

PDC ENERGY

WELD COUNTY, COLORADO

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

STROH 13O-223

JOB #2015-53-123

07 July, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: NE SW SEC. 13 T4N R67W 6th P.M.
Well: STROH 130-223
Wellbore: JOB #2015-53-123
Design: FINAL SURVEYS

ANNOTATIONS									
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Dep	Annotation	
934.8	935.0	1.49	206.00	-14.3	-4.8	13.4	15.7	SURFACE CASING	
6370.7	6500.0	0.92	149.05	235.6	1071.9	-65.2	1138.2	KOP	
7112.7	7681.0	86.85	181.58	-552.6	1135.5	723.3	1934.8	ICP	
7123.2	14198.0	88.00	176.00	-7067.2	1122.4	7155.8	8451.1	LAST SURVEY - JULY 6, 2015	
7124.9	14253.0	88.40	175.40	-7122.0	1126.5	7210.6	8506.1	EXTRAPOLATION TO TD	

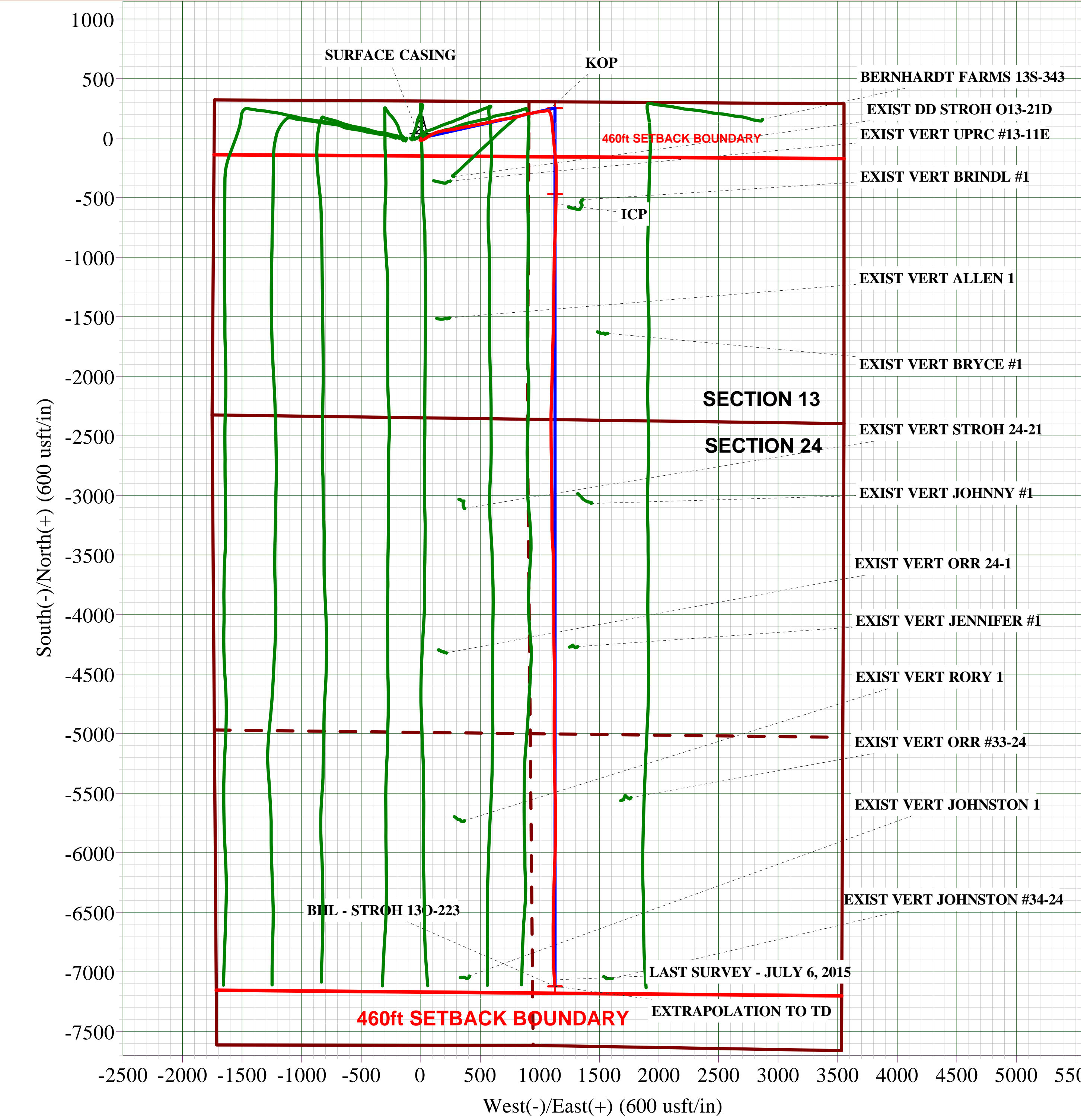
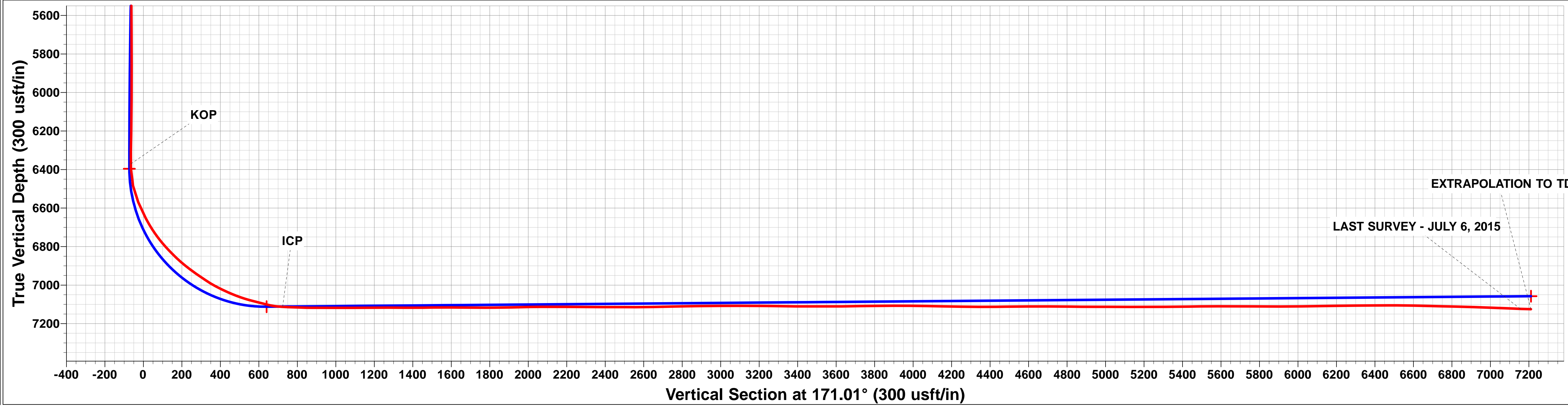
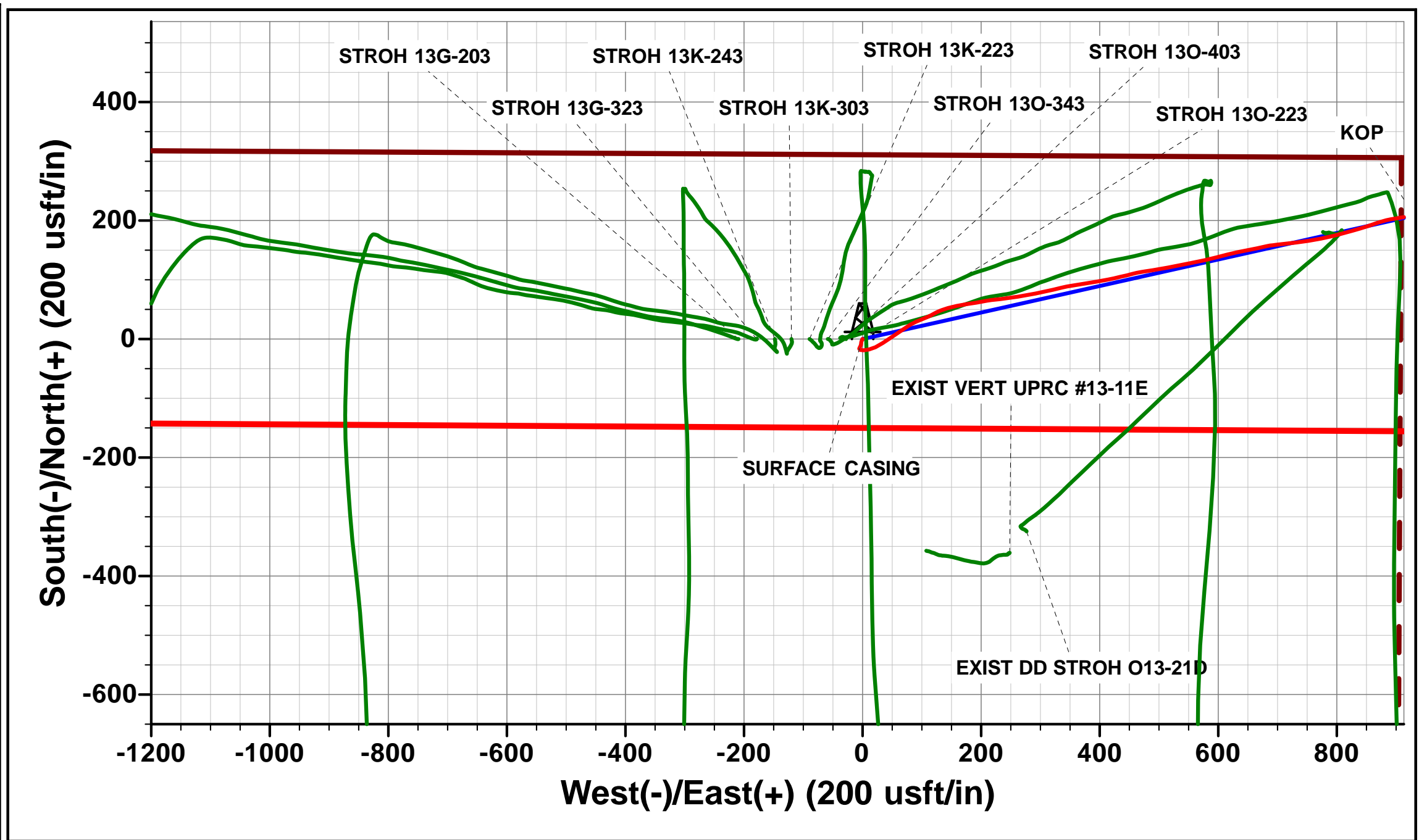
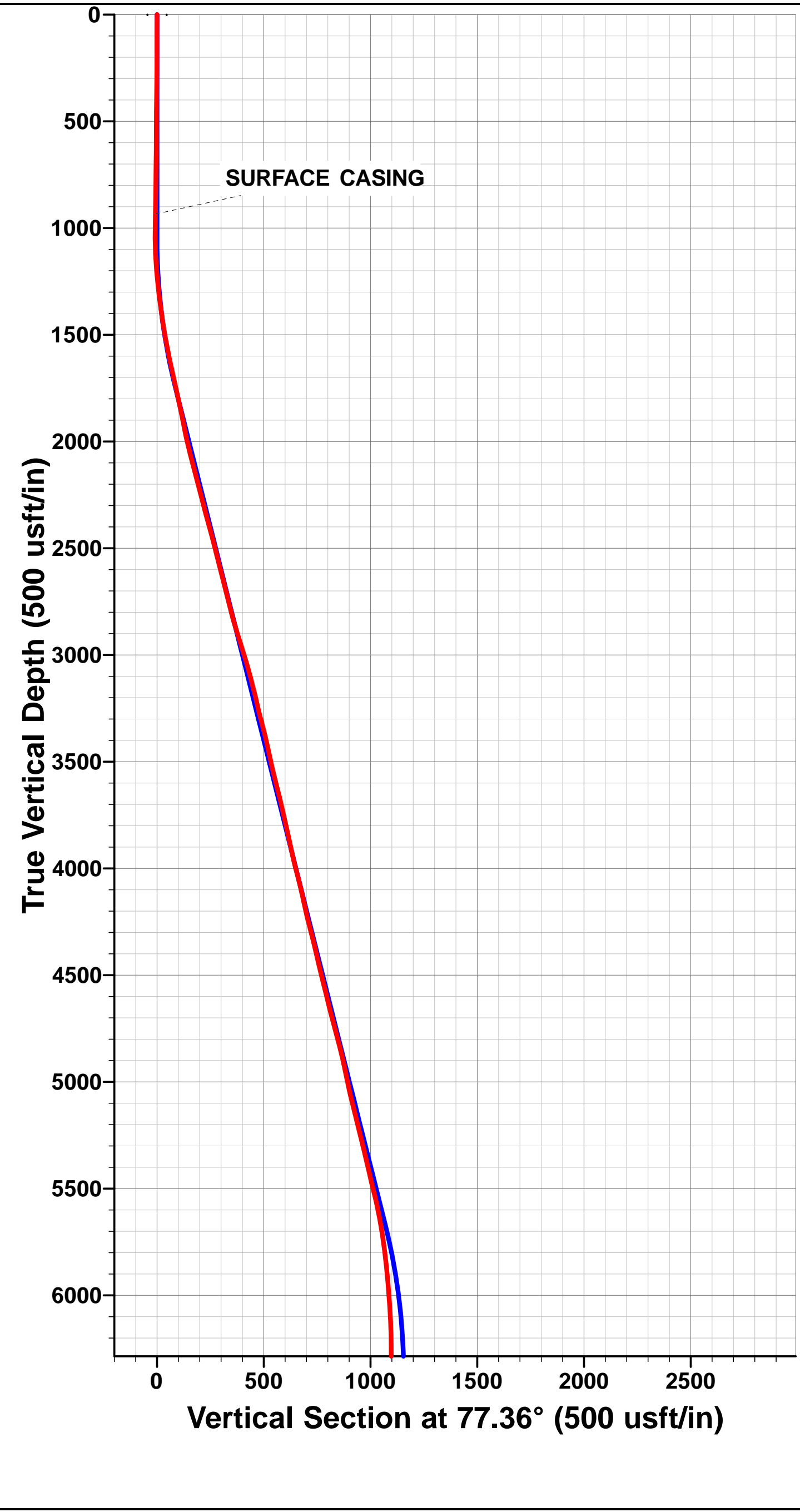
AS DRILLED LOCAL COORDINATES:

