

PDC ENERGY

WELD COUNTY, COLORADO

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

STROH 13O-403

JOB # 2015-051-123

25 June, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: NE SW SEC. 13 T4N R67W 6th P.M.
Well: STROH 130-403
Wellbore: JOB # 2015-051-123
Design: FINAL SURVEYS

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation	
946.0	946.0	0.95	260.94	3.7	-6.4	-4.5	8.2	SURFACE CASING	
6586.5	6682.0	4.36	159.32	245.1	915.0	-125.8	976.3	KOP	
7297.8	7838.0	89.91	178.64	-523.3	925.9	637.7	1747.0	ICP	
7306.7	14380.0	90.10	181.90	-7058.5	875.1	7112.4	8288.2	LAST SURVEY - JUNE 25, 2015	
7306.6	14430.0	90.10	181.90	-7108.5	873.4	7161.8	8338.2	EXTRAPOLATION TO TD	

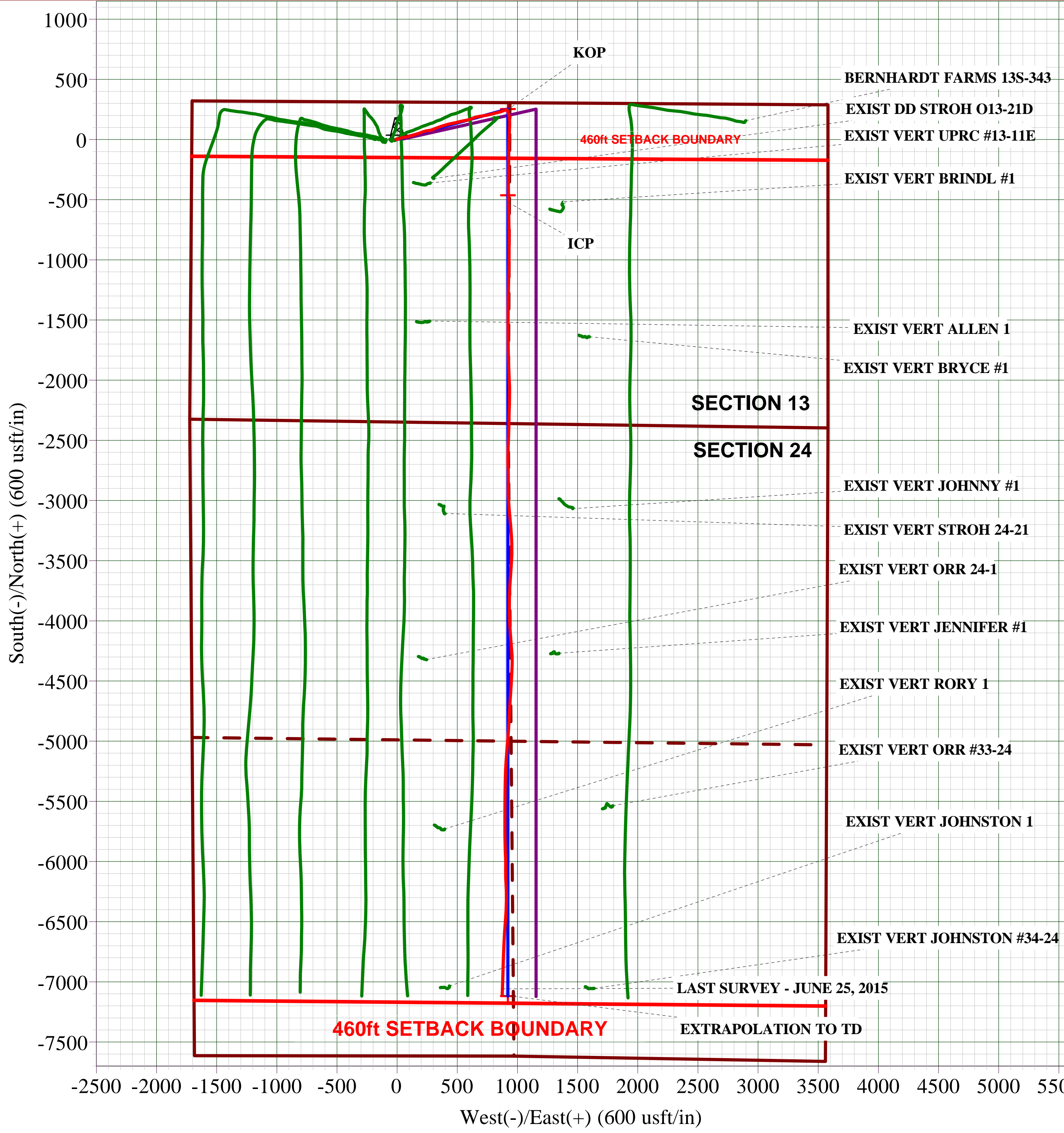
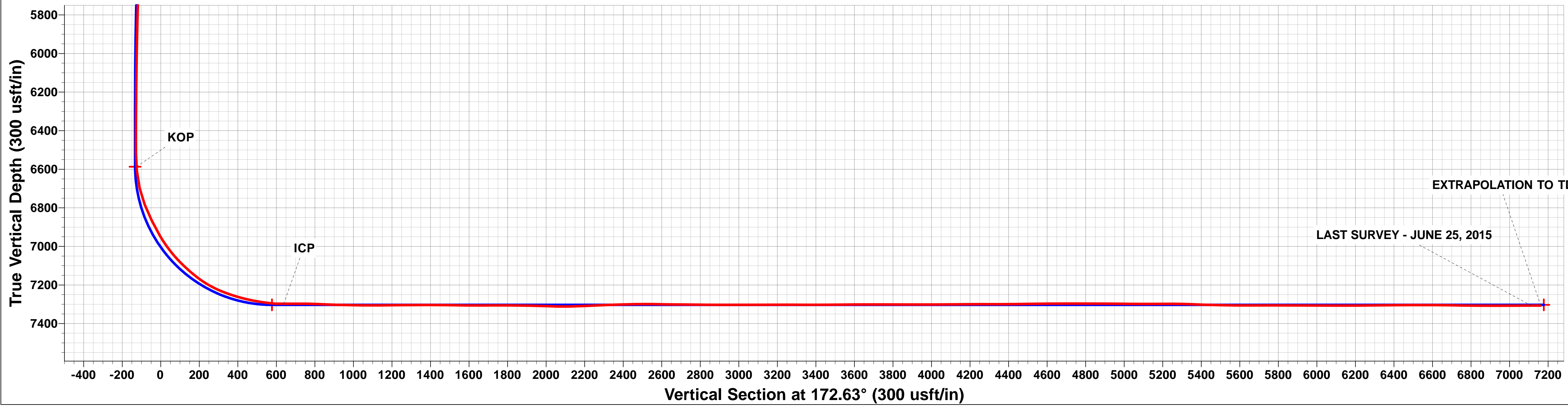
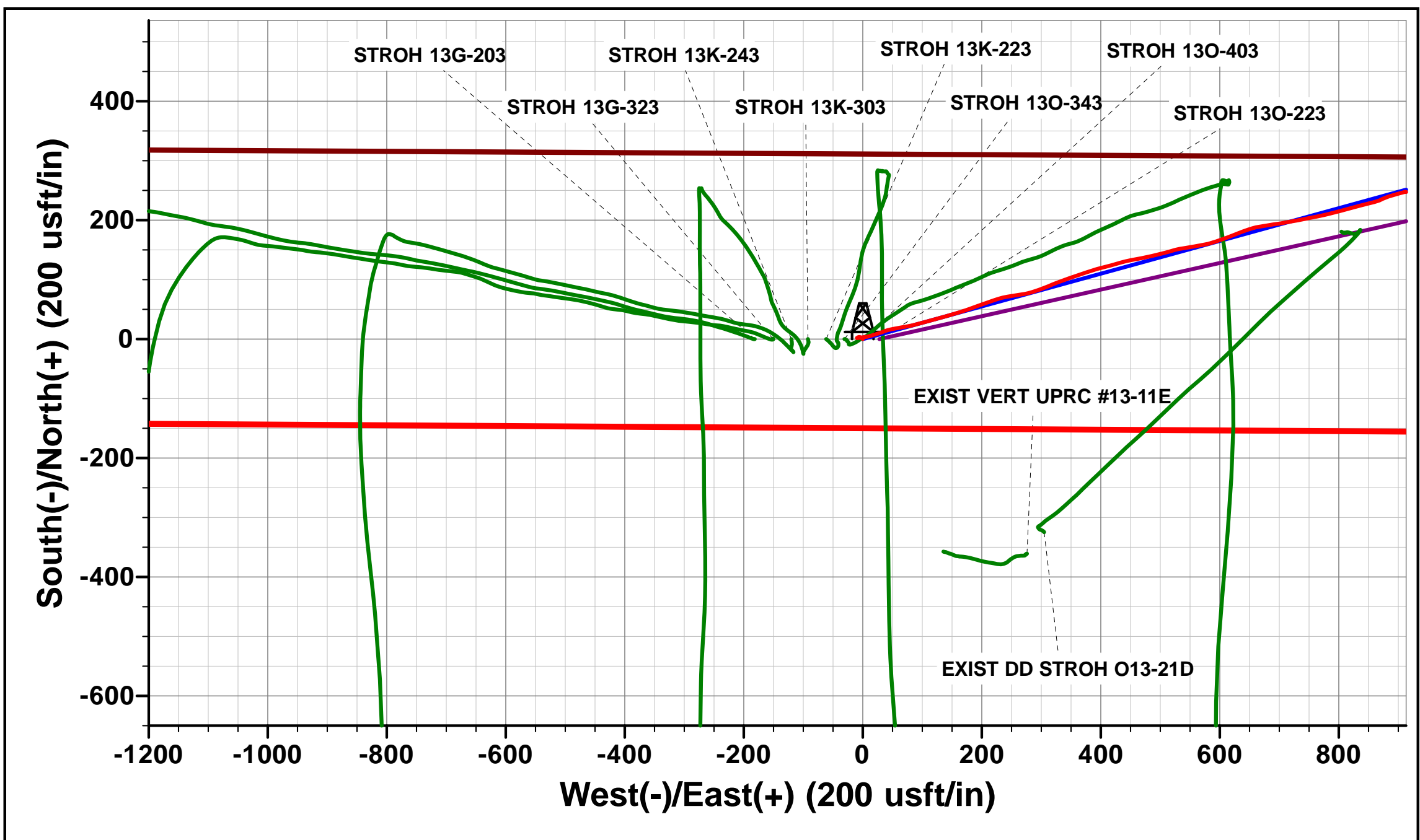
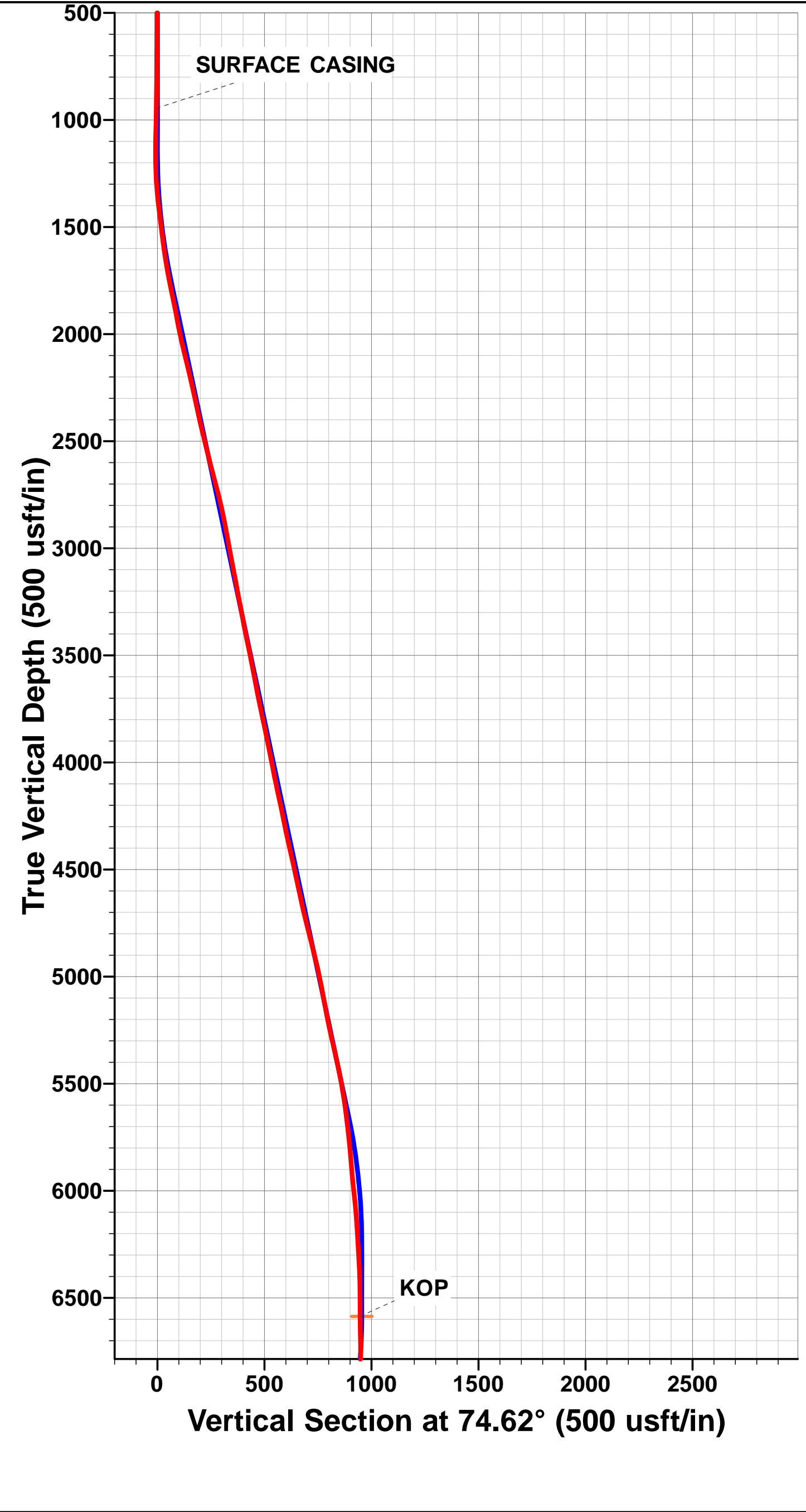
AS DRILLED LOCAL COORDINATES:

