

Project: Wells Ranch  
Site: AE Section 32  
Well: Wells Ranch State AA36-633  
Wellbore: Wells Ranch State AA36-633  
Design: Plan 1

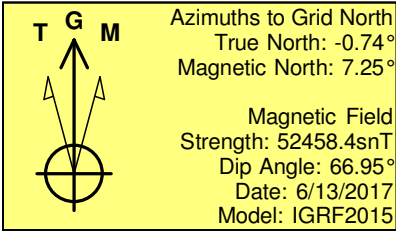
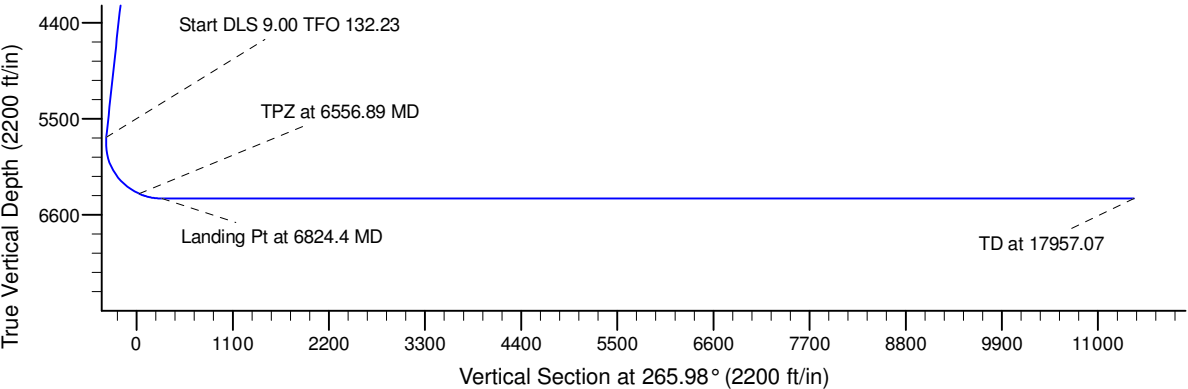
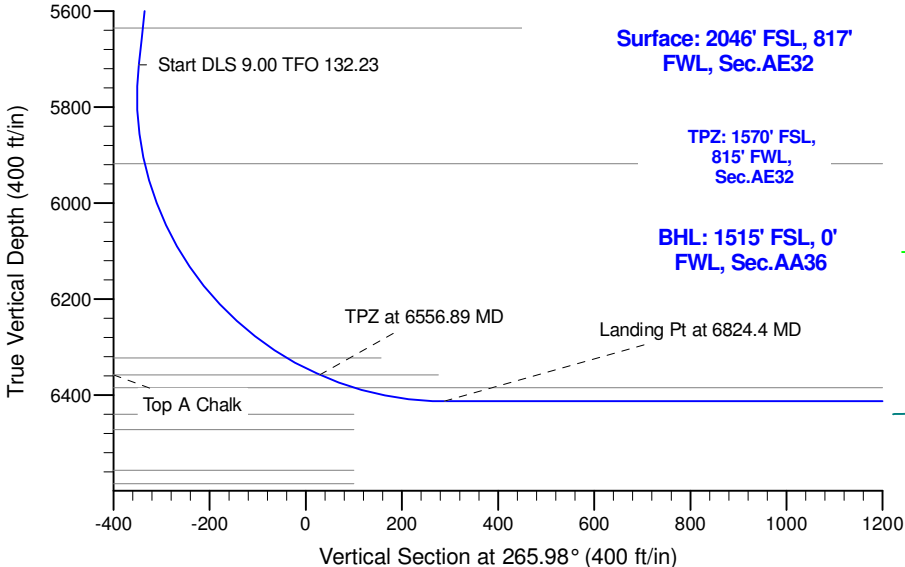
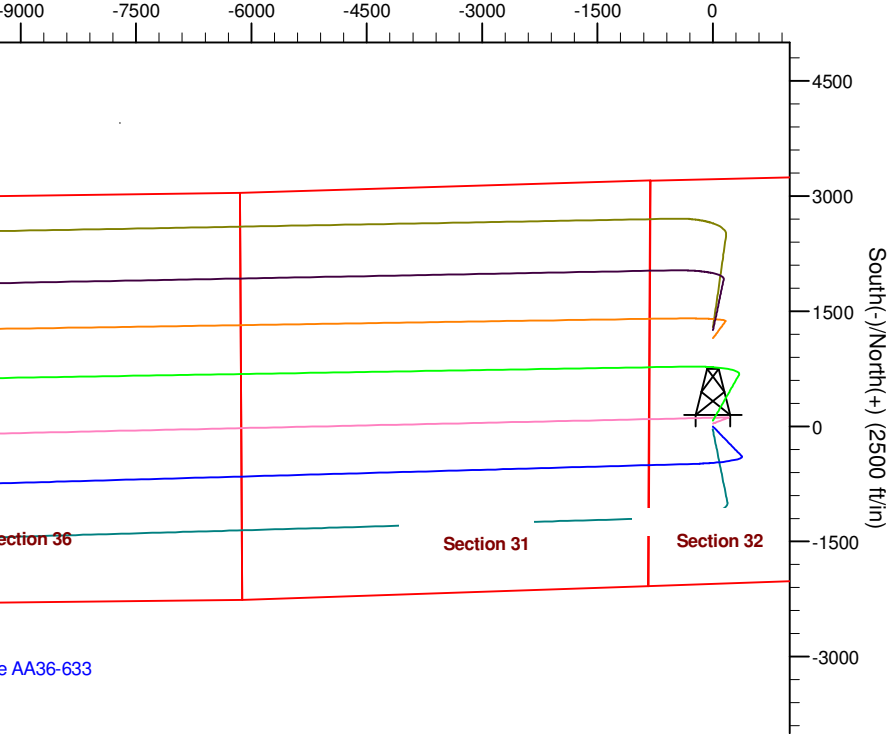
# Northern Region - DJ Basin

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	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2665.99	9.32	135.79	2663.94	-27.10	26.37	2.00	135.79	-24.41	
4	5754.50	9.32	135.79	5711.68	-385.59	375.16	0.00	0.00	-347.21	
5	6824.44	90.00	268.39	6413.00	-488.00	-255.00	9.00	132.23	288.58	
6	17957.07	90.00	268.39	6413.00	-799.94	-11383.26	0.00	0.00	11411.33	Wells Ranch State AA36-633 BHL

West(-)/East(+) (2500 ft/in)



## WELL DETAILS: Wells Ranch State AA36-633

0.00	0.00	Northing 1405770.21	Easting 3319023.66	4726.00 Latitude 40.4415812	Longitude -104.3538008
Plan: Plan 1 (Wells Ranch State AA36-633/Wells Ranch State AA36-633)					
Created By: Colby Baxter			Date: 14:28, January 04 2018		
Checked: _____			Date: _____		
Reviewed: _____			Date: _____		
Approved: _____			Date: _____		

# **Northern Region - DJ Basin**

**Wells Ranch**

**AE Section 32**

**Wells Ranch State AA36-633**

**Wells Ranch State AA36-633**

**Plan: Plan 1**

## **Standard Survey Report**

**04 January, 2018**

# Noble Energy, Inc.

## Survey Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Plan 1	<b>Database:</b>	EDMP

<b>Project</b>	Wells Ranch, 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	AE Section 32				
Site Position:		Northing:	1,404,332.08 usft	Latitude:	40.4376400
From:	Map	Easting:	3,318,849.41 usft	Longitude:	-104.3544935
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.74 °

Well	Wells Ranch State AA36-633, NEI					
Well Position	+N/-S	0.00 ft	Northing:	1,405,770.21 usft	Latitude:	40.4415812
	+E/-W	0.00 ft	Easting:	3,319,023.67 usft	Longitude:	-104.3538008
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,726.00 ft

<b>Wellbore</b>	Wells Ranch State AA36-633				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	6/13/2017	7.99	66.95	52,458.40965101

