

Condor Energy, Weld County, CO

Well Name: **Logan 2H**

Surface Location: Logan 2H Pad Sec.19-T7N-R59W

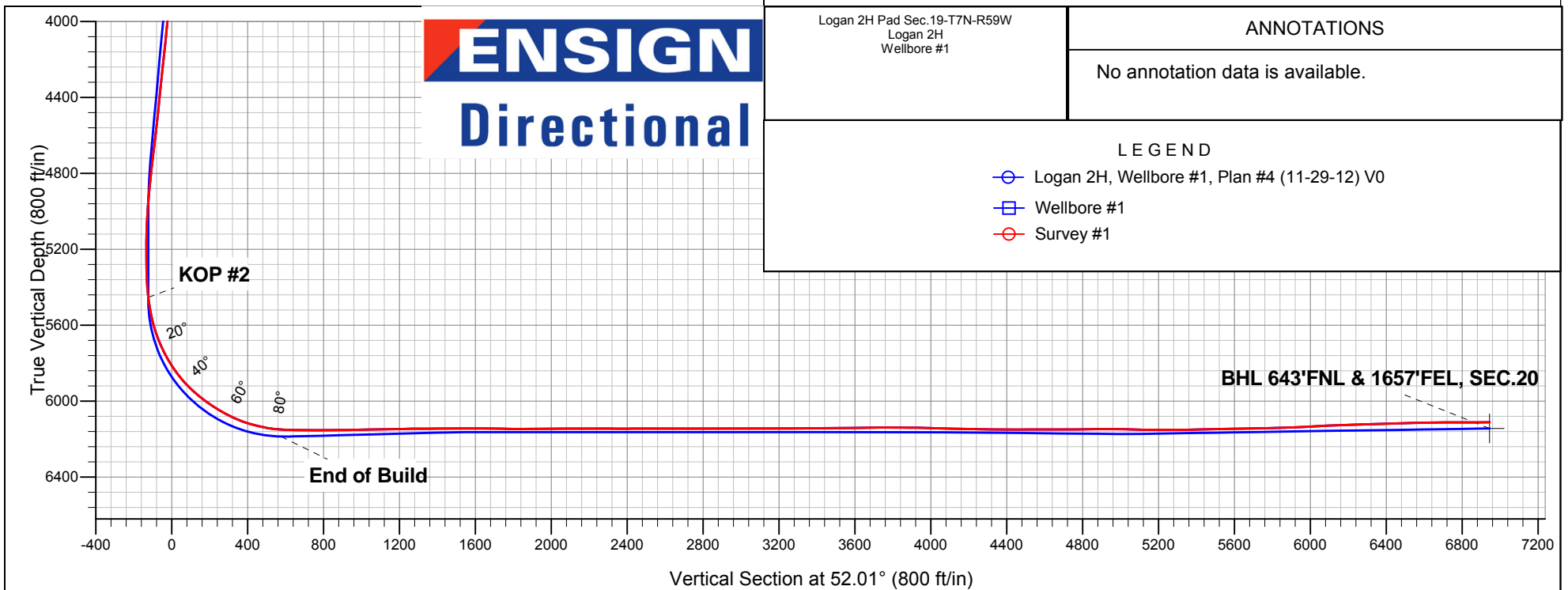
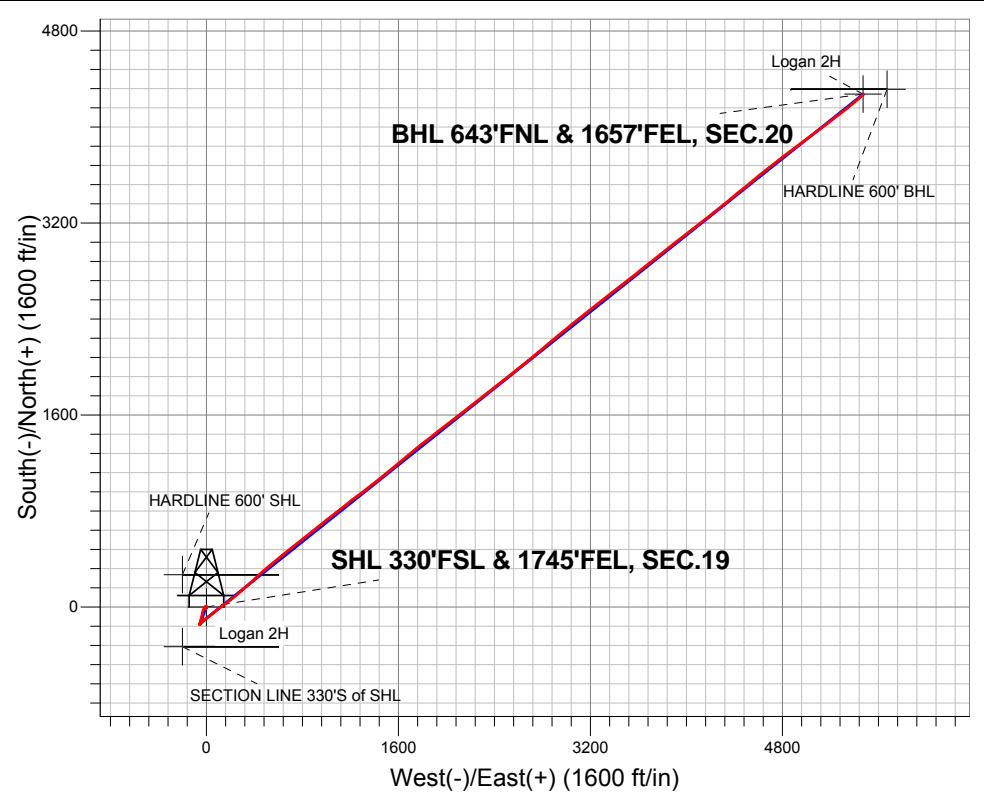
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4939.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1448209.89	3411571.45	40.554300	-104.018800	
RKB Ensign 136 - 12.5' WELL @ 4951.5ft (RKB Ensign 136 - 12.5')						

