Project: Mustang
Site: DD Section 08
Well: Guttersen DD17-730
Wellbore: Guttersen DD17-730
Design: Plan #1

Northern Region - DJ Basin

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

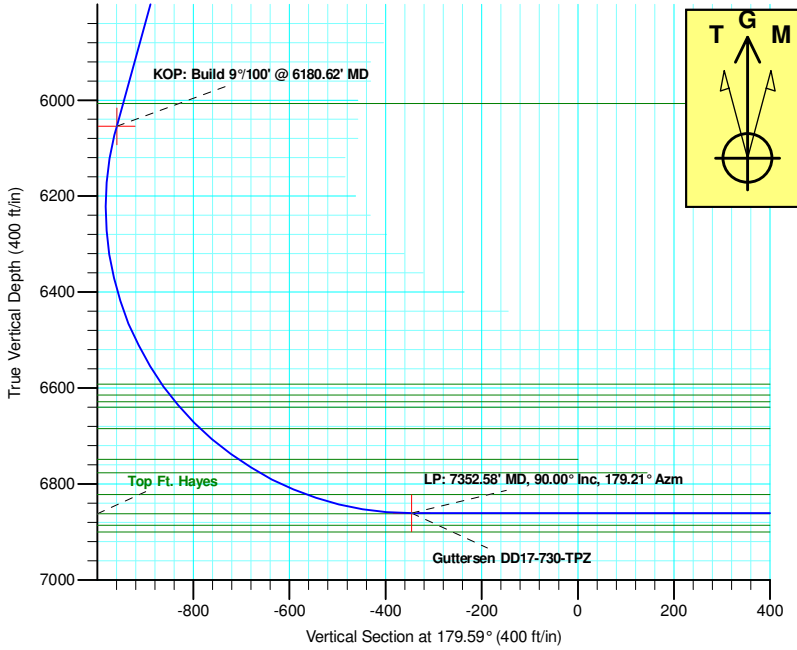
SECTION DETAILS

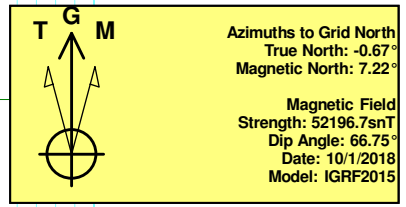
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2975.05	15.50	356.04	2965.63	103.96	-7.19	2.00	356.04	-104.01	
4	6180.62	15.50	356.04	6054.60	958.62	-66.28	0.00	0.00	-959.07	
5	7352.58	90.00	179.21	6861.00	344.98	-70.19	9.00	-176.71	-345.47	Guttersen DD17-730-TPZ
6	17599.20	90.00	179.21	6861.00	-9900.67	70.85	0.00	0.00	9900.92	Guttersen DD17-730-BHL

