

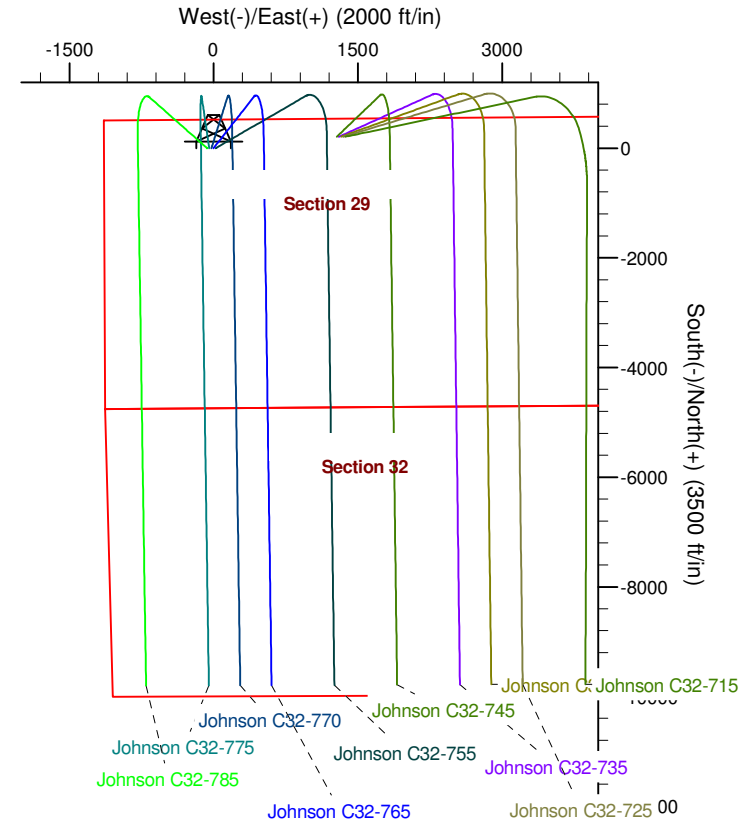
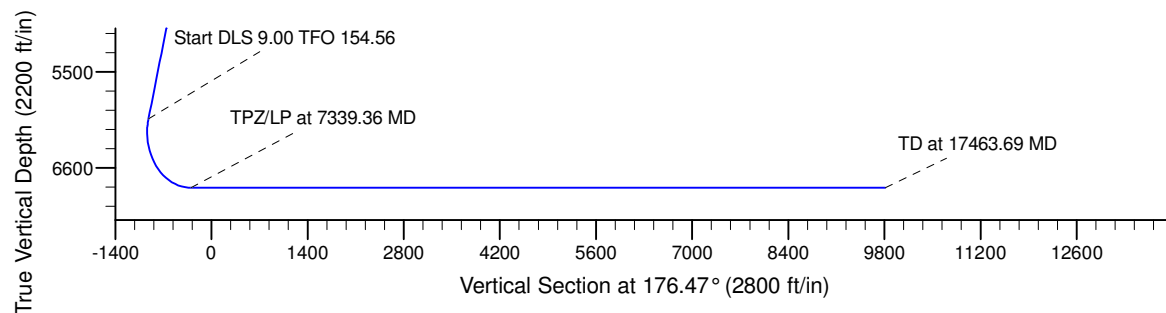
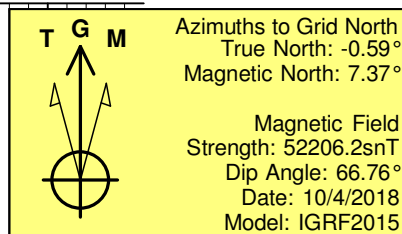
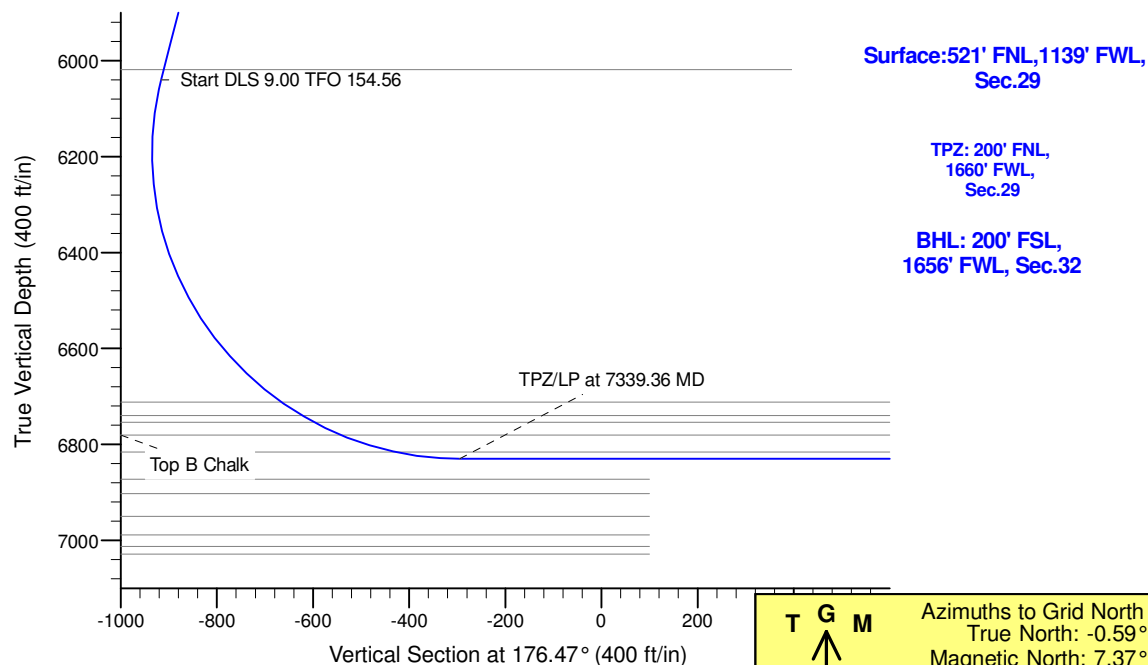
Project: Mustang  
Site: C Section 29  
Well: Johnson C32-765  
Wellbore: Wellbore #1  
Design: Plan #1

# 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	2792.43	15.85	24.12	2782.37	99.39	44.50	2.00	24.12	-96.47	
4	6179.60	15.85	24.12	6040.77	943.67	422.47	0.00	0.00	-915.90	
5	7339.36	90.00	179.53	6830.00	327.78	520.74	9.00	154.56	-295.13	TPZ Johnson C32-765
6	17463.69	90.00	179.53	6830.00	-9796.21	603.66	0.00	0.00	9814.79	BHL Johnson C32-765



## WELL DETAILS: Johnson C32-765

	Northing	Easting	Latitude	Longitude
0.00	0.00	1349539.42	4787.00 40.2892319	-104.5801140

## Plan: Plan #1 (Johnson C32-765/Wellbore #1)

Created By: Colby Baxter Date: 16:03, October 04 2018

Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Approved: \_\_\_\_\_ Date: \_\_\_\_\_

