

# Synergy Resources

Well Name: **SRC Cannon S-16NHZ**

Surface Location: SRC Cannon Pad Sec.16-T4N-R68W

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

Ground Elevation: 4931.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1355854.01	3139483.46	40.309140	-104.999848	

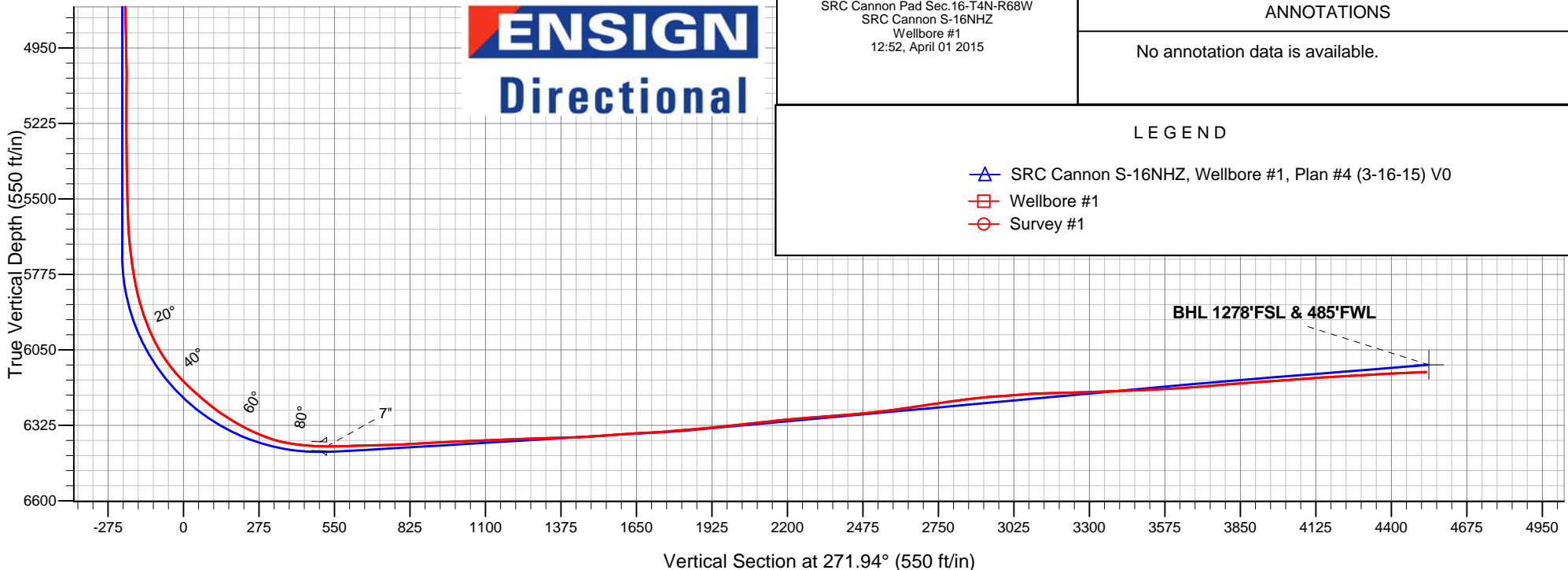
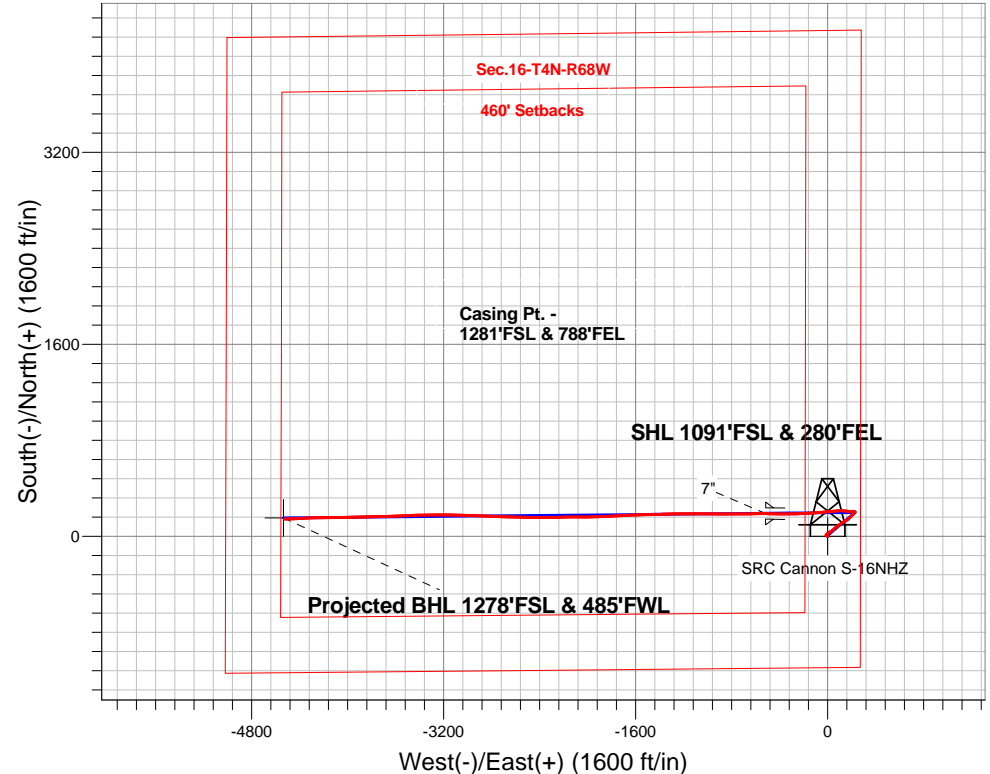
Ensign Rig #131 - RKB - 13.5' WELL @ 4944.5ft (Ensign Rig #131 - RKB - 13.5')

