



Berry Petroleum Company

BERRY PETROLEUM COMPANY

GARFIELD COUNTY, COLORADO

CHEVRON 18-21D PAD

CHEVRON 18-23D

18-23D

Survey: Survey #1

Standard Survey Report

21 October, 2010



Weatherford®



Company:	BERRY PETROLEUM COMPANY	Local Co-ordinate Reference:	Well CHEVRON 18-23D
Project:	GARFIELD COUNTY, COLORADO	TVD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Site:	CHEVRON 18-21D PAD	MD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Well:	CHEVRON 18-23D	North Reference:	True
Wellbore:	18-23D	Survey Calculation Method:	Minimum Curvature
Design:	18-23D	Database:	EDM 2003.21 Single User Db

Project	GARFIELD COUNTY, COLORADO, COLORADO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	CHEVRON 18-21D PAD		
Site Position:		Northing:	495,906.2501 m
From:	Lat/Long	Easting:	686,014.9627 m
Position Uncertainty:	0.0000 ft	Slot Radius:	0.0000 in
		Latitude:	39° 31' 29.2000 N
		Longitude:	108° 9' 24.0000 W
		Grid Convergence:	-1.6755 °

Well	CHEVRON 18-23D		
Well Position	+N/-S	0.0000 ft	Northing: 495,906.2501 m
	+E/-W	0.0000 ft	Easting: 686,014.9627 m
Position Uncertainty	0.0000 ft		Wellhead Elevation: ft
			Latitude: 39° 31' 29.2000 N
			Longitude: 108° 9' 24.0000 W
			Ground Level: 8,209.0000 ft

Wellbore	18-23D		
Magnetics	Model Name	Sample Date	Declination (°)
	bggm2007	6/5/2007	10.9663
			Dip Angle (°) 65.8606
			Field Strength (nT) 52,632

Design	18-23D		
Audit Notes:			
Version:	3	Phase:	ACTUAL
		Tie On Depth:	0.0000
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)
	0.0000	0.0000	0.0000
			Direction (°) 301.0584

Survey Program	Date	7/23/2008		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
230.0000	8,412.0000	Survey #1 (18-23D)	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)
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.00	0.00
230.0000	0.0600	169.1000	230.0000	-0.1183	0.0228	-0.0805	0.0261	0.03	0.00
323.0000	0.5000	219.2200	322.9987	-0.4804	-0.2246	-0.0555	0.4987	0.47	53.89
417.0000	0.7500	209.9700	416.9930	-1.3311	-0.7913	-0.0089	0.2860	0.27	-9.84
509.0000	0.5000	254.0000	508.9880	-1.9634	-1.4779	0.2531	0.5682	-0.27	47.86
601.0000	0.6900	305.2200	600.9836	-1.7546	-2.3164	1.0791	0.5893	0.21	55.67
665.0000	1.0000	334.8500	664.9768	-1.0268	-2.8685	1.9276	0.8217	0.48	46.30
760.0000	1.6900	328.3500	759.9501	0.9161	-3.9559	3.8614	0.7427	0.73	-6.84
854.0000	2.8800	328.9700	853.8737	4.1198	-5.9006	7.1802	1.2662	1.27	0.66
888.0000	3.5000	331.8500	887.8209	5.7668	-6.8306	8.8265	1.8829	1.82	8.47
983.0000	4.5600	329.6000	982.5847	11.5809	-10.1097	14.6351	1.1279	1.12	-2.37
1,078.0000	4.9400	326.7200	1,077.2584	18.2577	-14.2652	21.6395	0.4721	0.40	-3.03
1,173.0000	4.6300	324.2200	1,171.9273	24.7878	-18.7515	28.8517	0.3932	-0.33	-2.63



Company:	BERRY PETROLEUM COMPANY	Local Co-ordinate Reference:	Well CHEVRON 18-23D
Project:	GARFIELD COUNTY, COLORADO	TVD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Site:	CHEVRON 18-21D PAD	MD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Well:	CHEVRON 18-23D	North Reference:	True
Wellbore:	18-23D	Survey Calculation Method:	Minimum Curvature
Design:	18-23D	Database:	EDM 2003.21 Single User Db

