



Ursa Operating Company, LLC

Rockies Region

B&V

B&V 23C-07-07-95

Wellbore #1

Design: Actual

End of Well Report

14 March, 2017



Company:	Ursa Operating Company, LLC	Local Co-ordinate Reference:	Well B&V 23C-07-07-95
Project:	Rockies Region	TVD Reference:	B&V 23C-07-07-95 @ 5101.0usft (Plan KB)
Site:	B&V	MD Reference:	B&V 23C-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 23C-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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
From:	Lat/Long	Easting:	2,280,801.73 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	39.450164128
		Longitude:	-108.047211920
		Grid Convergence:	-1.61 °

Well	B&V 23C-07-07-95, SHL LAT: 39.450362362 LONG: -108.047019871		
Well Position	+N/-S	0.0 usft	Northing: 1,599,005.72 usft
	+E/-W	0.0 usft	Easting: 2,280,857.96 usft
Position Uncertainty		0.0 usft	Wellhead Elevation: 5,101.0 usft
			Latitude: 39.450362362
			Longitude: -108.047019871
			Ground Level: 5,084.0 usft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	3/14/2017	9.74
			Dip Angle (°) 65.54
			Field Strength (nT) 51,534

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)
	0.0	0.0	0.0
			Direction (°) 98.84

Survey Program	Date 3/14/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
168.0	6,525.0	Surface (Wellbore #1)	MWD
			Description MWD - Standard

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Well:	B&V 23C-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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	0.00
168.0	0.66	120.79	168.0	0.9	-0.5	0.8	0.39	0.39	0.00	
199.0	0.66	123.07	199.0	1.2	-0.7	1.1	0.08	0.00	7.35	
229.0	0.57	124.17	229.0	1.5	-0.9	1.4	0.30	-0.30	3.67	
260.0	0.62	119.47	260.0	1.8	-1.0	1.7	0.23	0.16	-15.16	
290.0	0.70	132.04	290.0	2.1	-1.2	2.0	0.55	0.27	41.90	
321.0	0.79	124.57	321.0	2.5	-1.5	2.3	0.43	0.29	-24.10	
351.0	0.75	124.48	351.0	2.8	-1.7	2.6	0.13	-0.13	-0.30	
382.0	0.92	129.00	382.0	3.2	-2.0	3.0	0.59	0.55	14.58	
412.0	1.33	114.46	412.0	3.8	-2.3	3.5	1.65	1.37	-48.47	
443.0	1.41	113.89	443.0	4.5	-2.6	4.1	0.26	0.26	-1.84	
473.0	1.80	104.88	473.0	5.3	-2.9	4.9	1.54	1.30	-30.03	
504.0	2.55	104.26	503.9	6.5	-3.1	6.1	2.42	2.42	-2.00	
565.0	4.11	95.21	564.8	10.0	-3.7	9.6	2.69	2.56	-14.84	
595.0	4.92	91.96	594.7	12.4	-3.8	11.9	2.83	2.70	-10.83	
626.0	5.71	93.94	625.6	15.2	-4.0	14.8	2.62	2.55	6.39	
718.0	8.57	99.82	716.9	26.6	-5.5	26.1	3.20	3.11	6.39	
748.0	9.62	103.16	746.5	31.4	-6.4	30.8	3.92	3.50	11.13	
779.0	10.70	100.45	777.0	36.8	-7.5	36.1	3.81	3.48	-8.74	
810.0	11.38	102.94	807.4	42.8	-8.7	41.9	2.68	2.19	8.03	
840.0	12.43	101.60	836.8	48.9	-10.0	48.0	3.62	3.50	-4.47	
883.0	13.89	99.78	878.7	58.7	-11.8	57.6	3.53	3.40	-4.23	
926.0	14.50	100.26	920.4	69.3	-13.7	68.0	1.44	1.42	1.12	
968.0	15.64	100.92	960.9	80.2	-15.7	78.7	2.74	2.71	1.57	
1,011.0	16.35	100.97	1,002.2	92.0	-17.9	90.3	1.65	1.65	0.12	
1,054.0	17.71	100.26	1,043.4	104.6	-20.3	102.7	3.20	3.16	-1.65	
1,096.0	18.98	99.30	1,083.2	117.8	-22.5	115.7	3.11	3.02	-2.29	