FINAL SURVEY

Projected Bottom Hole Location
12911' MD 6111' TVD 4271' N & 5477' E
of SHL
91.0 degree Incl @ 50.0 degree AZM



Logan 2H Pad Sec.19-T7N-R59W
Logan 2H
Wellbore #1

ANNOTATIONS

No annotation data is available.

LEGEND

- Logan 2H, Wellbore #1, Plan #4 (11-29-12) V0
- Wellbore #1
- Survey #1



Directional

Condor Energy, Weld County, CO

SEC.19-T7N-R59W

Logan 2H Pad Sec.19-T7N-R59W

Logan 2H

Wellbore #1

Survey: Survey #1

Standard Survey Report

10 December, 2012

Company:	Condor Energy, Weld County, CO	Local Co-ordinate Reference:	Well Logan 2H
Project:	SEC.19-T7N-R59W	TVD Reference:	WELL @ 4951.5ft (RKB Ensign 136 - 12.5')
Site:	Logan 2H Pad Sec.19-T7N-R59W	MD Reference:	WELL @ 4951.5ft (RKB Ensign 136 - 12.5')
Well:	Logan 2H	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.19-T7N-R59W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Logan 2H Pad Sec.19-T7N-R59W		
Site Position:		Northing:	1,448,209.89 ft
From:	Lat/Long	Easting:	3,411,571.45 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.554300
		Longitude:	-104.018800
		Grid Convergence:	0.96 °

Well	Logan 2H		
Well Position	+N/-S	0.0 ft	Northing: 1,448,209.89 ft
	+E/-W	0.0 ft	Easting: 3,411,571.45 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.554300
		Longitude:	-104.018800
		Ground Level:	4,939.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/9/2012	8.28	67.25	53,140

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	52.01	

Survey Program	Date	12/10/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
175.0	12,911.0	Survey #1 (Wellbore #1)			

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
0.5	0.00	186.30	0.5	0.0	0.0	0.0	0.46	0.46	0.00	
HARDLINE 600' SHL										
1.0	0.00	186.30	1.0	0.0	0.0	0.0	0.46	0.46	0.00	
SHL 330'FSL & 1745'FEL, SEC.19										
3.0	0.01	186.30	3.0	0.0	0.0	0.0	0.46	0.46	0.00	
SECTION LINE 330'S of SHL										
175.0	0.80	186.30	175.0	-1.2	-0.1	-0.9	0.46	0.46	0.00	
249.0	1.10	184.40	249.0	-2.4	-0.2	-1.7	0.41	0.41	-2.57	
376.0	1.40	186.90	376.0	-5.2	-0.5	-3.6	0.24	0.24	1.97	
503.0	1.20	187.90	502.9	-8.0	-0.9	-5.7	0.16	-0.16	0.79	
631.0	1.30	188.30	630.9	-10.8	-1.3	-7.7	0.08	0.08	0.31	
758.0	0.40	249.10	757.9	-12.4	-1.9	-9.1	0.91	-0.71	47.87	

