

BONANZA CREEK ENERGY

WELD COUNTY

SEC 2-T5N-R62W

STATE ANTELOPE 13-43-2HN

OWB

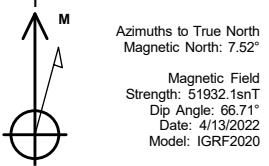
Design: FINAL SURVEY

Standard Survey Report

14 November, 2022

Project: WELD COUNTY
Site: SEC 2-T5N-R62W
Well: STATE ANTELOPE 13-43-2HN
Wellbore: OWB
Design: FINAL SURVEY

PROJECT DETAILS: WELD COUNTY
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
System Datum: Mean Sea Level

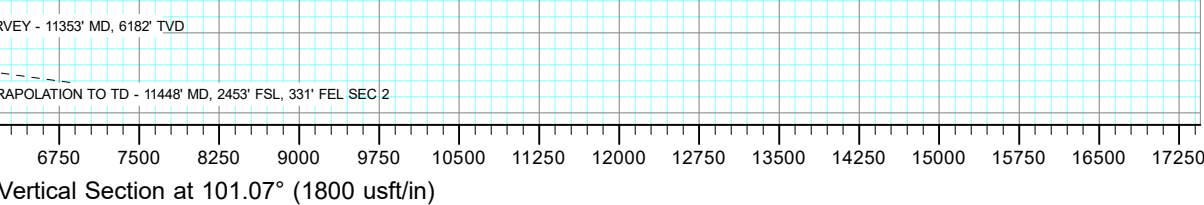
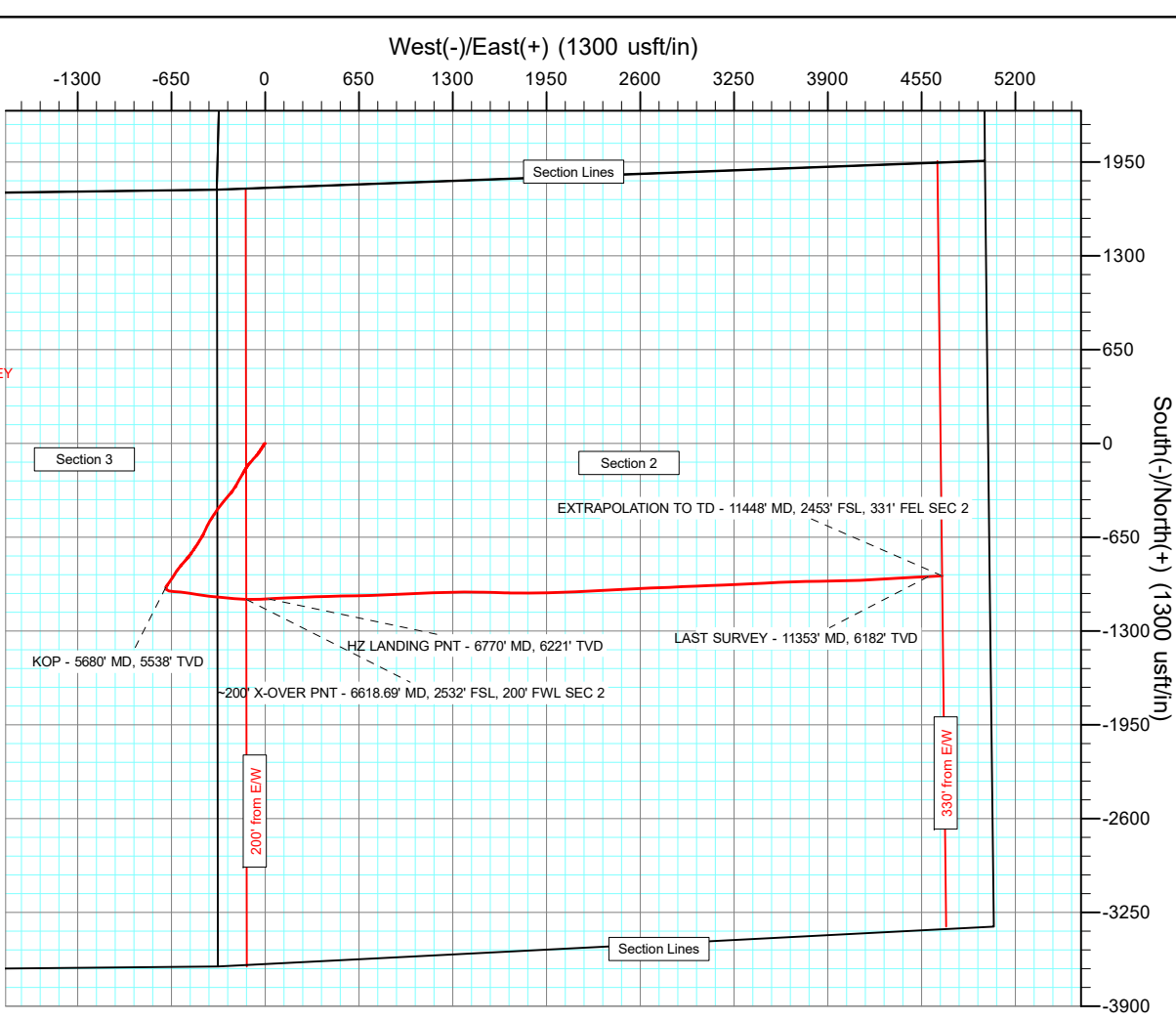
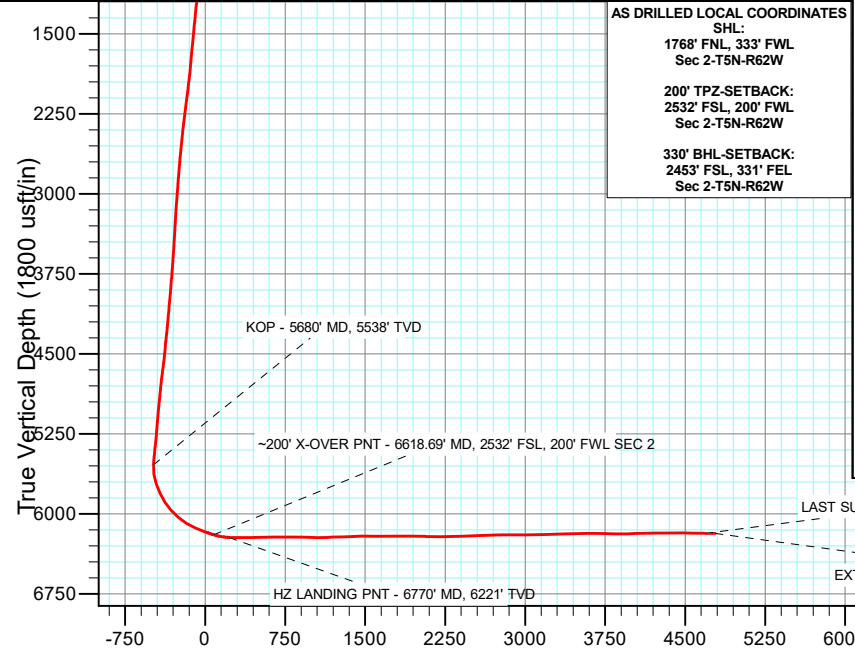
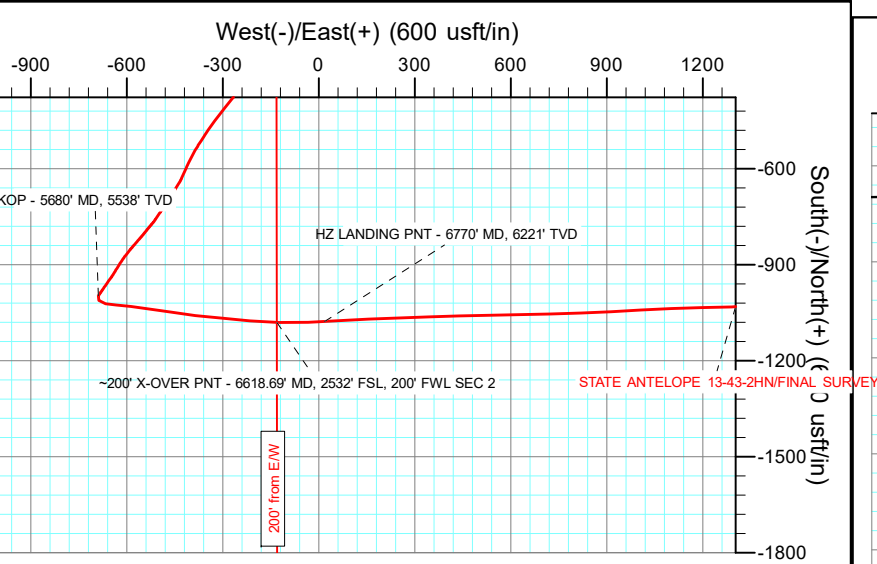