<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	265.98	

<b>Survey Tool Program</b>	<b>Date</b>	1/4/2018			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	17,957.07	Plan 1 (Wells Ranch State AA36-633)	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<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	135.79	2,299.98	-1.25	1.22	-1.13	2.00	2.00	0.00
2,400.00	4.00	135.79	2,399.84	-5.00	4.87	-4.50	2.00	2.00	0.00
2,500.00	6.00	135.79	2,499.45	-11.25	10.94	-10.13	2.00	2.00	0.00
2,600.00	8.00	135.79	2,598.70	-19.98	19.44	-17.99	2.00	2.00	0.00
2,665.99	9.32	135.79	2,663.94	-27.10	26.37	-24.41	2.00	2.00	0.00
2,700.00	9.32	135.79	2,697.50	-31.05	30.21	-27.96	0.00	0.00	0.00
2,800.00	9.32	135.79	2,796.18	-42.66	41.50	-38.41	0.00	0.00	0.00
2,900.00	9.32	135.79	2,894.86	-54.27	52.80	-48.86	0.00	0.00	0.00
3,000.00	9.32	135.79	2,993.54	-65.87	64.09	-59.32	0.00	0.00	0.00
3,100.00	9.32	135.79	3,092.22	-77.48	75.38	-69.77	0.00	0.00	0.00
3,200.00	9.32	135.79	3,190.90	-89.09	86.68	-80.22	0.00	0.00	0.00
3,300.00	9.32	135.79	3,289.58	-100.69	97.97	-90.67	0.00	0.00	0.00
3,400.00	9.32	135.79	3,388.26	-112.30	109.26	-101.12	0.00	0.00	0.00
3,500.00	9.32	135.79	3,486.94	-123.91	120.56	-111.57	0.00	0.00	0.00
3,600.00	9.32	135.79	3,585.62	-135.52	131.85	-122.03	0.00	0.00	0.00
3,700.00	9.32	135.79	3,684.30	-147.12	143.14	-132.48	0.00	0.00	0.00
3,800.00	9.32	135.79	3,782.98	-158.73	154.44	-142.93	0.00	0.00	0.00
3,900.00	9.32	135.79	3,881.66	-170.34	165.73	-153.38	0.00	0.00	0.00
4,000.00	9.32	135.79	3,980.34	-181.95	177.02	-163.83	0.00	0.00	0.00
4,100.00	9.32	135.79	4,079.02	-193.55	188.32	-174.28	0.00	0.00	0.00
4,200.00	9.32	135.79	4,177.70	-205.16	199.61	-184.74	0.00	0.00	0.00
4,300.00	9.32	135.79	4,276.38	-216.77	210.90	-195.19	0.00	0.00	0.00
4,400.00	9.32	135.79	4,375.06	-228.37	222.19	-205.64	0.00	0.00	0.00
4,500.00	9.32	135.79	4,473.74	-239.98	233.49	-216.09	0.00	0.00	0.00
4,600.00	9.32	135.79	4,572.42	-251.59	244.78	-226.54	0.00	0.00	0.00
4,700.00	9.32	135.79	4,671.10	-263.20	256.07	-236.99	0.00	0.00	0.00
4,800.00	9.32	135.79	4,769.78	-274.80	267.37	-247.45	0.00	0.00	0.00
4,900.00	9.32	135.79	4,868.46	-286.41	278.66	-257.90	0.00	0.00	0.00
5,000.00	9.32	135.79	4,967.14	-298.02	289.95	-268.35	0.00	0.00	0.00
5,100.00	9.32	135.79	5,065.82	-309.62	301.25	-278.80	0.00	0.00	0.00
5,200.00	9.32	135.79	5,164.50	-321.23	312.54	-289.25	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<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	9.32	135.79	5,263.18	-332.84	323.83	-299.70	0.00	0.00	0.00
5,400.00	9.32	135.79	5,361.86	-344.45	335.13	-310.16	0.00	0.00	0.00
5,500.00	9.32	135.79	5,460.54	-356.05	346.42	-320.61	0.00	0.00	0.00
5,600.00	9.32	135.79	5,559.22	-367.66	357.71	-331.06	0.00	0.00	0.00
5,700.00	9.32	135.79	5,657.90	-379.27	369.01	-341.51	0.00	0.00	0.00
5,754.50	9.32	135.79	5,711.68	-385.59	375.16	-347.21	0.00	0.00	0.00
5,800.00	7.23	160.63	5,756.72	-390.94	378.68	-350.34	9.00	-4.60	54.62
5,900.00	9.67	223.24	5,855.81	-403.01	375.01	-345.83	9.00	2.44	62.60
6,000.00	17.20	245.43	5,953.07	-415.30	355.77	-325.78	9.00	7.53	22.19
6,100.00	25.68	253.85	6,046.08	-427.51	321.44	-290.68	9.00	8.48	8.42
6,200.00	34.41	258.24	6,132.57	-439.32	272.86	-241.39	9.00	8.73	4.39
6,300.00	43.25	261.02	6,210.40	-450.45	211.23	-179.14	9.00	8.83	2.78
6,400.00	52.13	263.00	6,277.66	-460.63	138.07	-105.44	9.00	8.88	1.99
6,500.00	61.03	264.56	6,332.69	-469.60	55.18	-22.13	9.00	8.91	1.56
6,600.00	69.95	265.87	6,374.13	-477.15	-35.40	68.76	9.00	8.92	1.31
6,700.00	78.88	267.03	6,400.96	-483.08	-131.44	164.98	9.00	8.93	1.17
6,800.00	87.82	268.13	6,412.53	-487.26	-230.58	264.17	9.00	8.93	1.10
6,824.44	90.00	268.39	6,413.00	-488.00	-255.00	288.58	9.00	8.94	1.08
6,900.00	90.00	268.39	6,413.00	-490.12	-330.53	364.08	0.00	0.00	0.00
7,000.00	90.00	268.39	6,413.00	-492.92	-430.49	463.99	0.00	0.00	0.00
7,100.00	90.00	268.39	6,413.00	-495.72	-530.45	563.90	0.00	0.00	0.00
7,200.00	90.00	268.39	6,413.00	-498.52	-630.41	663.81	0.00	0.00	0.00
7,300.00	90.00	268.39	6,413.00	-501.33	-730.37	763.72	0.00	0.00	0.00
7,400.00	90.00	268.39	6,413.00	-504.13	-830.33	863.63	0.00	0.00	0.00
7,500.00	90.00	268.39	6,413.00	-506.93	-930.30	963.54	0.00	0.00	0.00
7,600.00	90.00	268.39	6,413.00	-509.73	-1,030.26	1,063.45	0.00	0.00	0.00
7,700.00	90.00	268.39	6,413.00	-512.53	-1,130.22	1,163.37	0.00	0.00	0.00
7,800.00	90.00	268.39	6,413.00	-515.34	-1,230.18	1,263.28	0.00	0.00	0.00
7,900.00	90.00	268.39	6,413.00	-518.14	-1,330.14	1,363.19	0.00	0.00	0.00
8,000.00	90.00	268.39	6,413.00	-520.94	-1,430.10	1,463.10	0.00	0.00	0.00
8,100.00	90.00	268.39	6,413.00	-523.74	-1,530.06	1,563.01	0.00	0.00	0.00
8,200.00	90.00	268.39	6,413.00	-526.54	-1,630.02	1,662.92	0.00	0.00	0.00
8,300.00	90.00	268.39	6,413.00	-529.35	-1,729.98	1,762.83	0.00	0.00	0.00
8,400.00	90.00	268.39	6,413.00	-532.15	-1,829.94	1,862.74	0.00	0.00	0.00
8,500.00	90.00	268.39	6,413.00	-534.95	-1,929.90	1,962.66	0.00	0.00	0.00
8,600.00	90.00	268.39	6,413.00	-537.75	-2,029.86	2,062.57	0.00	0.00	0.00
8,700.00	90.00	268.39	6,413.00	-540.55	-2,129.82	2,162.48	0.00	0.00	0.00
8,800.00	90.00	268.39	6,413.00	-543.36	-2,229.79	2,262.39	0.00	0.00	0.00
8,900.00	90.00	268.39	6,413.00	-546.16	-2,329.75	2,362.30	0.00	0.00	0.00
9,000.00	90.00	268.39	6,413.00	-548.96	-2,429.71	2,462.21	0.00	0.00	0.00
9,100.00	90.00	268.39	6,413.00	-551.76	-2,529.67	2,562.12	0.00	0.00	0.00
9,200.00	90.00	268.39	6,413.00	-554.56	-2,629.63	2,662.03	0.00	0.00	0.00
9,300.00	90.00	268.39	6,413.00	-557.37	-2,729.59	2,761.95	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<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	268.39	6,413.00	-560.17	-2,829.55	2,861.86	0.00	0.00	0.00
9,500.00	90.00	268.39	6,413.00	-562.97	-2,929.51	2,961.77	0.00	0.00	0.00
9,600.00	90.00	268.39	6,413.00	-565.77	-3,029.47	3,061.68	0.00	0.00	0.00
9,700.00	90.00	268.39	6,413.00	-568.57	-3,129.43	3,161.59	0.00	0.00	0.00
9,800.00	90.00	268.39	6,413.00	-571.38	-3,229.39	3,261.50	0.00	0.00	0.00
9,900.00	90.00	268.39	6,413.00	-574.18	-3,329.35	3,361.41	0.00	0.00	0.00
10,000.00	90.00	268.39	6,413.00	-576.98	-3,429.31	3,461.32	0.00	0.00	0.00
10,100.00	90.00	268.39	6,413.00	-579.78	-3,529.27	3,561.24	0.00	0.00	0.00