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Site:	Logan 2H Pad Sec.19-T7N-R59W	MD Reference:	WELL @ 4951.5ft (RKB Ensign 136 - 12.5')
Well:	Logan 2H	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)
886.0	1.30	322.60	885.9	-11.4	-3.2	-9.5	0.97	0.70	57.42
956.0	2.00	333.10	955.8	-9.7	-4.2	-9.3	1.09	1.00	15.00
1,082.0	2.40	330.70	1,081.7	-5.4	-6.5	-8.5	0.33	0.32	-1.90
1,203.0	0.40	183.70	1,202.7	-3.6	-7.8	-8.4	2.27	-1.65	-121.49
1,325.0	0.70	181.60	1,324.7	-4.8	-7.8	-9.1	0.25	0.25	-1.72
1,446.0	0.50	203.00	1,445.7	-6.0	-8.1	-10.1	0.25	-0.17	17.69
1,567.0	0.50	192.70	1,566.7	-7.0	-8.4	-10.9	0.07	0.00	-8.51
1,689.0	0.40	168.20	1,688.7	-8.0	-8.4	-11.5	0.18	-0.08	-20.08
1,810.0	1.30	136.20	1,809.7	-9.4	-7.4	-11.6	0.81	0.74	-26.45
1,937.0	2.40	71.90	1,936.6	-9.6	-3.9	-8.9	1.71	0.87	-50.63
2,064.0	1.80	29.00	2,063.5	-7.0	-0.4	-4.6	1.29	-0.47	-33.78
2,192.0	0.50	359.30	2,191.5	-4.7	0.6	-2.4	1.08	-1.02	-23.20
2,319.0	0.50	23.70	2,318.5	-3.6	0.8	-1.6	0.17	0.00	19.21
2,445.0	0.70	24.60	2,444.5	-2.4	1.4	-0.4	0.16	0.16	0.71
2,573.0	0.50	356.30	2,572.5	-1.2	1.6	0.6	0.27	-0.16	-22.11
2,701.0	0.90	356.30	2,700.5	0.4	1.5	1.5	0.31	0.31	0.00
2,829.0	0.80	351.60	2,828.5	2.3	1.3	2.5	0.10	-0.08	-3.67
2,957.0	1.20	337.70	2,956.5	4.4	0.7	3.3	0.36	0.31	-10.86
3,086.0	0.50	315.00	3,085.4	6.1	-0.2	3.6	0.59	-0.54	-17.60
3,214.0	0.70	271.20	3,213.4	6.5	-1.4	2.9	0.38	0.16	-34.22
3,342.0	0.70	247.50	3,341.4	6.2	-2.9	1.5	0.22	0.00	-18.52
3,471.0	1.00	221.30	3,470.4	5.0	-4.4	-0.3	0.37	0.23	-20.31
3,599.0	0.70	217.10	3,598.4	3.6	-5.6	-2.2	0.24	-0.23	-3.28
3,727.0	1.80	241.20	3,726.4	2.0	-7.8	-4.9	0.93	0.86	18.83
3,855.0	4.00	218.90	3,854.2	-2.5	-12.4	-11.3	1.90	1.72	-17.42
3,983.0	5.50	209.70	3,981.8	-11.3	-18.2	-21.3	1.31	1.17	-7.19
4,112.0	6.60	198.10	4,110.0	-23.7	-23.6	-33.2	1.27	0.85	-8.99
4,240.0	7.50	201.80	4,237.1	-38.4	-29.0	-46.5	0.79	0.70	2.89
4,368.0	7.70	190.60	4,363.9	-54.6	-33.6	-60.1	1.17	0.16	-8.75
4,497.0	7.60	190.90	4,491.8	-71.5	-36.8	-73.0	0.08	-0.08	0.23
4,625.0	8.50	195.50	4,618.5	-88.9	-41.0	-87.0	0.86	0.70	3.59
4,753.0	8.50	195.30	4,745.1	-107.2	-46.0	-102.2	0.02	0.00	-0.16
4,881.0	8.20	192.10	4,871.8	-125.2	-50.4	-116.8	0.43	-0.23	-2.50
5,009.0	4.70	180.20	4,999.0	-139.4	-52.3	-127.0	2.91	-2.73	-9.30
5,138.0	1.70	223.70	5,127.8	-146.1	-53.7	-132.2	2.84	-2.33	33.72
5,266.0	0.60	65.60	5,255.7	-147.1	-54.4	-133.4	1.77	-0.86	-123.52
5,394.0	3.10	33.60	5,383.7	-144.0	-51.9	-129.5	2.04	1.95	-25.00
5,437.0	5.90	41.50	5,426.5	-141.4	-49.7	-126.2	6.65	6.51	18.37
5,480.0	7.70	43.60	5,469.2	-137.6	-46.3	-121.2	4.23	4.19	4.88
5,523.0	9.50	39.60	5,511.7	-132.8	-42.0	-114.9	4.41	4.19	-9.30
5,565.0	12.80	40.10	5,552.9	-126.6	-36.8	-106.9	7.86	7.86	1.19
5,608.0	14.80	46.60	5,594.7	-119.1	-29.8	-96.8	5.88	4.65	15.12
5,651.0	18.30	51.00	5,635.9	-111.1	-20.5	-84.6	8.64	8.14	10.23
5,694.0	22.00	54.20	5,676.3	-102.2	-8.8	-69.8	8.98	8.60	7.44
5,737.0	24.40	54.00	5,715.8	-92.2	5.0	-52.8	5.58	5.58	-0.47
5,779.0	27.70	52.60	5,753.5	-81.2	19.7	-34.4	7.99	7.86	-3.33
5,822.0	31.00	51.90	5,791.0	-68.3	36.4	-13.3	7.72	7.67	-1.63
5,865.0	34.00	50.10	5,827.3	-53.7	54.3	9.8	7.33	6.98	-4.19
5,908.0	37.90	50.30	5,862.1	-37.6	73.7	35.0	9.07	9.07	0.47
5,950.0	41.20	51.50	5,894.4	-20.7	94.5	61.7	8.06	7.86	2.86
5,993.0	44.70	53.60	5,925.9	-2.9	117.8	91.0	8.79	8.14	4.88
6,036.0	48.70	54.30	5,955.4	15.5	143.1	122.3	9.38	9.30	1.63
6,079.0	52.30	53.30	5,982.7	35.1	169.8	155.4	8.56	8.37	-2.33
6,122.0	55.10	52.00	6,008.2	56.1	197.4	190.1	6.95	6.51	-3.02

