

PDC ENERGY

WELD COUNTY, COLORADO

NE SW SEC. 13 T4N R67W 6th P.M.

STROH 13O-343

JOB # 2015-051-123

15 June, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: NE SW SEC. 13 T4N R67W 6th P.M.
Well: STROH 130-343
Wellbore: JOB # 2015-051-123
Design: FINAL SURVEYS

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
926.9	927.0	1.06	156.94	-5.9	6.7	6.5	9.6	SURFACE CASING	
6499.6	6568.0	2.44	206.64	266.5	634.2	-208.5	735.6	KOP	
7187.7	7636.0	88.89	184.56	-352.2	642.0	408.4	1355.8	ICP	
7144.6	14335.0	91.10	180.30	-7047.4	617.8	7074.4	8054.0	LAST SURVEY - JUNE 14, 2015	
7143.4	14401.0	91.10	180.30	-7113.4	617.4	7140.1	8120.0	EXTRAPOLATION TO TD	

AS DRILLED: LOCAL COORDINATES:

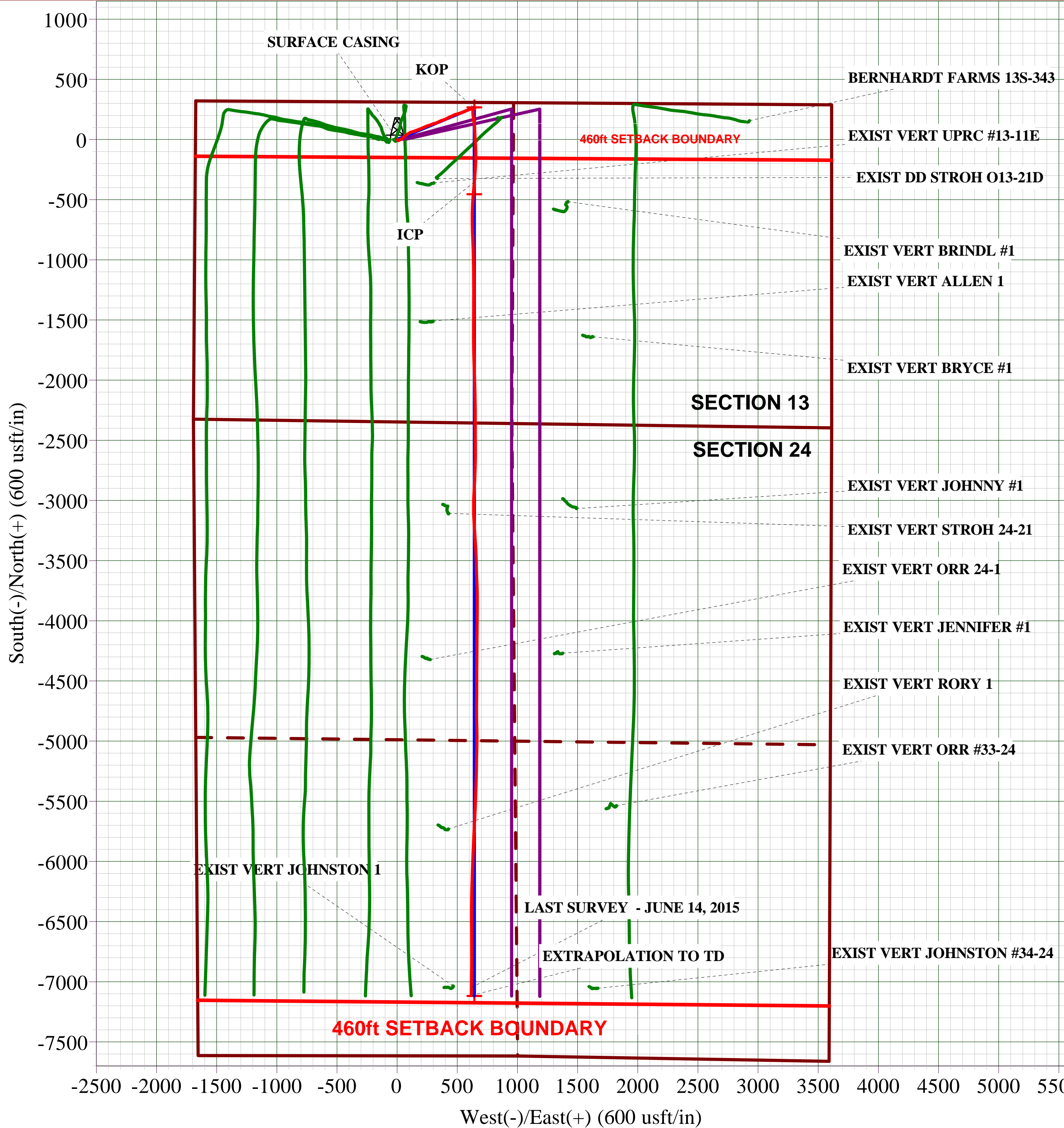
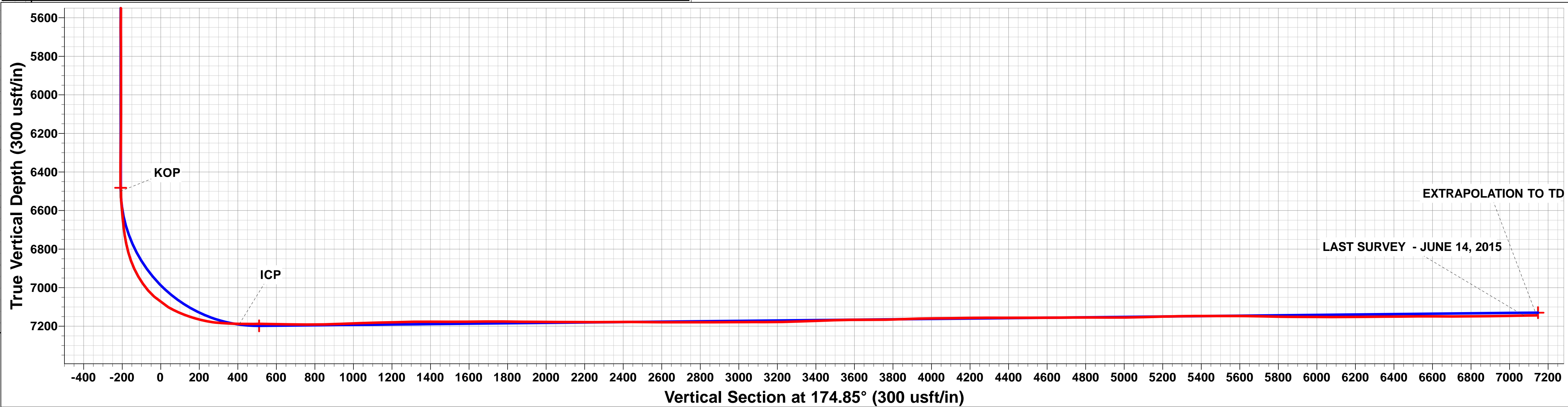
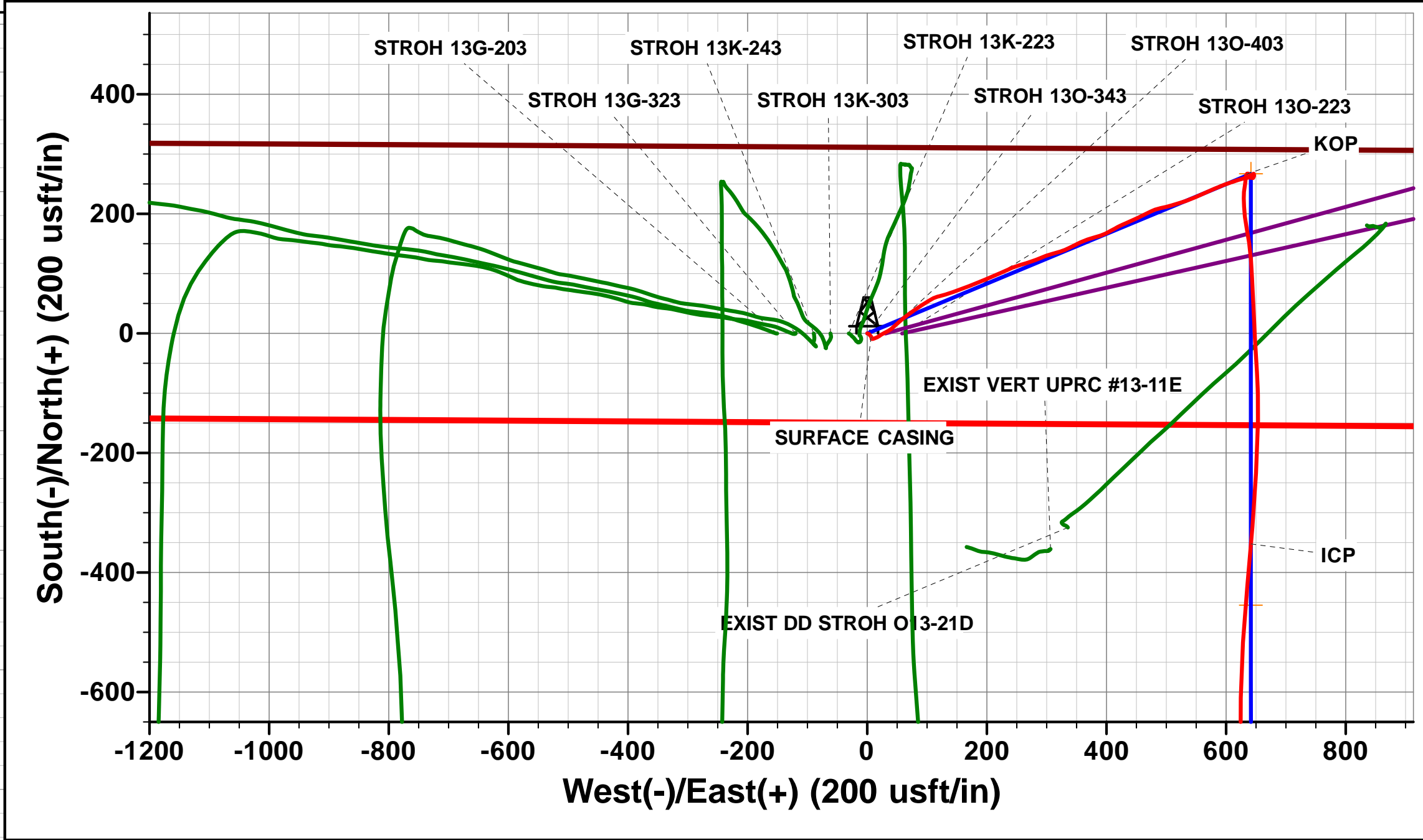
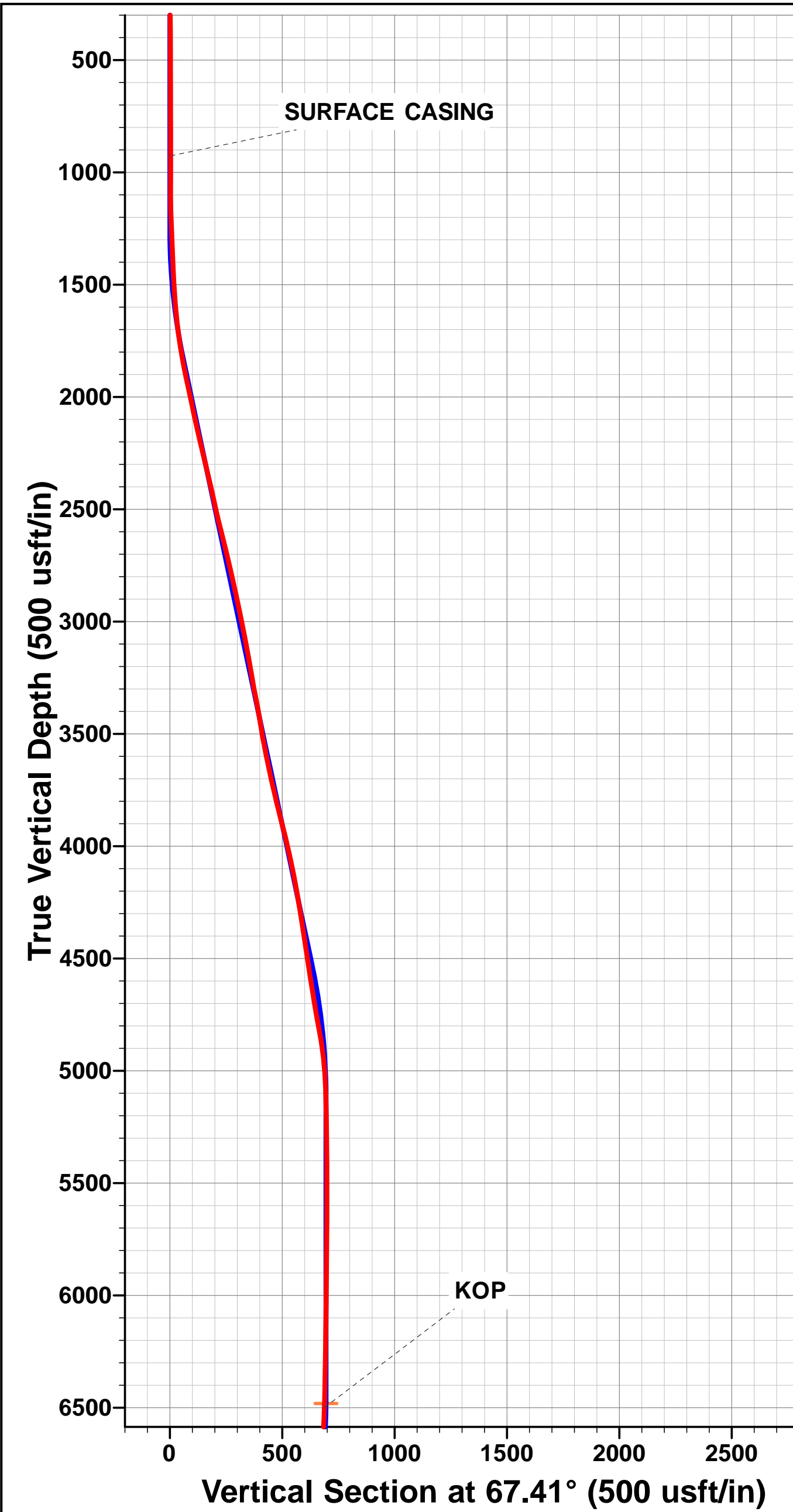
SHL: 2354ft FSL & 1676ft FWL Sec 13