10,200.00	90.00	268.39	6,413.00	-582.58	-3,629.24	3,661.15	0.00	0.00	0.00
10,300.00	90.00	268.39	6,413.00	-585.39	-3,729.20	3,761.06	0.00	0.00	0.00
10,400.00	90.00	268.39	6,413.00	-588.19	-3,829.16	3,860.97	0.00	0.00	0.00
10,500.00	90.00	268.39	6,413.00	-590.99	-3,929.12	3,960.88	0.00	0.00	0.00
10,600.00	90.00	268.39	6,413.00	-593.79	-4,029.08	4,060.79	0.00	0.00	0.00
10,700.00	90.00	268.39	6,413.00	-596.59	-4,129.04	4,160.70	0.00	0.00	0.00
10,800.00	90.00	268.39	6,413.00	-599.40	-4,229.00	4,260.61	0.00	0.00	0.00
10,900.00	90.00	268.39	6,413.00	-602.20	-4,328.96	4,360.53	0.00	0.00	0.00
11,000.00	90.00	268.39	6,413.00	-605.00	-4,428.92	4,460.44	0.00	0.00	0.00
11,100.00	90.00	268.39	6,413.00	-607.80	-4,528.88	4,560.35	0.00	0.00	0.00
11,200.00	90.00	268.39	6,413.00	-610.61	-4,628.84	4,660.26	0.00	0.00	0.00
11,300.00	90.00	268.39	6,413.00	-613.41	-4,728.80	4,760.17	0.00	0.00	0.00
11,400.00	90.00	268.39	6,413.00	-616.21	-4,828.76	4,860.08	0.00	0.00	0.00
11,500.00	90.00	268.39	6,413.00	-619.01	-4,928.72	4,959.99	0.00	0.00	0.00
11,600.00	90.00	268.39	6,413.00	-621.81	-5,028.69	5,059.90	0.00	0.00	0.00
11,700.00	90.00	268.39	6,413.00	-624.62	-5,128.65	5,159.82	0.00	0.00	0.00
11,800.00	90.00	268.39	6,413.00	-627.42	-5,228.61	5,259.73	0.00	0.00	0.00
11,900.00	90.00	268.39	6,413.00	-630.22	-5,328.57	5,359.64	0.00	0.00	0.00
12,000.00	90.00	268.39	6,413.00	-633.02	-5,428.53	5,459.55	0.00	0.00	0.00
12,100.00	90.00	268.39	6,413.00	-635.82	-5,528.49	5,559.46	0.00	0.00	0.00
12,200.00	90.00	268.39	6,413.00	-638.63	-5,628.45	5,659.37	0.00	0.00	0.00
12,300.00	90.00	268.39	6,413.00	-641.43	-5,728.41	5,759.28	0.00	0.00	0.00
12,400.00	90.00	268.39	6,413.00	-644.23	-5,828.37	5,859.19	0.00	0.00	0.00
12,500.00	90.00	268.39	6,413.00	-647.03	-5,928.33	5,959.11	0.00	0.00	0.00
12,600.00	90.00	268.39	6,413.00	-649.83	-6,028.29	6,059.02	0.00	0.00	0.00
12,700.00	90.00	268.39	6,413.00	-652.64	-6,128.25	6,158.93	0.00	0.00	0.00
12,800.00	90.00	268.39	6,413.00	-655.44	-6,228.21	6,258.84	0.00	0.00	0.00
12,900.00	90.00	268.39	6,413.00	-658.24	-6,328.18	6,358.75	0.00	0.00	0.00
13,000.00	90.00	268.39	6,413.00	-661.04	-6,428.14	6,458.66	0.00	0.00	0.00
13,100.00	90.00	268.39	6,413.00	-663.84	-6,528.10	6,558.57	0.00	0.00	0.00
13,200.00	90.00	268.39	6,413.00	-666.65	-6,628.06	6,658.48	0.00	0.00	0.00
13,300.00	90.00	268.39	6,413.00	-669.45	-6,728.02	6,758.40	0.00	0.00	0.00
13,400.00	90.00	268.39	6,413.00	-672.25	-6,827.98	6,858.31	0.00	0.00	0.00
13,500.00	90.00	268.39	6,413.00	-675.05	-6,927.94	6,958.22	0.00	0.00	0.00
13,600.00	90.00	268.39	6,413.00	-677.85	-7,027.90	7,058.13	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<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	268.39	6,413.00	-680.66	-7,127.86	7,158.04	0.00	0.00	0.00
13,800.00	90.00	268.39	6,413.00	-683.46	-7,227.82	7,257.95	0.00	0.00	0.00
13,900.00	90.00	268.39	6,413.00	-686.26	-7,327.78	7,357.86	0.00	0.00	0.00
14,000.00	90.00	268.39	6,413.00	-689.06	-7,427.74	7,457.77	0.00	0.00	0.00
14,100.00	90.00	268.39	6,413.00	-691.86	-7,527.70	7,557.69	0.00	0.00	0.00
14,200.00	90.00	268.39	6,413.00	-694.67	-7,627.66	7,657.60	0.00	0.00	0.00
14,300.00	90.00	268.39	6,413.00	-697.47	-7,727.63	7,757.51	0.00	0.00	0.00
14,400.00	90.00	268.39	6,413.00	-700.27	-7,827.59	7,857.42	0.00	0.00	0.00
14,500.00	90.00	268.39	6,413.00	-703.07	-7,927.55	7,957.33	0.00	0.00	0.00
14,600.00	90.00	268.39	6,413.00	-705.87	-8,027.51	8,057.24	0.00	0.00	0.00
14,700.00	90.00	268.39	6,413.00	-708.68	-8,127.47	8,157.15	0.00	0.00	0.00
14,800.00	90.00	268.39	6,413.00	-711.48	-8,227.43	8,257.06	0.00	0.00	0.00
14,900.00	90.00	268.39	6,413.00	-714.28	-8,327.39	8,356.98	0.00	0.00	0.00
15,000.00	90.00	268.39	6,413.00	-717.08	-8,427.35	8,456.89	0.00	0.00	0.00
15,100.00	90.00	268.39	6,413.00	-719.88	-8,527.31	8,556.80	0.00	0.00	0.00
15,200.00	90.00	268.39	6,413.00	-722.69	-8,627.27	8,656.71	0.00	0.00	0.00
15,300.00	90.00	268.39	6,413.00	-725.49	-8,727.23	8,756.62	0.00	0.00	0.00
15,400.00	90.00	268.39	6,413.00	-728.29	-8,827.19	8,856.53	0.00	0.00	0.00
15,500.00	90.00	268.39	6,413.00	-731.09	-8,927.15	8,956.44	0.00	0.00	0.00
15,600.00	90.00	268.39	6,413.00	-733.90	-9,027.12	9,056.35	0.00	0.00	0.00
15,700.00	90.00	268.39	6,413.00	-736.70	-9,127.08	9,156.27	0.00	0.00	0.00
15,800.00	90.00	268.39	6,413.00	-739.50	-9,227.04	9,256.18	0.00	0.00	0.00
15,900.00	90.00	268.39	6,413.00	-742.30	-9,327.00	9,356.09	0.00	0.00	0.00
16,000.00	90.00	268.39	6,413.00	-745.10	-9,426.96	9,456.00	0.00	0.00	0.00
16,100.00	90.00	268.39	6,413.00	-747.91	-9,526.92	9,555.91	0.00	0.00	0.00
16,200.00	90.00	268.39	6,413.00	-750.71	-9,626.88	9,655.82	0.00	0.00	0.00
16,300.00	90.00	268.39	6,413.00	-753.51	-9,726.84	9,755.73	0.00	0.00	0.00
16,400.00	90.00	268.39	6,413.00	-756.31	-9,826.80	9,855.64	0.00	0.00	0.00
16,500.00	90.00	268.39	6,413.00	-759.11	-9,926.76	9,955.56	0.00	0.00	0.00
16,600.00	90.00	268.39	6,413.00	-761.92	-10,026.72	10,055.47	0.00	0.00	0.00
16,700.00	90.00	268.39	6,413.00	-764.72	-10,126.68	10,155.38	0.00	0.00	0.00
16,800.00	90.00	268.39	6,413.00	-767.52	-10,226.64	10,255.29	0.00	0.00	0.00
16,900.00	90.00	268.39	6,413.00	-770.32	-10,326.60	10,355.20	0.00	0.00	0.00
17,000.00	90.00	268.39	6,413.00	-773.12	-10,426.57	10,455.11	0.00	0.00	0.00
17,100.00	90.00	268.39	6,413.00	-775.93	-10,526.53	10,555.02	0.00	0.00	0.00
17,200.00	90.00	268.39	6,413.00	-778.73	-10,626.49	10,654.93	0.00	0.00	0.00
17,300.00	90.00	268.39	6,413.00	-781.53	-10,726.45	10,754.85	0.00	0.00	0.00
17,400.00	90.00	268.39	6,413.00	-784.33	-10,826.41	10,854.76	0.00	0.00	0.00
17,500.00	90.00	268.39	6,413.00	-787.13	-10,926.37	10,954.67	0.00	0.00	0.00
17,600.00	90.00	268.39	6,413.00	-789.94	-11,026.33	11,054.58	0.00	0.00	0.00
17,700.00	90.00	268.39	6,413.00	-792.74	-11,126.29	11,154.49	0.00	0.00	0.00
17,800.00	90.00	268.39	6,413.00	-795.54	-11,226.25	11,254.40	0.00	0.00	0.00
17,900.00	90.00	268.39	6,413.00	-798.34	-11,326.21	11,354.31	0.00	0.00	0.00
17,957.07	90.00	268.39	6,413.00	-799.94	-11,383.26	11,411.33	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Well:</b>	Wells Ranch State AA36-633	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wells Ranch State AA36-633	<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)