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)
1,268.0000	4.5600	322.1000	1,266.6220	30.8783	-23.3131	35.9014	0.1934	-0.07	-2.23
1,363.0000	4.5600	320.6000	1,361.3213	36.7763	-28.0299	42.9849	0.1255	0.00	-1.58
1,458.0000	4.5600	319.6000	1,456.0206	42.5704	-32.8744	50.1241	0.0837	0.00	-1.05
1,553.0000	4.5000	318.1000	1,550.7239	48.2201	-37.8109	57.2677	0.1398	-0.06	-1.58
1,649.0000	4.4400	316.6000	1,646.4319	53.7231	-42.8791	64.4484	0.1369	-0.06	-1.56
1,742.0000	4.5600	317.3500	1,739.1452	59.0578	-47.8572	71.4651	0.1437	0.13	0.81
1,837.0000	4.6300	318.9700	1,833.8399	64.7277	-52.9328	78.7382	0.1552	0.07	1.71
1,933.0000	4.5600	319.3500	1,929.5313	70.5459	-57.9623	86.0483	0.0795	-0.07	0.40
2,029.0000	4.4400	316.4700	2,025.2355	76.1354	-63.0075	93.2540	0.2665	-0.12	-3.00
2,124.0000	4.8100	318.1000	2,119.9260	81.7660	-68.2001	100.6071	0.4133	0.39	1.72
2,219.0000	4.1900	319.2200	2,214.6327	87.3586	-73.1269	107.7129	0.6591	-0.65	1.18
2,314.0000	3.3800	310.9700	2,309.4254	91.8228	-77.5084	113.7694	1.0253	-0.85	-8.68
2,409.0000	2.7500	302.2200	2,404.2896	94.8741	-81.5510	118.8066	0.8242	-0.66	-9.21
2,505.0000	3.7500	281.7500	2,500.1371	96.7414	-86.5731	124.0722	1.5801	1.04	-21.32
2,599.0000	3.4800	276.7900	2,593.9502	97.7047	-92.4156	129.5741	0.4393	-0.29	-5.28
WASATCH									
2,606.5634	3.4077	276.0841	2,601.5000	97.7557	-92.8671	129.9871	1.1085	-0.96	-9.33
2,693.0000	2.6300	265.3500	2,687.8167	97.8672	-97.3982	133.9262	1.1085	-0.90	-12.42
2,788.0000	2.5000	275.9700	2,782.7220	97.9060	-101.6313	137.5724	0.5178	-0.14	11.18
2,883.0000	3.6900	281.9700	2,877.5820	98.7555	-106.6827	142.3380	1.2965	1.25	6.32
9 5/8"									
3,000.0000	3.4915	279.2961	2,994.3523	100.1119	-113.8818	149.2047	0.2219	-0.17	-2.29
3,068.0000	3.3800	277.6000	3,062.2301	100.7115	-117.9122	152.9667	0.2219	-0.16	-2.49
3,166.0000	2.5600	311.6000	3,160.1050	102.5468	-122.4128	157.7690	1.9438	-0.84	34.69
3,263.0000	2.2500	354.4700	3,257.0270	105.8806	-124.2164	161.0339	1.8360	-0.32	44.20
3,360.0000	1.4400	33.4700	3,353.9794	108.7927	-123.7276	162.1177	1.4939	-0.84	40.21
3,457.0000	2.1900	54.9700	3,450.9312	110.8733	-121.5378	161.3151	1.0316	0.77	22.16