## FINAL SURVEY

**Projected Bottom Hole Location**

**10845'MD 6131'TVD 144'N & 4524'W of SHL**

**92.3 degree Incl @ 267.4 degree AZM**



SRC Cannon Pad Sec.16-T4N-R68W  
SRC Cannon S-16NHZ  
Wellbore #1  
12:52, April 01 2015

### ANNOTATIONS

No annotation data is available.

### LEGEND

- ▲ SRC Cannon S-16NHZ, Wellbore #1, Plan #4 (3-16-15) V0
- Wellbore #1
- Survey #1



## **Synergy Resources**

**SEC.16-T4N-R68W**

**SRC Cannon Pad Sec.16-T4N-R68W**

**SRC Cannon S-16NHZ**

**Wellbore #1**

**Survey: Survey #1**

## **Standard Survey Report**

**01 April, 2015**

<b>Company:</b>	Synergy Resources	<b>Local Co-ordinate Reference:</b>	Well SRC Cannon S-16NHZ
<b>Project:</b>	SEC.16-T4N-R68W	<b>TVD Reference:</b>	WELL @ 4944.5ft (Ensign Rig #131 - RKB - 13.5')
<b>Site:</b>	SRC Cannon Pad Sec.16-T4N-R68W	<b>MD Reference:</b>	WELL @ 4944.5ft (Ensign Rig #131 - RKB - 13.5')
<b>Well:</b>	SRC Cannon S-16NHZ	<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.16-T4N-R68W, Weld County, 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

Site	SRC Cannon Pad Sec.16-T4N-R68W				
Site Position:		Northing:	1,355,779.01 ft	Latitude:	40.308934
From:	Lat/Long	Easting:	3,139,483.89 ft	Longitude:	-104.999848
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.32 °

Well	SRC Cannon S-16NHZ					
Well Position	+N-S	0.0 ft	Northing:	1,355,854.01 ft	Latitude:	40.309140
	+E-W	0.0 ft	Easting:	3,139,483.46 ft	Longitude:	-104.999848
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,931.0 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	3/16/2015	8.48	66.81	52,663