ICP: 2235.25ft FSL & 2408.3ft FWL

BHL: 494.9ft FSL & 2275.8ft FWL Sec 24

KB: 4817.5ft GE: 4804ft

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
7" ICP *NEW* - STROH 130-343 (P2)	7198.0	-454.4	641.6	40.309783	-104.840349	Point
BHL - STROH 130-343 (P2)	7129.5	-7118.5	641.6	40.291490	-104.840350	Point
KOP - STROH 130-343 (P2)	6481.8	267.0	641.6	40.311763	-104.840349	Point



Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-343
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4817usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB @ 4817usft (ENS 123)
Well:	STROH 130-343	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Project	WELD COUNTY, COLORADO		
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	NE SW SEC. 13 T4N R67W 6th P.M.				
Site Position:		Northing:	1,356,828.67 usft	Latitude:	40.311030
From:	Lat/Long	Easting:	3,183,317.37 usft	Longitude:	-104.842650
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000 ft	Grid Convergence:	0.42 °

Well	STROH 130-343					
Well Position	+N/-S	0.0 usft	Northing:	1,356,828.67 usft	Latitude:	40.311030
	+E/-W	0.0 usft	Easting:	3,183,317.37 usft	Longitude:	-104.842650
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,804.0 usft

Wellbore	JOB # 2015-051-123				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	29/05/2015	8.46	66.82	52,572

Design	FINAL SURVEYS				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)		+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0		0.0	0.0	174.85

Survey Program	Date	15/06/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
80.0	13,873.0	FINAL SURVEYS (JOB # 2015-051-123)	MWD	MWD - Standard	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-4,817.5	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.40	86.90	80.0	-4,737.5	0.0	0.3	0.0	0.50	0.50	0.00
173.0	0.50	105.80	173.0	-4,644.5	-0.1	1.0	0.2	0.19	0.11	20.32
267.0	0.60	114.10	267.0	-4,550.5	-0.4	1.8	0.6	0.14	0.11	8.83
360.0	0.50	125.20	360.0	-4,457.5	-0.8	2.6	1.1	0.16	-0.11	11.94
453.0	0.70	120.20	453.0	-4,364.5	-1.3	3.4	1.6	0.22	0.22	-5.38
546.0	0.50	158.80	546.0	-4,271.5	-2.0	4.1	2.4	0.47	-0.22	41.51
640.0	0.70	154.60	640.0	-4,177.5	-2.9	4.5	3.3	0.22	0.21	-4.47
733.0	0.60	131.20	733.0	-4,084.5	-3.7	5.1	4.2	0.30	-0.11	-25.16
826.0	0.80	132.00	826.0	-3,991.5	-4.5	5.9	5.0	0.22	0.22	0.86
893.0	1.00	157.70	893.0	-3,924.5	-5.4	6.5	5.9	0.66	0.30	38.36
SURFACE CASING										
927.0	1.06	156.94	926.9	-3,890.6	-5.9	6.7	6.5	0.18	0.18	-2.22

