 - Wellbore #1 - No Surveys	13,655.55	6,734.00	2,280.59	1,952.11	6.943	CC, ES
THOMPSON C #28-23 - Wellbore #1 - No Surveys	13,800.00	6,734.00	2,285.16	1,955.67	6.936	SF
THOMPSON C #28-24 - Wellbore #1 - No Surveys	13,465.22	6,750.00	1,041.89	714.20	3.180	CC, ES
THOMPSON C #28-24 - Wellbore #1 - No Surveys	13,500.00	6,750.00	1,042.47	714.54	3.179	SF
THOMPSON C #28-25 - Wellbore #1 - No Surveys	13,580.80	6,757.00	350.74	21.90	1.067	Level 2, CC, ES, SF
Thompson C28-79HN - Thompson C28-79HN OH - Origi	16,410.59	10,302.54	1,569.47	1,415.85	10.216	CC
Thompson C28-79HN - Thompson C28-79HN OH - Origi	16,500.00	10,349.82	1,570.67	1,415.53	10.124	ES
Thompson C28-79HN - Thompson C28-79HN OH - Origi	17,100.00	10,881.04	1,597.65	1,428.88	9.467	SF
Thompson C33-69HN - Thompson C33-69HN OH - Origi	12,341.05	7,747.01	30.13	-28.05	0.518	Level 1, CC
Thompson C33-69HN - Thompson C33-69HN OH - Origi	12,341.68	7,747.00	30.13	-28.17	0.517	Level 1, ES, SF
C Section 32						
Becker #1 - Wellbore #1 - Plan #1	1,900.00	1,992.00	6,227.03	6,213.54	461.750	CC
Becker #1 - Wellbore #1 - Plan #1	2,100.00	2,145.72	6,227.74	6,213.02	423.130	ES
Becker #1 - Wellbore #1 - Plan #1	17,329.85	17,647.88	6,588.00	6,409.05	36.815	SF
Becker #2 - Wellbore #1 - Plan #1	7,166.50	7,530.56	5,921.97	5,872.02	118.552	CC
Becker #2 - Wellbore #1 - Plan #1	17,329.85	17,664.97	5,935.49	5,756.52	33.165	ES, SF
Becker #3 - Wellbore #1 - Plan #1	7,182.32	7,656.96	5,269.57	5,218.83	103.846	CC
Becker #3 - Wellbore #1 - Plan #1	17,329.85	17,776.56	5,283.07	5,104.21	29.538	ES, SF
Becker #4 - Wellbore #1 - Plan #1	7,167.38	7,868.13	4,617.80	4,565.92	89.021	CC
Becker #4 - Wellbore #1 - Plan #1	17,329.85	18,007.80	4,630.78	4,451.65	25.852	ES, SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Gutteresen C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutteresen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Gutteresen C28-765	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Summary						
Site Name	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	10,938.38	6,965.56	1,758.18	1,682.88	23.350	CC, ES