SHL: 2354ft FSL & 1706ft FWL Sec 13

ICP: 1830.7ft FSL & 2631.9ft FWL Sec 24

BHL: 510ft FSL & 2562.8ft FWL Sec 24

WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
7" ICP *NEW* - STROH 130-403 (P2)	7303.0	-462.9	920.6	40.309759	-104.839239
BHL - STROH 130-403 (P2)	7303.0	-7118.5	920.6	40.291490	-104.839240
KOP - STROH 130-403 (P2)	6586.8	253.3	920.6	40.311725	-104.839239



Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-403
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 130-403	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 130-403					
Well Position	+N/-S	0.0 usft	Northing:	1,356,828.89 usft	Latitude:	40.311030
	+E/-W	0.0 usft	Easting:	3,183,348.05 usft	Longitude:	-104.842540
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	172.63

Survey Program	Date	25/06/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
77.0	14,430.0	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
77.0	0.40	348.80	77.0	-4,740.5	0.3	-0.1	-0.3	0.52	0.52	0.00
170.0	0.60	332.80	170.0	-4,647.5	1.0	-0.3	-1.1	0.26	0.22	-17.20
264.0	0.70	278.60	264.0	-4,553.5	1.5	-1.1	-1.7	0.64	0.11	-57.66
357.0	0.60	298.00	357.0	-4,460.5	1.9	-2.1	-2.1	0.26	-0.11	20.86
450.0	0.30	284.10	450.0	-4,367.5	2.1	-2.8	-2.5	0.34	-0.32	-14.95
543.0	0.40	323.30	543.0	-4,274.5	2.5	-3.2	-2.9	0.27	0.11	42.15
637.0	0.30	284.70	637.0	-4,180.5	2.8	-3.7	-3.2	0.27	-0.11	-41.06
730.0	0.40	301.70	730.0	-4,087.5	3.0	-4.2	-3.5	0.15	0.11	18.28
823.0	0.60	294.10	823.0	-3,994.5	3.4	-4.9	-4.0	0.23	0.22	-8.17
910.0	0.80	282.60	910.0	-3,907.5	3.7	-5.9	-4.4	0.28	0.23	-13.22
SURFACE CASING										
946.0	0.95	260.94	946.0	-3,871.5	3.7	-6.4	-4.5	1.01	0.42	-60.17

