

BONANZA CREEK ENERGY OPERATING

Well Name: **State Antelope K-O-1HNB**

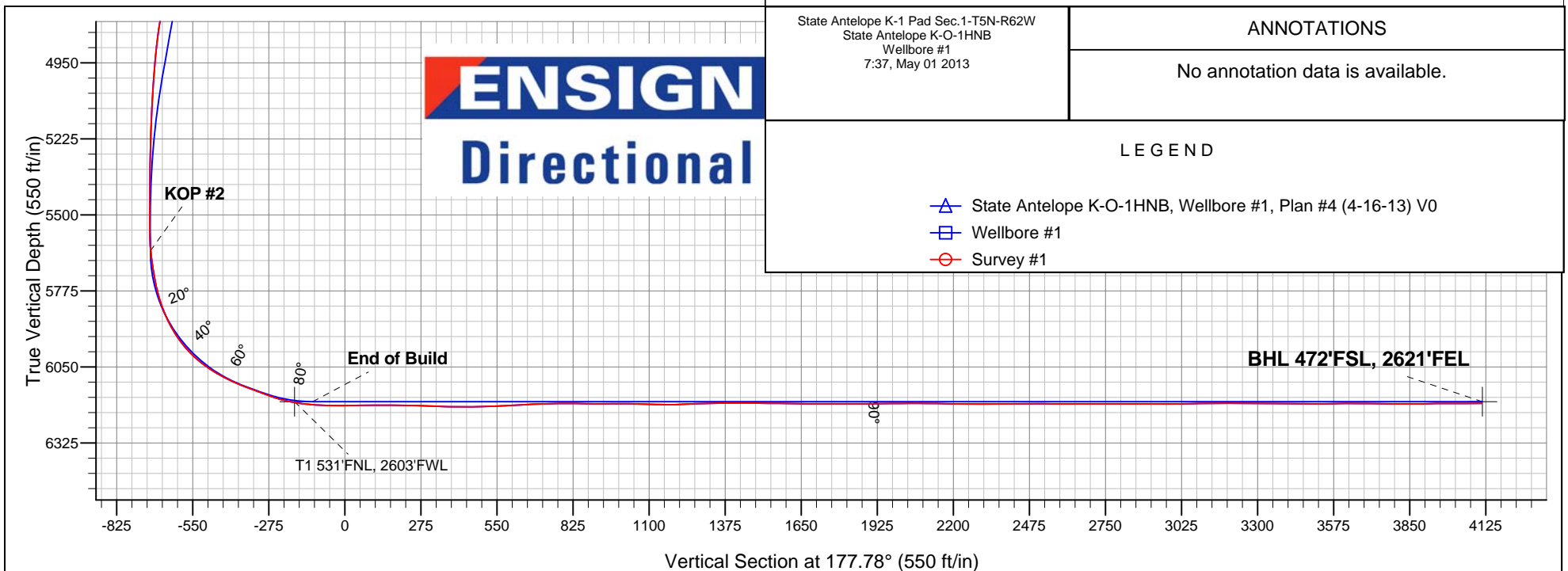
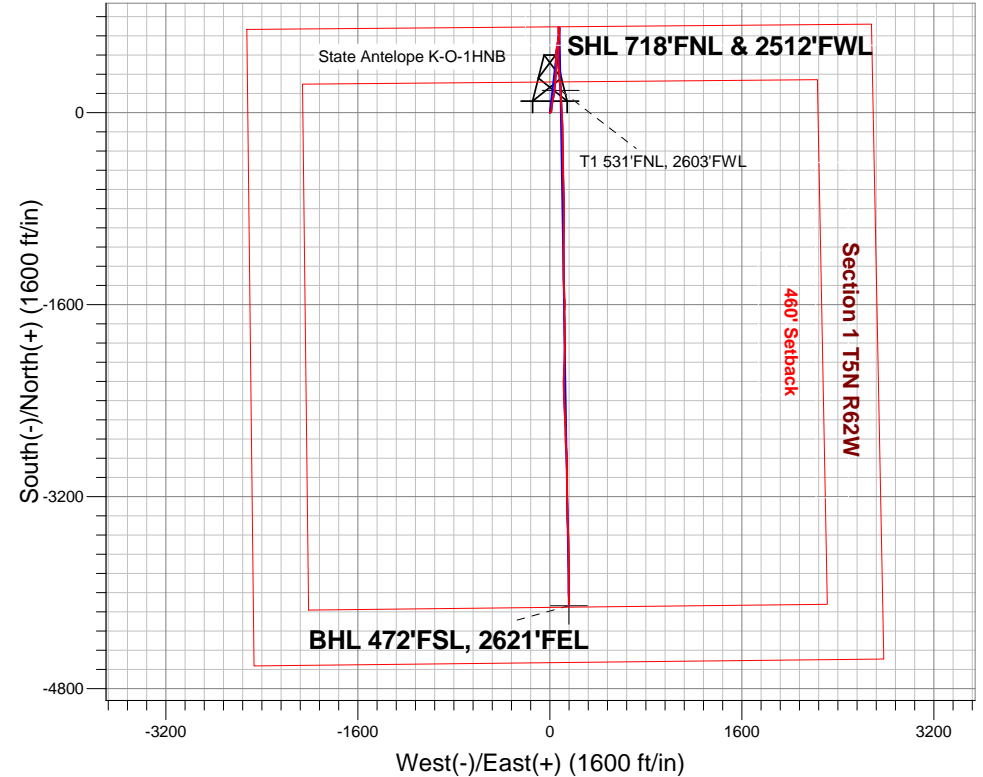
Surface Location: State Antelope K-1 Pad Sec.1-T5N-R62W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4662.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1403812.98	3341857.54	40.435370	-104.271870	

