

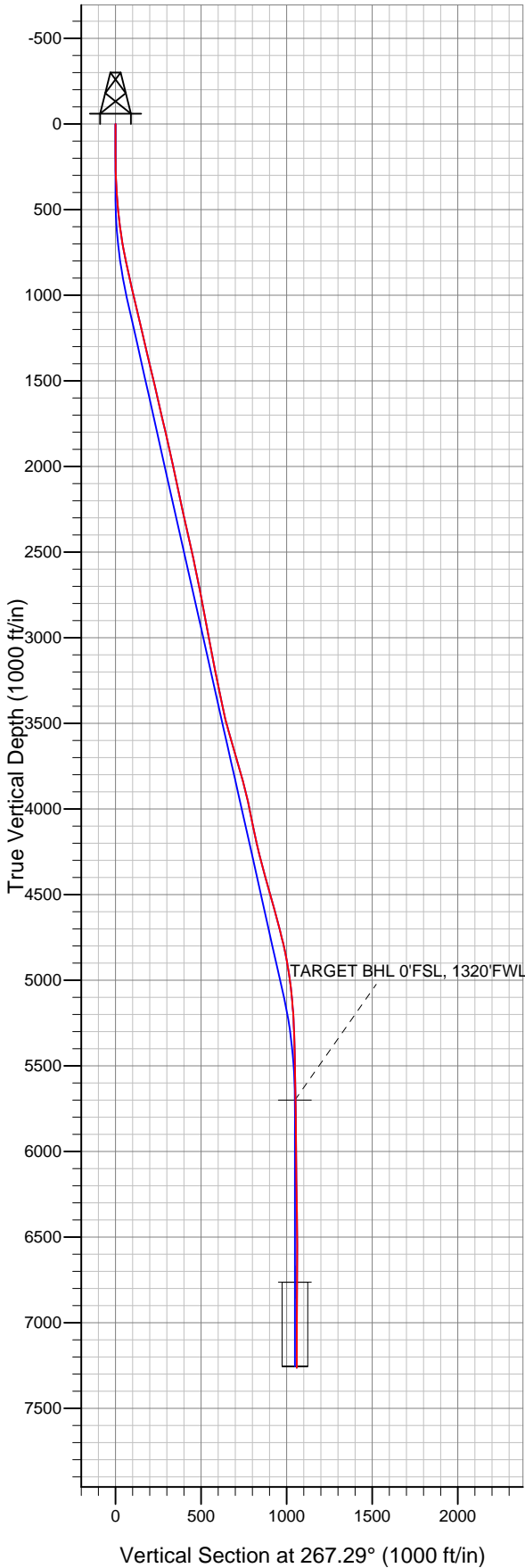
Well Name: **HCW FD 24-35D**

Surface Location: HCW FD 24-20D Pad Sec.24-T6N-R67W
 North American Datum 1983 US State Plane 1983 Colorado Northern Zone