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-403
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 130-403	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)
1,007.0	1.40	240.00	1,006.9	-3,810.6	3.3	-7.6	-4.2	1.01	0.73	-34.33
1,100.0	1.50	244.40	1,099.9	-3,717.6	2.2	-9.7	-3.4	0.16	0.11	4.73
1,194.0	1.20	86.30	1,193.9	-3,623.6	1.7	-9.8	-2.9	2.82	-0.32	-168.19
1,287.0	3.70	78.50	1,286.8	-3,530.7	2.4	-5.9	-3.1	2.71	2.69	-8.39
1,380.0	6.20	84.70	1,379.5	-3,438.0	3.4	2.1	-3.1	2.75	2.69	6.67
1,473.0	7.60	74.60	1,471.8	-3,345.7	5.5	13.0	-3.8	1.99	1.51	-10.86
1,566.0	6.70	71.70	1,564.1	-3,253.4	8.9	24.1	-5.7	1.04	-0.97	-3.12
1,659.0	9.40	69.50	1,656.1	-3,161.4	13.2	36.3	-8.4	2.92	2.90	-2.37
1,753.0	10.90	79.20	1,748.7	-3,068.8	17.6	52.3	-10.7	2.41	1.60	10.32
1,846.0	12.40	81.20	1,839.8	-2,977.7	20.7	70.8	-11.5	1.67	1.61	2.15
1,939.0	10.20	74.10	1,931.0	-2,886.5	24.5	88.6	-13.0	2.79	-2.37	-7.63
2,029.0	12.60	76.00	2,019.2	-2,798.3	29.1	105.8	-15.3	2.70	2.67	2.11
2,119.0	14.00	74.10	2,106.8	-2,710.7	34.5	125.7	-18.0	1.63	1.56	-2.11
2,209.0	12.50	73.00	2,194.4	-2,623.1	40.3	145.5	-21.3	1.69	-1.67	-1.22
2,298.0	12.90	74.40	2,281.2	-2,536.3	45.8	164.3	-24.3	0.57	0.45	1.57
2,388.0	12.20	68.10	2,369.0	-2,448.5	52.0	182.8	-28.1	1.71	-0.78	-7.00
2,478.0	13.90	72.40	2,456.7	-2,360.8	58.8	201.9	-32.4	2.17	1.89	4.78
2,568.0	13.60	69.20	2,544.1	-2,273.4	65.9	222.1	-36.8	0.91	-0.33	-3.56
2,657.0	14.70	80.50	2,630.4	-2,187.1	71.4	243.1	-39.7	3.33	1.24	12.70
2,747.0	15.20	81.60	2,717.4	-2,100.1	75.0	266.0	-40.3	0.64	0.56	1.22
2,837.0	12.70	71.70	2,804.8	-2,012.7	79.9	287.1	-42.4	3.83	-2.78	-11.00
2,927.0	11.00	69.10	2,892.8	-1,924.7	86.1	304.5	-46.3	1.98	-1.89	-2.89
3,017.0	10.10	65.80	2,981.3	-1,836.2	92.3	319.7	-50.6	1.20	-1.00	-3.67
3,107.0	11.30	72.80	3,069.7	-1,747.8	98.2	335.3	-54.4	1.96	1.33	7.78
3,197.0	10.20	67.30	3,158.2	-1,659.3	103.9	351.1	-58.0	1.67	-1.22	-6.11
3,287.0	11.40	74.10	3,246.6	-1,570.9	109.4	367.0	-61.4	1.94	1.33	7.56
3,376.0	10.20	69.90	3,334.0	-1,483.5	114.5	382.9	-64.5	1.61	-1.35	-4.72
3,466.0	12.20	76.00	3,422.3	-1,395.2	119.5	399.6	-67.3	2.58	2.22	6.78
3,556.0	11.40	75.00	3,510.4	-1,307.1	124.1	417.4	-69.6	0.92	-0.89	-1.11
3,646.0	10.40	73.60	3,598.8	-1,218.7	128.7	433.8	-72.0	1.15	-1.11	-1.56
3,736.0	11.40	79.70	3,687.1	-1,130.4	132.6	450.3	-73.8	1.69	1.11	6.78
3,826.0	12.00	78.90	3,775.3	-1,042.2	136.0	468.3	-74.8	0.69	0.67	-0.89
3,916.0	11.70	76.60	3,863.3	-954.2	139.9	486.3	-76.4	0.62	-0.33	-2.56
4,006.0	11.60	75.90	3,951.5	-866.0	144.3	504.0	-78.4	0.19	-0.11	-0.78
4,096.0	10.80	72.80	4,039.8	-777.7	149.0	520.8	-80.9	1.11	-0.89	-3.44
4,186.0	12.70	82.20	4,127.9	-689.6	152.8	538.7	-82.4	2.99	2.11	10.44
4,276.0	11.90	79.60	4,215.8	-601.7	155.8	557.6	-83.0	1.08	-0.89	-2.89
4,366.0	11.20	78.30	4,304.0	-513.5	159.3	575.3	-84.2	0.83	-0.78	-1.44
4,456.0	12.90	71.90	4,392.0	-425.5	164.1	593.4	-86.7	2.40	1.89	-7.11
4,546.0	12.90	69.50	4,479.8	-337.7	170.8	612.4	-90.8	0.60	0.00	-2.67
4,636.0	11.70	67.90	4,567.7	-249.8	177.7	630.2	-95.4	1.39	-1.33	-1.78
4,726.0	12.60	71.00	4,655.7	-161.8	184.4	648.0	-99.7	1.23	1.00	3.44
4,816.0	14.00	80.30	4,743.3	-74.2	189.4	668.0	-102.2	2.84	1.56	10.33
4,906.0	14.60	81.80	4,830.5	13.0	192.9	689.9	-102.8	0.78	0.67	1.67
4,995.0	13.60	80.20	4,916.8	99.3	196.2	711.3	-103.4	1.21	-1.12	-1.80
5,086.0	11.80	79.20	5,005.6	188.1	199.8	731.0	-104.4	1.99	-1.98	-1.10
5,175.0	10.20	78.30	5,092.9	275.4	203.1	747.7	-105.5	1.81	-1.80	-1.01
5,265.0	10.90	79.30	5,181.4	363.9	206.3	763.8	-106.6	0.80	0.78	1.11
5,355.0	12.90	76.00	5,269.5	452.0	210.3	782.0	-108.3	2.35	2.22	-3.67
5,445.0	13.20	75.30	5,357.1	539.6	215.3	801.6	-110.8	0.38	0.33	-0.78
5,535.0	11.30	74.70	5,445.1	627.6	220.3	820.1	-113.3	2.12	-2.11	-0.67
5,625.0	9.50	75.40	5,533.6	716.1	224.5	835.8	-115.4	2.00	-2.00	0.78
5,715.0	7.50	76.10	5,622.6	805.1	227.8	848.7	-117.0	2.23	-2.22	0.78