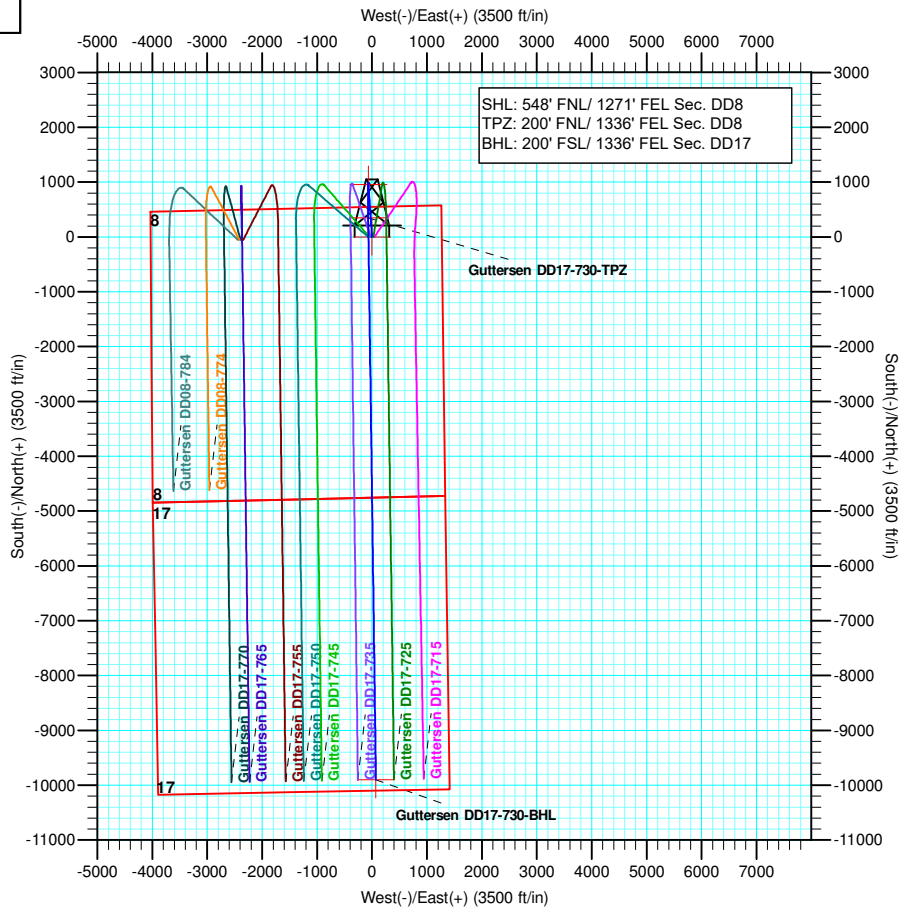
WELL DETAILS: Guttersen DD17-730

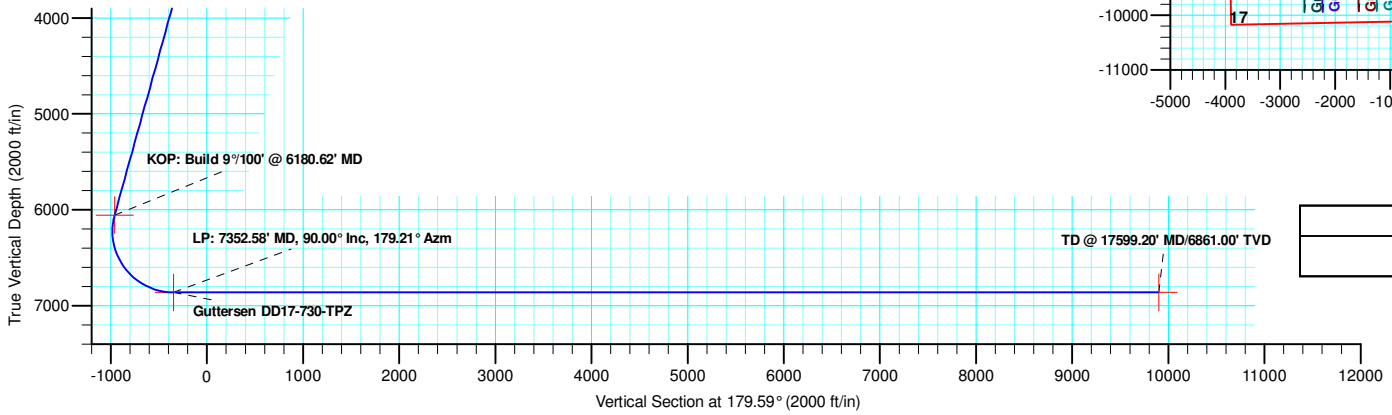
Ground Level: 4866.00

+N/-S	+E/-W	Northing	Easting	Latittude	Longitude	Slot
0.00	0.00	1334136.36	3291226.41	40.2459000	-104.4566900	









Plan: Plan #1 (Guttersen DD17-730/Guttersen DD17-730)

Created By: Keith Noack Date: 12:30, October 02 2018

Northern Region - DJ Basin

Mustang
DD Section 08
Guttersen DD17-730

Guttersen DD17-730

Plan: Plan #1

Standard Planning Report

02 October, 2018

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4896.00ft
Project:	Mustang	**MD Reference:**	Well @ 4896.00ft
Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Project Mustang, Weld County Colorado

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

Site DD Section 08

Site Position:		**Northing:**	1,330,053.01 usft	**Latitude:**	40.2347995
From:	Map	**Easting:**	3,287,864.30 usft	**Longitude:**	-104.4689036
Position Uncertainty:	0.00 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.67 °

Well Guttersen DD17-730

Well Position	**+N/-S**	4,083.36 ft	**Northing:**	1,334,136.36 usft	**Latitude:**	40.2459000
	+E/-W	3,362.11 ft	**Easting:**	3,291,226.41 usft	**Longitude:**	-104.4566900
Position Uncertainty		0.00 ft	**Wellhead Elevation:**		**Ground Level:**	4,866.00 ft

Wellbore Guttersen DD17-730

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/1/2018	7.90	66.75	52,196.72045743

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	179.59

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	
2,975.05	15.50	356.04	2,965.63	103.96	-7.19	2.00	2.00	0.00	356.04	
6,180.62	15.50	356.04	6,054.60	958.62	-66.28	0.00	0.00	0.00	0.00	
7,352.58	90.00	179.21	6,861.00	344.98	-70.19	9.00	6.36	-15.09	-176.71	Guttersen DD17-73
17,599.20	90.00	179.21	6,861.00	-9,900.67	70.85	0.00	0.00	0.00	0.00	Guttersen DD17-73

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4896.00ft
Project:	Mustang	**MD Reference:**	Well @ 4896.00ft
Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
413.00	0.00	0.00	413.00	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
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
753.00	0.00	0.00	753.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Top									
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
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,648.00	0.00	0.00	1,648.00	0.00	0.00	0.00	0.00	0.00	0.00
Upper Pierre Aquifer Base									
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	356.04	2,299.98	1.74	-0.12	-1.74	2.00	2.00	0.00
2,400.00	4.00	356.04	2,399.84	6.96	-0.48	-6.97	2.00	2.00	0.00
2,500.00	6.00	356.04	2,499.45	15.66	-1.08	-15.66	2.00	2.00	0.00
2,600.00	8.00	356.04	2,598.70	27.81	-1.92	-27.83	2.00	2.00	0.00
2,700.00	10.00	356.04	2,697.47	43.42	-3.00	-43.44	2.00	2.00	0.00
2,800.00	12.00	356.04	2,795.62	62.45	-4.32	-62.48	2.00	2.00	0.00
2,900.00	14.00	356.04	2,893.06	84.89	-5.87	-84.93	2.00	2.00	0.00
2,975.05	15.50	356.04	2,965.63	103.96	-7.19	-104.01	2.00	2.00	0.00
Hold: 15.50° Inc, 356.04° Azm									
3,000.00	15.50	356.04	2,989.67	110.61	-7.65	-110.66	0.00	0.00	0.00
3,100.00	15.50	356.04	3,086.03	137.27	-9.49	-137.33	0.00	0.00	0.00
3,200.00	15.50	356.04	3,182.40	163.93	-11.33	-164.01	0.00	0.00	0.00
3,300.00	15.50	356.04	3,278.76	190.59	-13.18	-190.68	0.00	0.00	0.00
3,400.00	15.50	356.04	3,375.12	217.26	-15.02	-217.36	0.00	0.00	0.00
3,500.00	15.50	356.04	3,471.49	243.92	-16.86	-244.03	0.00	0.00	0.00
3,600.00	15.50	356.04	3,567.85	270.58	-18.71	-270.71	0.00	0.00	0.00
3,700.00	15.50	356.04	3,664.21	297.24	-20.55	-297.38	0.00	0.00	0.00
3,800.00	15.50	356.04	3,760.57	323.90	-22.39	-324.06	0.00	0.00	0.00
3,828.46	15.50	356.04	3,788.00	331.49	-22.92	-331.65	0.00	0.00	0.00
Parkman									
3,900.00	15.50	356.04	3,856.94	350.57	-24.24	-350.73	0.00	0.00	0.00
4,000.00	15.50	356.04	3,953.30	377.23	-26.08	-377.40	0.00	0.00	0.00
4,100.00	15.50	356.04	4,049.66	403.89	-27.92	-404.08	0.00	0.00	0.00

