



# **Ursa Operating Company, LLC**

**Rockies Region**

**B&V**

**B&V 14C-07-07-95**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**04 January, 2017**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well B&V 14C-07-07-95
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	B&V 14C-07-07-95 @ 5101.0usft (Plan KB)
<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 14C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Project		Rockies Region	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		Using geodetic scale factor

Site		B&V							
Site Position:		Northing:		1,598,935.06	usft	Latitude:		39.450164128	
From:	Lat/Long	Easting:		2,280,801.73	usft	Longitude:		-108.047211920	
Position Uncertainty:		0.0	usft	Slot Radius:		13-3/16	"	Grid Convergence:	-1.61 °

Well		B&V 14C-07-07-95, SHL LAT: 39.450249858 LONG: -108.047073743				
Well Position	+N/-S	0.0 usft	Northing:	1,598,965.19 usft	Latitude:	39.450249858
	+E/-W	0.0 usft	Easting:	2,280,841.61 usft	Longitude:	-108.047073743
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,101.0 usft	Ground Level:	5,084.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	1/4/2017	9.76	65.55	51,555

Design	Actual			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	177.66

Survey Program		Date	1/4/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
105.0	6,495.0	Surface (Wellbore #1)	MWD	MWD - Standard	

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<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
105.0	0.17	280.29	105.0	0.0	0.0	-0.2	0.16	0.16	0.00	
134.0	0.24	248.55	134.0	0.0	0.0	-0.3	0.45	0.24	-109.45	
163.0	0.00	254.64	163.0	0.0	0.0	-0.3	0.83	-0.83	0.00	
192.0	0.04	83.12	192.0	0.0	0.0	-0.3	0.14	0.14	0.00	
222.0	0.23	289.95	222.0	0.0	0.0	-0.3	0.89	0.63	-510.57	
252.0	0.13	302.06	252.0	-0.1	0.1	-0.4	0.35	-0.33	40.37	
283.0	0.15	272.37	283.0	-0.1	0.1	-0.5	0.24	0.06	-95.77	
313.0	0.13	300.92	313.0	-0.1	0.1	-0.6	0.24	-0.07	95.17	
344.0	0.14	300.40	344.0	-0.2	0.1	-0.6	0.03	0.03	-1.68	
375.0	0.13	166.66	375.0	-0.1	0.1	-0.7	0.80	-0.03	-431.42	
405.0	0.14	285.92	405.0	-0.1	0.1	-0.7	0.78	0.03	397.53	
436.0	0.13	204.68	436.0	-0.1	0.1	-0.7	0.57	-0.03	-262.06	
466.0	0.04	261.81	466.0	-0.1	0.0	-0.8	0.38	-0.30	190.43	
497.0	0.13	326.41	497.0	-0.1	0.1	-0.8	0.38	0.29	208.39	
527.0	0.18	125.52	527.0	-0.1	0.1	-0.8	1.02	0.17	530.37	
558.0	0.10	65.00	558.0	-0.1	0.0	-0.7	0.51	-0.26	-195.23	
589.0	0.13	189.87	589.0	-0.1	0.0	-0.7	0.66	0.10	402.81	
619.0	0.13	127.33	619.0	0.0	0.0	-0.7	0.45	0.00	-208.47	
650.0	0.13	228.01	650.0	0.0	-0.1	-0.7	0.65	0.00	324.77	
680.0	0.20	293.40	680.0	0.0	-0.1	-0.7	0.63	0.23	217.97	
711.0	0.18	238.34	711.0	0.0	-0.1	-0.8	0.57	-0.06	-177.61	
742.0	0.13	10.92	742.0	0.0	-0.1	-0.9	0.92	-0.16	427.68	
772.0	0.22	186.48	772.0	0.1	-0.1	-0.9	1.17	0.30	585.20	
803.0	0.97	176.42	803.0	0.4	-0.4	-0.9	2.43	2.42	-32.45	
833.0	1.60	179.11	833.0	1.1	-1.1	-0.8	2.11	2.10	8.97	
876.0	2.24	177.52	876.0	2.5	-2.5	-0.8	1.49	1.49	-3.70	