GUTTERSEN C #33-31D - GUTTERSEN C #33-31D OH	11,200.00	6,970.84	1,777.53	1,700.44	23.057	SF
GUTTERSEN C #33-32 - Wellbore #1 - No Surveys	9,463.53	6,753.00	1,447.81	1,147.69	4.824	CC, ES
GUTTERSEN C #33-32 - Wellbore #1 - No Surveys	9,500.00	6,753.00	1,448.27	1,147.95	4.823	SF
GUTTERSEN C #33-33D - GUTTERSEN C #33-33D OH	8,300.90	6,930.93	1,753.53	1,695.91	30.433	CC, ES
GUTTERSEN C #33-33D - GUTTERSEN C #33-33D OH	8,400.00	6,930.57	1,756.33	1,698.57	30.407	SF
Gutteresen C28-715 - Gutteresen C28-715 - Plan #1	2,200.00	2,195.00	2,061.25	2,045.96	134.821	CC, ES
Gutteresen C28-715 - Gutteresen C28-715 - Plan #1	17,329.85	17,594.25	3,246.53	3,068.04	18.189	SF
Gutteresen C28-725 - Gutteresen C28-725 - Plan #1	2,200.00	2,193.00	2,038.92	2,023.64	133.423	CC
Gutteresen C28-725 - Gutteresen C28-725 - Plan #1	2,300.00	2,266.16	2,039.28	2,023.41	128.490	ES
Gutteresen C28-725 - Gutteresen C28-725 - Plan #1	17,329.85	17,549.05	2,596.38	2,416.74	14.453	SF
Gutteresen C28-735 - Gutteresen C28-735 - Plan #1	17,329.85	17,457.46	1,949.13	1,769.59	10.856	CC, ES, SF
Gutteresen C28-745 - Gutteresen C28-745 - Plan #1	17,329.85	17,345.60	1,298.17	1,119.12	7.251	CC, ES, SF
Gutteresen C28-750 - Gutteresen C28-750 - Plan #1	12,432.28	12,664.23	984.14	879.68	9.421	CC
Gutteresen C28-750 - Gutteresen C28-750 - Plan #1	17,329.85	17,561.38	987.84	808.22	5.500	ES, SF
Gutteresen C28-755 - Gutteresen C28-755 - Plan #1	2,200.00	2,200.00	22.33	7.02	1.459	Level 3, CC, ES
Gutteresen C28-755 - Gutteresen C28-755 - Plan #1	2,300.00	2,299.51	23.13	7.14	1.447	Level 3, SF
Gutteresen C28-770 - Gutteresen C28-770 - Plan #1	2,200.00	2,200.00	22.61	7.30	1.477	Level 3, CC
Gutteresen C28-770 - Gutteresen C28-770 - Plan #1	2,300.00	2,299.85	23.18	7.20	1.450	Level 3, ES, SF
Gutteresen C28-775 - Gutteresen C28-775 - Plan #1	2,200.00	2,201.00	44.93	29.62	2.935	CC, ES
Gutteresen C28-775 - Gutteresen C28-775 - Plan #1	2,300.00	2,300.27	46.01	30.02	2.878	SF
Gutteresen C28-785 - Gutteresen C28-785 - Plan #1	2,200.00	2,201.00	67.54	52.23	4.411	CC, ES
Gutteresen C28-785 - Gutteresen C28-785 - Plan #1	2,300.00	2,299.18	69.15	53.17	4.327	SF
