



# **Noble Energy, Inc**

**Weld County, CO (NAD 83)**

**Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad)**

**Wells Ranch USX AA27-67-1HN**

**Wellbore #1**

**Design: OH**

## **Final Survey Report**

**03 September, 2013**





# IDS Final Survey Report



<b>Company:</b>	Noble Energy, Inc	<b>Local Co-ordinate Reference:</b>	Well Wells Ranch USX AA27-67-1HN
<b>Project:</b>	Weld County, CO (NAD 83)	<b>TVD Reference:</b>	WELL @ 4807.0usft (HP 277)
<b>Site:</b>	Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad)	<b>MD Reference:</b>	WELL @ 4807.0usft (HP 277)
<b>Well:</b>	Wells Ranch USX AA27-67-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Weld County, CO (NAD 83)		
<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		Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad)			
Site Position:		Northing:	1,412,541.08 usft	Latitude:	40° 27' 39.276 N
From:	Lat/Long	Easting:	3,297,308.18 usft	Longitude:	104° 25' 53.472 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	0.69 °

Well	Wells Ranch USX AA27-67-1HN					
Well Position	+N-S	0.0 usft	Northing:	1,412,541.07 usft	Latitude:	40° 27' 39.276 N
	+E-W	0.0 usft	Easting:	3,297,308.18 usft	Longitude:	104° 25' 53.472 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,783.0 usft

<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>
	IGRF2010	7/8/2013	8.41	67.08	52,981

<b>Design</b>	OH				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N-S (usft)</b>	<b>+E-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	91.94	

<b>Survey Program</b>	<b>Date</b>	9/3/2013			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
368.0	11,477.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>							
<b>MD (usft)</b>	<b>Inc (°)</b>	<b>Azi (azimuth) (°)</b>	<b>TVD (usft)</b>	<b>E/W (usft)</b>	<b>V. Sec (usft)</b>	<b>DLeg (°/100usft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.00	
368.0	0.20	70.10	368.0	0.6	0.6	0.05	
<b>First MWD</b>							
613.0	0.70	79.50	613.0	2.5	2.5	0.21	
726.0	0.90	116.80	726.0	3.9	3.9	0.48	
818.0	1.00	124.60	818.0	5.3	5.3	0.18	
911.0	1.00	134.70	911.0	6.5	6.5	0.19	
1,004.0	0.80	137.60	1,003.9	7.5	7.6	0.22	
1,097.0	0.90	129.70	1,096.9	8.5	8.6	0.17	
1,190.0	0.90	125.10	1,189.9	9.7	9.8	0.08	
1,284.0	0.70	143.50	1,283.9	10.6	10.8	0.34	
1,377.0	0.90	145.50	1,376.9	11.4	11.6	0.22	



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<b>Site:</b>	Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad	<b>MD Reference:</b>	WELL @ 4807.0usft (HP 277)
<b>Well:</b>	Wells Ranch USX AA27-67-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
1,469.0	0.50	126.90	1,468.9	12.1	12.3	0.49	
1,564.0	0.90	112.00	1,563.9	13.1	13.4	0.46	
1,659.0	0.80	106.30	1,658.9	14.5	14.7	0.14	
1,754.0	2.80	247.70	1,753.8	12.9	13.2	3.64	
1,849.0	5.20	255.40	1,848.6	6.6	7.0	2.58	
1,945.0	7.80	256.10	1,944.0	-3.9	-3.4	2.71	
2,040.0	8.10	253.90	2,038.1	-16.6	-16.0	0.45	
2,135.0	8.40	251.20	2,132.1	-29.6	-28.9	0.52	
2,230.0	8.10	251.90	2,226.1	-42.5	-41.6	0.33	
2,325.0	7.80	252.80	2,320.2	-55.0	-54.0	0.34	
2,420.0	9.40	242.40	2,414.1	-68.1	-66.9	2.34	
2,516.0	9.90	230.60	2,508.8	-81.4	-79.9	2.12	
2,611.0	11.60	220.10	2,602.1	-93.9	-91.9	2.72	
2,706.0	11.30	208.10	2,695.2	-104.4	-101.9	2.52	
2,801.0	10.50	204.80	2,788.5	-112.4	-109.4	1.07	
2,896.0	10.70	201.80	2,881.9	-119.3	-115.7	0.62	
2,991.0	10.90	198.50	2,975.2	-125.5	-121.3	0.68	
3,086.0	10.80	198.10	3,068.5	-131.1	-126.3	0.13	
3,181.0	10.70	197.20	3,161.9	-136.4	-131.1	0.21	
3,277.0	9.90	195.30	3,256.3	-141.3	-135.4	0.91	
3,372.0	7.90	189.60	3,350.2	-144.5	-138.1	2.30	
3,467.0	6.20	207.80	3,444.5	-148.0	-141.2	2.93	
3,562.0	2.40	195.40	3,539.2	-150.9	-143.9	4.09	
3,657.0	0.20	260.50	3,634.1	-151.6	-144.6	2.45	
3,752.0	0.40	312.30	3,729.1	-152.0	-145.0	0.33	
3,848.0	0.50	254.50	3,825.1	-152.7	-145.6	0.46	
3,943.0	0.90	265.30	3,920.1	-153.8	-146.8	0.44	
4,038.0	0.90	288.40	4,015.1	-155.3	-148.2	0.38	
4,133.0	0.50	283.10	4,110.1	-156.4	-149.4	0.43	
4,228.0	0.50	329.40	4,205.1	-157.0	-150.0	0.41	
4,323.0	0.30	264.60	4,300.1	-157.4	-150.5	0.48	
4,419.0	1.00	285.90	4,396.1	-158.5	-151.5	0.76	
4,514.0	1.10	269.50	4,491.1	-160.2	-153.2	0.33	
4,609.0	0.80	273.90	4,586.1	-161.8	-154.8	0.32	
4,704.0	0.40	246.80	4,681.1	-162.7	-155.8	0.51	
4,800.0	0.80	210.80	4,777.1	-163.4	-156.4	0.55	
4,895.0	1.30	219.30	4,872.0	-164.4	-157.4	0.55	
4,990.0	1.60	224.50	4,967.0	-166.0	-158.9	0.34	
5,085.0	1.60	233.90	5,062.0	-168.0	-160.9	0.28	
5,181.0	0.70	205.00	5,158.0	-169.4	-162.2	1.09	
5,276.0	0.30	210.20	5,253.0	-169.7	-162.5	0.42	
5,371.0	0.40	335.00	5,347.9	-170.0	-162.8	0.65	
5,466.0	0.40	29.30	5,442.9	-170.0	-162.8	0.38	
5,561.0	0.60	358.80	5,537.9	-169.8	-162.6	0.34	



