

# Synergy Resources

Well Name: **SRC Kiehn 31-4CHZ**

Surface Location: SRC Kiehn Pad Sec.4-T4N-R68W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

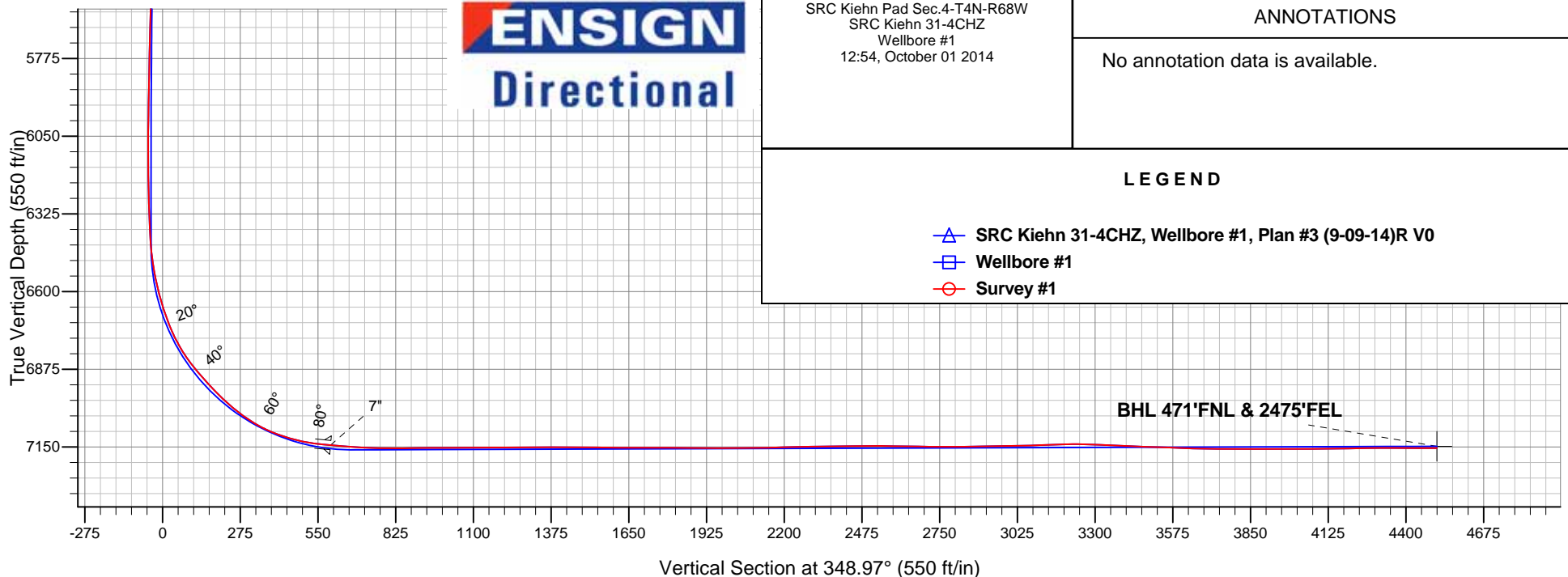
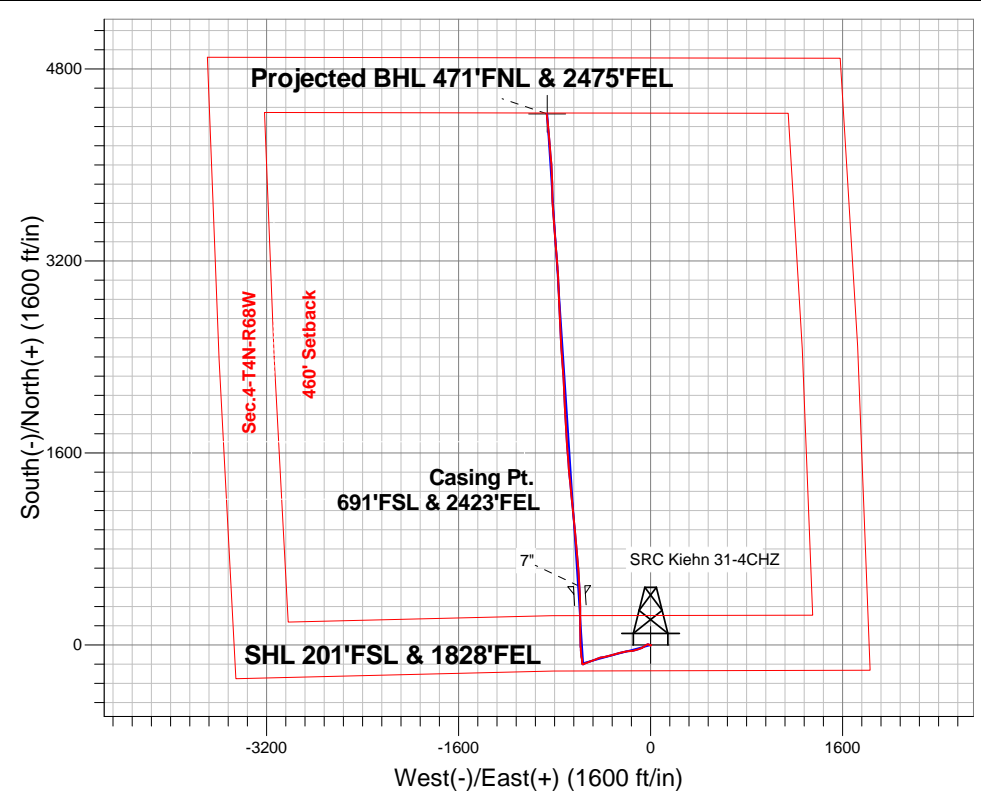
Ground Elevation: 5064.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1365559.30	3137864.22	40.335806	-105.005460	