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Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,200.00	15.50	356.04	4,146.02	430.55	-29.77	-430.75	0.00	0.00	0.00
4,233.18	15.50	356.04	4,178.00	439.40	-30.38	-439.61	0.00	0.00	0.00
Sussex									
4,300.00	15.50	356.04	4,242.39	457.21	-31.61	-457.43	0.00	0.00	0.00
4,400.00	15.50	356.04	4,338.75	483.88	-33.45	-484.10	0.00	0.00	0.00
4,500.00	15.50	356.04	4,435.11	510.54	-35.30	-510.78	0.00	0.00	0.00
4,600.00	15.50	356.04	4,531.47	537.20	-37.14	-537.45	0.00	0.00	0.00
4,700.00	15.50	356.04	4,627.84	563.86	-38.98	-564.13	0.00	0.00	0.00
4,800.00	15.50	356.04	4,724.20	590.52	-40.83	-590.80	0.00	0.00	0.00
4,900.00	15.50	356.04	4,820.56	617.19	-42.67	-617.48	0.00	0.00	0.00
5,000.00	15.50	356.04	4,916.92	643.85	-44.51	-644.15	0.00	0.00	0.00
5,042.63	15.50	356.04	4,958.00	655.21	-45.30	-655.52	0.00	0.00	0.00
Shannon									
5,100.00	15.50	356.04	5,013.29	670.51	-46.36	-670.82	0.00	0.00	0.00
5,200.00	15.50	356.04	5,109.65	697.17	-48.20	-697.50	0.00	0.00	0.00
5,300.00	15.50	356.04	5,206.01	723.83	-50.04	-724.17	0.00	0.00	0.00
5,400.00	15.50	356.04	5,302.37	750.50	-51.89	-750.85	0.00	0.00	0.00
5,500.00	15.50	356.04	5,398.74	777.16	-53.73	-777.52	0.00	0.00	0.00
5,600.00	15.50	356.04	5,495.10	803.82	-55.58	-804.20	0.00	0.00	0.00
5,700.00	15.50	356.04	5,591.46	830.48	-57.42	-830.87	0.00	0.00	0.00
5,800.00	15.50	356.04	5,687.82	857.14	-59.26	-857.55	0.00	0.00	0.00
5,900.00	15.50	356.04	5,784.19	883.80	-61.11	-884.22	0.00	0.00	0.00
6,000.00	15.50	356.04	5,880.55	910.47	-62.95	-910.89	0.00	0.00	0.00
6,100.00	15.50	356.04	5,976.91	937.13	-64.79	-937.57	0.00	0.00	0.00
6,131.22	15.50	356.04	6,007.00	945.45	-65.37	-945.90	0.00	0.00	0.00
Teepee Buttes									
6,180.62	15.50	356.04	6,054.60	958.62	-66.28	-959.07	0.00	0.00	0.00
KOP: Build 9°/100' @ 6180.62' MD									
6,200.00	13.76	355.62	6,073.35	963.51	-66.63	-963.96	9.00	-8.98	-2.17
6,250.00	9.27	353.83	6,122.33	973.45	-67.52	-973.90	9.00	-8.97	-3.59
6,300.00	4.81	348.73	6,171.94	979.51	-68.36	-979.98	9.00	-8.92	-10.20
6,350.00	0.91	284.05	6,221.88	981.67	-69.16	-982.14	9.00	-7.81	-129.36
6,400.00	4.36	190.81	6,271.83	979.90	-69.90	-980.37	9.00	6.90	-186.48
6,450.00	8.81	184.88	6,321.48	974.21	-70.58	-974.69	9.00	8.91	-11.86
6,500.00	13.30	182.93	6,370.54	964.65	-71.20	-965.13	9.00	8.97	-3.91
6,550.00	17.79	181.95	6,418.70	951.27	-71.76	-951.76	9.00	8.98	-1.96
6,600.00	22.28	181.35	6,465.67	934.15	-72.24	-934.64	9.00	8.99	-1.19
6,650.00	26.78	180.95	6,511.14	913.40	-72.65	-913.89	9.00	8.99	-0.81
6,700.00	31.28	180.66	6,554.85	889.14	-72.99	-889.64	9.00	9.00	-0.59
6,744.45	35.28	180.45	6,592.00	864.76	-73.22	-865.26	9.00	9.00	-0.46
Sharon Springs									
6,750.00	35.78	180.43	6,596.52	861.53	-73.24	-862.04	9.00	9.00	-0.41
6,773.09	37.85	180.34	6,615.00	847.70	-73.34	-848.20	9.00	9.00	-0.38
Top A Chalk									
6,791.02	39.47	180.28	6,629.00	836.50	-73.40	-837.00	9.00	9.00	-0.35
Top A Marl									
6,800.00	40.28	180.25	6,635.89	830.74	-73.42	-831.25	9.00	9.00	-0.34
6,805.40	40.76	180.23	6,640.00	827.23	-73.44	-827.74	9.00	9.00	-0.33
Top B Chalk									
6,850.00	44.77	180.10	6,672.73	796.95	-73.52	-797.46	9.00	9.00	-0.30
6,867.52	46.35	180.05	6,685.00	784.45	-73.54	-784.95	9.00	9.00	-0.27
Top B Marl									
6,900.00	49.27	179.97	6,706.81	760.38	-73.54	-760.89	9.00	9.00	-0.25

