

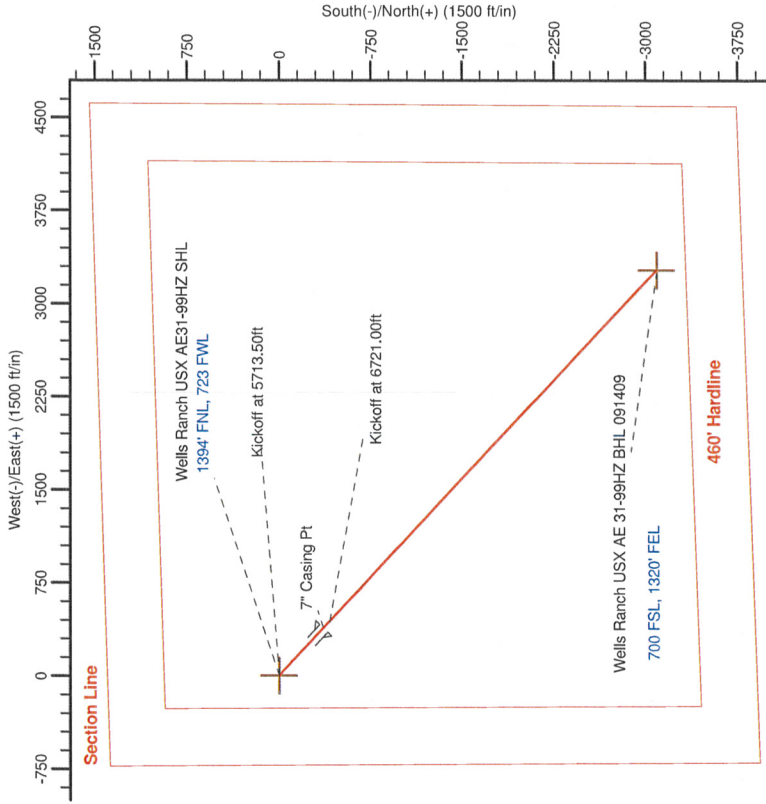
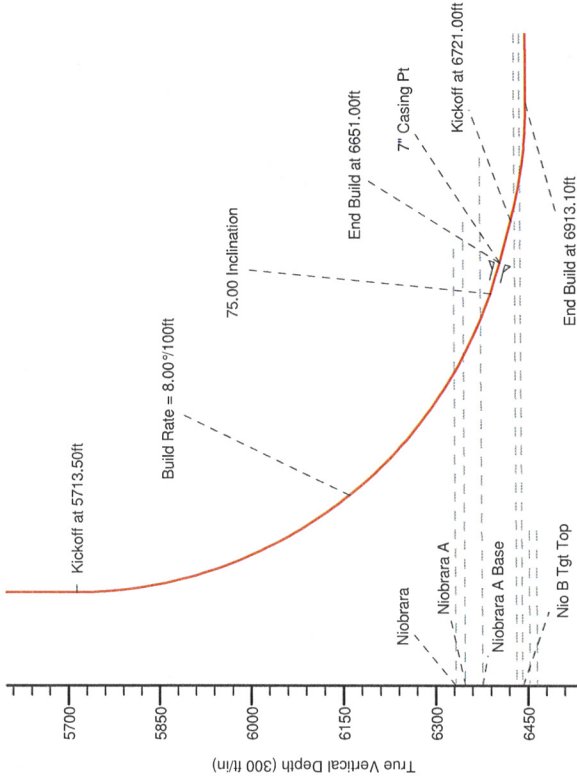
Project: Weld County, CO  
Site: Sec. 31-T6N-R62W  
Well: Wells Ranch USX AE31-99HZ  
Wellbore: Wellbore #1  
Design: Plan #4 Proposal