Ensign 128 RKB - 15' WELL @ 4677.0ft (Ensign 128 RKB - 15')

FINAL SURVEY

Projected Bottom Hole Location
10816' MD 6181' TVD 4107' S & 159' E of SHL
90.7 degree Incl @ 178.6 degree AZM



State Antelope K-1 Pad Sec.1-T5N-R62W
State Antelope K-O-1HNB
Wellbore #1
7:37, May 01 2013

ANNOTATIONS

No annotation data is available.

LEGEND

- State Antelope K-O-1HNB, Wellbore #1, Plan #4 (4-16-13) V0
- Wellbore #1
- Survey #1



BONANZA CREEK ENERGY OPERATING

SEC.1-T5N-R62W

State Antelope K-1 Pad Sec.1-T5N-R62W

State Antelope K-O-1HNB

Wellbore #1

Survey: Survey #1

Standard Survey Report

01 May, 2013

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)
Main Survey	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
	275.0	0.50	44.30	275.0	0.9	0.8	-0.8	0.18	0.18	0.00
	416.0	0.40	93.70	416.0	1.3	1.8	-1.2	0.27	-0.07	35.04
	481.0	0.70	81.60	481.0	1.3	2.4	-1.2	0.49	0.46	-18.62
	604.0	1.10	79.50	604.0	1.6	4.3	-1.5	0.33	0.33	-1.71
	728.0	1.10	64.10	728.0	2.4	6.5	-2.1	0.24	0.00	-12.42
	852.0	1.00	32.60	851.9	3.8	8.2	-3.5	0.47	-0.08	-25.40
	977.0	2.20	14.70	976.9	7.0	9.4	-6.7	1.03	0.96	-14.32
	1,101.0	4.00	9.90	1,100.7	13.6	10.7	-13.2	1.47	1.45	-3.87
	1,225.0	5.70	9.90	1,224.2	23.9	12.5	-23.4	1.37	1.37	0.00
	1,348.0	7.40	5.70	1,346.4	37.8	14.4	-37.2	1.44	1.38	-3.41
	1,472.0	8.50	6.20	1,469.2	54.9	16.1	-54.2	0.89	0.89	0.40
	1,594.0	8.40	6.90	1,589.9	72.7	18.2	-71.9	0.12	-0.08	0.57