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-343
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4817usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB @ 4817usft (ENS 123)
Well:	STROH 130-343	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
949.0	1.10	156.50	948.9	-3,868.6	-6.3	6.9	6.9	0.18	0.18	-2.02
1,011.0	1.10	168.20	1,010.9	-3,806.6	-7.4	7.3	8.0	0.36	0.00	18.87
1,105.0	1.00	172.80	1,104.9	-3,712.6	-9.1	7.5	9.8	0.14	-0.11	4.89
1,198.0	2.40	70.50	1,197.9	-3,619.6	-9.3	9.5	10.1	3.00	1.51	-110.00
1,291.0	2.40	66.60	1,290.8	-3,526.7	-7.9	13.1	9.0	0.18	0.00	-4.19
1,385.0	2.00	68.90	1,384.7	-3,432.8	-6.5	16.4	7.9	0.44	-0.43	2.45
1,478.0	3.80	57.00	1,477.6	-3,339.9	-4.2	20.5	6.0	2.03	1.94	-12.80
1,571.0	3.70	57.00	1,570.4	-3,247.1	-0.9	25.6	3.2	0.11	-0.11	0.00
1,664.0	6.60	64.70	1,663.0	-3,154.5	3.0	33.0	0.0	3.20	3.12	8.28
1,757.0	9.20	48.20	1,755.2	-3,062.3	10.3	43.4	-6.3	3.68	2.80	-17.74
1,850.0	10.70	48.50	1,846.7	-2,970.8	20.9	55.4	-15.9	1.61	1.61	0.32
1,944.0	12.80	53.90	1,938.8	-2,878.7	32.9	70.3	-26.4	2.52	2.23	5.74
2,033.0	12.60	58.40	2,025.6	-2,791.9	43.7	86.6	-35.8	1.13	-0.22	5.06
2,123.0	12.10	54.70	2,113.5	-2,704.0	54.3	102.6	-44.9	1.04	-0.56	-4.11
2,213.0	13.70	76.20	2,201.3	-2,616.2	62.3	120.7	-51.3	5.58	1.78	23.89
2,303.0	13.30	70.80	2,288.8	-2,528.7	68.3	140.8	-55.4	1.47	-0.44	-6.00
2,393.0	13.40	69.60	2,376.4	-2,441.1	75.3	160.4	-60.6	0.33	0.11	-1.33
2,482.0	12.00	66.80	2,463.2	-2,354.3	82.6	178.5	-66.2	1.72	-1.57	-3.15
2,572.0	13.60	69.00	2,551.0	-2,266.5	90.0	197.0	-72.0	1.86	1.78	2.44
2,662.0	13.70	67.00	2,638.4	-2,179.1	98.0	216.7	-78.2	0.54	0.11	-2.22
2,752.0	13.80	63.80	2,725.8	-2,091.7	106.9	236.1	-85.3	0.85	0.11	-3.56
2,842.0	13.10	74.00	2,813.4	-2,004.1	114.5	255.6	-91.1	2.74	-0.78	11.33
2,932.0	11.90	71.30	2,901.3	-1,916.2	120.2	274.2	-95.1	1.48	-1.33	-3.00
3,021.0	10.90	66.60	2,988.5	-1,829.0	126.5	290.6	-99.9	1.53	-1.12	-5.28
3,111.0	11.70	73.80	3,076.8	-1,740.7	132.5	307.2	-104.3	1.80	0.89	8.00
3,201.0	9.90	73.60	3,165.2	-1,652.3	137.2	323.3	-107.6	2.00	-2.00	-0.22
3,291.0	9.80	62.70	3,253.8	-1,563.7	142.9	337.6	-112.0	2.07	-0.11	-12.11
3,381.0	11.30	64.40	3,342.3	-1,475.2	150.2	352.3	-118.0	1.70	1.67	1.89
3,471.0	9.40	68.90	3,430.8	-1,386.7	156.7	367.1	-123.1	2.29	-2.11	5.00
3,561.0	10.00	77.10	3,519.6	-1,297.9	161.1	381.6	-126.1	1.67	0.67	9.11
3,650.0	12.40	64.10	3,606.9	-1,210.6	167.0	397.8	-130.6	3.90	2.70	-14.61
3,740.0	11.50	60.70	3,694.9	-1,122.6	175.6	414.3	-137.7	1.27	-1.00	-3.78
3,830.0	14.20	66.80	3,782.7	-1,034.8	184.3	432.2	-144.8	3.35	3.00	6.78
3,920.0	14.20	65.00	3,869.9	-947.6	193.3	452.4	-151.9	0.49	0.00	-2.00
4,010.0	13.70	62.70	3,957.3	-860.2	202.9	471.9	-159.7	0.83	-0.56	-2.56
4,100.0	12.40	78.40	4,045.0	-772.5	209.7	490.8	-164.8	4.18	-1.44	17.44
4,190.0	11.10	74.20	4,133.1	-684.4	214.0	508.6	-167.5	1.73	-1.44	-4.67
4,280.0	10.20	72.20	4,221.5	-596.0	218.8	524.5	-170.8	1.08	-1.00	-2.22
4,370.0	9.30	68.50	4,310.2	-507.3	223.9	538.9	-174.6	1.22	-1.00	-4.11
4,460.0	8.40	66.20	4,399.2	-418.3	229.2	551.7	-178.8	1.07	-1.00	-2.56
4,550.0	8.00	64.30	4,488.2	-329.3	234.6	563.3	-183.1	0.54	-0.44	-2.11
4,640.0	9.50	68.80	4,577.2	-240.3	240.0	575.9	-187.3	1.83	1.67	5.00
4,730.0	8.60	65.60	4,666.1	-151.4	245.5	589.0	-191.6	1.15	-1.00	-3.56
4,820.0	10.50	71.50	4,754.8	-62.7	250.8	602.9	-195.7	2.37	2.11	6.56
4,910.0	10.20	71.70	4,843.4	25.9	255.9	618.2	-199.4	0.34	-0.33	0.22
5,000.0	6.80	76.30	4,932.4	114.9	259.7	631.0	-202.0	3.85	-3.78	5.11
5,090.0	4.10	93.40	5,021.9	204.4	260.8	639.3	-202.3	3.47	-3.00	19.00
5,180.0	1.80	112.70	5,111.8	294.3	260.0	643.9	-201.2	2.75	-2.56	21.44
5,269.0	1.30	24.60	5,200.8	383.3	260.4	645.6	-201.4	2.46	-0.56	-98.99
5,359.0	1.00	28.70	5,290.8	473.3	262.0	646.4	-203.0	0.35	-0.33	4.56
5,448.0	1.20	4.70	5,379.8	562.3	263.7	646.8	-204.5	0.56	0.22	-26.97
5,538.0	1.00	342.60	5,469.7	652.2	265.3	646.7	-206.2	0.52	-0.22	-24.56
5,628.0	0.80	0.30	5,559.7	742.2	266.7	646.4	-207.6	0.38	-0.22	19.67