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Design:	Wellbore #1	Database:	Landmark

Survey										
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6,164.0	57.00	50.60	6,031.7	77.9	224.5	224.9	5.30	4.52	-3.33	
6,207.0	59.30	50.30	6,054.3	101.1	252.7	261.4	5.38	5.35	-0.70	
6,250.0	62.90	50.10	6,075.1	125.2	281.6	299.0	8.38	8.37	-0.47	
6,293.0	66.60	48.50	6,093.5	150.6	311.1	337.9	9.24	8.60	-3.72	
6,335.0	70.70	47.50	6,108.8	176.8	340.2	376.9	10.01	9.76	-2.38	
6,378.0	74.20	47.30	6,121.7	204.5	370.3	417.8	8.15	8.14	-0.47	
6,421.0	76.40	47.10	6,132.6	232.8	400.8	459.2	5.14	5.12	-0.47	
6,464.0	79.90	47.80	6,141.5	261.2	431.8	501.1	8.29	8.14	1.63	
6,506.0	83.90	48.70	6,147.4	288.9	462.9	542.6	9.76	9.52	2.14	
6,539.0	86.20	49.80	6,150.2	310.4	487.8	575.5	7.72	6.97	3.33	
6,560.5	87.38	50.26	6,151.4	324.2	504.2	596.9	5.90	5.49	2.16	
Landing Point 645'FSL & 1240'FEL										
6,590.0	89.00	50.90	6,152.4	342.9	527.0	626.4	5.90	5.49	2.15	
6,591.0	89.30	48.90	6,152.4	343.5	527.8	627.4	202.22	30.00	-200.00	
6,633.0	89.40	50.60	6,152.8	370.7	559.8	669.4	4.05	0.24	4.05	
6,676.0	89.30	51.30	6,153.3	397.7	593.2	712.3	1.64	-0.23	1.63	
6,719.0	89.90	51.30	6,153.6	424.6	626.8	755.3	1.40	1.40	0.00	
6,762.0	90.30	51.30	6,153.6	451.5	660.3	798.3	0.93	0.93	0.00	
6,804.0	90.60	51.20	6,153.2	477.8	693.1	840.3	0.75	0.71	-0.24	
6,847.0	90.40	50.60	6,152.9	504.9	726.4	883.3	1.47	-0.47	-1.40	
6,890.0	90.80	51.00	6,152.4	532.1	759.8	926.3	1.32	0.93	0.93	
6,933.0	91.40	51.20	6,151.6	559.1	793.2	969.3	1.47	1.40	0.47	
6,976.0	91.10	51.50	6,150.6	585.9	826.8	1,012.3	0.99	-0.70	0.70	
7,018.0	90.60	51.50	6,150.0	612.1	859.7	1,054.3	1.19	-1.19	0.00	
7,061.0	91.40	51.90	6,149.3	638.7	893.4	1,097.3	2.08	1.86	0.93	
7,104.0	91.30	52.00	6,148.3	665.2	927.3	1,140.3	0.33	-0.23	0.23	
7,147.0	90.90	52.40	6,147.4	691.6	961.2	1,183.2	1.32	-0.93	0.93	
7,190.0	90.80	52.20	6,146.8	717.9	995.2	1,226.2	0.52	-0.23	-0.47	
7,232.0	90.70	51.90	6,146.2	743.7	1,028.4	1,268.2	0.75	-0.24	-0.71	
7,275.0	90.40	51.70	6,145.8	770.3	1,062.2	1,311.2	0.84	-0.70	-0.47	
7,318.0	90.20	51.30	6,145.6	797.1	1,095.8	1,354.2	1.04	-0.47	-0.93	
7,361.0	90.30	51.20	6,145.4	824.0	1,129.3	1,397.2	0.33	0.23	-0.23	
7,391.0	90.30	51.00	6,145.3	842.8	1,152.7	1,427.2	0.67	0.00	-0.67	
7,421.0	90.30	51.20	6,145.1	861.6	1,176.0	1,457.2	0.67	0.00	0.67	
7,452.0	90.40	51.70	6,144.9	881.0	1,200.3	1,488.2	1.64	0.32	1.61	
7,457.8	90.46	51.83	6,144.9	884.5	1,204.8	1,494.0	2.54	1.00	2.33	
WP1										