Company:	BONANZA CREEK ENERGY OPERATING	Local Co-ordinate Reference:	Well State Antelope K-O-1HNB
Project:	SEC.1-T5N-R62W	TVD Reference:	WELL @ 4677.0ft (Ensign 128 RKB - 15')
Site:	State Antelope K-1 Pad Sec.1-T5N-R62W	MD Reference:	WELL @ 4677.0ft (Ensign 128 RKB - 15')
Well:	State Antelope K-O-1HNB	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)	
1,718.0	9.10	7.60	1,712.5	91.4	20.6	-90.5	0.57	0.56	0.56	
1,841.0	9.50	13.40	1,833.9	110.9	24.2	-109.9	0.83	0.33	4.72	
1,964.0	9.10	15.40	1,955.2	130.2	29.1	-129.0	0.42	-0.33	1.63	
2,088.0	10.00	8.70	2,077.5	150.3	33.4	-148.9	1.15	0.73	-5.40	
2,213.0	8.50	6.10	2,200.9	170.2	36.0	-168.7	1.25	-1.20	-2.08	
2,337.0	9.60	6.80	2,323.4	189.6	38.2	-188.0	0.89	0.89	0.56	
2,459.0	9.20	6.80	2,443.7	209.4	40.6	-207.6	0.33	-0.33	0.00	
2,583.0	10.80	5.40	2,565.8	230.8	42.8	-228.9	1.31	1.29	-1.13	
2,707.0	11.40	1.10	2,687.5	254.6	44.2	-252.7	0.82	0.48	-3.47	
2,834.0	11.30	359.90	2,812.0	279.6	44.4	-277.7	0.20	-0.08	-0.94	
2,961.0	9.90	9.80	2,936.9	302.8	46.2	-300.8	1.80	-1.10	7.80	
3,088.0	9.40	9.20	3,062.1	323.8	49.7	-321.6	0.40	-0.39	-0.47	
3,215.0	8.50	0.80	3,187.5	343.4	51.5	-341.2	1.25	-0.71	-6.61	
3,342.0	12.00	1.80	3,312.5	366.0	52.1	-363.7	2.76	2.76	0.79	
3,469.0	14.00	359.00	3,436.2	394.5	52.2	-392.2	1.65	1.57	-2.20	
3,596.0	14.90	355.50	3,559.2	426.2	50.7	-423.9	0.99	0.71	-2.76	
3,723.0	12.50	358.50	3,682.6	456.2	49.0	-454.0	1.97	-1.89	2.36	
3,850.0	12.10	4.80	3,806.7	483.2	49.8	-480.9	1.10	-0.31	4.96	
3,977.0	10.70	7.30	3,931.2	508.2	52.4	-505.8	1.17	-1.10	1.97	
4,104.0	9.10	12.70	4,056.3	529.7	56.1	-527.1	1.46	-1.26	4.25	
4,231.0	10.00	9.60	4,181.5	550.3	60.1	-547.6	0.82	0.71	-2.44	
4,358.0	12.20	10.10	4,306.1	574.4	64.3	-571.5	1.73	1.73	0.39	
4,485.0	10.60	9.10	4,430.6	599.2	68.5	-596.1	1.27	-1.26	-0.79	
4,612.0	12.50	8.40	4,555.0	624.3	72.4	-621.0	1.50	1.50	-0.55	
4,739.0	11.20	7.50	4,679.3	650.1	76.0	-646.7	1.03	-1.02	-0.71	