3,555.0000	2.5600	59.1000	3,548.8469	113.0720	-118.1265	159.5273	0.4157	0.38	4.21
3,652.0000	2.8100	59.8500	3,645.7403	115.3787	-114.2117	157.3637	0.2603	0.26	0.77
3,750.0000	1.5000	55.9700	3,743.6689	117.3031	-111.0714	155.6664	1.3442	-1.34	-3.96
3,848.0000	1.5000	40.6000	3,841.6357	118.9949	-109.1736	154.9135	0.4093	0.00	-15.68
3,945.0000	1.7500	31.2200	3,938.5968	121.2255	-107.5797	154.6989	0.3755	0.26	-9.67
4,042.0000	2.1300	49.4700	4,035.5420	123.6635	-105.4419	154.1254	0.7429	0.39	18.81
4,140.0000	2.1300	54.9700	4,133.4744	125.8924	-102.5664	152.8120	0.2085	0.00	5.61
4,238.0000	2.3100	54.2200	4,231.4008	128.0925	-99.4729	151.2970	0.1860	0.18	-0.77
4,332.0000	2.4400	61.7200	4,325.3202	130.1481	-96.1739	149.5315	0.3581	0.14	7.98
4,430.0000	2.5600	66.2200	4,423.2270	132.0190	-92.3340	147.2072	0.2347	0.12	4.59
4,526.0000	2.6900	62.6100	4,519.1263	133.9198	-88.3719	144.7938	0.2190	0.14	-3.76
4,623.0000	3.0000	73.2200	4,616.0074	135.6998	-83.9206	141.8989	0.6286	0.32	10.94
4,718.0000	2.1300	87.8500	4,710.9123	136.4837	-79.7762	138.7531	1.1391	-0.92	15.40
4,814.0000	1.5600	109.6000	4,806.8632	136.1123	-76.7623	135.9797	0.9304	-0.59	22.66
4,911.0000	1.8100	103.9700	4,903.8213	135.2996	-74.0319	133.2214	0.3088	0.26	-5.80
5,009.0000	2.0600	103.2200	5,001.7653	134.5231	-70.8153	130.0654	0.2564	0.26	-0.77
5,104.0000	2.5600	78.3400	5,096.6902	134.5614	-67.0752	126.8812	1.1667	0.53	-26.19
5,201.0000	2.6300	83.8500	5,193.5909	135.2377	-62.7409	123.5171	0.2670	0.07	5.68
5,298.0000	2.6900	102.9700	5,290.4883	134.9652	-58.3100	119.5809	0.9126	0.06	19.71
5,396.0000	3.8100	120.9700	5,388.3316	132.7735	-53.2770	114.1386	1.5329	1.14	18.37
5,493.0000	4.1300	128.4700	5,485.0994	128.9421	-47.7789	107.4520	0.6281	0.33	7.73
5,590.0000	4.0600	128.3500	5,581.8517	124.6385	-42.3512	100.5822	0.0727	-0.07	-0.12
5,689.0000	4.2500	131.6000	5,680.5916	120.0285	-36.8595	93.4994	0.3056	0.19	3.28
5,787.0000	4.3100	146.8500	5,778.3215	114.5342	-32.1301	86.6135	1.1595	0.06	15.56
5,884.0000	3.3100	168.9700	5,875.1110	108.7335	-29.6010	81.4543	1.8143	-1.03	22.80
5,980.0000	2.9400	175.2200	5,970.9684	103.5599	-28.8656	78.1552	0.5234	-0.39	6.51
6,078.0000	3.1300	173.3500	6,068.8309	98.3979	-28.3464	75.0473	0.2186	0.19	-1.91