<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	271.94	

<b>Survey Program</b>	<b>Date</b>	4/1/2015			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
107.0	10,845.0	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	282.90	1.0	0.0	0.0	0.0	0.65	0.65	0.00	
<b>SHL 1091'FSL &amp; 280'FEL</b>										
107.0	0.70	282.90	107.0	0.1	-0.6	0.6	0.65	0.65	0.00	
201.0	0.40	273.20	201.0	0.3	-1.5	1.5	0.33	-0.32	-10.32	
295.0	0.80	64.20	295.0	0.6	-1.3	1.3	1.24	0.43	160.64	
389.0	1.00	55.30	389.0	1.3	0.0	0.0	0.26	0.21	-9.47	
482.0	0.80	6.00	482.0	2.5	0.7	-0.7	0.83	-0.22	-53.01	
550.0	1.20	330.90	550.0	3.6	0.4	-0.3	1.05	0.59	-51.62	
635.0	1.80	313.80	634.9	5.3	-1.0	1.1	0.87	0.71	-20.12	
727.0	2.10	304.90	726.9	7.2	-3.4	3.6	0.46	0.33	-9.67	

<b>Company:</b>	Synergy Resources	<b>Local Co-ordinate Reference:</b>	Well SRC Cannon S-16NHZ
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<b>Site:</b>	SRC Cannon Pad Sec.16-T4N-R68W	<b>MD Reference:</b>	WELL @ 4944.5ft (Ensign Rig #131 - RKB - 13.5')
<b>Well:</b>	SRC Cannon S-16NHZ	<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)
819.0	1.70	237.20	818.8	7.4	-5.9	6.2	2.33	-0.43	-73.59
911.0	2.20	252.70	910.8	6.2	-8.7	8.9	0.79	0.54	16.85
1,003.0	1.10	289.00	1,002.7	5.9	-11.3	11.5	1.59	-1.20	39.46
1,095.0	1.10	331.40	1,094.7	7.0	-12.5	12.8	0.86	0.00	46.09
1,187.0	1.30	18.20	1,186.7	8.8	-12.6	12.9	1.06	0.22	50.87
1,279.0	2.40	42.80	1,278.7	11.2	-11.0	11.4	1.45	1.20	26.74
1,372.0	3.70	29.10	1,371.5	15.2	-8.2	8.7	1.59	1.40	-14.73
1,464.0	3.50	45.40	1,463.4	19.8	-4.8	5.4	1.13	-0.22	17.72
1,556.0	4.60	55.30	1,555.1	23.9	0.3	0.5	1.41	1.20	10.76
1,650.0	5.80	57.50	1,648.7	28.6	7.4	-6.4	1.29	1.28	2.34
1,742.0	8.50	59.80	1,740.0	34.5	17.2	-16.0	2.95	2.93	2.50
1,834.0	8.40	54.90	1,831.0	41.8	28.6	-27.1	0.79	-0.11	-5.33
1,926.0	8.10	51.70	1,922.1	49.6	39.1	-37.4	0.60	-0.33	-3.48
2,019.0	7.70	47.70	2,014.2	57.9	48.9	-46.9	0.73	-0.43	-4.30
2,111.0	8.10	46.80	2,105.3	66.5	58.2	-55.9	0.46	0.43	-0.98
2,202.0	8.10	56.30	2,195.4	74.4	68.2	-65.6	1.47	0.00	10.44
2,294.0	7.90	47.50	2,286.5	82.3	78.2	-75.4	1.35	-0.22	-9.57
2,387.0	6.90	57.70	2,378.7	89.6	87.7	-84.6	1.77	-1.08	10.97