4,866.0	9.30	1.80	4,804.3	672.6	77.9	-669.1	1.69	-1.50	-4.49	
4,993.0	5.10	354.30	4,930.3	688.5	77.7	-685.0	3.38	-3.31	-5.91	
5,120.0	3.30	354.50	5,056.9	697.8	76.8	-694.3	1.42	-1.42	0.16	
5,247.0	2.60	350.20	5,183.8	704.2	75.9	-700.8	0.58	-0.55	-3.39	
5,374.0	0.60	353.40	5,310.7	707.7	75.4	-704.3	1.58	-1.57	2.52	
5,501.0	0.30	35.80	5,437.7	708.7	75.5	-705.2	0.34	-0.24	33.39	
5,564.0	0.40	293.30	5,500.7	708.9	75.4	-705.4	0.87	0.16	-162.70	
5,596.0	1.80	282.00	5,532.7	709.0	74.8	-705.6	4.41	4.38	-35.31	
5,633.0	2.60	246.00	5,569.7	708.8	73.5	-705.4	4.21	2.16	-97.30	
5,665.0	4.10	204.50	5,601.6	707.5	72.3	-704.1	8.61	4.69	-129.69	
5,697.0	5.70	186.80	5,633.5	704.9	71.7	-701.6	6.82	5.00	-55.31	
5,728.0	7.50	182.00	5,664.3	701.3	71.4	-698.0	6.07	5.81	-15.48	
5,760.0	8.90	180.60	5,696.0	696.7	71.3	-693.5	4.42	4.38	-4.38	
5,792.0	10.30	178.20	5,727.5	691.4	71.4	-688.1	4.55	4.38	-7.50	
5,824.0	12.70	177.30	5,758.9	685.0	71.6	-681.7	7.52	7.50	-2.81	
5,855.0	15.40	176.90	5,788.9	677.5	72.0	-674.2	8.72	8.71	-1.29	
5,887.0	18.30	177.30	5,819.6	668.3	72.5	-664.9	9.07	9.06	1.25	
5,919.0	21.50	178.30	5,849.7	657.4	72.9	-654.1	10.06	10.00	3.13	
5,951.0	25.10	178.90	5,879.0	644.7	73.2	-641.4	11.27	11.25	1.88	
5,982.0	29.50	180.30	5,906.6	630.5	73.3	-627.2	14.34	14.19	4.52	
6,014.0	33.20	181.30	5,933.9	613.9	73.0	-610.6	11.68	11.56	3.13	
6,046.0	37.50	181.00	5,960.0	595.4	72.7	-592.1	13.45	13.44	-0.94	
6,078.0	41.60	181.10	5,984.7	575.0	72.3	-571.8	12.81	12.81	0.31	
6,109.0	45.70	181.30	6,007.1	553.6	71.9	-550.4	13.23	13.23	0.65	
6,141.0	50.40	182.20	6,028.5	529.8	71.1	-526.7	14.84	14.69	2.81	
6,173.0	55.00	181.70	6,047.9	504.4	70.3	-501.3	14.43	14.38	-1.56	
6,205.0	58.50	179.90	6,065.4	477.6	69.9	-474.6	11.91	10.94	-5.63	
6,236.0	61.10	178.50	6,081.0	450.8	70.3	-447.8	9.25	8.39	-4.52	
6,268.0	63.30	177.80	6,095.9	422.6	71.2	-419.5	7.14	6.88	-2.19	