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Wells Ranch State AA36	0.00	0.00	6,413.00	-799.94	-11,383.26	1,404,970.27	3,307,640.43	40.4397822	-104.3947304
- plan hits target center									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
504.00	504.00	Pierre				
577.00	577.00	Upper Pierre Aquifer Top				
1,492.00	1,492.00	Upper Pierre Aquifer Base				
3,461.55	3,449.00	Parkman				
4,202.33	4,180.00	Sussex				
4,807.32	4,777.00	Shannon				
5,676.80	5,635.00	Teepee Buttes				
5,963.57	5,918.00	Top C Chalk				
6,480.53	6,323.00	Sharon Springs				
6,556.89	6,358.00	Top A Chalk				
6,634.23	6,385.00	Top A Marl				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2200	2200	0	0	KOP - Start Build 2.00
5755	5712	-386	375	Start DLS 9.00 TFO 132.23
6557	6358	-474	4	TPZ at 6556.89 MD
6824	6413	-488	-255	Landing Pt at 6824.4 MD
17,957	6413	-800	-11,383	TD at 17957.07

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



# **Northern Region - DJ Basin**

**Wells Ranch**

**AE Section 32**

**Wells Ranch State AA36-633**

**Wells Ranch State AA36-633**

**Plan 1**

## **Anticollision Summary Report**

**04 January, 2018**

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

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan 1		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.00 ft	<b>Error Surface:</b>	Pedal Curve
<b>Warning Levels Evaluated at:</b>	2.00 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b>	1/4/2018		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.00	17,957.07	Plan 1 (Wells Ranch State AA36-633)	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
Offset Well - Wellbore - Design						
AA Section 35						
Wells Ranch USX AA35-65HN - Plan A - Original Drilling	17,957.07	10,987.02	1,316.67	1,077.53	5.506	CC, ES, SF
AA Section 36						
Wells Ranch 11-36 - Wells Ranch 11-36 - Wells Ranch 1	17,165.72	6,442.71	3,120.60	2,962.28	19.710	CC
Wells Ranch 11-36 - Wells Ranch 11-36 - Wells Ranch 1	17,200.00	6,442.47	3,120.79	2,962.07	19.662	ES
Wells Ranch 11-36 - Wells Ranch 11-36 - Wells Ranch 1	17,600.00	6,439.69	3,150.67	2,988.55	19.434	SF
Wells Ranch 12-36 - Wells Ranch 12-36 - Wells Ranch 1	17,198.56	6,443.95	1,707.85	1,549.09	10.758	CC
Wells Ranch 12-36 - Wells Ranch 12-36 - Wells Ranch 1	17,200.00	6,443.95	1,707.85	1,549.08	10.757	ES
Wells Ranch 12-36 - Wells Ranch 12-36 - Wells Ranch 1	17,300.00	6,444.52	1,710.86	1,551.18	10.715	SF
Wells Ranch 13-36 - Wells Ranch 13-36 - Wells Ranch 1	17,269.31	6,428.20	482.97	323.42	3.027	CC, ES, SF
Wells Ranch 14-36 - Wells Ranch 14-36 - Wells Ranch 1	17,512.84	6,406.04	984.31	821.84	6.058	CC, ES
Wells Ranch 14-36 - Wells Ranch 14-36 - Wells Ranch 1	17,600.00	6,406.05	988.17	825.01	6.057	SF
Wells Ranch 21-36 - Wells Ranch 21-36 - Wells Ranch 2	15,783.61	6,425.67	3,131.51	2,990.11	22.146	CC
Wells Ranch 21-36 - Wells Ranch 21-36 - Wells Ranch 2	15,800.00	6,425.70	3,131.55	2,989.96	22.117	ES
Wells Ranch 21-36 - Wells Ranch 21-36 - Wells Ranch 2	16,200.00	6,426.57	3,159.07	3,013.82	21.750	SF
Wells Ranch 22-36 - Wells Ranch 22-36 - Wells Ranch 2	15,742.93	6,416.55	1,863.51	1,722.65	13.229	CC, ES
Wells Ranch 22-36 - Wells Ranch 22-36 - Wells Ranch 2	15,900.00	6,414.98	1,870.12	1,727.88	13.147	SF
Wells Ranch 23-36 - Wells Ranch 23-36 - Wells Ranch 2	16,042.08	6,426.61	497.35	352.80	3.441	CC, ES, SF
Wells Ranch 24-36 - Wells Ranch 24-36 - Wells Ranch 2	15,863.68	6,398.86	1,109.50	967.21	7.797	CC, ES
Wells Ranch 24-36 - Wells Ranch 24-36 - Wells Ranch 2	15,900.00	6,399.24	1,110.09	967.37	7.778	SF
Wells Ranch 31-36 - Wells Ranch 31-36 - Wells Ranch 3	14,455.69	6,406.16	3,106.34	2,981.14	24.811	CC
Wells Ranch 31-36 - Wells Ranch 31-36 - Wells Ranch 3	14,500.00	6,406.11	3,106.66	2,980.95	24.714	ES
Wells Ranch 31-36 - Wells Ranch 31-36 - Wells Ranch 3	14,900.00	6,405.65	3,137.96	3,008.62	24.262	SF
Wells Ranch 32-36 - Wells Ranch 32-36 - Wells Ranch 3	14,396.63	6,396.45	1,718.63	1,594.17	13.808	CC
Wells Ranch 32-36 - Wells Ranch 32-36 - Wells Ranch 3	14,400.00	6,396.46	1,718.64	1,594.13	13.804	ES
Wells Ranch 32-36 - Wells Ranch 32-36 - Wells Ranch 3	14,500.00	6,396.78	1,721.74	1,596.29	13.725	SF
Wells Ranch 33-36 - Wells Ranch 33-36 - Wells Ranch 3	14,667.68	6,375.51	418.98	291.33	3.282	CC, ES, SF
Wells Ranch 34-36 - Original Drilling - Original Drilling - A	14,609.10	6,380.71	952.22	825.26	7.500	CC, ES
Wells Ranch 34-36 - Original Drilling - Original Drilling - A	14,700.00	6,380.33	956.55	828.80	7.488	SF
Wells Ranch 36A - Wells Ranch 36A - Wells Ranch 36A	16,762.01	6,441.77	2,441.80	2,288.41	15.919	CC
Wells Ranch 36A - Wells Ranch 36A - Wells Ranch 36A	16,800.00	6,441.55	2,442.10	2,288.28	15.877	ES
Wells Ranch 36A - Wells Ranch 36A - Wells Ranch 36A	17,000.00	6,440.40	2,453.37	2,297.83	15.773	SF
Wells Ranch 36B - Wells Ranch 36B - Wells Ranch 36B	16,661.61	6,427.96	213.14	61.03	1.401	Level 3, CC, ES, SF
Wells Ranch 36C - Wells Ranch 36C - Wells Ranch 36C	13,971.20	6,350.69	2,375.18	2,256.07	19.940	CC
Wells Ranch 36C - Wells Ranch 36C - Wells Ranch 36C	14,000.00	6,350.17	2,375.36	2,255.92	19.888	ES
Wells Ranch 36C - Wells Ranch 36C - Wells Ranch 36C	14,300.00	6,344.83	2,397.82	2,275.86	19.660	SF