GUTTERSEN D #03-30D - Wellbore #1 - No Surveys	7,640.61	6,703.00	324.65	33.61	1.115	Level 2, CC, ES, SF
LINDSAY #33-1 - LINDSAY #33-1 OH - As-Drilled	7,646.35	6,709.02	1,588.53	1,540.33	32.958	CC, ES
LINDSAY #33-1 - LINDSAY #33-1 OH - As-Drilled	7,800.00	6,708.99	1,595.94	1,547.40	32.876	SF
LINDSAY #33-3 - Wellbore #1 - No Surveys	10,288.94	6,710.00	307.48	3.87	1.013	Level 2, CC, ES, SF
LINDSAY #33-4 - Wellbore #1 - No Surveys	10,300.69	6,710.00	1,638.48	1,334.79	5.395	CC, ES
LINDSAY #33-4 - Wellbore #1 - No Surveys	10,400.00	6,710.00	1,641.48	1,337.20	5.395	SF
LINDSAY #33-5 - Wellbore #1 - No Surveys	8,974.67	6,705.00	1,640.16	1,344.18	5.541	CC, ES
LINDSAY #33-5 - Wellbore #1 - No Surveys	9,000.00	6,705.00	1,640.36	1,344.25	5.540	SF
LINDSAY #33-6 - Wellbore #1 - No Surveys	8,970.23	6,318.00	314.65	34.17	1.122	Level 2, CC, ES, SF
LINDSAY #33-7 - Wellbore #1 - No Surveys	11,607.73	6,722.88	303.10	-9.86	0.969	Level 1, CC, ES, SF
LINDSAY #33-8 - Wellbore #1 - No Surveys	11,608.48	6,725.91	1,617.32	1,304.24	5.166	CC, ES
LINDSAY #33-8 - Wellbore #1 - No Surveys	11,700.00	6,728.70	1,619.91	1,306.10	5.162	SF
LINDSAY #C33-10 - Wellbore #1 - No Surveys	11,643.33	6,739.97	1,058.67	744.78	3.373	CC, ES, SF
LINDSAY #C33-11 - LINDSAY #C33-11 OH - As-Drilled	10,355.96	6,739.83	1,098.72	1,037.60	17.977	CC, ES
LINDSAY #C33-11 - LINDSAY #C33-11 OH - As-Drilled	10,400.00	6,740.55	1,099.60	1,038.22	17.915	SF
LINDSAY #C33-12 - Wellbore #1 - No Surveys	8,969.56	6,721.00	996.92	700.33	3.361	CC, ES, SF
LINDSAY #C33-13 - LINDSAY #C33-13 OH - As-Drilled	100.00	82.09	910.41	910.14	3,378.935	CC
LINDSAY #C33-13 - LINDSAY #C33-13 OH - As-Drilled	2,200.00	2,174.90	916.55	901.47	60.782	ES
LINDSAY #C33-13 - LINDSAY #C33-13 OH - As-Drilled	7,700.00	6,715.78	1,038.60	990.22	21.471	SF
LINDSAY #C33-14 - Wellbore #1 - No Surveys	11,602.76	6,724.73	2,934.92	2,621.92	9.377	CC, ES
LINDSAY #C33-14 - Wellbore #1 - No Surveys	11,800.00	6,730.76	2,941.53	2,626.95	9.351	SF
LINDSAY #C33-15 - Wellbore #1 - No Surveys	10,287.99	6,706.00	2,941.09	2,637.85	9.699	CC