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Well:	State Antelope K-O-1HNB	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)
6,300.0	66.70	177.10	6,109.4	393.6	72.5	-390.5	10.81	10.63	-2.19
6,332.0	69.60	176.40	6,121.4	363.9	74.2	-360.8	9.29	9.06	-2.19
6,364.0	69.80	175.90	6,132.5	334.0	76.2	-330.8	1.59	0.63	-1.56
6,395.0	69.30	175.20	6,143.3	305.0	78.4	-301.8	2.66	-1.61	-2.26
6,427.0	70.30	175.20	6,154.3	275.1	80.9	-271.8	3.13	3.13	0.00
6,459.0	73.40	175.20	6,164.3	244.8	83.5	-241.4	9.69	9.69	0.00
6,491.0	76.60	175.70	6,172.6	214.0	85.9	-210.5	10.11	10.00	1.56
6,519.3	80.16	175.88	6,178.3	186.4	88.0	-182.8	12.60	12.58	0.65
T1 531'FNL, 2603'FWL									
6,522.0	80.50	175.90	6,178.7	183.7	88.2	-180.2	12.60	12.58	0.64
6,554.0	83.60	176.00	6,183.2	152.1	90.4	-148.5	9.69	9.69	0.31
6,586.0	85.90	176.20	6,186.1	120.3	92.6	-116.6	7.21	7.19	0.63
6,605.0	87.30	176.60	6,187.2	101.4	93.8	-97.7	7.66	7.37	2.11
6,686.0	89.30	176.20	6,189.6	20.6	98.8	-16.7	2.52	2.47	-0.49
6,716.0	90.50	176.90	6,189.7	-9.4	100.6	13.3	4.63	4.00	2.33
6,747.0	91.50	178.30	6,189.1	-40.3	101.9	44.2	5.55	3.23	4.52
6,779.0	91.50	178.90	6,188.3	-72.3	102.7	76.2	1.87	0.00	1.88
6,811.0	90.70	179.60	6,187.7	-104.3	103.1	108.2	3.32	-2.50	2.19
6,842.0	89.30	179.40	6,187.7	-135.3	103.4	139.2	4.56	-4.52	-0.65
6,874.0	89.50	179.00	6,188.0	-167.3	103.9	171.2	1.40	0.63	-1.25
6,906.0	89.50	179.00	6,188.3	-199.3	104.4	203.2	0.00	0.00	0.00
6,937.0	88.80	178.70	6,188.8	-230.3	105.0	234.2	2.46	-2.26	-0.97
6,969.0	88.00	178.90	6,189.6	-262.3	105.7	266.2	2.58	-2.50	0.63
7,001.0	88.30	178.30	6,190.7	-294.2	106.5	298.1	2.10	0.94	-1.88
7,033.0	88.50	178.00	6,191.6	-326.2	107.5	330.1	1.13	0.63	-0.94
7,064.0	88.30	178.50	6,192.4	-357.2	108.5	361.1	1.74	-0.65	1.61
7,096.0	88.90	179.00	6,193.2	-389.2	109.2	393.1	2.44	1.88	1.56
7,128.0	89.30	179.20	6,193.7	-421.2	109.7	425.1	1.40	1.25	0.63
7,159.0	90.00	179.00	6,193.9	-452.1	110.2	456.1	2.35	2.26	-0.65
7,191.0	91.70	179.20	6,193.4	-484.1	110.7	488.1	5.35	5.31	0.63
7,223.0	92.10	179.70	6,192.4	-516.1	111.0	520.0	2.00	1.25	1.56
7,255.0	92.50	179.20	6,191.1	-548.1	111.3	552.0	2.00	1.25	-1.56
7,286.0	92.90	179.40	6,189.6	-579.1	111.7	582.9	1.44	1.29	0.65
7,318.0	92.70	179.20	6,188.1	-611.0	112.0	614.9	0.88	-0.63	-0.63
7,350.0	93.00	178.20	6,186.5	-643.0	112.8	646.9	3.26	0.94	-3.13
7,382.0	92.90	177.80	6,184.8	-674.9	113.9	678.8	1.29	-0.31	-1.25
7,413.0	92.20	177.60	6,183.5	-705.8	115.1	709.8	2.35	-2.26	-0.65
7,445.0	91.30	178.00	6,182.5	-737.8	116.4	741.8	3.08	-2.81	1.25
7,477.0	91.00	179.00	6,181.8	-769.8	117.2	773.8	3.26	-0.94	3.13
7,509.0	89.70	179.70	6,181.6	-801.8	117.6	805.7	4.61	-4.06	2.19
7,540.0	89.20	181.00	6,181.9	-832.8	117.4	836.7	4.49	-1.61	4.19
7,572.0	89.10	180.80	6,182.4	-864.8	116.9	868.7	0.70	-0.31	-0.63
7,604.0	89.40	180.80	6,182.8	-896.8	116.4	900.6	0.94	0.94	0.00
7,636.0	90.30	181.00	6,182.9	-928.8	115.9	932.6	2.88	2.81	0.63
7,668.0	90.50	180.30	6,182.7	-960.8	115.6	964.5	2.27	0.63	-2.19
7,699.0	90.30	180.40	6,182.5	-991.8	115.4	995.5	0.72	-0.65	0.32
7,731.0	89.30	180.40	6,182.6	-1,023.8	115.1	1,027.5	3.13	-3.13	0.00
7,763.0	88.10	180.80	6,183.3	-1,055.8	114.8	1,059.4	3.95	-3.75	1.25
7,794.0	88.00	181.00	6,184.4	-1,086.7	114.3	1,090.3	0.72	-0.32	0.65
7,826.0	88.50	181.00	6,185.3	-1,118.7	113.8	1,122.3	1.56	1.56	0.00
7,858.0	89.30	180.40	6,186.0	-1,150.7	113.4	1,154.2	3.12	2.50	-1.88
7,890.0	90.50	180.10	6,186.0	-1,182.7	113.2	1,186.2	3.87	3.75	-0.94
7,922.0	92.20	180.10	6,185.3	-1,214.7	113.2	1,218.2	5.31	5.31	0.00
7,953.0	93.00	179.40	6,183.9	-1,245.7	113.3	1,249.1	3.43	2.58	-2.26