Wells Ranch 36D - Wells Ranch 36D - Wells Ranch 36D	13,905.82	6,369.12	156.54	38.14	1.322	Level 3, 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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<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						
AA Section 36						
Wells Ranch 36F - Wells Ranch 36F - Wells Ranch 36F	17,815.97	6,464.07	2,392.06	2,225.67	14.376	CC, ES
Wells Ranch 36F - Wells Ranch 36F - Wells Ranch 36F	17,957.07	6,464.24	2,396.22	2,228.43	14.281	SF
Wells Ranch 36H - Wells Ranch 36H - Wells Ranch 36H	17,810.00	6,406.39	310.10	143.98	1.867	CC, ES, SF
Wells Ranch 36J - Original Drilling - As Drilled	16,502.21	6,347.29	3,599.00	3,450.03	24.160	CC, ES
Wells Ranch 36J - Original Drilling - As Drilled	17,100.00	6,343.79	3,648.30	3,494.03	23.649	SF
Wells Ranch 36K - Wells Ranch 36K - Wells Ranch 36K	16,479.91	6,437.99	1,127.82	978.60	7.558	CC
Wells Ranch 36K - Wells Ranch 36K - Wells Ranch 36K	16,500.00	6,437.70	1,128.00	978.58	7.549	ES, SF
Wells Ranch 36L - Wells Ranch 36L - Wells Ranch 36L	16,686.11	6,407.56	1,368.11	1,216.55	9.026	CC
Wells Ranch 36L - Wells Ranch 36L - Wells Ranch 36L	16,700.00	6,407.58	1,368.18	1,216.44	9.016	ES
Wells Ranch 36L - Wells Ranch 36L - Wells Ranch 36L	16,800.00	6,407.72	1,372.85	1,220.19	8.993	SF
Wells Ranch 36N - Wells Ranch 36N - Wells Ranch 36N	15,242.79	6,377.16	2,375.56	2,193.78	13.069	CC, ES
Wells Ranch 36N - Wells Ranch 36N - Wells Ranch 36N	15,500.00	6,376.54	2,389.44	2,205.35	12.980	SF
Wells Ranch 36O - Wells Ranch 36O - Wells Ranch 36O	15,180.75	6,383.86	1,225.89	1,092.76	9.208	CC
Wells Ranch 36O - Wells Ranch 36O - Wells Ranch 36O	15,200.00	6,383.68	1,226.05	1,092.71	9.195	ES, SF
Wells Ranch 36P - Wells Ranch 36P - Wells Ranch 36P	15,066.66	6,392.71	283.60	151.80	2.152	CC, ES, SF
Wells Ranch 36R - Wells Ranch 36R - Wells Ranch 36R	13,782.06	6,423.13	3,552.65	3,435.54	30.336	CC
Wells Ranch 36R - Wells Ranch 36R - Wells Ranch 36R	13,800.00	6,423.20	3,552.70	3,435.38	30.283	ES
Wells Ranch 36R - Wells Ranch 36R - Wells Ranch 36R	14,500.00	6,425.98	3,624.47	3,500.90	29.333	SF
Wells Ranch 36S - Wells Ranch 36S - Wells Ranch 36S	13,992.85	6,354.82	1,050.11	931.52	8.855	CC
Wells Ranch 36S - Wells Ranch 36S - Wells Ranch 36S	14,000.00	6,354.78	1,050.13	931.47	8.850	ES, SF
Wells Ranch 36T - Wells Ranch 36T - Wells Ranch 36T	13,941.22	6,381.09	1,447.90	1,329.88	12.268	CC, ES
Wells Ranch 36T - Wells Ranch 36T - Wells Ranch 36T	14,100.00	6,381.83	1,456.58	1,337.03	12.184	SF
Wells Ranch 36V - Wells Ranch 36V - Wells Ranch 36V	12,800.77	6,355.10	2,334.43	2,230.33	22.426	CC, ES
Wells Ranch 36V - Wells Ranch 36V - Wells Ranch 36V	13,100.00	6,352.72	2,353.53	2,246.70	22.030	SF
Wells Ranch 41-36 - Wells Ranch 41-36 - Wells Ranch 4	13,250.34	6,380.00	3,036.12	2,925.56	27.460	CC
Wells Ranch 41-36 - Wells Ranch 41-36 - Wells Ranch 4	13,300.00	6,380.09	3,036.53	2,925.40	27.325	ES
Wells Ranch 41-36 - Wells Ranch 41-36 - Wells Ranch 4	13,800.00	6,380.96	3,085.48	2,969.98	26.714	SF
Wells Ranch 42-36 - Wells Ranch 42-36 - Wells Ranch 4	13,299.26	6,355.27	1,780.79	1,669.70	16.030	CC
Wells Ranch 42-36 - Wells Ranch 42-36 - Wells Ranch 4	13,300.00	6,355.27	1,780.79	1,669.69	16.029	ES
Wells Ranch 42-36 - Wells Ranch 42-36 - Wells Ranch 4	13,500.00	6,355.27	1,792.07	1,679.26	15.886	SF
Wells Ranch 43-36 - Wells Ranch 43-36 - Wells Ranch 4	13,333.51	6,352.12	458.75	347.26	4.115	CC, ES, SF
Wells Ranch 44-36 - Wells Ranch 44-36 - Wells Ranch 4	13,176.82	6,381.43	1,096.19	986.55	9.998	CC
Wells Ranch 44-36 - Wells Ranch 44-36 - Wells Ranch 4	13,200.00	6,381.63	1,096.44	986.50	9.973	ES
Wells Ranch 44-36 - Wells Ranch 44-36 - Wells Ranch 4	13,300.00	6,382.48	1,103.09	992.32	9.958	SF
Wells Ranch AA35-62-1AHNC - Original Drilling - Origina	17,957.07	6,420.33	1,036.55	871.88	6.295	CC, ES, SF
Wells Ranch AA35-62-1BHNC - Original Drilling - Origina	17,957.07	6,467.00	1,333.89	1,168.05	8.043	CC, ES, SF
Wells Ranch AA35-62-1HNA - Original Drilling - Original	17,957.07	6,326.96	1,196.27	1,032.77	7.317	CC, ES, SF
Wells Ranch AA35-63-1AHNA - Original Drilling - Origina	17,957.07	6,423.89	356.67	203.53	2.329	CC, ES, SF
Wells Ranch AA35-63-1BHNA - Original Drilling - Origina	17,957.07	6,264.22	740.43	577.95	4.557	CC, ES, SF
Wells Ranch AA35-63-1HNC - Original Drilling - Original	17,957.07	6,447.16	505.85	340.94	3.067	CC, ES, SF
Wells Ranch AA35-64-1AHNA - Original Drilling - Origina	17,957.07	6,388.59	274.90	136.14	1.981	CC, ES, SF
Wells Ranch AA35-64-1BHNC - Original Drilling - Origina	17,957.07	6,450.95	114.45	13.86	1.138	Level 2, CC, ES, SF
Wells Ranch AA35-65-1AHNA - Original Drilling - Origina	17,957.07	6,402.45	885.34	720.13	5.359	CC, ES, SF
Wells Ranch AA35-65-1BHNC - Original Drilling - Origina	17,957.07	6,412.66	705.71	540.87	4.281	CC, ES, SF
Wells Ranch AA35-66-1AHNC - Original Drilling - Origina	17,957.07	6,436.78	1,633.53	1,467.78	9.856	CC, ES, SF
Wells Ranch AA35-67-1AHNA - Original Drilling - Origina	17,957.07	6,332.60	2,363.91	2,198.39	14.281	CC, ES, SF
Wells Ranch AA35-67-1BHNA - Original Drilling - Origina	17,957.07	6,422.29	1,963.68	1,798.16	11.864	CC, ES, SF
Wells Ranch AA35-67-1HNC - Original Drilling - Original	17,957.07	6,466.69	2,122.68	1,956.50	12.774	CC, ES, SF
Wells Ranch AA35-68-1AHNA - Original Drilling - Origina	17,957.07	6,479.00	2,866.86	2,700.88	17.273	CC, ES, SF