LINDSAY #C33-15 - Wellbore #1 - No Surveys	10,300.00	6,706.00	2,941.12	2,637.80	9.696	ES
LINDSAY #C33-15 - Wellbore #1 - No Surveys	10,500.00	6,706.00	2,948.73	2,644.18	9.682	SF
LINDSAY #C33-16 - Wellbore #1 - No Surveys	7,696.80	6,707.00	2,942.16	2,650.84	10.099	CC
LINDSAY #C33-16 - Wellbore #1 - No Surveys	7,700.00	6,707.00	2,942.16	2,650.84	10.099	ES
LINDSAY #C33-16 - Wellbore #1 - No Surveys	7,800.00	6,707.00	2,943.97	2,652.40	10.097	SF
LINDSAY #C33-9 - Wellbore #1 - No Surveys	9,015.52	6,688.00	2,940.43	2,644.93	9.951	CC, ES
LINDSAY #C33-9 - Wellbore #1 - No Surveys	9,200.00	6,688.00	2,946.21	2,649.80	9.939	SF
LINDSAY C #33-17 - Wellbore #1 - No Surveys	10,946.01	6,719.00	2,117.92	1,809.66	6.871	CC, ES

CC - Min centre to center distance or convergent 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 C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen C28-765	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 C #33-17 - Wellbore #1 - No Surveys	11,000.00	6,719.00	2,118.60	1,809.99	6.865	SF
LINDSAY C #33-18 - Wellbore #1 - As-Drilled	10,900.00	6,838.49	946.10	812.70	7.092	SF
LINDSAY C #33-18 - Wellbore #1 - As-Drilled	10,950.63	6,838.65	944.75	811.71	7.101	CC, ES
LINDSAY C #33-19 - Wellbore #1 - No Surveys	10,891.18	6,727.00	445.13	136.92	1.444	Level 3, CC, ES, SF
LINDSAY C #33-20 - Wellbore #1 - No Surveys	9,439.82	6,723.00	342.68	43.57	1.146	Level 2, CC, ES, SF
LINDSAY C #33-21 - Wellbore #1 - No Surveys	9,461.68	6,706.00	973.81	675.26	3.262	CC, ES, SF
LINDSAY C #33-22 - Wellbore #1 - No Surveys	9,474.09	6,703.00	2,277.23	1,978.73	7.629	CC, ES
LINDSAY C #33-22 - Wellbore #1 - No Surveys	9,600.00	6,703.00	2,280.71	1,981.52	7.623	SF
LINDSAY C #33-23 - Wellbore #1 - No Surveys	8,299.16	6,708.00	2,253.59	1,960.41	7.687	CC
LINDSAY C #33-23 - Wellbore #1 - No Surveys	8,300.00	6,708.00	2,253.59	1,960.40	7.686	ES
LINDSAY C #33-23 - Wellbore #1 - No Surveys	8,400.00	6,708.00	2,255.85	1,962.28	7.684	SF
LINDSAY C #33-24 - Wellbore #1 - No Surveys	8,290.03	6,703.00	947.04	654.08	3.233	CC, ES
LINDSAY C #33-24 - Wellbore #1 - No Surveys	8,300.00	6,703.00	947.09	654.10	3.232	SF