SHL: 2355ft FSL & 1736t FWL Sec 13

ICP: 1802.4ft FSL & 2871.5t FWL Sec 13

BHL: 499.9ft FSL & 2409.5ft FEL Sec 24

WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
7" ICP *NEW* - STROH 130-223 (P2)	7112.0	-469.8	1127.0	40.309740	-104.838399	Point
BHL - STROH 130-223	7057.5	-7122.1	1127.0	40.291480	-104.838400	Point
KOP - STROH 130-223 (P2)	6395.8	252.3	1127.0	40.311722	-104.838399	Point



Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-223
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4816.5usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB-EST @ 4816.5usft (ENS 123)
Well:	STROH 130-223	North Reference:	True
Wellbore:	JOB #2015-53-123	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 130-223					
Well Position	+N/-S	0.0 usft	Northing:	1,356,829.10 usft	Latitude:	40.311030
	+E/-W	0.0 usft	Easting:	3,183,375.93 usft	Longitude:	-104.842440
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,803.0 usft

Wellbore	JOB #2015-53-123				
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	171.01

Survey Program	Date	07/07/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
81.0	14,253.0	FINAL SURVEYS (JOB #2015-53-123)	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	-4,816.5	0.0	0.0	0.0	0.00	0.00	0.00
81.0	0.20	310.60	81.0	-4,735.5	0.1	-0.1	-0.1	0.25	0.25	0.00
174.0	0.50	175.80	174.0	-4,642.5	-0.2	-0.2	0.2	0.71	0.32	-144.95
268.0	1.00	205.40	268.0	-4,548.5	-1.4	-0.5	1.3	0.66	0.53	31.49
361.0	1.00	206.50	361.0	-4,455.5	-2.8	-1.2	2.6	0.02	0.00	1.18
454.0	1.00	196.30	454.0	-4,362.5	-4.3	-1.8	4.0	0.19	0.00	-10.97
547.0	1.10	184.70	546.9	-4,269.6	-6.0	-2.1	5.6	0.25	0.11	-12.47
641.0	1.10	187.10	640.9	-4,175.6	-7.8	-2.3	7.3	0.05	0.00	2.55
734.0	1.40	193.10	733.9	-4,082.6	-9.8	-2.7	9.2	0.35	0.32	6.45
824.0	1.40	209.30	823.9	-3,992.6	-11.8	-3.5	11.1	0.44	0.00	18.00
SURFACE CASING										
935.0	1.49	206.00	934.8	-3,881.7	-14.3	-4.8	13.4	0.11	0.08	-2.97
946.0	1.50	205.70	945.8	-3,870.7	-14.5	-4.9	13.6	0.11	0.08	-2.77