WELL DETAILS: STATE ANTELOPE 13-43-2HN

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1402449.79	3334367.81	40.431910°N	104.298840°W	

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Vsect	Departure	Annotation
5680.00	11.23	213.33	5538.44	-996.79	-689.12	-484.93	1217.11	KOP - 5680' MD, 5538' TVD
6618.69	72.89	91.06	6195.12	-1080.47	-130.85	79.02	1799.79	~200' X-OVER PNT - 6618.69' MD, 2532' FSL, 200' FWL SEC 2
6770.00	87.18	87.12	6220.55	-1077.56	17.81	224.36	1948.55	HZ LANDING PNT - 6770' MD, 6221' TVD
11353.00	89.49	86.87	6182.46	-922.88	4596.14	4687.82	6530.43	LAST SURVEY - 11353' MD, 6182' TVD
11448.00	89.49	86.87	6183.31	-917.70	4691.00	4779.92	6625.42	EXTRAPOLATION TO TD - 11448' MD, 2453' FSL, 331' FEL SEC 2



Survey Report

Company:	BONANZA CREEK ENERGY	Local Co-ordinate Reference:	Well STATE ANTELOPE 13-43-2HN
Project:	WELD COUNTY	TVD Reference:	KB 25' @ 4671.00usft
Site:	SEC 2-T5N-R62W	MD Reference:	KB 25' @ 4671.00usft
Well:	STATE ANTELOPE 13-43-2HN	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Project	WELD COUNTY		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site		SEC 2-T5N-R62W			
Site Position:		Northing:	1,404,201.39 usft	Latitude:	40.436731°N
From:	Lat/Long	Easting:	3,334,009.19 usft	Longitude:	104.300043°W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.78 °

Well		STATE ANTELOPE 13-43-2HN				
Well Position	+N/-S	0.00 usft	Northing:	1,402,449.79 usft	Latitude:	40.431910°N
	+E/-W	0.00 usft	Easting:	3,334,367.81 usft	Longitude:	104.298840°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,646.00 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	4/13/2022	7.52	66.71	51,932.07405231

Design	FINAL SURVEY				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	101.07	

Survey Program	Date	11/3/2022			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
210.00	1,593.00	SURFACE SURVEY (OWB)	MWD OWSG	OWSG MWD - Standard	
1,675.00	11,448.00	FINAL SURVEY (OWB)	MWD OWSG	OWSG MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
210.00	1.80	253.50	209.97	-0.94	-3.16	-2.92	0.86	0.86	0.00	
302.00	3.20	213.60	301.88	-3.49	-5.97	-5.19	2.34	1.52	-43.37	
376.00	5.40	211.50	375.67	-8.18	-8.93	-7.20	2.98	2.97	-2.84	
463.00	7.00	210.20	462.16	-16.25	-13.74	-10.36	1.85	1.84	-1.49	
550.00	9.70	212.00	548.23	-27.05	-20.29	-14.72	3.12	3.10	2.07	
637.00	11.90	213.50	633.68	-40.75	-29.13	-20.76	2.55	2.53	1.72	
725.00	13.90	212.50	719.46	-57.23	-39.81	-28.09	2.29	2.27	-1.14	
812.00	12.90	220.50	804.09	-73.43	-51.74	-36.68	2.42	-1.15	9.20	
899.00	11.40	221.30	889.14	-87.27	-63.72	-45.78	1.73	-1.72	0.92	