2,476.0	6.60	52.10	2,467.1	95.6	96.2	-92.9	0.81	-0.34	-6.29
2,565.0	6.00	59.70	2,555.6	101.1	104.3	-100.8	1.15	-0.67	8.54
2,654.0	5.50	52.40	2,644.1	106.0	111.7	-108.0	0.99	-0.56	-8.20
2,743.0	5.60	51.20	2,732.7	111.4	118.4	-114.6	0.17	0.11	-1.35
2,832.0	6.10	63.00	2,821.3	116.2	126.0	-122.0	1.46	0.56	13.26
2,921.0	7.00	63.20	2,909.7	120.8	135.1	-130.9	1.01	1.01	0.22
3,011.0	6.40	60.50	2,999.1	125.8	144.3	-140.0	0.75	-0.67	-3.00
3,100.0	6.20	59.30	3,087.5	130.7	152.8	-148.3	0.27	-0.22	-1.35
3,189.0	5.90	57.90	3,176.0	135.5	160.8	-156.1	0.38	-0.34	-1.57
3,279.0	5.10	54.40	3,265.6	140.3	168.0	-163.1	0.96	-0.89	-3.89
3,367.0	5.80	40.70	3,353.2	146.0	174.1	-169.0	1.67	0.80	-15.57
3,457.0	4.20	58.10	3,442.9	151.2	179.8	-174.6	2.43	-1.78	19.33
3,546.0	4.60	36.80	3,531.6	155.8	184.7	-179.3	1.88	0.45	-23.93
3,635.0	5.70	46.80	3,620.3	161.6	190.1	-184.5	1.59	1.24	11.24
3,724.0	5.70	42.40	3,708.8	167.9	196.3	-190.5	0.49	0.00	-4.94
3,813.0	7.20	49.50	3,797.3	174.8	203.5	-197.5	1.91	1.69	7.98
3,902.0	6.40	43.50	3,885.6	182.0	211.2	-204.9	1.20	-0.90	-6.74
3,992.0	5.90	37.90	3,975.1	189.3	217.5	-210.9	0.87	-0.56	-6.22
4,080.0	5.80	29.60	4,062.7	196.8	222.4	-215.6	0.97	-0.11	-9.43
4,169.0	3.20	40.00	4,151.4	202.6	226.3	-219.3	3.05	-2.92	11.69
4,258.0	0.40	83.40	4,240.3	204.5	228.2	-221.1	3.28	-3.15	48.76
4,348.0	0.70	302.80	4,330.3	204.8	228.0	-220.9	1.16	0.33	-156.22
4,437.0	1.50	308.90	4,419.3	205.9	226.6	-219.6	0.91	0.90	6.85
4,526.0	1.50	223.10	4,508.3	205.7	224.9	-217.9	2.29	0.00	-96.40
4,615.0	1.40	236.30	4,597.3	204.3	223.2	-216.2	0.39	-0.11	14.83
4,704.0	1.80	249.10	4,686.2	203.2	221.0	-214.0	0.60	0.45	14.38
4,793.0	0.60	318.60	4,775.2	203.0	219.4	-212.4	1.89	-1.35	78.09
4,883.0	1.90	280.60	4,865.2	203.7	217.6	-210.6	1.64	1.44	-42.22
4,972.0	0.50	262.30	4,954.2	203.9	215.8	-208.8	1.61	-1.57	-20.56
5,062.0	1.20	278.10	5,044.2	204.0	214.5	-207.5	0.81	0.78	17.56
5,151.0	1.00	89.90	5,133.1	204.1	214.3	-207.3	2.47	-0.22	193.03
5,240.0	0.40	18.00	5,222.1	204.4	215.2	-208.2	1.07	-0.67	-80.79
5,329.0	0.80	312.10	5,311.1	205.1	214.8	-207.8	0.82	0.45	-74.05
5,418.0	1.20	282.20	5,400.1	205.7	213.5	-206.4	0.72	0.45	-33.60
5,507.0	1.60	288.20	5,489.1	206.3	211.4	-204.3	0.48	0.45	6.74