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
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Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,950.00	53.77	179.85	6,737.91	721.25	-73.48	-721.76	9.00	9.00	-0.23
6,969.16	55.50	179.81	6,749.00	705.63	-73.43	-706.13	9.00	9.00	-0.21
Top C Chalk									
7,000.00	58.27	179.75	6,765.85	679.80	-73.34	-680.31	9.00	9.00	-0.20
7,021.81	60.23	179.71	6,777.00	661.05	-73.25	-661.56	9.00	9.00	-0.19
Top C Marl									
7,050.00	62.77	179.66	6,790.45	636.28	-73.11	-636.79	9.00	9.00	-0.18
7,100.00	67.27	179.58	6,811.56	590.97	-72.81	-591.48	9.00	9.00	-0.17
7,128.57	69.84	179.53	6,822.00	564.38	-72.61	-564.89	9.00	9.00	-0.16
Top D Chalk									
7,150.00	71.77	179.50	6,829.05	544.15	-72.44	-544.65	9.00	9.00	-0.15
7,200.00	76.27	179.43	6,842.81	496.09	-71.99	-496.60	9.00	9.00	-0.15
7,250.00	80.77	179.35	6,852.76	447.11	-71.47	-447.61	9.00	9.00	-0.14
7,300.00	85.27	179.28	6,858.83	397.50	-70.88	-397.99	9.00	9.00	-0.14
7,352.58	90.00	179.21	6,861.00	344.98	-70.19	-345.47	9.00	9.00	-0.14
LP: 7352.58' MD, 90.00° Inc, 179.21° Azm									
7,400.00	90.00	179.21	6,861.00	297.56	-69.53	-298.05	0.00	0.00	0.00
7,500.00	90.00	179.21	6,861.00	197.57	-68.16	-198.06	0.00	0.00	0.00
7,600.00	90.00	179.21	6,861.00	97.58	-66.78	-98.06	0.00	0.00	0.00
7,700.00	90.00	179.21	6,861.00	-2.41	-65.40	1.94	0.00	0.00	0.00
7,800.00	90.00	179.21	6,861.00	-102.40	-64.03	101.94	0.00	0.00	0.00
7,900.00	90.00	179.21	6,861.00	-202.39	-62.65	201.93	0.00	0.00	0.00
8,000.00	90.00	179.21	6,861.00	-302.38	-61.27	301.93	0.00	0.00	0.00
8,100.00	90.00	179.21	6,861.00	-402.37	-59.90	401.93	0.00	0.00	0.00
8,200.00	90.00	179.21	6,861.00	-502.36	-58.52	501.93	0.00	0.00	0.00
8,300.00	90.00	179.21	6,861.00	-602.35	-57.15	601.93	0.00	0.00	0.00
8,400.00	90.00	179.21	6,861.00	-702.34	-55.77	701.92	0.00	0.00	0.00
8,500.00	90.00	179.21	6,861.00	-802.33	-54.39	801.92	0.00	0.00	0.00
8,600.00	90.00	179.21	6,861.00	-902.32	-53.02	901.92	0.00	0.00	0.00
8,700.00	90.00	179.21	6,861.00	-1,002.31	-51.64	1,001.92	0.00	0.00	0.00
8,800.00	90.00	179.21	6,861.00	-1,102.30	-50.26	1,101.92	0.00	0.00	0.00
8,900.00	90.00	179.21	6,861.00	-1,202.29	-48.89	1,201.91	0.00	0.00	0.00
9,000.00	90.00	179.21	6,861.00	-1,302.28	-47.51	1,301.91	0.00	0.00	0.00
9,100.00	90.00	179.21	6,861.00	-1,402.27	-46.13	1,401.91	0.00	0.00	0.00
9,200.00	90.00	179.21	6,861.00	-1,502.27	-44.76	1,501.91	0.00	0.00	0.00
9,300.00	90.00	179.21	6,861.00	-1,602.26	-43.38	1,601.90	0.00	0.00	0.00
9,400.00	90.00	179.21	6,861.00	-1,702.25	-42.00	1,701.90	0.00	0.00	0.00
9,500.00	90.00	179.21	6,861.00	-1,802.24	-40.63	1,801.90	0.00	0.00	0.00
9,600.00	90.00	179.21	6,861.00	-1,902.23	-39.25	1,901.90	0.00	0.00	0.00
9,700.00	90.00	179.21	6,861.00	-2,002.22	-37.88	2,001.90	0.00	0.00	0.00
9,800.00	90.00	179.21	6,861.00	-2,102.21	-36.50	2,101.89	0.00	0.00	0.00
9,900.00	90.00	179.21	6,861.00	-2,202.20	-35.12	2,201.89	0.00	0.00	0.00
10,000.00	90.00	179.21	6,861.00	-2,302.19	-33.75	2,301.89	0.00	0.00	0.00
10,100.00	90.00	179.21	6,861.00	-2,402.18	-32.37	2,401.89	0.00	0.00	0.00
10,200.00	90.00	179.21	6,861.00	-2,502.17	-30.99	2,501.88	0.00	0.00	0.00
10,300.00	90.00	179.21	6,861.00	-2,602.16	-29.62	2,601.88	0.00	0.00	0.00
10,400.00	90.00	179.21	6,861.00	-2,702.15	-28.24	2,701.88	0.00	0.00	0.00
10,500.00	90.00	179.21	6,861.00	-2,802.14	-26.86	2,801.88	0.00	0.00	0.00
10,600.00	90.00	179.21	6,861.00	-2,902.13	-25.49	2,901.88	0.00	0.00	0.00
10,700.00	90.00	179.21	6,861.00	-3,002.12	-24.11	3,001.87	0.00	0.00	0.00
10,800.00	90.00	179.21	6,861.00	-3,102.11	-22.73	3,101.87	0.00	0.00	0.00
10,900.00	90.00	179.21	6,861.00	-3,202.10	-21.36	3,201.87	0.00	0.00	0.00
11,000.00	90.00	179.21	6,861.00	-3,302.09	-19.98	3,301.87	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4896.00ft
Project:	Mustang	**MD Reference:**	Well @ 4896.00ft
Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,100.00	90.00	179.21	6,861.00	-3,402.09	-18.61	3,401.86	0.00	0.00	0.00
11,200.00	90.00	179.21	6,861.00	-3,502.08	-17.23	3,501.86	0.00	0.00	0.00
11,300.00	90.00	179.21	6,861.00	-3,602.07	-15.85	3,601.86	0.00	0.00	0.00
11,400.00	90.00	179.21	6,861.00	-3,702.06	-14.48	3,701.86	0.00	0.00	0.00
11,500.00	90.00	179.21	6,861.00	-3,802.05	-13.10	3,801.86	0.00	0.00	0.00
11,600.00	90.00	179.21	6,861.00	-3,902.04	-11.72	3,901.85	0.00	0.00	0.00
11,700.00	90.00	179.21	6,861.00	-4,002.03	-10.35	4,001.85	0.00	0.00	0.00
11,800.00	90.00	179.21	6,861.00	-4,102.02	-8.97	4,101.85	0.00	0.00	0.00
11,900.00	90.00	179.21	6,861.00	-4,202.01	-7.59	4,201.85	0.00	0.00	0.00
12,000.00	90.00	179.21	6,861.00	-4,302.00	-6.22	4,301.85	0.00	0.00	0.00
12,100.00	90.00	179.21	6,861.00	-4,401.99	-4.84	4,401.84	0.00	0.00	0.00
12,200.00	90.00	179.21	6,861.00	-4,501.98	-3.46	4,501.84	0.00	0.00	0.00
12,300.00	90.00	179.21	6,861.00	-4,601.97	-2.09	4,601.84	0.00	0.00	0.00
12,400.00	90.00	179.21	6,861.00	-4,701.96	-0.71	4,701.84	0.00	0.00	0.00
12,500.00	90.00	179.21	6,861.00	-4,801.95	0.66	4,801.83	0.00	0.00	0.00
12,600.00	90.00	179.21	6,861.00	-4,901.94	2.04	4,901.83	0.00	0.00	0.00
12,700.00	90.00	179.21	6,861.00	-5,001.93	3.42	5,001.83	0.00	0.00	0.00
12,800.00	90.00	179.21	6,861.00	-5,101.92	4.79	5,101.83	0.00	0.00	0.00
12,900.00	90.00	179.21	6,861.00	-5,201.91	6.17	5,201.83	0.00	0.00	0.00
13,000.00	90.00	179.21	6,861.00	-5,301.91	7.55	5,301.82	0.00	0.00	0.00
13,100.00	90.00	179.21	6,861.00	-5,401.90	8.92	5,401.82	0.00	0.00	0.00
13,200.00	90.00	179.21	6,861.00	-5,501.89	10.30	5,501.82	0.00	0.00	0.00
13,300.00	90.00	179.21	6,861.00	-5,601.88	11.68	5,601.82	0.00	0.00	0.00
13,400.00	90.00	179.21	6,861.00	-5,701.87	13.05	5,701.81	0.00	0.00	0.00
13,500.00	90.00	179.21	6,861.00	-5,801.86	14.43	5,801.81	0.00	0.00	0.00
13,600.00	90.00	179.21	6,861.00	-5,901.85	15.81	5,901.81	0.00	0.00	0.00
13,700.00	90.00	179.21	6,861.00	-6,001.84	17.18	6,001.81	0.00	0.00	0.00
13,800.00	90.00	179.21	6,861.00	-6,101.83	18.56	6,101.81	0.00	0.00	0.00
13,900.00	90.00	179.21	6,861.00	-6,201.82	19.93	6,201.80	0.00	0.00	0.00
14,000.00	90.00	179.21	6,861.00	-6,301.81	21.31	6,301.80	0.00	0.00	0.00
14,100.00	90.00	179.21	6,861.00	-6,401.80	22.69	6,401.80	0.00	0.00	0.00
14,200.00	90.00	179.21	6,861.00	-6,501.79	24.06	6,501.80	0.00	0.00	0.00
14,300.00	90.00	179.21	6,861.00	-6,601.78	25.44	6,601.80	0.00	0.00	0.00
14,400.00	90.00	179.21	6,861.00	-6,701.77	26.82	6,701.79	0.00	0.00	0.00
14,500.00	90.00	179.21	6,861.00	-6,801.76	28.19	6,801.79	0.00	0.00	0.00
14,600.00	90.00	179.21	6,861.00	-6,901.75	29.57	6,901.79	0.00	0.00	0.00
14,700.00	90.00	179.21	6,861.00	-7,001.74	30.95	7,001.79	0.00	0.00	0.00
14,800.00	90.00	179.21	6,861.00	-7,101.73	32.32	7,101.78	0.00	0.00	0.00
14,900.00	90.00	179.21	6,861.00	-7,201.73	33.70	7,201.78	0.00	0.00	0.00
15,000.00	90.00	179.21	6,861.00	-7,301.72	35.08	7,301.78	0.00	0.00	0.00
15,100.00	90.00	179.21	6,861.00	-7,401.71	36.45	7,401.78	0.00	0.00	0.00
15,200.00	90.00	179.21	6,861.00	-7,501.70	37.83	7,501.78	0.00	0.00	0.00
15,300.00	90.00	179.21	6,861.00	-7,601.69	39.20	7,601.77	0.00	0.00	0.00
15,400.00	90.00	179.21	6,861.00	-7,701.68	40.58	7,701.77	0.00	0.00	0.00
15,500.00	90.00	179.21	6,861.00	-7,801.67	41.96	7,801.77	0.00	0.00	0.00
15,600.00	90.00	179.21	6,861.00	-7,901.66	43.33	7,901.77	0.00	0.00	0.00
15,700.00	90.00	179.21	6,861.00	-8,001.65	44.71	8,001.76	0.00	0.00	0.00
15,800.00	90.00	179.21	6,861.00	-8,101.64	46.09	8,101.76	0.00	0.00	0.00
15,900.00	90.00	179.21	6,861.00	-8,201.63	47.46	8,201.76	0.00	0.00	0.00
16,000.00	90.00	179.21	6,861.00	-8,301.62	48.84	8,301.76	0.00	0.00	0.00
16,100.00	90.00	179.21	6,861.00	-8,401.61	50.22	8,401.76	0.00	0.00	0.00
16,200.00	90.00	179.21	6,861.00	-8,501.60	51.59	8,501.75	0.00	0.00	0.00
16,300.00	90.00	179.21	6,861.00	-8,601.59	52.97	8,601.75	0.00	0.00	0.00
16,400.00	90.00	179.21	6,861.00	-8,701.58	54.35	8,701.75	0.00	0.00	0.00