7,482.0	90.70	52.40	6,144.6	899.4	1,223.9	1,518.2	2.54	1.00	2.33	
7,512.0	90.80	52.60	6,144.2	917.7	1,247.7	1,548.2	0.75	0.33	0.67	
7,543.0	90.20	52.90	6,144.0	936.4	1,272.4	1,579.2	2.16	-1.94	0.97	
7,573.0	89.90	53.10	6,143.9	954.5	1,296.4	1,609.2	1.20	-1.00	0.67	
7,604.0	89.20	53.10	6,144.2	973.1	1,321.2	1,640.2	2.26	-2.26	0.00	
7,634.0	88.80	53.10	6,144.7	991.1	1,345.1	1,670.2	1.33	-1.33	0.00	
7,665.0	88.60	52.80	6,145.4	1,009.8	1,369.9	1,701.2	1.16	-0.65	-0.97	
7,695.0	88.80	52.60	6,146.1	1,028.0	1,393.7	1,731.2	0.94	0.67	-0.67	
7,725.0	89.60	52.20	6,146.5	1,046.3	1,417.5	1,761.2	2.98	2.67	-1.33	
7,756.0	89.60	51.70	6,146.7	1,065.4	1,441.9	1,792.2	1.61	0.00	-1.61	
7,786.0	89.90	51.20	6,146.9	1,084.1	1,465.4	1,822.2	1.94	1.00	-1.67	
7,816.0	90.30	51.20	6,146.8	1,102.9	1,488.7	1,852.2	1.33	1.33	0.00	
7,845.0	90.40	51.00	6,146.6	1,121.1	1,511.3	1,881.1	0.77	0.34	-0.69	
7,876.0	90.30	50.10	6,146.4	1,140.8	1,535.3	1,912.1	2.92	-0.32	-2.90	
7,906.0	90.30	49.60	6,146.3	1,160.1	1,558.2	1,942.1	1.67	0.00	-1.67	
7,937.0	90.10	49.10	6,146.2	1,180.3	1,581.7	1,973.1	1.74	-0.65	-1.61	
7,967.0	90.00	49.40	6,146.1	1,199.9	1,604.4	2,003.0	1.05	-0.33	1.00	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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7,998.0	90.40	50.30	6,146.0	1,219.9	1,628.1	2,034.0	3.18	1.29	2.90	
8,029.0	90.60	49.90	6,145.8	1,239.8	1,651.9	2,065.0	1.44	0.65	-1.29	
8,059.0	90.30	49.90	6,145.5	1,259.1	1,674.9	2,095.0	1.00	-1.00	0.00	
8,089.0	90.00	50.50	6,145.4	1,278.3	1,697.9	2,125.0	2.24	-1.00	2.00	
8,119.0	89.60	51.30	6,145.6	1,297.2	1,721.2	2,155.0	2.98	-1.33	2.67	
8,150.0	89.70	51.30	6,145.7	1,316.6	1,745.4	2,186.0	0.32	0.32	0.00	
8,192.0	90.20	52.40	6,145.8	1,342.5	1,778.4	2,228.0	2.88	1.19	2.62	
8,235.0	90.30	51.70	6,145.6	1,369.0	1,812.3	2,271.0	1.64	0.23	-1.63	
8,277.0	89.70	51.00	6,145.6	1,395.2	1,845.1	2,313.0	2.20	-1.43	-1.67	
8,320.0	89.90	51.50	6,145.7	1,422.1	1,878.6	2,356.0	1.25	0.47	1.16	
8,362.0	90.30	52.40	6,145.7	1,448.0	1,911.7	2,397.9	2.34	0.95	2.14	
8,404.0	90.30	51.90	6,145.4	1,473.8	1,944.9	2,439.9	1.19	0.00	-1.19	
8,447.0	89.90	52.00	6,145.4	1,500.3	1,978.7	2,482.9	0.96	-0.93	0.23	
8,489.0	90.40	51.90	6,145.3	1,526.2	2,011.8	2,524.9	1.21	1.19	-0.24	
8,531.0	90.20	52.80	6,145.0	1,551.8	2,045.1	2,566.9	2.20	-0.48	2.14	
8,573.0	90.30	52.90	6,144.9	1,577.2	2,078.5	2,608.9	0.34	0.24	0.24	
8,616.0	90.10	52.40	6,144.7	1,603.3	2,112.7	2,651.9	1.25	-0.47	-1.16	