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-343
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4817usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB @ 4817usft (ENS 123)
Well:	STROH 130-343	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,718.0	0.50	255.60	5,649.7	832.2	267.2	646.1	-208.2	1.16	-0.33	-116.33
5,808.0	0.60	207.70	5,739.7	922.2	266.7	645.5	-207.7	0.51	0.11	-53.22
5,898.0	0.60	239.40	5,829.7	1,012.2	266.1	644.8	-207.1	0.36	0.00	35.22
5,988.0	0.50	267.20	5,919.7	1,102.2	265.8	644.0	-206.9	0.31	-0.11	30.89
6,078.0	0.80	243.20	6,009.7	1,192.2	265.5	643.1	-206.7	0.44	0.33	-26.67
6,168.0	1.00	290.60	6,099.7	1,282.2	265.5	641.8	-206.8	0.83	0.22	52.67
6,258.0	1.00	292.60	6,189.7	1,372.2	266.1	640.3	-207.5	0.04	0.00	2.22
6,348.0	1.20	294.20	6,279.7	1,462.2	266.8	638.7	-208.4	0.22	0.22	1.78
6,438.0	1.10	282.20	6,369.7	1,552.2	267.3	637.0	-209.1	0.29	-0.11	-13.33
6,528.0	1.40	261.50	6,459.6	1,642.1	267.4	635.1	-209.3	0.60	0.33	-23.00
KOP										
6,568.0	2.44	206.64	6,499.6	1,682.1	266.5	634.2	-208.5	4.98	2.59	-137.14
6,618.0	4.70	188.90	6,549.5	1,732.0	263.6	633.4	-205.6	4.98	4.52	-35.49
6,708.0	5.70	184.80	6,639.1	1,821.6	255.5	632.5	-197.6	1.18	1.11	-4.56
6,753.0	6.50	187.10	6,683.9	1,866.4	250.7	632.0	-193.0	1.86	1.78	5.11
6,798.0	8.70	190.40	6,728.5	1,911.0	244.8	631.1	-187.2	4.98	4.89	7.33
6,843.0	12.20	185.70	6,772.7	1,955.2	236.7	630.0	-179.2	8.00	7.78	-10.44
6,888.0	15.10	178.50	6,816.5	1,999.0	226.2	629.7	-168.7	7.46	6.44	-16.00
6,933.0	20.10	177.70	6,859.3	2,041.8	212.6	630.1	-155.1	11.12	11.11	-1.78
6,978.0	24.70	173.40	6,900.9	2,083.4	195.5	631.5	-138.0	10.85	10.22	-9.56
7,023.0	30.10	169.10	6,940.9	2,123.4	175.0	634.7	-117.4	12.77	12.00	-9.56
7,068.0	34.80	171.50	6,978.9	2,161.4	151.3	638.8	-93.3	10.83	10.44	5.33
7,113.0	41.10	176.20	7,014.3	2,196.8	123.8	641.7	-65.7	15.39	14.00	10.44
7,158.0	47.20	176.90	7,046.6	2,229.1	92.5	643.5	-34.3	13.60	13.56	1.56
7,248.0	59.50	177.60	7,100.2	2,282.7	20.5	647.0	37.7	13.68	13.67	0.78
7,338.0	69.40	176.20	7,139.0	2,321.5	-60.5	651.4	118.7	11.09	11.00	-1.56
7,428.0	75.50	180.90	7,166.1	2,348.6	-146.2	653.5	204.3	8.41	6.78	5.22
7,517.0	84.70	183.50	7,181.4	2,363.9	-233.7	650.1	291.1	10.73	10.34	2.92
7,607.0	88.20	184.10	7,187.0	2,369.5	-323.3	644.1	379.8	3.95	3.89	0.67
ICP										
7,636.0	88.89	184.56	7,187.7	2,370.2	-352.2	642.0	408.4	2.86	2.38	1.58
7,708.0	90.60	185.70	7,188.0	2,370.5	-423.9	635.5	479.3	2.86	2.38	1.58
7,801.0	88.70	183.20	7,188.6	2,371.1	-516.6	628.3	570.9	3.38	-2.04	-2.69
7,894.0	89.20	181.30	7,190.3	2,372.8	-609.5	624.7	663.2	2.11	0.54	-2.04
7,987.0	89.70	179.20	7,191.2	2,373.7	-702.5	624.2	755.7	2.32	0.54	-2.26
8,080.0	91.30	177.80	7,190.4	2,372.9	-795.5	626.7	848.5	2.29	1.72	-1.51
8,173.0	92.10	177.20	7,187.6	2,370.1	-888.4	630.7	941.4	1.08	0.86	-0.65
8,267.0	92.40	179.00	7,184.0	2,366.5	-982.2	633.9	1,035.2	1.94	0.32	1.91
8,360.0	91.00	179.40	7,181.2	2,363.7	-1,075.2	635.1	1,127.9	1.57	-1.51	0.43
8,453.0	91.70	179.00	7,179.0	2,361.5	-1,168.1	636.4	1,220.6	0.87	0.75	-0.43
8,546.0	91.10	180.20	7,176.7	2,359.2	-1,261.1	637.1	1,313.2	1.44	-0.65	1.29
8,639.0	89.20	181.00	7,176.5	2,359.0	-1,354.1	636.1	1,405.7	2.22	-2.04	0.86
8,733.0	90.30	180.20	7,176.9	2,359.4	-1,448.1	635.1	1,499.3	1.45	1.17	-0.85
8,826.0	90.10	179.90	7,176.6	2,359.1	-1,541.1	635.1	1,591.9	0.39	-0.22	-0.32
8,919.0	91.10	179.80	7,175.6	2,358.1	-1,634.1	635.3	1,684.5	1.08	1.08	-0.11
9,012.0	89.10	179.10	7,175.4	2,357.9	-1,727.1	636.2	1,777.2	2.28	-2.15	-0.75
9,106.0	89.40	178.40	7,176.7	2,359.2	-1,821.0	638.2	1,871.0	0.81	0.32	-0.74
9,199.0	89.80	178.10	7,177.3	2,359.8	-1,914.0	641.1	1,963.8	0.54	0.43	-0.32
9,292.0	89.60	178.60	7,177.8	2,360.3	-2,007.0	643.8	2,056.6	0.58	-0.22	0.54
9,385.0	89.70	178.70	7,178.4	2,360.9	-2,099.9	646.0	2,149.4	0.15	0.11	0.11
9,479.0	89.80	178.60	7,178.8	2,361.3	-2,193.9	648.2	2,243.2	0.15	0.11	-0.11
9,568.0	90.90	180.00	7,178.2	2,360.7	-2,282.9	649.3	2,332.0	2.00	1.24	1.57
9,658.0	89.70	180.20	7,177.8	2,360.3	-2,372.9	649.1	2,421.6	1.35	-1.33	0.22

