

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

	WELL DETAILS: Johnson C32-725					
				4774.00		
	Northing	Easting		Latitude		Longitude
0.00	0.00	1349748.35	3257960.42	40.2897669		-104.5752720
	Plan: Plan #1 (Johnson C32-725/Wellbore #1)					
	Created By: Colby Baxter			Date: 15:44, October 04 2018		
	Checked: _____			Date: _____		
	Reviewed: _____			Date: _____		
	Approved: _____			Date: _____		

# **Northern Region - DJ Basin**

**Mustang**

**C Section 29**

**Johnson C32-725**

**Wellbore #1**

**Plan: Plan #1**

## **Standard Survey Report**

**04 October, 2018**

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<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	C Section 29				
Site Position:		Northing:	1,346,017.00 usft	Latitude:	40.2794770
From:	Lat/Long	Easting:	3,259,619.89 usft	Longitude:	-104.5694640
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.60 °

Well	Johnson C32-725					
Well Position	+N/-S	0.00 ft	Northing:	1,349,748.35 usft	Latitude:	40.2897670
	+E/-W	0.00 ft	Easting:	3,257,960.42 usft	Longitude:	-104.5752720
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,774.00 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	10/4/2018	7.96	66.76	52,207.04261510

<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	169.41	

<b>Survey Tool Program</b>	<b>Date</b>	10/4/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	17,766.93	Plan #1 (Wellbore #1)	2_MWD+IFR1	A005Mb: IFR declination correction only	

<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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<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	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
2,300.00	2.00	62.20	2,299.98	0.81	1.54	-0.52	2.00	2.00	0.00
2,400.00	4.00	62.20	2,399.84	3.25	6.17	-2.06	2.00	2.00	0.00
2,500.00	6.00	62.20	2,499.45	7.32	13.88	-4.64	2.00	2.00	0.00
2,600.00	8.00	62.20	2,598.70	13.00	24.66	-8.25	2.00	2.00	0.00
2,700.00	10.00	62.20	2,697.47	20.30	38.50	-12.88	2.00	2.00	0.00
2,800.00	12.00	62.20	2,795.62	29.20	55.38	-18.52	2.00	2.00	0.00
2,900.00	14.00	62.20	2,893.06	39.69	75.28	-25.18	2.00	2.00	0.00
3,000.00	16.00	62.20	2,989.64	51.76	98.17	-32.84	2.00	2.00	0.00
3,100.00	18.00	62.20	3,085.27	65.39	124.03	-41.49	2.00	2.00	0.00
3,200.00	20.00	62.20	3,179.82	80.57	152.83	-51.12	2.00	2.00	0.00
3,300.00	22.00	62.20	3,273.17	97.29	184.53	-61.72	2.00	2.00	0.00
3,400.00	24.00	62.20	3,365.21	115.51	219.09	-73.28	2.00	2.00	0.00
3,500.00	26.00	62.20	3,455.84	135.22	256.47	-85.79	2.00	2.00	0.00
3,563.08	27.26	62.20	3,512.23	148.40	281.48	-94.15	2.00	2.00	0.00
3,600.00	27.26	62.20	3,545.05	156.29	296.44	-99.16	0.00	0.00	0.00
3,700.00	27.26	62.20	3,633.94	177.65	336.96	-112.71	0.00	0.00	0.00
3,800.00	27.26	62.20	3,722.83	199.01	377.48	-126.27	0.00	0.00	0.00
3,900.00	27.26	62.20	3,811.72	220.37	418.00	-139.82	0.00	0.00	0.00
4,000.00	27.26	62.20	3,900.62	241.74	458.52	-153.37	0.00	0.00	0.00
4,100.00	27.26	62.20	3,989.51	263.10	499.04	-166.93	0.00	0.00	0.00
4,200.00	27.26	62.20	4,078.40	284.46	539.56	-180.48	0.00	0.00	0.00
4,300.00	27.26	62.20	4,167.29	305.82	580.08	-194.03	0.00	0.00	0.00
4,400.00	27.26	62.20	4,256.19	327.19	620.60	-207.59	0.00	0.00	0.00
4,500.00	27.26	62.20	4,345.08	348.55	661.11	-221.14	0.00	0.00	0.00
4,600.00	27.26	62.20	4,433.97	369.91	701.63	-234.69	0.00	0.00	0.00
4,700.00	27.26	62.20	4,522.86	391.27	742.15	-248.25	0.00	0.00	0.00
4,800.00	27.26	62.20	4,611.76	412.63	782.67	-261.80	0.00	0.00	0.00
4,900.00	27.26	62.20	4,700.65	434.00	823.19	-275.35	0.00	0.00	0.00
5,000.00	27.26	62.20	4,789.54	455.36	863.71	-288.91	0.00	0.00	0.00
5,100.00	27.26	62.20	4,878.43	476.72	904.23	-302.46	0.00	0.00	0.00
5,200.00	27.26	62.20	4,967.33	498.08	944.75	-316.01	0.00	0.00	0.00