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4896.00ft
Project:	Mustang	**MD Reference:**	Well @ 4896.00ft
Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,500.00	90.00	179.21	6,861.00	-8,801.57	55.72	8,801.75	0.00	0.00	0.00
16,600.00	90.00	179.21	6,861.00	-8,901.56	57.10	8,901.74	0.00	0.00	0.00
16,700.00	90.00	179.21	6,861.00	-9,001.55	58.47	9,001.74	0.00	0.00	0.00
16,800.00	90.00	179.21	6,861.00	-9,101.55	59.85	9,101.74	0.00	0.00	0.00
16,900.00	90.00	179.21	6,861.00	-9,201.54	61.23	9,201.74	0.00	0.00	0.00
17,000.00	90.00	179.21	6,861.00	-9,301.53	62.60	9,301.74	0.00	0.00	0.00
17,100.00	90.00	179.21	6,861.00	-9,401.52	63.98	9,401.73	0.00	0.00	0.00
17,200.00	90.00	179.21	6,861.00	-9,501.51	65.36	9,501.73	0.00	0.00	0.00
17,300.00	90.00	179.21	6,861.00	-9,601.50	66.73	9,601.73	0.00	0.00	0.00
17,400.00	90.00	179.21	6,861.00	-9,701.49	68.11	9,701.73	0.00	0.00	0.00
17,500.00	90.00	179.21	6,861.00	-9,801.48	69.49	9,801.73	0.00	0.00	0.00
17,599.20	90.00	179.21	6,861.00	-9,900.67	70.85	9,900.92	0.00	0.00	0.00
TD @ 17599.20' MD/6861.00' 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 DD17-730- - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,334,136.36	3,291,226.41	40.2459000	-104.4566900
Guttersen DD17-730- - plan hits target center - Point	0.00	0.00	6,054.60	958.62	-66.28	1,335,094.98	3,291,160.13	40.2485335	-104.4568870
Guttersen DD17-730- - plan hits target center - Point	0.00	0.00	6,861.00	-9,900.67	70.85	1,324,235.71	3,291,297.26	40.2187213	-104.4568534
Guttersen DD17-730- - plan hits target center - Point	0.00	0.00	6,861.00	344.98	-70.19	1,334,481.34	3,291,156.23	40.2468492	-104.4569269