Ensign 131 RKB - 13'5' WELL @ 5077.5ft (Ensign 131 RKB - 13'5')

## FINAL SURVEY

Projected Bottom Hole Location  
11473'MD 7155'TVD 4426'N & 866'W of SHL  
89.8 degree Incl @ 354.0 degree AZM



SRC Kiehn Pad Sec.4-T4N-R68W  
SRC Kiehn 31-4CHZ  
Wellbore #1  
12:54, October 01 2014

### ANNOTATIONS

No annotation data is available.

### LEGEND

- ▲ SRC Kiehn 31-4CHZ, Wellbore #1, Plan #3 (9-09-14)R V0
- Wellbore #1
- Survey #1



## **Synergy Resources**

**SEC.4-T4N-R68W**

**SRC Kiehn Pad Sec.4-T4N-R68W**

**SRC Kiehn 31-4CHZ**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**01 October, 2014**

<b>Company:</b>	Synergy Resources	<b>Local Co-ordinate Reference:</b>	Well SRC Kiehn 31-4CHZ
<b>Project:</b>	SEC.4-T4N-R68W	<b>TVD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Site:</b>	SRC Kiehn Pad Sec.4-T4N-R68W	<b>MD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Well:</b>	SRC Kiehn 31-4CHZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	Landmark

<b>Project</b>	SEC.4-T4N-R68W, Weld, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	SRC Kiehn Pad Sec.4-T4N-R68W		
<b>Site Position:</b>		<b>Northing:</b>	1,365,561.75 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,137,974.04 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.335811
		<b>Longitude:</b>	-105.005066
		<b>Grid Convergence:</b>	0.32 °

<b>Well</b>	SRC Kiehn 31-4CHZ		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40.335806
		<b>Longitude:</b>	-105.005460
		<b>Ground Level:</b>	5,064.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/9/2014	8.55	66.85	52,730

<b>Design</b>	Wellbore #1				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	348.97	