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## Survey Report

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<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<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	27.26	62.20	5,056.22	519.44	985.27	-329.57	0.00	0.00	0.00
5,400.00	27.26	62.20	5,145.11	540.81	1,025.79	-343.12	0.00	0.00	0.00
5,500.00	27.26	62.20	5,234.00	562.17	1,066.30	-356.67	0.00	0.00	0.00
5,600.00	27.26	62.20	5,322.90	583.53	1,106.82	-370.23	0.00	0.00	0.00
5,700.00	27.26	62.20	5,411.79	604.89	1,147.34	-383.78	0.00	0.00	0.00
5,800.00	27.26	62.20	5,500.68	626.25	1,187.86	-397.33	0.00	0.00	0.00
5,900.00	27.26	62.20	5,589.57	647.62	1,228.38	-410.89	0.00	0.00	0.00
6,000.00	27.26	62.20	5,678.47	668.98	1,268.90	-424.44	0.00	0.00	0.00
6,100.00	27.26	62.20	5,767.36	690.34	1,309.42	-437.99	0.00	0.00	0.00
6,200.00	27.26	62.20	5,856.25	711.70	1,349.94	-451.55	0.00	0.00	0.00
6,300.00	27.26	62.20	5,945.14	733.07	1,390.46	-465.10	0.00	0.00	0.00
6,400.00	27.26	62.20	6,034.04	754.43	1,430.98	-478.65	0.00	0.00	0.00
6,490.13	27.26	62.20	6,114.16	773.68	1,467.50	-490.87	0.00	0.00	0.00
6,500.00	26.90	63.98	6,122.94	775.71	1,471.50	-492.13	9.00	-3.65	18.07
6,600.00	24.69	84.13	6,213.15	787.80	1,512.69	-496.44	9.00	-2.22	20.15
6,700.00	25.44	105.41	6,303.92	784.22	1,554.25	-485.29	9.00	0.75	21.28
6,800.00	28.92	123.67	6,393.02	765.07	1,595.16	-458.95	9.00	3.49	18.26
6,900.00	34.32	137.48	6,478.26	730.81	1,634.41	-418.06	9.00	5.39	13.81
7,000.00	40.86	147.65	6,557.53	682.30	1,671.04	-363.65	9.00	6.55	10.16
7,100.00	48.09	155.33	6,628.89	620.73	1,704.15	-297.04	9.00	7.23	7.68
7,200.00	55.72	161.41	6,690.58	547.61	1,732.91	-219.88	9.00	7.63	6.08
7,300.00	63.60	166.45	6,741.08	464.74	1,756.62	-134.06	9.00	7.88	5.05
7,400.00	71.63	170.84	6,779.14	374.16	1,774.70	-41.71	9.00	8.03	4.39
7,500.00	79.76	174.84	6,803.83	278.11	1,786.70	54.91	9.00	8.13	4.00
7,600.00	87.93	178.63	6,814.54	178.95	1,792.33	153.42	9.00	8.17	3.79
7,625.25	90.00	179.58	6,815.00	153.71	1,792.72	178.30	9.00	8.18	3.75
7,700.00	90.00	179.58	6,815.00	78.96	1,793.27	251.88	0.00	0.00	0.00
7,800.00	90.00	179.58	6,815.00	-21.03	1,794.00	350.31	0.00	0.00	0.00
7,900.00	90.00	179.58	6,815.00	-121.03	1,794.73	448.74	0.00	0.00	0.00
8,000.00	90.00	179.58	6,815.00	-221.03	1,795.47	547.17	0.00	0.00	0.00
8,100.00	90.00	179.58	6,815.00	-321.03	1,796.20	645.60	0.00	0.00	0.00
8,200.00	90.00	179.58	6,815.00	-421.02	1,796.93	744.02	0.00	0.00	0.00
8,300.00	90.00	179.58	6,815.00	-521.02	1,797.66	842.45	0.00	0.00	0.00
8,400.00	90.00	179.58	6,815.00	-621.02	1,798.39	940.88	0.00	0.00	0.00
8,500.00	90.00	179.58	6,815.00	-721.02	1,799.12	1,039.31	0.00	0.00	0.00
8,600.00	90.00	179.58	6,815.00	-821.01	1,799.86	1,137.74	0.00	0.00	0.00
8,700.00	90.00	179.58	6,815.00	-921.01	1,800.59	1,236.17	0.00	0.00	0.00
8,800.00	90.00	179.58	6,815.00	-1,021.01	1,801.32	1,334.60	0.00	0.00	0.00
8,900.00	90.00	179.58	6,815.00	-1,121.01	1,802.05	1,433.03	0.00	0.00	0.00
9,000.00	90.00	179.58	6,815.00	-1,221.00	1,802.78	1,531.46	0.00	0.00	0.00
9,100.00	90.00	179.58	6,815.00	-1,321.00	1,803.51	1,629.89	0.00	0.00	0.00
9,200.00	90.00	179.58	6,815.00	-1,421.00	1,804.25	1,728.32	0.00	0.00	0.00
9,300.00	90.00	179.58	6,815.00	-1,520.99	1,804.98	1,826.75	0.00	0.00	0.00