# **Northern Region - DJ Basin**

**Mustang**

**C Section 29**

**Johnson C32-765**

**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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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 C32-765				
Well Position	+N/-S	0.00 ft	Northing:	1,349,539.42 usft	Latitude:	40.2892320
	+E/-W	0.00 ft	Easting:	3,256,611.78 usft	Longitude:	-104.5801140
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,787.00 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	7.97	66.76	52,206.15931675

<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	176.47	

<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	17,463.69	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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	24.12	2,099.98	1.59	0.71	-1.55	2.00	2.00	0.00
2,200.00	4.00	24.12	2,199.84	6.37	2.85	-6.18	2.00	2.00	0.00
2,300.00	6.00	24.12	2,299.45	14.32	6.41	-13.90	2.00	2.00	0.00
2,400.00	8.00	24.12	2,398.70	25.45	11.39	-24.70	2.00	2.00	0.00
2,500.00	10.00	24.12	2,497.47	39.72	17.78	-38.55	2.00	2.00	0.00
2,600.00	12.00	24.12	2,595.62	57.14	25.58	-55.46	2.00	2.00	0.00
2,700.00	14.00	24.12	2,693.06	77.67	34.77	-75.38	2.00	2.00	0.00
2,792.43	15.85	24.12	2,782.37	99.39	44.50	-96.47	2.00	2.00	0.00
2,800.00	15.85	24.12	2,789.65	101.28	45.34	-98.30	0.00	0.00	0.00
2,900.00	15.85	24.12	2,885.84	126.21	56.50	-122.49	0.00	0.00	0.00
3,000.00	15.85	24.12	2,982.04	151.13	67.66	-146.69	0.00	0.00	0.00
3,100.00	15.85	24.12	3,078.24	176.06	78.82	-170.88	0.00	0.00	0.00
3,200.00	15.85	24.12	3,174.44	200.98	89.98	-195.07	0.00	0.00	0.00
3,300.00	15.85	24.12	3,270.64	225.91	101.14	-219.26	0.00	0.00	0.00
3,400.00	15.85	24.12	3,366.84	250.84	112.30	-243.45	0.00	0.00	0.00
3,500.00	15.85	24.12	3,463.04	275.76	123.46	-267.65	0.00	0.00	0.00
3,600.00	15.85	24.12	3,559.23	300.69	134.61	-291.84	0.00	0.00	0.00
3,700.00	15.85	24.12	3,655.43	325.61	145.77	-316.03	0.00	0.00	0.00
3,800.00	15.85	24.12	3,751.63	350.54	156.93	-340.22	0.00	0.00	0.00
3,900.00	15.85	24.12	3,847.83	375.46	168.09	-364.42	0.00	0.00	0.00
4,000.00	15.85	24.12	3,944.03	400.39	179.25	-388.61	0.00	0.00	0.00
4,100.00	15.85	24.12	4,040.23	425.32	190.41	-412.80	0.00	0.00	0.00
4,200.00	15.85	24.12	4,136.43	450.24	201.57	-436.99	0.00	0.00	0.00
4,300.00	15.85	24.12	4,232.63	475.17	212.73	-461.18	0.00	0.00	0.00
4,400.00	15.85	24.12	4,328.82	500.09	223.89	-485.38	0.00	0.00	0.00
4,500.00	15.85	24.12	4,425.02	525.02	235.05	-509.57	0.00	0.00	0.00
4,600.00	15.85	24.12	4,521.22	549.95	246.21	-533.76	0.00	0.00	0.00
4,700.00	15.85	24.12	4,617.42	574.87	257.36	-557.95	0.00	0.00	0.00
4,800.00	15.85	24.12	4,713.62	599.80	268.52	-582.15	0.00	0.00	0.00
4,900.00	15.85	24.12	4,809.82	624.72	279.68	-606.34	0.00	0.00	0.00
5,000.00	15.85	24.12	4,906.02	649.65	290.84	-630.53	0.00	0.00	0.00
5,100.00	15.85	24.12	5,002.21	674.57	302.00	-654.72	0.00	0.00	0.00
5,200.00	15.85	24.12	5,098.41	699.50	313.16	-678.92	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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	15.85	24.12	5,194.61	724.43	324.32	-703.11	0.00	0.00	0.00	
5,400.00	15.85	24.12	5,290.81	749.35	335.48	-727.30	0.00	0.00	0.00	
5,500.00	15.85	24.12	5,387.01	774.28	346.64	-751.49	0.00	0.00	0.00	
5,600.00	15.85	24.12	5,483.21	799.20	357.80	-775.68	0.00	0.00	0.00	
5,700.00	15.85	24.12	5,579.41	824.13	368.95	-799.88	0.00	0.00	0.00	
5,800.00	15.85	24.12	5,675.61	849.06	380.11	-824.07	0.00	0.00	0.00	
5,900.00	15.85	24.12	5,771.80	873.98	391.27	-848.26	0.00	0.00	0.00	
6,000.00	15.85	24.12	5,868.00	898.91	402.43	-872.45	0.00	0.00	0.00	
6,100.00	15.85	24.12	5,964.20	923.83	413.59	-896.65	0.00	0.00	0.00	
6,179.60	15.85	24.12	6,040.77	943.67	422.47	-915.90	0.00	0.00	0.00	
6,200.00	14.21	27.33	6,060.48	948.44	424.76	-920.52	9.00	-8.02	15.75	
6,300.00	7.61	61.71	6,158.71	962.51	436.25	-933.86	9.00	-6.60	34.37	
6,400.00	8.66	128.69	6,257.90	960.94	447.98	-931.57	9.00	1.05	66.99	
6,500.00	15.92	155.07	6,355.62	943.76	459.66	-913.70	9.00	7.26	26.37	
6,600.00	24.35	164.40	6,449.44	911.40	471.01	-880.70	9.00	8.43	9.34	
6,700.00	33.07	169.08	6,537.07	864.65	481.74	-833.39	9.00	8.72	4.68	
6,800.00	41.90	171.97	6,616.35	804.67	491.60	-772.91	9.00	8.83	2.89	
6,900.00	50.78	174.00	6,685.32	732.93	500.33	-700.77	9.00	8.88	2.03	
