

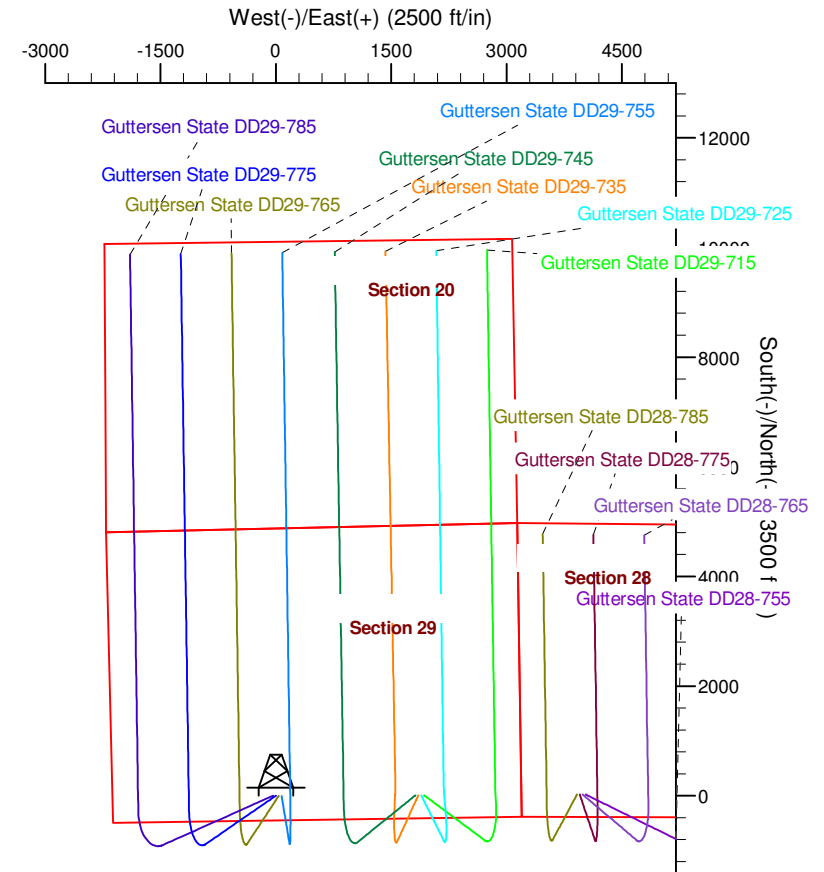
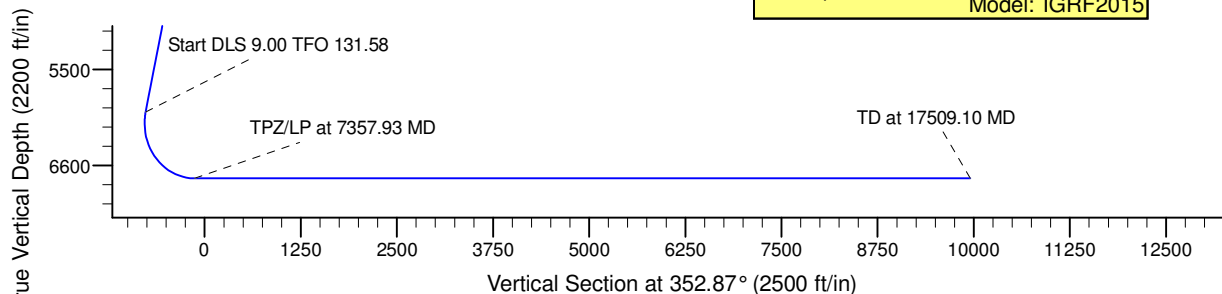
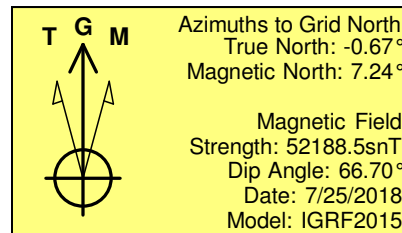
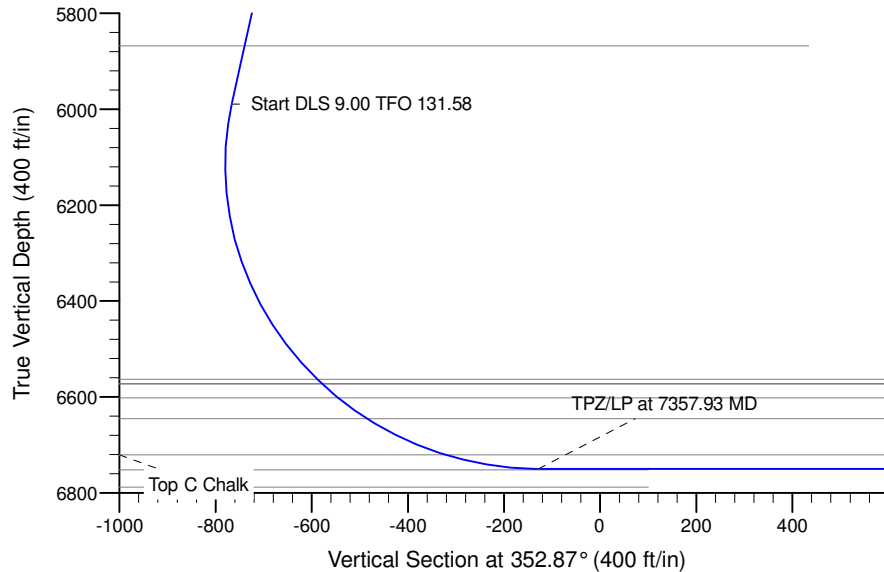
Project: Mustang
Site: DD Section 29
Well: Gutttersen State DD29-775
Wellbore: Wellbore #1
Design: Plan #1

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	2000.00	0.00	0.00	2000.00	0.00	0.00	0.00	0.00	0.00	
3	3007.79	20.16	226.01	2987.13	-121.85	-126.23	2.00	226.01	-105.24	
4	6205.81	20.16	226.01	5989.31	-887.18	-919.05	0.00	0.00	-766.25	
5	7357.93	90.00	359.39	6750.00	-270.82	-1128.50	9.00	131.58	-128.67	Gutttersen State DD29-775-TPZ
6	17509.10	90.00	359.39	6750.00	9879.78	-1235.74	0.00	0.00	9956.76	Gutttersen State DD29-775-BHL



WELL DETAILS: Gutttersen State DD29-775

	Northing	Easting	Latitude	Longitude
0.00	0.00	1313902.67	4855.00 40.1904137	-104.4634984

Plan: Plan #1 (Gutttersen State DD29-775/Wellbore #1)

Created By: Colby Baxter	Date: 11:47, August 20 2018
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

Northern Region - DJ Basin

Mustang

DD Section 29

Guttersen State DD29-775

Wellbore #1

Plan: Plan #1

Standard Survey Report

20 August, 2018

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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 29			
Site Position:		Northing:	1,317,717.97 usft	Latitude:	40.2008380
From:	Lat/Long	Easting:	3,291,067.61 usft	Longitude:	-104.4579500
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.67 °