LINDSAY C #33-25 - Wellbore #1 - No Surveys	8,218.90	6,715.00	288.99	-4.19	0.986	Level 1, CC, ES, SF
C Section 34						
Aloysius C34-99HZ - Original Drilling - Original Drilling - /	8,159.30	10,570.00	4,145.84	4,087.94	71.596	CC
Aloysius C34-99HZ - Original Drilling - Original Drilling - /	8,200.00	10,570.00	4,146.04	4,087.47	70.783	ES
Aloysius C34-99HZ - Original Drilling - Original Drilling - /	11,100.00	10,570.00	5,082.89	4,970.53	45.239	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Gutttersen C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Gutttersen C28-765	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)	Between Ellipses (ft)	Separation Factor	Warning
D Section 04						
Burghart D04-22 - Wellbore #1 - Wellbore #1- As Drilled	6,219.90	6,143.79	3,097.08	3,053.82	71.596	CC, ES
Burghart D04-22 - Wellbore #1 - Wellbore #1- As Drilled	6,550.00	6,436.20	3,154.40	3,109.24	69.847	SF
Gittlein Blue D04-08 - Wellbore #1 - Wellbore #1- As Drill	6,216.88	6,084.30	3,314.26	3,271.11	76.817	CC, ES
Gittlein Blue D04-08 - Wellbore #1 - Wellbore #1- As Drill	6,650.00	6,476.51	3,386.39	3,340.78	74.242	SF
Gutttersen D03-33D - Wellbore #1 - Wellbore #1- As Drill	6,197.85	6,137.91	4,820.62	4,772.55	100.272	CC
Gutttersen D03-33D - Wellbore #1 - Wellbore #1- As Drill	6,200.00	6,141.32	4,820.62	4,772.53	100.238	ES
Gutttersen D03-33D - Wellbore #1 - Wellbore #1- As Drill	6,550.00	6,493.07	4,886.63	4,836.64	97.755	SF
Gutttersen D04-30D - Plan B - Plan B	1,117.45	1,126.31	1,357.26	1,350.81	210.529	CC
Gutttersen D04-30D - Plan B - Plan B	1,200.00	1,191.93	1,357.76	1,350.79	194.640	ES
Gutttersen D04-30D - Plan B - Plan B	7,150.00	6,790.57	1,727.62	1,680.25	36.472	SF
Gutttersen D04-31D - Plan B - Plan B	923.77	929.48	1,368.88	1,363.85	272.407	CC, ES
Gutttersen D04-31D - Plan B - Plan B	6,400.00	6,537.58	1,973.62	1,925.60	41.095	SF
Gutttersen D04-69HN - Original Drilling - Original Drilling	7,091.91	7,851.26	63.05	38.74	2.594	CC
Gutttersen D04-69HN - Original Drilling - Original Drilling	7,100.00	7,851.60	63.61	36.45	2.342	ES
Gutttersen D04-69HN - Original Drilling - Original Drilling	7,150.00	7,853.59	87.61	40.23	1.849	SF
