

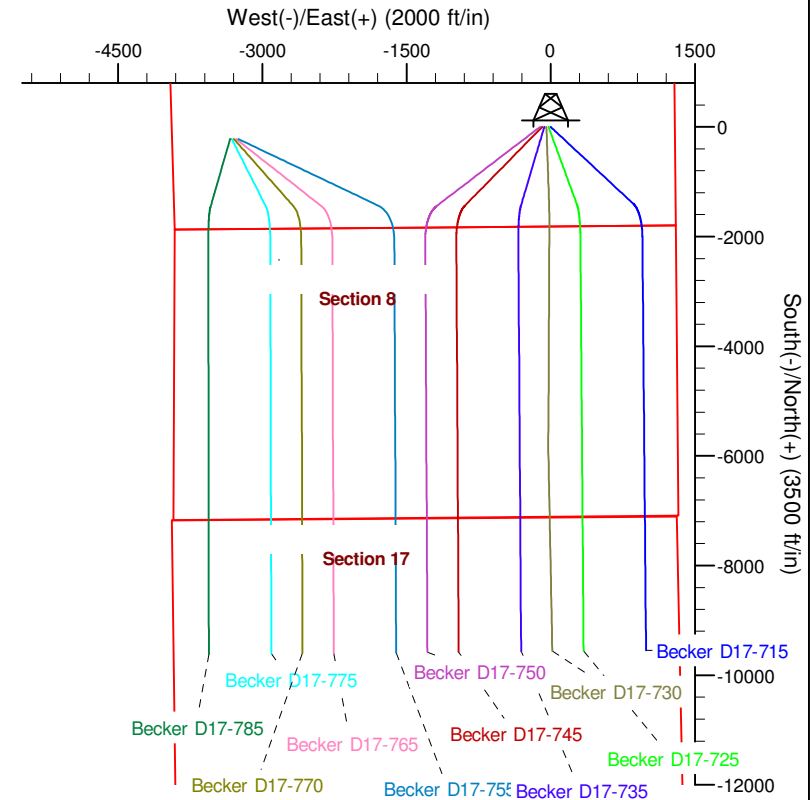
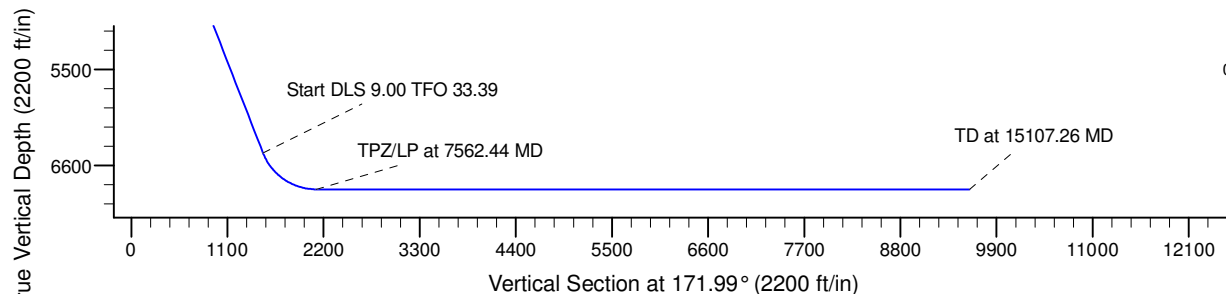
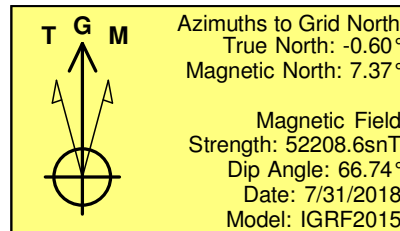
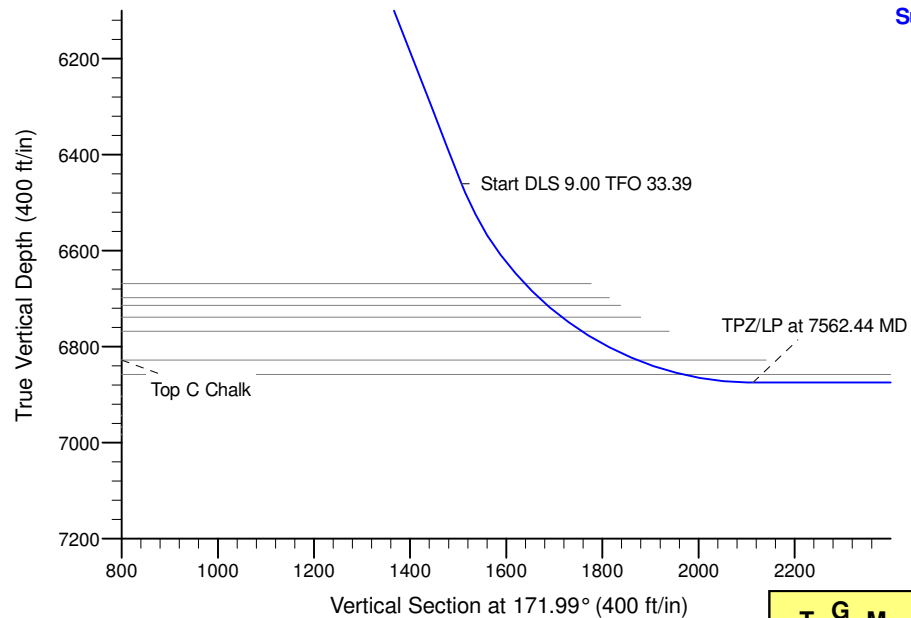
Project: Mustang  
Site: D Section 08  
Well: Becker D17-715  
Wellbore: Wellbore #1  
Design: Plan #1

# 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	3148.36	22.97	148.46	3117.85	-193.54	118.80	2.00	148.46	208.21	
4	6778.95	22.97	148.46	6460.64	-1400.90	859.92	0.00	0.00	1507.04	
5	7562.44	90.00	179.71	6875.00	-2000.59	954.05	9.00	33.39	2114.00	Becker D17-715 TPZ
6	15107.26	90.00	179.71	6875.00	-9545.31	992.00	0.00	0.00	9590.42	Becker D17-715 BHL



## WELL DETAILS: Becker D17-715

	Northing	Easting	Latitude	Longitude
0.00	0.00	1336071.87	4775.00 40.2521800	-104.5700500

## Plan: Plan #1 (Becker D17-715/Wellbore #1)

Created By: Colby Baxter	Date: 8:35, October 02 2018
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

# **Northern Region - DJ Basin**

**Mustang**

**D Section 08**

**Becker D17-715**

**Wellbore #1**

**Plan: Plan #1**

## **Standard Survey Report**

**02 October, 2018**

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	EDMP

<b>Project</b>	Mustang, Weld County Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		D Section 08					
Site Position:		Northing:	1,334,012.94	usft	Latitude:	40.2466118	
From:	Map	Easting:	3,256,643.55	usft	Longitude:	-104.5805772	
Position Uncertainty:	0.00	ft	Slot Radius:	13.200	in	Grid Convergence:	0.59 °

Well		Becker D17-715				
Well Position	+N/-S	0.00 ft	Northing:	1,336,071.87 usft	Latitude:	40.2521800
	+E/-W	0.00 ft	Easting:	3,259,560.68 usft	Longitude:	-104.5700500
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,775.00 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	7/31/2018	7.98	66.74	52,208.61622802

<b>Design</b>	Plan #1				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00	
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	171.99	

<b>Survey Tool Program</b>	<b>Date</b>	10/1/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	15,107.26	Plan #1 (Wellbore #1)	2_MWD+IFR1+MS	A008Mb: IFR dec & multi-station analysis	