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<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 14C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
918.0	2.90	178.57	917.9	4.4	-4.4	-0.7	1.58	1.57	2.50	
961.0	3.97	183.61	960.8	6.9	-7.0	-0.8	2.58	2.49	11.72	
1,004.0	4.79	181.74	1,003.7	10.2	-10.3	-0.9	1.94	1.91	-4.35	
1,047.0	6.02	183.13	1,046.5	14.3	-14.3	-1.1	2.88	2.86	3.23	
1,089.0	7.19	181.54	1,088.2	19.1	-19.1	-1.3	2.82	2.79	-3.79	
1,132.0	8.61	182.05	1,130.8	25.0	-25.0	-1.5	3.31	3.30	1.19	
1,174.0	10.11	182.70	1,172.3	31.8	-31.9	-1.8	3.58	3.57	1.55	
1,217.0	11.78	182.22	1,214.5	39.9	-40.0	-2.1	3.89	3.88	-1.12	
1,260.0	13.62	180.60	1,256.4	49.3	-49.5	-2.4	4.36	4.28	-3.77	
1,303.0	15.44	178.09	1,298.1	60.1	-60.3	-2.2	4.48	4.23	-5.84	
1,345.0	17.67	176.07	1,338.3	72.1	-72.2	-1.6	5.48	5.31	-4.81	
1,388.0	20.48	175.37	1,379.0	86.1	-86.2	-0.5	6.56	6.53	-1.63	
1,431.0	23.07	175.06	1,418.9	102.1	-102.1	0.8	6.03	6.02	-0.72	
1,473.0	25.14	175.28	1,457.2	119.2	-119.2	2.2	4.93	4.93	0.52	
1,516.0	26.54	175.94	1,495.9	137.9	-137.9	3.7	3.32	3.26	1.53	
1,559.0	27.11	176.90	1,534.3	157.3	-157.3	4.9	1.66	1.33	2.23	
1,602.0	27.29	177.17	1,572.5	177.0	-176.9	5.9	0.51	0.42	0.63	
1,644.0	27.45	176.43	1,609.8	196.3	-196.2	7.0	0.90	0.38	-1.76	
1,687.0	28.26	176.46	1,647.9	216.4	-216.2	8.2	1.88	1.88	0.07	
Last PZD Surface Survey										
1,782.0	28.56	175.62	1,731.4	261.5	-261.3	11.3	0.53	0.32	-0.88	
1,868.0	28.30	174.93	1,807.0	302.5	-302.1	14.7	0.49	-0.30	-0.80	
1,953.0	29.05	176.33	1,881.6	343.2	-342.8	17.8	1.18	0.88	1.65	
2,039.0	31.73	182.27	1,955.8	386.6	-386.2	18.3	4.68	3.12	6.91	
2,124.0	30.37	181.17	2,028.6	430.4	-430.0	16.9	1.73	-1.60	-1.29	
2,209.0	30.89	181.45	2,101.8	473.6	-473.3	15.9	0.63	0.61	0.33	
2,294.0	31.82	178.93	2,174.4	517.8	-517.6	15.8	1.89	1.09	-2.96	