<b>Survey Program</b>	<b>Date</b>	10/1/2014			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
67.0	11,473.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
1.0	0.01	216.20	1.0	0.0	0.0	0.0	1.49	1.49	0.00	
<b>SHL 201'FSL &amp; 1828'FEL</b>										
67.0	1.00	216.20	67.0	-0.5	-0.3	-0.4	1.49	1.49	0.00	
162.0	0.70	217.00	162.0	-1.6	-1.2	-1.3	0.32	-0.32	0.84	
256.0	0.40	280.00	256.0	-2.0	-1.9	-1.6	0.67	-0.32	67.02	
350.0	0.80	231.50	350.0	-2.4	-2.7	-1.8	0.65	0.43	-51.60	
444.0	0.70	123.20	444.0	-3.1	-2.7	-2.5	1.29	-0.11	-115.21	
538.0	1.60	76.10	538.0	-3.1	-1.0	-2.8	1.31	0.96	-50.11	
554.0	1.70	87.10	553.9	-3.0	-0.5	-2.9	2.07	0.63	68.75	
632.0	1.40	76.00	631.9	-2.7	1.6	-3.0	0.54	-0.38	-14.23	
727.0	1.70	294.20	726.9	-1.9	1.4	-2.1	3.09	0.32	-149.26	
820.0	1.30	210.00	819.9	-2.2	-0.4	-2.1	2.19	-0.43	-90.54	