<b>Planned Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	148.46	2,099.98	-1.49	0.91	1.60	2.00	2.00	0.00
2,200.00	4.00	148.46	2,199.84	-5.95	3.65	6.40	2.00	2.00	0.00
2,300.00	6.00	148.46	2,299.45	-13.37	8.21	14.39	2.00	2.00	0.00
2,400.00	8.00	148.46	2,398.70	-23.76	14.59	25.56	2.00	2.00	0.00
2,500.00	10.00	148.46	2,497.47	-37.09	22.77	39.90	2.00	2.00	0.00
2,600.00	12.00	148.46	2,595.62	-53.35	32.75	57.40	2.00	2.00	0.00
2,700.00	14.00	148.46	2,693.06	-72.52	44.52	78.02	2.00	2.00	0.00
2,800.00	16.00	148.46	2,789.64	-94.58	58.06	101.75	2.00	2.00	0.00
2,900.00	18.00	148.46	2,885.27	-119.50	73.35	128.55	2.00	2.00	0.00
3,000.00	20.00	148.46	2,979.82	-147.24	90.38	158.40	2.00	2.00	0.00
3,100.00	22.00	148.46	3,073.17	-177.78	109.13	191.25	2.00	2.00	0.00
3,148.36	22.97	148.46	3,117.85	-193.54	118.80	208.21	2.00	2.00	0.00
3,200.00	22.97	148.46	3,165.40	-210.72	129.34	226.68	0.00	0.00	0.00
3,300.00	22.97	148.46	3,257.47	-243.97	149.76	262.46	0.00	0.00	0.00
3,400.00	22.97	148.46	3,349.54	-277.23	170.17	298.23	0.00	0.00	0.00
3,500.00	22.97	148.46	3,441.62	-310.48	190.58	334.00	0.00	0.00	0.00
3,600.00	22.97	148.46	3,533.69	-343.74	211.00	369.78	0.00	0.00	0.00
3,700.00	22.97	148.46	3,625.76	-376.99	231.41	405.55	0.00	0.00	0.00
3,800.00	22.97	148.46	3,717.84	-410.25	251.82	441.33	0.00	0.00	0.00
3,900.00	22.97	148.46	3,809.91	-443.50	272.24	477.10	0.00	0.00	0.00
4,000.00	22.97	148.46	3,901.98	-476.76	292.65	512.88	0.00	0.00	0.00
4,100.00	22.97	148.46	3,994.05	-510.01	313.06	548.65	0.00	0.00	0.00
4,200.00	22.97	148.46	4,086.13	-543.27	333.48	584.43	0.00	0.00	0.00
4,300.00	22.97	148.46	4,178.20	-576.52	353.89	620.20	0.00	0.00	0.00
4,400.00	22.97	148.46	4,270.27	-609.78	374.30	655.98	0.00	0.00	0.00
4,500.00	22.97	148.46	4,362.35	-643.03	394.72	691.75	0.00	0.00	0.00
4,600.00	22.97	148.46	4,454.42	-676.29	415.13	727.53	0.00	0.00	0.00
4,700.00	22.97	148.46	4,546.49	-709.54	435.54	763.30	0.00	0.00	0.00
4,800.00	22.97	148.46	4,638.56	-742.80	455.96	799.08	0.00	0.00	0.00
4,900.00	22.97	148.46	4,730.64	-776.05	476.37	834.85	0.00	0.00	0.00
5,000.00	22.97	148.46	4,822.71	-809.31	496.78	870.63	0.00	0.00	0.00
5,100.00	22.97	148.46	4,914.78	-842.56	517.20	906.40	0.00	0.00	0.00
5,200.00	22.97	148.46	5,006.85	-875.82	537.61	942.18	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	22.97	148.46	5,098.93	-909.07	558.02	977.95	0.00	0.00	0.00
5,400.00	22.97	148.46	5,191.00	-942.33	578.43	1,013.72	0.00	0.00	0.00
5,500.00	22.97	148.46	5,283.07	-975.58	598.85	1,049.50	0.00	0.00	0.00
5,600.00	22.97	148.46	5,375.15	-1,008.84	619.26	1,085.27	0.00	0.00	0.00
5,700.00	22.97	148.46	5,467.22	-1,042.09	639.67	1,121.05	0.00	0.00	0.00
5,800.00	22.97	148.46	5,559.29	-1,075.35	660.09	1,156.82	0.00	0.00	0.00
5,900.00	22.97	148.46	5,651.36	-1,108.60	680.50	1,192.60	0.00	0.00	0.00
6,000.00	22.97	148.46	5,743.44	-1,141.86	700.91	1,228.37	0.00	0.00	0.00
6,100.00	22.97	148.46	5,835.51	-1,175.11	721.33	1,264.15	0.00	0.00	0.00
6,200.00	22.97	148.46	5,927.58	-1,208.37	741.74	1,299.92	0.00	0.00	0.00
6,300.00	22.97	148.46	6,019.66	-1,241.62	762.15	1,335.70	0.00	0.00	0.00
6,400.00	22.97	148.46	6,111.73	-1,274.88	782.57	1,371.47	0.00	0.00	0.00
6,500.00	22.97	148.46	6,203.80	-1,308.13	802.98	1,407.25	0.00	0.00	0.00
6,600.00	22.97	148.46	6,295.87	-1,341.39	823.39	1,443.02	0.00	0.00	0.00
6,700.00	22.97	148.46	6,387.95	-1,374.64	843.81	1,478.80	0.00	0.00	0.00
6,778.95	22.97	148.46	6,460.64	-1,400.90	859.92	1,507.04	0.00	0.00	0.00
6,800.00	24.57	150.96	6,479.90	-1,408.23	864.20	1,514.89	9.00	7.61	11.91
6,900.00	32.59	159.59	6,567.68	-1,451.73	883.72	1,560.69	9.00	8.02	8.63
7,000.00	40.98	165.05	6,647.72	-1,508.77	901.60	1,619.67	9.00	8.39	5.46
7,100.00	49.56	168.91	6,718.05	-1,577.94	917.41	1,690.36	9.00	8.58	3.86
7,200.00	58.23	171.89	6,776.93	-1,657.53	930.76	1,771.03	9.00	8.67	2.98
7,300.00	66.96	174.35	6,822.91	-1,745.58	941.32	1,859.70	9.00	8.73	2.46
7,400.00	75.73	176.51	6,854.87	-1,839.93	948.82	1,954.18	9.00	8.77	2.16
7,500.00	84.51	178.50	6,872.01	-1,938.25	953.08	2,052.13	9.00	8.78	2.00
7,562.44	90.00	179.71	6,875.00	-2,000.59	954.05	2,114.00	9.00	8.79	1.94
7,600.00	90.00	179.71	6,875.00	-2,038.15	954.24	2,151.22	0.00	0.00	0.00
7,700.00	90.00	179.71	6,875.00	-2,138.15	954.74	2,250.31	0.00	0.00	0.00
7,800.00	90.00	179.71	6,875.00	-2,238.14	955.25	2,349.40	0.00	0.00	0.00
7,900.00	90.00	179.71	6,875.00	-2,338.14	955.75	2,448.50	0.00	0.00	0.00
8,000.00	90.00	179.71	6,875.00	-2,438.14	956.25	2,547.59	0.00	0.00	0.00
8,100.00	90.00	179.71	6,875.00	-2,538.14	956.76	2,646.68	0.00	0.00	0.00
8,200.00	90.00	179.71	6,875.00	-2,638.14	957.26	2,745.78	0.00	0.00	0.00
8,300.00	90.00	179.71	6,875.00	-2,738.14	957.76	2,844.87	0.00	0.00	0.00
8,400.00	90.00	179.71	6,875.00	-2,838.14	958.27	2,943.96	0.00	0.00	0.00
8,500.00	90.00	179.71	6,875.00	-2,938.14	958.77	3,043.06	0.00	0.00	0.00
8,600.00	90.00	179.71	6,875.00	-3,038.13	959.27	3,142.15	0.00	0.00	0.00
8,700.00	90.00	179.71	6,875.00	-3,138.13	959.77	3,241.24	0.00	0.00	0.00
8,800.00	90.00	179.71	6,875.00	-3,238.13	960.28	3,340.34	0.00	0.00	0.00
8,900.00	90.00	179.71	6,875.00	-3,338.13	960.78	3,439.43	0.00	0.00	0.00
9,000.00	90.00	179.71	6,875.00	-3,438.13	961.28	3,538.53	0.00	0.00	0.00
9,100.00	90.00	179.71	6,875.00	-3,538.13	961.79	3,637.62	0.00	0.00	0.00
9,200.00	90.00	179.71	6,875.00	-3,638.13	962.29	3,736.71	0.00	0.00	0.00
9,300.00	90.00	179.71	6,875.00	-3,738.13	962.79	3,835.81	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	179.71	6,875.00	-3,838.12	963.30	3,934.90	0.00	0.00	0.00
9,500.00	90.00	179.71	6,875.00	-3,938.12	963.80	4,033.99	0.00	0.00	0.00
9,600.00	90.00	179.71	6,875.00	-4,038.12	964.30	4,133.09	0.00	0.00	0.00
9,700.00	90.00	179.71	6,875.00	-4,138.12	964.81	4,232.18	0.00	0.00	0.00
9,800.00	90.00	179.71	6,875.00	-4,238.12	965.31	4,331.27	0.00	0.00	0.00
9,900.00	90.00	179.71	6,875.00	-4,338.12	965.81	4,430.37	0.00	0.00	0.00
10,000.00	90.00	179.71	6,875.00	-4,438.12	966.31	4,529.46	0.00	0.00	0.00
10,100.00	90.00	179.71	6,875.00	-4,538.12	966.82	4,628.55	0.00	0.00	0.00
10,200.00	90.00	179.71	6,875.00	-4,638.11	967.32	4,727.65	0.00	0.00	0.00
10,300.00	90.00	179.71	6,875.00	-4,738.11	967.82	4,826.74	0.00	0.00	0.00
10,400.00	90.00	179.71	6,875.00	-4,838.11	968.33	4,925.84	0.00	0.00	0.00
10,500.00	90.00	179.71	6,875.00	-4,938.11	968.83	5,024.93	0.00	0.00	0.00
10,600.00	90.00	179.71	6,875.00	-5,038.11	969.33	5,124.02	0.00	0.00	0.00
10,700.00	90.00	179.71	6,875.00	-5,138.11	969.84	5,223.12	0.00	0.00	0.00
10,800.00	90.00	179.71	6,875.00	-5,238.11	970.34	5,322.21	0.00	0.00	0.00
10,900.00	90.00	179.71	6,875.00	-5,338.11	970.84	5,421.30	0.00	0.00	0.00
11,000.00	90.00	179.71	6,875.00	-5,438.10	971.34	5,520.40	0.00	0.00	0.00
11,100.00	90.00	179.71	6,875.00	-5,538.10	971.85	5,619.49	0.00	0.00	0.00
11,200.00	90.00	179.71	6,875.00	-5,638.10	972.35	5,718.58	0.00	0.00	0.00
11,300.00	90.00	179.71	6,875.00	-5,738.10	972.85	5,817.68	0.00	0.00	0.00
11,400.00	90.00	179.71	6,875.00	-5,838.10	973.36	5,916.77	0.00	0.00	0.00
11,500.00	90.00	179.71	6,875.00	-5,938.10	973.86	6,015.86	0.00	0.00	0.00
11,600.00	90.00	179.71	6,875.00	-6,038.10	974.36	6,114.96	0.00	0.00	0.00
11,700.00	90.00	179.71	6,875.00	-6,138.10	974.87	6,214.05	0.00	0.00	0.00
11,800.00	90.00	179.71	6,875.00	-6,238.09	975.37	6,313.15	0.00	0.00	0.00
11,900.00	90.00	179.71	6,875.00	-6,338.09	975.87	6,412.24	0.00	0.00	0.00
12,000.00	90.00	179.71	6,875.00	-6,438.09	976.37	6,511.33	0.00	0.00	0.00
12,100.00	90.00	179.71	6,875.00	-6,538.09	976.88	6,610.43	0.00	0.00	0.00
12,200.00	90.00	179.71	6,875.00	-6,638.09	977.38	6,709.52	0.00	0.00	0.00
12,300.00	90.00	179.71	6,875.00	-6,738.09	977.88	6,808.61	0.00	0.00	0.00
12,400.00	90.00	179.71	6,875.00	-6,838.09	978.39	6,907.71	0.00	0.00	0.00
12,500.00	90.00	179.71	6,875.00	-6,938.09	978.89	7,006.80	0.00	0.00	0.00
12,600.00	90.00	179.71	6,875.00	-7,038.08	979.39	7,105.89	0.00	0.00	0.00
12,700.00	90.00	179.71	6,875.00	-7,138.08	979.90	7,204.99	0.00	0.00	0.00
12,800.00	90.00	179.71	6,875.00	-7,238.08	980.40	7,304.08	0.00	0.00	0.00
12,900.00	90.00	179.71	6,875.00	-7,338.08	980.90	7,403.17	0.00	0.00	0.00
13,000.00	90.00	179.71	6,875.00	-7,438.08	981.40	7,502.27	0.00	0.00	0.00
13,100.00	90.00	179.71	6,875.00	-7,538.08	981.91	7,601.36	0.00	0.00	0.00
13,200.00	90.00	179.71	6,875.00	-7,638.08	982.41	7,700.46	0.00	0.00	0.00
13,300.00	90.00	179.71	6,875.00	-7,738.08	982.91	7,799.55	0.00	0.00	0.00
13,400.00	90.00	179.71	6,875.00	-7,838.07	983.42	7,898.64	0.00	0.00	0.00
13,500.00	90.00	179.71	6,875.00	-7,938.07	983.92	7,997.74	0.00	0.00	0.00
13,600.00	90.00	179.71	6,875.00	-8,038.07	984.42	8,096.83	0.00	0.00	0.00