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## Survey Report

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<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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### 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	179.58	6,815.00	-1,620.99	1,805.71	1,925.18	0.00	0.00	0.00
9,500.00	90.00	179.58	6,815.00	-1,720.99	1,806.44	2,023.61	0.00	0.00	0.00
9,600.00	90.00	179.58	6,815.00	-1,820.99	1,807.17	2,122.03	0.00	0.00	0.00
9,700.00	90.00	179.58	6,815.00	-1,920.98	1,807.90	2,220.46	0.00	0.00	0.00
9,800.00	90.00	179.58	6,815.00	-2,020.98	1,808.64	2,318.89	0.00	0.00	0.00
9,900.00	90.00	179.58	6,815.00	-2,120.98	1,809.37	2,417.32	0.00	0.00	0.00
10,000.00	90.00	179.58	6,815.00	-2,220.98	1,810.10	2,515.75	0.00	0.00	0.00
10,100.00	90.00	179.58	6,815.00	-2,320.97	1,810.83	2,614.18	0.00	0.00	0.00
10,200.00	90.00	179.58	6,815.00	-2,420.97	1,811.56	2,712.61	0.00	0.00	0.00
10,300.00	90.00	179.58	6,815.00	-2,520.97	1,812.30	2,811.04	0.00	0.00	0.00
10,400.00	90.00	179.58	6,815.00	-2,620.96	1,813.03	2,909.47	0.00	0.00	0.00
10,500.00	90.00	179.58	6,815.00	-2,720.96	1,813.76	3,007.90	0.00	0.00	0.00
10,600.00	90.00	179.58	6,815.00	-2,820.96	1,814.49	3,106.33	0.00	0.00	0.00
10,700.00	90.00	179.58	6,815.00	-2,920.96	1,815.22	3,204.76	0.00	0.00	0.00
10,800.00	90.00	179.58	6,815.00	-3,020.95	1,815.95	3,303.19	0.00	0.00	0.00
10,900.00	90.00	179.58	6,815.00	-3,120.95	1,816.69	3,401.62	0.00	0.00	0.00
11,000.00	90.00	179.58	6,815.00	-3,220.95	1,817.42	3,500.04	0.00	0.00	0.00
11,100.00	90.00	179.58	6,815.00	-3,320.95	1,818.15	3,598.47	0.00	0.00	0.00
11,200.00	90.00	179.58	6,815.00	-3,420.94	1,818.88	3,696.90	0.00	0.00	0.00
11,300.00	90.00	179.58	6,815.00	-3,520.94	1,819.61	3,795.33	0.00	0.00	0.00
11,400.00	90.00	179.58	6,815.00	-3,620.94	1,820.34	3,893.76	0.00	0.00	0.00
11,500.00	90.00	179.58	6,815.00	-3,720.94	1,821.08	3,992.19	0.00	0.00	0.00
11,600.00	90.00	179.58	6,815.00	-3,820.93	1,821.81	4,090.62	0.00	0.00	0.00
11,700.00	90.00	179.58	6,815.00	-3,920.93	1,822.54	4,189.05	0.00	0.00	0.00
11,800.00	90.00	179.58	6,815.00	-4,020.93	1,823.27	4,287.48	0.00	0.00	0.00
11,900.00	90.00	179.58	6,815.00	-4,120.92	1,824.00	4,385.91	0.00	0.00	0.00
12,000.00	90.00	179.58	6,815.00	-4,220.92	1,824.73	4,484.34	0.00	0.00	0.00
12,100.00	90.00	179.58	6,815.00	-4,320.92	1,825.47	4,582.77	0.00	0.00	0.00
12,200.00	90.00	179.58	6,815.00	-4,420.92	1,826.20	4,681.20	0.00	0.00	0.00
12,300.00	90.00	179.58	6,815.00	-4,520.91	1,826.93	4,779.63	0.00	0.00	0.00
12,400.00	90.00	179.58	6,815.00	-4,620.91	1,827.66	4,878.05	0.00	0.00	0.00
12,500.00	90.00	179.58	6,815.00	-4,720.91	1,828.39	4,976.48	0.00	0.00	0.00
12,600.00	90.00	179.58	6,815.00	-4,820.91	1,829.12	5,074.91	0.00	0.00	0.00
12,700.00	90.00	179.58	6,815.00	-4,920.90	1,829.86	5,173.34	0.00	0.00	0.00
12,800.00	90.00	179.58	6,815.00	-5,020.90	1,830.59	5,271.77	0.00	0.00	0.00
12,900.00	90.00	179.58	6,815.00	-5,120.90	1,831.32	5,370.20	0.00	0.00	0.00
13,000.00	90.00	179.58	6,815.00	-5,220.90	1,832.05	5,468.63	0.00	0.00	0.00
13,100.00	90.00	179.58	6,815.00	-5,320.89	1,832.78	5,567.06	0.00	0.00	0.00
13,200.00	90.00	179.58	6,815.00	-5,420.89	1,833.51	5,665.49	0.00	0.00	0.00
13,300.00	90.00	179.58	6,815.00	-5,520.89	1,834.25	5,763.92	0.00	0.00	0.00
13,400.00	90.00	179.58	6,815.00	-5,620.88	1,834.98	5,862.35	0.00	0.00	0.00
13,500.00	90.00	179.58	6,815.00	-5,720.88	1,835.71	5,960.78	0.00	0.00	0.00