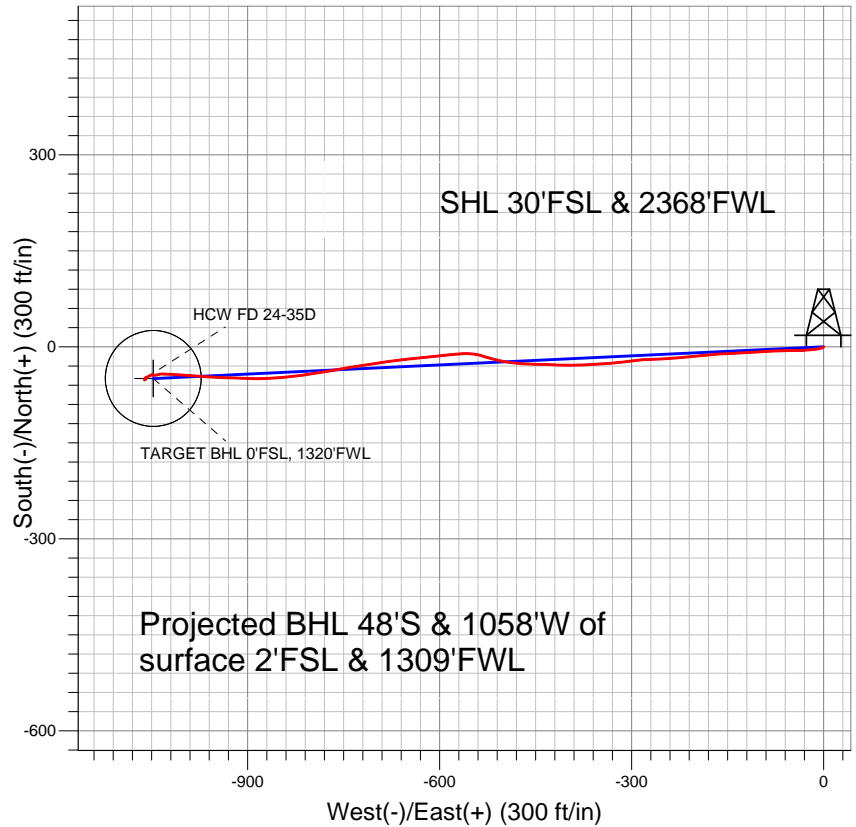
Ground Elevation: 4744.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1413051.69	3182831.02	40.465369	-104.842900	

Original Well Elev WELL @ 4758.0ft (Original Well Elev)



Great Western



LEGEND

- HCW FD 24-35D, Wellbore #1, Plan #1 (10-22-12) R V0
- Wellbore #1
- Survey #1

Final Survey Plot

Projected Final Survey -
 7379'MD & 7263'TVD @ 1059'VS
 0.2 deg Inc 85.6 deg AZ

Project: SEC.24-T6N-R67W
 Site: HCW FD 24-20D Pad Sec.24-T6N-R67W
 Well: HCW FD 24-35D
 Plan: Wellbore #1



Directional

Great Western

SEC.24-T6N-R67W

HCW FD 24-20D Pad Sec.24-T6N-R67W

HCW FD 24-35D

Wellbore #1

Survey: Survey #1

Standard Survey Report

29 October, 2012

Company:	Great Western	Local Co-ordinate Reference:	Well HCW FD 24-35D
Project:	SEC.24-T6N-R67W	TVD Reference:	WELL @ 4758.0ft (Original Well Elev)
Site:	HCW FD 24-20D Pad Sec.24-T6N-R67W	MD Reference:	WELL @ 4758.0ft (Original Well Elev)
Well:	HCW FD 24-35D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.24-T6N-R67W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	HCW FD 24-20D Pad Sec.24-T6N-R67W				
Site Position:		Northing:	1,413,056.70ft	Latitude:	40.465383
From:	Lat/Long	Easting:	3,182,817.07ft	Longitude:	-104.842950
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.42 °

Well	HCW FD 24-35D					
Well Position	+N/-S	0.0 ft	Northing:	1,413,051.69 ft	Latitude:	40.465369
	+E/-W	0.0 ft	Easting:	3,182,831.02 ft	Longitude:	-104.842900
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,744.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/22/2012	8.73	67.04	53,015

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	267.29	

Survey Program	Date	10/29/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
88.0	7,379.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
88.0	0.50	239.40	88.0	-0.2	-0.3	0.3	0.57	0.57	0.00	
180.0	0.40	198.50	180.0	-0.7	-0.8	0.8	0.36	-0.11	-44.46	
271.0	1.40	249.40	271.0	-1.4	-1.9	2.0	1.31	1.10	55.93	
362.0	2.80	255.00	361.9	-2.4	-5.1	5.2	1.55	1.54	6.15	
453.0	4.70	260.30	452.7	-3.6	-10.9	11.1	2.12	2.09	5.82	
544.0	6.30	266.10	543.3	-4.5	-19.6	19.8	1.86	1.76	6.37	
601.0	7.70	264.20	599.9	-5.1	-26.5	26.7	2.49	2.46	-3.33	
697.0	9.40	269.80	694.8	-5.8	-40.7	41.0	1.97	1.77	5.83	
792.0	11.80	268.70	788.2	-6.1	-58.2	58.4	2.54	2.53	-1.16	
887.0	12.30	268.60	881.1	-6.5	-78.0	78.3	0.53	0.53	-0.11	
981.0	12.70	265.20	972.9	-7.6	-98.4	98.6	0.89	0.43	-3.62	
1,076.0	14.20	266.60	1,065.3	-9.2	-120.4	120.7	1.62	1.58	1.47	