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<b>Well:</b>	Wells Ranch USX AA27-67-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

Survey						
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)
5,656.0	1.20	22.90	5,632.9	-169.4	-162.3	0.73
5,751.0	1.30	347.90	5,727.9	-169.3	-162.2	0.80
5,847.0	0.70	332.70	5,823.9	-169.8	-162.8	0.68
5,942.0	1.20	341.40	5,918.9	-170.4	-163.4	0.55
6,033.0	1.20	349.70	6,009.9	-170.8	-163.9	0.19
6,129.0	4.30	68.90	6,105.8	-167.7	-160.8	4.42
6,176.0	9.00	78.90	6,152.4	-162.4	-155.6	10.26
6,224.0	12.00	80.20	6,199.6	-153.8	-147.1	6.27
6,271.0	13.60	89.30	6,245.5	-143.5	-136.8	5.47
6,319.0	16.50	96.80	6,291.8	-131.0	-124.3	7.27
6,366.0	20.80	99.90	6,336.3	-116.2	-109.4	9.39
6,414.0	24.60	100.60	6,380.6	-98.0	-91.1	7.94
6,462.0	29.20	97.50	6,423.4	-76.5	-69.6	10.02
6,509.0	33.50	94.70	6,463.5	-52.2	-45.2	9.66
6,557.0	39.70	92.90	6,502.1	-23.7	-16.6	13.11
6,604.0	44.10	93.40	6,537.0	7.7	14.8	9.39
6,652.0	47.00	95.30	6,570.6	41.8	49.0	6.67
6,700.0	51.40	92.40	6,602.0	78.1	85.3	10.24
6,747.0	57.90	90.10	6,629.2	116.4	123.6	14.39
6,795.0	63.30	90.10	6,652.7	158.2	165.4	11.25
6,842.0	70.30	89.70	6,671.2	201.3	208.5	14.91
6,877.0	73.95	90.14	6,682.0	234.6	241.8	10.48
<b>Crosses HL @ 6877' MD / 6682' TVD</b>						
6,890.0	75.30	90.30	6,685.4	247.2	254.4	10.48
6,937.0	75.90	90.10	6,697.1	292.7	299.9	1.34
6,985.0	81.00	90.10	6,706.7	339.7	346.8	10.62
7,046.0	86.40	88.80	6,713.4	400.3	407.4	9.10
7,142.0	90.40	91.50	6,716.1	496.2	503.3	5.03
7,237.0	92.30	91.80	6,713.9	591.2	598.3	2.02
7,332.0	93.50	92.20	6,709.1	686.0	693.1	1.33
7,427.0	89.80	91.50	6,706.3	780.9	788.1	3.96
7,522.0	88.10	91.00	6,708.1	875.8	883.0	1.87
7,617.0	91.40	89.70	6,708.5	970.8	978.0	3.73
7,712.0	85.80	88.60	6,710.8	1,065.7	1,072.8	6.01
7,808.0	87.80	88.90	6,716.2	1,161.6	1,168.5	2.11
7,903.0	88.10	88.80	6,719.6	1,256.5	1,263.3	0.33
7,998.0	87.10	88.50	6,723.5	1,351.4	1,358.1	1.10
8,093.0	87.90	88.50	6,727.7	1,446.3	1,452.8	0.84
8,188.0	89.00	88.20	6,730.2	1,541.2	1,547.6	1.20
8,283.0	88.00	87.00	6,732.7	1,636.1	1,642.3	1.64
8,379.0	89.00	86.50	6,735.2	1,731.9	1,737.9	1.16
8,474.0	91.70	88.70	6,734.7	1,826.8	1,832.6	3.67
8,569.0	92.20	90.60	6,731.4	1,921.7	1,927.4	2.07
8,664.0	89.80	90.40	6,729.8	2,016.7	2,022.4	2.54
8,760.0	90.40	90.40	6,729.6	2,112.7	2,118.3	0.62