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-223
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4816.5usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB-EST @ 4816.5usft (ENS 123)
Well:	STROH 130-223	North Reference:	True
Wellbore:	JOB #2015-53-123	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)
1,008.0	1.60	203.50	1,007.8	-3,808.7	-16.1	-5.6	15.0	0.19	0.16	-3.55
1,101.0	2.80	116.90	1,100.8	-3,715.7	-18.3	-4.1	17.4	3.38	1.29	-93.12
1,195.0	4.70	83.00	1,194.6	-3,621.9	-18.9	1.8	18.9	3.02	2.02	-36.06
1,288.0	6.60	80.00	1,287.1	-3,529.4	-17.5	10.8	18.9	2.07	2.04	-3.23
1,381.0	7.90	63.50	1,379.4	-3,437.1	-13.7	21.8	16.9	2.63	1.40	-17.74
1,474.0	9.80	57.60	1,471.3	-3,345.2	-6.6	34.2	11.9	2.26	2.04	-6.34
1,567.0	11.80	55.80	1,562.6	-3,253.9	3.0	48.8	4.7	2.18	2.15	-1.94
1,660.0	12.80	56.00	1,653.5	-3,163.0	14.1	65.2	-3.7	1.08	1.08	0.22
1,753.0	13.30	59.90	1,744.1	-3,072.4	25.2	83.0	-11.9	1.09	0.54	4.19
1,847.0	13.10	70.00	1,835.6	-2,980.9	34.3	102.3	-17.9	2.46	-0.21	10.74
1,940.0	10.80	58.40	1,926.6	-2,889.9	42.5	119.7	-23.2	3.56	-2.47	-12.47
2,030.0	13.50	72.40	2,014.6	-2,801.9	50.1	136.9	-28.1	4.42	3.00	15.56
2,120.0	14.70	77.70	2,101.9	-2,714.6	55.7	158.1	-30.3	1.96	1.33	5.89
2,210.0	15.00	81.90	2,188.9	-2,627.6	59.7	180.7	-30.8	1.24	0.33	4.67
2,299.0	14.00	78.90	2,275.1	-2,541.4	63.4	202.7	-31.0	1.40	-1.12	-3.37
2,389.0	15.70	84.20	2,362.0	-2,454.5	66.8	225.5	-30.7	2.42	1.89	5.89
2,479.0	14.80	81.80	2,448.9	-2,367.6	69.6	249.0	-29.9	1.22	-1.00	-2.67
2,569.0	14.20	80.10	2,536.0	-2,280.5	73.2	271.3	-29.9	0.82	-0.67	-1.89
2,659.0	14.10	78.90	2,623.3	-2,193.2	77.2	292.9	-30.5	0.34	-0.11	-1.33
2,748.0	14.50	77.50	2,709.5	-2,107.0	81.7	314.4	-31.5	0.59	0.45	-1.57
2,838.0	14.00	76.10	2,796.8	-2,019.7	86.7	336.0	-33.2	0.67	-0.56	-1.56
2,928.0	17.90	81.80	2,883.3	-1,933.2	91.3	360.2	-33.9	4.66	4.33	6.33
3,018.0	17.10	80.30	2,969.1	-1,847.4	95.5	387.0	-33.9	1.02	-0.89	-1.67
3,108.0	15.90	78.80	3,055.4	-1,761.1	100.2	412.1	-34.5	1.41	-1.33	-1.67
3,198.0	14.20	77.10	3,142.3	-1,674.2	105.0	435.0	-35.7	1.95	-1.89	-1.89
3,288.0	13.10	74.90	3,229.8	-1,586.7	110.1	455.6	-37.6	1.35	-1.22	-2.44
3,377.0	14.80	81.90	3,316.2	-1,500.3	114.4	476.6	-38.5	2.69	1.91	7.87
3,467.0	13.20	80.70	3,403.5	-1,413.0	117.6	498.1	-38.3	1.81	-1.78	-1.33
3,557.0	11.70	78.60	3,491.4	-1,325.1	121.1	517.2	-38.8	1.74	-1.67	-2.33
3,647.0	14.80	79.30	3,578.9	-1,237.6	125.0	537.4	-39.5	3.45	3.44	0.78
3,737.0	13.20	78.40	3,666.3	-1,150.2	129.2	558.8	-40.3	1.79	-1.78	-1.00
3,827.0	13.00	77.40	3,753.9	-1,062.6	133.5	578.7	-41.4	0.34	-0.22	-1.11
3,917.0	12.40	76.00	3,841.7	-974.8	138.1	598.0	-42.9	0.75	-0.67	-1.56
4,007.0	12.20	74.80	3,929.7	-886.8	142.9	616.5	-44.8	0.36	-0.22	-1.33
4,097.0	14.90	79.30	4,017.2	-799.3	147.5	637.1	-46.2	3.22	3.00	5.00
4,187.0	13.00	78.30	4,104.5	-712.0	151.7	658.4	-47.0	2.13	-2.11	-1.11
4,277.0	12.10	77.00	4,192.3	-624.2	155.9	677.5	-48.1	1.05	-1.00	-1.44
4,367.0	15.20	84.20	4,279.8	-536.7	159.2	698.4	-48.1	3.92	3.44	8.00
4,457.0	13.50	83.30	4,367.0	-449.5	161.7	720.6	-47.0	1.91	-1.89	-1.00
4,547.0	12.80	82.60	4,454.6	-361.9	164.2	740.9	-46.3	0.80	-0.78	-0.78
4,637.0	14.60	79.20	4,542.1	-274.4	167.6	761.9	-46.4	2.19	2.00	-3.78
4,727.0	13.20	78.70	4,629.4	-187.1	171.7	783.2	-47.2	1.56	-1.56	-0.56
4,817.0	15.50	74.50	4,716.6	-99.9	176.9	804.8	-49.0	2.80	2.56	-4.67
4,907.0	14.60	74.60	4,803.5	-13.0	183.2	827.4	-51.6	1.00	-1.00	0.11
4,996.0	13.00	72.50	4,890.0	73.5	189.2	847.7	-54.3	1.88	-1.80	-2.36
5,086.0	11.50	69.80	4,977.9	161.4	195.3	865.8	-57.6	1.78	-1.67	-3.00
5,175.0	13.00	77.30	5,064.9	248.4	200.6	883.9	-59.9	2.45	1.69	8.43
5,265.0	14.90	81.00	5,152.2	335.7	204.6	905.2	-60.6	2.33	2.11	4.11
5,354.0	12.90	80.00	5,238.6	422.1	208.1	926.3	-60.8	2.26	-2.25	-1.12
5,444.0	14.40	78.90	5,326.1	509.6	212.0	947.2	-61.4	1.69	1.67	-1.22
5,534.0	12.10	77.00	5,413.7	597.2	216.3	967.3	-62.4	2.60	-2.56	-2.11
5,624.0	14.40	82.50	5,501.3	684.8	219.9	987.6	-62.8	2.91	2.56	6.11
5,714.0	12.20	81.60	5,588.8	772.3	222.7	1,008.1	-62.4	2.46	-2.44	-1.00