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-343
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4817usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB @ 4817usft (ENS 123)
Well:	STROH 130-343	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,748.0	89.30	179.70	7,178.5	2,361.0	-2,462.9	649.2	2,511.2	0.71	-0.44	-0.56
9,838.0	89.80	178.80	7,179.3	2,361.8	-2,552.9	650.4	2,600.9	1.14	0.56	-1.00
9,927.0	90.20	181.30	7,179.3	2,361.8	-2,641.9	650.3	2,689.6	2.84	0.45	2.81
10,017.0	89.80	181.50	7,179.3	2,361.8	-2,731.8	648.1	2,779.0	0.50	-0.44	0.22
10,107.0	90.20	182.70	7,179.3	2,361.8	-2,821.8	644.8	2,868.3	1.41	0.44	1.33
10,197.0	90.20	183.40	7,178.9	2,361.4	-2,911.6	640.0	2,957.3	0.78	0.00	0.78
10,286.0	90.40	181.60	7,178.5	2,361.0	-3,000.6	636.1	3,045.5	2.03	0.22	-2.02
10,376.0	89.40	178.70	7,178.6	2,361.1	-3,090.5	635.9	3,135.1	3.41	-1.11	-3.22
10,466.0	91.80	176.90	7,177.7	2,360.2	-3,180.5	639.3	3,225.0	3.33	2.67	-2.00
10,556.0	91.60	176.30	7,175.0	2,357.5	-3,270.3	644.7	3,314.9	0.70	-0.22	-0.67
10,646.0	92.20	175.80	7,172.0	2,354.5	-3,360.0	650.9	3,404.9	0.87	0.67	-0.56
10,736.0	92.00	177.80	7,168.7	2,351.2	-3,449.8	655.9	3,494.7	2.23	-0.22	2.22
10,826.0	90.50	179.30	7,166.8	2,349.3	-3,539.7	658.2	3,584.5	2.36	-1.67	1.67
10,916.0	89.70	177.40	7,166.6	2,349.1	-3,629.7	660.7	3,674.4	2.29	-0.89	-2.11
11,005.0	91.20	177.90	7,165.9	2,348.4	-3,718.6	664.4	3,763.2	1.78	1.69	0.56
11,095.0	92.20	180.10	7,163.2	2,345.7	-3,808.6	666.0	3,853.0	2.68	1.11	2.44
11,175.0	91.50	179.70	7,160.7	2,343.2	-3,888.5	666.1	3,932.6	1.01	-0.87	-0.50
11,265.0	90.60	181.10	7,159.0	2,341.5	-3,978.5	665.5	4,022.2	1.85	-1.00	1.56
11,355.0	90.60	180.50	7,158.1	2,340.6	-4,068.5	664.2	4,111.7	0.67	0.00	-0.67
11,445.0	91.20	180.50	7,156.7	2,339.2	-4,158.5	663.4	4,201.2	0.67	0.67	0.00
11,535.0	89.50	179.90	7,156.1	2,338.6	-4,248.5	663.1	4,290.8	2.00	-1.89	-0.67
11,625.0	90.20	180.80	7,156.3	2,338.8	-4,338.5	662.6	4,380.4	1.27	0.78	1.00
11,715.0	90.00	180.70	7,156.2	2,338.7	-4,428.4	661.4	4,469.9	0.25	-0.22	-0.11
11,805.0	90.10	179.50	7,156.1	2,338.6	-4,518.4	661.2	4,559.6	1.34	0.11	-1.33
11,895.0	90.60	180.90	7,155.6	2,338.1	-4,608.4	660.9	4,649.2	1.65	0.56	1.56
11,985.0	90.30	180.40	7,154.9	2,337.4	-4,698.4	659.9	4,738.7	0.65	-0.33	-0.56
12,075.0	89.90	179.30	7,154.7	2,337.2	-4,788.4	660.1	4,828.4	1.30	-0.44	-1.22
12,165.0	89.90	178.40	7,154.9	2,337.4	-4,878.4	661.9	4,918.1	1.00	0.00	-1.00
12,255.0	90.60	179.50	7,154.5	2,337.0	-4,968.4	663.6	5,007.9	1.45	0.78	1.22
12,345.0	91.50	182.00	7,152.8	2,335.3	-5,058.4	662.4	5,097.4	2.95	1.00	2.78
12,435.0	91.50	181.30	7,150.5	2,333.0	-5,148.3	659.8	5,186.7	0.78	0.00	-0.78
12,525.0	91.20	180.20	7,148.3	2,330.8	-5,238.3	658.6	5,276.2	1.27	-0.33	-1.22
12,615.0	90.30	181.90	7,147.2	2,329.7	-5,328.2	657.0	5,365.7	2.14	-1.00	1.89
12,705.0	89.80	181.70	7,147.1	2,329.6	-5,418.2	654.2	5,455.0	0.60	-0.56	-0.22
12,795.0	90.30	182.20	7,147.0	2,329.5	-5,508.1	651.1	5,544.3	0.79	0.56	0.56
12,884.0	89.20	183.20	7,147.4	2,329.9	-5,597.0	646.9	5,632.5	1.67	-1.24	1.12
12,974.0	89.00	182.50	7,148.8	2,331.3	-5,686.9	642.4	5,721.6	0.81	-0.22	-0.78
13,063.0	88.80	182.80	7,150.5	2,333.0	-5,775.8	638.3	5,809.8	0.41	-0.22	0.34
13,153.0	89.90	182.70	7,151.5	2,334.0	-5,865.7	634.0	5,898.9	1.23	1.22	-0.11
13,243.0	89.80	182.00	7,151.8	2,334.3	-5,955.6	630.3	5,988.1	0.79	-0.11	-0.78
13,333.0	89.80	181.60	7,152.1	2,334.6	-6,045.6	627.5	6,077.5	0.44	0.00	-0.44
13,423.0	90.40	181.90	7,151.9	2,334.4	-6,135.5	624.7	6,166.8	0.75	0.67	0.33
13,513.0	90.60	182.20	7,151.1	2,333.6	-6,225.5	621.5	6,256.1	0.40	0.22	0.33
13,603.0	90.50	180.80	7,150.3	2,332.8	-6,315.4	619.2	6,345.5	1.56	-0.11	-1.56
13,693.0	90.30	180.30	7,149.6	2,332.1	-6,405.4	618.3	6,435.1	0.60	-0.22	-0.56
13,783.0	90.60	179.60	7,148.9	2,331.4	-6,495.4	618.4	6,524.7	0.85	0.33	-0.78
13,873.0	89.40	179.80	7,148.9	2,331.4	-6,585.4	618.9	6,614.4	1.35	-1.33	0.22
13,963.0	90.20	179.70	7,149.3	2,331.8	-6,675.4	619.2	6,704.0	0.90	0.89	-0.11
14,056.0	90.50	179.90	7,148.7	2,331.2	-6,768.4	619.6	6,796.7	0.39	0.32	0.22
14,149.0	90.60	180.20	7,147.8	2,330.3	-6,861.4	619.5	6,889.3	0.34	0.11	0.32
14,242.0	91.10	180.80	7,146.4	2,328.9	-6,954.4	618.7	6,981.8	0.84	0.54	0.65
LAST SURVEY - JUNE 14, 2015										
14,335.0	91.10	180.30	7,144.6	2,327.1	-7,047.4	617.8	7,074.4	0.54	0.00	-0.54

