



## Final Survey Plot

Projected Final Survey -  
 7470'MD & 7321'TVD @ 1189'VS  
 0.2 deg Inc 104.0 deg AZ

Project: SEC.33-T7N-R65W  
 Site: Appaloosa 33-13 Pad Sec.33-T7N-R65W  
 Well: Appaloosa 33-14  
 Plan: Wellbore #1



# **Directional**

## **Great Western**

**SEC.33-T7N-R65W**

**Appaloosa 33-13 Pad Sec.33-T7N-R65W**

**Appaloosa 33-14**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**20 May, 2011**

<b>Company:</b>	Great Western	<b>Local Co-ordinate Reference:</b>	Well Appaloosa 33-14
<b>Project:</b>	SEC.33-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Site:</b>	Appaloosa 33-13 Pad Sec.33-T7N-R65W	<b>MD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Well:</b>	Appaloosa 33-14	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.33-T7N-R65W, 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		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Appaloosa 33-13 Pad Sec.33-T7N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	437,746.75 m
<b>From:</b>	Lat/Long	<b>Easting:</b>	984,541.28 m
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	in
		<b>Latitude:</b>	40° 31' 39.900 N
		<b>Longitude:</b>	104° 40' 19.884 W
		<b>Grid Convergence:</b>	0.53 °

<b>Well</b>	Appaloosa 33-14		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 437,734.52 m
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 984,540.55 m
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40° 31' 39.504 N
		<b>Longitude:</b>	104° 40' 19.920 W
		<b>Ground Level:</b>	4,787.0 ft

<b>Wellbore</b>	Wellbore #1		
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>
	IGRF2010	1/13/2011	8.88
			<b>Dip Angle (°)</b> 67.18
			<b>Field Strength (nT)</b> 53,253

<b>Design</b>	Wellbore #1		
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>
	0.0	0.0	0.0
			<b>Direction (°)</b> 229.62

<b>Survey Program</b>	<b>Date</b> 5/20/2011		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>
578.0	7,470.0	Survey #1 (Wellbore #1)	MWD
			<b>Description</b> MWD - Standard

<b>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>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
578.0	0.70	214.50	578.0	-2.9	-2.0	3.4	0.12	0.12	0.00
672.0	1.60	213.70	672.0	-4.5	-3.1	5.2	0.96	0.96	-0.85
765.0	4.10	222.30	764.8	-8.0	-6.0	9.8	2.72	2.69	9.25
859.0	5.60	232.60	858.5	-13.3	-11.9	17.7	1.84	1.60	10.96
953.0	7.90	226.80	951.8	-20.5	-20.3	28.7	2.55	2.45	-6.17
1,047.0	9.60	232.80	1,044.8	-29.7	-31.2	43.0	2.05	1.81	6.38
1,139.0	11.50	230.20	1,135.2	-40.2	-44.4	59.8	2.13	2.07	-2.83
1,232.0	13.30	229.20	1,226.0	-53.1	-59.6	79.8	1.95	1.94	-1.08
1,327.0	15.20	230.10	1,318.1	-68.2	-77.4	103.2	2.01	2.00	0.95
1,420.0	15.30	225.00	1,407.8	-84.7	-95.5	127.6	1.45	0.11	-5.48
1,514.0	16.50	223.20	1,498.2	-103.2	-113.4	153.2	1.38	1.28	-1.91
1,608.0	16.30	223.50	1,588.4	-122.5	-131.6	179.6	0.23	-0.21	0.32

<b>Company:</b>	Great Western	<b>Local Co-ordinate Reference:</b>	Well Appaloosa 33-14
<b>Project:</b>	SEC.33-T7N-R65W	<b>TVD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Site:</b>	Appaloosa 33-13 Pad Sec.33-T7N-R65W	<b>MD Reference:</b>	WELL @ 4800.0ft (Original Well Elev)
<b>Well:</b>	Appaloosa 33-14	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