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<b>Site:</b>	SRC Cannon Pad Sec.16-T4N-R68W	<b>MD Reference:</b>	WELL @ 4944.5ft (Ensign Rig #131 - RKB - 13.5')
<b>Well:</b>	SRC Cannon S-16NHZ	<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)
5,596.0	1.80	283.10	5,578.1	207.0	208.8	-201.7	0.28	0.22	-5.73
5,685.0	6.00	265.80	5,666.8	207.0	202.8	-195.7	4.85	4.72	-19.44
5,774.0	8.50	265.70	5,755.1	206.2	191.6	-184.6	2.81	2.81	-0.11
5,864.0	13.30	277.30	5,843.5	207.0	174.7	-167.6	5.84	5.33	12.89
5,953.0	19.30	280.40	5,928.9	210.9	150.1	-142.9	6.81	6.74	3.48
6,042.0	25.90	271.30	6,011.0	214.0	116.1	-108.8	8.37	7.42	-10.22
6,131.0	34.90	264.10	6,087.7	211.9	71.3	-64.1	10.89	10.11	-8.09
6,220.0	44.10	264.60	6,156.3	206.3	15.0	-8.0	10.34	10.34	0.56
6,309.0	48.90	265.50	6,217.6	200.8	-49.3	56.1	5.44	5.39	1.01
6,398.0	54.20	265.30	6,272.9	195.2	-118.8	125.3	5.96	5.96	-0.22
6,487.0	60.90	266.90	6,320.6	190.1	-193.6	200.0	7.68	7.53	1.80
6,576.0	67.40	268.80	6,359.4	187.1	-273.6	279.8	7.55	7.30	2.13
6,621.0	72.00	269.40	6,375.0	186.5	-315.8	322.0	10.30	10.22	1.33
6,665.0	78.10	270.60	6,386.4	186.5	-358.3	364.4	14.11	13.86	2.73
6,710.0	82.60	271.10	6,393.9	187.1	-402.7	408.8	10.06	10.00	1.11
6,755.0	85.30	271.10	6,398.6	188.0	-447.4	453.5	6.00	6.00	0.00
6,788.0	87.50	271.60	6,400.7	188.8	-480.3	486.4	6.84	6.67	1.52
6,807.1	88.46	271.04	6,401.4	189.2	-499.4	505.5	5.79	5.00	-2.92
Landing Pt. (S-16NHZ)									
6,823.0	89.25	270.58	6,401.7	189.4	-515.3	521.4	5.79	5.00	-2.92
7"									
6,884.0	92.30	268.80	6,400.9	189.1	-576.3	582.4	5.79	5.00	-2.92
6,976.0	91.10	269.50	6,398.2	187.7	-668.2	674.2	1.51	-1.30	0.76
7,065.0	91.80	268.60	6,395.9	186.3	-757.2	763.1	1.28	0.79	-1.01
7,154.0	93.60	269.30	6,391.7	184.6	-846.1	851.8	2.17	2.02	0.79
7,243.0	93.30	271.10	6,386.4	185.0	-934.9	940.6	2.05	-0.34	2.02
7,332.0	91.90	271.40	6,382.3	186.9	-1,023.8	1,029.5	1.61	-1.57	0.34
7,422.0	92.00	270.20	6,379.3	188.2	-1,113.7	1,119.5	1.34	0.11	-1.33
7,511.0	92.90	269.50	6,375.5	187.9	-1,202.6	1,208.3	1.28	1.01	-0.79
7,600.0	91.30	269.00	6,372.2	186.8	-1,291.6	1,297.2	1.88	-1.80	-0.56
7,689.0	91.50	267.40	6,370.0	184.0	-1,380.5	1,385.9	1.81	0.22	-1.80
7,779.0	93.60	268.50	6,366.0	180.7	-1,470.3	1,475.6	2.63	2.33	1.22
7,868.0	94.60	269.50	6,359.6	179.2	-1,559.1	1,564.3	1.59	1.12	1.12
7,957.0	92.90	267.20	6,353.8	176.6	-1,647.9	1,652.9	3.21	-1.91	-2.58
8,047.0	94.20	266.00	6,348.3	171.3	-1,737.5	1,742.3	1.96	1.44	-1.33
8,136.0	94.70	267.40	6,341.3	166.2	-1,826.1	1,830.7	1.67	0.56	1.57
8,162.5	94.94	267.93	6,339.1	165.1	-1,852.5	1,857.0	2.21	0.90	2.02
WP #1 (S-16NHZ)									
8,225.0	95.50	269.20	6,333.4	163.6	-1,914.7	1,919.2	2.21	0.90	2.02
8,314.0	95.90	269.00	6,324.6	162.2	-2,003.3	2,007.6	0.50	0.45	-0.22
8,403.0	96.70	270.00	6,314.8	161.4	-2,091.7	2,096.0	1.43	0.90	1.12
8,492.0	95.70	268.50	6,305.2	160.2	-2,180.2	2,184.4	2.02	-1.12	-1.69
8,582.0	94.60	269.00	6,297.1	158.3	-2,269.8	2,273.9	1.34	-1.22	0.56
8,670.0	93.80	270.00	6,290.7	157.5	-2,357.6	2,361.5	1.45	-0.91	1.14
8,760.0	95.10	270.40	6,283.7	157.8	-2,447.3	2,451.2	1.51	1.44	0.44
8,849.0	97.00	271.30	6,274.3	159.2	-2,535.8	2,539.7	2.36	2.13	1.01
8,938.0	98.10	270.60	6,262.6	160.6	-2,624.0	2,627.9	1.46	1.24	-0.79
9,027.0	98.70	271.80	6,249.6	162.5	-2,712.0	2,716.0	1.49	0.67	1.35
9,117.0	98.00	272.20	6,236.6	165.6	-2,801.0	2,805.0	0.89	-0.78	0.44
9,206.0	95.80	273.00	6,225.9	169.6	-2,889.3	2,893.4	2.63	-2.47	0.90
9,295.0	94.40	272.50	6,218.0	173.8	-2,977.8	2,982.0	1.67	-1.57	-0.56
9,384.0	94.00	271.60	6,211.4	177.0	-3,066.5	3,070.7	1.10	-0.45	-1.01