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	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	179.71	6,875.00	-8,138.07	984.93	8,195.92	0.00	0.00	0.00
13,800.00	90.00	179.71	6,875.00	-8,238.07	985.43	8,295.02	0.00	0.00	0.00
13,900.00	90.00	179.71	6,875.00	-8,338.07	985.93	8,394.11	0.00	0.00	0.00
14,000.00	90.00	179.71	6,875.00	-8,438.07	986.43	8,493.20	0.00	0.00	0.00
14,100.00	90.00	179.71	6,875.00	-8,538.07	986.94	8,592.30	0.00	0.00	0.00
14,200.00	90.00	179.71	6,875.00	-8,638.06	987.44	8,691.39	0.00	0.00	0.00
14,300.00	90.00	179.71	6,875.00	-8,738.06	987.94	8,790.48	0.00	0.00	0.00
14,400.00	90.00	179.71	6,875.00	-8,838.06	988.45	8,889.58	0.00	0.00	0.00
14,500.00	90.00	179.71	6,875.00	-8,938.06	988.95	8,988.67	0.00	0.00	0.00
14,600.00	90.00	179.71	6,875.00	-9,038.06	989.45	9,087.76	0.00	0.00	0.00
14,700.00	90.00	179.71	6,875.00	-9,138.06	989.96	9,186.86	0.00	0.00	0.00
14,800.00	90.00	179.71	6,875.00	-9,238.06	990.46	9,285.95	0.00	0.00	0.00
14,900.00	90.00	179.71	6,875.00	-9,338.06	990.96	9,385.05	0.00	0.00	0.00
15,000.00	90.00	179.71	6,875.00	-9,438.05	991.46	9,484.14	0.00	0.00	0.00
15,100.00	90.00	179.71	6,875.00	-9,538.05	991.97	9,583.23	0.00	0.00	0.00
15,107.26	90.00	179.71	6,875.00	-9,545.31	992.00	9,590.42	0.00	0.00	0.00