Well		Guttersen State DD29-775				
Well Position	+N/-S	0.00 ft	Northing:	1,313,902.67 usft	Latitude:	40.1904137
	+E/-W	0.00 ft	Easting:	3,289,562.28 usft	Longitude:	-104.4634984
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,855.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	7/25/2018	7.92	66.70	52,188.52946984

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	352.87	

Survey Tool Program	Date	8/20/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,509.10	Plan #1 (Wellbore #1)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	
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	

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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)
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
1,700.00	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	2.00	226.01	2,099.98	-1.21	-1.26	-1.05	2.00	2.00	0.00
2,200.00	4.00	226.01	2,199.84	-4.85	-5.02	-4.19	2.00	2.00	0.00
2,300.00	6.00	226.01	2,299.45	-10.90	-11.29	-9.41	2.00	2.00	0.00
2,400.00	8.00	226.01	2,398.70	-19.36	-20.06	-16.72	2.00	2.00	0.00
2,500.00	10.00	226.01	2,497.47	-30.23	-31.31	-26.11	2.00	2.00	0.00
2,600.00	12.00	226.01	2,595.62	-43.48	-45.04	-37.55	2.00	2.00	0.00
2,700.00	14.00	226.01	2,693.06	-59.10	-61.22	-51.05	2.00	2.00	0.00
2,800.00	16.00	226.01	2,789.64	-77.08	-79.85	-66.57	2.00	2.00	0.00
2,900.00	18.00	226.01	2,885.27	-97.38	-100.88	-84.11	2.00	2.00	0.00
3,000.00	20.00	226.01	2,979.82	-119.99	-124.30	-103.64	2.00	2.00	0.00
3,007.79	20.16	226.01	2,987.13	-121.85	-126.23	-105.24	2.00	2.00	0.00
3,100.00	20.16	226.01	3,073.70	-143.92	-149.09	-124.30	0.00	0.00	0.00
3,200.00	20.16	226.01	3,167.57	-167.85	-173.88	-144.97	0.00	0.00	0.00
3,300.00	20.16	226.01	3,261.45	-191.78	-198.67	-165.64	0.00	0.00	0.00
3,400.00	20.16	226.01	3,355.32	-215.71	-223.46	-186.31	0.00	0.00	0.00
3,500.00	20.16	226.01	3,449.20	-239.64	-248.25	-206.98	0.00	0.00	0.00
3,600.00	20.16	226.01	3,543.07	-263.57	-273.04	-227.65	0.00	0.00	0.00
3,700.00	20.16	226.01	3,636.95	-287.50	-297.83	-248.32	0.00	0.00	0.00
3,800.00	20.16	226.01	3,730.83	-311.43	-322.62	-268.99	0.00	0.00	0.00
3,900.00	20.16	226.01	3,824.70	-335.37	-347.42	-289.65	0.00	0.00	0.00
4,000.00	20.16	226.01	3,918.58	-359.30	-372.21	-310.32	0.00	0.00	0.00
4,100.00	20.16	226.01	4,012.45	-383.23	-397.00	-330.99	0.00	0.00	0.00
4,200.00	20.16	226.01	4,106.33	-407.16	-421.79	-351.66	0.00	0.00	0.00
4,300.00	20.16	226.01	4,200.21	-431.09	-446.58	-372.33	0.00	0.00	0.00
4,400.00	20.16	226.01	4,294.08	-455.02	-471.37	-393.00	0.00	0.00	0.00
4,500.00	20.16	226.01	4,387.96	-478.95	-496.16	-413.67	0.00	0.00	0.00
4,600.00	20.16	226.01	4,481.83	-502.88	-520.95	-434.34	0.00	0.00	0.00
4,700.00	20.16	226.01	4,575.71	-526.82	-545.74	-455.01	0.00	0.00	0.00
4,800.00	20.16	226.01	4,669.59	-550.75	-570.54	-475.68	0.00	0.00	0.00
4,900.00	20.16	226.01	4,763.46	-574.68	-595.33	-496.35	0.00	0.00	0.00
5,000.00	20.16	226.01	4,857.34	-598.61	-620.12	-517.02	0.00	0.00	0.00
5,100.00	20.16	226.01	4,951.21	-622.54	-644.91	-537.69	0.00	0.00	0.00
5,200.00	20.16	226.01	5,045.09	-646.47	-669.70	-558.36	0.00	0.00	0.00

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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)
5,300.00	20.16	226.01	5,138.97	-670.40	-694.49	-579.03	0.00	0.00	0.00
5,400.00	20.16	226.01	5,232.84	-694.33	-719.28	-599.70	0.00	0.00	0.00
5,500.00	20.16	226.01	5,326.72	-718.27	-744.07	-620.37	0.00	0.00	0.00
5,600.00	20.16	226.01	5,420.59	-742.20	-768.86	-641.03	0.00	0.00	0.00
5,700.00	20.16	226.01	5,514.47	-766.13	-793.66	-661.70	0.00	0.00	0.00
5,800.00	20.16	226.01	5,608.35	-790.06	-818.45	-682.37	0.00	0.00	0.00
5,900.00	20.16	226.01	5,702.22	-813.99	-843.24	-703.04	0.00	0.00	0.00
6,000.00	20.16	226.01	5,796.10	-837.92	-868.03	-723.71	0.00	0.00	0.00
6,100.00	20.16	226.01	5,889.97	-861.85	-892.82	-744.38	0.00	0.00	0.00
6,200.00	20.16	226.01	5,983.85	-885.79	-917.61	-765.05	0.00	0.00	0.00
6,205.81	20.16	226.01	5,989.31	-887.18	-919.05	-766.25	0.00	0.00	0.00
6,300.00	15.80	249.90	6,078.99	-902.88	-942.81	-778.89	9.00	-4.62	25.36
6,400.00	15.40	283.79	6,175.51	-904.40	-968.54	-777.20	9.00	-0.40	33.90
6,500.00	19.57	310.76	6,271.02	-890.27	-994.18	-760.00	9.00	4.17	26.96
6,600.00	26.21	326.58	6,363.18	-860.85	-1,019.07	-727.72	9.00	6.64	15.82
6,700.00	33.90	336.00	6,449.73	-816.86	-1,042.62	-681.14	9.00	7.69	9.42
6,800.00	42.06	342.20	6,528.51	-759.37	-1,064.25	-621.42	9.00	8.16	6.20
6,900.00	50.46	346.67	6,597.61	-689.82	-1,083.42	-550.02	9.00	8.40	4.48
7,000.00	59.00	350.17	6,655.31	-609.91	-1,099.66	-468.71	9.00	8.54	3.50
7,100.00	67.61	353.09	6,700.20	-521.60	-1,112.57	-379.49	9.00	8.62	2.92
7,200.00	76.28	355.66	6,731.17	-427.08	-1,121.83	-284.54	9.00	8.66	2.57
7,300.00	84.96	358.05	6,747.46	-328.66	-1,127.21	-186.22	9.00	8.69	2.39
7,357.93	90.00	359.39	6,750.00	-270.82	-1,128.50	-128.67	9.00	8.70	2.33
7,400.00	90.00	359.39	6,750.00	-228.76	-1,128.94	-86.87	0.00	0.00	0.00
7,500.00	90.00	359.39	6,750.00	-128.76	-1,130.00	12.48	0.00	0.00	0.00
7,600.00	90.00	359.39	6,750.00	-28.77	-1,131.06	111.83	0.00	0.00	0.00
7,700.00	90.00	359.39	6,750.00	71.23	-1,132.11	211.18	0.00	0.00	0.00
7,800.00	90.00	359.39	6,750.00	171.22	-1,133.17	310.54	0.00	0.00	0.00
7,900.00	90.00	359.39	6,750.00	271.22	-1,134.23	409.89	0.00	0.00	0.00
8,000.00	90.00	359.39	6,750.00	371.21	-1,135.28	509.24	0.00	0.00	0.00
8,100.00	90.00	359.39	6,750.00	471.20	-1,136.34	608.59	0.00	0.00	0.00
8,200.00	90.00	359.39	6,750.00	571.20	-1,137.40	707.95	0.00	0.00	0.00
8,300.00	90.00	359.39	6,750.00	671.19	-1,138.45	807.30	0.00	0.00	0.00
8,400.00	90.00	359.39	6,750.00	771.19	-1,139.51	906.65	0.00	0.00	0.00
8,500.00	90.00	359.39	6,750.00	871.18	-1,140.57	1,006.00	0.00	0.00	0.00
8,600.00	90.00	359.39	6,750.00	971.18	-1,141.62	1,105.36	0.00	0.00	0.00
8,700.00	90.00	359.39	6,750.00	1,071.17	-1,142.68	1,204.71	0.00	0.00	0.00
8,800.00	90.00	359.39	6,750.00	1,171.17	-1,143.73	1,304.06	0.00	0.00	0.00
8,900.00	90.00	359.39	6,750.00	1,271.16	-1,144.79	1,403.41	0.00	0.00	0.00
9,000.00	90.00	359.39	6,750.00	1,371.15	-1,145.85	1,502.77	0.00	0.00	0.00
9,100.00	90.00	359.39	6,750.00	1,471.15	-1,146.90	1,602.12	0.00	0.00	0.00
9,200.00	90.00	359.39	6,750.00	1,571.14	-1,147.96	1,701.47	0.00	0.00	0.00
9,300.00	90.00	359.39	6,750.00	1,671.14	-1,149.02	1,800.82	0.00	0.00	0.00