#### 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)
1,702.0	16.70	226.20	1,678.5	-141.4	-150.4	206.2	0.92	0.43	2.87
1,797.0	15.40	226.60	1,769.8	-159.6	-169.4	232.4	1.37	-1.37	0.42
1,890.0	14.50	228.10	1,859.7	-175.8	-187.1	256.4	1.05	-0.97	1.61
1,983.0	14.80	233.60	1,949.7	-190.6	-205.3	279.9	1.53	0.32	5.91
2,077.0	14.50	228.90	2,040.6	-205.5	-223.8	303.6	1.30	-0.32	-5.00
2,170.0	16.50	229.20	2,130.2	-221.8	-242.6	328.5	2.15	2.15	0.32
2,264.0	14.90	229.60	2,220.7	-238.3	-261.9	353.9	1.71	-1.70	0.43
2,358.0	16.40	229.70	2,311.2	-254.8	-281.2	379.3	1.60	1.60	0.11
2,452.0	15.00	226.80	2,401.7	-271.7	-300.2	404.7	1.71	-1.49	-3.09
2,546.0	14.80	225.40	2,492.6	-288.4	-317.6	428.8	0.44	-0.21	-1.49
2,639.0	16.00	222.20	2,582.2	-306.3	-334.7	453.4	1.58	1.29	-3.44
2,733.0	14.40	220.30	2,672.9	-324.8	-351.0	477.8	1.78	-1.70	-2.02
2,827.0	15.50	222.50	2,763.7	-342.9	-367.0	501.8	1.32	1.17	2.34
2,921.0	17.00	229.70	2,854.0	-361.1	-386.0	528.0	2.67	1.60	7.66
3,015.0	17.20	230.90	2,943.8	-378.8	-407.3	555.6	0.43	0.21	1.28
3,108.0	16.00	233.20	3,033.0	-395.1	-428.2	582.1	1.47	-1.29	2.47
3,203.0	15.10	235.00	3,124.5	-410.0	-448.8	607.5	1.07	-0.95	1.89
3,297.0	16.00	230.70	3,215.0	-425.3	-468.9	632.7	1.56	0.96	-4.57
3,390.0	17.40	232.40	3,304.1	-441.9	-489.8	659.4	1.59	1.51	1.83
3,484.0	14.80	232.10	3,394.4	-457.8	-510.4	685.4	2.77	-2.77	-0.32
3,578.0	13.90	226.70	3,485.5	-472.9	-528.1	708.7	1.71	-0.96	-5.74
3,671.0	14.50	225.30	3,575.7	-488.8	-544.5	731.5	0.74	0.65	-1.51
3,766.0	14.60	225.10	3,667.6	-505.6	-561.4	755.3	0.12	0.11	-0.21
3,859.0	15.70	233.70	3,757.4	-521.3	-579.9	779.5	2.69	1.18	9.25
3,952.0	16.60	237.50	3,846.7	-535.9	-601.2	805.2	1.49	0.97	4.09
4,045.0	16.70	239.70	3,935.8	-549.8	-624.0	831.5	0.69	0.11	2.37
4,140.0	17.40	236.20	4,026.6	-564.6	-647.6	859.1	1.31	0.74	-3.68
4,234.0	17.20	238.40	4,116.4	-579.7	-671.1	886.8	0.73	-0.21	2.34
4,327.0	15.70	238.80	4,205.6	-593.4	-693.6	912.8	1.62	-1.61	0.43
4,421.0	14.90	235.10	4,296.3	-606.9	-714.4	937.4	1.34	-0.85	-3.94
4,515.0	13.90	227.30	4,387.3	-621.5	-732.6	960.7	2.32	-1.06	-8.30
4,609.0	14.70	226.00	4,478.4	-637.4	-749.4	983.9	0.92	0.85	-1.38
4,703.0	16.00	233.30	4,569.0	-653.5	-768.4	1,008.7	2.48	1.38	7.77
4,797.0	15.20	229.60	4,659.6	-669.2	-788.2	1,034.0	1.36	-0.85	-3.94
4,890.0	13.50	231.70	4,749.7	-683.8	-806.0	1,057.0	1.91	-1.83	2.26
4,984.0	10.60	230.10	4,841.6	-696.2	-821.2	1,076.6	3.11	-3.09	-1.70
5,078.0	10.20	233.10	4,934.1	-706.7	-834.5	1,093.6	0.72	-0.43	3.19
5,172.0	10.00	226.60	5,026.6	-717.3	-847.1	1,110.0	1.23	-0.21	-6.91
5,265.0	8.70	227.00	5,118.4	-727.7	-858.1	1,125.1	1.40	-1.40	0.43
5,359.0	6.70	219.50	5,211.5	-736.8	-866.8	1,137.6	2.38	-2.13	-7.98
5,453.0	5.10	226.50	5,305.0	-743.9	-873.3	1,147.2	1.86	-1.70	7.45
5,547.0	3.80	232.20	5,398.7	-748.6	-878.8	1,154.5	1.46	-1.38	6.06
5,641.0	3.00	226.00	5,492.6	-752.3	-883.1	1,160.0	0.94	-0.85	-6.60
5,735.0	2.70	235.90	5,586.5	-755.2	-886.7	1,164.7	0.61	-0.32	10.53
5,748.5	2.55	240.75	5,600.0	-755.5	-887.2	1,165.3	1.97	-1.09	35.85
<b>TARGET BHL 631'FSL, 661'FWL</b>									
5,828.0	2.20	278.30	5,679.4	-756.2	-890.2	1,168.1	1.97	-0.44	47.25
5,922.0	1.30	268.70	5,773.3	-756.0	-893.1	1,170.1	1.00	-0.96	-10.21
6,016.0	1.60	263.90	5,867.3	-756.1	-895.5	1,172.0	0.34	0.32	-5.11
6,110.0	1.30	196.10	5,961.3	-757.3	-897.1	1,174.0	1.74	-0.32	-72.13
6,203.0	1.30	194.90	6,054.3	-759.3	-897.6	1,175.7	0.03	0.00	-1.29
6,298.0	1.30	182.90	6,149.2	-761.4	-898.0	1,177.3	0.29	0.00	-12.63
6,392.0	0.60	200.70	6,243.2	-763.0	-898.2	1,178.5	0.80	-0.74	18.94
6,485.0	0.70	159.10	6,336.2	-763.9	-898.2	1,179.1	0.51	0.11	-44.73