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-223
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4816.5usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB-EST @ 4816.5usft (ENS 123)
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Wellbore:	JOB #2015-53-123	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)
5,804.0	9.50	83.60	5,677.2	860.7	224.9	1,024.9	-62.0	3.03	-3.00	2.22
5,894.0	7.60	83.30	5,766.2	949.7	226.5	1,038.2	-61.4	2.11	-2.11	-0.33
5,984.0	6.20	82.40	5,855.6	1,039.1	227.8	1,048.9	-61.1	1.56	-1.56	-1.00
6,074.0	4.90	79.90	5,945.2	1,128.7	229.1	1,057.5	-61.0	1.47	-1.44	-2.78
6,164.0	3.80	74.30	6,034.9	1,218.4	230.6	1,064.2	-61.4	1.31	-1.22	-6.22
6,254.0	3.00	67.80	6,124.7	1,308.2	232.3	1,069.2	-62.3	0.99	-0.89	-7.22
6,344.0	1.00	13.30	6,214.7	1,398.2	234.0	1,071.6	-63.6	2.84	-2.22	-60.56
6,434.0	1.00	352.30	6,304.7	1,488.2	235.5	1,071.7	-65.1	0.40	0.00	-23.33
KOP										
6,500.0	0.92	149.05	6,370.7	1,554.2	235.6	1,071.9	-65.2	2.85	-0.12	237.50
6,524.0	1.60	154.20	6,394.7	1,578.2	235.1	1,072.1	-64.7	2.85	2.82	21.45
6,614.0	14.00	142.30	6,483.7	1,667.2	225.4	1,079.4	-53.9	13.82	13.78	-13.22
6,704.0	22.90	161.70	6,569.0	1,752.5	200.0	1,091.5	-27.0	11.89	9.89	21.56
6,794.0	27.50	174.40	6,650.5	1,834.0	162.7	1,099.1	11.1	7.86	5.11	14.11
6,884.0	34.40	174.20	6,727.6	1,911.1	116.7	1,103.7	57.3	7.67	7.67	-0.22
6,974.0	42.20	175.00	6,798.2	1,981.7	61.2	1,108.9	112.9	8.68	8.67	0.89
7,064.0	46.70	174.90	6,862.4	2,045.9	-1.6	1,114.4	175.8	5.00	5.00	-0.11
7,154.0	54.00	174.40	6,919.8	2,103.3	-70.5	1,120.9	244.9	8.12	8.11	-0.56
7,244.0	56.00	173.70	6,971.4	2,154.9	-143.9	1,128.6	318.5	2.31	2.22	-0.78
7,333.0	63.50	176.20	7,016.3	2,199.8	-220.4	1,135.3	395.1	8.77	8.43	2.81
7,423.0	68.70	180.90	7,052.7	2,236.2	-302.6	1,137.3	476.6	7.49	5.78	5.22
7,513.0	75.50	180.60	7,080.4	2,263.9	-388.2	1,136.2	561.0	7.56	7.56	-0.33
7,603.0	76.30	179.90	7,102.3	2,285.8	-475.5	1,135.8	647.1	1.17	0.89	-0.78
7,650.0	84.10	179.90	7,110.3	2,293.8	-521.7	1,135.9	692.9	16.60	16.60	0.00
ICP										
7,681.0	86.85	181.58	7,112.7	2,296.2	-552.6	1,135.5	723.3	10.38	8.86	5.43
7,685.0	87.20	181.80	7,112.9	2,296.4	-556.6	1,135.3	727.2	10.38	8.86	5.41
7,775.0	88.30	181.10	7,116.5	2,300.0	-646.5	1,133.1	815.7	1.45	1.22	-0.78
7,867.0	90.20	182.00	7,117.7	2,301.2	-738.5	1,130.6	906.1	2.29	2.07	0.98
7,959.0	89.60	181.80	7,117.8	2,301.3	-830.4	1,127.5	996.5	0.69	-0.65	-0.22
8,053.0	90.20	183.40	7,118.0	2,301.5	-924.3	1,123.3	1,088.5	1.82	0.64	1.70
8,145.0	90.60	180.30	7,117.4	2,300.9	-1,016.3	1,120.3	1,178.9	3.40	0.43	-3.37
8,240.0	90.10	180.60	7,116.8	2,300.3	-1,111.3	1,119.5	1,272.6	0.61	-0.53	0.32
8,333.0	89.30	181.60	7,117.3	2,300.8	-1,204.2	1,117.8	1,364.1	1.38	-0.86	1.08
8,426.0	90.80	180.10	7,117.2	2,300.7	-1,297.2	1,116.4	1,455.8	2.28	1.61	-1.61
8,519.0	90.50	181.00	7,116.1	2,299.6	-1,390.2	1,115.5	1,547.5	1.02	-0.32	0.97
8,613.0	89.30	179.60	7,116.3	2,299.8	-1,484.2	1,115.0	1,640.2	1.96	-1.28	-1.49
8,706.0	89.90	182.00	7,116.9	2,300.4	-1,577.2	1,113.7	1,731.9	2.66	0.65	2.58
8,799.0	90.20	181.20	7,116.9	2,300.4	-1,670.1	1,111.1	1,823.3	0.92	0.32	-0.86
8,892.0	91.50	181.80	7,115.5	2,299.0	-1,763.1	1,108.7	1,914.7	1.54	1.40	0.65
8,986.0	90.90	181.50	7,113.5	2,297.0	-1,857.0	1,106.0	2,007.1	0.71	-0.64	-0.32
9,079.0	90.00	181.40	7,112.8	2,296.3	-1,950.0	1,103.6	2,098.5	0.97	-0.97	-0.11
9,172.0	89.80	181.30	7,112.9	2,296.4	-2,043.0	1,101.4	2,190.0	0.24	-0.22	-0.11
9,265.0	89.80	181.80	7,113.3	2,296.8	-2,136.0	1,098.9	2,281.5	0.54	0.00	0.54
9,358.0	89.40	181.80	7,113.9	2,297.4	-2,228.9	1,096.0	2,372.8	0.43	-0.43	0.00
9,451.0	90.40	180.80	7,114.1	2,297.6	-2,321.9	1,093.9	2,464.3	1.52	1.08	-1.08
9,545.0	89.40	179.60	7,114.2	2,297.7	-2,415.9	1,093.5	2,557.1	1.66	-1.06	-1.28
9,638.0	91.40	179.70	7,113.6	2,297.1	-2,508.9	1,094.1	2,649.0	2.15	2.15	0.11
9,728.0	91.30	179.10	7,111.5	2,295.0	-2,598.8	1,095.1	2,738.0	0.68	-0.11	-0.67
9,818.0	91.10	178.70	7,109.6	2,293.1	-2,688.8	1,096.8	2,827.2	0.50	-0.22	-0.44
9,908.0	90.50	180.10	7,108.3	2,291.8	-2,778.8	1,097.7	2,916.2	1.69	-0.67	1.56
9,998.0	90.10	179.30	7,107.9	2,291.4	-2,868.8	1,098.2	3,005.2	0.99	-0.44	-0.89
10,088.0	90.30	178.50	7,107.5	2,291.0	-2,958.8	1,099.9	3,094.3	0.92	0.22	-0.89