# Noble Energy (Rockies)

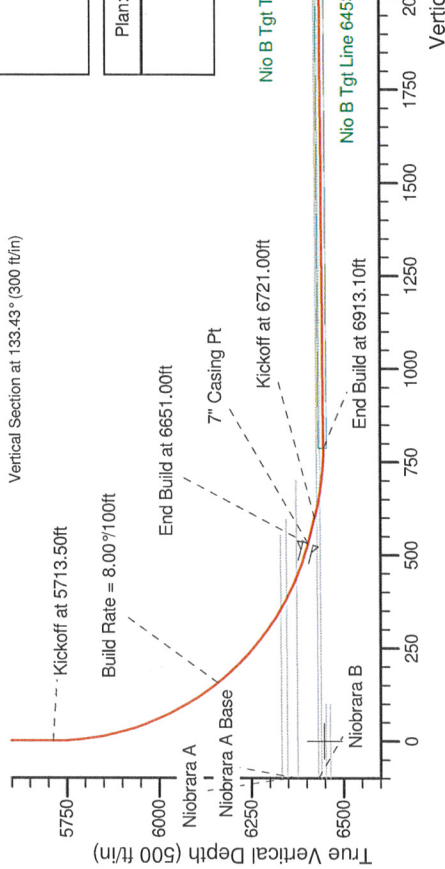
HALLIBURTON

## 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	5713.50	0.00	0.00	5713.50	0.00	0.00	0.00	0.00	0.00	
3	6651.00	75.00	133.43	6405.29	-364.93	385.50	8.00	133.43	530.83	
4	6721.00	75.00	133.43	6423.41	-411.41	434.50	0.00	0.00	598.45	
5	6913.10	90.37	133.43	6447.80	-542.01	572.55	8.00	0.00	788.41	
6	10621.84	90.37	133.43	6424.00	-3091.64	3265.81	0.00	0.00	4437.08	Wells Ranch USX AE 31-99HZ BHL 091409



Vertical Section at 133.43° (300 ft/in)



WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Wells Ranch USX AE 31-99HZ BHL 091409	6445.00	-3091.64	3265.81	40° 26' 15.936 N	104° 21' 41.652 W	Point
Wells Ranch USX AE 31-99HZ BHL	6448.00	-3091.64	3265.81	40° 26' 15.936 N	104° 21' 41.652 W	Point
Nio B Tgt Line		0.00	0.00	40° 26' 46.896 N	104° 22' 23.376 W	Polygon

Plan: Plan #4 Proposal (Wells Ranch USX AE31-99HZ/Wellbore #1)

Created By: Puneet Bhatia Date: 9/23/2009

WELL DETAILS: Wells Ranch USX AE31-99HZ

North	East	Ground Level	Latitude	Longitude
1407441.94	3313613.55	4694.00	40° 26' 46.896 N	104° 22' 23.376 W

Hold Angle at 90.37°

Nio B Tgt Top

Nio B Tgt Line 6453' @0° VS w/90.37° Updip

Wells Ranch USX AE 31-99HZ BHL 091409

# Noble Energy (Rockies)

Weld County, CO

Sec. 31-T6N-R62W

Wells Ranch USX AE31-99HZ

Wellbore #1

Plan: Plan #4 Proposal

## Sperry Drilling Services

### Proposal Report

24 September, 2009

Well Coordinates: 1,407,441.94 N, 3,313,613.55 E (40° 26' 46.90" N, 104° 22' 23.38" W)

Ground Level: 4,694.00 ft

Local Coordinate Origin:

Centered on Well Wells Ranch USX AE31-99HZ

Viewing Datum:

RKB - 13' @ 4707.00ft

TVDs to System:

N

North Reference:

Grid

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

## Plan Report for Wells Ranch USX AE31-99HZ - Plan #4 Proposal

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)	Toolface Azimuth (°)
0.00	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	0.00
200.00	0.00	0.00	200.00	0.00	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	0.00
400.00	0.00	0.00	400.00	0.00	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	0.00
600.00	0.00	0.00	600.00	0.00	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	0.00
800.00	0.00	0.00	800.00	0.00	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	0.00
1,000.00	0.00	0.00	1,000.00	0.00	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	0.00
1,200.00	0.00	0.00	1,200.00	0.00	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	0.00
1,400.00	0.00	0.00	1,400.00	0.00	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	0.00
1,600.00	0.00	0.00	1,600.00	0.00	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	0.00
1,800.00	0.00	0.00	1,800.00	0.00	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	0.00
2,000.00	0.00	0.00	2,000.00	0.00	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	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,675.00	0.00	0.00	2,675.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Silt										
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,465.00	0.00	0.00	3,465.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Parkman										
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sussex										
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,778.00	0.00	0.00	4,778.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Shannon										
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