Wells Ranch AA35-68-1BHNC - Original Drilling - Origina	17,874.58	6,384.00	2,690.45	2,525.85	16.345	CC
Wells Ranch AA35-68-1BHNC - Original Drilling - Origina	17,900.00	6,384.00	2,690.57	2,525.68	16.317	ES
Wells Ranch AA35-68-1BHNC - Original Drilling - Origina	17,957.07	6,407.16	2,691.43	2,525.77	16.247	SF
Wells Ranch AA35-69-1AHNC - Original Drilling - Origina	16,700.00	16,700.00	3,801.07	3,621.60	21.179	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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<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>AA Section 36</b>						
Wells Ranch AA35-69-1AHNC - Original Drilling - Original	17,953.86	6,527.00	3,603.11	3,436.68	21.649	CC
Wells Ranch AA35-69-1AHNC - Original Drilling - Original	17,957.07	6,527.00	3,603.11	3,436.64	21.644	ES
Wells Ranch AA35-69-1BHNC - Original Drilling - Original	17,200.00	17,200.00	3,347.52	3,154.04	17.301	SF
Wells Ranch AA35-69-1BHNC - Original Drilling - Original	17,913.10	6,504.09	3,282.92	3,117.23	19.814	CC
Wells Ranch AA35-69-1BHNC - Original Drilling - Original	17,957.07	6,554.61	3,283.00	3,116.61	19.730	ES
Wells Ranch AA35-69-1HNB - Original Drilling - Original	17,200.00	17,200.00	3,509.97	3,313.71	17.884	SF
Wells Ranch AA35-69-1HNB - Original Drilling - Original	17,893.55	6,385.00	3,445.81	3,280.85	20.889	CC
Wells Ranch AA35-69-1HNB - Original Drilling - Original	17,957.07	6,385.00	3,446.40	3,280.71	20.800	ES
Wells Ranch USX AA35-14 - Wellbore #1 - Wellbore #1 -	17,957.07	6,415.01	3,409.58	3,353.53	60.831	CC, ES, SF
<b>AE Section 31</b>						
UPRR-Wells 1 - UPRR-Wells 1 - UPRR-Wells 1 - As Dril	12,027.32	6,343.00	917.25	788.03	7.099	CC, ES
UPRR-Wells 1 - UPRR-Wells 1 - UPRR-Wells 1 - As Dril	12,100.00	6,343.00	920.12	790.15	7.079	SF
Wells Ranch USX AE31-01P - Wells Ranch USX AE31-0	1,838.96	1,810.01	2,715.97	2,703.44	216.774	CC
Wells Ranch USX AE31-01P - Wells Ranch USX AE31-0	1,900.00	1,860.22	2,716.09	2,703.17	210.192	ES
Wells Ranch USX AE31-01P - Wells Ranch USX AE31-0	8,900.00	6,376.34	3,104.72	3,045.66	52.573	SF
Wells Ranch USX AE31-02P - Wells Ranch USX AE31-0	9,268.93	6,442.17	2,969.85	2,904.89	45.722	CC
Wells Ranch USX AE31-02P - Wells Ranch USX AE31-0	9,300.00	6,442.10	2,970.01	2,904.74	45.506	ES
Wells Ranch USX AE31-02P - Wells Ranch USX AE31-0	10,100.00	6,440.28	3,083.94	3,011.84	42.777	SF
Wells Ranch USX AE31-03P - Wells Ranch USX AE31-0	10,606.35	6,424.34	3,015.78	2,936.12	37.859	CC, ES
Wells Ranch USX AE31-03P - Wells Ranch USX AE31-0	11,300.00	6,440.40	3,094.50	3,008.55	36.006	SF
Wells Ranch USX AE31-04 - Wells Ranch USX AE31-04	11,953.15	6,287.29	3,009.51	2,914.77	31.767	CC
Wells Ranch USX AE31-04 - Wells Ranch USX AE31-04	12,000.00	6,286.01	3,009.87	2,914.62	31.598	ES
Wells Ranch USX AE31-04 - Wells Ranch USX AE31-04	12,600.00	6,270.74	3,078.19	2,977.78	30.659	SF
Wells Ranch USX AE31-05P - Wells Ranch USX AE31-0	12,051.67	6,345.00	1,708.59	1,579.06	13.192	CC, ES
Wells Ranch USX AE31-05P - Wells Ranch USX AE31-0	12,200.00	6,345.00	1,715.01	1,584.12	13.102	SF
Wells Ranch USX AE31-06 - Wells Ranch USX AE31-06	10,551.76	6,277.30	1,667.70	1,589.42	21.303	CC, ES
Wells Ranch USX AE31-06 - Wells Ranch USX AE31-06	10,800.00	6,273.96	1,686.07	1,605.71	20.980	SF
Wells Ranch USX AE31-07P - Wells Ranch USX AE31-0	9,277.75	6,339.74	1,796.32	1,731.74	27.813	CC
Wells Ranch USX AE31-07P - Wells Ranch USX AE31-0	9,300.00	6,339.99	1,796.46	1,731.66	27.722	ES
Wells Ranch USX AE31-07P - Wells Ranch USX AE31-0	9,600.00	6,343.32	1,825.00	1,757.71	27.122	SF
Wells Ranch USX AE31-09P - Wells Ranch USX AE31-0	8,081.74	6,358.85	539.50	486.38	10.156	CC, ES
Wells Ranch USX AE31-09P - Wells Ranch USX AE31-0	8,100.00	6,358.88	539.81	486.57	10.139	SF
Wells Ranch USX AE31-10P - Wells Ranch USX AE31-1	9,265.51	6,353.23	430.44	365.90	6.670	CC, ES, SF
Wells Ranch USX AE31-11P - Wells Ranch USX AE31-1	10,896.86	6,334.45	345.33	262.77	4.183	CC
Wells Ranch USX AE31-11P - Wells Ranch USX AE31-1	10,900.00	6,334.41	345.34	262.77	4.182	ES, SF
Wells Ranch USX AE31-12 - Wells Ranch USX AE31-12	12,059.87	6,331.25	400.37	304.22	4.164	CC, ES, SF
Wells Ranch USX AE31-14 - Wells Ranch USX AE31-14	10,685.53	6,329.09	921.97	841.81	11.502	CC
Wells Ranch USX AE31-14 - Wells Ranch USX AE31-14	10,700.00	6,329.06	922.09	841.75	11.477	ES
Wells Ranch USX AE31-14 - Wells Ranch USX AE31-14	10,800.00	6,328.80	929.05	847.80	11.435	SF
Wells Ranch USX AE31-15 - Wells Ranch USX AE31-15	9,393.96	6,331.98	928.25	862.36	14.088	CC
Wells Ranch USX AE31-15 - Wells Ranch USX AE31-15	9,400.00	6,331.92	928.27	862.31	14.073	ES
Wells Ranch USX AE31-15 - Wells Ranch USX AE31-15	9,500.00	6,330.86	934.29	867.34	13.956	SF
Wells Ranch USX AE31-16P - Wells Ranch USX AE31-1	8,010.78	6,356.13	770.95	718.43	14.679	CC, ES
Wells Ranch USX AE31-16P - Wells Ranch USX AE31-1	8,100.00	6,355.62	776.09	722.83	14.571	SF
Wells Ranch USX AE31-98HZ - Wellbore #1 - Original D	8,251.60	6,524.19	79.07	34.55	1.776	CC, ES, SF
Wells Ranch USX AE31-99HZ - Wellbore #1 - Original D	9,620.02	9,360.18	70.96	16.67	1.307	Level 3, CC
Wells Ranch USX AE31-99HZ - Wellbore #1 - Original D	9,700.00	9,304.58	91.63	4.12	1.047	Level 2, 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 Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<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