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Site:	B&V	MD Reference:	B&V 23C-07-07-95 @ 5101.0usft (Plan KB)
Well:	B&V 23C-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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)	
1,139.0	20.04	99.56	1,123.8	132.2	-24.9	129.9	2.47	2.47	0.60	
1,182.0	21.45	97.98	1,164.0	147.4	-27.2	145.0	3.53	3.28	-3.67	
1,225.0	22.28	97.93	1,203.9	163.4	-29.4	160.8	1.93	1.93	-0.12	
1,267.0	23.38	97.71	1,242.6	179.7	-31.6	177.0	2.63	2.62	-0.52	
1,310.0	24.57	97.41	1,281.9	197.2	-33.9	194.3	2.78	2.77	-0.70	
1,353.0	26.41	95.78	1,320.7	215.7	-36.0	212.7	4.58	4.28	-3.79	
1,395.0	26.32	94.51	1,358.3	234.3	-37.7	231.2	1.36	-0.21	-3.02	
1,438.0	26.46	94.77	1,396.8	253.3	-39.2	250.3	0.42	0.33	0.60	
1,481.0	26.02	97.89	1,435.4	272.3	-41.3	269.2	3.37	-1.02	7.26	
1,524.0	25.75	98.37	1,474.1	291.1	-44.0	287.8	0.79	-0.63	1.12	
1,566.0	26.03	97.82	1,511.9	309.4	-46.6	305.9	0.88	0.67	-1.31	
1,609.0	25.53	99.65	1,550.6	328.1	-49.4	324.4	2.19	-1.16	4.26	
1,652.0	25.42	100.40	1,589.4	346.6	-52.6	342.6	0.79	-0.26	1.74	
1,694.0	25.49	100.00	1,627.3	364.7	-55.8	360.4	0.44	0.17	-0.95	
1,737.0	26.06	98.95	1,666.1	383.4	-58.9	378.8	1.70	1.33	-2.44	
Last PZD Surface Survey										
1,843.0	25.58	97.54	1,761.5	429.5	-65.5	424.5	0.74	-0.45	-1.33	
1,929.0	24.96	99.65	1,839.2	466.2	-71.0	460.8	1.27	-0.72	2.45	
2,014.0	26.41	100.35	1,915.8	503.1	-77.4	497.1	1.74	1.71	0.82	
2,100.0	25.65	99.74	1,993.1	540.8	-84.0	534.2	0.94	-0.88	-0.71	
2,185.0	26.62	102.44	2,069.4	578.2	-91.2	571.0	1.81	1.14	3.18	
2,271.0	25.93	101.89	2,146.5	616.2	-99.2	608.2	0.85	-0.80	-0.64	
2,356.0	26.41	104.48	2,222.8	653.6	-107.8	644.7	1.46	0.56	3.05	
2,441.0	26.10	101.93	2,299.1	691.1	-116.4	681.3	1.38	-0.36	-3.00	
2,527.0	25.62	102.55	2,376.5	728.5	-124.3	717.9	0.64	-0.56	0.72	
2,612.0	26.02	99.12	2,453.0	765.5	-131.3	754.3	1.82	0.47	-4.04	
2,697.0	25.71	98.24	2,529.5	802.6	-136.9	790.9	0.58	-0.36	-1.04	