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<b>Site:</b>	Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad	<b>MD Reference:</b>	WELL @ 4807.0usft (HP 277)
<b>Well:</b>	Wells Ranch USX AA27-67-1HN	<b>North Reference:</b>	Grid
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	OH	<b>Database:</b>	EDM 5000.1 Single User Db

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	
8,855.0	91.30	89.90	6,728.2	2,207.7	2,213.3	1.08	
8,950.0	92.50	89.40	6,725.0	2,302.6	2,308.2	1.37	
9,045.0	91.00	89.60	6,722.1	2,397.6	2,403.0	1.59	
9,140.0	92.10	89.60	6,719.6	2,492.5	2,497.9	1.16	
9,236.0	90.30	88.90	6,717.6	2,588.5	2,593.8	2.01	
9,331.0	89.80	88.60	6,717.5	2,683.5	2,688.6	0.61	
9,426.0	90.20	87.40	6,717.5	2,778.4	2,783.4	1.33	
9,522.0	90.70	86.70	6,716.7	2,874.3	2,879.0	0.90	
9,616.0	92.10	89.00	6,714.4	2,968.2	2,972.8	2.86	
9,712.0	89.40	89.10	6,713.2	3,064.1	3,068.6	2.81	
9,807.0	91.40	89.50	6,712.5	3,159.1	3,163.5	2.15	
9,902.0	88.50	86.50	6,712.6	3,254.1	3,258.3	4.39	
9,997.0	88.00	86.00	6,715.5	3,348.8	3,352.8	0.74	
10,092.0	87.40	88.10	6,719.3	3,443.6	3,447.3	2.30	
10,188.0	88.50	90.20	6,722.7	3,539.5	3,543.2	2.47	
10,283.0	89.00	89.50	6,724.8	3,634.5	3,638.1	0.91	
10,378.0	89.90	89.00	6,725.7	3,729.5	3,733.0	1.08	
10,473.0	91.90	90.10	6,724.2	3,824.5	3,827.9	2.40	
10,568.0	90.80	88.90	6,722.0	3,919.4	3,922.7	1.71	
10,663.0	91.00	87.30	6,720.5	4,014.4	4,017.5	1.70	
10,759.0	91.10	86.30	6,718.7	4,110.2	4,113.1	1.05	
10,854.0	88.70	86.20	6,718.9	4,205.0	4,207.6	2.53	
10,949.0	88.70	88.80	6,721.1	4,299.9	4,302.3	2.74	
11,044.0	88.90	90.00	6,723.1	4,394.8	4,397.2	1.28	
11,139.0	88.90	89.10	6,724.9	4,489.8	4,492.1	0.95	
11,167.0	89.19	89.19	6,725.3	4,517.8	4,520.1	1.09	
Crosses HL @ 11167' MD / 6725' TVD							
11,235.0	89.90	89.40	6,725.9	4,585.8	4,588.0	1.09	
11,330.0	91.50	90.50	6,724.7	4,680.8	4,682.9	2.04	
11,408.0	91.50	89.10	6,722.7	4,758.8	4,760.8	1.79	
Last MWD @ 11408' MD / 6723' TVD							
11,477.0	91.50	89.10	6,720.9	4,827.7	4,829.7	0.00	
PTD @ 11477' MD / 6721' TVD / 152' FEL & 1629' FNL							

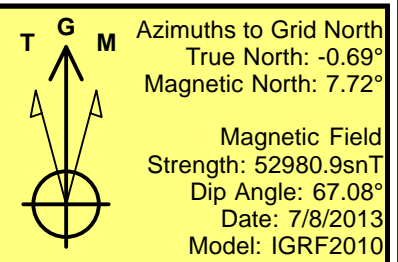
Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
368.0	368.0	0.2	0.6	First MWD
6,877.0	6,682.0	-216.5	234.6	Crosses HL @ 6877' MD / 6682' TVD
11,167.0	6,725.3	-143.2	4,517.8	Crosses HL @ 11167' MD / 6725' TVD
11,408.0	6,722.7	-142.0	4,758.8	Last MWD @ 11408' MD / 6723' TVD
11,477.0	6,720.9	-141.0	4,827.7	PTD @ 11477' MD / 6721' TVD / 152' FEL & 1629' FNL