### 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
Becker D17-715 SHL - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,336,071.87	3,259,560.68	40.2521800	-104.5700500
Becker D17-715 KOP - plan hits target center - Point	0.00	0.00	6,460.64	-1,400.90	859.92	1,334,670.98	3,260,420.60	40.2483098	-104.5670221
Becker D17-715 BHL - plan hits target center - Point	0.00	0.00	6,875.00	-9,545.31	992.00	1,326,526.58	3,260,552.68	40.2259501	-104.5668560
Becker D17-715 TPZ - plan hits target center - Point	0.00	0.00	6,875.00	-2,000.59	954.05	1,334,071.29	3,260,514.73	40.2466610	-104.5667075

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Well:</b>	Becker D17-715	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan #1	<b>Database:</b>	EDMP

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
488.00	488.00	Pierre				
622.00	622.00	Upper Pierre Aquifer Top				
1,538.00	1,538.00	Upper Pierre Aquifer Base				
3,675.28	3,603.00	Parkman				
4,424.68	4,293.00	Sussex				
5,108.93	4,923.00	Shannon				
6,276.48	5,998.00	Teepee Buttes				
7,028.73	6,669.00	Sharon Springs				
7,069.89	6,698.00	Top A Chalk				
7,093.79	6,714.00	Top A Marl				
7,133.30	6,739.00	Top B Chalk				
7,183.38	6,768.00	Top B Marl				
7,313.32	6,828.00	Top C Chalk				
7,413.23	6,858.00	Top C Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2000	2000	0	0	Start Build 2.00	
6779	6461	-1401	860	Start DLS 9.00 TFO 33.39	
7562	6875	-2001	954	TPZ/LP at 7562.44 MD	
15,107	6875	-9545	992	TD at 15107.26 MD	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_



# **Northern Region - DJ Basin**

**Mustang**

**D Section 08**

**Becker D17-715**

**Wellbore #1**

**Plan #1**

## **Anticollision Summary Report**

**02 October, 2018**

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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	15,107.26	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
D Section 05						
BECKER #15-9I(PR) - Wellbore #1 - Gyro Surveys	2,126.30	2,109.94	1,428.92	1,414.28	97.608	CC
BECKER #15-9I(PR) - Wellbore #1 - Gyro Surveys	2,200.00	2,178.27	1,429.22	1,414.10	94.535	ES
BECKER #15-9I(PR) - Wellbore #1 - Gyro Surveys	6,950.00	6,548.41	2,580.04	2,531.19	52.820	SF
BECKER #5-13(PA) - Wellbore #1 - No Surveys	2,000.00	1,993.00	2,002.09	1,977.71	82.112	CC
BECKER #5-13(PA) - Wellbore #1 - No Surveys	2,100.00	2,092.98	2,003.08	1,977.48	78.257	ES
BECKER #5-13(PA) - Wellbore #1 - No Surveys	6,950.00	6,601.80	3,292.88	3,209.15	39.326	SF
BECKER #5-14(PA) - Wellbore #1 - Gyro Surveys	0.00	0.00	3,433.84			
BECKER #5-14(PA) - Wellbore #1 - Gyro Surveys	2,100.00	2,084.89	3,441.66	3,427.21	238.173	ES
BECKER #5-14(PA) - Wellbore #1 - Gyro Surveys	7,600.00	6,750.65	4,328.99	4,276.14	81.913	SF
BECKER #5-16(PA) - Wellbore #1 - Gyro Surveys	2,843.48	2,799.46	482.97	463.54	24.857	CC
BECKER #5-16(PA) - Wellbore #1 - Gyro Surveys	2,900.00	2,855.04	483.17	463.34	24.374	ES
BECKER #5-16(PA) - Wellbore #1 - Gyro Surveys	3,400.00	3,313.60	523.88	500.62	22.517	SF
BECKER #5-2(PA) - Wellbore #1 - Gyro Surveys	455.36	435.34	2,430.39	2,427.59	868.122	CC
BECKER #5-2(PA) - Wellbore #1 - Gyro Surveys	1,900.00	1,862.14	2,432.73	2,419.77	187.692	ES
BECKER #5-2(PA) - Wellbore #1 - Gyro Surveys	7,250.00	6,881.74	3,302.70	3,250.69	63.503	SF
BECKER #5-5(PA) - Wellbore #1 - Gyro Surveys	5,486.53	5,218.34	135.72	96.88	3.494	CC
BECKER #5-5(PA) - Wellbore #1 - Gyro Surveys	5,500.00	5,230.77	135.83	96.88	3.487	ES, SF
BECKER #5-8(PR) - Wellbore #1 - Gyro Surveys	2,012.44	2,025.06	3,044.76	3,030.83	218.458	CC, ES
BECKER #5-8(PR) - Wellbore #1 - Gyro Surveys	7,050.00	6,900.00	4,267.75	4,216.65	83.524	SF
BECKER #6(SI) - Wellbore #1 - Gyro Surveys	3,543.32	3,448.36	222.26	197.92	9.132	CC, ES
BECKER #6(SI) - Wellbore #1 - Gyro Surveys	3,600.00	3,499.47	223.61	198.87	9.041	SF
Becker 5-1(PA) - Wellbore #1 - Gyro Surveys	1,275.27	1,267.30	680.40	671.76	78.717	CC
Becker 5-1(PA) - Wellbore #1 - Gyro Surveys	1,500.00	1,489.46	681.04	670.81	66.608	ES
Becker 5-1(PA) - Wellbore #1 - Gyro Surveys	2,900.00	2,870.36	799.30	779.46	40.275	SF
Becker 5-15(PA) - Wellbore #1 - Gyro Surveys	4,600.00	4,416.27	1,520.21	1,488.02	47.216	CC
Becker 5-15(PA) - Wellbore #1 - Gyro Surveys	4,611.13	4,469.19	1,520.22	1,487.77	46.846	ES
Becker 5-15(PA) - Wellbore #1 - Gyro Surveys	6,950.00	6,495.83	1,856.72	1,805.47	36.231	SF
Becker Ranch #5E-223 - Wellbore #1 - As Drilled	6,084.21	11,136.92	4,289.09	4,190.16	43.356	CC
Becker Ranch #5E-223 - Wellbore #1 - As Drilled	6,100.00	11,141.14	4,289.12	4,189.99	43.269	ES
Becker Ranch #5E-223 - Wellbore #1 - As Drilled	7,200.00	11,398.00	4,411.12	4,300.98	40.050	SF
Becker Ranch #5E-403 - As Drilled - As Drilled	0.00	55.22	4,491.38	4,491.28	10,000.000	CC
Becker Ranch #5E-403 - As Drilled - As Drilled	200.00	224.06	4,491.92	4,490.90	4,365.632	ES
Becker Ranch #5E-403 - As Drilled - As Drilled	7,500.00	11,599.00	4,748.34	4,632.02	40.820	SF
Becker Ranch #5J-103 - Wellbore #1 - As Drilled	5,314.67	8,438.00	4,444.75	4,393.28	86.359	CC, ES
Becker Ranch #5J-103 - Wellbore #1 - As Drilled	6,600.00	8,438.00	4,626.86	4,569.21	80.254	SF
Becker Ranch #5J-203 - Wellbore #1 - Plan #1	6,550.75	11,568.80	3,367.01	3,297.11	48.171	CC
Becker Ranch #5J-203 - Wellbore #1 - Plan #1	6,600.00	11,568.80	3,367.37	3,297.10	47.921	ES