7,000.00	59.69	175.57	6,742.28	651.20	507.73	-618.74	9.00	8.91	1.57	
7,100.00	68.61	176.88	6,785.84	561.49	513.61	-528.84	9.00	8.92	1.31	
7,200.00	77.55	178.04	6,814.91	466.01	517.83	-433.28	9.00	8.93	1.16	
7,300.00	86.48	179.11	6,828.79	367.12	520.28	-334.42	9.00	8.94	1.08	
7,339.36	90.00	179.53	6,830.00	327.78	520.74	-295.13	9.00	8.94	1.06	
7,400.00	90.00	179.53	6,830.00	267.14	521.24	-234.58	0.00	0.00	0.00	
7,500.00	90.00	179.53	6,830.00	167.15	522.06	-134.72	0.00	0.00	0.00	
7,600.00	90.00	179.53	6,830.00	67.15	522.88	-34.87	0.00	0.00	0.00	
7,700.00	90.00	179.53	6,830.00	-32.85	523.70	64.99	0.00	0.00	0.00	
7,800.00	90.00	179.53	6,830.00	-132.84	524.51	164.85	0.00	0.00	0.00	
7,900.00	90.00	179.53	6,830.00	-232.84	525.33	264.71	0.00	0.00	0.00	
8,000.00	90.00	179.53	6,830.00	-332.84	526.15	364.57	0.00	0.00	0.00	
8,100.00	90.00	179.53	6,830.00	-432.83	526.97	464.42	0.00	0.00	0.00	
8,200.00	90.00	179.53	6,830.00	-532.83	527.79	564.28	0.00	0.00	0.00	
8,300.00	90.00	179.53	6,830.00	-632.82	528.61	664.14	0.00	0.00	0.00	
8,400.00	90.00	179.53	6,830.00	-732.82	529.43	764.00	0.00	0.00	0.00	
8,500.00	90.00	179.53	6,830.00	-832.82	530.25	863.85	0.00	0.00	0.00	
8,600.00	90.00	179.53	6,830.00	-932.81	531.07	963.71	0.00	0.00	0.00	
8,700.00	90.00	179.53	6,830.00	-1,032.81	531.89	1,063.57	0.00	0.00	0.00	
8,800.00	90.00	179.53	6,830.00	-1,132.81	532.70	1,163.43	0.00	0.00	0.00	
8,900.00	90.00	179.53	6,830.00	-1,232.80	533.52	1,263.29	0.00	0.00	0.00	
9,000.00	90.00	179.53	6,830.00	-1,332.80	534.34	1,363.14	0.00	0.00	0.00	
9,100.00	90.00	179.53	6,830.00	-1,432.80	535.16	1,463.00	0.00	0.00	0.00	
9,200.00	90.00	179.53	6,830.00	-1,532.79	535.98	1,562.86	0.00	0.00	0.00	
9,300.00	90.00	179.53	6,830.00	-1,632.79	536.80	1,662.72	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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	179.53	6,830.00	-1,732.79	537.62	1,762.57	0.00	0.00	0.00
9,500.00	90.00	179.53	6,830.00	-1,832.78	538.44	1,862.43	0.00	0.00	0.00
9,600.00	90.00	179.53	6,830.00	-1,932.78	539.26	1,962.29	0.00	0.00	0.00
9,700.00	90.00	179.53	6,830.00	-2,032.78	540.07	2,062.15	0.00	0.00	0.00
9,800.00	90.00	179.53	6,830.00	-2,132.77	540.89	2,162.00	0.00	0.00	0.00
9,900.00	90.00	179.53	6,830.00	-2,232.77	541.71	2,261.86	0.00	0.00	0.00
10,000.00	90.00	179.53	6,830.00	-2,332.77	542.53	2,361.72	0.00	0.00	0.00
10,100.00	90.00	179.53	6,830.00	-2,432.76	543.35	2,461.58	0.00	0.00	0.00
10,200.00	90.00	179.53	6,830.00	-2,532.76	544.17	2,561.44	0.00	0.00	0.00
10,300.00	90.00	179.53	6,830.00	-2,632.76	544.99	2,661.29	0.00	0.00	0.00
10,400.00	90.00	179.53	6,830.00	-2,732.75	545.81	2,761.15	0.00	0.00	0.00
10,500.00	90.00	179.53	6,830.00	-2,832.75	546.63	2,861.01	0.00	0.00	0.00
10,600.00	90.00	179.53	6,830.00	-2,932.75	547.45	2,960.87	0.00	0.00	0.00
10,700.00	90.00	179.53	6,830.00	-3,032.74	548.26	3,060.72	0.00	0.00	0.00
10,800.00	90.00	179.53	6,830.00	-3,132.74	549.08	3,160.58	0.00	0.00	0.00
10,900.00	90.00	179.53	6,830.00	-3,232.74	549.90	3,260.44	0.00	0.00	0.00
11,000.00	90.00	179.53	6,830.00	-3,332.73	550.72	3,360.30	0.00	0.00	0.00
11,100.00	90.00	179.53	6,830.00	-3,432.73	551.54	3,460.15	0.00	0.00	0.00
11,200.00	90.00	179.53	6,830.00	-3,532.73	552.36	3,560.01	0.00	0.00	0.00
11,300.00	90.00	179.53	6,830.00	-3,632.72	553.18	3,659.87	0.00	0.00	0.00
11,400.00	90.00	179.53	6,830.00	-3,732.72	554.00	3,759.73	0.00	0.00	0.00
11,500.00	90.00	179.53	6,830.00	-3,832.72	554.82	3,859.59	0.00	0.00	0.00
11,600.00	90.00	179.53	6,830.00	-3,932.71	555.64	3,959.44	0.00	0.00	0.00
11,700.00	90.00	179.53	6,830.00	-4,032.71	556.45	4,059.30	0.00	0.00	0.00
11,800.00	90.00	179.53	6,830.00	-4,132.71	557.27	4,159.16	0.00	0.00	0.00
11,900.00	90.00	179.53	6,830.00	-4,232.70	558.09	4,259.02	0.00	0.00	0.00
12,000.00	90.00	179.53	6,830.00	-4,332.70	558.91	4,358.87	0.00	0.00	0.00
12,100.00	90.00	179.53	6,830.00	-4,432.70	559.73	4,458.73	0.00	0.00	0.00
12,200.00	90.00	179.53	6,830.00	-4,532.69	560.55	4,558.59	0.00	0.00	0.00
12,300.00	90.00	179.53	6,830.00	-4,632.69	561.37	4,658.45	0.00	0.00	0.00
12,400.00	90.00	179.53	6,830.00	-4,732.69	562.19	4,758.30	0.00	0.00	0.00
12,500.00	90.00	179.53	6,830.00	-4,832.68	563.01	4,858.16	0.00	0.00	0.00
12,600.00	90.00	179.53	6,830.00	-4,932.68	563.82	4,958.02	0.00	0.00	0.00
12,700.00	90.00	179.53	6,830.00	-5,032.68	564.64	5,057.88	0.00	0.00	0.00