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<b>Well:</b>	SRC Cannon S-16NHZ	<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)
9,474.0	91.30	270.40	6,207.3	178.6	-3,156.4	3,160.6	3.28	-3.00	-1.33
9,562.0	91.50	269.50	6,205.1	178.5	-3,244.4	3,248.6	1.05	0.23	-1.02
9,652.0	91.80	268.80	6,202.5	177.2	-3,334.3	3,338.4	0.85	0.33	-0.78
9,741.0	92.50	268.50	6,199.2	175.1	-3,423.2	3,427.2	0.86	0.79	-0.34
9,830.0	92.60	268.10	6,195.2	172.4	-3,512.1	3,515.9	0.46	0.11	-0.45
9,919.0	92.90	267.20	6,191.0	168.8	-3,600.9	3,604.6	1.06	0.34	-1.01
10,008.0	94.40	268.10	6,185.3	165.1	-3,689.7	3,693.1	1.96	1.69	1.01
10,037.0	94.82	268.39	6,183.0	164.3	-3,718.6	3,722.0	1.75	1.44	1.00
WP #2 (S-16NHZ)									
10,098.0	95.70	269.00	6,177.4	162.9	-3,779.3	3,782.6	1.75	1.44	1.00
10,186.0	93.80	269.00	6,170.1	161.3	-3,867.0	3,870.2	2.16	-2.16	0.00
10,276.0	93.40	267.90	6,164.4	158.9	-3,956.8	3,959.9	1.30	-0.44	-1.22
10,365.0	95.10	269.50	6,157.8	156.9	-4,045.5	4,048.5	2.62	1.91	1.80
10,454.0	93.30	269.70	6,151.3	156.3	-4,134.2	4,137.2	2.03	-2.02	0.22
10,543.0	93.10	269.00	6,146.4	155.3	-4,223.1	4,225.9	0.82	-0.22	-0.79
10,632.0	93.50	267.80	6,141.2	152.8	-4,311.9	4,314.6	1.42	0.45	-1.35
10,722.0	92.90	267.60	6,136.2	149.2	-4,401.7	4,404.2	0.70	-0.67	-0.22
10,795.0	92.30	267.40	6,132.9	146.0	-4,474.6	4,476.9	0.87	-0.82	-0.27
10,845.0	92.30	267.40	6,130.9	143.7	-4,524.5	4,526.7	0.00	0.00	0.00
BHL 1288'FSL & 475'FWL									

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude		Longitude
- hit/miss target										
- Shape										
SHL 1091'FSL & 280'I	0.00	0.00	1.0	0.0	0.0	1,355,854.01	3,139,483.46	40.309140		-104.999848
- survey hits target center										
- Point										
BHL 1288'FSL & 475'I	0.00	0.00	6,104.5	153.5	-4,534.0	1,355,981.90	3,134,948.89	40.309560		-105.016105
- survey misses target center by 29.7ft at 10845.0ft MD (6130.9 TVD, 143.7 N, -4524.5 E)										
- Point										

Casing Points						
Measured Depth (ft)	Vertical Depth (ft)	Name			Casing Diameter (")	Hole Diameter (")
6,823.0	6,401.7	7"			7	7-1/2

Checked By: _____	Approved By: _____	Date: _____
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