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Well:	State Antelope K-O-1HNB	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)
7,985.0	92.80	179.60	6,182.2	-1,277.6	113.6	1,281.1	0.88	-0.63	0.63
8,017.0	91.80	179.00	6,181.0	-1,309.6	114.0	1,313.0	3.64	-3.13	-1.88
8,049.0	91.00	179.20	6,180.2	-1,341.6	114.5	1,345.0	2.58	-2.50	0.63
8,080.0	90.50	179.20	6,179.8	-1,372.6	114.9	1,376.0	1.61	-1.61	0.00
8,112.0	90.30	178.90	6,179.5	-1,404.6	115.4	1,408.0	1.13	-0.63	-0.94
8,144.0	89.70	178.70	6,179.5	-1,436.6	116.1	1,440.0	1.98	-1.88	-0.63
8,175.0	88.70	177.60	6,180.0	-1,467.5	117.1	1,471.0	4.80	-3.23	-3.55
8,207.0	88.90	176.70	6,180.6	-1,499.5	118.7	1,503.0	2.88	0.63	-2.81
8,239.0	89.30	177.80	6,181.1	-1,531.4	120.2	1,535.0	3.66	1.25	3.44
8,271.0	89.40	179.20	6,181.5	-1,563.4	121.1	1,566.9	4.39	0.31	4.38
8,303.0	89.00	180.30	6,182.0	-1,595.4	121.2	1,598.9	3.66	-1.25	3.44
8,334.0	89.30	180.80	6,182.4	-1,626.4	120.9	1,629.9	1.88	0.97	1.61
8,366.0	89.70	181.10	6,182.7	-1,658.4	120.4	1,661.8	1.56	1.25	0.94
8,398.0	89.70	180.60	6,182.9	-1,690.4	119.9	1,693.8	1.56	0.00	-1.56
8,430.0	89.80	179.70	6,183.0	-1,722.4	119.8	1,725.8	2.83	0.31	-2.81
8,462.0	89.90	179.00	6,183.1	-1,754.4	120.2	1,757.7	2.21	0.31	-2.19
8,493.0	90.20	178.70	6,183.1	-1,785.4	120.8	1,788.7	1.37	0.97	-0.97
8,525.0	90.40	177.50	6,182.9	-1,817.4	121.9	1,820.7	3.80	0.63	-3.75
8,557.0	90.10	177.60	6,182.8	-1,849.4	123.2	1,852.7	0.99	-0.94	0.31
8,588.0	90.00	178.90	6,182.7	-1,880.3	124.2	1,883.7	4.21	-0.32	4.19
8,620.0	90.70	180.30	6,182.5	-1,912.3	124.4	1,915.7	4.89	2.19	4.38
8,652.0	90.70	181.10	6,182.1	-1,944.3	124.0	1,947.7	2.50	0.00	2.50
8,684.0	90.50	181.80	6,181.8	-1,976.3	123.2	1,979.6	2.27	-0.63	2.19
8,716.0	90.20	182.20	6,181.6	-2,008.3	122.1	2,011.5	1.56	-0.94	1.25
8,747.0	89.90	181.30	6,181.6	-2,039.3	121.2	2,042.4	3.06	-0.97	-2.90
8,779.0	90.10	180.80	6,181.6	-2,071.3	120.6	2,074.4	1.68	0.63	-1.56
