



Azimuths to True North  
 Magnetic North: 10.21°  
 Magnetic Field  
 Strength: 52126.7nT  
 Dip Angle: 65.59°  
 Date: 8/29/2011  
 Model: IGRF2010

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well NBC Elk Ranch 17-23D
<b>Company:</b>	Delta Petroleum	<b>TVD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Project:</b>	North Vega	<b>MD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Site:</b>	Sec 17-T9S-R93W (Elk Ranch)	<b>North Reference:</b>	True
<b>Well:</b>	NBC Elk Ranch 17-23D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

<b>Project</b>	North Vega		
<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 Central Zone		

<b>Site</b>	Sec 17-T9S-R93W (Elk Ranch)			
<b>Site Position:</b>		<b>Northing:</b>	1,534,532.81 ft	<b>Latitude:</b> 39.278525
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,350,892.13 ft	<b>Longitude:</b> -107.793341
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.45 °

<b>Well</b>	NBC Elk Ranch 17-23D			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,534,535.95 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,350,882.61 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	7,281.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/29/2011	10.21	65.59	52,127

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	206.03

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
6,532.9	30.66	206.03	6,460.8	-359.8	-175.7	2.00	2.00	0.00	206.03	
7,786.5	30.66	206.03	7,539.2	-934.2	-456.3	0.00	0.00	0.00	0.00	
9,319.4	0.00	0.00	9,000.0	-1,294.0	-632.0	2.00	-2.00	0.00	180.00	
13,819.4	0.00	0.00	13,500.0	-1,294.0	-632.0	0.00	0.00	0.00	0.00	NBC Elk Ranch 17-23

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<b>Project:</b>	North Vega	<b>MD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Site:</b>	Sec 17-T9S-R93W (Elk Ranch)	<b>North Reference:</b>	True
<b>Well:</b>	NBC Elk Ranch 17-23D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

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)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 5000'
5,100.0	2.00	206.03	5,100.0	-1.6	-0.8	1.7	2.00	2.00	

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<b>Project:</b>	North Vega	<b>MD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Site:</b>	Sec 17-T9S-R93W (Elk Ranch)	<b>North Reference:</b>	True
<b>Well:</b>	NBC Elk Ranch 17-23D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

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)	Comments / Formations
5,200.0	4.00	206.03	5,199.8	-6.3	-3.1	7.0	2.00	2.00	
5,300.0	6.00	206.03	5,299.5	-14.1	-6.9	15.7	2.00	2.00	
5,400.0	8.00	206.03	5,398.7	-25.1	-12.2	27.9	2.00	2.00	
5,500.0	10.00	206.03	5,497.5	-39.1	-19.1	43.5	2.00	2.00	
5,600.0	12.00	206.03	5,595.6	-56.3	-27.5	62.6	2.00	2.00	
5,700.0	14.00	206.03	5,693.1	-76.5	-37.3	85.1	2.00	2.00	
5,800.0	16.00	206.03	5,789.6	-99.7	-48.7	111.0	2.00	2.00	
5,900.0	18.00	206.03	5,885.3	-126.0	-61.5	140.2	2.00	2.00	
6,000.0	20.00	206.03	5,979.8	-155.2	-75.8	172.8	2.00	2.00	
6,100.0	22.00	206.03	6,073.2	-187.4	-91.5	208.6	2.00	2.00	
6,200.0	24.00	206.03	6,165.2	-222.5	-108.7	247.7	2.00	2.00	
6,300.0	26.00	206.03	6,255.8	-260.5	-127.2	289.9	2.00	2.00	
6,400.0	28.00	206.03	6,344.9	-301.3	-147.2	335.3	2.00	2.00	
6,500.0	30.00	206.03	6,432.4	-344.9	-168.4	383.8	2.00	2.00	
6,532.9	30.66	206.03	6,460.8	-359.8	-175.7	400.4	2.00	2.00	EOB; Inc=30.66°
6,600.0	30.66	206.03	6,518.5	-390.5	-190.7	434.6	0.00	0.00	
6,700.0	30.66	206.03	6,604.5	-436.4	-213.1	485.6	0.00	0.00	
6,800.0	30.66	206.03	6,690.6	-482.2	-235.5	536.6	0.00	0.00	
6,900.0	30.66	206.03	6,776.6	-528.0	-257.9	587.6	0.00	0.00	
7,000.0	30.66	206.03	6,862.6	-573.8	-280.3	638.6	0.00	0.00	
7,100.0	30.66	206.03	6,948.6	-619.6	-302.6	689.6	0.00	0.00	
7,200.0	30.66	206.03	7,034.6	-665.5	-325.0	740.6	0.00	0.00	
7,300.0	30.66	206.03	7,120.7	-711.3	-347.4	791.6	0.00	0.00	
7,400.0	30.66	206.03	7,206.7	-757.1	-369.8	842.6	0.00	0.00	
7,500.0	30.66	206.03	7,292.7	-802.9	-392.1	893.6	0.00	0.00	
7,600.0	30.66	206.03	7,378.7	-848.7	-414.5	944.5	0.00	0.00	
7,700.0	30.66	206.03	7,464.8	-894.5	-436.9	995.5	0.00	0.00	
7,786.5	30.66	206.03	7,539.2	-934.2	-456.3	1,039.7	0.00	0.00	Start Drop -2.00
7,800.0	30.39	206.03	7,550.8	-940.3	-459.3	1,046.5	2.00	-2.00	
7,900.0	28.39	206.03	7,637.9	-984.4	-480.8	1,095.6	2.00	-2.00	
8,000.0	26.39	206.03	7,726.7	-1,025.8	-501.0	1,141.6	2.00	-2.00	
8,100.0	24.39	206.03	7,817.1	-1,064.3	-519.8	1,184.4	2.00	-2.00	
8,200.0	22.39	206.03	7,908.8	-1,100.0	-537.2	1,224.1	2.00	-2.00	
8,300.0	20.39	206.03	8,001.9	-1,132.7	-553.2	1,260.6	2.00	-2.00	
8,400.0	18.39	206.03	8,096.3	-1,162.6	-567.8	1,293.8	2.00	-2.00	
8,500.0	16.39	206.03	8,191.7	-1,189.4	-580.9	1,323.7	2.00	-2.00	
8,600.0	14.39	206.03	8,288.1	-1,213.3	-592.6	1,350.2	2.00	-2.00	
8,700.0	12.39	206.03	8,385.4	-1,234.1	-602.7	1,373.4	2.00	-2.00	
8,800.0	10.39	206.03	8,483.4	-1,251.8	-611.4	1,393.1	2.00	-2.00	
8,900.0	8.39	206.03	8,582.1	-1,266.5	-618.5	1,409.4	2.00	-2.00	
9,000.0	6.39	206.03	8,681.2	-1,278.0	-624.2	1,422.3	2.00	-2.00	
9,100.0	4.39	206.03	8,780.8	-1,286.5	-628.3	1,431.7	2.00	-2.00	
9,200.0	2.39	206.03	8,880.6	-1,291.8	-630.9	1,437.6	2.00	-2.00	
9,300.0	0.39	206.03	8,980.6	-1,293.9	-632.0	1,440.0	2.00	-2.00	
9,319.4	0.00	0.00	9,000.0	-1,294.0	-632.0	1,440.1	2.00	-2.00	EOD; Inc=0°
9,400.0	0.00	0.00	9,080.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
9,500.0	0.00	0.00	9,180.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
9,600.0	0.00	0.00	9,280.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
9,700.0	0.00	0.00	9,380.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
9,800.0	0.00	0.00	9,480.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
9,900.0	0.00	0.00	9,580.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,000.0	0.00	0.00	9,680.6	-1,294.0	-632.0	1,440.1	0.00	0.00	