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
<b>Offset Well - Wellbore - Design</b>						
D Section 05						
Becker Ranch #5J-203 - Wellbore #1 - Plan #1	7,400.00	11,568.80	3,461.11	3,385.89	46.011	SF
Becker Ranch #5J-303 - Wellbore #1 - As Drilled	6,370.69	11,473.00	3,663.02	3,552.97	33.285	CC
Becker Ranch #5J-303 - Wellbore #1 - As Drilled	6,400.00	11,473.00	3,663.14	3,552.84	33.212	ES
Becker Ranch #5J-303 - Wellbore #1 - As Drilled	6,950.00	11,473.00	3,707.80	3,594.01	32.585	SF
Becker Ranch #5J-323 - Wellbore #1 - As Drilled	6,489.98	11,430.00	3,027.22	2,918.32	27.798	CC
Becker Ranch #5J-323 - Wellbore #1 - As Drilled	6,500.00	11,430.00	3,027.24	2,918.23	27.771	ES
Becker Ranch #5J-323 - Wellbore #1 - As Drilled	7,000.00	11,430.00	3,069.03	2,955.93	27.138	SF
Becker Ranch #5J-323R - Wellbore #1 - Plan #1	6,361.55	11,100.00	2,969.05	2,902.87	44.866	CC
Becker Ranch #5J-323R - Wellbore #1 - Plan #1	6,400.00	11,100.00	2,969.30	2,902.87	44.698	ES
Becker Ranch #5J-323R - Wellbore #1 - Plan #1	7,562.44	11,449.33	3,169.32	3,095.11	42.710	SF
Becker Ranch #5J-343 - Wellbore #1 - As Drilled	6,291.11	11,500.00	3,973.52	3,865.23	36.694	CC
Becker Ranch #5J-343 - Wellbore #1 - As Drilled	6,300.00	11,500.00	3,973.53	3,865.17	36.668	ES
Becker Ranch #5J-343 - Wellbore #1 - As Drilled	7,050.00	11,500.00	4,043.07	3,929.86	35.711	SF
Becker Ranch #5M-203 - Wellbore #1 - Plan #1	6,598.88	11,268.00	2,076.24	2,006.66	29.837	CC
Becker Ranch #5M-203 - Wellbore #1 - Plan #1	6,600.00	11,268.00	2,076.24	2,006.65	29.833	ES
Becker Ranch #5M-203 - Wellbore #1 - Plan #1	6,950.00	11,268.00	2,105.73	2,033.46	29.137	SF
Becker Ranch #5M-243 - Wellbore #1 - Plan #1	6,472.19	11,287.31	2,671.60	2,602.36	38.581	CC, ES
Becker Ranch #5M-243 - Wellbore #1 - Plan #1	6,900.00	11,282.50	2,705.67	2,634.25	37.884	SF
Becker Ranch #5M-303 - Wellbore #1 - Plan #1	6,620.38	11,462.20	2,369.52	2,298.76	33.485	CC, ES
Becker Ranch #5M-303 - Wellbore #1 - Plan #1	6,900.00	11,462.20	2,386.02	2,314.04	33.148	SF
Becker Ranch #5M-323 - Wellbore #1 - Plan #1	6,758.19	11,315.70	1,692.37	1,621.88	24.008	CC
Becker Ranch #5M-323 - Wellbore #1 - Plan #1	6,778.95	11,315.70	1,692.50	1,621.84	23.953	ES
Becker Ranch #5M-323 - Wellbore #1 - Plan #1	6,950.00	11,315.70	1,704.19	1,632.37	23.726	SF
Becker Ranch #5M-423 - Wellbore #1 - Plan #1	6,836.45	11,437.50	1,925.94	1,855.07	27.177	CC
Becker Ranch #5M-423 - Wellbore #1 - Plan #1	6,850.00	11,437.50	1,925.99	1,855.01	27.133	ES
Becker Ranch #5M-423 - Wellbore #1 - Plan #1	7,100.00	11,437.50	1,946.75	1,873.99	26.756	SF
Becker Ranch #5R-203 - Wellbore #1 - Plan #1	6,845.91	11,257.60	771.07	700.86	10.983	CC
Becker Ranch #5R-203 - Wellbore #1 - Plan #1	6,850.00	11,257.60	771.08	700.82	10.975	ES
Becker Ranch #5R-203 - Wellbore #1 - Plan #1	6,900.00	11,257.60	773.34	702.53	10.921	SF
Becker Ranch #5R-243 - Wellbore #1 - Plan #1	6,729.40	11,231.80	1,442.66	1,372.29	20.500	CC, ES
Becker Ranch #5R-243 - Wellbore #1 - Plan #1	6,850.00	11,231.80	1,447.88	1,376.73	20.351	SF
Becker Ranch #5R-303 - Wellbore #1 - Plan #1	6,866.04	11,308.90	1,064.09	992.59	14.882	CC, ES
Becker Ranch #5R-303 - Wellbore #1 - Plan #1	6,900.00	11,308.90	1,064.75	993.08	14.857	SF
Becker Ranch #5R-323 - Wellbore #1 - Plan #1	6,935.72	11,332.80	606.29	537.12	8.766	CC, ES
Becker Ranch #5R-323 - Wellbore #1 - Plan #1	6,950.00	11,332.80	606.51	537.19	8.749	SF
Becker Ranch #5R-443 - Wellbore #1 - Plan #1	6,911.88	11,417.20	1,440.73	1,369.41	20.203	CC, ES
Becker Ranch #5R-443 - Wellbore #1 - Plan #1	7,000.00	11,417.20	1,444.11	1,372.26	20.100	SF
Becker Ranch #5U-243 - Wellbore #1 - Plan #1	6,929.12	11,243.60	278.60	216.02	4.452	CC, ES, SF
Becker Ranch #5U-303 - Wellbore #1 - Plan #1	7,027.46	11,348.00	355.45	292.75	5.669	CC, ES, SF
Becker Ranch #5U-443 - Wellbore #1 - Plan #1	7,070.77	11,407.70	367.54	311.20	6.523	CC, ES, SF
LDS #D08-18D(PR) - Wellbore #1 - MWD Surveys	8,500.00	7,325.15	2,201.69	2,127.56	29.698	SF
LDS #D08-18D(PR) - Wellbore #1 - MWD Surveys	8,694.34	7,323.78	2,193.10	2,119.46	29.780	CC, ES
LDS #D08-29(SI) - Wellbore #1 - Gyro Surveys	0.00	0.00	2,925.77			
LDS #D08-29(SI) - Wellbore #1 - Gyro Surveys	100.00	57.63	2,925.93	2,925.65	10,000.000	ES
LDS #D08-29(SI) - Wellbore #1 - Gyro Surveys	7,900.00	6,868.79	3,578.92	3,524.22	65.417	SF
LDS D08-28D(PR) - Wellbore #1 - MWD Surveys	4,930.39	5,006.00	2,226.56	2,187.95	57.661	CC, ES
LDS D08-28D(PR) - Wellbore #1 - MWD Surveys	7,550.00	6,968.72	2,511.52	2,456.89	45.970	SF
LDS D08-30D(SI) - Wellbore #1 - MWD Surveys	742.53	732.55	3,111.04	3,106.33	661.535	CC
LDS D08-30D(SI) - Wellbore #1 - MWD Surveys	800.00	771.00	3,111.23	3,106.19	616.782	ES
LDS D08-30D(SI) - Wellbore #1 - MWD Surveys	9,500.00	7,105.86	5,484.24	5,418.70	83.681	SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