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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)
9,400.00	90.00	359.39	6,750.00	1,771.13	-1,150.07	1,900.17	0.00	0.00	0.00
9,500.00	90.00	359.39	6,750.00	1,871.13	-1,151.13	1,999.53	0.00	0.00	0.00
9,600.00	90.00	359.39	6,750.00	1,971.12	-1,152.19	2,098.88	0.00	0.00	0.00
9,700.00	90.00	359.39	6,750.00	2,071.12	-1,153.24	2,198.23	0.00	0.00	0.00
9,800.00	90.00	359.39	6,750.00	2,171.11	-1,154.30	2,297.58	0.00	0.00	0.00
9,900.00	90.00	359.39	6,750.00	2,271.10	-1,155.36	2,396.94	0.00	0.00	0.00
10,000.00	90.00	359.39	6,750.00	2,371.10	-1,156.41	2,496.29	0.00	0.00	0.00
10,100.00	90.00	359.39	6,750.00	2,471.09	-1,157.47	2,595.64	0.00	0.00	0.00
10,200.00	90.00	359.39	6,750.00	2,571.09	-1,158.53	2,694.99	0.00	0.00	0.00
10,300.00	90.00	359.39	6,750.00	2,671.08	-1,159.58	2,794.35	0.00	0.00	0.00
10,400.00	90.00	359.39	6,750.00	2,771.08	-1,160.64	2,893.70	0.00	0.00	0.00
10,500.00	90.00	359.39	6,750.00	2,871.07	-1,161.69	2,993.05	0.00	0.00	0.00
10,600.00	90.00	359.39	6,750.00	2,971.06	-1,162.75	3,092.40	0.00	0.00	0.00
10,700.00	90.00	359.39	6,750.00	3,071.06	-1,163.81	3,191.76	0.00	0.00	0.00
10,800.00	90.00	359.39	6,750.00	3,171.05	-1,164.86	3,291.11	0.00	0.00	0.00
10,900.00	90.00	359.39	6,750.00	3,271.05	-1,165.92	3,390.46	0.00	0.00	0.00
11,000.00	90.00	359.39	6,750.00	3,371.04	-1,166.98	3,489.81	0.00	0.00	0.00
11,100.00	90.00	359.39	6,750.00	3,471.04	-1,168.03	3,589.17	0.00	0.00	0.00
11,200.00	90.00	359.39	6,750.00	3,571.03	-1,169.09	3,688.52	0.00	0.00	0.00
11,300.00	90.00	359.39	6,750.00	3,671.03	-1,170.15	3,787.87	0.00	0.00	0.00
11,400.00	90.00	359.39	6,750.00	3,771.02	-1,171.20	3,887.22	0.00	0.00	0.00
11,500.00	90.00	359.39	6,750.00	3,871.01	-1,172.26	3,986.58	0.00	0.00	0.00
11,600.00	90.00	359.39	6,750.00	3,971.01	-1,173.32	4,085.93	0.00	0.00	0.00
11,700.00	90.00	359.39	6,750.00	4,071.00	-1,174.37	4,185.28	0.00	0.00	0.00
11,800.00	90.00	359.39	6,750.00	4,171.00	-1,175.43	4,284.63	0.00	0.00	0.00
11,900.00	90.00	359.39	6,750.00	4,270.99	-1,176.48	4,383.99	0.00	0.00	0.00
12,000.00	90.00	359.39	6,750.00	4,370.99	-1,177.54	4,483.34	0.00	0.00	0.00
12,100.00	90.00	359.39	6,750.00	4,470.98	-1,178.60	4,582.69	0.00	0.00	0.00
12,200.00	90.00	359.39	6,750.00	4,570.98	-1,179.65	4,682.04	0.00	0.00	0.00
12,300.00	90.00	359.39	6,750.00	4,670.97	-1,180.71	4,781.39	0.00	0.00	0.00
12,400.00	90.00	359.39	6,750.00	4,770.96	-1,181.77	4,880.75	0.00	0.00	0.00
12,500.00	90.00	359.39	6,750.00	4,870.96	-1,182.82	4,980.10	0.00	0.00	0.00
12,600.00	90.00	359.39	6,750.00	4,970.95	-1,183.88	5,079.45	0.00	0.00	0.00
12,700.00	90.00	359.39	6,750.00	5,070.95	-1,184.94	5,178.80	0.00	0.00	0.00
12,800.00	90.00	359.39	6,750.00	5,170.94	-1,185.99	5,278.16	0.00	0.00	0.00
12,900.00	90.00	359.39	6,750.00	5,270.94	-1,187.05	5,377.51	0.00	0.00	0.00
13,000.00	90.00	359.39	6,750.00	5,370.93	-1,188.11	5,476.86	0.00	0.00	0.00
13,100.00	90.00	359.39	6,750.00	5,470.93	-1,189.16	5,576.21	0.00	0.00	0.00
13,200.00	90.00	359.39	6,750.00	5,570.92	-1,190.22	5,675.57	0.00	0.00	0.00
13,300.00	90.00	359.39	6,750.00	5,670.91	-1,191.28	5,774.92	0.00	0.00	0.00
13,400.00	90.00	359.39	6,750.00	5,770.91	-1,192.33	5,874.27	0.00	0.00	0.00
13,500.00	90.00	359.39	6,750.00	5,870.90	-1,193.39	5,973.62	0.00	0.00	0.00
13,600.00	90.00	359.39	6,750.00	5,970.90	-1,194.44	6,072.98	0.00	0.00	0.00