## Plan Report for Wells Ranch USX AE31-99HZ - Plan #4 Proposal

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)	Toolface Azimuth (°)
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,596.00	0.00	0.00	5,596.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Teepee Buttes										
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5,713.50	0.00	0.00	5,713.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Kickoff at 5713.50ft										
5,800.00	6.92	133.43	5,799.79	-3.59	3.79	5.22	8.00	8.00	0.00	133.43
5,900.00	14.92	133.43	5,897.90	-16.60	17.53	24.15	8.00	8.00	0.00	0.00
6,000.00	22.92	133.43	5,992.42	-38.87	41.06	56.54	8.00	8.00	0.00	0.00
6,100.00	30.92	133.43	6,081.51	-69.97	73.92	101.78	8.00	8.00	0.00	0.00
6,196.00	38.60	133.43	6,160.32	-107.57	113.63	156.47	8.00	8.00	0.00	0.00
Build Rate = 8.00°/100ft										
6,200.00	38.92	133.43	6,163.44	-109.29	115.45	158.98	8.00	8.00	0.00	0.00
6,300.00	46.92	133.43	6,236.61	-156.07	164.87	227.02	8.00	8.00	0.00	0.00
6,400.00	54.92	133.43	6,299.60	-209.39	221.19	304.58	8.00	8.00	0.00	0.00
6,458.89	59.63	133.43	6,331.43	-243.44	257.16	354.11	8.00	8.00	0.00	0.00
Niobrara										
6,489.45	62.08	133.43	6,346.31	-261.79	276.54	380.80	8.00	8.00	0.00	0.00
Niobrara A										
6,500.00	62.92	133.43	6,351.18	-268.22	283.34	390.16	8.00	8.00	0.00	0.00
6,554.31	67.26	133.43	6,374.05	-302.08	319.10	439.41	8.00	8.00	0.00	0.00
Niobrara A Base										
6,600.00	70.92	133.43	6,390.35	-331.42	350.09	482.08	8.00	8.00	0.00	0.00
75.00 Inclination										
6,651.00	75.00	133.43	6,405.29	-364.93	385.50	530.83	8.00	8.00	0.00	0.00
End Build at 6651.00ft - 7" Casing Pt										
6,700.00	75.00	133.43	6,417.98	-397.47	419.87	578.16	0.00	0.00	0.00	0.00
6,721.00	75.00	133.43	6,423.41	-411.41	434.60	598.45	0.00	0.00	0.00	0.00
Kickoff at 6721.00ft										
6,745.03	76.92	133.43	6,429.24	-427.44	451.53	621.76	8.00	8.00	0.00	0.00
Niobrara B										
6,790.06	80.52	133.43	6,438.04	-457.79	483.60	665.91	8.00	8.00	0.00	0.00
Nio B Tgt Top										
6,800.00	81.32	133.43	6,439.61	-464.54	490.72	675.73	8.00	8.00	0.00	0.00
6,860.00	86.12	133.43	6,446.17	-505.53	534.02	735.35	8.00	8.00	0.00	0.00
Build Rate = 8.00°/100ft										
6,900.00	89.32	133.43	6,447.76	-533.00	563.04	775.31	8.00	8.00	0.00	0.00
6,913.10	90.37	133.43	6,447.80	-542.01	572.56	788.41	8.00	8.00	0.00	0.00
End Build at 6913.10ft										
7,000.00	90.37	133.43	6,447.24	-601.75	635.66	875.31	0.00	0.00	0.00	0.00
7,100.00	90.37	133.43	6,446.60	-670.50	708.28	975.31	0.00	0.00	0.00	0.00
7,200.00	90.37	133.43	6,445.96	-739.24	780.90	1,075.31	0.00	0.00	0.00	0.00
7,300.00	90.37	133.43	6,445.32	-807.99	853.52	1,175.30	0.00	0.00	0.00	0.00
7,400.00	90.37	133.43	6,444.68	-876.74	926.14	1,275.30	0.00	0.00	0.00	0.00
7,500.00	90.37	133.43	6,444.03	-945.48	998.76	1,375.30	0.00	0.00	0.00	0.00
7,600.00	90.37	133.43	6,443.39	-1,014.23	1,071.38	1,475.30	0.00	0.00	0.00	0.00
7,700.00	90.37	133.43	6,442.75	-1,082.97	1,143.99	1,575.30	0.00	0.00	0.00	0.00
7,800.00	90.37	133.43	6,442.11	-1,151.72	1,216.61	1,675.29	0.00	0.00	0.00	0.00
7,900.00	90.37	133.43	6,441.47	-1,220.47	1,289.23	1,775.29	0.00	0.00	0.00	0.00
8,000.00	90.37	133.43	6,440.82	-1,289.21	1,361.85	1,875.29	0.00	0.00	0.00	0.00
8,100.00	90.37	133.43	6,440.18	-1,357.96	1,434.47	1,975.29	0.00	0.00	0.00	0.00
8,200.00	90.37	133.43	6,439.54	-1,426.71	1,507.09	2,075.29	0.00	0.00	0.00	0.00
8,300.00	90.37	133.43	6,438.90	-1,495.45	1,579.71	2,175.28	0.00	0.00	0.00	0.00