**Summary**

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 08						
Becker D17-725 - Wellbore #1 - Plan #1	2,000.00	2,000.00	22.33	8.40	1.603	CC, ES
Becker D17-725 - Wellbore #1 - Plan #1	2,100.00	2,100.02	23.27	8.65	1.591	SF
Becker D17-730 - Wellbore #1 - Plan #1	2,000.00	2,001.00	44.66	30.73	3.206	CC, ES
Becker D17-730 - Wellbore #1 - Plan #1	2,100.00	2,100.98	45.58	30.95	3.116	SF
Becker D17-735 - Wellbore #1 - Plan #1	2,000.00	2,002.00	66.99	53.05	4.808	CC, ES
Becker D17-735 - Wellbore #1 - Plan #1	2,200.00	2,201.84	70.83	55.51	4.624	SF
Becker D17-745 - Wellbore #1 - Plan #1	2,000.00	2,002.00	89.32	75.38	6.410	CC, ES
Becker D17-745 - Wellbore #1 - Plan #1	2,200.00	2,201.84	93.10	77.78	6.078	SF
Becker D17-750 - Wellbore #1 - Plan #1	2,000.00	2,070.00	111.65	97.59	7.943	CC, ES
Becker D17-750 - Wellbore #1 - Plan #1	2,300.00	2,369.45	120.47	104.35	7.471	SF
Becker D17-755 - Wellbore #1 - Plan #1	6,665.06	7,382.43	2,559.62	2,503.44	45.562	CC
Becker D17-755 - Wellbore #1 - Plan #1	15,107.26	15,247.97	2,598.72	2,435.47	15.919	ES, SF
Becker D17-765 - Wellbore #1 - Plan #1	6,234.83	6,891.29	3,154.37	3,101.39	59.537	CC
Becker D17-765 - Wellbore #1 - Plan #1	15,107.26	14,983.08	3,249.45	3,063.43	17.469	ES, SF
Becker D17-770 - Wellbore #1 - Plan #1	2,000.00	2,027.00	3,302.13	3,288.10	235.472	CC, ES
Becker D17-770 - Wellbore #1 - Plan #1	15,107.26	15,116.82	3,574.48	3,387.76	19.144	SF
Becker D17-775 - Wellbore #1 - Plan #1	2,000.00	2,027.00	3,324.70	3,310.68	237.082	CC, ES
Becker D17-775 - Wellbore #1 - Plan #1	15,107.26	14,970.75	3,898.03	3,711.70	20.920	SF
Becker D17-785 - Wellbore #1 - Plan #1	1,904.96	1,930.96	3,341.20	3,327.86	250.495	CC
Becker D17-785 - Wellbore #1 - Plan #1	2,000.00	2,020.54	3,341.22	3,327.23	238.721	ES
Becker D17-785 - Wellbore #1 - Plan #1	15,107.26	14,872.69	4,548.02	4,385.19	27.932	SF
HSR-ALVIN DECHANT #12-8 (SI) - Wellbore #1 - No Su	10,583.21	6,862.00	4,118.73	4,010.46	38.041	CC
HSR-ALVIN DECHANT #12-8 (SI) - Wellbore #1 - No Su	10,600.00	6,862.00	4,118.76	4,010.40	38.008	ES
HSR-ALVIN DECHANT #12-8 (SI) - Wellbore #1 - No Su	11,300.00	6,862.00	4,180.64	4,068.78	37.374	SF
HSR-ALVIN DECHANT #13-8(SI) - Wellbore #1 - No Sur	12,168.31	6,851.00	4,199.63	4,079.95	35.090	CC
HSR-ALVIN DECHANT #13-8(SI) - Wellbore #1 - No Sur	12,200.00	6,851.00	4,199.75	4,079.88	35.035	ES
HSR-ALVIN DECHANT #13-8(SI) - Wellbore #1 - No Sur	12,800.00	6,851.00	4,246.87	4,123.91	34.539	SF
HSR-LDS #14-8(SI) - Wellbore #1 - No Surveys	11,644.93	6,842.00	3,060.53	2,944.80	26.445	CC, ES
HSR-LDS #14-8(SI) - Wellbore #1 - No Surveys	12,000.00	6,842.00	3,081.05	2,963.67	26.248	SF
HSR-LDS #15-8(SI) - Wellbore #1 - No Surveys	11,921.33	6,839.00	1,626.78	1,509.03	13.816	CC, ES
HSR-LDS #15-8(SI) - Wellbore #1 - No Surveys	12,000.00	6,839.00	1,628.68	1,510.69	13.803	SF
HSR-LDS #16-8(SI) - Wellbore #1 - No Surveys	12,037.78	6,838.00	269.25	150.66	2.270	CC, ES, SF
HSR-LDS #3-8(SI) - Wellbore #1 - No Surveys	8,140.33	6,840.00	3,040.26	2,947.60	32.811	CC, ES
HSR-LDS #3-8(SI) - Wellbore #1 - No Surveys	8,500.00	6,840.00	3,061.47	2,967.36	32.532	SF
HSR-LDS #4-8(SI) - Wellbore 1 - No Surveys	8,292.14	6,865.00	4,178.39	4,084.70	44.597	CC
HSR-LDS #4-8(SI) - Wellbore 1 - No Surveys	8,300.00	6,865.00	4,178.40	4,084.67	44.579	ES
HSR-LDS #4-8(SI) - Wellbore 1 - No Surveys	9,100.00	6,865.00	4,255.77	4,158.50	43.750	SF
HSR-LDS #5-8(SI) - Wellbore #1 - No Surveys	9,444.17	6,858.00	4,342.55	4,242.01	43.191	CC, ES
HSR-LDS #5-8(SI) - Wellbore #1 - No Surveys	10,300.00	6,858.00	4,426.08	4,321.36	42.266	SF
HSR-LDS #6-8(SI) - Wellbore #1 - No Surveys	9,385.68	6,838.00	2,941.45	2,841.46	29.417	CC
HSR-LDS #6-8(SI) - Wellbore #1 - No Surveys	9,400.00	6,838.00	2,941.49	2,841.42	29.397	ES
HSR-LDS #6-8(SI) - Wellbore #1 - No Surveys	9,700.00	6,838.00	2,958.20	2,856.80	29.176	SF
HSR-LDS #9-8(SI) - Wellbore #1 - No Surveys	10,478.83	6,833.00	308.51	201.22	2.876	CC, ES, SF
HSR-LDS A #10-8(SI) - Wellbore #1 - No Surveys	10,755.13	6,837.00	1,540.98	1,431.71	14.103	CC, ES
HSR-LDS A #10-8(SI) - Wellbore #1 - No Surveys	10,800.00	6,837.00	1,541.63	1,432.22	14.090	SF
HSR-LDS A #11-8(SI) - Wellbore #1 - No Surveys	10,606.37	6,839.00	2,999.10	2,890.87	27.710	CC, ES
HSR-LDS A #11-8(SI) - Wellbore #1 - No Surveys	10,900.00	6,839.00	3,013.44	2,903.83	27.491	SF
LDS #18-8(SI) - Wellbore #1 - No Surveys	8,835.38	6,860.00	3,580.89	3,484.12	37.005	CC, ES
LDS #18-8(SI) - Wellbore #1 - No Surveys	9,400.00	6,860.00	3,625.13	3,525.82	36.504	SF
LDS #20-8(SI) - Wellbore #1 - No Surveys	11,382.24	6,836.00	968.03	854.27	8.510	CC, ES, SF
LDS D #09-30(SI) - Wellbore #1 - No Surveys	7,552.59	6,826.93	172.06	82.38	1.919	CC, ES
LDS D #09-30(SI) - Wellbore #1 - No Surveys	7,562.44	6,827.00	172.36	82.51	1.918	SF
LDS D #09-31D(SI) - Wellbore #1 - No Surveys	7,576.44	6,827.00	169.94	80.17	1.893	CC, ES, SF

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

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
D Section 08						
RUBY RED #D 8-1D(PA) - Wellbore #1 - Gyro Surveys	8,375.63	6,811.62	679.32	621.50	11.747	CC, ES, SF
RUBY RED #D 8-7(PR) - Wellbore #1 - Gyro Surveys	9,433.03	6,841.21	1,773.50	1,709.12	27.549	CC, ES
RUBY RED #D 8-7(PR) - Wellbore #1 - Gyro Surveys	9,600.00	6,860.40	1,781.34	1,716.36	27.413	SF
RUBY RED #D 8-8(PR) - Wellbore #1 - Gyro Surveys	9,438.86	6,833.43	125.88	61.47	1.954	CC, ES, SF
RUBY RED D8-2(PA) - Wellbore #1 - Gyro Surveys	7,888.97	6,839.39	1,856.03	1,800.62	33.498	CC
RUBY RED D8-2(PA) - Wellbore #1 - Gyro Surveys	7,900.00	6,839.33	1,856.06	1,800.62	33.477	ES
RUBY RED D8-2(PA) - Wellbore #1 - Gyro Surveys	8,100.00	6,838.25	1,867.99	1,811.94	33.325	SF
TWO E RANCHES #1(PA) - Wellbore #1 - Gyro Surveys	11,038.33	6,800.00	3,907.44	3,832.35	52.038	CC, ES
TWO E RANCHES #1(PA) - Wellbore #1 - Gyro Surveys	11,800.00	6,800.00	3,980.98	3,902.27	50.576	SF