8,811.0	89.60	181.30	6,181.7	-2,103.3	120.0	2,106.3	2.21	-1.56	1.56
8,843.0	89.00	182.20	6,182.1	-2,135.3	119.0	2,138.3	3.38	-1.88	2.81
8,875.0	88.70	182.20	6,182.7	-2,167.2	117.8	2,170.2	0.94	-0.94	0.00
8,906.0	89.10	181.00	6,183.3	-2,198.2	116.9	2,201.1	4.08	1.29	-3.87
8,938.0	89.30	180.40	6,183.7	-2,230.2	116.5	2,233.0	1.98	0.63	-1.88
8,970.0	89.90	180.60	6,184.0	-2,262.2	116.2	2,265.0	1.98	1.88	0.63
9,002.0	90.90	180.80	6,183.7	-2,294.2	115.8	2,297.0	3.19	3.13	0.63
9,033.0	90.50	179.70	6,183.4	-2,325.2	115.7	2,327.9	3.78	-1.29	-3.55
9,065.0	89.90	177.50	6,183.2	-2,357.2	116.5	2,359.9	7.13	-1.88	-6.88
9,097.0	89.60	177.30	6,183.4	-2,389.1	117.9	2,391.9	1.13	-0.94	-0.63
9,129.0	90.40	177.50	6,183.4	-2,421.1	119.4	2,423.9	2.58	2.50	0.63
9,160.0	91.20	177.30	6,183.0	-2,452.1	120.8	2,454.9	2.66	2.58	-0.65
9,192.0	90.40	176.70	6,182.5	-2,484.0	122.5	2,486.9	3.12	-2.50	-1.88
9,224.0	89.10	176.60	6,182.6	-2,516.0	124.3	2,518.9	4.07	-4.06	-0.31
9,256.0	89.10	176.90	6,183.2	-2,547.9	126.2	2,550.9	0.94	0.00	0.94
9,288.0	89.30	178.20	6,183.6	-2,579.9	127.5	2,582.9	4.11	0.63	4.06
9,319.0	90.40	178.90	6,183.7	-2,610.9	128.3	2,613.9	4.21	3.55	2.26
9,351.0	91.00	178.90	6,183.3	-2,642.9	128.9	2,645.9	1.88	1.88	0.00
9,383.0	90.40	178.70	6,182.9	-2,674.9	129.6	2,677.9	1.98	-1.88	-0.63
9,415.0	89.60	178.00	6,182.9	-2,706.8	130.5	2,709.9	3.32	-2.50	-2.19
9,446.0	89.40	178.20	6,183.2	-2,737.8	131.5	2,740.9	0.91	-0.65	0.65
9,478.0	89.60	177.80	6,183.4	-2,769.8	132.7	2,772.9	1.40	0.63	-1.25
9,510.0	89.80	177.60	6,183.6	-2,801.8	133.9	2,804.9	0.88	0.63	-0.63
9,542.0	89.90	177.50	6,183.7	-2,833.8	135.3	2,836.9	0.44	0.31	-0.31
9,573.0	89.90	176.70	6,183.8	-2,864.7	136.9	2,867.9	2.58	0.00	-2.58
9,605.0	90.00	176.60	6,183.8	-2,896.7	138.8	2,899.9	0.44	0.31	-0.31
9,637.0	90.00	177.30	6,183.8	-2,928.6	140.5	2,931.9	2.19	0.00	2.19
9,668.0	90.50	177.50	6,183.6	-2,959.6	141.9	2,962.9	1.74	1.61	0.65