8,658.0	90.00	52.00	6,144.7	1,629.0	2,145.9	2,693.9	0.98	-0.24	-0.95	
8,700.0	90.70	52.00	6,144.4	1,654.9	2,179.0	2,735.9	1.67	1.67	0.00	
8,743.0	89.90	51.50	6,144.2	1,681.5	2,212.8	2,778.9	2.19	-1.86	-1.16	
8,785.0	89.10	51.50	6,144.6	1,707.6	2,245.6	2,820.9	1.90	-1.90	0.00	
8,827.0	89.30	51.30	6,145.1	1,733.8	2,278.5	2,862.9	0.67	0.48	-0.48	
8,870.0	89.40	52.20	6,145.6	1,760.5	2,312.2	2,905.9	2.11	0.23	2.09	
8,912.0	89.80	52.00	6,145.9	1,786.3	2,345.4	2,947.9	1.06	0.95	-0.48	
8,955.0	89.90	51.70	6,146.0	1,812.8	2,379.2	2,990.9	0.74	0.23	-0.70	
8,997.0	90.00	52.80	6,146.1	1,838.5	2,412.4	3,032.9	2.63	0.24	2.62	
9,039.0	90.70	52.60	6,145.8	1,864.0	2,445.8	3,074.9	1.73	1.67	-0.48	
9,082.0	90.10	51.90	6,145.5	1,890.3	2,479.8	3,117.9	2.14	-1.40	-1.63	
9,124.0	90.00	51.30	6,145.5	1,916.4	2,512.7	3,159.9	1.45	-0.24	-1.43	
9,167.0	90.80	51.30	6,145.2	1,943.3	2,546.3	3,202.9	1.86	1.86	0.00	
9,209.0	90.40	51.20	6,144.7	1,969.6	2,579.0	3,244.9	0.98	-0.95	-0.24	
9,252.0	90.30	50.80	6,144.5	1,996.6	2,612.4	3,287.9	0.96	-0.23	-0.93	
9,295.0	91.00	50.80	6,144.0	2,023.8	2,645.8	3,330.9	1.63	1.63	0.00	
9,337.0	90.10	50.10	6,143.6	2,050.5	2,678.2	3,372.9	2.71	-2.14	-1.67	
9,380.0	90.10	50.50	6,143.5	2,078.0	2,711.2	3,415.8	0.93	0.00	0.93	
9,423.0	91.20	50.60	6,143.0	2,105.3	2,744.4	3,458.8	2.57	2.56	0.23	
9,466.0	91.00	50.30	6,142.2	2,132.7	2,777.6	3,501.8	0.84	-0.47	-0.70	
9,508.0	91.20	50.30	6,141.4	2,159.5	2,809.9	3,543.8	0.48	0.48	0.00	
9,551.0	90.90	49.90	6,140.6	2,187.1	2,842.9	3,586.7	1.16	-0.70	-0.93	
9,594.0	90.30	49.60	6,140.2	2,214.9	2,875.7	3,629.7	1.56	-1.40	-0.70	
9,637.0	90.60	50.10	6,139.8	2,242.6	2,908.6	3,672.7	1.36	0.70	1.16	
9,680.0	90.70	50.60	6,139.3	2,270.1	2,941.7	3,715.7	1.19	0.23	1.16	
9,722.0	90.00	51.00	6,139.1	2,296.6	2,974.2	3,757.6	1.92	-1.67	0.95	
9,765.0	89.10	51.30	6,139.4	2,323.6	3,007.7	3,800.6	2.21	-2.09	0.70	
9,808.0	89.80	51.20	6,139.8	2,350.5	3,041.2	3,843.6	1.64	1.63	-0.23	
9,851.0	89.60	51.50	6,140.0	2,377.3	3,074.8	3,886.6	0.84	-0.47	0.70	
9,894.0	88.80	51.50	6,140.6	2,404.1	3,108.5	3,929.6	1.86	-1.86	0.00	
9,936.0	88.50	51.00	6,141.6	2,430.4	3,141.2	3,971.6	1.39	-0.71	-1.19	
9,978.6	88.90	50.80	6,142.6	2,457.2	3,174.3	4,014.2	1.04	0.93	-0.47	
WP2										
9,979.0	88.90	50.80	6,142.6	2,457.5	3,174.6	4,014.6	1.04	0.93	-0.47	
10,022.0	88.50	51.50	6,143.6	2,484.5	3,208.1	4,057.6	1.87	-0.93	1.63	
10,065.0	88.20	51.50	6,144.8	2,511.2	3,241.7	4,100.6	0.70	-0.70	0.00	
10,107.0	88.40	51.50	6,146.1	2,537.4	3,274.5	4,142.5	0.48	0.48	0.00	