**Noble Energy, Inc.**  
Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	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						
D Section 17						
Butterball D19-27D - Wellbore #1 - Gyro Surveys	15,107.26	7,075.51	6,795.79	6,685.87	61.821	CC, ES, SF
Guttersen State D16-33 (SI) - Wellbore #1 - No Surveys	15,107.26	6,852.00	1,415.02	1,321.90	15.195	CC, ES, SF
HSR LDS 6-17 (SI) - Wellbore #1 - No Surveys	14,674.32	6,850.00	3,119.93	2,981.09	22.471	CC
HSR LDS 6-17 (SI) - Wellbore #1 - No Surveys	14,700.00	6,850.00	3,120.03	2,981.05	22.448	ES
HSR LDS 6-17 (SI) - Wellbore #1 - No Surveys	14,900.00	6,850.00	3,128.08	2,988.12	22.350	SF
HSR LDS B5-17 (SI) - Wellbore #1 - No Surveys	14,525.41	6,851.00	4,226.17	4,088.48	30.693	CC, ES
HSR LDS B5-17 (SI) - Wellbore #1 - No Surveys	15,107.26	6,851.00	4,266.04	4,125.35	30.322	SF
HSR Mike Guttersen 16-17X (SI) - Wellbore #1 - No Su	15,107.26	6,857.00	2,305.94	2,211.13	24.322	CC, ES, SF
HSR Weeks 10-17 - Wellbore #1 - Gyro Surveys	15,107.26	6,700.00	1,872.98	1,773.09	18.749	CC, ES, SF
HSR Weeks 15-17 (SI) - Wellbore #1 - No Surveys	15,107.26	6,855.00	2,717.72	2,598.70	22.834	CC, ES, SF
HSR Weeks 9-17 - Wellbore #1 - Gyro Surveys	15,107.26	6,846.15	977.42	898.64	12.407	CC, ES, SF
HSR-LDS 3-17 (SI) - Wellbore #1 - No Surveys	13,350.12	6,845.00	3,118.38	2,989.81	24.255	CC, ES
HSR-LDS 3-17 (SI) - Wellbore #1 - No Surveys	13,600.00	6,845.00	3,128.37	2,998.58	24.102	SF
HSR-LDS 4-17 (SI) - Wellbore #1 - No Surveys	13,531.01	6,847.00	4,245.42	4,115.45	32.665	CC, ES
HSR-LDS 4-17 (SI) - Wellbore #1 - No Surveys	14,100.00	6,847.00	4,283.38	4,150.42	32.215	SF
LDS 18-17 (SI) - Wellbore #1 - No Surveys	14,021.43	6,850.00	3,443.41	3,309.64	25.741	CC, ES
LDS 18-17 (SI) - Wellbore #1 - No Surveys	14,400.00	6,850.00	3,464.16	3,328.54	25.543	SF
LDS D17-13 - Wellbore #1 - Gyro Surveys	15,107.26	6,900.00	5,202.47	5,101.96	51.757	CC, ES, SF
LDS D17-18 (SI) - Wellbore #1 - No Surveys	13,956.84	6,848.00	2,137.86	2,004.61	16.043	CC, ES
LDS D17-18 (SI) - Wellbore #1 - No Surveys	14,100.00	6,848.00	2,142.65	2,008.85	16.014	SF
LDS D17-20 - Wellbore #1 - No Surveys	15,107.26	6,856.00	3,603.20	3,460.65	25.276	CC, ES, SF
LDS D17-21 - Wellbore #1 - No Surveys	15,107.26	6,852.00	2,475.75	2,333.49	17.404	CC, ES, SF
LDS D17-22 (SI) - Wellbore #1 - No Surveys	15,107.26	6,847.00	1,029.76	887.33	7.230	CC, ES, SF
LDS D17-24D - Wellbore #1 - LDS D17-24D - As Drilled	15,107.26	7,003.03	2,768.74	2,664.88	26.658	CC, ES, SF
LDS D17-25D - Wellbore #1 - LDS D17-25D - As Drilled	15,107.26	7,103.27	3,792.08	3,684.97	35.405	CC, ES, SF
LDS D17-31D - LDS D17-31D - LDS D17-31D - As Drille	14,040.98	7,116.09	4,964.52	4,856.52	45.967	CC, ES
LDS D17-31D - LDS D17-31D - LDS D17-31D - As Drille	14,800.00	7,116.31	5,022.21	4,910.80	45.078	SF
LDS D17-32D - LDS D17-32D - LDS D17-32D - As Drille	15,107.26	6,911.26	4,982.75	4,876.88	47.064	CC, ES, SF
LDS D17-33 - LDS D17-33 - LDS D17-33 - As Drilled	15,107.26	6,924.12	4,960.66	4,855.52	47.180	CC, ES, SF
LDS D17-7 - Wellbore #1 - No Surveys	14,653.06	6,846.00	1,744.58	1,605.94	12.583	CC, ES
LDS D17-7 - Wellbore #1 - No Surveys	14,700.00	6,846.00	1,745.21	1,606.40	12.573	SF
LDS D20-29D - Wellbore #1 - LDS D20-29D - As Drilled	15,107.26	7,066.74	4,714.58	4,615.21	47.443	CC, ES, SF
LDS D20-30D - Wellbore #1 - LDS D20-30D - As Drilled	15,107.26	6,895.20	5,870.61	5,771.72	59.363	CC, ES, SF
LDS RED D17-11 (SI) - Wellbore #1 - No Surveys	15,107.26	6,853.00	2,910.60	2,769.79	20.671	CC, ES, SF
LDS Red D17-12 - Wellbore #1 - No Surveys	15,107.26	6,856.00	4,483.71	4,341.31	31.487	CC, ES, SF
LDS Red D17-14X (SI) - Wellbore #1 - No Surveys	15,107.26	6,857.00	3,419.59	3,287.74	25.935	CC, ES, SF
LDS Red D17-3J - Wellbore #1 - Gyro Surveys	15,107.26	6,838.53	4,397.14	4,294.89	43.002	CC, ES, SF
LDS White D17-1 - Wellbore #1 - Gyro Surveys	13,300.00	6,846.20	336.21	243.90	3.642	SF
LDS White D17-1 - Wellbore #1 - Gyro Surveys	13,312.52	6,846.20	335.97	243.75	3.643	CC, ES
LDS White D17-2 - Wellbore #1 - No Surveys	13,331.56	6,843.00	1,638.11	1,509.70	12.757	CC, ES
LDS White D17-2 - Wellbore #1 - No Surveys	13,400.00	6,843.00	1,639.54	1,510.91	12.747	SF
LDS White D17-8 - Wellbore #1 - No Surveys	14,666.12	6,841.00	398.36	259.67	2.872	CC, ES, SF
Thomson D20-31D - Wellbore #1 - Gyro Surveys	15,107.26	6,779.39	6,649.38	6,549.14	66.329	CC, ES, SF
Weeks 20-17 (SI) - Wellbore #1 - Gyro Surveys	15,107.26	6,828.21	1,960.29	1,879.15	24.160	CC, ES, SF