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-403
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 130-403	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
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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)
5,805.0	6.70	74.50	5,711.9	894.4	230.6	859.4	-118.4	0.92	-0.89	-1.78
5,895.0	5.30	70.50	5,801.4	983.9	233.4	868.4	-120.1	1.62	-1.56	-4.44
5,985.0	4.50	61.20	5,891.1	1,073.6	236.5	875.4	-122.2	1.25	-0.89	-10.33
6,075.0	6.50	71.80	5,980.7	1,163.2	239.7	883.4	-124.5	2.48	2.22	11.78
6,165.0	5.30	75.30	6,070.2	1,252.7	242.4	892.2	-126.0	1.39	-1.33	3.89
6,255.0	3.70	75.00	6,159.9	1,342.4	244.2	899.0	-126.9	1.78	-1.78	-0.33
6,345.0	3.30	73.40	6,249.8	1,432.3	245.7	904.3	-127.7	0.46	-0.44	-1.78
6,435.0	3.30	75.30	6,339.6	1,522.1	247.1	909.3	-128.4	0.12	0.00	2.11
6,525.0	1.00	93.10	6,429.5	1,612.0	247.7	912.6	-128.6	2.63	-2.56	19.78
6,615.0	0.50	102.50	6,519.5	1,702.0	247.6	913.8	-128.3	0.57	-0.56	10.44
KOP										
6,682.0	4.36	159.32	6,586.5	1,769.0	245.1	915.0	-125.8	6.13	5.76	84.80
6,704.0	5.70	160.70	6,608.4	1,790.9	243.3	915.6	-123.9	6.13	6.10	6.29
6,795.0	13.00	158.90	6,698.1	1,880.6	229.5	920.8	-109.5	8.03	8.02	-1.98
6,885.0	21.70	166.80	6,783.9	1,966.4	203.8	928.3	-83.1	9.99	9.67	8.78
6,975.0	26.10	174.70	6,866.2	2,048.7	167.9	933.9	-46.7	6.04	4.89	8.78
7,065.0	30.80	180.50	6,945.3	2,127.8	125.1	935.5	-4.0	6.05	5.22	6.44
7,155.0	38.30	183.60	7,019.4	2,201.9	74.1	933.6	46.2	8.56	8.33	3.44
7,245.0	45.50	181.90	7,086.4	2,268.9	14.1	930.8	105.4	8.10	8.00	-1.89
7,334.0	50.70	181.40	7,145.8	2,328.3	-52.1	928.9	170.8	5.86	5.84	-0.56
7,424.0	59.80	180.70	7,197.0	2,379.5	-125.9	927.5	243.9	10.13	10.11	-0.78
7,514.0	68.90	180.60	7,236.0	2,418.5	-207.0	926.6	324.1	10.11	10.11	-0.11
7,604.0	74.60	180.70	7,264.1	2,446.6	-292.4	925.6	408.7	6.33	6.33	0.11
7,694.0	80.10	180.60	7,283.8	2,466.3	-380.2	924.6	495.6	6.11	6.11	-0.11
7,784.0	84.40	179.20	7,296.0	2,478.5	-469.3	924.8	584.1	5.02	4.78	-1.56
7,800.0	87.80	178.90	7,297.1	2,479.6	-485.3	925.1	599.9	21.33	21.25	-1.87
ICP										
7,838.0	89.91	178.64	7,297.8	2,480.3	-523.3	925.9	637.7	5.60	5.56	-0.69
7,872.0	91.80	178.40	7,297.3	2,479.8	-557.3	926.8	671.5	5.60	5.56	-0.69
7,965.0	88.40	178.90	7,297.1	2,479.6	-650.2	929.0	764.0	3.70	-3.66	0.54
8,059.0	87.30	179.60	7,300.7	2,483.2	-744.1	930.2	857.3	1.39	-1.17	0.74
8,152.0	89.10	180.40	7,303.6	2,486.1	-837.1	930.2	949.5	2.12	1.94	0.86
8,246.0	88.80	180.10	7,305.3	2,487.8	-931.1	929.8	1,042.6	0.45	-0.32	-0.32
8,339.0	90.80	180.60	7,305.6	2,488.1	-1,024.1	929.2	1,134.8	2.22	2.15	0.54
8,433.0	90.60	181.40	7,304.5	2,487.0	-1,118.0	927.6	1,227.8	0.88	-0.21	0.85
8,523.0	90.40	181.20	7,303.7	2,486.2	-1,208.0	925.5	1,316.7	0.31	-0.22	-0.22
8,613.0	89.70	180.50	7,303.6	2,486.1	-1,298.0	924.2	1,405.8	1.10	-0.78	-0.78
8,703.0	89.20	180.40	7,304.5	2,487.0	-1,388.0	923.5	1,495.0	0.57	-0.56	-0.11
8,792.0	89.00	180.40	7,305.9	2,488.4	-1,477.0	922.9	1,583.2	0.22	-0.22	0.00
8,882.0	90.60	180.80	7,306.2	2,488.7	-1,567.0	921.9	1,672.3	1.83	1.78	0.44
8,972.0	90.00	179.30	7,305.7	2,488.2	-1,657.0	921.8	1,761.5	1.80	-0.67	-1.67
9,061.0	89.40	178.70	7,306.2	2,488.7	-1,746.0	923.4	1,850.0	0.95	-0.67	-0.67
9,151.0	88.60	178.60	7,307.8	2,490.3	-1,835.9	925.5	1,939.5	0.90	-0.89	-0.11
9,240.0	88.00	177.60	7,310.4	2,492.9	-1,924.8	928.5	2,028.0	1.31	-0.67	-1.12
9,329.0	90.80	177.40	7,311.3	2,493.8	-2,013.7	932.4	2,116.7	3.15	3.15	-0.22
9,419.0	92.90	180.00	7,308.4	2,490.9	-2,103.6	934.4	2,206.1	3.71	2.33	2.89
9,508.0	92.30	181.50	7,304.4	2,486.9	-2,192.5	933.2	2,294.1	1.81	-0.67	1.69
9,598.0	91.40	181.60	7,301.5	2,484.0	-2,282.5	930.8	2,383.0	1.01	-1.00	0.11
9,688.0	91.60	181.30	7,299.1	2,481.6	-2,372.4	928.5	2,471.9	0.40	0.22	-0.33
9,777.0	88.40	181.70	7,299.1	2,481.6	-2,461.4	926.2	2,559.8	3.62	-3.60	0.45
9,867.0	89.70	182.80	7,300.6	2,483.1	-2,551.3	922.7	2,648.5	1.89	1.44	1.22
9,957.0	89.40	179.80	7,301.3	2,483.8	-2,641.2	920.6	2,737.5	3.35	-0.33	-3.33
10,047.0	89.40	177.50	7,302.3	2,484.8	-2,731.2	922.7	2,827.0	2.56	0.00	-2.56