Karch Blue D04-02 - Wellbore #1 - Wellbore #1- As Drille	6,067.74	5,836.73	1,753.43	1,711.46	41.783	CC, ES
Karch Blue D04-02 - Wellbore #1 - Wellbore #1- As Drille	6,650.00	6,420.66	1,810.14	1,764.42	39.594	SF
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,198.96	6,066.27	2,306.80	2,263.85	53.713	CC
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,200.00	6,067.31	2,306.80	2,263.85	53.704	ES
Karch Blue D04-07 - Wellbore #1 - Wellbore #1- As Drille	6,450.00	6,310.13	2,342.30	2,297.78	52.610	SF
Karch D04-17 - Wellbore #1 - Wellbore #1- As Drilled	6,221.48	6,079.20	2,483.48	2,440.28	57.481	CC, ES
Karch D04-17 - Wellbore #1 - Wellbore #1- As Drilled	6,650.00	6,504.86	2,536.88	2,491.11	55.423	SF
Marie D04-09 - Wellbore #1 - Wellbore #1- As Drilled	6,196.20	6,035.55	4,077.75	4,034.92	95.199	CC
Marie D04-09 - Wellbore #1 - Wellbore #1- As Drilled	6,200.00	6,039.04	4,077.76	4,034.90	95.143	ES
Marie D04-09 - Wellbore #1 - Wellbore #1- As Drilled	6,700.00	6,532.43	4,210.73	4,164.98	92.047	SF
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,195.79	6,082.38	3,444.59	3,401.70	80.312	CC
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,200.00	6,087.19	3,444.61	3,401.68	80.255	ES
Marie D04-10 - Wellbore #1 - Wellbore #1- As Drilled	6,500.00	6,383.06	3,506.25	3,461.50	78.349	SF
Marie D04-15 - Wellbore #1 - Wellbore #1- As Drilled	6,189.26	6,053.17	4,490.41	4,447.68	105.085	CC, ES
Marie D04-15 - Wellbore #1 - Wellbore #1- As Drilled	6,550.00	6,356.38	4,585.13	4,540.39	102.500	SF
Marie D04-16 - Wellbore #1 - Wellbore #1- As Drilled	6,205.39	6,131.01	5,038.38	4,995.26	116.850	CC, ES
Marie D04-16 - Wellbore #1 - Wellbore #1- As Drilled	6,600.00	6,453.08	5,137.45	5,092.20	113.548	SF
Marie D04-23 - Wellbore #1 - Wellbore #1-As Drilled	6,207.94	6,150.52	4,202.89	4,159.71	97.349	CC, ES
Marie D04-23 - Wellbore #1 - Wellbore #1-As Drilled	6,550.00	6,419.23	4,281.27	4,236.25	95.089	SF
Marie D04-72-1HN - Original Drilling - Original Drilling - A	6,723.39	11,395.00	3,297.92	3,188.28	30.078	CC, ES