<b>Company:</b>	Synergy Resources	<b>Local Co-ordinate Reference:</b>	Well SRC Kiehn 31-4CHZ
<b>Project:</b>	SEC.4-T4N-R68W	<b>TVD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Site:</b>	SRC Kiehn Pad Sec.4-T4N-R68W	<b>MD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Well:</b>	SRC Kiehn 31-4CHZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
914.0	1.20	158.00	913.9	-4.1	-0.5	-3.9	1.17	-0.11	-55.32
1,008.0	0.30	87.70	1,007.9	-5.0	0.1	-4.9	1.21	-0.96	-74.79
1,103.0	0.70	280.10	1,102.9	-4.8	-0.3	-4.7	1.05	0.42	-176.42
1,195.0	1.10	6.10	1,194.8	-3.9	-0.7	-3.7	1.37	0.43	93.48
1,287.0	2.00	316.30	1,286.8	-1.8	-1.7	-1.5	1.67	0.98	-54.13
1,380.0	1.90	276.30	1,379.8	-0.5	-4.4	0.4	1.44	-0.11	-43.01
1,472.0	1.90	288.70	1,471.7	0.2	-7.3	1.6	0.45	0.00	13.48
1,563.0	0.90	282.10	1,562.7	0.8	-9.5	2.6	1.11	-1.10	-7.25
1,655.0	0.60	24.70	1,654.7	1.4	-10.0	3.3	1.29	-0.33	111.52
1,747.0	3.40	291.00	1,746.6	2.8	-12.3	5.1	3.79	3.04	-101.85
1,840.0	5.30	286.30	1,839.4	5.0	-19.0	8.6	2.08	2.04	-5.05
1,932.0	5.50	247.40	1,931.0	4.5	-27.2	9.6	3.91	0.22	-42.28
2,024.0	8.40	238.50	2,022.3	-0.7	-37.0	6.4	3.35	3.15	-9.67
2,117.0	8.40	235.50	2,114.3	-8.1	-48.4	1.3	0.47	0.00	-3.23
2,209.0	8.80	233.40	2,205.3	-16.1	-59.5	-4.4	0.55	0.43	-2.28
2,301.0	8.70	240.20	2,296.2	-23.8	-71.2	-9.7	1.13	-0.11	7.39
2,393.0	8.00	251.50	2,387.2	-29.2	-83.3	-12.8	1.94	-0.76	12.28
2,486.0	7.90	253.80	2,479.3	-33.1	-95.6	-14.2	0.36	-0.11	2.47
2,578.0	7.90	252.00	2,570.5	-36.8	-107.7	-15.5	0.27	0.00	-1.96
2,670.0	8.80	251.50	2,661.5	-41.0	-120.4	-17.2	0.98	0.98	-0.54
2,762.0	7.70	256.20	2,752.5	-44.7	-133.1	-18.4	1.40	-1.20	5.11
2,854.0	8.00	259.60	2,843.7	-47.3	-145.3	-18.6	0.60	0.33	3.70
2,943.0	6.90	258.00	2,931.9	-49.5	-156.7	-18.7	1.26	-1.24	-1.80
3,032.0	8.20	266.40	3,020.1	-51.1	-168.2	-17.9	1.91	1.46	9.44
3,121.0	7.70	265.50	3,108.3	-51.9	-180.5	-16.4	0.58	-0.56	-1.01
3,210.0	8.40	269.40	3,196.4	-52.5	-192.9	-14.6	1.00	0.79	4.38
3,300.0	9.40	261.30	3,285.3	-53.6	-206.8	-13.1	1.78	1.11	-9.00
3,389.0	10.20	256.90	3,373.0	-56.5	-221.6	-13.1	1.23	0.90	-4.94
3,478.0	10.90	255.20	3,460.5	-60.5	-237.5	-13.9	0.86	0.79	-1.91
3,567.0	11.30	255.30	3,547.9	-64.8	-254.0	-15.0	0.45	0.45	0.11
3,656.0	11.60	254.50	3,635.1	-69.4	-271.1	-16.3	0.38	0.34	-0.90
3,746.0	11.00	253.20	3,723.3	-74.3	-288.0	-17.9	0.72	-0.67	-1.44
3,835.0	9.60	253.20	3,810.9	-78.9	-303.3	-19.5	1.57	-1.57	0.00
3,924.0	8.80	255.20	3,898.8	-82.8	-316.9	-20.6	0.97	-0.90	2.25
4,013.0	8.40	254.60	3,986.8	-86.3	-329.8	-21.6	0.46	-0.45	-0.67
4,103.0	8.10	255.20	4,075.8	-89.6	-342.3	-22.5	0.35	-0.33	0.67
4,191.0	7.80	255.00	4,163.0	-92.8	-354.0	-23.3	0.34	-0.34	-0.23
4,280.0	7.50	256.20	4,251.2	-95.7	-365.5	-24.0	0.38	-0.34	1.35
4,369.0	8.30	262.70	4,339.3	-97.9	-377.5	-23.9	1.35	0.90	7.30
4,459.0	8.30	262.90	4,428.4	-99.5	-390.4	-23.0	0.03	0.00	0.22
4,548.0	9.60	258.90	4,516.3	-101.8	-404.1	-22.6	1.62	1.46	-4.49
4,637.0	10.10	252.40	4,604.0	-105.6	-418.8	-23.5	1.37	0.56	-7.30
4,726.0	8.40	246.40	4,691.9	-110.5	-432.2	-25.8	2.19	-1.91	-6.74
4,815.0	8.20	249.20	4,779.9	-115.4	-444.1	-28.3	0.51	-0.22	3.15
4,904.0	7.70	249.40	4,868.1	-119.7	-455.6	-30.4	0.56	-0.56	0.22
4,993.0	7.60	249.50	4,956.3	-123.9	-466.7	-32.3	0.11	-0.11	0.11
5,082.0	7.40	248.70	5,044.5	-128.0	-477.5	-34.3	0.25	-0.22	-0.90
5,172.0	7.00	249.20	5,133.8	-132.1	-488.1	-36.3	0.45	-0.44	0.56
5,261.0	6.80	250.40	5,222.2	-135.8	-498.1	-38.0	0.28	-0.22	1.35
5,350.0	6.70	253.40	5,310.5	-139.0	-508.0	-39.3	0.41	-0.11	3.37
5,439.0	5.60	252.70	5,399.0	-141.8	-517.1	-40.3	1.24	-1.24	-0.79
5,529.0	5.40	253.20	5,488.6	-144.3	-525.4	-41.2	0.23	-0.22	0.56
5,618.0	5.00	250.00	5,577.2	-146.9	-533.0	-42.2	0.55	-0.45	-3.60
5,707.0	4.60	239.40	5,665.9	-150.0	-539.8	-44.0	1.09	-0.45	-11.91