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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)
13,700.00	90.00	359.39	6,750.00	6,070.89	-1,195.50	6,172.33	0.00	0.00	0.00
13,800.00	90.00	359.39	6,750.00	6,170.89	-1,196.56	6,271.68	0.00	0.00	0.00
13,900.00	90.00	359.39	6,750.00	6,270.88	-1,197.61	6,371.03	0.00	0.00	0.00
14,000.00	90.00	359.39	6,750.00	6,370.88	-1,198.67	6,470.39	0.00	0.00	0.00
14,100.00	90.00	359.39	6,750.00	6,470.87	-1,199.73	6,569.74	0.00	0.00	0.00
14,200.00	90.00	359.39	6,750.00	6,570.86	-1,200.78	6,669.09	0.00	0.00	0.00
14,300.00	90.00	359.39	6,750.00	6,670.86	-1,201.84	6,768.44	0.00	0.00	0.00
14,400.00	90.00	359.39	6,750.00	6,770.85	-1,202.90	6,867.80	0.00	0.00	0.00
14,500.00	90.00	359.39	6,750.00	6,870.85	-1,203.95	6,967.15	0.00	0.00	0.00
14,600.00	90.00	359.39	6,750.00	6,970.84	-1,205.01	7,066.50	0.00	0.00	0.00
14,700.00	90.00	359.39	6,750.00	7,070.84	-1,206.07	7,165.85	0.00	0.00	0.00
14,800.00	90.00	359.39	6,750.00	7,170.83	-1,207.12	7,265.21	0.00	0.00	0.00
14,900.00	90.00	359.39	6,750.00	7,270.83	-1,208.18	7,364.56	0.00	0.00	0.00
15,000.00	90.00	359.39	6,750.00	7,370.82	-1,209.23	7,463.91	0.00	0.00	0.00
15,100.00	90.00	359.39	6,750.00	7,470.81	-1,210.29	7,563.26	0.00	0.00	0.00
15,200.00	90.00	359.39	6,750.00	7,570.81	-1,211.35	7,662.62	0.00	0.00	0.00
15,300.00	90.00	359.39	6,750.00	7,670.80	-1,212.40	7,761.97	0.00	0.00	0.00
15,400.00	90.00	359.39	6,750.00	7,770.80	-1,213.46	7,861.32	0.00	0.00	0.00
15,500.00	90.00	359.39	6,750.00	7,870.79	-1,214.52	7,960.67	0.00	0.00	0.00
15,600.00	90.00	359.39	6,750.00	7,970.79	-1,215.57	8,060.02	0.00	0.00	0.00
15,700.00	90.00	359.39	6,750.00	8,070.78	-1,216.63	8,159.38	0.00	0.00	0.00
15,800.00	90.00	359.39	6,750.00	8,170.77	-1,217.69	8,258.73	0.00	0.00	0.00
15,900.00	90.00	359.39	6,750.00	8,270.77	-1,218.74	8,358.08	0.00	0.00	0.00
16,000.00	90.00	359.39	6,750.00	8,370.76	-1,219.80	8,457.43	0.00	0.00	0.00
16,100.00	90.00	359.39	6,750.00	8,470.76	-1,220.86	8,556.79	0.00	0.00	0.00
16,200.00	90.00	359.39	6,750.00	8,570.75	-1,221.91	8,656.14	0.00	0.00	0.00
16,300.00	90.00	359.39	6,750.00	8,670.75	-1,222.97	8,755.49	0.00	0.00	0.00
16,400.00	90.00	359.39	6,750.00	8,770.74	-1,224.03	8,854.84	0.00	0.00	0.00
16,500.00	90.00	359.39	6,750.00	8,870.74	-1,225.08	8,954.20	0.00	0.00	0.00
16,600.00	90.00	359.39	6,750.00	8,970.73	-1,226.14	9,053.55	0.00	0.00	0.00
16,700.00	90.00	359.39	6,750.00	9,070.72	-1,227.19	9,152.90	0.00	0.00	0.00
16,800.00	90.00	359.39	6,750.00	9,170.72	-1,228.25	9,252.25	0.00	0.00	0.00
16,900.00	90.00	359.39	6,750.00	9,270.71	-1,229.31	9,351.61	0.00	0.00	0.00
17,000.00	90.00	359.39	6,750.00	9,370.71	-1,230.36	9,450.96	0.00	0.00	0.00
17,100.00	90.00	359.39	6,750.00	9,470.70	-1,231.42	9,550.31	0.00	0.00	0.00
17,200.00	90.00	359.39	6,750.00	9,570.70	-1,232.48	9,649.66	0.00	0.00	0.00
17,300.00	90.00	359.39	6,750.00	9,670.69	-1,233.53	9,749.02	0.00	0.00	0.00
17,400.00	90.00	359.39	6,750.00	9,770.69	-1,234.59	9,848.37	0.00	0.00	0.00
17,500.00	90.00	359.39	6,750.00	9,870.68	-1,235.65	9,947.72	0.00	0.00	0.00
17,509.10	90.00	359.39	6,750.00	9,879.78	-1,235.74	9,956.76	0.00	0.00	0.00

Noble Energy, Inc.

Survey Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Well:	Guttersen State DD29-775	North Reference:	Grid
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDMP

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 State DD29-7 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,313,902.67	3,289,562.28	40.1904137	-104.4634984
Guttersen State DD29-7 - plan hits target center - Point	0.00	0.00	5,989.30	-887.18	-919.05	1,313,015.50	3,288,643.23	40.1880079	-104.4668249
Guttersen State DD29-7 - plan hits target center - Point	0.00	0.00	6,750.00	9,879.78	-1,235.74	1,323,782.43	3,288,326.54	40.2175725	-104.4675096
Guttersen State DD29-7 - plan hits target center - Point	0.00	0.01	6,750.00	-270.82	-1,128.50	1,313,631.85	3,288,433.78	40.1897065	-104.4675488

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
778.00	778.00	Fox Hills			
778.00	778.00	Pierre			
925.00	925.00	Upper Pierre Aquifer Top			
1,687.00	1,687.00	Upper Pierre Aquifer Base			
3,828.95	3,758.00	Parkman			
4,439.33	4,331.00	Sussex			
5,148.77	4,997.00	Shannon			
6,076.59	5,868.00	Teepee Buttes			
6,848.00	6,563.00	Sharon Springs			
6,861.10	6,572.00	Top A Marl			
6,862.58	6,573.00	Top A Chalk			
6,906.94	6,602.00	Top B Chalk			
6,980.45	6,645.00	Top B Marl			
7,161.67	6,721.00	Top C Chalk			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2000	2000	0	0	Start Build 2.00
6206	5989	-122	-126	Start DLS 9.00 TFO 131.58
7358	6750	-887	-919	TPZ/LP at 7357.93 MD
17,509	6750	-271	-1129	TD at 17509.10 MD