AE Section 32						
Wells Ranch AE32-05 - Wells Ranch AE32-05 - Wells Ra	2,227.73	2,213.10	1,195.45	1,180.12	77.982	CC, ES
Wells Ranch AE32-05 - Wells Ranch AE32-05 - Wells Ra	6,750.00	6,404.20	1,765.68	1,720.36	38.962	SF
Wells Ranch AE32-615 - Original Drilling - Original Drillin	6,623.19	6,810.39	1,216.91	1,170.22	26.062	CC, ES, SF
Wells Ranch AE32-620 - Original Drilling - Original Drillin	6,889.62	6,589.12	896.33	851.59	20.031	CC
Wells Ranch AE32-620 - Original Drilling - Original Drillin	6,900.00	6,581.31	896.36	851.58	20.019	ES
Wells Ranch AE32-620 - Original Drilling - Original Drillin	7,000.00	6,503.21	899.44	854.36	19.952	SF
Wells Ranch AE32-625 - Original Drilling - Original Drillin	6,650.00	6,669.29	598.32	552.81	13.149	SF
Wells Ranch AE32-625 - Original Drilling - Original Drillin	6,862.68	6,434.00	593.29	549.07	13.416	CC, ES
Wells Ranch AE32-630 - Original Drilling - Original Drillin	6,687.36	6,716.30	243.61	200.46	5.646	CC
Wells Ranch AE32-630 - Original Drilling - Original Drillin	6,700.00	6,707.47	243.81	200.39	5.614	ES, SF
Wells Ranch AE32-635 - Original Drilling - Original Drillin	6,700.00	6,609.53	94.02	47.70	2.030	ES, SF
Wells Ranch AE32-635 - Original Drilling - Original Drillin	6,704.91	6,605.51	93.98	47.74	2.032	CC
Wells Ranch AE32-640 - Original Drilling - Original Drillin	100.00	89.86	166.87	166.59	594.300	CC
Wells Ranch AE32-640 - Original Drilling - Original Drillin	1,400.00	1,388.71	173.80	165.23	20.285	ES
Wells Ranch AE32-640 - Original Drilling - Original Drillin	6,800.00	6,535.18	399.53	353.60	8.698	SF
Wells Ranch AE32-645 - Original Drilling - Original Drillin	1,485.59	1,476.62	168.85	159.67	18.395	CC
Wells Ranch AE32-645 - Original Drilling - Original Drillin	1,500.00	1,491.02	168.85	159.57	18.191	ES
Wells Ranch AE32-645 - Original Drilling - Original Drillin	6,450.00	6,766.80	745.44	698.61	15.919	SF
Wells Ranch AE32-650 - Original Drilling - Original Drillin	782.22	772.23	178.74	174.60	43.173	CC
Wells Ranch AE32-650 - Original Drilling - Original Drillin	2,200.00	2,188.53	183.49	169.31	12.936	ES
Wells Ranch AE32-650 - Original Drilling - Original Drillin	2,400.00	2,388.36	191.68	176.11	12.311	SF
Wells Ranch AE32-655 - Original Drilling - Original Drillin	2,412.01	2,490.29	1,167.96	1,152.07	73.497	CC, ES
Wells Ranch AE32-655 - Original Drilling - Original Drillin	6,350.00	6,881.10	1,353.15	1,305.60	28.458	SF
Wells Ranch AE32-665 - Original Drilling - Original Drillin	1,494.36	1,497.65	1,223.30	1,214.50	139.066	CC, ES
Wells Ranch AE32-665 - Original Drilling - Original Drillin	6,300.00	6,945.82	2,030.92	1,984.15	43.428	SF
Wells Ranch AE32-670 - Original Drilling - Original Drillin	2,224.11	2,237.49	1,255.67	1,241.34	87.589	CC, ES
Wells Ranch AE32-670 - Original Drilling - Original Drillin	7,700.00	5,877.60	2,347.70	2,301.10	50.382	SF
Wells Ranch AE32-675 - Original Drilling - Original Drillin	2,501.36	2,744.83	2,597.24	2,579.87	149.524	CC, ES
Wells Ranch AE32-675 - Original Drilling - Original Drillin	6,250.00	7,045.35	2,677.79	2,630.46	56.567	SF
Wells Ranch AE32-685 - Original Drilling - Original Drillin	0.00	15.60	2,650.72			
Wells Ranch AE32-685 - Original Drilling - Original Drillin	900.00	900.15	2,654.27	2,649.30	534.504	ES
Wells Ranch AE32-685 - Original Drilling - Original Drillin	8,500.00	6,087.00	3,707.64	3,653.62	68.636	SF
Wells Ranch AE32-690 - Original Drilling - Original Drillin	1,425.60	1,441.61	2,685.56	2,676.92	310.733	CC
Wells Ranch AE32-690 - Original Drilling - Original Drillin	1,500.00	1,483.00	2,685.88	2,676.83	296.778	ES
Wells Ranch AE32-690 - Original Drilling - Original Drillin	8,800.00	5,803.00	3,922.50	3,867.64	71.494	SF
Wells Ranch AF05-690 - Original Drilling - Original Drillin	3,174.72	3,020.20	1,409.38	1,389.93	72.490	CC
Wells Ranch AF05-690 - Original Drilling - Original Drillin	7,102.86	5,868.00	1,409.58	1,367.49	33.491	ES
Wells Ranch AF05-690 - Original Drilling - Original Drillin	7,400.00	5,868.00	1,440.56	1,396.54	32.730	SF
Wells Ranch State AA36-622 - Wells Ranch State AA36-	2,000.00	1,999.00	37.46	23.59	2.701	CC, ES
Wells Ranch State AA36-622 - Wells Ranch State AA36-	17,957.07	17,977.56	715.63	429.61	2.502	SF
Wells Ranch State AA36-643 - Wells Ranch State AA36-	2,200.00	2,200.00	37.46	22.16	2.447	CC, ES
Wells Ranch State AA36-643 - Wells Ranch State AA36-	17,957.07	17,888.62	673.41	386.59	2.348	SF
Wells Ranch State AA36-654 - Wells Ranch State AA36-	2,000.00	2,001.00	74.91	61.04	5.399	CC, ES
Wells Ranch State AA36-654 - Wells Ranch State AA36-	17,957.07	17,975.89	1,396.20	1,104.60	4.788	SF
Wells Ranch State AA36-664 - Wells Ranch State AA36-	2,200.00	2,205.00	1,149.11	1,133.78	74.984	CC, ES
Wells Ranch State AA36-664 - Wells Ranch State AA36-	17,957.07	17,839.31	2,040.77	1,751.11	7.045	SF
Wells Ranch State AA36-673 - Wells Ranch State AA36-	2,200.00	2,205.00	1,254.04	1,238.72	81.832	CC, ES
Wells Ranch State AA36-673 - Wells Ranch State AA36-	17,957.07	17,738.38	2,627.45	2,338.20	9.084	SF
Wells Ranch State AA36-683 - Wells Ranch State AA36-	2,000.00	2,006.00	1,291.67	1,277.78	92.964	CC, ES
Wells Ranch State AA36-683 - Wells Ranch State AA36-	17,957.07	17,992.81	3,308.01	3,018.39	11.422	SF