Company:	Great Western	Local Co-ordinate Reference:	Well HCW FD 24-35D
Project:	SEC.24-T6N-R67W	TVD Reference:	WELL @ 4758.0ft (Original Well Elev)
Site:	HCW FD 24-20D Pad Sec.24-T6N-R67W	MD Reference:	WELL @ 4758.0ft (Original Well Elev)
Well:	HCW FD 24-35D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)
1,170.0	13.20	268.20	1,156.6	-10.2	-142.6	142.9	1.14	-1.06	1.70
1,265.0	13.20	265.60	1,249.1	-11.4	-164.3	164.6	0.62	0.00	-2.74
1,360.0	12.80	264.50	1,341.6	-13.2	-185.6	186.0	0.50	-0.42	-1.16
1,454.0	13.40	264.90	1,433.2	-15.2	-206.8	207.3	0.65	0.64	0.43
1,549.0	13.20	264.00	1,525.6	-17.3	-228.5	229.1	0.30	-0.21	-0.95
1,644.0	13.30	266.80	1,618.1	-19.1	-250.2	250.9	0.68	0.11	2.95
1,738.0	12.70	269.30	1,709.7	-19.8	-271.4	272.0	0.87	-0.64	2.66
1,833.0	13.00	262.90	1,802.3	-21.2	-292.4	293.1	1.53	0.32	-6.74
1,928.0	12.80	262.90	1,894.9	-23.9	-313.5	314.2	0.21	-0.21	0.00
2,021.0	12.20	266.00	1,985.7	-25.8	-333.5	334.3	0.97	-0.65	3.33
2,115.0	11.50	266.40	2,077.7	-27.1	-352.7	353.6	0.75	-0.74	0.43
2,210.0	12.70	267.30	2,170.6	-28.2	-372.6	373.5	1.28	1.26	0.95
2,305.0	12.80	270.00	2,263.3	-28.7	-393.6	394.5	0.64	0.11	2.84
2,399.0	12.10	271.50	2,355.1	-28.4	-413.8	414.7	0.82	-0.74	1.60
2,494.0	12.90	272.40	2,447.8	-27.7	-434.4	435.2	0.87	0.84	0.95
2,589.0	12.80	272.10	2,540.4	-26.9	-455.5	456.3	0.13	-0.11	-0.32
2,683.0	10.70	272.10	2,632.4	-26.2	-474.6	475.3	2.23	-2.23	0.00
2,778.0	11.10	280.20	2,725.7	-24.2	-492.4	493.0	1.66	0.42	8.53
2,873.0	12.30	283.10	2,818.8	-20.3	-511.3	511.7	1.41	1.26	3.05
2,967.0	11.10	287.90	2,910.8	-15.3	-529.7	529.8	1.64	-1.28	5.11
3,062.0	10.60	277.20	3,004.1	-11.4	-547.0	547.0	2.18	-0.53	-11.26
3,157.0	11.00	266.40	3,097.5	-10.8	-564.8	564.6	2.17	0.42	-11.37
3,251.0	11.30	264.70	3,189.7	-12.3	-582.9	582.8	0.47	0.32	-1.81
3,349.0	11.60	262.80	3,285.7	-14.4	-602.2	602.2	0.49	0.31	-1.94
3,444.0	12.00	265.00	3,378.7	-16.4	-621.5	621.6	0.63	0.42	2.32
3,539.0	12.80	264.20	3,471.5	-18.4	-641.8	642.0	0.86	0.84	-0.84
3,633.0	16.30	262.10	3,562.5	-21.2	-665.3	665.5	3.76	3.72	-2.23
3,728.0	16.50	261.90	3,653.6	-25.0	-691.8	692.2	0.22	0.21	-0.21
3,822.0	16.40	261.50	3,743.8	-28.8	-718.2	718.7	0.16	-0.11	-0.43
3,917.0	15.60	261.00	3,835.1	-32.8	-744.0	744.8	0.85	-0.84	-0.53