Checked By: _____ Approved By: _____ Date: _____

Northern Region - DJ Basin

Mustang

DD Section 29

Guttersen State DD29-775

Wellbore #1

Plan #1

Anticollision Summary Report

10 September, 2018

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Gutttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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	8/20/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,509.10	Plan #1 (Wellbore #1)	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
DD Section 17						
Gutttersen 23-17 - Wellbore #1 - Wellbore #1 - As Drilled	17,509.10	6,723.14	2,490.00	2,422.32	36.795	CC, ES, SF
Gutttersen State DD17-78HN - Original Drilling - Original	17,509.10	6,734.29	427.05	336.93	4.739	CC, ES, SF
Gutttersen State DD17-78HN - Original Drilling - ST01 - S	17,509.10	6,434.00	652.22	570.83	8.013	CC, ES, SF
Gutttersen State DD17-79-1HN - Original Drilling - Original	17,509.10	6,401.00	863.89	767.40	8.953	CC, ES, SF
Gutttersen State DD17-79HN - Original Drilling - Original	17,509.10	6,466.13	1,049.93	947.69	10.269	CC, ES, SF
Gutttersen USX DD17-19 - Original Drilling - Original Dri	17,509.10	6,695.07	4,353.93	4,300.70	81.800	CC, ES, SF
DD Section 19						
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	15,986.53	6,741.10	2,075.05	1,975.11	20.762	CC
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	16,000.00	6,740.37	2,075.09	1,975.02	20.736	ES
Champlin 366 Amoco B1 (PR) - Wellbore #1 - Gyro Surv	16,200.00	6,729.30	2,085.98	1,984.33	20.522	SF
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	13,390.04	6,650.00	4,705.05	4,514.97	24.753	CC
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	13,400.00	6,650.00	4,705.06	4,514.90	24.742	ES
Champlin 366 Amoco D1 (PA) - Wellbore #1 - No Survey	14,100.00	6,650.00	4,758.31	4,562.97	24.359	SF
Gutttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys	16,986.39	6,685.08	2,996.31	2,888.57	27.811	CC
Gutttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys	17,000.00	6,684.85	2,996.34	2,888.48	27.780	ES
Gutttersen 31-19 (PR) - Wellbore #1 - Gyro Surveys	17,400.00	6,677.91	3,024.71	2,913.93	27.302	SF
Gutttersen 44-19 (SI) - Wellbore #1 - No Surveys	13,122.63	6,695.00	1,673.74	1,484.72	8.855	CC, ES
Gutttersen 44-19 (SI) - Wellbore #1 - No Surveys	13,200.00	6,695.00	1,675.53	1,485.83	8.833	SF
DD Section 20						
Spike State DD 20-02J (PR) - Wellbore #1 - Gyro Survey	16,800.73	6,689.28	128.21	21.82	1.205	Level 3, CC, ES, SF
Spike State DD 20-03J (PR) - Wellbore #1 - Gyro Survey	13,688.92	6,703.93	264.08	181.61	3.202	CC, 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 Gutttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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
Offset Well - Wellbore - Design						
DD Section 28						
Gutttersen 11-28 (PA) - Wellbore #1 - Gyro Surveys	11,916.99	6,761.82	4,974.20	4,904.23	71.098	CC, ES
Gutttersen 11-28 (PA) - Wellbore #1 - Gyro Surveys	13,300.00	6,777.38	5,162.86	5,085.52	66.754	SF
Gutttersen 12-28 (SI) - Wellbore #1 - Gyro Surveys	2,017.18	2,001.67	4,937.75	4,923.93	357.323	CC, ES
Gutttersen 12-28 (SI) - Wellbore #1 - Gyro Surveys	12,200.00	6,759.03	5,300.22	5,231.16	76.757	SF
Gutttersen 21-28 (PA) - Wellbore #1 - Gyro Surveys	11,846.28	6,662.96	6,268.26	6,199.19	90.746	CC
Gutttersen 21-28 (PA) - Wellbore #1 - Gyro Surveys	11,900.00	6,662.64	6,268.50	6,199.08	90.306	ES
Gutttersen 21-28 (PA) - Wellbore #1 - Gyro Surveys	14,100.00	6,648.69	6,661.10	6,579.96	82.099	SF
Gutttersen 22-28 (PA) - Wellbore #1 - Gyro Surveys	2,008.96	1,961.56	5,794.57	5,780.92	424.722	CC, ES
Gutttersen 22-28 (PA) - Wellbore #1 - Gyro Surveys	13,000.00	6,827.67	6,622.55	6,548.91	89.930	SF
Gutttersen 28A (PA) - Wellbore #1 - Gyro Surveys	11,201.79	6,713.67	5,610.23	5,545.20	86.279	CC, ES
Gutttersen 28A (PA) - Wellbore #1 - Gyro Surveys	13,100.00	6,727.56	5,922.64	5,847.69	79.023	SF
Gutttersen Federal YY4-755 - Wellbore #1 - Plan #1	2,000.00	1,965.00	4,031.94	4,018.19	293.288	CC, ES
Gutttersen Federal YY4-755 - Wellbore #1 - Plan #1	11,400.00	4,737.91	7,270.45	7,217.43	137.115	SF
Gutttersen Federal YY4-765 - Wellbore #1 - Plan #1	2,000.00	1,970.00	3,993.98	3,980.21	290.148	CC, ES
Gutttersen Federal YY4-765 - Wellbore #1 - Plan #1	10,400.00	5,707.30	6,434.89	6,381.91	121.449	SF
Gutttersen Federal YY4-775 - Wellbore #1 - Plan #1	2,000.00	1,975.00	3,956.98	3,943.20	287.087	CC, ES
Gutttersen Federal YY4-775 - Wellbore #1 - Plan #1	6,600.00	7,204.22	5,155.56	5,106.85	105.849	SF
Gutttersen Federal YY4-785 - Wellbore #1 - Plan #1	2,000.00	1,980.00	3,919.02	3,905.22	283.964	CC, ES
Gutttersen Federal YY4-785 - Wellbore #1 - Plan #1	6,650.00	7,041.57	4,541.71	4,492.92	93.080	SF
Gutttersen State DD28-755 - Wellbore #1 - Plan #1	2,000.00	1,948.00	5,413.95	5,400.26	395.570	CC, ES
Gutttersen State DD28-755 - Wellbore #1 - Plan #1	13,900.00	12,105.26	6,821.07	6,713.88	63.635	SF
Gutttersen State DD28-765 - Wellbore #1 - Plan #1	2,473.20	3,063.62	5,356.37	5,337.42	282.624	CC
Gutttersen State DD28-765 - Wellbore #1 - Plan #1	2,500.00	3,090.24	5,356.46	5,337.32	279.889	ES
Gutttersen State DD28-765 - Wellbore #1 - Plan #1	13,600.00	12,048.97	6,108.01	6,003.12	58.231	SF
Gutttersen State DD28-775 - Wellbore #1 - Plan #1	5,440.61	6,841.43	5,139.32	5,094.29	114.127	CC
Gutttersen State DD28-775 - Wellbore #1 - Plan #1	5,500.00	6,866.73	5,139.59	5,094.24	113.324	ES
Gutttersen State DD28-775 - Wellbore #1 - Plan #1	13,300.00	12,268.39	5,398.62	5,295.38	52.291	SF
Gutttersen State DD28-785 - Wellbore #1 - Plan #1	5,665.09	7,250.00	4,514.06	4,465.85	93.621	CC
Gutttersen State DD28-785 - Wellbore #1 - Plan #1	5,700.00	7,250.00	4,514.20	4,465.84	93.341	ES
Gutttersen State DD28-785 - Wellbore #1 - Plan #1	13,000.00	12,462.95	4,696.72	4,595.03	46.185	SF
State 27 (SI) - Wellbore #1 - Gyro Surveys	2,002.50	1,935.95	4,586.79	4,573.24	338.564	CC, ES
State 27 (SI) - Wellbore #1 - Gyro Surveys	10,800.00	6,900.00	6,017.94	5,957.20	99.074	SF

Noble Energy, Inc.