Survey Report

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Project:	WELD COUNTY	TVD Reference:	KB 25' @ 4671.00usft
Site:	SEC 2-T5N-R62W	MD Reference:	KB 25' @ 4671.00usft
Well:	STATE ANTELOPE 13-43-2HN	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
986.00	11.90	222.30	974.35	-100.37	-75.43	-54.76	0.62	0.57	1.15
1,074.00	12.00	221.50	1,060.44	-113.93	-87.60	-64.10	0.22	0.11	-0.91
1,161.00	12.20	221.10	1,145.51	-127.63	-99.63	-73.28	0.25	0.23	-0.46
1,248.00	13.50	220.00	1,230.33	-142.34	-112.21	-82.79	1.52	1.49	-1.26
1,335.00	13.40	214.10	1,314.95	-158.46	-124.39	-91.65	1.58	-0.11	-6.78
1,423.00	15.30	214.30	1,400.20	-176.50	-136.65	-100.22	2.16	2.16	0.23
1,510.00	15.50	208.07	1,484.08	-196.24	-148.59	-108.15	1.91	0.23	-7.16
1,593.00	17.10	210.60	1,563.74	-216.53	-160.02	-115.47	2.11	1.93	3.05
1,675.00	17.25	209.84	1,642.09	-237.46	-172.20	-123.41	0.33	0.18	-0.93
1,770.00	16.32	209.06	1,733.04	-261.34	-185.70	-132.07	1.01	-0.98	-0.82
1,864.00	16.02	207.20	1,823.32	-284.42	-198.04	-139.75	0.64	-0.32	-1.98
1,958.00	16.50	215.37	1,913.57	-306.85	-211.70	-148.85	2.48	0.51	8.69
2,053.00	16.07	214.39	2,004.76	-328.70	-226.93	-159.60	0.54	-0.45	-1.03
2,149.00	14.91	222.08	2,097.28	-348.83	-242.72	-171.23	2.45	-1.21	8.01
2,244.00	14.63	220.91	2,189.14	-366.97	-258.76	-183.50	0.43	-0.29	-1.23
2,338.00	14.01	219.34	2,280.22	-384.74	-273.75	-194.79	0.78	-0.66	-1.67
2,432.00	13.50	219.05	2,371.53	-402.06	-287.88	-205.33	0.55	-0.54	-0.31
2,527.00	13.01	218.31	2,463.99	-419.07	-301.49	-215.43	0.55	-0.52	-0.78
2,622.00	12.60	217.38	2,556.63	-435.69	-314.41	-224.91	0.48	-0.43	-0.98
2,717.00	12.24	216.59	2,649.41	-452.01	-326.71	-233.85	0.42	-0.38	-0.83
2,812.00	11.79	214.90	2,742.33	-468.05	-338.26	-242.11	0.60	-0.47	-1.78
2,907.00	11.35	214.35	2,835.40	-483.73	-349.09	-249.72	0.48	-0.46	-0.58
3,001.00	10.49	211.94	2,927.69	-498.63	-358.83	-256.43	1.04	-0.91	-2.56
3,120.00	11.40	213.44	3,044.53	-517.64	-371.05	-264.76	0.80	0.76	1.26
3,214.00	12.30	211.64	3,136.52	-533.91	-381.42	-271.82	1.03	0.96	-1.91
3,403.00	12.83	206.15	3,321.00	-569.89	-401.23	-284.35	0.69	0.28	-2.90
3,498.00	12.93	205.00	3,413.61	-588.99	-410.37	-289.65	0.29	0.11	-1.21
3,593.00	13.21	204.07	3,506.15	-608.54	-419.29	-294.65	0.37	0.29	-0.98
3,689.00	13.43	204.75	3,599.57	-628.68	-428.43	-299.76	0.28	0.23	0.71
3,784.00	14.06	212.50	3,691.86	-648.43	-439.25	-306.59	2.05	0.66	8.16
3,878.00	13.53	211.95	3,783.15	-667.39	-451.20	-314.68	0.58	-0.56	-0.59
3,973.00	12.63	210.81	3,875.68	-685.74	-462.40	-322.15	0.99	-0.95	-1.20
4,068.00	13.43	214.59	3,968.23	-703.74	-473.99	-330.06	1.23	0.84	3.98
4,162.00	12.16	213.56	4,059.90	-720.98	-485.66	-338.20	1.37	-1.35	-1.10
4,256.00	13.76	214.00	4,151.50	-738.50	-497.38	-346.34	1.71	1.70	0.47
4,351.00	12.71	213.93	4,243.98	-756.54	-509.53	-354.81	1.11	-1.11	-0.07
4,446.00	12.94	221.41	4,336.61	-773.19	-522.40	-364.24	1.76	0.24	7.87
4,540.00	10.64	218.62	4,428.62	-787.86	-534.78	-373.57	2.52	-2.45	-2.97
4,635.00	12.48	218.81	4,521.69	-802.71	-546.69	-382.41	1.94	1.94	0.20
4,730.00	13.78	221.45	4,614.21	-819.19	-560.62	-392.91	1.51	1.37	2.78
4,824.00	14.77	221.16	4,705.31	-836.61	-575.91	-404.58	1.06	1.05	-0.31
4,919.00	13.29	218.70	4,797.47	-854.25	-590.71	-415.71	1.68	-1.56	-2.59
5,012.00	13.35	217.96	4,887.97	-871.05	-604.00	-425.53	0.19	0.06	-0.80