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

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)	
6,579.0	0.80	173.10	6,430.2	-765.1	-897.9	1,179.7	0.22	0.11	14.89	
6,673.0	0.80	217.50	6,524.2	-766.3	-898.2	1,180.7	0.64	0.00	47.23	
6,765.0	1.00	179.70	6,616.2	-767.6	-898.6	1,181.8	0.67	0.22	-41.09	
6,848.6	0.73	167.37	6,699.7	-768.9	-898.5	1,182.5	0.39	-0.33	-14.75	
LEGAL BOX 400' X 400' 635'FSL & 661'FWL										
6,858.0	0.70	165.40	6,709.2	-769.0	-898.4	1,182.6	0.39	-0.29	-20.92	
6,952.0	1.10	197.00	6,803.2	-770.4	-898.5	1,183.6	0.66	0.43	33.62	
7,045.0	1.20	191.20	6,896.1	-772.2	-899.0	1,185.1	0.16	0.11	-6.24	
7,138.0	1.20	178.70	6,989.1	-774.1	-899.2	1,186.5	0.28	0.00	-13.44	
7,232.0	0.90	200.50	7,083.1	-775.8	-899.4	1,187.7	0.53	-0.32	23.19	
7,327.0	1.00	156.60	7,178.1	-777.3	-899.3	1,188.6	0.75	0.11	-46.21	
7,421.0	0.20	104.00	7,272.1	-778.1	-898.9	1,188.8	0.95	-0.85	-55.96	
7,470.0	0.20	104.00	7,321.1	-778.1	-898.7	1,188.7	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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