Anticollision Summary Report

Company:	Northern Region - DJ Basin	Local Co-ordinate Reference:	Well Guttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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
Offset Well - Wellbore - Design						
DD Section 29						
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro	11,403.94	6,813.90	2,601.10	2,534.05	38.794	CC, ES
Champlin 366 Amoco C UT 1 (PR) - Wellbore #1 - Gyro	11,800.00	6,819.25	2,631.08	2,562.19	38.193	SF
Champlin Amoco 1 (PA) - Wellbore #1 - No Surveys	8,455.34	6,727.01	328.14	166.15	2.026	CC, ES, SF
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	10,490.94	6,861.74	3,533.54	3,443.38	39.193	CC
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	10,500.00	6,861.46	3,533.55	3,443.35	39.175	ES
Guttersen 42-29 (PR) - Wellbore #1 - Gyro Surveys	11,000.00	6,846.00	3,569.99	3,477.57	38.628	SF
Guttersen Federal YY5-715 - Guttersen Federal YY5-715	2,000.00	1,985.00	1,934.75	1,920.93	140.006	CC, ES
Guttersen Federal YY5-715 - Guttersen Federal YY5-715	8,400.00	6,004.56	3,935.81	3,889.00	84.066	SF
Guttersen Federal YY5-725 - Guttersen Federal YY5-725	2,000.00	2,005.00	1,897.89	1,884.00	136.630	CC, ES
Guttersen Federal YY5-725 - Guttersen Federal YY5-725	6,650.00	7,140.08	3,243.56	3,194.78	66.490	SF
Guttersen Federal YY5-735 - Guttersen Federal YY5-735	2,000.00	2,005.00	1,860.04	1,846.15	133.905	CC, ES
Guttersen Federal YY5-735 - Guttersen Federal YY5-735	6,600.00	7,426.79	2,611.68	2,562.09	52.668	SF
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	2,756.20	3,143.70	1,807.03	1,786.96	90.051	CC
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	2,800.00	3,187.03	1,807.31	1,786.94	88.720	ES
Guttersen Federal YY5-745 - Guttersen Federal YY5-745	6,600.00	7,421.71	1,985.11	1,934.49	39.213	SF
Guttersen Federal YY5-755 - Guttersen Federal YY5-755	2,000.00	2,005.00	167.50	153.61	12.058	CC, ES
Guttersen Federal YY5-755 - Guttersen Federal YY5-755	2,200.00	2,204.84	174.10	158.82	11.393	SF
Guttersen Federal YY5-765 - Guttersen Federal YY5-765	2,000.00	2,005.00	154.39	140.50	11.115	CC, ES
Guttersen Federal YY5-765 - Guttersen Federal YY5-765	2,200.00	2,204.84	160.35	145.07	10.493	SF
Guttersen Federal YY5-775 - Guttersen Federal YY5-775	7,115.74	7,075.21	91.99	40.95	1.802	CC, ES, SF
Guttersen Federal YY5-785 - Guttersen Federal YY5-785	2,000.00	2,005.00	153.93	140.04	11.082	CC, ES
Guttersen Federal YY5-785 - Guttersen Federal YY5-785	2,300.00	2,294.28	162.36	146.44	10.195	SF
Guttersen State DD29-715 - Wellbore #1 - Plan #1	2,000.00	1,985.00	1,928.65	1,914.83	139.564	CC, ES
Guttersen State DD29-715 - Wellbore #1 - Plan #1	17,509.10	17,394.90	3,982.57	3,805.04	22.433	SF
Guttersen State DD29-725 - Wellbore #1 - Plan #1	2,000.00	1,995.00	1,890.66	1,876.80	136.461	CC, ES
Guttersen State DD29-725 - Wellbore #1 - Plan #1	17,509.10	17,208.75	3,324.96	3,147.41	18.727	SF
Guttersen State DD29-735 - Wellbore #1 - Plan #1	2,006.10	2,013.95	1,853.65	1,839.71	132.962	CC
Guttersen State DD29-735 - Wellbore #1 - Plan #1	2,100.00	2,131.95	1,854.15	1,839.49	126.497	ES
Guttersen State DD29-735 - Wellbore #1 - Plan #1	17,509.10	17,342.25	2,662.65	2,484.78	14.969	SF
Guttersen State DD29-745 - Wellbore #1 - Plan #1	2,843.13	3,228.94	1,782.26	1,761.60	86.297	CC
Guttersen State DD29-745 - Wellbore #1 - Plan #1	2,900.00	3,285.78	1,782.65	1,761.59	84.633	ES
Guttersen State DD29-745 - Wellbore #1 - Plan #1	17,509.10	17,348.36	2,005.12	1,828.47	11.351	SF
Guttersen State DD29-755 - Wellbore #1 - Plan #1	2,000.00	2,005.00	75.02	61.13	5.401	CC, ES
Guttersen State DD29-755 - Wellbore #1 - Plan #1	2,100.00	2,104.63	76.51	61.94	5.251	SF
Guttersen State DD29-765 - Wellbore #1 - Plan #1	2,007.12	2,012.19	38.01	24.07	2.727	CC
Guttersen State DD29-765 - Wellbore #1 - Plan #1	2,100.00	2,105.58	38.45	23.88	2.639	ES
Guttersen State DD29-765 - Wellbore #1 - Plan #1	2,200.00	2,206.10	39.96	24.74	2.625	SF
Guttersen State DD29-785 - Wellbore #1 - Plan #1	2,014.67	2,009.67	36.98	23.03	2.650	CC
Guttersen State DD29-785 - Wellbore #1 - Plan #1	2,200.00	2,192.90	37.58	22.40	2.476	ES
Guttersen State DD29-785 - Wellbore #1 - Plan #1	2,400.00	2,390.72	40.09	23.63	2.437	SF