Company:	Condor Energy, Weld County, CO	Local Co-ordinate Reference:	Well Logan 2H
Project:	SEC.19-T7N-R59W	TVD Reference:	WELL @ 4951.5ft (RKB Ensign 136 - 12.5')
Site:	Logan 2H Pad Sec.19-T7N-R59W	MD Reference:	WELL @ 4951.5ft (RKB Ensign 136 - 12.5')
Well:	Logan 2H	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)
10,150.0	88.50	52.20	6,147.2	2,563.9	3,308.3	4,185.5	1.64	0.23	1.63
10,193.0	88.80	52.00	6,148.2	2,590.3	3,342.3	4,228.5	0.84	0.70	-0.47
10,236.0	88.90	52.40	6,149.1	2,616.7	3,376.2	4,271.5	0.96	0.23	0.93
10,279.0	89.00	52.00	6,149.9	2,643.0	3,410.2	4,314.5	0.96	0.23	-0.93
10,321.0	89.80	52.00	6,150.3	2,668.9	3,443.3	4,356.5	1.90	1.90	0.00
10,364.0	90.10	51.90	6,150.4	2,695.4	3,477.2	4,399.5	0.74	0.70	-0.23
10,407.0	90.20	52.00	6,150.3	2,721.9	3,511.0	4,442.5	0.33	0.23	0.23
10,450.0	90.30	52.00	6,150.1	2,748.3	3,544.9	4,485.5	0.23	0.23	0.00
10,492.0	90.00	51.70	6,150.0	2,774.3	3,577.9	4,527.5	1.01	-0.71	-0.71
10,535.0	89.90	51.70	6,150.0	2,800.9	3,611.7	4,570.5	0.23	-0.23	0.00
10,578.0	89.90	51.50	6,150.1	2,827.7	3,645.4	4,613.5	0.47	0.00	-0.47
10,621.0	89.90	51.30	6,150.2	2,854.5	3,679.0	4,656.5	0.47	0.00	-0.47
10,664.0	90.00	51.20	6,150.2	2,881.4	3,712.5	4,699.5	0.33	0.23	-0.23
10,706.0	90.70	51.20	6,149.9	2,907.7	3,745.3	4,741.5	1.67	1.67	0.00
10,749.0	91.00	51.20	6,149.3	2,934.7	3,778.8	4,784.5	0.70	0.70	0.00
10,794.0	91.30	51.20	6,148.4	2,962.8	3,813.8	4,829.4	0.67	0.67	0.00
10,839.0	90.70	52.00	6,147.6	2,990.8	3,849.1	4,874.4	2.22	-1.33	1.78
10,883.0	89.80	52.40	6,147.4	3,017.8	3,883.9	4,918.4	2.24	-2.05	0.91
10,928.0	89.20	52.60	6,147.8	3,045.1	3,919.5	4,963.4	1.41	-1.33	0.44
10,973.0	89.20	52.60	6,148.4	3,072.5	3,955.3	5,008.4	0.00	0.00	0.00
10,979.1	89.09	52.63	6,148.5	3,076.2	3,960.1	5,014.5	1.83	-1.78	0.44
WP 3									
11,018.0	88.40	52.80	6,149.4	3,099.7	3,991.1	5,053.4	1.83	-1.78	0.44
11,063.0	88.50	52.40	6,150.6	3,127.1	4,026.8	5,098.4	0.92	0.22	-0.89
11,108.0	89.20	52.00	6,151.5	3,154.6	4,062.4	5,143.4	1.79	1.56	-0.89