Checked By: _____	Approved By: _____	Date: _____
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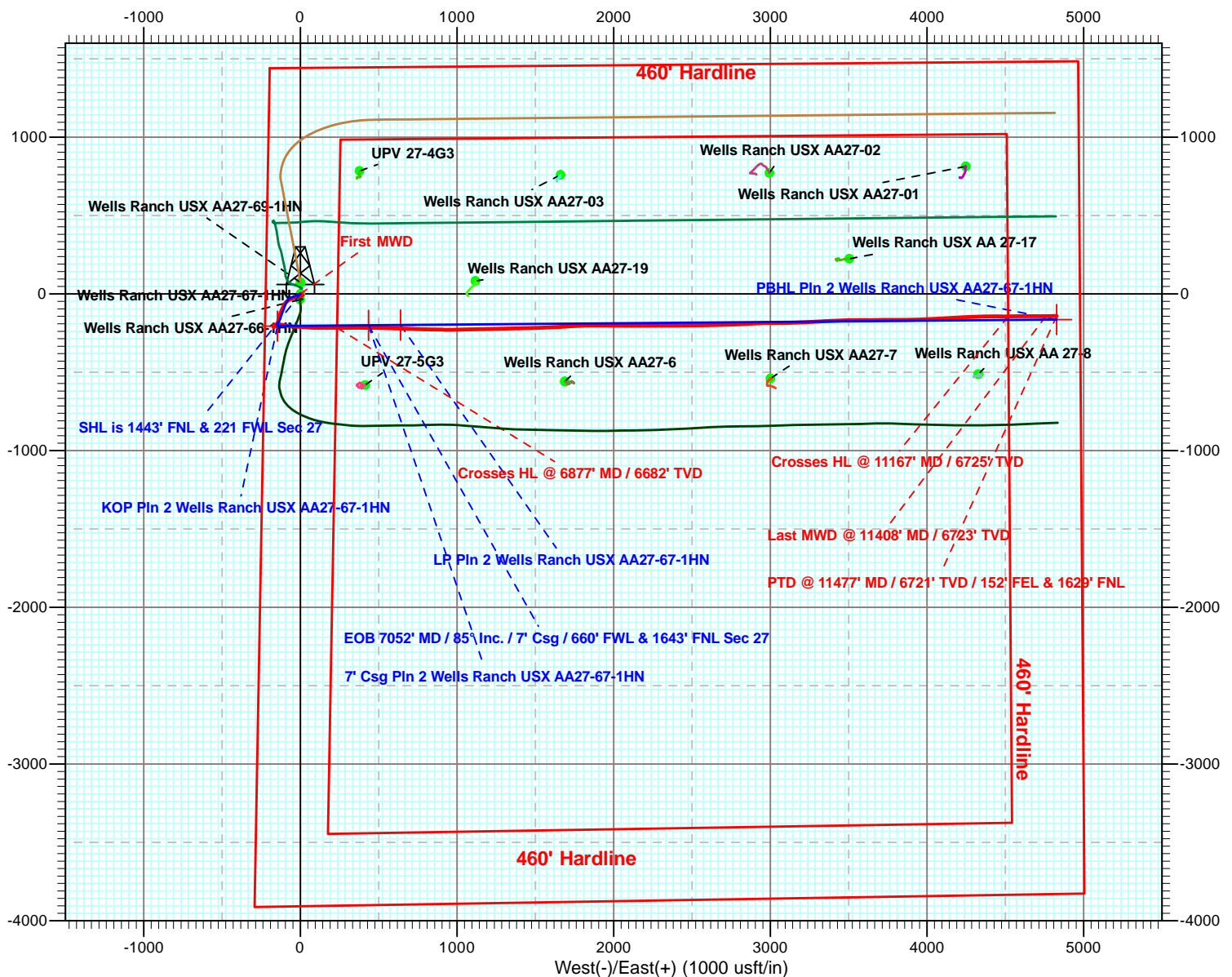
Weld County, CO (NAD 83)  
 Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad)  
 Wells Ranch USX AA27-67-1HN

HP 277  
 Plan #2



LEGEND

- △ UPV 27-4G3, Wellbore #1, OH V0
- ✕ UPV 27-5G3, Wellbore #1, OH V0
- ◇ Wells Ranch USX AA 27-17, Wellbore #1, OH V0
- ⊥ Wells Ranch USX AA 27-8, Wellbore #1, OH V0
- ⊥ Wells Ranch USX AA27-01, Wellbore #1, OH V0
- ⊥ Wells Ranch USX AA27-02, Wellbore #1, OH V0
- ⊥ Wells Ranch USX AA27-03, Wellbore #1, OH V0
- △ Wells Ranch USX AA27-19, Wellbore #1, OH V0
- ✕ Wells Ranch USX AA27-6, Wellbore #1, OH V0
- Wells Ranch USX AA27-66-1HN, Wellbore #1, OH V0
- ◇ Wells Ranch USX AA27-67-1HN, Wellbore #1, OH V0
- Wells Ranch USX AA27-68-1HN, Wellbore #1, Plan #4 V0
- ◇ Wells Ranch USX AA27-69-1HN, Wellbore #1, Plan #1 V0
- ⊥ Wells Ranch USX AA27-7, Wellbore #1, OH V0
- ⊥ Plan #2





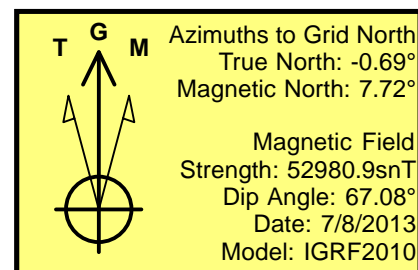
Weld County, CO (NAD 83)