Survey Report

Company:	BONANZA CREEK ENERGY	Local Co-ordinate Reference:	Well STATE ANTELOPE 13-43-2HN
Project:	WELD COUNTY	TVD Reference:	KB 25' @ 4671.00usft
Site:	SEC 2-T5N-R62W	MD Reference:	KB 25' @ 4671.00usft
Well:	STATE ANTELOPE 13-43-2HN	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,107.00	12.45	213.38	4,980.57	-888.25	-616.38	-434.38	1.43	-0.95	-4.82	
5,201.00	12.77	211.90	5,072.30	-905.54	-627.44	-441.92	0.48	0.34	-1.57	
5,296.00	13.83	211.56	5,164.76	-924.12	-638.94	-449.63	1.12	1.12	-0.36	
5,391.00	13.04	215.78	5,257.16	-942.50	-651.15	-458.08	1.32	-0.83	4.44	
5,486.00	13.46	214.80	5,349.63	-960.27	-663.72	-467.01	0.50	0.44	-1.03	
5,581.00	14.07	214.37	5,441.90	-978.88	-676.55	-476.03	0.65	0.64	-0.45	
5,676.00	11.59	215.95	5,534.52	-996.14	-688.67	-484.61	2.64	-2.61	1.66	
5,680.00	11.23	213.33	5,538.44	-996.79	-689.12	-484.93	15.78	-8.99	-65.58	
KOP - 5680' MD, 5538' TVD										
5,770.00	12.26	138.67	5,627.01	-1,011.36	-687.62	-480.66	15.78	1.14	-82.95	
5,865.00	17.56	101.77	5,718.97	-1,021.89	-666.87	-458.27	11.17	5.58	-38.84	
5,960.00	25.09	92.89	5,807.43	-1,025.84	-632.67	-423.95	8.60	7.93	-9.35	
6,055.00	33.08	98.02	5,890.39	-1,030.48	-586.80	-378.04	8.80	8.41	5.40	
6,150.00	41.46	97.43	5,965.93	-1,038.17	-529.84	-320.66	8.83	8.82	-0.62	
6,245.00	50.28	99.35	6,032.01	-1,048.20	-462.46	-252.62	9.40	9.28	2.02	
6,340.00	58.20	96.20	6,087.50	-1,058.51	-386.15	-175.74	8.76	8.34	-3.32	
6,435.00	66.40	95.19	6,131.62	-1,066.82	-302.52	-92.07	8.68	8.63	-1.06	
6,529.00	69.97	95.95	6,166.54	-1,075.30	-215.68	-5.22	3.87	3.80	0.81	
6,618.69	72.89	91.06	6,195.12	-1,080.47	-130.85	79.02	6.11	3.26	-5.45	
~200' X-OVER PNT - 6618.69' MD, 2532' FSL, 200' FWL SEC 2										
6,624.00	73.07	90.78	6,196.67	-1,080.55	-125.78	84.02	6.11	3.33	-5.35	
6,718.00	83.03	88.19	6,216.11	-1,079.68	-33.94	173.98	10.93	10.60	-2.76	
6,770.00	87.18	87.12	6,220.55	-1,077.56	17.81	224.36	8.25	7.99	-2.06	
HZ LANDING PNT - 6770' MD, 6221' TVD										
6,813.00	90.62	86.24	6,221.37	-1,075.07	60.72	266.00	8.25	7.99	-2.04	
6,907.00	90.18	88.05	6,220.72	-1,070.39	154.60	357.23	1.98	-0.47	1.93	
7,002.00	90.41	87.60	6,220.23	-1,066.79	249.53	449.70	0.53	0.24	-0.47	
7,097.00	90.81	87.56	6,219.22	-1,062.78	344.44	542.08	0.42	0.42	-0.04	
7,191.00	90.50	88.99	6,218.14	-1,059.95	438.39	633.73	1.56	-0.33	1.52	
7,286.00	90.69	88.64	6,217.15	-1,057.98	533.36	726.56	0.42	0.20	-0.37	
7,381.00	89.30	88.74	6,217.16	-1,055.81	628.34	819.35	1.47	-1.46	0.11	
7,476.00	88.65	88.67	6,218.86	-1,053.66	723.30	912.13	0.69	-0.68	-0.07	
7,571.00	89.09	87.97	6,220.74	-1,050.88	818.24	1,004.77	0.87	0.46	-0.74	
7,666.00	90.75	86.67	6,220.87	-1,046.44	913.13	1,097.05	2.22	1.75	-1.37	
7,760.00	92.43	86.89	6,218.26	-1,041.16	1,006.94	1,188.10	1.80	1.79	0.23	
7,855.00	91.65	88.41	6,214.88	-1,037.27	1,101.80	1,280.44	1.80	-0.82	1.60	
7,949.00	92.71	87.89	6,211.30	-1,034.23	1,195.68	1,372.00	1.26	1.13	-0.55	
8,044.00	90.45	89.38	6,208.68	-1,031.97	1,290.61	1,464.73	2.85	-2.38	1.57	
8,138.00	88.14	89.41	6,209.84	-1,030.98	1,384.59	1,556.77	2.46	-2.46	0.03	
8,233.00	91.13	90.62	6,210.44	-1,031.01	1,479.57	1,649.99	3.40	3.15	1.27	
8,328.00	90.05	91.14	6,209.47	-1,032.46	1,574.55	1,743.49	1.26	-1.14	0.55	
8,422.00	91.79	92.28	6,207.96	-1,035.27	1,668.50	1,836.22	2.21	1.85	1.21	
8,516.00	88.49	89.69	6,207.73	-1,036.88	1,762.46	1,928.74	4.46	-3.51	-2.76	
8,610.00	88.61	90.00	6,210.11	-1,036.63	1,856.43	2,020.92	0.35	0.13	0.33	