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



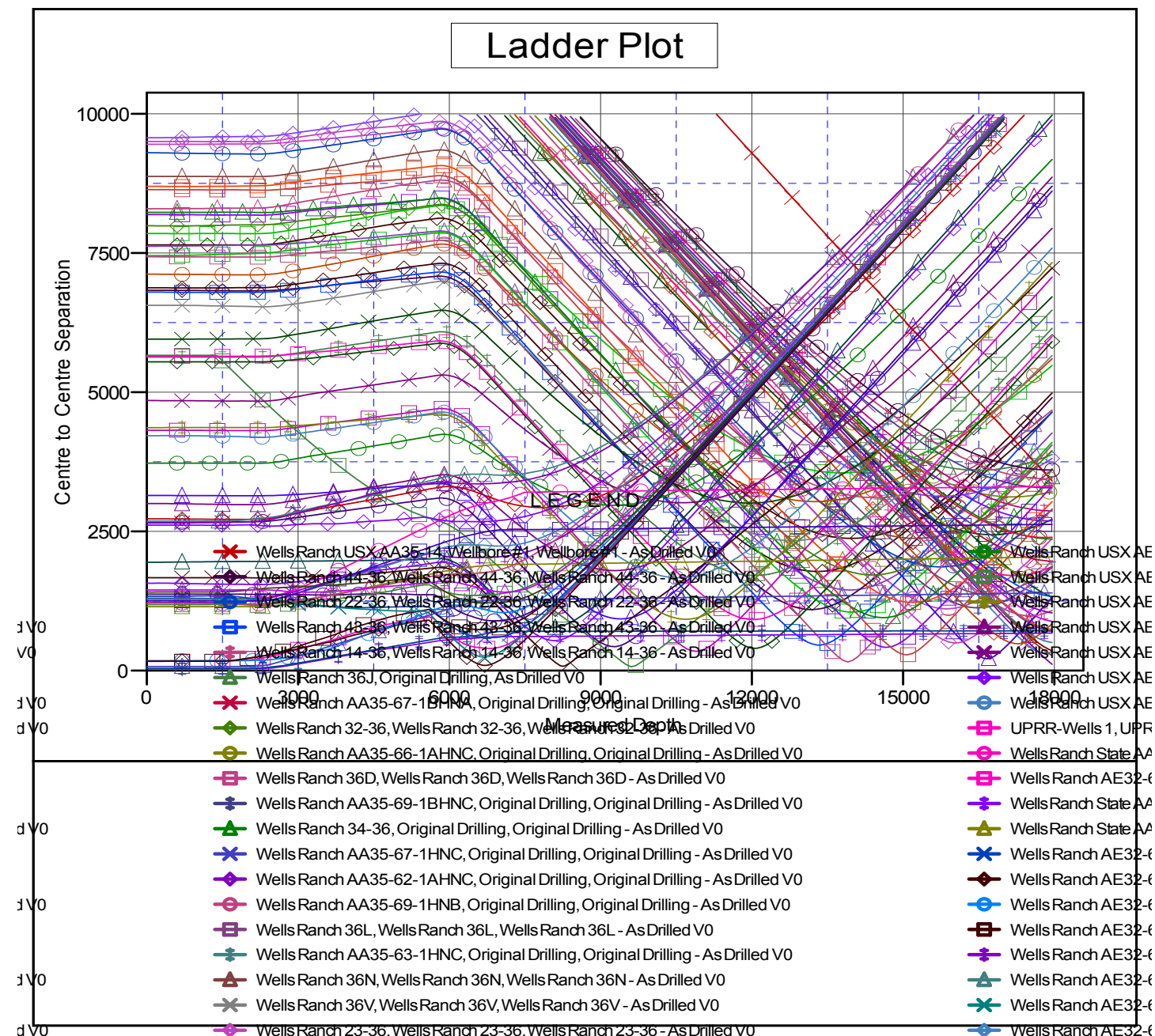
## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

Coordinates are relative to: Wells Ranch State AA36-633

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is:  $0.74^\circ$



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

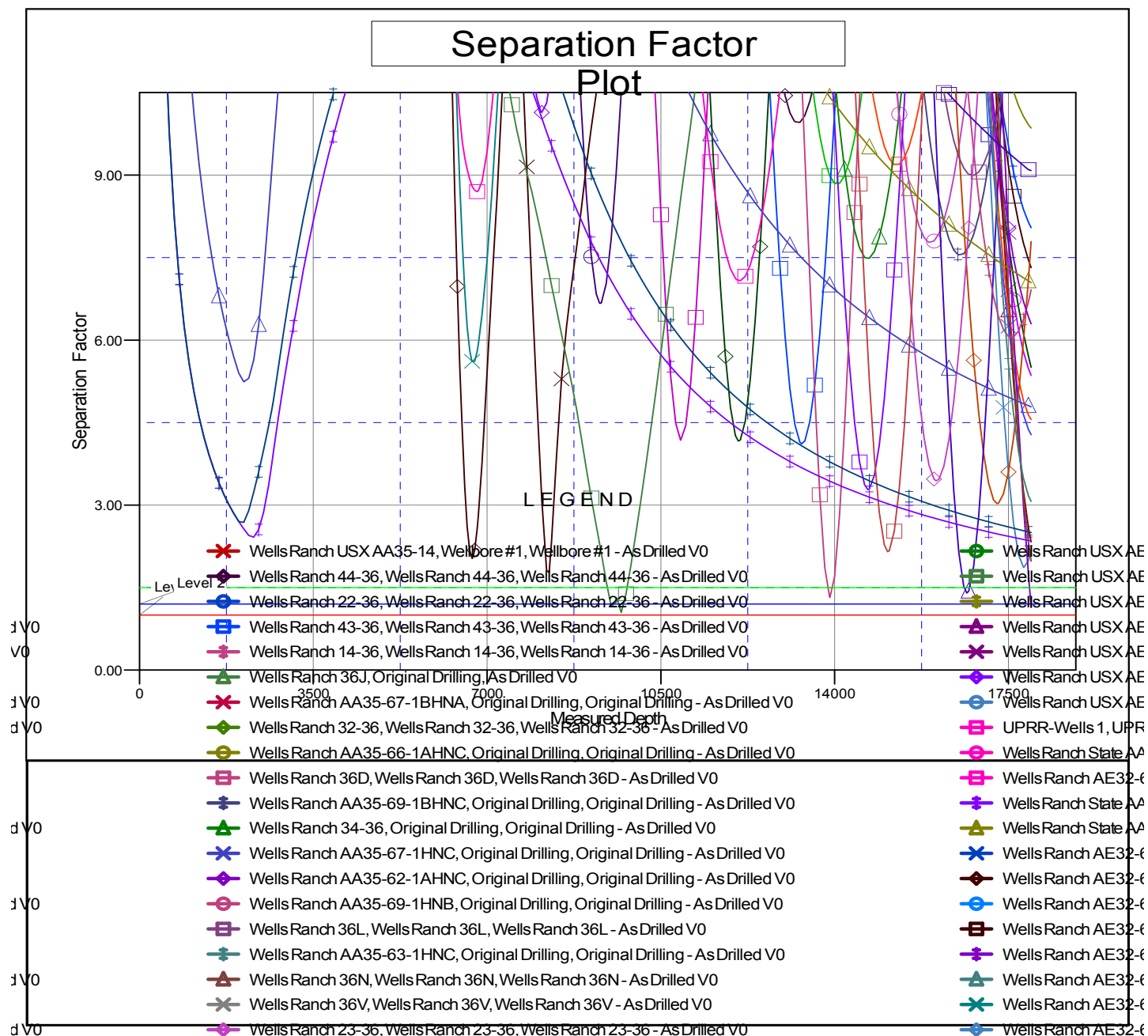
## Anticollision Summary Report

<b>Company:</b>	Northern Region - DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch State AA36-633
<b>Project:</b>	Wells Ranch	<b>TVD Reference:</b>	Well @ 4756.00ft
<b>Reference Site:</b>	AE Section 32	<b>MD Reference:</b>	Well @ 4756.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	Grid
<b>Reference Well:</b>	Wells Ranch State AA36-633	<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>	Wells Ranch State AA36-633	<b>Database:</b>	EDMP
<b>Reference Design:</b>	Plan 1	<b>Offset TVD Reference:</b>	Offset Datum

Coordinates are relative to: Wells Ranch State AA36-633

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.74°



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