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<b>Site:</b>	B&V	<b>MD Reference:</b>	B&V 14C-07-07-95 @ 5101.0usft (Plan KB)
<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
2,380.0	30.94	177.87	2,247.8	562.5	-562.3	17.1	1.21	-1.02	-1.23	
2,465.0	31.90	178.53	2,320.3	606.9	-606.6	18.4	1.20	1.13	0.78	
2,550.0	30.83	177.01	2,392.9	651.1	-650.8	20.2	1.57	-1.26	-1.79	
2,636.0	31.29	178.75	2,466.6	695.5	-695.1	21.8	1.17	0.53	2.02	
2,721.0	30.54	180.33	2,539.5	739.1	-738.8	22.2	1.30	-0.88	1.86	
2,806.0	30.19	178.97	2,612.8	782.0	-781.8	22.4	0.91	-0.41	-1.60	
2,892.0	29.44	178.40	2,687.4	824.8	-824.5	23.4	0.93	-0.87	-0.66	
2,977.0	28.61	177.26	2,761.8	866.0	-865.7	24.9	1.17	-0.98	-1.34	
3,063.0	28.70	178.22	2,837.2	907.3	-906.9	26.6	0.55	0.10	1.12	
3,148.0	29.59	178.66	2,911.5	948.7	-948.3	27.7	1.08	1.05	0.52	
3,234.0	27.99	178.49	2,986.8	990.1	-989.7	28.7	1.86	-1.86	-0.20	
3,319.0	26.71	179.03	3,062.3	1,029.1	-1,028.8	29.6	1.53	-1.51	0.64	
3,404.0	25.88	178.40	3,138.5	1,066.8	-1,066.4	30.4	1.03	-0.98	-0.74	
3,490.0	24.19	177.12	3,216.5	1,103.2	-1,102.8	31.8	2.06	-1.97	-1.49	
3,575.0	22.85	176.86	3,294.4	1,137.1	-1,136.6	33.6	1.58	-1.58	-0.31	
3,661.0	21.23	180.64	3,374.1	1,169.3	-1,168.9	34.3	2.50	-1.88	4.40	
3,746.0	17.80	182.52	3,454.2	1,197.6	-1,197.3	33.6	4.10	-4.04	2.21	
3,831.0	16.26	182.13	3,535.5	1,222.5	-1,222.1	32.6	1.82	-1.81	-0.46	
3,917.0	13.75	181.87	3,618.6	1,244.7	-1,244.4	31.8	2.92	-2.92	-0.30	
4,002.0	11.16	182.79	3,701.5	1,262.9	-1,262.7	31.1	3.06	-3.05	1.08	
4,087.0	8.79	183.06	3,785.3	1,277.6	-1,277.4	30.3	2.79	-2.79	0.32	
4,173.0	6.50	183.17	3,870.5	1,289.0	-1,288.8	29.7	2.66	-2.66	0.13	
4,258.0	4.35	178.66	3,955.1	1,297.0	-1,296.9	29.5	2.58	-2.53	-5.31	
4,344.0	2.86	194.75	4,040.9	1,302.3	-1,302.2	29.0	2.08	-1.73	18.71	
4,348.7	2.86	194.79	4,045.6	1,302.5	-1,302.4	29.0	0.07	-0.06	0.91	
<b>B&amp;V 14C-07-07-95 TGT</b>										
4,429.0	2.81	195.54	4,125.8	1,306.3	-1,306.3	27.9	0.07	-0.06	0.93	