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
5,796.0	4.60	245.00	5,754.7	-153.3	-546.1	-46.0	0.50	0.00	6.29
5,885.0	4.00	240.20	5,843.4	-156.4	-552.0	-47.9	0.79	-0.67	-5.39
5,974.0	3.70	246.40	5,932.2	-159.1	-557.3	-49.5	0.58	-0.34	6.97
6,064.0	2.10	237.80	6,022.1	-161.1	-561.4	-50.8	1.84	-1.78	-9.56
6,153.0	1.10	288.20	6,111.0	-161.7	-563.6	-50.9	1.84	-1.12	56.63
6,242.0	1.20	279.30	6,200.0	-161.3	-565.3	-50.2	0.23	0.11	-10.00
6,331.0	3.00	307.20	6,289.0	-159.7	-568.1	-48.1	2.27	2.02	31.35
6,420.0	1.80	344.60	6,377.9	-157.0	-570.3	-45.0	2.15	-1.35	42.02
6,509.0	6.60	358.50	6,466.6	-150.5	-570.8	-38.6	5.47	5.39	15.62
6,598.0	11.80	358.50	6,554.5	-136.3	-571.2	-24.5	5.84	5.84	0.00
6,687.0	16.40	349.20	6,640.8	-114.9	-573.8	-3.0	5.75	5.17	-10.45
6,776.0	22.30	353.30	6,724.7	-85.7	-578.1	26.5	6.80	6.63	4.61
6,865.0	31.00	355.90	6,804.2	-46.0	-581.7	66.1	9.86	9.78	2.92
6,954.0	40.30	357.70	6,876.4	5.7	-584.5	117.4	10.51	10.45	2.02
7,043.0	43.80	359.60	6,942.5	65.3	-585.9	176.2	4.18	3.93	2.13
7,132.0	49.40	359.10	7,003.6	129.9	-586.6	239.8	6.31	6.29	-0.56
7,222.0	57.30	359.60	7,057.3	202.1	-587.4	310.7	8.79	8.78	0.56
7,311.0	68.10	0.30	7,098.1	281.1	-587.5	388.2	12.15	12.13	0.79
7,400.0	76.30	358.50	7,125.3	365.7	-588.4	471.5	9.41	9.21	-2.02
7,489.0	83.90	356.60	7,140.5	453.2	-592.2	558.1	8.79	8.54	-2.13
7,496.0	84.70	356.40	7,141.2	460.2	-592.6	565.1	11.78	11.43	-2.86
7,526.0	85.11	356.40	7,143.9	490.0	-594.5	594.7	1.35	1.35	0.00
7"									
7,570.0	85.70	356.40	7,147.4	533.8	-597.2	638.2	1.35	1.35	0.00
7,659.0	86.90	356.10	7,153.2	622.4	-603.0	726.3	1.39	1.35	-0.34
7,748.0	90.30	356.10	7,155.3	711.2	-609.1	814.5	3.82	3.82	0.00
7,838.0	91.20	355.00	7,154.2	800.9	-616.1	903.9	1.58	1.00	-1.22
7,927.0	90.00	354.50	7,153.2	889.5	-624.2	992.5	1.46	-1.35	-0.56
8,016.0	90.10	353.80	7,153.2	978.0	-633.3	1,081.1	0.79	0.11	-0.79
8,105.0	90.70	354.00	7,152.5	1,066.5	-642.7	1,169.8	0.71	0.67	0.22
8,194.0	90.10	354.70	7,151.9	1,155.1	-651.5	1,258.4	1.04	-0.67	0.79
8,284.0	90.30	353.80	7,151.6	1,244.6	-660.5	1,348.0	1.02	0.22	-1.00
8,373.0	90.00	354.50	7,151.4	1,333.2	-669.6	1,436.6	0.86	-0.34	0.79
8,462.0	89.10	355.00	7,152.1	1,421.8	-677.7	1,525.2	1.16	-1.01	0.56
8,551.0	89.90	356.10	7,152.8	1,510.5	-684.6	1,613.6	1.53	0.90	1.24
8,640.0	90.00	355.50	7,152.9	1,599.3	-691.1	1,702.0	0.68	0.11	-0.67
8,729.0	89.70	355.40	7,153.2	1,688.0	-698.2	1,790.4	0.36	-0.34	-0.11
8,819.0	89.10	356.40	7,154.1	1,777.8	-704.6	1,879.7	1.30	-0.67	1.11
8,907.0	90.00	357.50	7,154.8	1,865.6	-709.3	1,966.9	1.62	1.02	1.25
8,997.0	90.70	356.90	7,154.2	1,955.5	-713.7	2,055.9	1.02	0.78	-0.67
9,086.0	91.30	358.00	7,152.7	2,044.4	-717.7	2,144.0	1.41	0.67	1.24
9,175.0	91.30	357.10	7,150.7	2,133.3	-721.5	2,231.9	1.01	0.00	-1.01
9,264.0	91.30	356.20	7,148.6	2,222.1	-726.7	2,320.1	1.01	0.00	-1.01
9,354.0	90.00	356.40	7,147.6	2,311.9	-732.5	2,409.4	1.46	-1.44	0.22
9,443.0	90.50	356.20	7,147.2	2,400.8	-738.2	2,497.6	0.61	0.56	-0.22
9,532.0	89.30	356.60	7,147.4	2,489.6	-743.8	2,585.9	1.42	-1.35	0.45
9,621.0	89.10	355.70	7,148.6	2,578.4	-749.8	2,674.2	1.04	-0.22	-1.01
9,710.0	89.40	357.80	7,149.8	2,667.2	-754.8	2,762.4	2.38	0.34	2.36
9,799.0	91.40	357.80	7,149.2	2,756.1	-758.3	2,850.3	2.25	2.25	0.00
9,889.0	90.60	357.10	7,147.6	2,846.0	-762.3	2,939.3	1.18	-0.89	-0.78
9,978.0	91.20	357.50	7,146.2	2,934.9	-766.5	3,027.3	0.81	0.67	0.45
10,067.0	92.20	357.80	7,143.6	3,023.8	-770.1	3,115.3	1.17	1.12	0.34
10,156.0	91.40	356.60	7,140.8	3,112.7	-774.4	3,203.3	1.62	-0.90	-1.35
10,245.0	87.40	355.40	7,141.7	3,201.4	-780.7	3,291.6	4.69	-4.49	-1.35