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-403
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 130-403	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)
10,137.0	89.60	180.10	7,303.1	2,485.6	-2,821.2	924.6	2,916.5	2.90	0.22	2.89
10,227.0	90.60	180.60	7,302.9	2,485.4	-2,911.2	924.1	3,005.6	1.24	1.11	0.56
10,317.0	90.10	176.90	7,302.4	2,484.9	-3,001.1	926.0	3,095.1	4.15	-0.56	-4.11
10,407.0	90.10	174.80	7,302.2	2,484.7	-3,090.9	932.5	3,185.0	2.33	0.00	-2.33
10,497.0	89.70	174.50	7,302.4	2,484.9	-3,180.5	940.9	3,274.9	0.56	-0.44	-0.33
10,587.0	90.00	177.00	7,302.6	2,485.1	-3,270.2	947.6	3,364.8	2.80	0.33	2.78
10,677.0	90.20	177.20	7,302.4	2,484.9	-3,360.1	952.2	3,454.5	0.31	0.22	0.22
10,767.0	90.50	181.30	7,301.9	2,484.4	-3,450.1	953.3	3,543.9	4.57	0.33	4.56
10,857.0	90.50	184.60	7,301.1	2,483.6	-3,540.0	948.7	3,632.4	3.67	0.00	3.67
10,947.0	90.10	183.60	7,300.6	2,483.1	-3,629.7	942.3	3,720.6	1.20	-0.44	-1.11
11,037.0	89.60	183.40	7,300.9	2,483.4	-3,719.6	936.8	3,809.0	0.60	-0.56	-0.22
11,126.0	89.70	180.60	7,301.4	2,483.9	-3,808.5	933.7	3,896.8	3.15	0.11	-3.15
11,216.0	90.50	181.30	7,301.2	2,483.7	-3,898.5	932.2	3,985.8	1.18	0.89	0.78
11,306.0	90.20	176.50	7,300.7	2,483.2	-3,988.4	933.9	4,075.3	5.34	-0.33	-5.33
11,396.0	90.80	176.90	7,299.9	2,482.4	-4,078.3	939.1	4,165.0	0.80	0.67	0.44
11,486.0	89.90	175.00	7,299.4	2,481.9	-4,168.1	945.4	4,254.9	2.34	-1.00	-2.11
11,576.0	89.60	175.40	7,299.8	2,482.3	-4,257.7	953.0	4,344.8	0.56	-0.33	0.44
11,666.0	91.40	180.60	7,299.0	2,481.5	-4,347.6	956.1	4,434.4	6.11	2.00	5.78
11,755.0	90.60	184.00	7,297.4	2,479.9	-4,436.5	952.5	4,522.1	3.92	-0.90	3.82
11,845.0	90.20	182.10	7,296.8	2,479.3	-4,526.4	947.8	4,610.6	2.16	-0.44	-2.11
11,935.0	90.20	184.50	7,296.5	2,479.0	-4,616.3	942.6	4,699.0	2.67	0.00	2.67
12,025.0	89.90	183.60	7,296.4	2,478.9	-4,706.0	936.2	4,787.2	1.05	-0.33	-1.00
12,115.0	89.80	181.90	7,296.6	2,479.1	-4,795.9	931.9	4,875.8	1.89	-0.11	-1.89
12,205.0	89.40	184.10	7,297.3	2,479.8	-4,885.8	927.2	4,964.4	2.48	-0.44	2.44
12,295.0	89.50	184.10	7,298.1	2,480.6	-4,975.6	920.8	5,052.6	0.11	0.11	0.00
12,385.0	90.30	184.80	7,298.3	2,480.8	-5,065.3	913.8	5,140.6	1.18	0.89	0.78
12,475.0	90.60	184.70	7,297.6	2,480.1	-5,155.0	906.3	5,228.6	0.35	0.33	-0.11
12,565.0	87.80	182.00	7,298.8	2,481.3	-5,244.8	901.1	5,317.0	4.32	-3.11	-3.00
12,655.0	88.20	181.10	7,302.0	2,484.5	-5,334.7	898.6	5,405.9	1.09	0.44	-1.00
12,745.0	88.60	180.70	7,304.5	2,487.0	-5,424.7	897.2	5,494.9	0.63	0.44	-0.44
12,835.0	89.50	180.70	7,306.0	2,488.5	-5,514.6	896.1	5,584.0	1.00	1.00	0.00
12,925.0	90.60	180.50	7,305.9	2,488.4	-5,604.6	895.2	5,673.2	1.24	1.22	-0.22
13,015.0	89.80	178.90	7,305.6	2,488.1	-5,694.6	895.6	5,762.5	1.99	-0.89	-1.78
13,105.0	89.90	179.90	7,305.8	2,488.3	-5,784.6	896.6	5,851.8	1.12	0.11	1.11
13,195.0	89.70	178.80	7,306.1	2,488.6	-5,874.6	897.6	5,941.2	1.24	-0.22	-1.22
13,285.0	89.70	177.10	7,306.6	2,489.1	-5,964.5	900.8	6,030.8	1.89	0.00	-1.89
13,374.0	90.20	181.10	7,306.7	2,489.2	-6,053.5	902.2	6,119.2	4.53	0.56	4.49
13,464.0	90.10	177.80	7,306.4	2,488.9	-6,143.5	903.1	6,208.6	3.67	-0.11	-3.67
13,554.0	90.80	177.20	7,305.7	2,488.2	-6,233.4	907.0	6,298.3	1.02	0.78	-0.67
13,644.0	90.50	181.40	7,304.7	2,487.2	-6,323.4	908.1	6,387.6	4.68	-0.33	4.67
13,734.0	90.20	182.50	7,304.2	2,486.7	-6,413.3	905.1	6,476.4	1.27	-0.33	1.22
13,824.0	90.30	185.20	7,303.8	2,486.3	-6,503.1	899.0	6,564.7	3.00	0.11	3.00
13,914.0	88.60	183.00	7,304.6	2,487.1	-6,592.9	892.6	6,652.9	3.09	-1.89	-2.44
14,008.0	89.50	183.00	7,306.2	2,488.7	-6,686.7	887.7	6,745.4	0.96	0.96	0.00
14,101.0	89.50	181.90	7,307.0	2,489.5	-6,779.6	883.7	6,837.0	1.18	0.00	-1.18
14,195.0	90.00	181.40	7,307.4	2,489.9	-6,873.6	881.0	6,929.8	0.75	0.53	-0.53
14,288.0	90.40	182.00	7,307.1	2,489.6	-6,966.6	878.2	7,021.7	0.78	0.43	0.65
LAST SURVEY - JUNE 25, 2015										
14,380.0	90.10	181.90	7,306.7	2,489.2	-7,058.5	875.1	7,112.4	0.34	-0.33	-0.11
EXTRAPOLATION TO TD										
14,430.0	90.10	181.90	7,306.6	2,489.1	-7,108.5	873.4	7,161.8	0.00	0.00	0.00