4,012.0	12.80	258.50	3,927.2	-36.9	-767.0	767.9	3.02	-2.95	-2.63
4,106.0	11.70	261.50	4,019.0	-40.4	-786.6	787.6	1.35	-1.17	3.19
4,201.0	11.80	261.70	4,112.0	-43.2	-805.8	806.9	0.11	0.11	0.21
4,296.0	12.10	263.50	4,205.0	-45.7	-825.3	826.5	0.50	0.32	1.89
4,390.0	14.70	264.30	4,296.4	-48.0	-846.9	848.2	2.77	2.77	0.85
4,485.0	16.10	268.20	4,388.0	-49.6	-872.1	873.4	1.83	1.47	4.11
4,580.0	15.40	272.40	4,479.4	-49.5	-897.8	899.2	1.41	-0.74	4.42
4,675.0	14.90	271.20	4,571.1	-48.7	-922.7	923.9	0.62	-0.53	-1.26
4,770.0	15.70	273.70	4,662.8	-47.6	-947.7	948.9	1.09	0.84	2.63
4,864.0	14.10	273.80	4,753.6	-46.1	-971.8	972.9	1.70	-1.70	0.11
4,959.0	11.50	273.70	4,846.2	-44.7	-992.8	993.8	2.74	-2.74	-0.11
5,054.0	8.80	273.60	4,939.7	-43.6	-1,009.5	1,010.5	2.84	-2.84	-0.11
5,148.0	6.80	271.90	5,032.9	-43.0	-1,022.3	1,023.2	2.14	-2.13	-1.81
5,243.0	5.30	271.40	5,127.3	-42.7	-1,032.3	1,033.1	1.58	-1.58	-0.53
5,338.0	3.60	255.50	5,222.0	-43.3	-1,039.5	1,040.4	2.19	-1.79	-16.74
5,432.0	1.80	251.00	5,315.9	-44.6	-1,043.8	1,044.7	1.93	-1.91	-4.79
5,527.0	1.40	302.70	5,410.9	-44.4	-1,046.2	1,047.1	1.52	-0.42	54.42
5,716.0	1.00	249.70	5,599.9	-43.7	-1,049.7	1,050.6	0.60	-0.21	-28.04
5,816.1	0.79	245.58	5,700.0	-44.3	-1,051.1	1,052.0	0.22	-0.21	-4.12
TARGET BHL 0'FSL, 1320'FWL									
5,906.0	0.60	239.40	5,789.9	-44.8	-1,052.1	1,053.0	0.22	-0.21	-6.87
6,095.0	0.80	245.10	5,978.8	-45.9	-1,054.1	1,055.1	0.11	0.11	3.02
6,286.0	1.00	229.90	6,169.8	-47.5	-1,056.6	1,057.7	0.16	0.10	-7.96
6,475.0	1.60	216.20	6,358.8	-50.7	-1,059.4	1,060.7	0.36	0.32	-7.25

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	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)	
6,664.0	0.80	354.20	6,547.7	-51.5	-1,061.1	1,062.4	1.20	-0.42	73.02	
6,854.0	0.60	43.70	6,737.7	-49.5	-1,060.6	1,061.7	0.32	-0.11	26.05	
6,879.4	0.57	45.09	6,763.1	-49.3	-1,060.4	1,061.5	0.13	-0.11	5.49	
TARGET CIRCLE 0'FSL, 1320'FWL										
7,043.0	0.40	58.70	6,926.7	-48.4	-1,059.3	1,060.4	0.13	-0.10	8.32	
7,232.0	0.10	60.60	7,115.7	-48.0	-1,058.6	1,059.7	0.16	-0.16	1.01	
7,329.0	0.20	85.60	7,212.7	-47.9	-1,058.4	1,059.5	0.12	0.10	25.77	
7,379.0	0.20	85.60	7,262.7	-47.9	-1,058.2	1,059.3	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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