13,600.00	90.00	179.58	6,815.00	-5,820.88	1,836.44	6,059.21	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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<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	179.58	6,815.00	-5,920.88	1,837.17	6,157.64	0.00	0.00	0.00
13,800.00	90.00	179.58	6,815.00	-6,020.87	1,837.90	6,256.06	0.00	0.00	0.00
13,900.00	90.00	179.58	6,815.00	-6,120.87	1,838.64	6,354.49	0.00	0.00	0.00
14,000.00	90.00	179.58	6,815.00	-6,220.87	1,839.37	6,452.92	0.00	0.00	0.00
14,100.00	90.00	179.58	6,815.00	-6,320.87	1,840.10	6,551.35	0.00	0.00	0.00
14,200.00	90.00	179.58	6,815.00	-6,420.86	1,840.83	6,649.78	0.00	0.00	0.00
14,300.00	90.00	179.58	6,815.00	-6,520.86	1,841.56	6,748.21	0.00	0.00	0.00
14,400.00	90.00	179.58	6,815.00	-6,620.86	1,842.29	6,846.64	0.00	0.00	0.00
14,500.00	90.00	179.58	6,815.00	-6,720.86	1,843.03	6,945.07	0.00	0.00	0.00
14,600.00	90.00	179.58	6,815.00	-6,820.85	1,843.76	7,043.50	0.00	0.00	0.00
14,700.00	90.00	179.58	6,815.00	-6,920.85	1,844.49	7,141.93	0.00	0.00	0.00
14,800.00	90.00	179.58	6,815.00	-7,020.85	1,845.22	7,240.36	0.00	0.00	0.00
14,900.00	90.00	179.58	6,815.00	-7,120.84	1,845.95	7,338.79	0.00	0.00	0.00
15,000.00	90.00	179.58	6,815.00	-7,220.84	1,846.68	7,437.22	0.00	0.00	0.00
15,100.00	90.00	179.58	6,815.00	-7,320.84	1,847.42	7,535.65	0.00	0.00	0.00
15,200.00	90.00	179.58	6,815.00	-7,420.84	1,848.15	7,634.07	0.00	0.00	0.00
15,300.00	90.00	179.58	6,815.00	-7,520.83	1,848.88	7,732.50	0.00	0.00	0.00
15,400.00	90.00	179.58	6,815.00	-7,620.83	1,849.61	7,830.93	0.00	0.00	0.00
15,500.00	90.00	179.58	6,815.00	-7,720.83	1,850.34	7,929.36	0.00	0.00	0.00
15,600.00	90.00	179.58	6,815.00	-7,820.83	1,851.07	8,027.79	0.00	0.00	0.00
15,700.00	90.00	179.58	6,815.00	-7,920.82	1,851.81	8,126.22	0.00	0.00	0.00
15,800.00	90.00	179.58	6,815.00	-8,020.82	1,852.54	8,224.65	0.00	0.00	0.00
15,900.00	90.00	179.58	6,815.00	-8,120.82	1,853.27	8,323.08	0.00	0.00	0.00
16,000.00	90.00	179.58	6,815.00	-8,220.82	1,854.00	8,421.51	0.00	0.00	0.00
16,100.00	90.00	179.58	6,815.00	-8,320.81	1,854.73	8,519.94	0.00	0.00	0.00
16,200.00	90.00	179.58	6,815.00	-8,420.81	1,855.47	8,618.37	0.00	0.00	0.00
16,300.00	90.00	179.58	6,815.00	-8,520.81	1,856.20	8,716.80	0.00	0.00	0.00
16,400.00	90.00	179.58	6,815.00	-8,620.80	1,856.93	8,815.23	0.00	0.00	0.00
16,500.00	90.00	179.58	6,815.00	-8,720.80	1,857.66	8,913.66	0.00	0.00	0.00
16,600.00	90.00	179.58	6,815.00	-8,820.80	1,858.39	9,012.08	0.00	0.00	0.00
16,700.00	90.00	179.58	6,815.00	-8,920.80	1,859.12	9,110.51	0.00	0.00	0.00
16,800.00	90.00	179.58	6,815.00	-9,020.79	1,859.86	9,208.94	0.00	0.00	0.00
16,900.00	90.00	179.58	6,815.00	-9,120.79	1,860.59	9,307.37	0.00	0.00	0.00
17,000.00	90.00	179.58	6,815.00	-9,220.79	1,861.32	9,405.80	0.00	0.00	0.00
17,100.00	90.00	179.58	6,815.00	-9,320.79	1,862.05	9,504.23	0.00	0.00	0.00
17,200.00	90.00	179.58	6,815.00	-9,420.78	1,862.78	9,602.66	0.00	0.00	0.00
17,300.00	90.00	179.58	6,815.00	-9,520.78	1,863.51	9,701.09	0.00	0.00	0.00
17,400.00	90.00	179.58	6,815.00	-9,620.78	1,864.25	9,799.52	0.00	0.00	0.00
17,500.00	90.00	179.58	6,815.00	-9,720.78	1,864.98	9,897.95	0.00	0.00	0.00
17,600.00	90.00	179.58	6,815.00	-9,820.77	1,865.71	9,996.38	0.00	0.00	0.00
17,700.00	90.00	179.58	6,815.00	-9,920.77	1,866.44	10,094.81	0.00	0.00	0.00
17,766.93	90.00	179.58	6,815.00	-9,987.69	1,866.93	10,160.68	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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Well:</b>	Johnson C32-725	<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