Database:	EDMP	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Company:	Northern Region - DJ Basin	**TVD Reference:**	Well @ 4896.00ft
Project:	Mustang	**MD Reference:**	Well @ 4896.00ft
Site:	DD Section 08	**North Reference:**	Grid
Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Guttersen DD17-730		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
413.00	413.00	Pierre			
753.00	753.00	Upper Pierre Aquifer Top			
1,648.00	1,648.00	Upper Pierre Aquifer Base			
3,828.46	3,788.00	Parkman			
4,233.18	4,178.00	Sussex			
5,042.63	4,958.00	Shannon			
6,131.22	6,007.00	Teepee Buttes			
6,744.45	6,592.00	Sharon Springs			
6,773.09	6,615.00	Top A Chalk			
6,791.02	6,629.00	Top A Marl			
6,805.40	6,640.00	Top B Chalk			
6,867.52	6,685.00	Top B Marl			
6,969.16	6,749.00	Top C Chalk			
7,021.81	6,777.00	Top C Marl			
7,128.57	6,822.00	Top D Chalk			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
2,200.00	2,200.00	0.00	0.00	Build: 2°/100'
2,975.05	2,965.63	103.96	-7.19	Hold: 15.50° Inc, 356.04° Azm
6,180.62	6,054.60	958.62	-66.28	KOP: Build 9°/100' @ 6180.62' MD
7,352.58	6,861.00	344.98	-70.19	LP: 7352.58' MD, 90.00° Inc, 179.21° Azm
17,599.20	6,861.00	-9,900.67	70.85	TD @ 17599.20' MD/6861.00' TVD

Northern Region - DJ Basin

Mustang
DD Section 08
Guttersen DD17-730

Guttersen DD17-730
Plan #1

Anticollision Summary Report

02 October, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Project:	Mustang	**TVD Reference:**	Well @ 4896.00ft
Reference Site:	DD Section 08	**MD Reference:**	Well @ 4896.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen DD17-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Plan #1