12,800.00	90.00	179.53	6,830.00	-5,132.67	565.46	5,157.74	0.00	0.00	0.00
12,900.00	90.00	179.53	6,830.00	-5,232.67	566.28	5,257.59	0.00	0.00	0.00
13,000.00	90.00	179.53	6,830.00	-5,332.67	567.10	5,357.45	0.00	0.00	0.00
13,100.00	90.00	179.53	6,830.00	-5,432.66	567.92	5,457.31	0.00	0.00	0.00
13,200.00	90.00	179.53	6,830.00	-5,532.66	568.74	5,557.17	0.00	0.00	0.00
13,300.00	90.00	179.53	6,830.00	-5,632.66	569.56	5,657.02	0.00	0.00	0.00
13,400.00	90.00	179.53	6,830.00	-5,732.65	570.38	5,756.88	0.00	0.00	0.00
13,500.00	90.00	179.53	6,830.00	-5,832.65	571.20	5,856.74	0.00	0.00	0.00
13,600.00	90.00	179.53	6,830.00	-5,932.65	572.01	5,956.60	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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	179.53	6,830.00	-6,032.64	572.83	6,056.45	0.00	0.00	0.00
13,800.00	90.00	179.53	6,830.00	-6,132.64	573.65	6,156.31	0.00	0.00	0.00
13,900.00	90.00	179.53	6,830.00	-6,232.64	574.47	6,256.17	0.00	0.00	0.00
14,000.00	90.00	179.53	6,830.00	-6,332.63	575.29	6,356.03	0.00	0.00	0.00
14,100.00	90.00	179.53	6,830.00	-6,432.63	576.11	6,455.89	0.00	0.00	0.00
14,200.00	90.00	179.53	6,830.00	-6,532.63	576.93	6,555.74	0.00	0.00	0.00
14,300.00	90.00	179.53	6,830.00	-6,632.62	577.75	6,655.60	0.00	0.00	0.00
14,400.00	90.00	179.53	6,830.00	-6,732.62	578.57	6,755.46	0.00	0.00	0.00
14,500.00	90.00	179.53	6,830.00	-6,832.62	579.38	6,855.32	0.00	0.00	0.00
14,600.00	90.00	179.53	6,830.00	-6,932.61	580.20	6,955.17	0.00	0.00	0.00
14,700.00	90.00	179.53	6,830.00	-7,032.61	581.02	7,055.03	0.00	0.00	0.00
14,800.00	90.00	179.53	6,830.00	-7,132.61	581.84	7,154.89	0.00	0.00	0.00
14,900.00	90.00	179.53	6,830.00	-7,232.60	582.66	7,254.75	0.00	0.00	0.00
15,000.00	90.00	179.53	6,830.00	-7,332.60	583.48	7,354.61	0.00	0.00	0.00
15,100.00	90.00	179.53	6,830.00	-7,432.60	584.30	7,454.46	0.00	0.00	0.00
15,200.00	90.00	179.53	6,830.00	-7,532.59	585.12	7,554.32	0.00	0.00	0.00
15,300.00	90.00	179.53	6,830.00	-7,632.59	585.94	7,654.18	0.00	0.00	0.00
15,400.00	90.00	179.53	6,830.00	-7,732.59	586.76	7,754.04	0.00	0.00	0.00
15,500.00	90.00	179.53	6,830.00	-7,832.58	587.57	7,853.89	0.00	0.00	0.00
15,600.00	90.00	179.53	6,830.00	-7,932.58	588.39	7,953.75	0.00	0.00	0.00
15,700.00	90.00	179.53	6,830.00	-8,032.58	589.21	8,053.61	0.00	0.00	0.00
15,800.00	90.00	179.53	6,830.00	-8,132.57	590.03	8,153.47	0.00	0.00	0.00
15,900.00	90.00	179.53	6,830.00	-8,232.57	590.85	8,253.32	0.00	0.00	0.00
16,000.00	90.00	179.53	6,830.00	-8,332.57	591.67	8,353.18	0.00	0.00	0.00
16,100.00	90.00	179.53	6,830.00	-8,432.56	592.49	8,453.04	0.00	0.00	0.00
16,200.00	90.00	179.53	6,830.00	-8,532.56	593.31	8,552.90	0.00	0.00	0.00
16,300.00	90.00	179.53	6,830.00	-8,632.56	594.13	8,652.76	0.00	0.00	0.00
16,400.00	90.00	179.53	6,830.00	-8,732.55	594.95	8,752.61	0.00	0.00	0.00
16,500.00	90.00	179.53	6,830.00	-8,832.55	595.76	8,852.47	0.00	0.00	0.00
16,600.00	90.00	179.53	6,830.00	-8,932.55	596.58	8,952.33	0.00	0.00	0.00
16,700.00	90.00	179.53	6,830.00	-9,032.54	597.40	9,052.19	0.00	0.00	0.00
16,800.00	90.00	179.53	6,830.00	-9,132.54	598.22	9,152.04	0.00	0.00	0.00
16,900.00	90.00	179.53	6,830.00	-9,232.54	599.04	9,251.90	0.00	0.00	0.00
17,000.00	90.00	179.53	6,830.00	-9,332.53	599.86	9,351.76	0.00	0.00	0.00
17,100.00	90.00	179.53	6,830.00	-9,432.53	600.68	9,451.62	0.00	0.00	0.00
17,200.00	90.00	179.53	6,830.00	-9,532.53	601.50	9,551.47	0.00	0.00	0.00
17,300.00	90.00	179.53	6,830.00	-9,632.52	602.32	9,651.33	0.00	0.00	0.00
17,400.00	90.00	179.53	6,830.00	-9,732.52	603.13	9,751.19	0.00	0.00	0.00
17,463.69	90.00	179.53	6,830.00	-9,796.21	603.66	9,814.79	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Well:</b>	Johnson C32-765	<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 C32-765 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,349,539.42	3,256,611.78	40.2892320	-104.5801140
KOP Johnson C32-765 - plan hits target center - Point	0.00	0.00	6,040.78	943.67	422.47	1,350,483.09	3,257,034.25	40.2918102	-104.5785645
TPZ Johnson C32-765 - plan hits target center - Point	0.00	0.01	6,830.00	327.78	520.74	1,349,867.20	3,257,132.52	40.2901169	-104.5782352
BHL Johnson C32-765 - plan hits target center - Point	0.00	0.00	6,830.00	-9,796.21	603.66	1,339,743.23	3,257,215.43	40.2623249	-104.5783152

### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
592.00	592.00	Pierre			
672.00	672.00	Upper Pierre Aquifer Top			
1,568.00	1,568.00	Upper Pierre Aquifer Base			
3,699.55	3,655.00	Parkman			
4,179.81	4,117.00	Sussex			
5,051.96	4,956.00	Shannon			
6,156.96	6,019.00	Teepee Buttes			
6,944.09	6,712.00	Sharon Springs			
6,995.51	6,740.00	Top A Chalk			
7,024.00	6,754.00	Top A Marl			
7,087.07	6,781.00	Top B Chalk			
7,205.14	6,816.00	Top B Marl			

### 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
6180	6041	99	44	Start DLS 9.00 TFO 154.56
7339	6830	944	422	TPZ/LP at 7339.36 MD
17,464	6830	328	521	TD at 17463.69 MD

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



# **Northern Region - DJ Basin**

**Mustang**

**C Section 29**

**Johnson C32-765**

**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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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	17,463.69	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	6,314.07	6,096.92	4,197.50	4,152.96	94.241	CC, ES
Agricultural Products Inc 20-414 - Wellbore #1 - Wellbore	6,650.00	6,518.26	4,278.30	4,231.52	91.439	SF
BALBOA #20-1(SI) - Wellbore #1 - No Surveys	6,775.79	6,528.03	3,050.87	2,969.05	37.284	CC
BALBOA #20-1(SI) - Wellbore #1 - No Surveys	6,800.00	6,546.35	3,051.00	2,968.96	37.188	ES
BALBOA #20-1(SI) - Wellbore #1 - No Surveys	7,100.00	6,715.84	3,076.66	2,992.52	36.565	SF
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	452.89	415.30	1,446.79	1,444.68	685.876	CC
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	6,427.79	6,397.32	1,468.49	1,419.46	29.948	ES
Balboa C #20-24D(PR) - Wellbore #1 - MWD Survey	6,550.00	6,511.92	1,476.34	1,426.76	29.776	SF
BALBOS #C20-4(TA) - Wellbore #1 - No Surveys	6,684.67	6,462.13	1,593.72	1,512.75	19.681	CC
BALBOS #C20-4(TA) - Wellbore #1 - No Surveys	6,700.00	6,475.07	1,593.79	1,512.66	19.646	ES
BALBOS #C20-4(TA) - Wellbore #1 - No Surveys	6,900.00	6,623.32	1,607.96	1,525.16	19.419	SF
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	5,430.69	5,301.23	933.19	894.60	24.180	CC
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	5,500.00	5,364.64	933.50	894.40	23.875	ES
Chenoweth 2 - Wellbore #1 - Wellbore #1 - As Drilled	6,400.00	6,248.64	972.45	926.71	21.258	SF
Chenoweth C20-25D(SI) - Wellbore #1 - MWD Surveys	6,266.91	6,272.88	829.60	780.69	16.962	CC, ES
Chenoweth C20-25D(SI) - Wellbore #1 - MWD Surveys	6,350.00	6,371.15	834.11	784.82	16.922	SF
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	6,799.37	6,549.88	3,096.89	3,014.81	37.727	CC
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	6,800.00	6,550.35	3,096.89	3,014.80	37.724	ES
HANSCOME C #28-30D(SI) - Wellbore #1 - No Surveys	7,150.00	6,736.24	3,127.05	3,042.60	37.032	SF
HANSCOME C #29-27D(SI) - Wellbore #1 - No Surveys	6,789.87	6,542.75	3,081.08	2,999.08	37.575	CC
HANSCOME C #29-27D(SI) - Wellbore #1 - No Surveys	6,800.00	6,550.35	3,081.10	2,999.01	37.535	ES
HANSCOME C #29-27D(SI) - Wellbore #1 - No Surveys	7,150.00	6,736.24	3,113.06	3,028.62	36.870	SF
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	6,293.27	6,122.99	1,775.57	1,730.68	39.557	CC
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	6,300.00	6,129.68	1,775.60	1,730.66	39.515	ES
Highland 12-20 - Wellbore #1 - Wellbore #1 - As Drilled	6,450.00	6,273.36	1,792.04	1,746.13	39.038	SF
JOHNSON C #29-28(PR) - Wellbore #1 - No Surveys	7,025.08	6,703.51	809.02	724.99	9.627	CC, ES
JOHNSON C #29-28(PR) - Wellbore #1 - No Surveys	7,050.00	6,714.81	809.39	725.22	9.617	SF
Klingenberg C20-780 - Original Drilling - Original Drilling	3,886.12	3,814.58	867.54	843.18	35.620	CC
Klingenberg C20-780 - Original Drilling - Original Drilling	3,900.00	3,826.29	867.56	843.11	35.484	ES
Klingenberg C20-780 - Original Drilling - Original Drilling	6,950.00	6,706.29	1,128.76	1,083.06	24.700	SF
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	3,886.12	3,814.58	867.54	843.18	35.620	CC
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	3,900.00	3,826.29	867.56	843.11	35.484	ES
Klingenberg C20-780 - Original Drilling - ST01 - ST01 - A	6,750.00	6,565.59	1,111.94	1,067.78	25.178	SF
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	3,886.12	3,814.58	867.54	843.18	35.620	CC
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	3,900.00	3,826.29	867.56	843.11	35.484	ES
Klingenberg C20-780 - Original Drilling - ST02 - ST02 - A	6,750.00	6,565.59	1,111.94	1,067.78	25.178	SF
Prebish 2 - Wellbore #1 - Wellbore #1 - As Drilled	6,304.17	6,088.20	3,020.02	2,975.45	67.762	CC, ES

CC - Min centre to center distance or covergent 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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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	6,550.00	6,368.72	3,063.31	3,017.10	66.292	SF
Prebish C20-19 - Wellbore #1 - Wellbore #1 - As Drilled	6,339.48	6,189.00	3,583.56	3,538.84	80.127	CC, ES
Prebish C20-19 - Wellbore #1 - Wellbore #1 - As Drilled	6,600.00	6,410.43	3,637.79	3,591.59	78.751	SF