11,152.0	90.00	51.90	6,151.8	3,181.8	4,097.0	5,187.4	1.83	1.82	-0.23
11,197.0	90.10	51.70	6,151.8	3,209.6	4,132.4	5,232.4	0.50	0.22	-0.44
11,242.0	90.30	51.50	6,151.6	3,237.5	4,167.6	5,277.4	0.63	0.44	-0.44
11,287.0	90.70	51.20	6,151.2	3,265.6	4,202.8	5,322.4	1.11	0.89	-0.67
11,332.0	91.00	51.00	6,150.6	3,293.9	4,237.8	5,367.4	0.80	0.67	-0.44
11,376.0	91.10	50.60	6,149.7	3,321.7	4,271.9	5,411.3	0.94	0.23	-0.91
11,421.0	91.00	50.60	6,148.9	3,350.3	4,306.7	5,456.3	0.22	-0.22	0.00
11,466.0	91.00	50.30	6,148.1	3,378.9	4,341.4	5,501.3	0.67	0.00	-0.67
11,511.0	91.60	52.20	6,147.1	3,407.1	4,376.4	5,546.3	4.43	1.33	4.22
11,556.0	91.20	51.20	6,146.0	3,434.9	4,411.7	5,591.3	2.39	-0.89	-2.22
11,600.0	90.00	50.80	6,145.6	3,462.6	4,445.9	5,635.3	2.87	-2.73	-0.91
11,645.0	90.60	51.00	6,145.3	3,491.0	4,480.9	5,680.2	1.41	1.33	0.44
11,690.0	91.50	50.80	6,144.5	3,519.4	4,515.8	5,725.2	2.05	2.00	-0.44
11,734.0	91.60	50.50	6,143.3	3,547.3	4,549.8	5,769.2	0.72	0.23	-0.68
11,779.0	91.60	50.60	6,142.0	3,575.9	4,584.5	5,814.2	0.22	0.00	0.22
11,824.0	92.40	50.50	6,140.5	3,604.4	4,619.2	5,859.1	1.79	1.78	-0.22
11,869.0	92.80	50.50	6,138.4	3,633.0	4,653.9	5,904.1	0.89	0.89	0.00
11,914.0	92.30	51.50	6,136.4	3,661.3	4,688.9	5,949.0	2.48	-1.11	2.22
11,958.0	92.90	51.30	6,134.4	3,688.7	4,723.2	5,993.0	1.44	1.36	-0.45
12,003.0	92.60	52.20	6,132.3	3,716.6	4,758.5	6,037.9	2.11	-0.67	2.00
12,048.0	92.50	53.10	6,130.3	3,743.8	4,794.3	6,082.9	2.01	-0.22	2.00
12,093.0	92.60	53.30	6,128.3	3,770.8	4,830.3	6,127.8	0.50	0.22	0.44
12,138.0	92.00	53.10	6,126.5	3,797.7	4,866.3	6,172.8	1.41	-1.33	-0.44
12,182.0	91.80	52.60	6,125.0	3,824.3	4,901.3	6,216.7	1.22	-0.45	-1.14
12,227.0	92.20	52.40	6,123.4	3,851.6	4,937.0	6,261.7	0.99	0.89	-0.44
12,272.0	91.60	53.30	6,121.9	3,878.8	4,972.8	6,306.7	2.40	-1.33	2.00
12,317.0	91.40	53.50	6,120.8	3,905.6	5,008.9	6,351.6	0.63	-0.44	0.44
12,362.0	92.20	53.80	6,119.4	3,932.3	5,045.2	6,396.6	1.90	1.78	0.67
12,406.0	91.90	54.00	6,117.8	3,958.2	5,080.7	6,440.6	0.82	-0.68	0.45

Checked By: _____ Approved By: _____ Date: _____