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

Survey Tool Program **Date** 10/1/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	17,599.20	Plan #1 (Guttersen DD17-730)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
DD Section 05						
Guttersen 1N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,581.49	4,534.06	174.87	143.91	5.649	CC, ES, SF
Guttersen 27N-5HZ - Wellbore #1 - Wellbore #1 - As Dril	6,659.74	6,621.05	239.18	192.32	5.104	CC, ES, SF
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	3,754.08	3,599.30	630.10	604.71	24.818	CC, ES
Guttersen 2N-5HZ - Wellbore #1 - Wellbore #1 - As Drille	4,300.00	4,069.07	688.36	659.69	24.005	SF
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,695.14	6,651.26	2,376.85	2,331.86	52.833	CC
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,700.00	6,651.41	2,376.86	2,331.86	52.820	ES
Guttersen 3-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,850.00	6,693.01	2,382.27	2,336.92	52.526	SF
Guttersen 4-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	838.19	822.06	2,566.70	2,561.11	459.575	CC, ES
Guttersen 4-5HZ - Wellbore #1 - Wellbore #1 - As Drilled	6,350.00	6,350.00	3,310.19	3,264.11	71.835	SF
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	6,359.68	6,167.78	2,968.05	2,923.68	66.895	CC, ES
UPV 05-13J03 - Wellbore #1 - Wellbore #1 - As Drilled	6,900.00	6,694.28	3,015.32	2,967.93	63.625	SF
DD Section 08						
GUTTERSEN #31-8 (PA) - GUTTERSEN #31-8 - No Sur	7,813.62	6,845.00	657.79	495.90	4.063	CC, ES, SF
GUTTERSEN #32-8(PA) - GUTTERSEN #32-8 - No Surv	9,146.88	6,865.00	668.87	502.54	4.021	CC, ES, SF
GUTTERSEN #33-8 (PA) - GUTTERSEN #33-8 - No Sur	10,461.97	6,855.00	663.16	490.08	3.832	CC, ES, SF
GUTTERSEN #34-8(PA) - GUTTERSEN #34-8 - No Surv	11,769.88	6,845.00	604.39	423.03	3.333	CC, ES, SF
GUTTERSEN #42-8(PA) - GUTTERSEN #42-8 - No Surv	9,142.29	6,835.00	673.91	508.20	4.067	CC, ES, SF
GUTTERSEN #43-8 (PA) - GUTTERSEN #43-8 - No Sur	10,464.62	6,855.00	662.92	489.83	3.830	CC, ES, SF
Guttersen 08C - Wellbore #1 - Wellbore #1 - As Drilled	8,454.96	6,856.30	63.35	13.17	1.262	Level 3, CC, ES, SF
Guttersen 08D - Wellbore #1 - Wellbore #1 - As Drilled	11,143.84	6,871.96	34.07	-29.99	0.532	Level 1, CC, ES, SF
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	100.00	78.83	803.18	802.92	3,077.490	CC
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	2,900.00	2,878.90	820.03	801.07	43.239	ES
Guttersen 41-08 - Wellbore #1 - Wellbore #1 - As Drilled	7,653.50	6,834.57	890.14	842.64	18.741	SF
Guttersen 44-08 - Wellbore #1 - Wellbore #1 - As Drilled	11,832.95	6,875.15	720.82	560.39	4.493	CC, ES, SF
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	2,112.12	2,124.12	2,414.77	2,400.05	164.050	CC
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	2,200.00	2,208.72	2,414.78	2,399.44	157.440	ES
Guttersen DD08-774 - Guttersen DD08-774 - Plan #1	12,700.00	12,243.71	2,988.62	2,889.93	30.283	SF
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	2,112.55	2,123.55	2,437.10	2,422.38	165.573	CC
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	2,200.00	2,200.00	2,437.13	2,421.82	159.221	ES
Guttersen DD08-784 - Guttersen DD08-784 - Plan #1	12,900.00	12,287.22	3,670.62	3,569.85	36.425	SF
Guttersen DD17-715 - Guttersen DD17-715 - Plan #1	2,200.00	2,198.00	44.81	29.51	2.929	CC, ES
Guttersen DD17-715 - Guttersen DD17-715 - Plan #1	2,300.00	2,297.23	45.88	29.87	2.866	SF
Guttersen DD17-725 - Guttersen DD17-725 - Plan #1	2,200.00	2,201.00	22.63	7.32	1.478	Level 3, CC
Guttersen DD17-725 - Guttersen DD17-725 - Plan #1	2,300.00	2,301.02	23.07	7.04	1.439	Level 3, ES, SF
Guttersen DD17-735 - Guttersen DD17-735 - Plan #1	2,200.00	2,201.00	22.33	7.02	1.459	Level 3, CC
Guttersen DD17-735 - Guttersen DD17-735 - Plan #1	2,300.00	2,300.75	22.79	6.77	1.423	Level 3, ES, 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 DD17-730
Project:	Mustang	**TVD Reference:**	Well @ 4896.00ft
Reference Site:	DD Section 08	**MD Reference:**	Well @ 4896.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen DD17-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
DD Section 08						
Guttersen DD17-745 - Guttersen DD17-745 - Plan #1	2,200.00	2,203.00	47.46	32.14	3.098	CC, ES
Guttersen DD17-745 - Guttersen DD17-745 - Plan #1	2,300.00	2,301.89	48.54	32.52	3.030	SF
Guttersen DD17-750 - Guttersen DD17-750 - Plan #1	2,200.00	2,204.00	69.79	54.46	4.555	CC, ES
Guttersen DD17-750 - Guttersen DD17-750 - Plan #1	2,300.00	2,302.12	71.07	55.05	4.436	SF
Guttersen DD17-755 - Guttersen DD17-755 - Plan #1	7,361.85	7,351.88	1,644.61	1,595.44	33.447	CC
Guttersen DD17-755 - Guttersen DD17-755 - Plan #1	17,599.20	17,581.43	1,644.95	1,468.35	9.315	ES, SF
Guttersen DD17-765 - Guttersen DD17-765 - Plan #1	7,362.67	7,224.57	2,305.70	2,257.05	47.394	CC
Guttersen DD17-765 - Guttersen DD17-765 - Plan #1	17,599.20	17,444.33	2,306.18	2,129.41	13.046	ES, SF
Guttersen DD17-770 - Guttersen DD17-770 - Plan #1	2,112.12	2,124.12	2,392.44	2,377.72	162.533	CC
Guttersen DD17-770 - Guttersen DD17-770 - Plan #1	2,300.00	2,293.47	2,392.80	2,376.80	149.568	ES
Guttersen DD17-770 - Guttersen DD17-770 - Plan #1	17,599.20	17,619.53	2,629.75	2,452.83	14.864	SF
Guttersen State DD08-11 - Wellbore #1 - Wellbore #1 - A	10,444.21	6,867.79	1,903.63	1,843.65	31.738	CC, ES
Guttersen State DD08-11 - Wellbore #1 - Wellbore #1 - A	10,700.00	6,868.72	1,920.74	1,859.37	31.296	SF
Guttersen State DD08-13 - Wellbore #1 - Wellbore #1 - A	11,700.68	6,906.03	3,371.66	3,302.97	49.085	CC, ES
Guttersen State DD08-13 - Wellbore #1 - Wellbore #1 - A	12,500.00	6,912.68	3,465.10	3,391.75	47.237	SF
L F RANCHES #1(DA) - L F RANCHES #1 - No Surveys	2,893.07	2,845.33	607.04	540.03	9.059	CC
L F RANCHES #1(DA) - L F RANCHES #1 - No Surveys	7,581.66	6,820.00	666.94	505.82	4.139	ES, SF
DD Section 17						
Guttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,685.64	6,827.59	2,086.40	1,989.14	21.452	CC
Guttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,700.00	6,827.48	2,086.45	1,989.07	21.428	ES
Guttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	15,900.00	6,826.00	2,097.38	1,998.78	21.272	SF
Guttersen State DD17-78HN - Original Drilling - Original	17,599.20	6,842.18	3,312.88	3,202.89	30.121	CC, ES, SF
Guttersen State DD17-78HN - Original Drilling - ST01 - S	15,415.21	8,686.59	3,312.50	3,199.58	29.335	CC
Guttersen State DD17-78HN - Original Drilling - ST01 - S	15,600.00	15,600.00	3,314.47	3,089.11	14.707	ES, SF
Guttersen State DD17-79-1HN - Original Drilling - Origina	15,400.00	15,400.00	3,658.19	3,434.83	16.378	ES, SF
Guttersen State DD17-79-1HN - Original Drilling - Origina	16,162.43	7,900.00	3,636.43	3,527.54	33.397	CC
Guttersen State DD17-79HN - Original Drilling - Original	13,300.00	13,300.00	3,917.17	3,737.25	21.772	ES, SF
Guttersen State DD17-79HN - Original Drilling - Original	14,909.19	9,227.00	3,872.12	3,753.13	32.544	CC
Guttersen USX DD17-19 - Origianal Drilling - Original Dri	13,662.96	6,824.20	2,756.95	2,674.54	33.452	CC
Guttersen USX DD17-19 - Origianal Drilling - Original Dri	13,700.00	6,824.15	2,757.20	2,674.51	33.344	ES
Guttersen USX DD17-19 - Origianal Drilling - Original Dri	14,100.00	6,823.63	2,791.38	2,706.28	32.801	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Project:	Mustang	**TVD Reference:**	Well @ 4896.00ft
Reference Site:	DD Section 08	**MD Reference:**	Well @ 4896.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen DD17-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
DD Section 18						
Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled	16,560.64	6,889.56	5,370.86	5,267.67	52.049	CC
Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled	16,600.00	6,890.08	5,371.00	5,267.50	51.894	ES
Guttersen 18D - Wellbore #1 - Wellbore #1 - As Drilled	17,599.20	6,903.21	5,470.33	5,360.33	49.728	SF
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,195.44	6,869.94	7,255.72	7,147.35	66.955	CC
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,300.00	6,870.29	7,256.47	7,147.28	66.459	ES
Guttersen 24-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,599.20	6,871.28	7,266.94	7,155.49	65.206	SF
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,790.47	6,792.97	5,964.40	5,866.54	60.948	CC
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,793.04	5,964.41	5,866.48	60.901	ES
Guttersen 33-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,400.00	6,804.90	6,177.75	6,069.85	57.256	SF
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,229.96	6,795.70	6,045.12	5,937.06	55.947	CC
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,300.00	6,795.42	6,045.52	5,936.92	55.668	ES
Guttersen 34-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,599.20	6,794.17	6,056.38	5,945.55	54.645	SF
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,797.92	6,816.55	4,767.06	4,666.25	47.289	CC
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	15,800.00	6,816.55	4,767.06	4,666.23	47.281	ES
Guttersen 43-18 - Wellbore #1 - Wellbore #1 - As Drilled	16,800.00	6,820.82	4,871.24	4,764.07	45.455	SF
Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,165.83	6,829.68	4,701.43	4,593.83	43.694	CC
Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,200.00	6,829.49	4,701.56	4,593.69	43.587	ES
Guttersen 44-18 - Wellbore #1 - Wellbore #1 - As Drilled	17,599.20	6,827.30	4,721.36	4,610.67	42.651	SF
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,137.06	6,682.67	7,648.20	7,548.02	76.341	CC
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	16,200.00	6,682.65	7,648.46	7,547.78	75.971	ES
Karch Blue DD18-03J - Wellbore #1 - Wellbore #1 - As D	17,599.20	6,682.21	7,786.71	7,676.38	70.576	SF
Karch Blue DD18-12 - Original Drilling - Original Drilling -	15,751.35	6,812.80	8,782.49	8,679.58	85.343	CC
Karch Blue DD18-12 - Original Drilling - Original Drilling -	15,800.00	6,812.60	8,782.62	8,679.34	85.033	ES
Karch Blue DD18-12 - Original Drilling - Original Drilling -	17,599.20	6,805.12	8,974.78	8,859.10	77.583	SF
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,235.59	6,972.95	8,835.31	8,725.52	80.473	CC
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,300.00	6,971.77	8,835.55	8,725.25	80.108	ES
Karch Blue DD18-13 - Wellbore #1 - Wellbore #1 - As Dr	17,599.20	6,966.27	8,842.79	8,730.21	78.546	SF
DD Section 20						
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	17,599.20	6,761.56	3,303.70	3,196.77	30.894	CC, ES, SF
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	17,599.20	6,845.53	5,033.33	4,956.21	65.266	CC, ES, SF