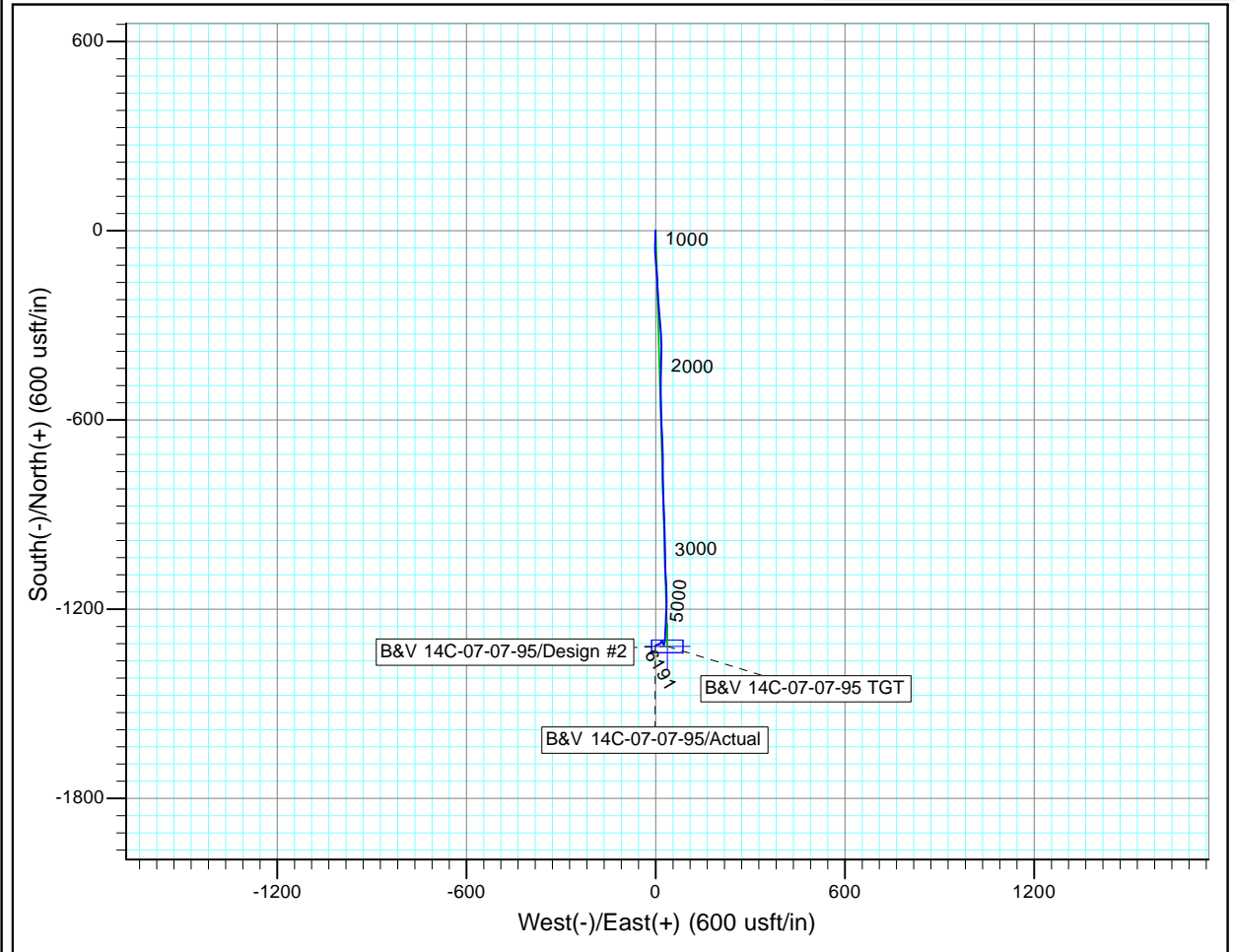
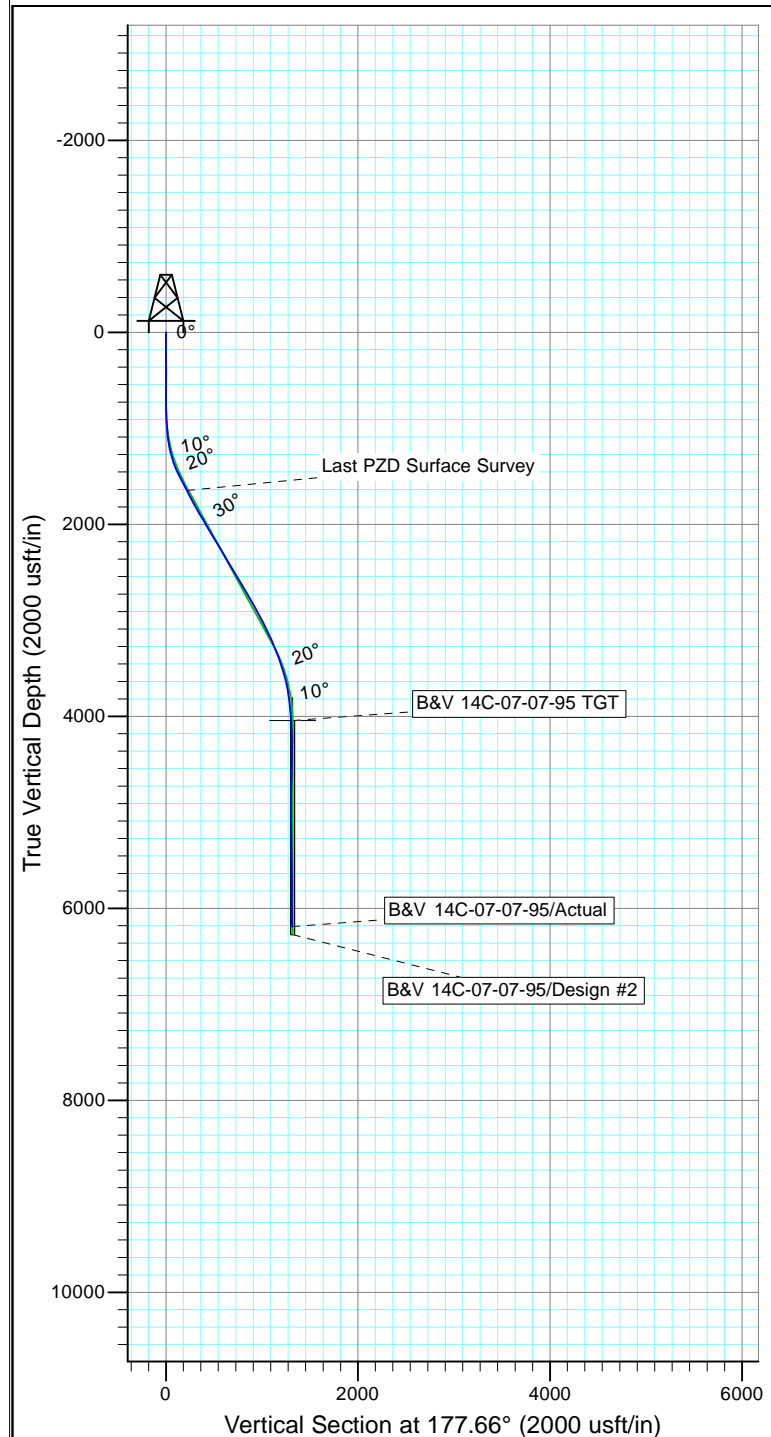
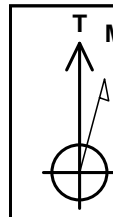
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<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
4,514.0	2.84	196.87	4,210.7	1,310.3	-1,310.3	26.8	0.08	0.04	1.56	
4,600.0	1.01	210.30	4,296.7	1,312.9	-1,313.0	25.8	2.18	-2.13	15.62	
4,685.0	0.48	344.51	4,381.7	1,313.2	-1,313.3	25.3	1.63	-0.62	157.89	
4,771.0	1.80	350.15	4,467.6	1,311.5	-1,311.6	25.0	1.54	1.53	6.56	
4,856.0	1.57	338.04	4,552.6	1,309.1	-1,309.2	24.3	0.50	-0.27	-14.25	
4,941.0	1.45	356.24	4,637.6	1,306.9	-1,307.1	23.8	0.58	-0.14	21.41	
5,027.0	1.36	338.71	4,723.6	1,304.9	-1,305.0	23.4	0.51	-0.10	-20.38	
5,112.0	1.32	315.82	4,808.5	1,303.2	-1,303.4	22.3	0.63	-0.05	-26.93	
5,198.0	1.63	299.56	4,894.5	1,301.8	-1,302.1	20.6	0.60	0.36	-18.91	
5,283.0	1.93	285.98	4,979.5	1,300.7	-1,301.1	18.1	0.61	0.35	-15.98	
5,368.0	1.14	164.34	5,064.4	1,301.1	-1,301.5	17.0	3.19	-0.93	-143.11	
5,454.0	1.47	177.99	5,150.4	1,303.0	-1,303.4	17.3	0.52	0.38	15.87	
5,539.0	1.71	196.20	5,235.4	1,305.3	-1,305.7	16.9	0.65	0.28	21.42	
5,624.0	1.93	206.13	5,320.4	1,307.8	-1,308.2	16.0	0.45	0.26	11.68	
5,710.0	1.10	233.68	5,406.3	1,309.5	-1,310.0	14.7	1.26	-0.97	32.03	
5,795.0	0.83	327.86	5,491.3	1,309.4	-1,310.0	13.7	1.68	-0.32	110.80	