Sec 27-T6N-R63W (Wells Ranch USX AA27 Pad)

Wells Ranch USX AA27-67-1HN

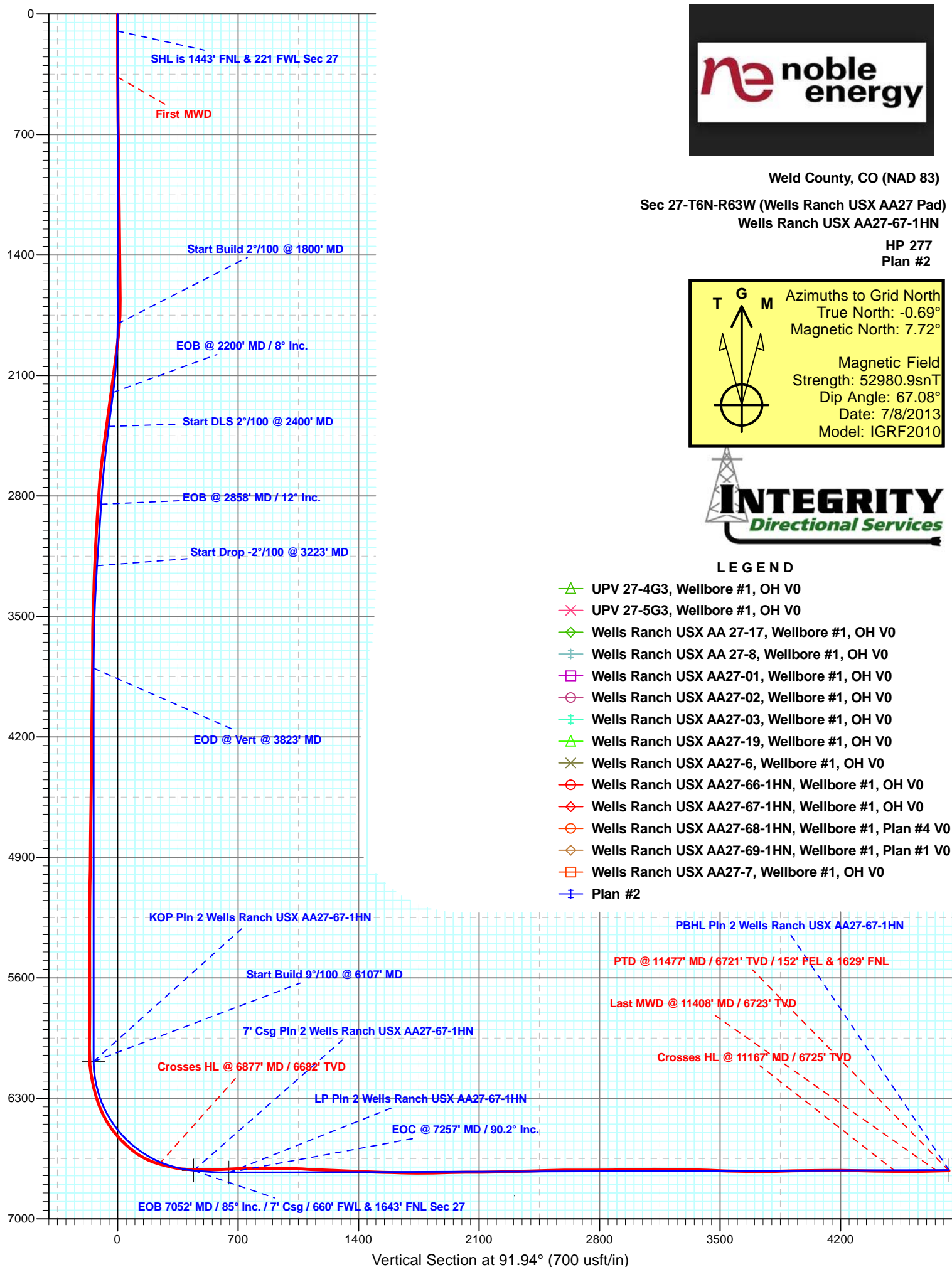
HP 277

Plan #2



#### LEGEND

- △ UPV 27-4G3, Wellbore #1, OH V0
- ✕ UPV 27-5G3, Wellbore #1, OH V0
- ◇ Wells Ranch USX AA 27-17, Wellbore #1, OH V0
- ⊕ Wells Ranch USX AA 27-8, Wellbore #1, OH V0
- ⊞ Wells Ranch USX AA27-01, Wellbore #1, OH V0
- ⊙ Wells Ranch USX AA27-02, Wellbore #1, OH V0
- ⊞ Wells Ranch USX AA27-03, Wellbore #1, OH V0
- △ Wells Ranch USX AA27-19, Wellbore #1, OH V0
- ✕ Wells Ranch USX AA27-6, Wellbore #1, OH V0
- ⊙ Wells Ranch USX AA27-66-1HN, Wellbore #1, OH V0
- ⊞ Wells Ranch USX AA27-67-1HN, Wellbore #1, OH V0
- ⊙ Wells Ranch USX AA27-68-1HN, Wellbore #1, Plan #4 V0
- ⊞ Wells Ranch USX AA27-69-1HN, Wellbore #1, Plan #1 V0
- ⊞ Wells Ranch USX AA27-7, Wellbore #1, OH V0
- ⊞ Plan #2