## Plan Report for Wells Ranch USX AE31-99HZ - Plan #4 Proposal

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)	Toolface Azimuth (°)
8,400.00	90.37	133.43	6,438.26	-1,564.20	1,652.33	2,275.28	0.00	0.00	0.00	0.00
8,500.00	90.37	133.43	6,437.62	-1,632.95	1,724.95	2,375.28	0.00	0.00	0.00	0.00
8,600.00	90.37	133.43	6,436.97	-1,701.69	1,797.56	2,475.28	0.00	0.00	0.00	0.00
8,700.00	90.37	133.43	6,436.33	-1,770.44	1,870.18	2,575.28	0.00	0.00	0.00	0.00
8,796.00	90.37	133.43	6,435.72	-1,836.44	1,939.90	2,671.27	0.00	0.00	0.00	0.00
Hold Angle at 90.37°										
8,800.00	90.37	133.43	6,435.69	-1,839.19	1,942.80	2,675.27	0.00	0.00	0.00	0.00
8,900.00	90.37	133.43	6,435.05	-1,907.93	2,015.42	2,775.27	0.00	0.00	0.00	0.00
9,000.00	90.37	133.43	6,434.41	-1,976.68	2,088.04	2,875.27	0.00	0.00	0.00	0.00
9,100.00	90.37	133.43	6,433.77	-2,045.43	2,160.66	2,975.27	0.00	0.00	0.00	0.00
9,200.00	90.37	133.43	6,433.12	-2,114.17	2,233.28	3,075.26	0.00	0.00	0.00	0.00
9,300.00	90.37	133.43	6,432.48	-2,182.92	2,305.90	3,175.26	0.00	0.00	0.00	0.00
9,400.00	90.37	133.43	6,431.84	-2,251.66	2,378.52	3,275.26	0.00	0.00	0.00	0.00
9,500.00	90.37	133.43	6,431.20	-2,320.41	2,451.14	3,375.26	0.00	0.00	0.00	0.00
9,600.00	90.37	133.43	6,430.56	-2,389.16	2,523.75	3,475.26	0.00	0.00	0.00	0.00
9,700.00	90.37	133.43	6,429.92	-2,457.90	2,596.37	3,575.25	0.00	0.00	0.00	0.00
9,800.00	90.37	133.43	6,429.27	-2,526.65	2,668.99	3,675.25	0.00	0.00	0.00	0.00
9,900.00	90.37	133.43	6,428.63	-2,595.40	2,741.61	3,775.25	0.00	0.00	0.00	0.00
10,000.00	90.37	133.43	6,427.99	-2,664.14	2,814.23	3,875.25	0.00	0.00	0.00	0.00
10,100.00	90.37	133.43	6,427.35	-2,732.89	2,886.85	3,975.25	0.00	0.00	0.00	0.00
10,200.00	90.37	133.43	6,426.71	-2,801.64	2,959.47	4,075.24	0.00	0.00	0.00	0.00
10,300.00	90.37	133.43	6,426.07	-2,870.38	3,032.09	4,175.24	0.00	0.00	0.00	0.00
10,400.00	90.37	133.43	6,425.42	-2,939.13	3,104.71	4,275.24	0.00	0.00	0.00	0.00
10,500.00	90.37	133.43	6,424.78	-3,007.88	3,177.32	4,375.24	0.00	0.00	0.00	0.00
10,600.00	90.37	133.43	6,424.14	-3,076.62	3,249.94	4,475.24	0.00	0.00	0.00	0.00
10,621.84	90.37	133.43	6,424.00	-3,091.64	3,265.80	4,497.08	0.00	0.00	0.00	0.00
Total Depth = 10621.84ft - Wells Ranch USX AE 31-99HZ BHL 091409										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
5,713.50	5,713.50	0.00	0.00	Kickoff at 5713.50ft
6,196.00	6,160.32	-107.57	113.63	Build Rate = 8.00°/100ft
6,600.00	6,390.35	-331.42	350.09	75.00 Inclination
6,651.00	6,405.29	-364.93	385.50	End Build at 6651.00ft
6,721.00	6,423.41	-411.41	434.60	Kickoff at 6721.00ft
6,860.00	6,446.17	-505.53	534.02	Build Rate = 8.00°/100ft
6,913.10	6,447.80	-542.01	572.56	End Build at 6913.10ft
8,796.00	6,435.72	-1,836.44	1,939.90	Hold Angle at 90.37°
10,621.84	6,424.00	-3,091.64	3,265.80	Total Depth = 10621.84ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	133.43	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	10,621.34	Plan #4 Proposal	MWD