5,881.0	0.22	294.50	5,577.3	1,308.8	-1,309.4	13.2	0.76	-0.71	-38.79	
5,966.0	0.79	253.32	5,662.3	1,308.9	-1,309.5	12.5	0.75	0.67	-48.45	
6,051.0	1.05	242.65	5,747.3	1,309.4	-1,310.0	11.2	0.37	0.31	-12.55	
6,137.0	1.32	244.27	5,833.3	1,310.1	-1,310.8	9.6	0.32	0.31	1.88	
6,222.0	1.71	251.35	5,918.2	1,310.8	-1,311.6	7.6	0.51	0.46	8.33	
6,307.0	2.33	244.36	6,003.2	1,311.9	-1,312.8	4.8	0.78	0.73	-8.22	
6,392.0	1.93	244.54	6,088.1	1,313.1	-1,314.1	1.9	0.47	-0.47	0.21	
6,435.0	2.15	239.57	6,131.1	1,313.8	-1,314.9	0.6	0.66	0.51	-11.56	
<b>Last PZD Survey</b>										
6,495.0	2.15	239.57	6,191.1	1,314.9	-1,316.0	-1.3	0.00	0.00	0.00	
<b>Straight Line Projection to TD</b>										

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<b>Well:</b>	B&V 14C-07-07-95	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,687.0	1,647.9	-216.2	8.2	Last PZD Surface Survey
6,435.0	6,131.1	-1,314.9	0.6	Last PZD Survey
6,495.0	6,191.1	-1,316.0	-1.3	Straight Line Projection to TD

Checked By: _____	Approved By: _____	Date: _____
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Design: Actual (B&V 14C-07-07-95/Wellbore #1)

Created By: Derek Stephens Date: 8:41, January 04 2017

THIS SURVEY IS CORRECT TO THE BEST OF  
 MY KNOWLEDGE AND IS SUPPORTED  
 BY ACTUAL FIELD DATA