Marie D04-72-1HN - Original Drilling - Original Drilling - A	6,950.00	11,395.00	3,311.08	3,200.33	29.896	SF
Marie D04-73-1HN - Original Drilling - Original Drilling - A	6,667.72	11,120.00	2,488.62	2,380.64	23.046	CC, ES
Marie D04-73-1HN - Original Drilling - Original Drilling - A	6,750.00	11,120.00	2,490.75	2,382.49	23.007	SF
Marie D04-74-1HN - Original Drilling - Original Drilling - P	6,186.20	6,067.46	5,149.50	5,108.94	126.934	CC, ES
Marie D04-74-1HN - Original Drilling - Original Drilling - P	6,600.00	6,511.92	5,265.31	5,222.23	122.223	SF
Marie D04-74-1HN - Original Drilling - ST01 - ST-01- As	6,689.42	11,217.00	1,988.50	1,924.76	31.195	CC, ES
Marie D04-74-1HN - Original Drilling - ST01 - ST-01- As	6,750.00	11,217.00	1,990.00	1,926.13	31.157	SF
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	6,351.35	6,218.46	2,657.97	2,613.83	60.221	CC
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	6,400.00	6,275.23	2,658.13	2,613.66	59.773	ES
Two E Ranch 01-04 - Wellbore #1 - Wellbore #1- As Drill	6,850.00	6,610.60	2,693.82	2,647.21	57.803	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 Guttersen C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen C28-765	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4753.00ft

Offset Depths are relative to Offset Datum

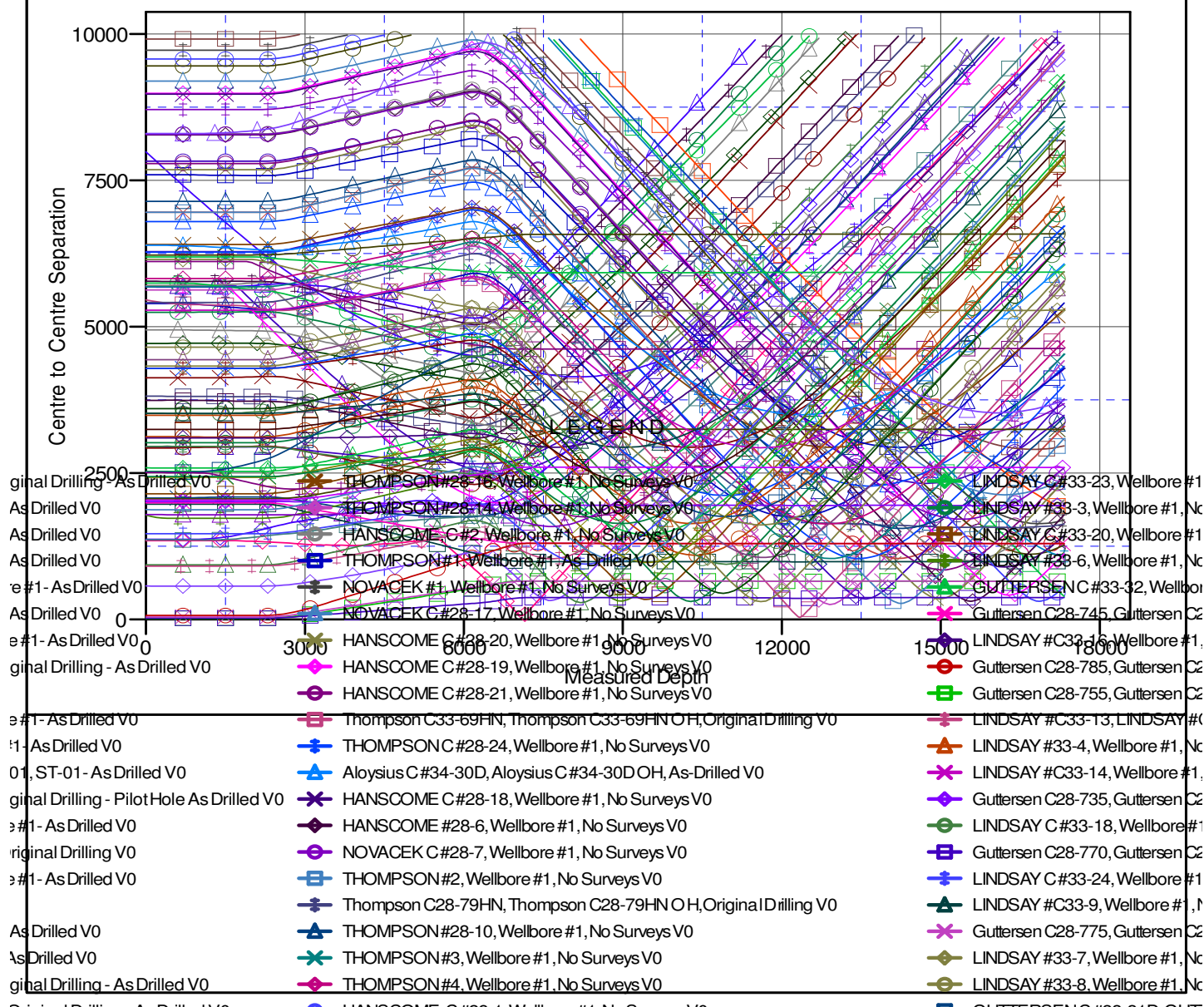
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen C28-765

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.61°

Ladder Plot



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

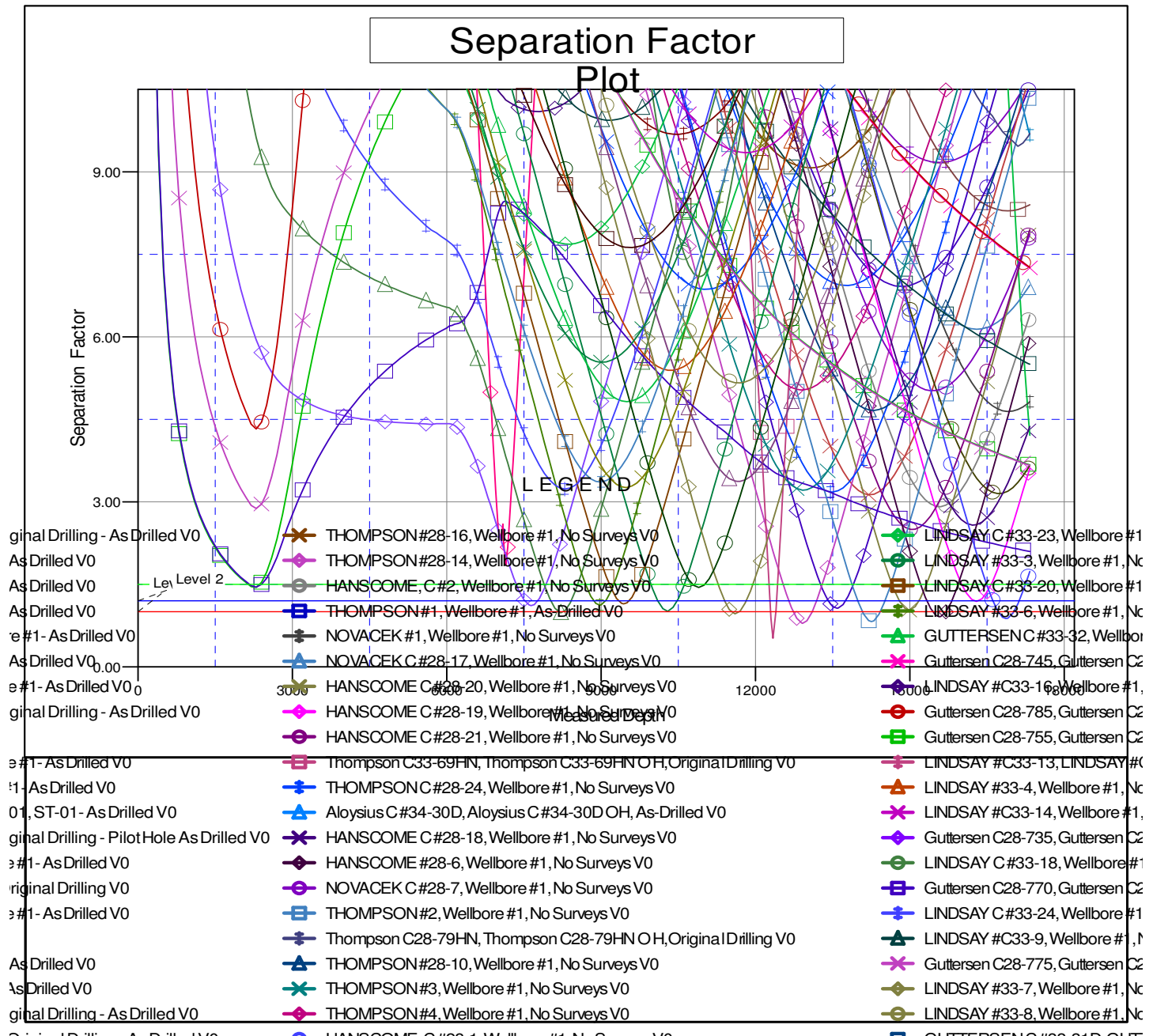
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen C28-765
Project:	Mustang	TVD Reference:	Well @ 4753.00ft
Reference Site:	C Section 33	MD Reference:	Well @ 4753.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen C28-765	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Guttersen C28-765	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to Well @ 4753.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen C28-765
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.61°



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