Berry Petroleum Company

Weatherford International Ltd.

Survey Report



Weatherford®

Company:	BERRY PETROLEUM COMPANY	Local Co-ordinate Reference:	Well CHEVRON 18-23D
Project:	GARFIELD COUNTY, COLORADO	TVD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Site:	CHEVRON 18-21D PAD	MD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Well:	CHEVRON 18-23D	North Reference:	True
Wellbore:	18-23D	Survey Calculation Method:	Minimum Curvature
Design:	18-23D	Database:	EDM 2003.21 Single User Db

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)
6,175.0000	3.5600	179.6000	6,165.6658	92.7560	-28.0187	71.8558	0.5806	0.44	6.44
OHIO CREEK									
6,240.9694	3.7768	181.4301	6,231.5000	88.5359	-28.0586	69.7128	0.3735	0.33	2.77
6,272.0000	3.8800	182.2200	6,262.4613	86.4652	-28.1248	68.7012	0.3735	0.33	2.55
6,370.0000	4.1900	187.4700	6,360.2186	79.6022	-28.7186	65.6692	0.4918	0.32	5.36
6,467.0000	3.6900	205.8500	6,456.9929	73.2793	-30.5404	63.9678	1.3927	-0.52	18.95
MESAVERDE									
6,551.6815	3.6822	215.2483	6,541.5000	68.6062	-33.2979	63.9191	0.7128	-0.01	11.10
6,565.0000	3.6900	216.7200	6,554.7910	67.9134	-33.8010	63.9926	0.7128	0.06	11.05
6,662.0000	3.6300	233.8500	6,651.5961	63.5999	-38.1469	65.4901	1.1248	-0.06	17.66
TOP GAS									
6,681.9445	3.6805	236.4189	6,671.5000	62.8734	-39.1900	66.0089	0.8592	0.25	12.88
6,759.0000	3.9400	245.6000	6,748.3858	60.4118	-43.6613	68.5693	0.8592	0.34	11.91
6,857.0000	4.1300	250.9700	6,846.1432	57.8702	-50.0636	72.7425	0.4314	0.19	5.48
6,954.0000	3.9400	275.3500	6,942.9099	57.0420	-56.6842	77.9867	1.7657	-0.20	25.13
7,051.0000	3.5000	284.7200	7,039.7061	58.1051	-62.8660	83.8307	0.7722	-0.45	9.66
7,149.0000	3.2500	286.3500	7,137.5361	59.6472	-68.4248	89.3882	0.2732	-0.26	1.66
7,247.0000	3.7500	285.6000	7,235.3530	61.2910	-74.1771	95.1639	0.5123	0.51	-0.77
7,343.0000	2.7500	284.6000	7,331.1974	62.7158	-79.4295	100.3984	1.0433	-1.04	-1.04
7,440.0000	3.9400	284.7200	7,428.0304	64.1491	-84.9047	105.8282	1.2268	1.23	0.12
7,537.0000	3.8100	282.7200	7,524.8087	65.7055	-91.2715	112.0852	0.1933	-0.13	-2.06
7,635.0000	3.0000	293.3500	7,622.6358	67.4389	-96.8021	117.7172	1.0446	-0.83	10.85
7,732.0000	2.5000	276.6000	7,719.5254	68.6881	-101.2341	122.1584	0.9704	-0.52	-17.27
7,829.0000	1.7500	297.4700	7,816.4594	69.6145	-104.6499	125.5624	1.0990	-0.77	21.52
7,927.0000	1.2500	312.8500	7,914.4259	71.0318	-106.7612	128.1022	0.6507	-0.51	15.69
8,024.0000	1.3100	300.9700	8,011.4019	72.3219	-108.4876	130.2467	0.2799	0.06	-12.25
8,122.0000	1.7500	277.2200	8,109.3677	73.0864	-110.9327	132.7357	0.7783	0.45	-24.23
8,220.0000	2.0600	276.2200	8,207.3134	73.4653	-114.1682	135.7029	0.3181	0.32	-1.02
8,315.0000	2.6900	273.4700	8,302.2313	73.7852	-118.0909	139.2282	0.6737	0.66	-2.89
LAST SURVEY - PBHL 18-23D									
8,412.0000	3.1900	273.9700	8,399.1033	74.1099	-123.0553	143.6485	0.5161	0.52	0.52

Design Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (m)	Easting (m)	Latitude	Longitude
- Shape									
PBHL 18-23D	0.00	0.00	421.5000	82.3987	-104.6603	495,932.2873	685,983.8102	39° 31' 30.0143 N	108° 9' 25.3357 W
- survey misses target center by 1022.5957ft at 8412.0000ft MD (8399.1033 TVD, 74.1099 N, -123.0553 E)									
- Rectangle (sides W100.0000 H200.0000 D0.0000)									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
3,000.0000	2,994.3523	9 5/8"	9.6200	12.2500



Berry Petroleum Company

Weatherford International Ltd.

Survey Report



Weatherford

Company:	BERRY PETROLEUM COMPANY	Local Co-ordinate Reference:	Well CHEVRON 18-23D
Project:	GARFIELD COUNTY, COLORADO	TVD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Site:	CHEVRON 18-21D PAD	MD Reference:	SITE @ 8237.0000ft (Original Site Elev)
Well:	CHEVRON 18-23D	North Reference:	True
Wellbore:	18-23D	Survey Calculation Method:	Minimum Curvature
Design:	18-23D	Database:	EDM 2003.21 Single User Db

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,606.5634	2,601.5000	WASATCH		0.0000	0.0000
6,240.9694	6,231.5000	OHIO CREEK		0.0000	0.0000
6,551.6815	6,541.5000	MESAVERDE		0.0000	0.0000
6,681.9445	6,671.5000	TOP GAS		0.0000	0.0000
7,238.0000	8,771.5000	CAMEO		0.0000	0.0000
7,238.0000	9,271.5000	ROLLINS SS		0.0000	0.0000

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,412.0000	8,399.1033	74.1099	-123.0553	LAST SURVEY

Checked By: _____ Approved By: _____ Date: _____