Job Number: CO13413NB

Company: Integrity Directional Services

Lease/Well: Well Ranch USX AA27-67-1HN

Location: Well Ranch

Rig Name: H&P 277

RKB: 4807

G.L. or M.S.L.: 4783

State/Country: Colorado

Declination: 7.72

Grid: Yes

File name: C:\WINSERVE\CO13413.SVY

Date/Time: 03-Sep-13 / 10:38

Curve Name: USX AA27-66-1HN

## Integrity Directional Services

### WINSERVE SURVEY CALCULATIONS

*Minimum Curvature Method*

*Vertical Section Plane 91.94*

*Vertical Section Referenced to Wellhead*

*Rectangular Coordinates Referenced to Wellhead*

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>True Vertical Depth</i>	<i>N-S FT</i>	<i>E-W FT</i>	<i>Vertical Section FT</i>	<i>C L O S U R E Distance FT</i>	<i>Direction Deg</i>	<i>Dogleg Severity Deg/100</i>
<b>Tied Into Surface</b>									
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
<b>First MWD Survey</b>									
368.00	.20	70.10	368.00	.22	.60	.60	.64	70.10	.05
613.00	.70	79.50	612.99	.64	2.48	2.45	2.56	75.58	.21
726.00	.90	116.80	725.98	.36	3.95	3.93	3.97	84.75	.48
818.00	1.00	124.60	817.97	-.42	5.25	5.27	5.27	94.56	.18
911.00	1.00	134.70	910.95	-1.45	6.50	6.54	6.66	102.58	.19
1004.00	.80	137.60	1003.94	-2.50	7.51	7.59	7.92	108.41	.22
1097.00	.90	129.70	1096.93	-3.45	8.51	8.63	9.18	112.04	.17
1190.00	.90	125.10	1189.92	-4.33	9.67	9.81	10.60	114.13	.08
1284.00	.70	143.50	1283.91	-5.22	10.62	10.79	11.83	116.18	.34
1377.00	.90	145.50	1376.90	-6.28	11.37	11.58	12.99	118.91	.22
1469.00	.50	126.90	1468.90	-7.11	12.10	12.33	14.04	120.45	.49
1564.00	.90	112.00	1563.89	-7.64	13.12	13.37	15.19	120.22	.46
1659.00	.80	106.30	1658.88	-8.11	14.45	14.72	16.57	119.30	.14
1754.00	2.80	247.70	1753.85	-9.18	12.94	13.24	15.86	125.34	3.64
1849.00	5.20	255.40	1848.61	-11.14	6.63	7.00	12.96	149.25	2.58
1945.00	7.80	256.10	1943.98	-13.80	-3.91	-3.44	14.35	195.81	2.71
2040.00	8.10	253.90	2038.07	-17.21	-16.60	-16.00	23.91	223.96	.45
2135.00	8.40	251.20	2132.09	-21.30	-29.60	-28.86	36.46	234.26	.52
2230.00	8.10	251.90	2226.10	-25.62	-42.53	-41.63	49.64	238.94	.33
2325.00	7.80	252.80	2320.19	-29.60	-55.05	-54.01	62.50	241.73	.34



Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
2420.00	9.40	242.40	2414.12	-35.10	-68.08	-66.85	76.60	242.72	2.34
2516.00	9.90	230.60	2508.78	-43.97	-81.41	-79.87	92.52	241.62	2.12
2611.00	11.60	220.10	2602.11	-56.47	-93.87	-91.91	109.55	238.97	2.72
2706.00	11.30	208.10	2695.24	-71.98	-104.41	-101.91	126.82	235.42	2.52
2801.00	10.50	204.80	2788.52	-88.05	-112.42	-109.38	142.80	231.93	1.07
2896.00	10.70	201.80	2881.90	-104.10	-119.33	-115.74	158.35	228.90	.62
2991.00	10.90	198.50	2975.22	-120.81	-125.46	-121.29	174.16	226.08	.68
3086.00	10.80	198.10	3068.52	-137.78	-131.07	-126.33	190.17	223.57	.13
3181.00	10.70	197.20	3161.86	-154.67	-136.44	-131.13	206.25	221.42	.21
3277.00	9.90	195.30	3256.31	-171.14	-141.26	-135.38	221.91	219.54	.91
3372.00	7.90	189.60	3350.16	-185.46	-144.50	-138.14	235.11	217.92	2.30
3467.00	6.20	207.80	3444.45	-196.44	-147.98	-141.25	245.94	216.99	2.93
3562.00	2.40	195.40	3539.17	-202.89	-150.90	-143.95	252.86	216.64	4.09
3657.00	.20	260.50	3634.14	-204.84	-151.60	-144.58	254.83	216.50	2.45
3752.00	.40	312.30	3729.14	-204.64	-152.01	-144.99	254.92	216.60	.33
3848.00	.50	254.50	3825.13	-204.53	-152.66	-145.65	255.22	216.74	.46
3943.00	.90	265.30	3920.13	-204.70	-153.80	-146.78	256.04	216.92	.44
4038.00	.90	288.40	4015.12	-204.53	-155.25	-148.24	256.78	217.20	.38
4133.00	.50	283.10	4110.11	-204.20	-156.36	-149.36	257.19	217.44	.43
4228.00	.50	329.40	4205.11	-203.75	-156.98	-149.99	257.21	217.61	.41
4323.00	.30	264.60	4300.10	-203.41	-157.44	-150.46	257.22	217.74	.48
4419.00	1.00	285.90	4396.10	-203.21	-158.49	-151.52	257.71	217.95	.76
4514.00	1.10	269.50	4491.08	-202.99	-160.20	-153.24	258.59	218.28	.33
4609.00	.80	273.90	4586.07	-202.95	-161.77	-154.81	259.54	218.56	.32
4704.00	.40	246.80	4681.06	-203.04	-162.74	-155.77	260.21	218.71	.51
4800.00	.80	210.80	4777.06	-203.74	-163.39	-156.40	261.17	218.73	.55
4895.00	1.30	219.30	4872.04	-205.15	-164.41	-157.38	262.90	218.71	.55
4990.00	1.60	224.50	4967.01	-206.93	-166.03	-158.93	265.30	218.74	.34
5085.00	1.60	233.90	5061.97	-208.66	-168.03	-160.87	267.90	218.84	.28
5181.00	.70	205.00	5157.95	-209.98	-169.36	-162.15	269.76	218.89	1.09
5276.00	.30	210.20	5252.95	-210.72	-169.73	-162.50	270.57	218.85	.42
5371.00	.40	335.00	5347.95	-210.63	-169.99	-162.77	270.67	218.91	.65
5466.00	.40	29.30	5442.95	-210.04	-169.97	-162.76	270.20	218.98	.38
5561.00	.60	358.80	5537.94	-209.26	-169.82	-162.64	269.49	219.06	.34
5656.00	1.20	22.90	5632.93	-207.84	-169.44	-162.31	268.16	219.19	.73
5751.00	1.30	349.70	5727.91	-205.87	-169.25	-162.18	266.51	219.42	.76
5847.00	.70	332.70	5823.90	-204.27	-169.71	-162.70	265.57	219.72	.69
5942.00	1.20	341.40	5918.88	-202.81	-170.30	-163.33	264.83	220.02	.55
6033.00	1.20	349.70	6009.86	-200.97	-170.77	-163.87	263.73	220.36	.19
6129.00	4.30	68.90	6105.76	-198.69	-167.59	-160.77	259.93	220.15	4.42
6176.00	9.00	78.90	6152.43	-197.35	-162.34	-155.56	255.54	219.44	10.26
6224.00	12.00	80.20	6199.62	-195.77	-153.73	-147.02	248.92	218.14	6.27
6271.00	13.60	89.30	6245.46	-194.87	-143.39	-136.71	241.94	216.35	5.47
6319.00	16.50	96.80	6291.81	-195.61	-130.98	-124.28	235.41	213.81	7.27
6366.00	20.80	99.90	6336.34	-197.84	-116.12	-109.36	229.40	210.41	9.39