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
SHL Johnson C32-725 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,349,748.35	3,257,960.42	40.2897670	-104.5752720
KOP Johnson C32-725 - plan hits target center - Point	0.00	0.00	6,114.15	773.68	1,467.50	1,350,522.03	3,259,427.92	40.2918485	-104.5699827
BHL Johnson C32-725 - plan hits target center - Point	0.00	0.00	6,815.00	-9,987.69	1,866.93	1,339,760.68	3,259,827.35	40.2622979	-104.5689559
TPZ Johnson C32-725 - plan hits target center - Point	0.00	0.00	6,815.00	153.71	1,792.72	1,349,902.06	3,259,753.14	40.2901374	-104.5688402

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
581.00	581.00	Pierre				
661.00	661.00	Upper Pierre Aquifer Top				
1,557.00	1,557.00	Upper Pierre Aquifer Base				
3,711.32	3,644.00	Parkman				
4,231.05	4,106.00	Sussex				
5,174.88	4,945.00	Shannon				
6,370.71	6,008.00	Teepee Buttes				
7,218.86	6,701.00	Sharon Springs				
7,273.79	6,729.00	Top A Chalk				
7,304.35	6,743.00	Top A Marl				
7,372.58	6,770.00	Top B Chalk				
7,506.75	6,805.00	Top B Marl				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
2200	2200	0	0	Start Build 2.00	
6490	6114	774	1467	Start DLS 9.00 TFO 114.72	
7625	6815	154	1793	TPZ/LP at 7625.25 MD	
17,767	6815	-9988	1867	TD at 17766.93 MD	

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



# **Northern Region - DJ Basin**

**Mustang**

**C Section 29**

**Johnson C32-725**

**Wellbore #1**

**Plan #1**

## **Anticollision Summary Report**

**04 October, 2018**

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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	10/4/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,766.93	Plan #1 (Wellbore #1)	2_MWD+IFR1	A005Mb: IFR declination correction only	

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						
C Section 20						
Agricultural Products Inc 20-414 - Wellbore #1 - Wellbore	3,834.29	3,674.98	5,140.92	5,114.09	191.658	CC
Agricultural Products Inc 20-414 - Wellbore #1 - Wellbore	4,000.00	3,808.65	5,141.73	5,113.57	182.597	ES
Agricultural Products Inc 20-414 - Wellbore #1 - Wellbore	6,900.00	6,541.60	5,422.26	5,367.93	99.788	SF
BALBOA #20-1(SI) - Wellbore #1 - No Surveys	6,959.19	6,469.03	619.76	537.36	7.521	CC, ES
BALBOA #20-1(SI) - Wellbore #1 - No Surveys	7,050.00	6,537.32	626.96	543.17	7.483	SF
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	435.44	411.34	486.92	484.88	238.704	CC
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	500.00	471.11	487.20	484.66	192.168	ES
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	6,490.13	6,233.89	1,521.34	1,463.73	26.408	SF
BALBOS #C20-4(TA) - Wellbore #1 - No Surveys	5,206.19	4,923.83	544.48	479.41	8.368	CC, ES
BALBOS #C20-4(TA) - Wellbore #1 - No Surveys	5,500.00	5,185.00	560.87	492.01	8.145	SF
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	0.00	3.64	2,077.10			
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	2,400.00	2,465.56	2,080.48	2,063.73	124.200	ES
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	6,900.00	6,501.38	3,490.87	3,441.59	70.847	SF
Chenoweth C20-25D(SI) - Wellbore #1 - MWD Surveys	975.35	953.13	488.39	483.44	98.655	CC, ES
Chenoweth C20-25D(SI) - Wellbore #1 - MWD Surveys	2,600.00	2,381.11	789.66	773.77	49.674	SF
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	6,996.65	6,501.99	640.62	558.01	7.755	CC
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	7,000.00	6,504.53	640.63	557.98	7.751	ES
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	7,050.00	6,541.32	643.06	559.71	7.715	SF
HANSCOME C #29-27D(SI) - Wellbore #1 - No Surveys	6,982.33	6,491.05	634.22	551.68	7.684	CC, ES
HANSCOME C #29-27D(SI) - Wellbore #1 - No Surveys	7,050.00	6,541.32	638.16	554.65	7.641	SF
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	2,432.18	2,469.81	2,932.09	2,915.16	173.210	CC
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	2,500.00	2,540.04	2,932.26	2,914.85	168.389	ES
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	6,750.00	6,335.70	3,741.52	3,690.78	73.753	SF
JOHNSON C #29-28(PR) - Wellbore #1 - No Surveys	3,261.26	3,199.15	437.92	398.48	11.104	CC
JOHNSON C #29-28(PR) - Wellbore #1 - No Surveys	3,300.00	3,235.17	438.15	398.24	10.979	ES
JOHNSON C #29-28(PR) - Wellbore #1 - No Surveys	3,563.08	3,474.23	455.10	412.01	10.562	SF
Klingenberg C20-780 - Original Drilling - Original Drilling	1,318.78	1,320.89	2,033.48	2,025.78	263.982	CC
Klingenberg C20-780 - Original Drilling - Original Drilling	2,235.03	2,255.30	2,035.26	2,022.07	154.282	ES
Klingenberg C20-780 - Original Drilling - Original Drilling	8,300.00	6,839.90	3,920.62	3,870.06	77.536	SF
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	1,318.78	1,320.89	2,033.48	2,025.78	263.982	CC
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	2,235.03	2,255.30	2,035.26	2,022.07	154.282	ES
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	6,800.00	6,403.94	3,571.15	3,526.09	79.257	SF
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	1,318.78	1,320.89	2,033.48	2,025.78	263.982	CC
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	2,235.03	2,255.30	2,035.26	2,022.07	154.282	ES
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	6,800.00	6,403.94	3,571.15	3,526.09	79.257	SF
Prebish 2 - Wellbore #1 - Wellbore #1 - As Drilled	1,287.46	1,287.55	3,922.25	3,913.56	451.297	CC
Prebish 2 - Wellbore #1 - Wellbore #1 - As Drilled	1,400.00	1,370.68	3,922.66	3,913.28	418.067	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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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						
C Section 20						
Prebish 2 - Wellbore #1 - Wellbore #1 - As Drilled	6,850.00	6,421.43	4,456.57	4,403.44	83.883	SF
Prebish C20-19 - Wellbore #1 - Wellbore #1 - As Drilled	4,700.71	4,400.01	4,359.03	4,324.83	127.435	CC
Prebish C20-19 - Wellbore #1 - Wellbore #1 - As Drilled	5,500.00	5,245.69	4,361.22	4,319.20	103.777	ES
Prebish C20-19 - Wellbore #1 - Wellbore #1 - As Drilled	6,850.00	6,417.23	4,501.00	4,447.03	83.404	SF