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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)	Between Ellipses (ft)	Separation Factor	Warning
C Section 29						
CPC-JOHNSON #29-1(SI) - Wellbore #1 - No Surveys	7,642.30	6,781.00	3,096.97	3,010.50	35.815	CC, ES
CPC-JOHNSON #29-1(SI) - Wellbore #1 - No Surveys	8,200.00	6,781.00	3,146.79	3,057.89	35.398	SF
JOHNSON #19-29(SI) - Wellbore #1 - No Surveys	11,086.47	6,819.00	362.48	249.48	3.208	CC, ES
JOHNSON #19-29(SI) - Wellbore #1 - No Surveys	11,100.00	6,819.00	362.73	249.65	3.208	SF
JOHNSON #20-29(SI) - Wellbore #1 - No Surveys	11,199.23	6,803.00	2,467.45	2,353.51	21.655	CC
JOHNSON #20-29(SI) - Wellbore #1 - No Surveys	11,200.00	6,803.00	2,467.45	2,353.50	21.653	ES
JOHNSON #20-29(SI) - Wellbore #1 - No Surveys	11,600.00	6,803.00	2,499.79	2,382.46	21.305	SF
JOHNSON #29-13(SI) - Wellbore #1 - No Surveys	9,115.56	6,804.00	1,640.49	1,545.02	17.183	CC, ES
JOHNSON #29-13(SI) - Wellbore #1 - No Surveys	9,300.00	6,804.00	1,650.82	1,554.02	17.053	SF
JOHNSON #29-15(SI) - Wellbore #1 - No Surveys	8,491.62	6,800.00	2,242.50	2,151.48	24.639	CC
JOHNSON #29-15(SI) - Wellbore #1 - No Surveys	8,500.00	6,800.00	2,242.51	2,151.44	24.625	ES
JOHNSON #29-15(SI) - Wellbore #1 - No Surveys	8,800.00	6,800.00	2,263.60	2,170.64	24.351	SF
JOHNSON C #29-18(SI) - Wellbore #1 - No Surveys	8,510.41	6,804.00	864.40	773.23	9.481	CC, ES
JOHNSON C #29-18(SI) - Wellbore #1 - No Surveys	8,600.00	6,804.00	869.03	777.35	9.479	SF
JOHNSON C #29-19(SI) - Wellbore #1 - Gyro Surveys	8,412.01	6,813.68	563.61	508.81	10.285	CC, ES, SF
JOHNSON C #29-29(SI) - Wellbore #1 - No Surveys	3,739.36	3,661.30	16.20	-29.13	0.357	Level 1, CC, ES, SF
Johnson C32-715 - Wellbore #1 - Plan #1	2,044.15	2,019.58	1,387.05	1,372.95	98.379	CC
Johnson C32-715 - Wellbore #1 - Plan #1	2,100.00	2,054.67	1,387.17	1,372.75	96.202	ES
Johnson C32-715 - Wellbore #1 - Plan #1	17,463.69	18,074.22	3,265.60	3,028.26	13.759	SF
Johnson C32-725 - Wellbore #1 - Plan #1	2,832.00	2,625.35	1,345.13	1,326.23	71.169	CC, ES
Johnson C32-725 - Wellbore #1 - Plan #1	17,463.69	17,765.26	2,611.98	2,374.18	10.984	SF
Johnson C32-730 - Wellbore #1 - Plan #1	3,019.19	2,823.25	1,295.28	1,274.97	63.780	CC, ES
Johnson C32-730 - Wellbore #1 - Plan #1	17,463.69	17,849.66	2,294.05	2,057.38	9.693	SF
Johnson C32-735 - Wellbore #1 - Plan #1	2,870.65	2,669.78	1,297.94	1,278.73	67.594	CC
Johnson C32-735 - Wellbore #1 - Plan #1	2,900.00	2,690.81	1,298.03	1,278.66	67.013	ES
Johnson C32-735 - Wellbore #1 - Plan #1	17,463.69	17,657.43	1,961.97	1,724.40	8.259	SF
Johnson C32-745 - Wellbore #1 - Plan #1	4,480.60	4,275.89	1,286.99	1,255.50	40.872	CC
Johnson C32-745 - Wellbore #1 - Plan #1	17,463.69	17,494.01	1,308.27	1,070.01	5.491	ES, SF
Johnson C32-755 - Wellbore #1 - Plan #1	2,223.53	2,223.24	20.57	5.11	1.330	Level 3, CC, ES, SF
Johnson C32-770 - Wellbore #1 - Plan #1	2,000.00	2,001.00	22.32	8.44	1.608	CC, ES
Johnson C32-770 - Wellbore #1 - Plan #1	2,100.00	2,101.02	23.10	8.51	1.583	SF
Johnson C32-775 - Wellbore #1 - Plan #1	2,000.00	2,001.00	44.91	31.04	3.237	CC, ES
Johnson C32-775 - Wellbore #1 - Plan #1	17,463.69	17,517.56	658.37	419.49	2.756	SF
Johnson C32-785 - Wellbore #1 - Plan #1	2,000.00	1,999.00	67.51	53.64	4.868	CC, ES
Johnson C32-785 - Wellbore #1 - Plan #1	2,100.00	2,097.75	69.14	54.56	4.743	SF
JOHNSON PM C #29-8(SI) - Wellbore #1 - No Surveys	9,080.56	6,800.00	2,767.22	2,672.05	29.077	CC
JOHNSON PM C #29-8(SI) - Wellbore #1 - No Surveys	9,100.00	6,800.00	2,767.29	2,671.97	29.032	ES
JOHNSON PM C #29-8(SI) - Wellbore #1 - No Surveys	9,600.00	6,800.00	2,815.55	2,716.59	28.450	SF
JOHNSON R C #29-2(SI) - Wellbore #1 - No Surveys	7,757.10	6,791.00	1,651.07	1,564.06	18.976	CC, ES
JOHNSON R C #29-2(SI) - Wellbore #1 - No Surveys	7,900.00	6,791.00	1,657.24	1,569.67	18.923	SF
UPRC #29-4H(SI) - Wellbore #1 - No Surveys	2,000.00	1,976.00	622.35	598.17	25.738	CC
UPRC #29-4H(SI) - Wellbore #1 - No Surveys	2,100.00	2,075.98	623.42	598.01	24.535	ES
UPRC #29-4H(SI) - Wellbore #1 - No Surveys	7,900.00	6,806.00	1,132.90	1,045.14	12.908	SF
UPRC #29-6H(SI) - Wellbore #1 - No Surveys	8,927.54	6,814.00	201.08	106.93	2.136	CC, ES, SF
VICTOR #C29-16(SI) - Wellbore #1 - No Surveys	11,854.66	6,792.00	3,066.33	2,946.06	25.496	CC
VICTOR #C29-16(SI) - Wellbore #1 - No Surveys	11,900.00	6,792.00	3,066.67	2,945.95	25.403	ES
VICTOR #C29-16(SI) - Wellbore #1 - No Surveys	12,400.00	6,792.00	3,114.45	2,989.48	24.921	SF
VICTOR C #29-10(SI) - Wellbore #1 - No Surveys	10,482.79	6,830.00	1,618.76	1,511.35	15.071	CC
VICTOR C #29-10(SI) - Wellbore #1 - No Surveys	10,500.00	6,830.00	1,618.85	1,511.28	15.049	ES
VICTOR C #29-10(SI) - Wellbore #1 - No Surveys	10,700.00	6,830.00	1,633.27	1,524.11	14.962	SF
VICTOR C #29-11(SI) - Wellbore #1 - No Surveys	10,482.91	6,837.00	267.85	160.38	2.492	CC, ES, SF
VICTOR C #29-12(SI) - Wellbore #1 - No Surveys	10,440.17	6,842.00	1,010.89	903.77	9.437	CC, ES