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-223
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4816.5usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB-EST @ 4816.5usft (ENS 123)
Well:	STROH 130-223	North Reference:	True
Wellbore:	JOB #2015-53-123	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)
10,178.0	89.50	179.80	7,107.7	2,291.2	-3,048.7	1,101.3	3,183.4	1.70	-0.89	1.44
10,268.0	89.40	179.90	7,108.6	2,292.1	-3,138.7	1,101.5	3,272.3	0.16	-0.11	0.11
10,358.0	88.80	180.20	7,110.0	2,293.5	-3,228.7	1,101.4	3,361.2	0.75	-0.67	0.33
10,448.0	90.60	178.50	7,110.5	2,294.0	-3,318.7	1,102.4	3,450.2	2.75	2.00	-1.89
10,538.0	89.40	175.70	7,110.5	2,294.0	-3,408.6	1,107.0	3,539.7	3.38	-1.33	-3.11
10,628.0	90.70	177.50	7,110.4	2,293.9	-3,498.4	1,112.3	3,629.3	2.47	1.44	2.00
10,718.0	91.00	179.60	7,109.0	2,292.5	-3,588.4	1,114.6	3,718.5	2.36	0.33	2.33
10,808.0	90.80	180.00	7,107.6	2,291.1	-3,678.4	1,114.9	3,807.4	0.50	-0.22	0.44
10,898.0	89.90	179.40	7,107.1	2,290.6	-3,768.4	1,115.4	3,896.4	1.20	-1.00	-0.67
10,987.0	89.60	180.10	7,107.5	2,291.0	-3,857.4	1,115.8	3,984.4	0.86	-0.34	0.79
11,077.0	88.90	179.50	7,108.6	2,292.1	-3,947.4	1,116.1	4,073.3	1.02	-0.78	-0.67
11,167.0	88.80	179.50	7,110.5	2,294.0	-4,037.3	1,116.9	4,162.3	0.11	-0.11	0.00
11,257.0	89.20	180.60	7,112.0	2,295.5	-4,127.3	1,116.8	4,251.1	1.30	0.44	1.22
11,347.0	89.60	178.60	7,113.0	2,296.5	-4,217.3	1,117.4	4,340.1	2.27	0.44	-2.22
11,437.0	91.00	178.90	7,112.5	2,296.0	-4,307.3	1,119.4	4,429.3	1.59	1.56	0.33
11,527.0	90.40	178.60	7,111.4	2,294.9	-4,397.3	1,121.4	4,518.5	0.75	-0.67	-0.33
11,617.0	90.30	180.50	7,110.8	2,294.3	-4,487.2	1,122.1	4,607.5	2.11	-0.11	2.11
11,707.0	90.00	179.90	7,110.6	2,294.1	-4,577.2	1,121.7	4,696.3	0.75	-0.33	-0.67
11,797.0	89.50	180.50	7,111.0	2,294.5	-4,667.2	1,121.4	4,785.2	0.87	-0.56	0.67
11,887.0	89.10	180.30	7,112.1	2,295.6	-4,757.2	1,120.8	4,873.9	0.50	-0.44	-0.22
11,977.0	90.40	180.80	7,112.5	2,296.0	-4,847.2	1,119.9	4,962.7	1.55	1.44	0.56
12,067.0	89.20	179.30	7,112.8	2,296.3	-4,937.2	1,119.9	5,051.6	2.13	-1.33	-1.67
12,157.0	90.30	180.40	7,113.2	2,296.7	-5,027.2	1,120.1	5,140.5	1.73	1.22	1.22
12,247.0	90.00	179.70	7,113.0	2,296.5	-5,117.2	1,120.0	5,229.4	0.85	-0.33	-0.78
12,337.0	90.20	177.80	7,112.8	2,296.3	-5,207.2	1,122.0	5,318.6	2.12	0.22	-2.11
12,427.0	91.10	179.40	7,111.8	2,295.3	-5,297.2	1,124.2	5,407.8	2.04	1.00	1.78
12,516.0	90.60	179.50	7,110.5	2,294.0	-5,386.1	1,125.0	5,495.8	0.57	-0.56	0.11
12,606.0	90.20	178.60	7,109.8	2,293.3	-5,476.1	1,126.5	5,584.9	1.09	-0.44	-1.00
12,696.0	89.50	177.90	7,110.1	2,293.6	-5,566.1	1,129.3	5,674.2	1.10	-0.78	-0.78
12,787.0	90.00	180.60	7,110.5	2,294.0	-5,657.1	1,130.5	5,764.2	3.02	0.55	2.97
12,877.0	89.50	179.70	7,110.9	2,294.4	-5,747.1	1,130.2	5,853.1	1.14	-0.56	-1.00
12,966.0	90.60	180.70	7,110.8	2,294.3	-5,836.1	1,129.9	5,940.9	1.67	1.24	1.12
13,056.0	90.40	180.60	7,110.0	2,293.5	-5,926.0	1,128.9	6,029.7	0.25	-0.22	-0.11
13,146.0	90.90	181.80	7,109.0	2,292.5	-6,016.0	1,127.0	6,118.2	1.44	0.56	1.33
13,236.0	91.00	182.00	7,107.5	2,291.0	-6,106.0	1,124.0	6,206.6	0.25	0.11	0.22
13,326.0	90.60	181.40	7,106.2	2,289.7	-6,195.9	1,121.4	6,295.0	0.80	-0.44	-0.67
13,416.0	90.30	182.00	7,105.5	2,289.0	-6,285.9	1,118.7	6,383.5	0.75	-0.33	0.67
13,506.0	90.20	182.40	7,105.1	2,288.6	-6,375.8	1,115.2	6,471.7	0.46	-0.11	0.44
13,596.0	89.00	180.60	7,105.8	2,289.3	-6,465.8	1,112.9	6,560.2	2.40	-1.33	-2.00
13,686.0	88.80	180.40	7,107.5	2,291.0	-6,555.7	1,112.1	6,649.0	0.31	-0.22	-0.22
13,776.0	88.70	179.90	7,109.5	2,293.0	-6,645.7	1,111.9	6,737.8	0.57	-0.11	-0.56
13,866.0	88.60	179.90	7,111.6	2,295.1	-6,735.7	1,112.0	6,826.7	0.11	-0.11	0.00
13,956.0	88.20	179.80	7,114.1	2,297.6	-6,825.7	1,112.3	6,915.6	0.46	-0.44	-0.11
14,046.0	87.80	177.80	7,117.2	2,300.7	-6,915.6	1,114.1	7,004.7	2.26	-0.44	-2.22
14,135.0	87.60	176.70	7,120.8	2,304.3	-7,004.4	1,118.4	7,093.1	1.26	-0.22	-1.24
LAST SURVEY - JULY 6, 2015										
14,198.0	88.00	176.00	7,123.2	2,306.7	-7,067.2	1,122.4	7,155.8	1.28	0.63	-1.11
EXTRAPOLATION TO TD										
14,253.0	88.40	175.40	7,124.9	2,308.4	-7,122.0	1,126.5	7,210.6	1.31	0.73	-1.09