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Well:	B&V 23C-07-07-95	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	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)	
2,782.0	26.50	98.81	2,605.8	840.0	-142.4	827.9	0.98	0.93	0.67	
2,868.0	25.36	99.08	2,683.1	877.6	-148.3	865.1	1.33	-1.33	0.31	
2,953.0	25.75	98.33	2,759.8	914.3	-153.8	901.3	0.60	0.46	-0.88	
3,038.0	25.66	101.27	2,836.4	951.1	-160.1	937.6	1.50	-0.11	3.46	
3,124.0	25.58	99.96	2,914.0	988.3	-166.9	974.2	0.67	-0.09	-1.52	
3,209.0	24.35	97.80	2,991.0	1,024.1	-172.5	1,009.6	1.80	-1.45	-2.54	
3,295.0	24.92	99.16	3,069.2	1,060.0	-177.8	1,045.1	0.93	0.66	1.58	
3,380.0	23.95	98.90	3,146.6	1,095.1	-183.3	1,079.8	1.15	-1.14	-0.31	
3,465.0	22.73	98.89	3,224.6	1,128.8	-188.5	1,113.1	1.44	-1.44	-0.01	
3,550.0	21.05	99.60	3,303.5	1,160.5	-193.6	1,144.4	2.00	-1.98	0.84	
3,636.0	18.41	98.77	3,384.4	1,189.5	-198.2	1,173.0	3.09	-3.07	-0.97	
3,721.0	16.83	98.59	3,465.4	1,215.3	-202.1	1,198.4	1.86	-1.86	-0.21	
3,806.0	15.16	101.80	3,547.1	1,238.7	-206.2	1,221.5	2.22	-1.96	3.78	
3,892.0	12.91	106.45	3,630.6	1,259.4	-211.2	1,241.7	2.92	-2.62	5.41	
3,977.0	12.04	105.98	3,713.6	1,277.6	-216.4	1,259.3	1.03	-1.02	-0.55	
4,063.0	10.02	104.37	3,798.0	1,294.0	-220.7	1,275.2	2.38	-2.35	-1.87	
4,148.0	7.73	95.21	3,882.0	1,307.1	-223.1	1,288.1	3.16	-2.69	-10.78	
4,233.0	6.33	87.83	3,966.3	1,317.4	-223.4	1,298.5	1.96	-1.65	-8.68	
4,319.0	3.34	84.05	4,052.0	1,324.4	-223.0	1,305.7	3.49	-3.48	-4.40	
4,396.9	2.45	93.63	4,129.8	1,328.3	-222.8	1,309.6	1.30	-1.15	12.30	
B&V 23C-07-07-95 TGT										
4,404.0	2.37	94.86	4,136.9	1,328.6	-222.9	1,309.9	1.30	-1.08	17.25	
4,490.0	2.02	90.60	4,222.8	1,331.9	-223.0	1,313.2	0.45	-0.41	-4.95	
4,575.0	1.99	92.36	4,307.8	1,334.8	-223.1	1,316.2	0.08	-0.04	2.07	
4,661.0	1.54	94.81	4,393.7	1,337.4	-223.3	1,318.8	0.53	-0.52	2.85	
4,746.0	2.11	80.53	4,478.7	1,340.1	-223.1	1,321.5	0.85	0.67	-16.80	
4,832.0	2.24	76.09	4,564.6	1,343.1	-222.4	1,324.7	0.25	0.15	-5.16	

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Site: B&V	MD Reference: B&V 23C-07-07-95 @ 5101.0usft (Plan KB)
Well: B&V 23C-07-07-95	North Reference: True
Wellbore: Wellbore #1	Survey Calculation Method: Minimum Curvature
Design: Actual	Database: 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)	
4,917.0	1.62	88.98	4,649.6	1,345.8	-222.0	1,327.5	0.89	-0.73	15.16	
5,003.0	1.36	98.68	4,735.6	1,348.1	-222.1	1,329.7	0.42	-0.30	11.28	
5,088.0	1.14	109.23	4,820.5	1,349.9	-222.6	1,331.5	0.37	-0.26	12.41	
5,173.0	1.10	114.11	4,905.5	1,351.5	-223.2	1,333.1	0.12	-0.05	5.74	
5,259.0	1.41	73.37	4,991.5	1,353.3	-223.2	1,334.8	1.07	0.36	-47.37	
5,344.0	1.41	89.36	5,076.5	1,355.2	-222.9	1,336.9	0.46	0.00	18.81	
5,429.0	1.49	93.41	5,161.4	1,357.4	-223.0	1,339.0	0.15	0.09	4.76	
5,515.0	0.62	117.62	5,247.4	1,358.9	-223.2	1,340.5	1.11	-1.01	28.15	
5,600.0	0.44	198.61	5,332.4	1,359.3	-223.8	1,340.8	0.83	-0.21	95.28	
5,685.0	0.92	162.71	5,417.4	1,359.6	-224.7	1,340.9	0.73	0.56	-42.24	
5,771.0	0.99	211.28	5,503.4	1,359.6	-226.0	1,340.8	0.92	0.08	56.48	
5,856.0	1.05	188.46	5,588.4	1,359.3	-227.4	1,340.3	0.48	0.07	-26.85	
5,941.0	1.41	210.48	5,673.4	1,358.9	-229.1	1,339.6	0.69	0.42	25.91	
6,027.0	1.05	18.09	5,759.4	1,358.7	-229.3	1,339.3	2.84	-0.42	194.90	
6,112.0	0.88	42.12	5,844.4	1,359.1	-228.0	1,340.0	0.51	-0.20	28.27	
6,198.0	1.10	0.29	5,930.3	1,359.4	-226.7	1,340.5	0.86	0.26	-48.64	
6,283.0	0.88	337.26	6,015.3	1,358.9	-225.3	1,340.2	0.53	-0.26	-27.09	
6,368.0	1.14	320.96	6,100.3	1,357.9	-224.0	1,339.4	0.45	0.31	-19.18	
6,454.0	0.62	349.26	6,186.3	1,357.2	-222.9	1,338.8	0.77	-0.60	32.91	
Last PZD Survey										
6,525.0	0.62	349.26	6,257.3	1,356.9	-222.2	1,338.7	0.00	0.00	0.00	
Straightline Projection to TD										