VICTOR C #29-12(SI) - Wellbore #1 - No Surveys	10,500.00	6,842.00	1,012.66	905.08	9.413	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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	11,946.84	6,816.00	992.28	870.89	8.174	CC, ES
VICTOR C #29-13(SI) - Wellbore #1 - No Surveys	12,000.00	6,816.00	993.71	871.89	8.158	SF
VICTOR C #29-14(SI) - Wellbore #1 - No Surveys	11,919.59	6,803.00	302.01	181.00	2.496	CC, ES, SF
VICTOR C #29-15(SI) - Wellbore #1 - No Surveys	11,722.45	6,819.00	1,628.55	1,509.36	13.663	CC, ES
VICTOR C #29-15(SI) - Wellbore #1 - No Surveys	11,900.00	6,819.00	1,638.20	1,517.48	13.570	SF
VICTOR C #29-3(PA) - Wellbore #1 - Gyro Surveys	7,952.11	6,806.08	106.25	54.01	2.034	CC, ES, SF
VICTOR C #29-4(PA) - Wellbore #1 - No Surveys	2,000.00	1,977.00	496.19	472.00	20.513	CC
VICTOR C #29-4(PA) - Wellbore #1 - No Surveys	2,100.00	2,076.98	497.35	471.93	19.566	ES
VICTOR C #29-4(PA) - Wellbore #1 - No Surveys	2,792.43	2,759.37	573.88	540.06	16.967	SF
VICTOR C #29-5(PA) - Wellbore #1 - Gyro Surveys	9,109.45	6,844.14	1,019.67	959.84	17.044	CC, ES
VICTOR C #29-5(PA) - Wellbore #1 - Gyro Surveys	9,200.00	6,842.43	1,023.68	963.26	16.944	SF
VICTOR C #29-6(PA) - Wellbore #1 - No Surveys	2,000.00	1,985.00	1,681.75	1,657.49	69.325	CC
VICTOR C #29-6(PA) - Wellbore #1 - No Surveys	2,100.00	2,084.98	1,682.78	1,657.29	66.020	ES
VICTOR C #29-6(PA) - Wellbore #1 - No Surveys	5,100.00	4,987.21	2,200.76	2,138.64	35.428	SF
VICTOR C #29-9(SI) - Wellbore #1 - No Surveys	10,390.47	6,788.00	3,111.19	3,005.00	29.297	CC
VICTOR C #29-9(SI) - Wellbore #1 - No Surveys	10,400.00	6,788.00	3,111.20	3,004.92	29.273	ES
VICTOR C #29-9(SI) - Wellbore #1 - No Surveys	11,000.00	6,788.00	3,170.33	3,059.09	28.499	SF
C Section 32						
HENNINGTON C #32-10(PR) - Wellbore #1 - No Surveys	15,693.16	6,783.00	1,648.45	1,488.62	10.313	CC
HENNINGTON C #32-10(PR) - Wellbore #1 - No Surveys	15,700.00	6,783.00	1,648.47	1,488.55	10.309	ES
HENNINGTON C #32-10(PR) - Wellbore #1 - No Surveys	15,800.00	6,783.00	1,651.91	1,491.09	10.272	SF
HENNINGTON C #32-2(PR) - Wellbore #1 - No Surveys	12,924.64	6,784.00	1,613.42	1,482.44	12.318	CC, ES
HENNINGTON C #32-2(PR) - Wellbore #1 - No Surveys	13,100.00	6,784.00	1,622.93	1,490.45	12.250	SF
HENNINGTON C #32-7(PA) - Wellbore #1 - Gyro Survey	14,270.72	6,876.99	1,450.47	1,341.29	13.285	CC
HENNINGTON C #32-7(PA) - Wellbore #1 - Gyro Survey	14,300.00	6,876.11	1,450.76	1,341.28	13.251	ES
HENNINGTON C #32-7(PA) - Wellbore #1 - Gyro Survey	14,400.00	6,873.12	1,456.21	1,345.95	13.206	SF
HOWELL #1(SI) - Wellbore #1 - No Surveys	16,646.84	6,813.00	463.60	293.39	2.724	CC, ES, SF
HOWELL #32-1(SI) - Wellbore #1 - No Surveys	14,631.99	6,797.00	298.53	149.75	2.006	CC, ES, SF
HOWELL #32-2(SI) - Wellbore #1 - No Surveys	13,238.20	6,791.00	358.22	223.97	2.668	CC, ES, SF
HOWELL #32-23(PR) - Wellbore #1 - No Surveys	14,338.15	6,824.00	877.17	731.22	6.010	CC, ES
HOWELL #32-23(PR) - Wellbore #1 - No Surveys	14,400.00	6,824.00	879.34	733.00	6.009	SF
HOWELL #C 32-12(SI) - Wellbore #1 - No Surveys	15,857.57	6,838.00	1,031.82	869.76	6.367	CC, ES
HOWELL #C 32-12(SI) - Wellbore #1 - No Surveys	15,900.00	6,838.00	1,032.69	870.30	6.359	SF
MCGUIRK-HOWELL C #32-11(SI) - Wellbore #1 - No Su	15,653.58	6,796.00	291.03	131.50	1.824	CC, ES, SF
MCGUIRK-HOWELL C #32-14(TA) - Wellbore #1 - No Su	17,026.83	6,802.00	181.61	7.44	1.043	Level 2, CC, ES, SF
MCGUIRK-HOWELL C #32-4(SI) - Wellbore #1 - No Sur	12,951.38	6,839.00	917.84	786.11	6.967	CC, ES
MCGUIRK-HOWELL C #32-4(SI) - Wellbore #1 - No Sur	13,000.00	6,839.00	919.13	787.02	6.958	SF
NELSON #32-25(PR) - Wellbore #1 - No Surveys	13,743.23	6,828.00	361.12	221.33	2.583	CC, ES, SF
PLUSS #32-43(PA) - Wellbore #1 - Gyro Surveys	17,166.78	6,870.23	1,328.69	1,188.78	9.497	CC, ES
PLUSS #32-43(PA) - Wellbore #1 - Gyro Surveys	17,200.00	6,869.44	1,329.10	1,188.86	9.477	SF
PTF #C 32-1(SI) - Wellbore #1 - No Surveys	13,211.22	6,776.00	2,933.05	2,799.20	21.913	CC, ES
PTF #C 32-1(SI) - Wellbore #1 - No Surveys	13,700.00	6,776.00	2,973.49	2,835.44	21.539	SF
PTF #C 32-16(SI) - Wellbore #1 - No Surveys	17,072.68	6,777.00	2,936.44	2,762.00	16.834	CC
PTF #C 32-16(SI) - Wellbore #1 - No Surveys	17,100.00	6,777.00	2,936.56	2,761.83	16.806	ES
PTF #C 32-16(SI) - Wellbore #1 - No Surveys	17,400.00	6,777.00	2,954.62	2,777.28	16.661	SF
PTF #C 32-8(SI) - Wellbore #1 - No Surveys	14,584.57	6,766.00	2,941.82	2,793.80	19.875	CC
PTF #C 32-8(SI) - Wellbore #1 - No Surveys	14,600.00	6,766.00	2,941.86	2,793.68	19.853	ES
PTF #C 32-8(SI) - Wellbore #1 - No Surveys	15,000.00	6,766.00	2,971.01	2,819.35	19.591	SF
PTF #C 32-9(SI) - Wellbore #1 - No Surveys	15,946.96	6,768.00	2,964.52	2,802.13	18.255	CC
PTF #C 32-9(SI) - Wellbore #1 - No Surveys	16,000.00	6,768.00	2,964.99	2,802.04	18.195	ES
PTF #C 32-9(SI) - Wellbore #1 - No Surveys	16,300.00	6,768.00	2,985.47	2,819.93	18.035	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 C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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 @ 4817.00ft