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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
C Section 29						
CPC-JOHNSON #29-1(SI) - Wellbore #1 - No Surveys	7,941.17	6,779.00	476.42	389.17	5.460	CC, ES, SF
JOHNSON #19-29(SI) - Wellbore #1 - No Surveys	11,388.36	6,817.00	2,980.02	2,867.64	26.517	CC
JOHNSON #19-29(SI) - Wellbore #1 - No Surveys	11,400.00	6,817.00	2,980.05	2,867.57	26.496	ES
JOHNSON #19-29(SI) - Wellbore #1 - No Surveys	11,900.00	6,817.00	3,023.63	2,907.77	26.098	SF
JOHNSON #20-29(SI) - Wellbore #1 - No Surveys	11,498.64	6,801.00	149.99	36.71	1.324	Level 3, CC, ES, SF
JOHNSON #29-13(SI) - Wellbore #1 - No Surveys	9,415.71	6,802.00	978.78	883.35	10.257	CC, ES
JOHNSON #29-13(SI) - Wellbore #1 - No Surveys	9,500.00	6,802.00	982.40	886.59	10.254	SF
JOHNSON #29-15(SI) - Wellbore #1 - No Surveys	8,791.24	6,798.00	377.31	286.04	4.134	CC, ES
JOHNSON #29-15(SI) - Wellbore #1 - No Surveys	8,800.00	6,798.00	377.42	286.12	4.134	SF
JOHNSON C #29-18(SI) - Wellbore #1 - No Surveys	2,200.00	2,187.00	1,046.09	1,019.35	39.123	CC
JOHNSON C #29-18(SI) - Wellbore #1 - No Surveys	2,300.00	2,286.98	1,046.84	1,018.87	37.434	ES
JOHNSON C #29-18(SI) - Wellbore #1 - No Surveys	9,000.00	6,802.00	1,765.52	1,673.09	19.101	SF
JOHNSON C #29-19(SI) - Wellbore #1 - Gyro Surveys	2,290.57	2,342.58	1,732.30	1,716.30	108.311	CC
JOHNSON C #29-19(SI) - Wellbore #1 - Gyro Surveys	2,300.00	2,353.01	1,732.31	1,716.25	107.842	ES
JOHNSON C #29-19(SI) - Wellbore #1 - Gyro Surveys	9,700.00	6,781.64	3,332.45	3,272.05	55.172	SF
JOHNSON C #29-29(SI) - Wellbore #1 - No Surveys	2,200.00	2,181.00	1,220.55	1,193.86	45.737	CC, ES
JOHNSON C #29-29(SI) - Wellbore #1 - No Surveys	8,000.00	6,796.00	3,029.50	2,941.68	34.495	SF
Johnson C32-715 - Wellbore #1 - Plan #1	2,000.00	2,000.00	22.60	8.72	1.629	CC, ES, SF
Johnson C32-730 - Wellbore #1 - Plan #1	2,200.00	2,201.00	22.60	7.29	1.476	Level 3, CC, ES, SF
Johnson C32-735 - Wellbore #1 - Plan #1	2,209.08	2,210.21	44.91	29.54	2.921	CC
Johnson C32-735 - Wellbore #1 - Plan #1	2,400.00	2,403.51	45.49	28.78	2.723	ES
Johnson C32-735 - Wellbore #1 - Plan #1	2,700.00	2,707.11	49.15	30.42	2.624	SF
Johnson C32-745 - Wellbore #1 - Plan #1	2,332.15	2,335.01	61.98	45.74	3.818	CC, ES
Johnson C32-745 - Wellbore #1 - Plan #1	2,400.00	2,402.99	62.61	45.89	3.746	SF
Johnson C32-755 - Wellbore #1 - Plan #1	3,080.82	3,482.13	1,306.03	1,283.64	58.328	CC
Johnson C32-755 - Wellbore #1 - Plan #1	3,100.00	3,501.18	1,306.09	1,283.56	57.958	ES
Johnson C32-755 - Wellbore #1 - Plan #1	17,766.93	17,700.01	1,962.02	1,724.02	8.244	SF
Johnson C32-765 - Wellbore #1 - Plan #1	2,625.35	2,832.00	1,345.13	1,326.23	71.169	CC, ES
Johnson C32-765 - Wellbore #1 - Plan #1	17,766.93	17,467.63	2,611.98	2,374.11	10.981	SF
Johnson C32-770 - Wellbore #1 - Plan #1	2,200.00	2,212.00	1,386.83	1,371.48	90.348	CC, ES
Johnson C32-770 - Wellbore #1 - Plan #1	17,766.93	17,631.86	2,944.67	2,705.93	12.334	SF
Johnson C32-775 - Wellbore #1 - Plan #1	2,200.92	2,213.35	1,409.20	1,393.85	91.759	CC, ES
Johnson C32-775 - Wellbore #1 - Plan #1	17,766.93	17,516.48	3,266.10	3,027.57	13.693	SF
Johnson C32-785 - Wellbore #1 - Plan #1	1,912.12	1,924.12	1,431.59	1,418.30	107.753	CC
Johnson C32-785 - Wellbore #1 - Plan #1	2,000.00	2,009.95	1,431.59	1,417.69	102.931	ES
Johnson C32-785 - Wellbore #1 - Plan #1	17,766.93	17,486.59	3,917.95	3,679.63	16.440	SF
JOHNSON PM C #29-8(SI) - Wellbore #1 - No Surveys	9,379.72	6,798.00	147.92	52.79	1.555	CC, ES, SF
JOHNSON R C #29-2(SI) - Wellbore #1 - No Surveys	4,174.04	4,029.33	637.89	586.73	12.468	CC
JOHNSON R C #29-2(SI) - Wellbore #1 - No Surveys	4,200.00	4,052.40	638.00	586.49	12.386	ES
JOHNSON R C #29-2(SI) - Wellbore #1 - No Surveys	8,100.00	6,789.00	970.32	882.40	11.036	SF
UPRC #29-4H(SI) - Wellbore #1 - No Surveys	2,200.00	2,189.00	1,985.47	1,958.71	74.206	CC, ES
UPRC #29-4H(SI) - Wellbore #1 - No Surveys	8,900.00	6,804.00	3,831.99	3,740.24	41.766	SF
UPRC #29-6H(SI) - Wellbore #1 - No Surveys	2,200.00	2,197.00	1,590.82	1,564.00	59.302	CC, ES
UPRC #29-6H(SI) - Wellbore #1 - No Surveys	9,600.00	6,812.00	2,446.65	2,350.27	25.383	SF
VICTOR #C29-16(SI) - Wellbore #1 - No Surveys	12,153.56	6,790.00	449.46	329.97	3.761	CC, ES
VICTOR #C29-16(SI) - Wellbore #1 - No Surveys	12,200.00	6,790.00	451.85	331.60	3.758	SF
VICTOR C #29-10(SI) - Wellbore #1 - No Surveys	10,782.96	6,828.00	999.31	892.40	9.348	CC, ES
VICTOR C #29-10(SI) - Wellbore #1 - No Surveys	10,800.00	6,828.00	999.46	892.47	9.342	SF
VICTOR C #29-11(SI) - Wellbore #1 - No Surveys	10,784.25	6,835.00	2,350.22	2,243.24	21.969	CC
VICTOR C #29-11(SI) - Wellbore #1 - No Surveys	10,800.00	6,835.00	2,350.27	2,243.18	21.947	ES
VICTOR C #29-11(SI) - Wellbore #1 - No Surveys	11,100.00	6,835.00	2,371.34	2,262.33	21.754	SF
VICTOR C #29-12(SI) - Wellbore #1 - No Surveys	2,200.00	2,225.00	3,497.03	3,469.96	129.183	CC, ES
VICTOR C #29-12(SI) - Wellbore #1 - No Surveys	11,500.00	6,840.00	3,707.19	3,595.23	33.112	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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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