Company:	BONANZA CREEK ENERGY OPERATING	Local Co-ordinate Reference:	Well State Antelope K-O-1HNB
Project:	SEC.1-T5N-R62W	TVD Reference:	WELL @ 4677.0ft (Ensign 128 RKB - 15')
Site:	State Antelope K-1 Pad Sec.1-T5N-R62W	MD Reference:	WELL @ 4677.0ft (Ensign 128 RKB - 15')
Well:	State Antelope K-O-1HNB	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)
9,700.0	90.70	178.50	6,183.3	-2,991.6	143.0	2,994.9	3.19	0.63	3.13
9,732.0	90.90	179.70	6,182.9	-3,023.5	143.5	3,026.8	3.80	0.63	3.75
9,763.0	90.80	180.60	6,182.4	-3,054.5	143.4	3,057.8	2.92	-0.32	2.90
9,795.0	90.60	181.00	6,182.0	-3,086.5	143.0	3,089.8	1.40	-0.63	1.25
9,827.0	90.80	180.60	6,181.6	-3,118.5	142.5	3,121.7	1.40	0.63	-1.25
9,858.0	90.20	179.70	6,181.4	-3,149.5	142.4	3,152.7	3.49	-1.94	-2.90
9,890.0	89.90	179.20	6,181.3	-3,181.5	142.7	3,184.7	1.82	-0.94	-1.56
9,922.0	90.00	179.00	6,181.4	-3,213.5	143.2	3,216.7	0.70	0.31	-0.63
9,954.0	90.10	178.70	6,181.3	-3,245.5	143.9	3,248.7	0.99	0.31	-0.94
9,985.0	90.10	179.40	6,181.3	-3,276.5	144.4	3,279.7	2.26	0.00	2.26
10,017.0	89.80	179.40	6,181.3	-3,308.5	144.7	3,311.6	0.94	-0.94	0.00
10,049.0	89.30	178.50	6,181.5	-3,340.5	145.3	3,343.6	3.22	-1.56	-2.81
10,081.0	89.10	178.50	6,182.0	-3,372.5	146.2	3,375.6	0.63	-0.63	0.00
10,113.0	89.30	178.30	6,182.4	-3,404.5	147.0	3,407.6	0.88	0.63	-0.63
10,145.0	89.50	178.20	6,182.8	-3,436.5	148.0	3,439.6	0.70	0.63	-0.31
10,176.0	89.80	177.80	6,183.0	-3,467.4	149.1	3,470.6	1.61	0.97	-1.29
10,208.0	90.00	177.50	6,183.0	-3,499.4	150.4	3,502.6	1.13	0.63	-0.94
10,240.0	90.50	177.80	6,182.9	-3,531.4	151.7	3,534.6	1.82	1.56	0.94
10,272.0	90.50	178.00	6,182.6	-3,563.4	152.9	3,566.6	0.62	0.00	0.63
10,303.0	91.10	178.50	6,182.2	-3,594.3	153.8	3,597.6	2.52	1.94	1.61
10,335.0	90.70	178.50	6,181.7	-3,626.3	154.7	3,629.6	1.25	-1.25	0.00
10,367.0	90.00	178.30	6,181.5	-3,658.3	155.6	3,661.6	2.28	-2.19	-0.63
10,399.0	88.70	178.30	6,181.8	-3,690.3	156.5	3,693.6	4.06	-4.06	0.00
10,431.0	89.00	179.40	6,182.5	-3,722.3	157.2	3,725.6	3.56	0.94	3.44
10,462.0	89.10	180.30	6,183.0	-3,753.3	157.3	3,756.6	2.92	0.32	2.90
10,494.0	89.40	180.10	6,183.4	-3,785.3	157.1	3,788.5	1.13	0.94	-0.63
10,526.0	89.70	180.10	6,183.7	-3,817.3	157.1	3,820.5	0.94	0.94	0.00
10,557.0	90.40	180.30	6,183.6	-3,848.3	157.0	3,851.5	2.35	2.26	0.65
10,589.0	91.20	180.10	6,183.2	-3,880.3	156.9	3,883.4	2.58	2.50	-0.63
10,621.0	91.20	179.60	6,182.5	-3,912.3	156.9	3,915.4	1.56	0.00	-1.56
10,653.0	90.70	179.90	6,182.0	-3,944.3	157.1	3,947.4	1.82	-1.56	0.94
10,684.0	90.00	179.60	6,181.8	-3,975.3	157.2	3,978.4	2.46	-2.26	-0.97
10,716.0	89.70	179.70	6,181.9	-4,007.3	157.4	4,010.4	0.99	-0.94	0.31
10,748.0	90.10	179.20	6,181.9	-4,039.3	157.7	4,042.3	2.00	1.25	-1.56
10,760.0	90.40	178.90	6,181.9	-4,051.3	157.9	4,054.3	3.54	2.50	-2.50
10,816.0	90.70	178.60	6,181.3	-4,107.2	159.1	4,110.3	0.76	0.54	-0.54
BHL 470'FSL, 2621'FEL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
BHL 470'FSL, 2621'FI	0.00	0.00	6,175.0	-4,109.5	158.7	1,399,706.29	3,342,073.13	40.424090	-104.271300
- hit/miss target									
- Shape									
- survey misses target center by 6.7ft at 10816.0ft MD (6181.3 TVD, -4107.2 N, 159.1 E)									
- Point									
T1 531'FNL, 2603'FW	0.00	0.00	6,175.0	185.8	89.1	1,404,000.00	3,341,944.03	40.435880	-104.271550
- survey misses target center by 3.5ft at 6519.4ft MD (6178.3 TVD, 186.3 N, 88.0 E)									
- Point									

Checked By: _____	Approved By: _____	Date: _____
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