Offset Depths are relative to Offset Datum

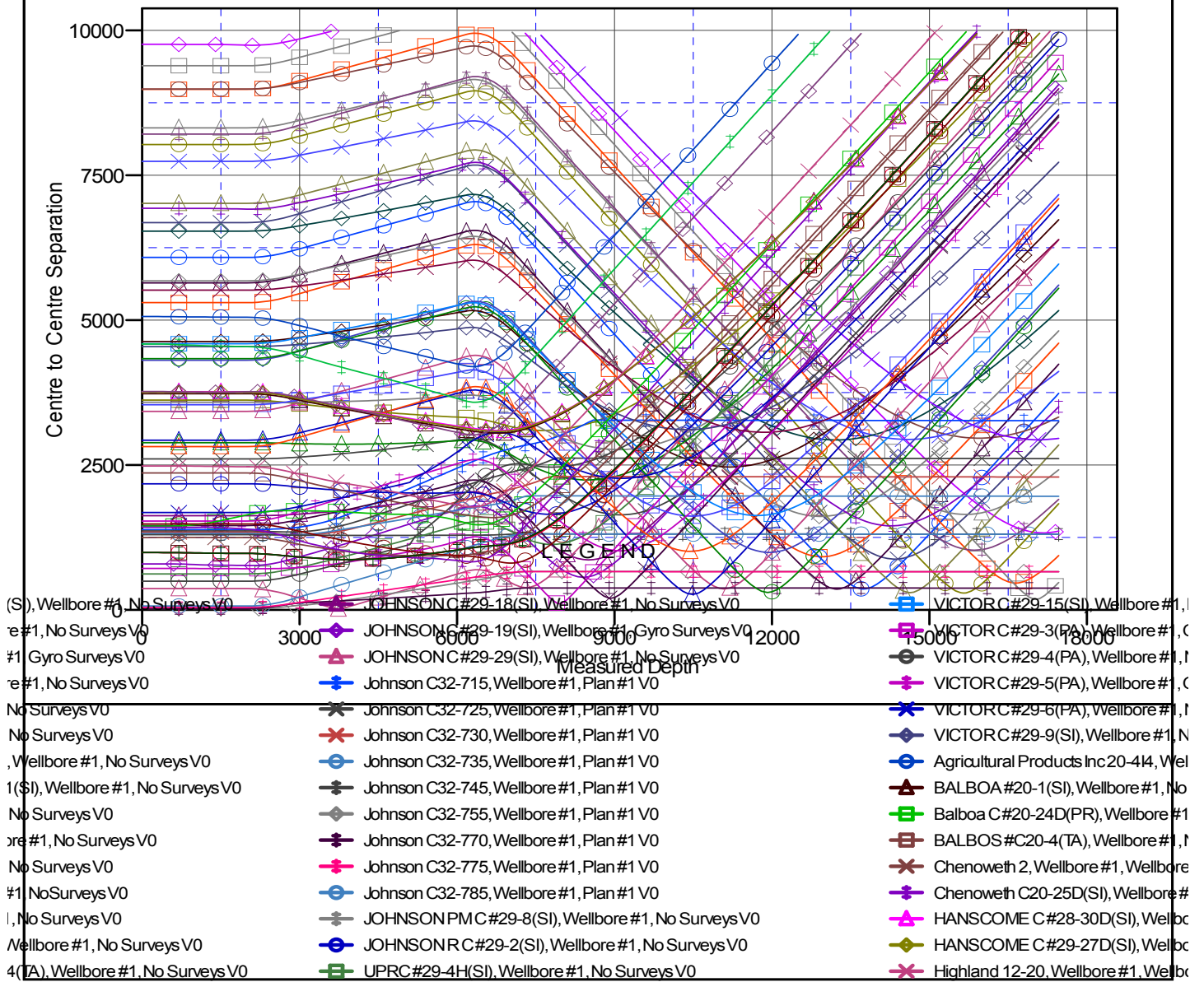
Central Meridian is -105.5000000

Coordinates are relative to: Johnson C32-765

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.59°

## Ladder Plot



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

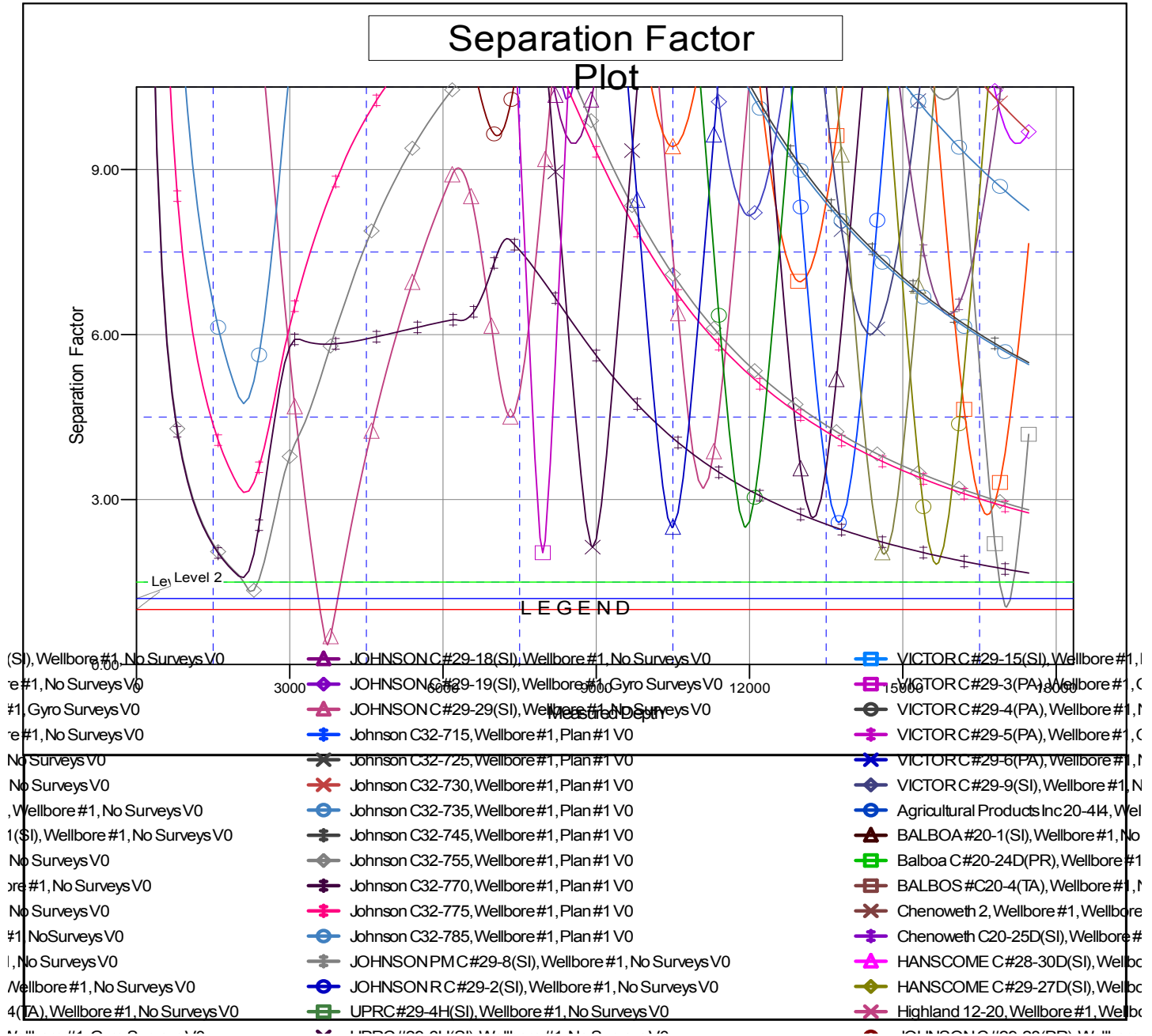
# Noble Energy, Inc.

## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Johnson C32-765
<b>Project:</b>	Mustang	<b>TVD Reference:</b>	KB @ 4817.00ft
<b>Reference Site:</b>	C Section 29	<b>MD Reference:</b>	KB @ 4817.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Johnson C32-765	<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 @ 4817.00ft  
 Offset Depths are relative to Offset Datum  
 Central Meridian is -105.5000000

Coordinates are relative to: Johnson C32-765  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Grid Convergence at Surface is: 0.59°



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