C Section 29						
VICTOR C #29-13(SI) - Wellbore #1 - No Surveys	12,249.27	6,814.00	3,609.08	3,488.44	29.917	CC
VICTOR C #29-13(SI) - Wellbore #1 - No Surveys	12,300.00	6,814.00	3,609.43	3,488.38	29.816	ES
VICTOR C #29-13(SI) - Wellbore #1 - No Surveys	12,900.00	6,814.00	3,667.27	3,541.97	29.267	SF
VICTOR C #29-14(SI) - Wellbore #1 - No Surveys	12,220.90	6,801.00	2,314.81	2,194.57	19.251	CC, ES
VICTOR C #29-14(SI) - Wellbore #1 - No Surveys	12,500.00	6,801.00	2,331.58	2,209.55	19.108	SF
VICTOR C #29-15(SI) - Wellbore #1 - No Surveys	12,022.60	6,817.00	988.44	869.99	8.345	CC, ES, SF
VICTOR C #29-3(PA) - Wellbore #1 - Gyro Surveys	769.56	755.57	854.18	849.19	171.038	CC
VICTOR C #29-3(PA) - Wellbore #1 - Gyro Surveys	2,200.00	2,185.38	856.02	840.91	56.659	ES
VICTOR C #29-3(PA) - Wellbore #1 - Gyro Surveys	8,800.00	6,799.28	2,572.72	2,517.31	46.428	SF
VICTOR C #29-4(PA) - Wellbore #1 - No Surveys	2,200.00	2,190.00	1,857.08	1,830.31	69.385	CC, ES
VICTOR C #29-4(PA) - Wellbore #1 - No Surveys	5,200.00	4,957.33	2,896.10	2,834.28	46.849	SF
VICTOR C #29-5(PA) - Wellbore #1 - Gyro Surveys	0.00	7.75	2,469.64			
VICTOR C #29-5(PA) - Wellbore #1 - Gyro Surveys	2,200.00	2,207.23	2,475.02	2,459.83	162.928	ES
VICTOR C #29-5(PA) - Wellbore #1 - Gyro Surveys	10,600.00	6,865.19	3,827.80	3,760.48	56.858	SF
VICTOR C #29-6(PA) - Wellbore #1 - No Surveys	2,200.00	2,198.00	1,748.24	1,721.41	65.149	CC, ES
VICTOR C #29-6(PA) - Wellbore #1 - No Surveys	5,200.00	4,965.33	2,614.65	2,551.80	41.604	SF
VICTOR C #29-9(SI) - Wellbore #1 - No Surveys	10,689.33	6,786.00	493.04	387.33	4.664	CC
VICTOR C #29-9(SI) - Wellbore #1 - No Surveys	10,700.00	6,786.00	493.15	387.27	4.658	ES, SF
C Section 32						
HENNINGTON C #32-10(PR) - Wellbore #1 - No Surveys	15,993.29	6,781.00	965.07	806.34	6.080	CC
HENNINGTON C #32-10(PR) - Wellbore #1 - No Surveys	16,000.00	6,781.00	965.10	806.34	6.079	ES, SF
HENNINGTON C #32-2(PR) - Wellbore #1 - No Surveys	13,224.80	6,782.00	1,002.52	872.43	7.707	CC, ES, SF
HENNINGTON C #32-7(PA) - Wellbore #1 - Gyro Survey	14,575.62	6,698.91	1,158.20	1,051.06	10.811	CC, ES
HENNINGTON C #32-7(PA) - Wellbore #1 - Gyro Survey	14,600.00	6,698.59	1,158.45	1,051.21	10.802	SF
HOWELL #1(SI) - Wellbore #1 - No Surveys	16,948.81	6,811.00	3,076.29	2,907.21	18.194	CC, ES
HOWELL #1(SI) - Wellbore #1 - No Surveys	17,200.00	6,811.00	3,086.53	2,915.65	18.063	SF
HOWELL #32-1(SI) - Wellbore #1 - No Surveys	14,933.30	6,795.00	2,315.92	2,168.16	15.674	CC, ES
HOWELL #32-1(SI) - Wellbore #1 - No Surveys	15,100.00	6,795.00	2,321.91	2,173.06	15.599	SF
HOWELL #32-2(SI) - Wellbore #1 - No Surveys	13,539.46	6,789.00	2,257.44	2,124.10	16.930	CC, ES
HOWELL #32-2(SI) - Wellbore #1 - No Surveys	13,700.00	6,789.00	2,263.15	2,128.74	16.838	SF
HOWELL #32-23(PR) - Wellbore #1 - No Surveys	14,640.48	6,822.00	3,491.87	3,346.92	24.090	CC, ES
HOWELL #32-23(PR) - Wellbore #1 - No Surveys	15,100.00	6,822.00	3,521.98	3,373.72	23.755	SF
HOWELL #C 32-12(SI) - Wellbore #1 - No Surveys	16,160.04	6,836.00	3,645.20	3,484.23	22.645	CC
HOWELL #C 32-12(SI) - Wellbore #1 - No Surveys	16,200.00	6,836.00	3,645.42	3,484.10	22.598	ES
HOWELL #C 32-12(SI) - Wellbore #1 - No Surveys	16,600.00	6,836.00	3,671.65	3,507.50	22.367	SF
MCGUIRK-HOWELL C #32-11(SI) - Wellbore #1 - No Su	15,954.90	6,794.00	2,322.53	2,164.09	14.658	CC, ES
MCGUIRK-HOWELL C #32-11(SI) - Wellbore #1 - No Su	16,100.00	6,794.00	2,327.06	2,167.66	14.599	SF
MCGUIRK-HOWELL C #32-14(TA) - Wellbore #1 - No Su	17,328.24	6,800.00	2,430.75	2,257.74	14.049	CC, ES
MCGUIRK-HOWELL C #32-14(TA) - Wellbore #1 - No Su	17,500.00	6,800.00	2,436.82	2,262.70	13.995	SF
MCGUIRK-HOWELL C #32-4(SI) - Wellbore #1 - No Sur	13,253.76	6,837.00	3,533.76	3,402.90	27.004	CC
MCGUIRK-HOWELL C #32-4(SI) - Wellbore #1 - No Sur	13,300.00	6,837.00	3,534.06	3,402.81	26.927	ES
MCGUIRK-HOWELL C #32-4(SI) - Wellbore #1 - No Sur	13,800.00	6,837.00	3,575.73	3,440.93	26.527	SF
NELSON #32-25(PR) - Wellbore #1 - No Surveys	14,045.12	6,826.00	2,976.35	2,837.51	21.438	CC, ES
NELSON #32-25(PR) - Wellbore #1 - No Surveys	14,400.00	6,826.00	2,997.43	2,856.14	21.214	SF
PLUSS #32-43(PA) - Wellbore #1 - Gyro Surveys	17,473.62	6,716.75	1,277.41	1,139.53	9.265	CC, ES
PLUSS #32-43(PA) - Wellbore #1 - Gyro Surveys	17,500.00	6,716.00	1,277.68	1,139.68	9.259	SF
PTF #C 32-1(SI) - Wellbore #1 - No Surveys	13,510.23	6,774.00	317.35	184.44	2.388	CC, ES, SF
PTF #C 32-16(SI) - Wellbore #1 - No Surveys	17,371.68	6,775.00	324.11	150.86	1.871	CC, ES, SF
PTF #C 32-8(SI) - Wellbore #1 - No Surveys	14,883.57	6,764.00	327.32	180.36	2.227	CC, ES
PTF #C 32-8(SI) - Wellbore #1 - No Surveys	14,900.00	6,764.00	327.74	180.38	2.224	SF
PTF #C 32-9(SI) - Wellbore #1 - No Surveys	16,245.94	6,766.00	351.21	189.95	2.178	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 Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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 @ 4804.00ft