Survey Report

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Project:	WELD COUNTY	TVD Reference:	KB 25' @ 4671.00usft
Site:	SEC 2-T5N-R62W	MD Reference:	KB 25' @ 4671.00usft
Well:	STATE ANTELOPE 13-43-2HN	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,705.00	89.12	88.42	6,211.99	-1,035.32	1,951.40	2,113.87	1.75	0.54	-1.66
8,799.00	90.72	88.39	6,212.12	-1,032.70	2,045.36	2,205.58	1.70	1.70	-0.03
8,894.00	89.88	86.74	6,211.62	-1,028.67	2,140.27	2,297.95	1.95	-0.88	-1.74
8,989.00	92.10	87.32	6,209.98	-1,023.75	2,235.12	2,390.09	2.42	2.34	0.61
9,083.00	92.46	86.09	6,206.24	-1,018.35	2,328.89	2,481.08	1.36	0.38	-1.31
9,177.00	91.78	87.85	6,202.76	-1,013.38	2,422.69	2,572.18	2.01	-0.72	1.87
9,272.00	92.93	87.65	6,198.86	-1,009.66	2,517.53	2,664.54	1.23	1.21	-0.21
9,367.00	90.32	87.71	6,196.17	-1,005.81	2,612.41	2,756.92	2.75	-2.75	0.06
9,461.00	89.86	87.67	6,196.02	-1,002.02	2,706.33	2,848.36	0.49	-0.49	-0.04
9,556.00	90.03	87.30	6,196.11	-997.86	2,801.24	2,940.71	0.43	0.18	-0.39
9,650.00	90.10	86.49	6,196.00	-992.76	2,895.10	3,031.84	0.86	0.07	-0.86
9,745.00	91.44	88.16	6,194.73	-988.33	2,989.98	3,124.11	2.25	1.41	1.76
9,841.00	90.75	87.29	6,192.89	-984.52	3,085.89	3,217.50	1.16	-0.72	-0.91
9,935.00	92.32	87.99	6,190.37	-980.65	3,179.77	3,308.89	1.83	1.67	0.74
10,030.00	92.15	87.57	6,186.67	-976.97	3,274.63	3,401.28	0.48	-0.18	-0.44
10,124.00	91.29	87.47	6,183.85	-972.91	3,368.50	3,492.62	0.92	-0.91	-0.11
10,219.00	90.09	87.05	6,182.70	-968.37	3,463.38	3,584.87	1.34	-1.26	-0.44
10,313.00	89.00	86.64	6,183.45	-963.19	3,557.23	3,675.98	1.24	-1.16	-0.44
10,502.00	89.03	88.86	6,186.70	-955.78	3,746.05	3,859.86	1.17	0.02	1.17
10,597.00	91.43	89.51	6,186.32	-954.43	3,841.03	3,952.81	2.62	2.53	0.68
10,691.00	91.31	88.99	6,184.07	-953.19	3,934.99	4,044.80	0.57	-0.13	-0.55
10,880.00	90.96	87.80	6,180.33	-947.90	4,123.88	4,229.15	0.66	-0.19	-0.63
10,975.00	90.83	87.11	6,178.84	-943.68	4,218.77	4,321.47	0.74	-0.14	-0.73