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 Gutttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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
Offset Well - Wellbore - Design						
DD Section 30						
Gutttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys	11,786.90	6,665.52	5,725.45	5,656.75	83.341	CC
Gutttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys	11,800.00	6,665.34	5,725.47	5,656.67	83.225	ES
Gutttersen 11-30 (PR) - Wellbore #1 - Gyro Surveys	14,000.00	6,629.84	6,138.20	6,055.65	74.356	SF
Gutttersen 12-30 (PR) - Wellbore #1 - Gyro Surveys	10,370.65	6,634.47	5,809.79	5,750.24	97.555	CC
Gutttersen 12-30 (PR) - Wellbore #1 - Gyro Surveys	10,400.00	6,633.52	5,809.87	5,750.13	97.256	ES
Gutttersen 12-30 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,536.46	6,335.64	6,261.30	85.221	SF
Gutttersen 22-30 (PR) - Wellbore #1 - Gyro Surveys	10,436.65	6,810.71	4,397.82	4,337.69	73.141	CC, ES
Gutttersen 22-30 (PR) - Wellbore #1 - Gyro Surveys	12,500.00	12,500.00	4,857.74	4,766.04	52.970	SF
Gutttersen 30 A (PR) - Wellbore #1 - Gyro Surveys	11,067.52	6,713.82	4,998.57	4,934.55	78.080	CC
Gutttersen 30 A (PR) - Wellbore #1 - Gyro Surveys	11,100.00	6,714.02	4,998.68	4,934.43	77.806	ES
Gutttersen 30 A (PR) - Wellbore #1 - Gyro Surveys	16,200.00	16,200.00	7,164.22	7,047.16	61.202	SF
Gutttersen State DD30-715 - Gutttersen State DD30-715 -	7,353.41	7,255.16	1,320.30	1,270.33	26.419	CC
Gutttersen State DD30-715 - Gutttersen State DD30-715 -	17,509.10	17,410.84	1,340.43	1,162.61	7.538	ES, SF
Gutttersen State DD30-725 - Gutttersen State DD30-725 -	7,357.63	7,132.05	1,981.53	1,931.88	39.910	CC
Gutttersen State DD30-725 - Gutttersen State DD30-725 -	17,509.10	17,269.51	1,982.65	1,804.42	11.125	ES, SF
Gutttersen State DD30-735 - Gutttersen State DD30-735 -	6,849.26	6,200.93	2,610.52	2,562.59	54.469	CC
Gutttersen State DD30-735 - Gutttersen State DD30-735 -	17,509.10	17,436.50	2,640.39	2,463.02	14.886	ES, SF
Gutttersen State DD30-745 - Gutttersen State DD30-745 -	3,911.14	3,132.58	2,909.45	2,885.23	120.125	CC, ES
Gutttersen State DD30-745 - Gutttersen State DD30-745 -	17,509.10	17,588.29	3,301.44	3,124.50	18.658	SF
Gutttersen State DD30-755 - Gutttersen State DD30-755 -	17,480.44	17,383.05	4,038.57	3,861.14	22.762	CC
Gutttersen State DD30-755 - Gutttersen State DD30-755 -	17,509.10	17,383.05	4,038.67	3,860.99	22.730	ES, SF
Gutttersen State DD30-766 - Gutttersen State DD30-766 -	6,975.75	5,626.29	4,657.64	4,611.71	101.410	CC
Gutttersen State DD30-766 - Gutttersen State DD30-766 -	17,509.10	17,329.34	4,747.73	4,571.07	26.875	ES, SF
Gutttersen State DD30-775 - Gutttersen State DD30-775 -	4,204.00	2,900.00	4,805.05	4,780.46	195.459	CC, ES
Gutttersen State DD30-775 - Gutttersen State DD30-775 -	17,509.10	17,481.59	5,357.11	5,179.86	30.224	SF
Gutttersen State DD30-785 - Gutttersen State DD30-785 -	3,956.18	2,639.47	4,873.19	4,850.50	214.822	CC
Gutttersen State DD30-785 - Gutttersen State DD30-785 -	4,000.00	2,654.69	4,873.32	4,850.42	212.864	ES
Gutttersen State DD30-785 - Gutttersen State DD30-785 -	17,509.10	17,796.63	5,997.51	5,820.63	33.907	SF
Gutttersen YY06-756 - Gutttersen YY06-756 - Plan #1	7,603.98	5,913.54	4,086.02	4,039.30	87.458	CC, ES
Gutttersen YY06-756 - Gutttersen YY06-756 - Plan #1	9,100.00	5,742.48	4,347.91	4,296.66	84.829	SF
Gutttersen YY06-766 - Gutttersen YY06-766 - Plan #1	7,610.72	5,722.57	4,590.85	4,544.19	98.394	CC, ES
Gutttersen YY06-766 - Gutttersen YY06-766 - Plan #1	9,600.00	5,629.36	5,002.44	4,948.71	93.102	SF
Gutttersen YY06-775 - Gutttersen YY06-775 - Plan #1	4,060.62	2,800.00	4,812.92	4,789.18	202.767	CC, ES
Gutttersen YY06-775 - Gutttersen YY06-775 - Plan #1	10,200.00	4,826.27	5,671.54	5,616.96	103.904	SF
Gutttersen YY06-785 - Gutttersen YY06-785 - Plan #1	3,974.71	2,700.00	4,874.71	4,851.66	211.522	CC
Gutttersen YY06-785 - Gutttersen YY06-785 - Plan #1	4,000.00	2,700.00	4,874.77	4,851.64	210.749	ES
Gutttersen YY06-785 - Gutttersen YY06-785 - Plan #1	10,800.00	4,202.74	6,137.18	6,081.79	110.801	SF
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	9,247.14	6,641.00	5,857.89	5,694.52	35.857	CC
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	9,300.00	6,641.00	5,858.13	5,694.50	35.802	ES
Karch Blue DD 30-12 (PA) - Wellbore #1 - No Surveys	10,400.00	6,641.00	5,970.26	5,800.62	35.195	SF
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	7,744.70	6,647.00	4,344.95	4,186.24	27.377	CC, ES
Karch Blue DD 30-14 (PA) - Wellbore #1 - No Surveys	8,000.00	6,647.00	4,352.45	4,193.27	27.344	SF
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	8,691.53	6,646.00	4,689.42	4,528.25	29.096	CC
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	8,700.00	6,646.00	4,689.43	4,528.23	29.090	ES
Karch Blue DD 30-3 J (PA) - Wellbore #1 - No Surveys	9,400.00	6,646.00	4,742.64	4,578.31	28.862	SF
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	11,440.61	6,600.00	4,410.73	4,344.42	66.515	CC
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	11,500.00	6,600.00	4,411.13	4,344.38	66.087	ES
L F Ranch 2-30 (PR) - Wellbore #1 - Gyro Surveys	12,900.00	6,572.78	4,645.78	4,570.28	61.533	SF
State 19 (PA) - Wellbore #1 - NO Surveys	11,079.21	6,697.00	2,189.00	2,014.13	12.518	CC
State 19 (PA) - Wellbore #1 - NO Surveys	11,100.00	6,697.00	2,189.10	2,014.07	12.507	ES
State 19 (PA) - Wellbore #1 - NO Surveys	11,300.00	6,697.00	2,200.11	2,023.64	12.468	SF