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



**Noble Energy, Inc.**  
**Anticollision Summary Report**

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 4775.00ft

Offset Depths are relative to Offset Datum

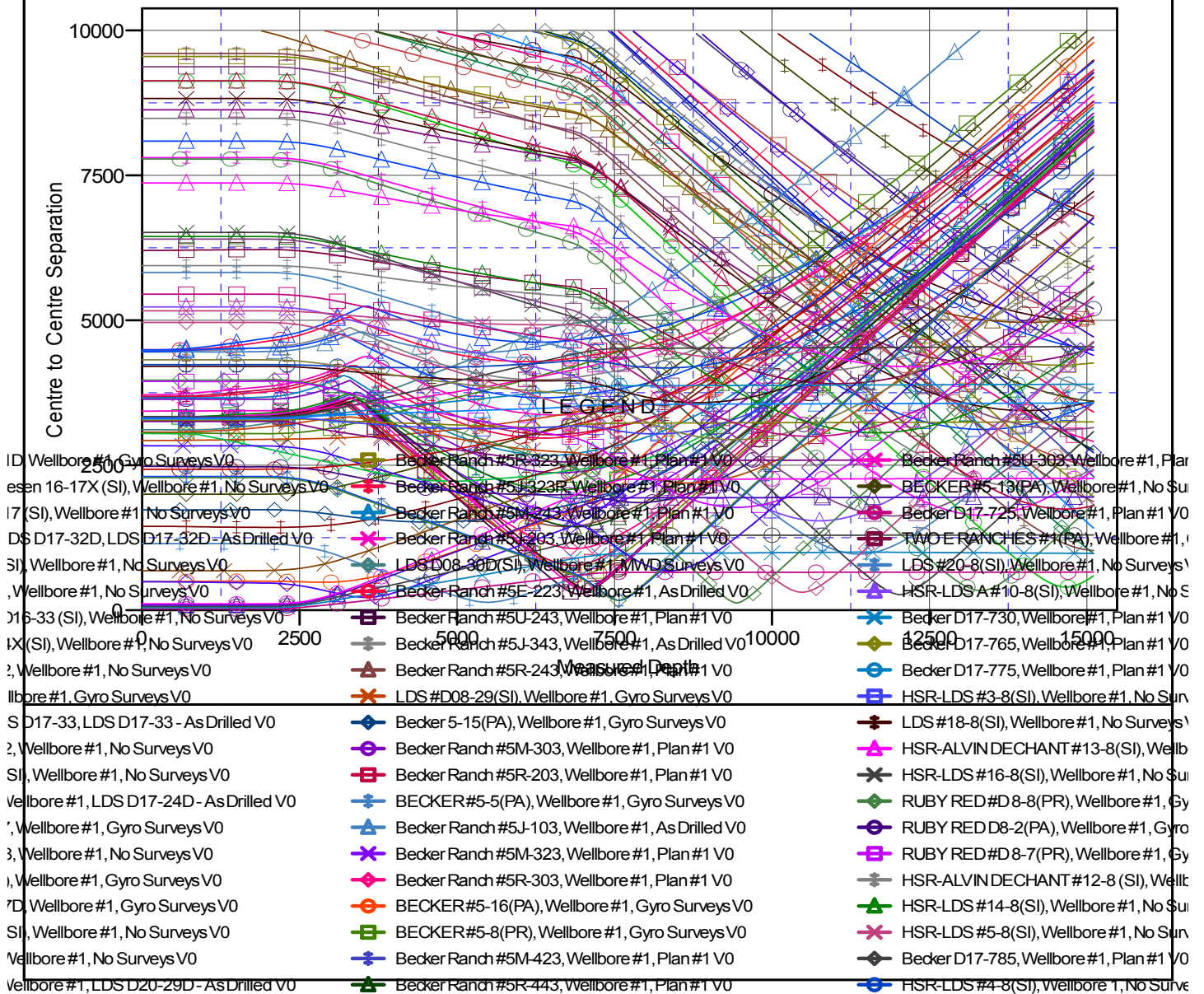
Central Meridian is -105.5000000

Coordinates are relative to: Becker D17-715

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.60°

## Ladder Plot



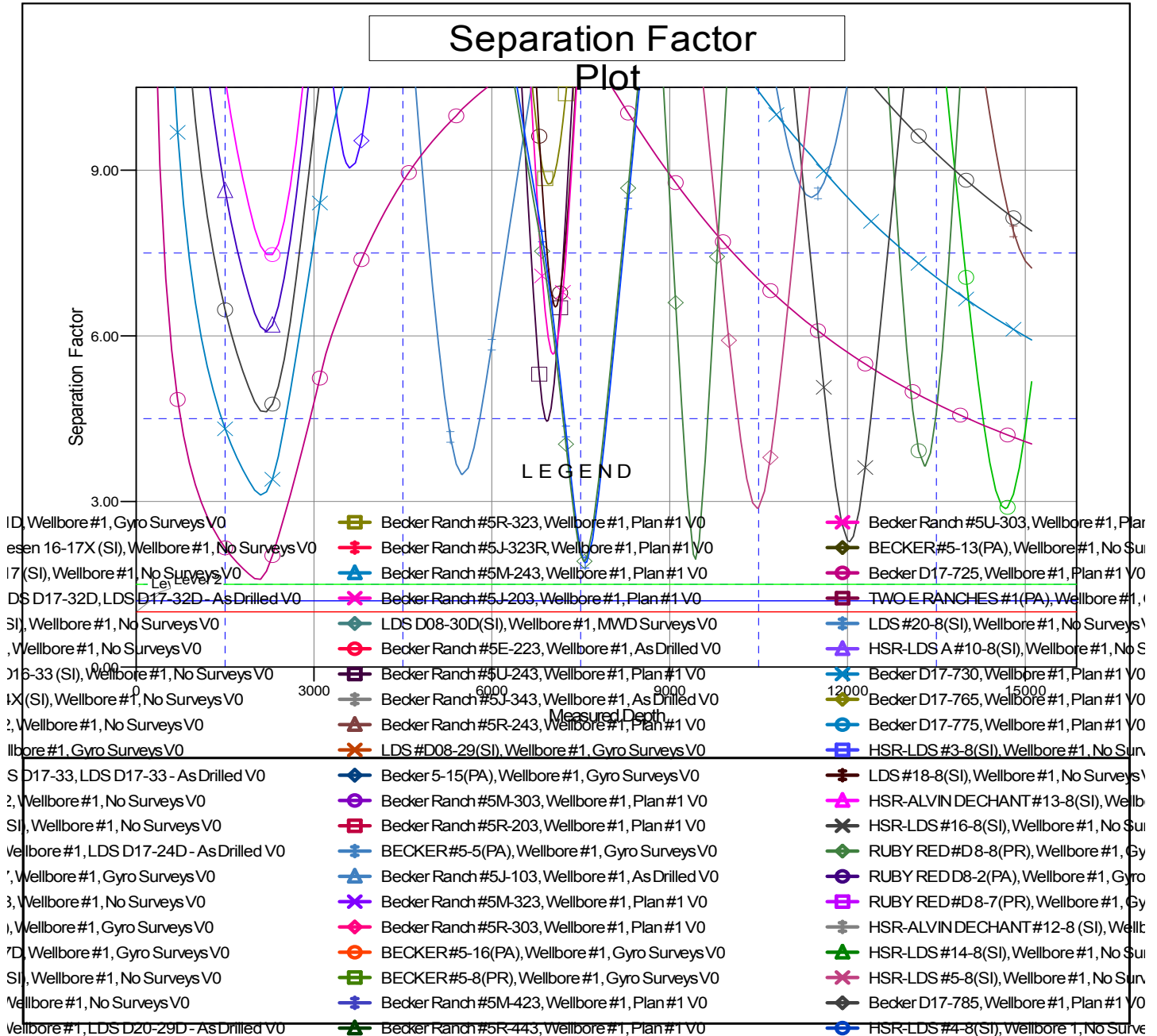
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

**Noble Energy, Inc.**  
**Anticollision Summary Report**

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Becker D17-715
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4775.00ft
<b>Reference Site:</b>	D Section 08	<b>MD Reference:</b>	KB @ 4775.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Becker D17-715	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KB @ 4775.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Becker D17-715  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.60°



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