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-343
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4817usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB @ 4817usft (ENS 123)
Well:	STROH 130-343	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
EXTRAPOLATION TO TD										
14,401.0	91.10	180.30	7,143.4	2,325.9	-7,113.4	617.4	7,140.1	0.00	0.00	0.00

Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
7" ICP *NEW* - STROH	0.00	0.00	7,178.0	-454.4	641.6	1,356,379.06	3,183,962.29	40.309783	-104.840349	
- survey misses target center by 13.3usft at 7737.9usft MD (7187.9 TVD, -453.6 N, 632.8 E)										
- Point										
KOP - STROH 130-343	0.00	0.00	6,461.8	267.0	641.6	1,357,100.41	3,183,956.95	40.311763	-104.840349	
- survey misses target center by 6.6usft at 6530.0usft MD (6461.7 TVD, 267.4 N, 635.1 E)										
- Point										
7" ICP *NEW* - STROH	0.00	0.00	7,198.0	-454.4	641.6	1,356,379.06	3,183,962.29	40.309783	-104.840349	
- survey misses target center by 13.4usft at 7738.0usft MD (7187.9 TVD, -453.8 N, 632.8 E)										
- Point										
KOP - STROH 130-343	0.00	0.00	6,481.8	267.0	641.6	1,357,100.41	3,183,956.95	40.311763	-104.840349	
- survey misses target center by 7.0usft at 6550.0usft MD (6481.7 TVD, 267.1 N, 634.6 E)										
- Point										
BHL - STROH 130-343	0.00	0.00	7,129.5	-7,118.5	641.6	1,349,715.41	3,184,011.72	40.291490	-104.840350	
- survey misses target center by 28.3usft at 14401.0usft MD (7143.4 TVD, -7113.4 N, 617.4 E)										
- Point										
BHL - STROH 130-343	0.00	0.00	7,129.5	-7,118.5	641.6	1,349,715.41	3,184,011.72	40.291490	-104.840350	
- survey misses target center by 28.3usft at 14401.0usft MD (7143.4 TVD, -7113.4 N, 617.4 E)										
- Point										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
927.0	926.9	-5.9	6.7	SURFACE CASING	
6,568.0	6,499.6	266.5	634.2	KOP	
7,636.0	7,187.7	-352.2	642.0	ICP	
14,335.0	7,144.6	-7,047.4	617.8	LAST SURVEY - JUNE 14, 2015	
14,401.0	7,143.4	-7,113.4	617.4	EXTRAPOLATION TO TD	

Checked By: _____ Approved By: _____ Date: _____