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Site:	B&V	MD Reference:	B&V 23C-07-07-95 @ 5101.0usft (Plan KB)
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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Actual	Database:	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,737.0	1,666.1	-58.9	378.8	Last PZD Surface Survey
6,454.0	6,186.3	-222.9	1,338.8	Last PZD Survey
6,525.0	6,257.3	-222.2	1,338.7	Straightline Projection to TD

Checked By: _____ Approved By: _____ Date: _____

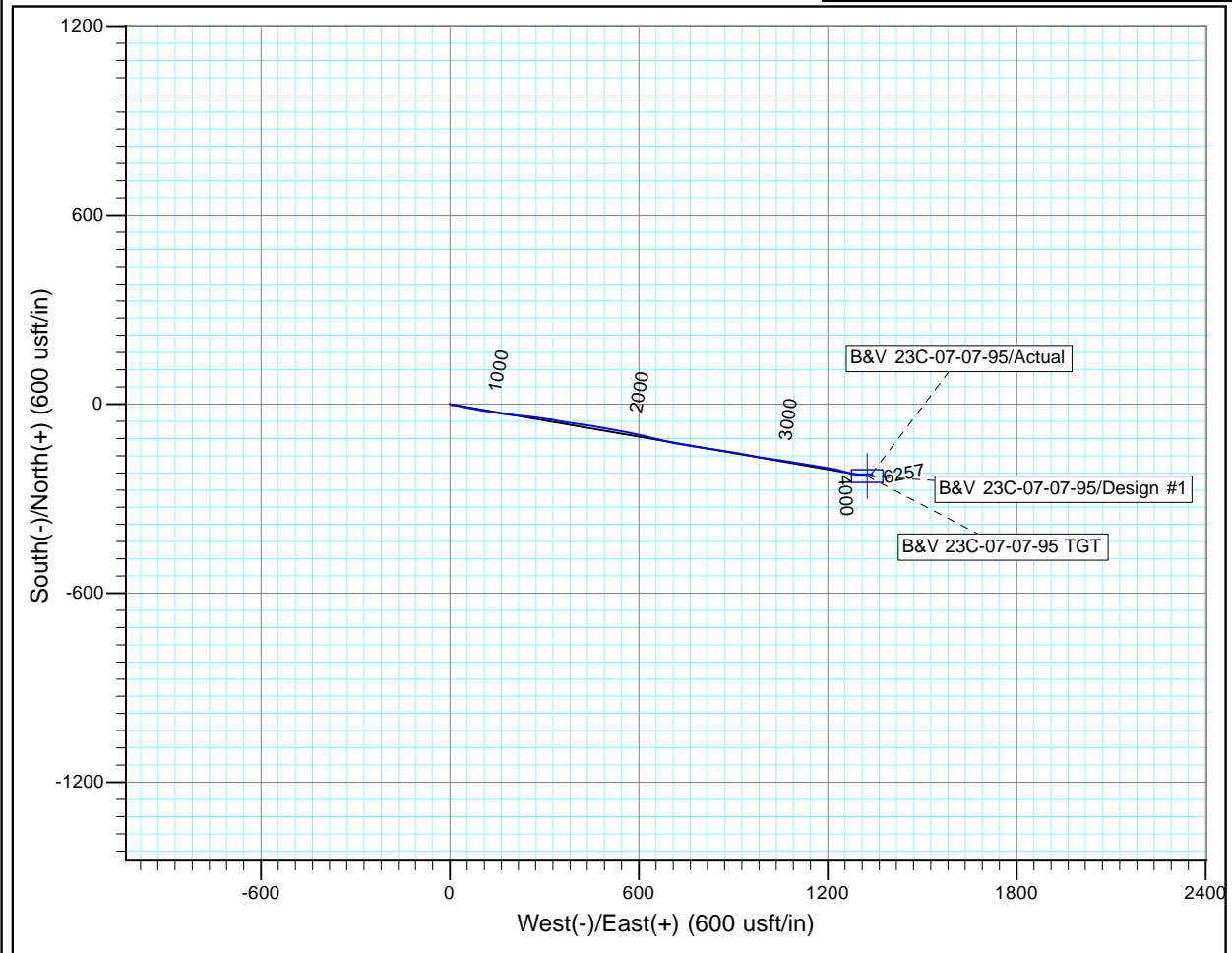
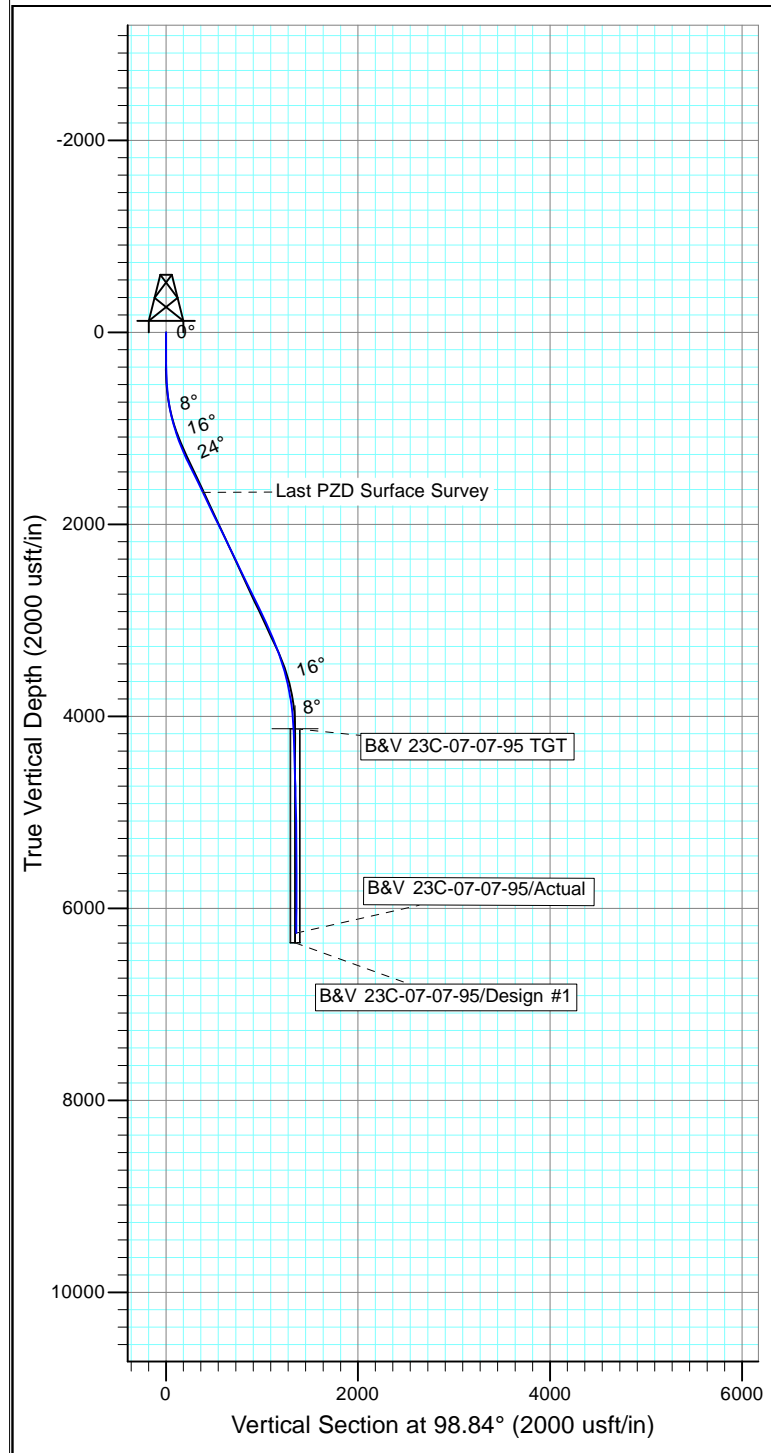


Project: Rockies Region
 Site: B&V
 Well: B&V 23C-07-07-95
 Wellbore: Wellbore #1
 Design: Actual



Azimuths to True North
 Magnetic North: 9.74°

Magnetic Field
 Strength: 51533.8snT
 Dip Angle: 65.54°
 Date: 3/14/2017
 Model: IGRF2015



Design: Actual (B&V 23C-07-07-95/Wellbore #1)

Created By: Derek Stephens Date: 12:51, March 14 2017

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