<b>Company:</b>	Synergy Resources	<b>Local Co-ordinate Reference:</b>	Well SRC Kiehn 31-4CHZ
<b>Project:</b>	SEC.4-T4N-R68W	<b>TVD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Site:</b>	SRC Kiehn Pad Sec.4-T4N-R68W	<b>MD Reference:</b>	WELL @ 5077.5ft (Ensign 131 RKB - 13'5')
<b>Well:</b>	SRC Kiehn 31-4CHZ	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Wellbore #1	<b>Database:</b>	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)
10,334.0	87.50	355.40	7,145.7	3,290.0	-787.8	3,380.0	0.11	0.11	0.00
10,423.0	87.80	355.70	7,149.3	3,378.7	-794.7	3,468.3	0.48	0.34	0.34
10,513.0	88.00	355.40	7,152.6	3,468.4	-801.7	3,557.7	0.40	0.22	-0.33
10,602.0	88.30	355.70	7,155.5	3,557.1	-808.6	3,646.0	0.48	0.34	0.34
10,691.0	89.20	356.40	7,157.4	3,645.8	-814.7	3,734.3	1.28	1.01	0.79
10,780.0	90.30	358.00	7,157.8	3,734.7	-819.0	3,822.4	2.18	1.24	1.80
10,870.0	90.30	0.50	7,157.3	3,824.7	-820.2	3,911.0	2.78	0.00	2.78
10,957.0	89.70	357.30	7,157.3	3,911.7	-821.9	3,996.7	3.74	-0.69	-3.68
11,046.0	90.40	355.40	7,157.3	4,000.5	-827.6	4,084.9	2.28	0.79	-2.13
11,136.0	91.00	355.70	7,156.2	4,090.2	-834.5	4,174.3	0.75	0.67	0.33
11,225.0	91.20	355.20	7,154.5	4,178.9	-841.6	4,262.7	0.60	0.22	-0.56
11,314.0	89.60	354.70	7,153.8	4,267.6	-849.4	4,351.2	1.88	-1.80	-0.56
11,403.0	89.80	354.00	7,154.3	4,356.1	-858.2	4,439.8	0.82	0.22	-0.79
11,423.0	89.80	354.00	7,154.4	4,376.0	-860.3	4,459.8	0.00	0.00	0.00
11,473.0	89.80	354.00	7,154.6	4,425.7	-865.5	4,509.6	0.00	0.00	0.00
BHL 470'FNL & 2472'FEL									

Casing Points				
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,526.0	7,143.9	7"	7	7-1/2

Checked By: _____	Approved By: _____	Date: _____
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