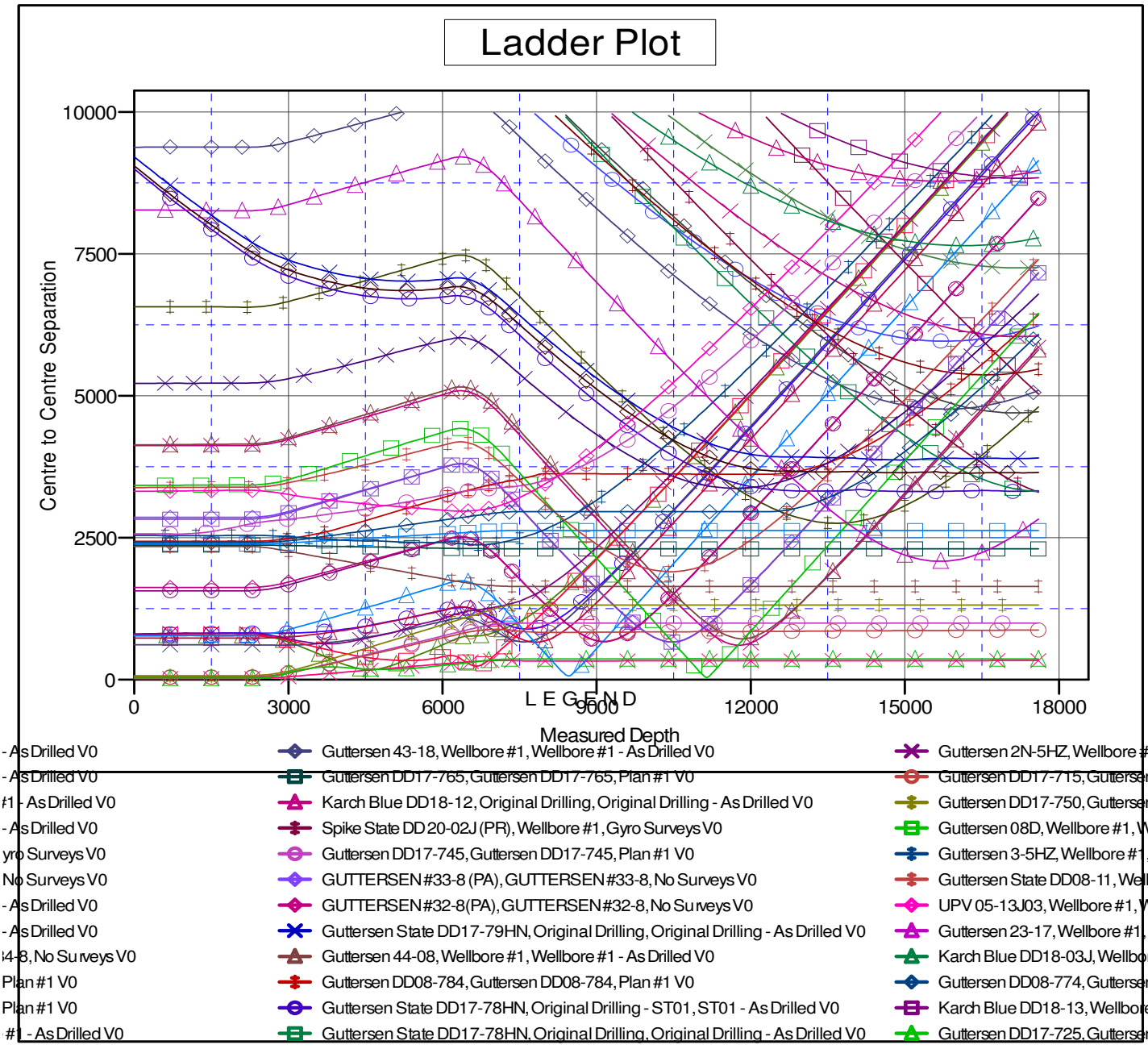
Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Project:	Mustang	**TVD Reference:**	Well @ 4896.00ft
Reference Site:	DD Section 08	**MD Reference:**	Well @ 4896.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen DD17-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4896.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen DD17-730
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.67°



Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	**Local Co-ordinate Reference:**	Well Guttersen DD17-730
Project:	Mustang	**TVD Reference:**	Well @ 4896.00ft
Reference Site:	DD Section 08	**MD Reference:**	Well @ 4896.00ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Guttersen DD17-730	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Guttersen DD17-730	**Database:**	EDMP
Reference Design:	Plan #1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to Well @ 4896.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Guttersen DD17-730
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.67°