Offset Depths are relative to Offset Datum

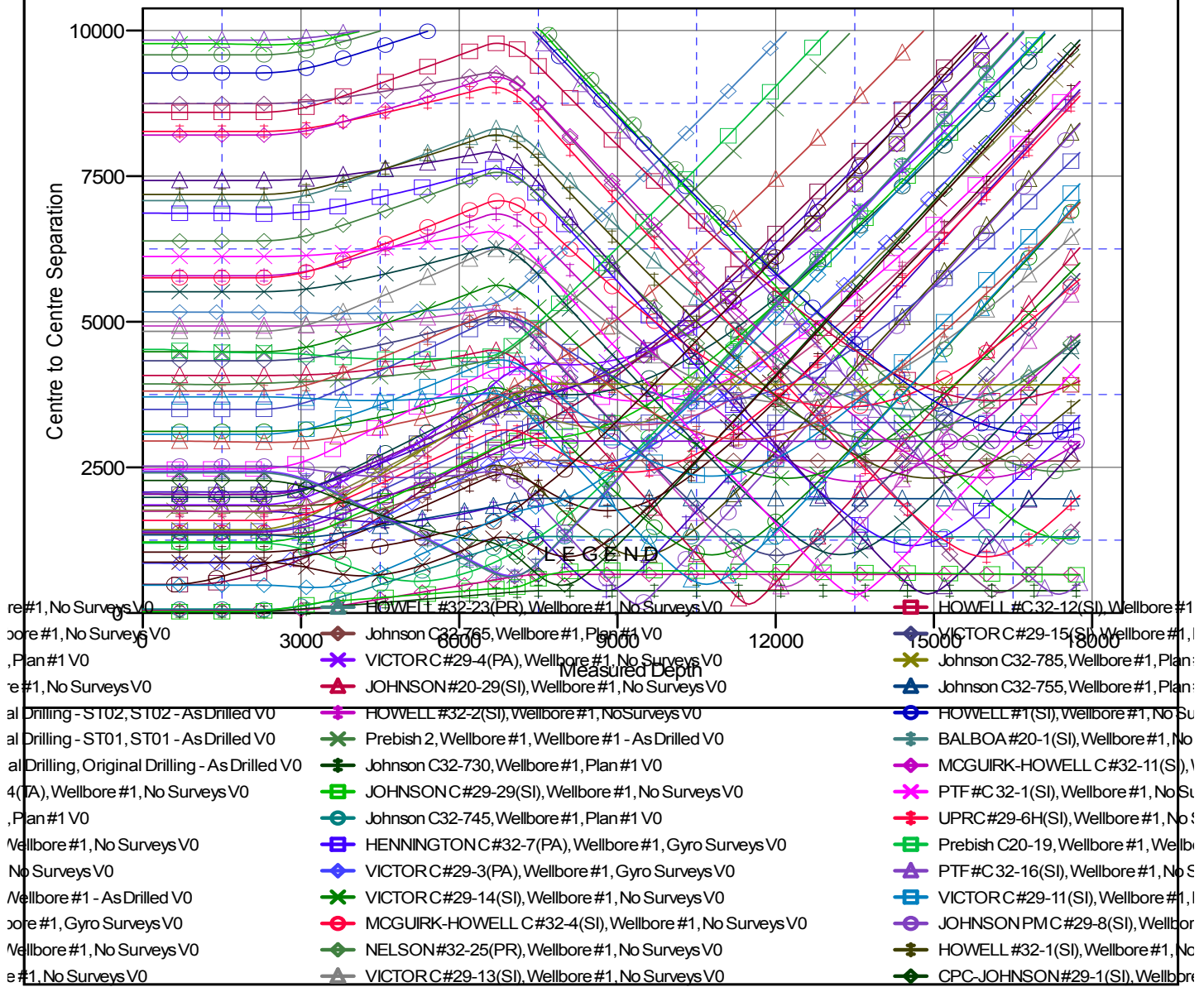
Central Meridian is -105.5000000

Coordinates are relative to: Johnson C32-725

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.60°

## Ladder Plot



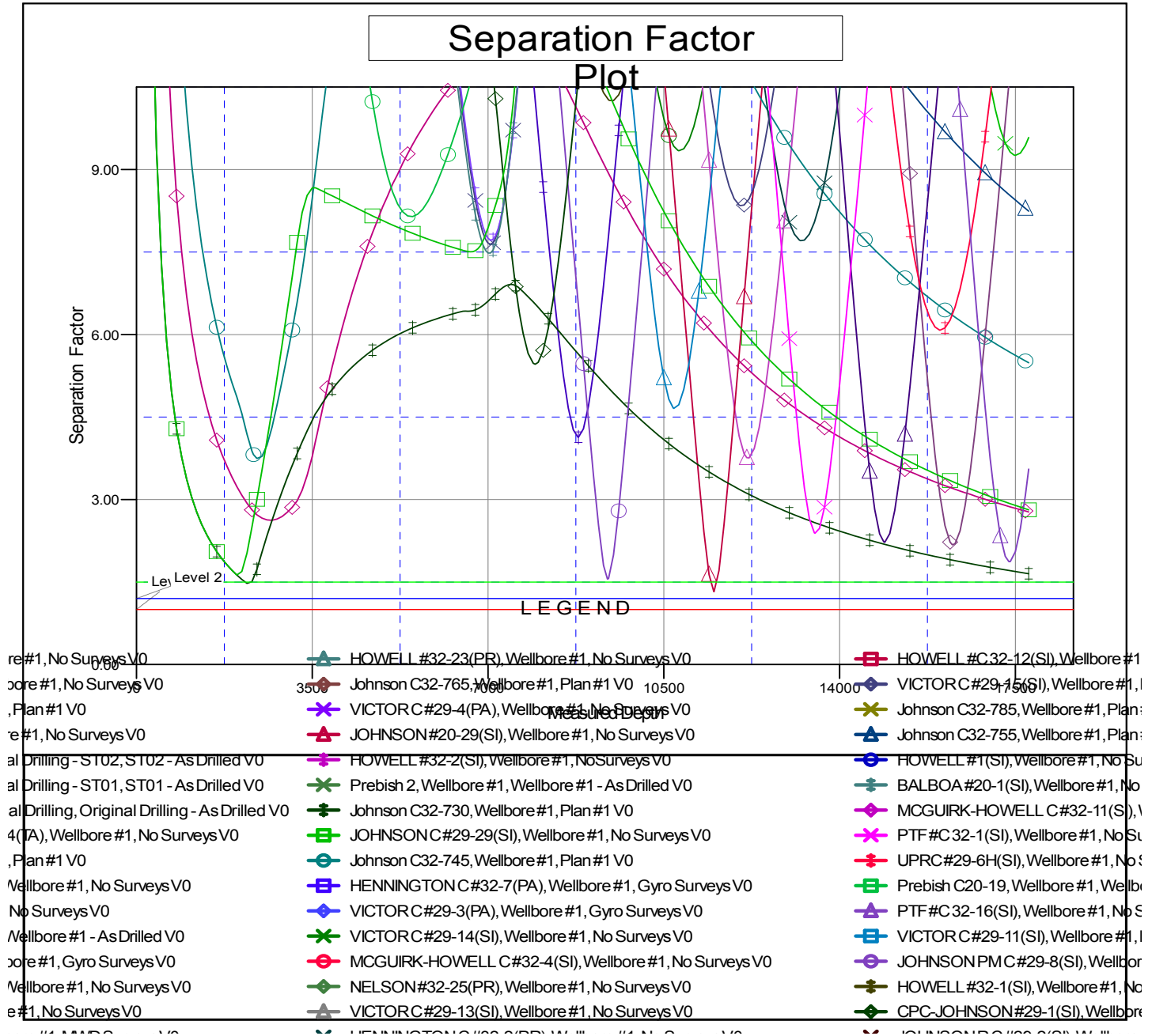
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-725
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4804.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4804.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-725	<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 @ 4804.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.5000000

Coordinates are relative to: Johnson C32-725  
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