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-403
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 130-403	North Reference:	True
Wellbore:	JOB # 2015-051-123	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
KOP - STROH 130-403 - survey misses target center by 9.2usft at 6657.3usft MD (6561.8 TVD, 246.6 N, 914.4 E) - Point	0.00	0.00	6,561.9	253.3	920.6	1,357,089.00	3,184,266.70	40.311725	-104.839239
BHL - STROH 130-403 - survey misses target center by 58.5usft at 14430.0usft MD (7306.6 TVD, -7108.5 N, 873.4 E) - Point	0.00	0.00	7,273.5	-7,118.5	920.6	1,349,717.72	3,184,321.35	40.291490	-104.839240
KOP - STROH 130-403 - survey misses target center by 9.9usft at 6682.0usft MD (6586.5 TVD, 245.1 N, 915.0 E) - Point	0.00	0.00	6,586.8	253.3	920.6	1,357,089.00	3,184,266.70	40.311725	-104.839239
7" ICP *NEW* - STROH - survey misses target center by 8.7usft at 7778.6usft MD (7295.4 TVD, -463.9 N, 924.7 E) - Point	0.00	0.00	7,303.0	-462.9	920.6	1,356,372.85	3,184,272.01	40.309759	-104.839239
BHL - STROH 130-403 - survey misses target center by 48.4usft at 14430.0usft MD (7306.6 TVD, -7108.5 N, 873.4 E) - Point	0.00	0.00	7,303.0	-7,118.5	920.6	1,349,717.72	3,184,321.35	40.291490	-104.839240
7" ICP *NEW* - STROH - survey misses target center by 17.7usft at 7775.7usft MD (7295.1 TVD, -461.1 N, 924.7 E) - Point	0.00	0.00	7,278.1	-463.4	920.6	1,356,372.35	3,184,272.02	40.309758	-104.839239

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
946.0	946.0	3.7	-6.4	SURFACE CASING
6,682.0	6,586.5	245.1	915.0	KOP
7,838.0	7,297.8	-523.3	925.9	ICP
14,380.0	7,306.7	-7,058.5	875.1	LAST SURVEY - JUNE 25, 2015
14,430.0	7,306.6	-7,108.5	873.4	EXTRAPOLATION TO TD

Checked By: _____ Approved By: _____ Date: _____