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 State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Guttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	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 32						
Childrens Hospital 1 (PA) - Wellbore #1 - No Surveys	3,332.18	3,239.66	2,617.50	2,541.10	34.261	CC
Childrens Hospital 1 (PA) - Wellbore #1 - No Surveys	3,800.00	3,678.83	2,622.46	2,535.44	30.138	ES
Childrens Hospital 1 (PA) - Wellbore #1 - No Surveys	6,600.00	6,311.18	2,900.27	2,749.19	19.197	SF
Guttersen 43-32 (SI) - Wellbore #1 - No Surveys	4,486.84	4,300.60	4,537.93	4,435.66	44.372	CC
Guttersen 43-32 (SI) - Wellbore #1 - No Surveys	5,400.00	5,157.84	4,548.83	4,425.54	36.897	ES
Guttersen 43-32 (SI) - Wellbore #1 - No Surveys	6,750.00	6,415.22	4,742.47	4,588.86	30.873	SF
Gutterson 33-32 (PA) - Wellbore #1 - Gyro Surveys	6,210.07	5,850.72	3,731.56	3,687.69	85.058	CC, ES
Gutterson 33-32 (PA) - Wellbore #1 - Gyro Surveys	6,700.00	6,450.52	3,868.90	3,821.33	81.341	SF
L F Ranches A 1 (PA) - Wellbore #1 - No Surveys	6,340.57	6,013.12	3,857.25	3,713.33	26.800	CC
L F Ranches A 1 (PA) - Wellbore #1 - No Surveys	6,350.00	6,022.23	3,857.32	3,713.18	26.759	ES
L F Ranches A 1 (PA) - Wellbore #1 - No Surveys	6,650.00	6,302.29	3,931.22	3,780.53	26.089	SF
DD Section 33						
Guttersen 23-33 (SI) - Wellbore #1 - No Surveys	2,000.00	1,915.00	6,537.01	6,491.77	144.507	CC
Guttersen 23-33 (SI) - Wellbore #1 - No Surveys	2,300.00	2,214.45	6,540.02	6,487.79	125.218	ES
Guttersen 23-33 (SI) - Wellbore #1 - No Surveys	7,000.00	6,570.31	7,176.94	7,020.00	45.730	SF
Guttersen 24-33 (SI) - Wellbore #1 - Gyro Surveys	2,096.47	2,011.04	7,335.03	7,320.92	519.623	CC
Guttersen 24-33 (SI) - Wellbore #1 - Gyro Surveys	2,300.00	2,193.26	7,335.65	7,320.23	475.562	ES
Guttersen 24-33 (SI) - Wellbore #1 - Gyro Surveys	6,900.00	6,514.47	7,752.73	7,704.65	161.246	SF
L F Ranch 1-33 (SI) - Wellbore #1 - No Surveys	2,865.09	2,760.01	6,303.15	6,238.07	96.855	CC
L F Ranch 1-33 (SI) - Wellbore #1 - No Surveys	4,100.00	3,920.45	6,317.27	6,224.21	67.881	ES
L F Ranch 1-33 (SI) - Wellbore #1 - No Surveys	6,900.00	6,505.61	6,655.75	6,500.12	42.767	SF
UPV 33-5J3 (SI) - Wellbore #1 - Gyro Surveys	2,023.45	1,966.62	4,687.42	4,673.70	341.804	CC
UPV 33-5J3 (SI) - Wellbore #1 - Gyro Surveys	2,100.00	2,051.22	4,687.74	4,673.47	328.459	ES
UPV 33-5J3 (SI) - Wellbore #1 - Gyro Surveys	9,800.00	9,800.00	6,736.30	6,672.98	106.379	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 Gutttersen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutttersen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4885.00ft

Offset Depths are relative to Offset Datum

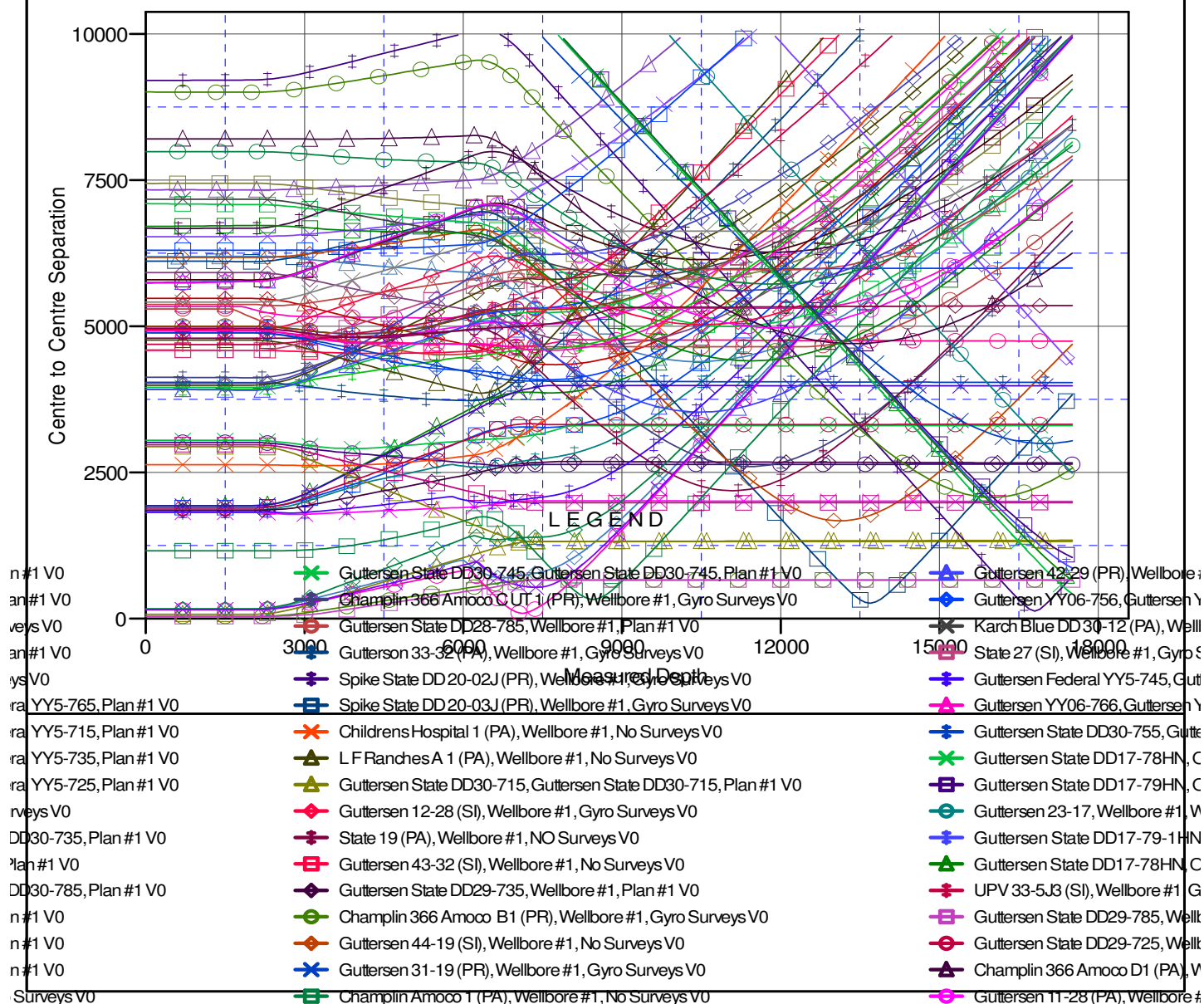
Central Meridian is -105.5000000

Coordinates are relative to: Gutttersen State DD29-775

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.67°

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 Gutteresen State DD29-775
Project:	Mustang	TVD Reference:	KB @ 4885.00ft
Reference Site:	DD Section 29	MD Reference:	KB @ 4885.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Gutteresen State DD29-775	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDMP
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KB @ 4885.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -105.5000000

Coordinates are relative to: Gutteresen State DD29-775
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.67°