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well STROH 130-223
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB-EST @ 4816.5usft (ENS 123)
Site:	NE SW SEC. 13 T4N R67W 6th P.M.	MD Reference:	KB-EST @ 4816.5usft (ENS 123)
Well:	STROH 130-223	North Reference:	True
Wellbore:	JOB #2015-53-123	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
BHL - STROH 130-223 - survey misses target center by 67.4usft at 14251.0usft MD (7124.9 TVD, -7120.1 N, 1126.4 E) - Point	0.00	0.00	7,057.5	-7,122.1	1,127.0	1,349,715.82	3,184,555.69	40.291480	-104.838400
KOP - STROH 130-223 - survey misses target center by 57.5usft at 6527.7usft MD (6398.3 TVD, 235.0 N, 1072.2 E) - Point	0.00	0.00	6,395.8	252.3	1,127.0	1,357,089.74	3,184,500.98	40.311722	-104.838399
KOP - STROH 130-223 - survey misses target center by 57.5usft at 6511.3usft MD (6381.9 TVD, 235.4 N, 1072.0 E) - Point	0.00	0.00	6,381.7	252.3	1,127.0	1,357,089.74	3,184,500.98	40.311722	-104.838399
7" ICP *NEW* - STROH - survey misses target center by 9.1usft at 7595.0usft MD (7100.4 TVD, -467.7 N, 1135.8 E) - Point	0.00	0.00	7,097.9	-468.3	1,127.0	1,356,369.19	3,184,506.33	40.309744	-104.838399
7" ICP *NEW* - STROH - survey misses target center by 13.9usft at 7599.9usft MD (7101.6 TVD, -472.5 N, 1135.8 E) - Point	0.00	0.00	7,112.0	-469.8	1,127.0	1,356,367.69	3,184,506.34	40.309740	-104.838399

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
935.0	934.8	-14.3	-4.8	SURFACE CASING
6,500.0	6,370.7	235.6	1,071.9	KOP
7,681.0	7,112.7	-552.6	1,135.5	ICP
14,198.0	7,123.2	-7,067.2	1,122.4	LAST SURVEY - JULY 6, 2015
14,253.0	7,124.9	-7,122.0	1,126.5	EXTRAPOLATION TO TD

Checked By: _____	Approved By: _____	Date: _____
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