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
6414.00	24.60	100.60	6380.61	-201.14	-97.90	-91.03	223.70	205.95	7.94
6462.00	29.20	97.50	6423.41	-204.51	-76.46	-69.49	218.34	200.50	10.02
6509.00	33.50	94.70	6463.54	-207.07	-52.15	-45.11	213.54	194.14	9.66
6557.00	39.70	92.90	6502.05	-208.93	-23.61	-16.52	210.26	186.45	13.11
6604.00	44.10	93.40	6537.03	-210.66	7.72	14.85	210.81	177.90	9.39
6652.00	47.00	95.30	6570.64	-213.28	41.88	49.08	217.35	168.89	6.67
6700.00	51.40	92.40	6602.00	-215.69	78.12	85.38	229.40	160.09	10.24
6747.00	57.90	90.10	6629.18	-216.49	116.42	123.68	245.81	151.73	14.39
6795.00	63.30	90.10	6652.74	-216.56	158.23	165.47	268.21	143.85	11.25
6842.00	70.30	89.70	6671.24	-216.48	201.40	208.61	295.68	137.07	14.91
Crossed Hardline at 6,877' MD									
6890.00	75.30	90.30	6685.43	-216.49	247.24	254.42	328.62	131.21	10.48
6937.00	75.90	90.10	6697.12	-216.65	292.76	299.93	364.20	126.50	1.34
6985.00	81.00	90.10	6706.73	-216.73	339.77	346.91	403.01	122.53	10.62
7046.00	86.40	88.80	6713.42	-216.14	400.38	407.46	454.99	118.36	9.10
7142.00	90.40	91.50	6716.10	-216.40	496.31	503.35	541.43	113.56	5.03
7237.00	92.30	91.80	6713.86	-219.13	591.24	598.32	630.54	110.34	2.02
7332.00	93.50	92.20	6709.05	-222.44	686.06	693.20	721.22	107.96	1.33
7427.00	89.80	91.50	6706.32	-225.51	780.95	788.14	812.86	106.11	3.96
7522.00	88.10	91.00	6708.06	-227.58	875.91	883.11	904.99	104.56	1.87
7617.00	91.40	89.70	6708.47	-228.16	970.89	978.06	997.34	103.22	3.73
7712.00	85.80	88.60	6710.79	-226.75	1065.81	1072.88	1089.67	102.01	6.01
7808.00	87.80	88.90	6716.15	-224.66	1161.64	1168.58	1183.16	100.95	2.11
7903.00	88.10	88.80	6719.55	-222.75	1256.56	1263.38	1276.15	100.05	.33
7998.00	87.10	88.50	6723.53	-220.52	1351.45	1358.14	1369.32	99.27	1.10
8093.00	87.90	88.50	6727.67	-218.03	1446.32	1452.87	1462.66	98.57	.84
8188.00	89.00	88.20	6730.24	-215.30	1541.25	1547.65	1556.21	97.95	1.20
8283.00	88.00	87.00	6732.73	-211.32	1636.13	1642.34	1649.72	97.36	1.64
8379.00	89.00	86.50	6735.24	-205.88	1731.94	1737.92	1744.13	96.78	1.16
8474.00	91.70	88.70	6734.66	-201.90	1826.84	1832.63	1837.96	96.31	3.67
8569.00	92.20	90.60	6731.43	-201.32	1921.78	1927.49	1932.29	95.98	2.07
8664.00	89.80	90.40	6729.77	-202.15	2016.75	2022.44	2026.86	95.72	2.54
8760.00	90.40	90.40	6729.60	-202.82	2112.75	2118.41	2122.46	95.48	.62
8855.00	91.30	89.90	6728.19	-203.07	2207.74	2213.35	2217.06	95.26	1.08
8950.00	92.50	89.40	6725.04	-202.49	2302.68	2308.22	2311.57	95.03	1.37
9045.00	91.00	89.60	6722.14	-201.66	2397.63	2403.08	2406.10	94.81	1.59
9140.00	92.10	89.60	6719.57	-201.00	2492.59	2497.97	2500.68	94.61	1.16
9236.00	90.30	88.90	6717.56	-199.74	2588.56	2593.84	2596.25	94.41	2.01
9331.00	89.80	88.60	6717.48	-197.67	2683.54	2688.69	2690.81	94.21	.61
9426.00	90.20	87.40	6717.48	-194.36	2778.48	2783.46	2785.27	94.00	1.33
9522.00	90.70	86.70	6716.73	-189.42	2874.35	2879.11	2880.58	93.77	.90
9616.00	92.10	89.00	6714.43	-185.89	2968.24	2972.83	2974.06	93.58	2.86
9712.00	89.40	89.10	6713.17	-184.30	3064.21	3068.69	3069.75	93.44	2.81
9807.00	91.40	89.50	6712.51	-183.14	3159.20	3163.59	3164.50	93.32	2.15

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
9902.00	88.50	86.50	6712.59	-179.82	3254.12	3258.34	3259.08	93.16	4.39
9997.00	88.00	86.00	6715.49	-173.61	3348.87	3352.83	3353.37	92.97	.74
10092.00	87.40	88.10	6719.31	-168.73	3443.66	3447.40	3447.79	92.81	2.30
10188.00	88.50	90.20	6722.74	-167.31	3539.58	3543.22	3543.54	92.71	2.47
10283.00	89.00	89.50	6724.81	-167.06	3634.56	3638.13	3638.40	92.63	.91
10378.00	89.90	89.00	6725.73	-165.81	3729.55	3733.02	3733.23	92.55	1.08
10473.00	91.90	90.10	6724.23	-165.07	3824.52	3827.92	3828.09	92.47	2.40
10568.00	90.80	88.90	6722.00	-164.24	3919.49	3922.81	3922.93	92.40	1.71
10663.00	91.00	87.30	6720.50	-161.09	4014.42	4017.58	4017.66	92.30	1.70
10759.00	91.10	86.30	6718.74	-155.73	4110.26	4113.17	4113.21	92.17	1.05
10854.00	88.70	86.20	6718.91	-149.52	4205.05	4207.70	4207.70	92.04	2.53
10949.00	88.70	88.80	6721.06	-145.38	4299.92	4302.38	4302.38	91.94	2.74
11044.00	88.90	90.00	6723.05	-144.38	4394.90	4397.27	4397.27	91.88	1.28
11139.00	88.90	89.10	6724.88	-143.64	4489.87	4492.16	4492.17	91.83	.95
<b>Crossed Hardline at 11,167' MD</b>									
11235.00	89.90	89.40	6725.88	-142.38	4585.86	4588.05	4588.07	91.78	1.09
11330.00	91.50	90.50	6724.72	-142.30	4680.85	4682.98	4683.01	91.74	2.04
<b>Last MWD Survey</b>									
11408.00	91.50	89.10	6722.68	-142.02	4758.82	4760.90	4760.94	91.71	1.79
<b>Straight Line Projection to TD</b>									
11477.00	91.50	89.10	6720.87	-140.94	4827.79	4829.79	4829.84	91.67	.00