11,070.00	90.00	85.65	6,178.15	-937.69	4,313.58	4,413.36	1.77	-0.87	-1.54
11,164.00	89.00	87.75	6,178.97	-932.28	4,407.41	4,504.41	2.47	-1.06	2.23
11,259.00	88.64	86.99	6,180.93	-927.92	4,502.29	4,596.69	0.89	-0.38	-0.80
11,353.00	89.49	86.87	6,182.47	-922.88	4,596.14	4,687.82	0.91	0.90	-0.13
LAST SURVEY - 11353' MD, 6182' TVD									
11,448.00	89.49	86.87	6,183.31	-917.70	4,691.00	4,779.92	0.00	0.00	0.00
EXTRAPOLATION TO TD - 11448' MD, 2453' FSL, 331' FEL SEC 2									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-STATE ANTELOP	0.00	0.00	6,180.00	-924.93	4,691.85	1,401,588.53	3,339,071.58	40.429370°N	104.281987°W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 8.00usft at 11448.00usft MD (6183.31 TVD, -917.70 N, 4691.00 E)									
- Point									
LP-STATE ANTELOPE 1	0.00	0.00	6,230.00	-1,100.22	-130.85	1,401,347.95	3,334,251.88	40.428890°N	104.299310°W
- hit/miss target									
- Shape									
- actual wellpath misses target center by 38.84usft at 6625.76usft MD (6197.18 TVD, -1080.57 N, -124.09 E)									
- Point									

Survey Report

Company:	BONANZA CREEK ENERGY	Local Co-ordinate Reference:	Well STATE ANTELOPE 13-43-2HN
Project:	WELD COUNTY	TVD Reference:	KB 25' @ 4671.00usft
Site:	SEC 2-T5N-R62W	MD Reference:	KB 25' @ 4671.00usft
Well:	STATE ANTELOPE 13-43-2HN	North Reference:	True
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEY	Database:	EDT_32Bit_ODBC

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,680.00	5,538.44	-996.79	-689.12	KOP - 5680' MD, 5538' TVD
6,618.69	6,195.12	-1,080.47	-130.85	~200' X-OVER PNT - 6618.69' MD, 2532' FSL, 200' FWL SEC 2
6,770.00	6,220.55	-1,077.56	17.81	HZ LANDING PNT - 6770' MD, 6221' TVD
11,353.00	6,182.47	-922.88	4,596.14	LAST SURVEY - 11353' MD, 6182' TVD
11,448.00	6,183.31	-917.70	4,691.00	EXTRAPOLATION TO TD - 11448' MD, 2453' FSL, 331' FEL SEC 2

Checked By: _____ Approved By: _____ Date: _____