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<b>Wellbore:</b>	DD		
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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)	Comments / Formations
10,100.0	0.00	0.00	9,780.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,200.0	0.00	0.00	9,880.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,300.0	0.00	0.00	9,980.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,400.0	0.00	0.00	10,080.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,500.0	0.00	0.00	10,180.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,600.0	0.00	0.00	10,280.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,700.0	0.00	0.00	10,380.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,800.0	0.00	0.00	10,480.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
10,900.0	0.00	0.00	10,580.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,000.0	0.00	0.00	10,680.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,100.0	0.00	0.00	10,780.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,200.0	0.00	0.00	10,880.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,300.0	0.00	0.00	10,980.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,400.0	0.00	0.00	11,080.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,500.0	0.00	0.00	11,180.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,600.0	0.00	0.00	11,280.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,700.0	0.00	0.00	11,380.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,800.0	0.00	0.00	11,480.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
11,900.0	0.00	0.00	11,580.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,000.0	0.00	0.00	11,680.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,100.0	0.00	0.00	11,780.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,200.0	0.00	0.00	11,880.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,300.0	0.00	0.00	11,980.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,400.0	0.00	0.00	12,080.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,500.0	0.00	0.00	12,180.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,600.0	0.00	0.00	12,280.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,700.0	0.00	0.00	12,380.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,800.0	0.00	0.00	12,480.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
12,900.0	0.00	0.00	12,580.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,000.0	0.00	0.00	12,680.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,100.0	0.00	0.00	12,780.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,200.0	0.00	0.00	12,880.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,300.0	0.00	0.00	12,980.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,400.0	0.00	0.00	13,080.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,500.0	0.00	0.00	13,180.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,600.0	0.00	0.00	13,280.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,700.0	0.00	0.00	13,380.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,800.0	0.00	0.00	13,480.6	-1,294.0	-632.0	1,440.1	0.00	0.00	
13,819.4	0.00	0.00	13,500.0	-1,294.0	-632.0	1,440.1	0.00	0.00	TD at 13819.4 - NBC Elk Ranch 17-23D PBHL

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
NBC Elk Ranch 17-23D	0.00	0.00	13,500.0	-1,294.0	-632.0	1,533,258.31	2,350,218.14	39.274980	-107.795607
- plan hits target center									
- Point									

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well NBC Elk Ranch 17-23D
<b>Company:</b>	Delta Petroleum	<b>TVD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Project:</b>	North Vega	<b>MD Reference:</b>	KBE @ 7295.0ft (Original Well Elev)
<b>Site:</b>	Sec 17-T9S-R93W (Elk Ranch)	<b>North Reference:</b>	True
<b>Well:</b>	NBC Elk Ranch 17-23D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	DD		
<b>Design:</b>	Plan #1		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,000.0	5,000.0	0.0	0.0	KOP @ 5000'
6,532.9	6,460.8	-359.8	-175.7	EOB; Inc=30.66°
7,786.5	7,539.2	-934.2	-456.3	Start Drop -2.00
9,319.4	9,000.0	-1,294.0	-632.0	EOD; Inc=0°
13,819.4	13,500.0	-1,294.0	-632.0	TD at 13819.4