## Plan Report for Wells Ranch USX AE31-99HZ - Plan #4 Proposal

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
6,651.00	6,405.29	7" Casing Pt	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	6,453.00	Nio B Tgt Line		0.37	
	6,465.00	Nio B Tgt Base		0.37	
2,675.00	2,675.00	Pierre Silt		0.37	
3,465.00	3,465.00	Parkman		0.37	
4,200.00	4,200.00	Sussex		0.37	
4,778.00	4,778.00	Shannon		0.37	
5,596.00	5,596.00	Teepee Buttes		0.37	
6,458.89	6,333.00	Niobrara		0.37	
6,489.45	6,348.00	Niobrara A		0.37	
6,554.31	6,376.00	Niobrara A Base		0.37	
6,745.03	6,432.00	Niobrara B		0.37	
6,790.06	6,441.00	Nio B Tgt Top		0.37	

*Targets associated with this wellbore*

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Wells Ranch USX AE 31-99HZ BHL	6,445.00	-3,091.64	3,265.81	Point
Wells Ranch USX AE 31-99HZ BHL 091409	6,424.00	-3,091.64	3,265.81	Point
Nio B Tgt Line	6,448.00	0.00	0.00	Polygon



## North Reference Sheet for Sec. 31-T6N-R62W - Wells Ranch USX AE31-99HZ - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to Grid North Reference.

Vertical Depths are relative to RKB - 13' @ 4707.00ft. Northing and Easting are relative to Wells Ranch USX AE31-99HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996266

Grid Coordinates of Well: 1,407,441.94 ft N, 3,313,613.55 ft E

Geographical Coordinates of Well: 40° 26' 46.90" N, 104° 22' 23.38" W

Grid Convergence at Surface is: 0.73°

Based upon Minimum Curvature type calculations, at a Measured Depth of 10,621.84ft  
the Bottom Hole Displacement is 4,497.08ft in the Direction of 133.43° (Grid).

Magnetic Convergence at surface is: -8.13° (16 September 2009, BGGM2008)

