

PDC ENERGY

WELD COUNTY, COLORADO

NW NW SEC. 28 T5N R64W 6th P.M.

CHURCHILL 28E-203

JOB # 2015-17-136

25 March, 2015

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
Site: NW NW SEC. 28 T5N R64W 6th P.M.
Well: CHURCHILL 28E-203
Wellbore: JOB # 2015-17-136
Design: FINAL SURVEYS

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Dep	Annotation
922.5	927.0	11.92	285.10	13.2	-64.0	-3.4	65.9	SURFACE CASING
6041.6	6167.0	1.65	155.43	212.8	-1123.0	-41.3	1149.6	KOP
6647.5	7148.0	87.28	180.97	-429.0	-1127.0	593.7	1792.7	ICP
6627.5	13865.0	90.70	180.10	-7143.9	-1100.5	7228.2	8509.1	LAST SURVEY - MAR 25, 2015
6626.9	13915.0	90.70	180.10	-7193.9	-1100.6	7277.7	8559.1	EXTRAPOLATION TO TD

PROPOSED LOCAL COORDINATES:

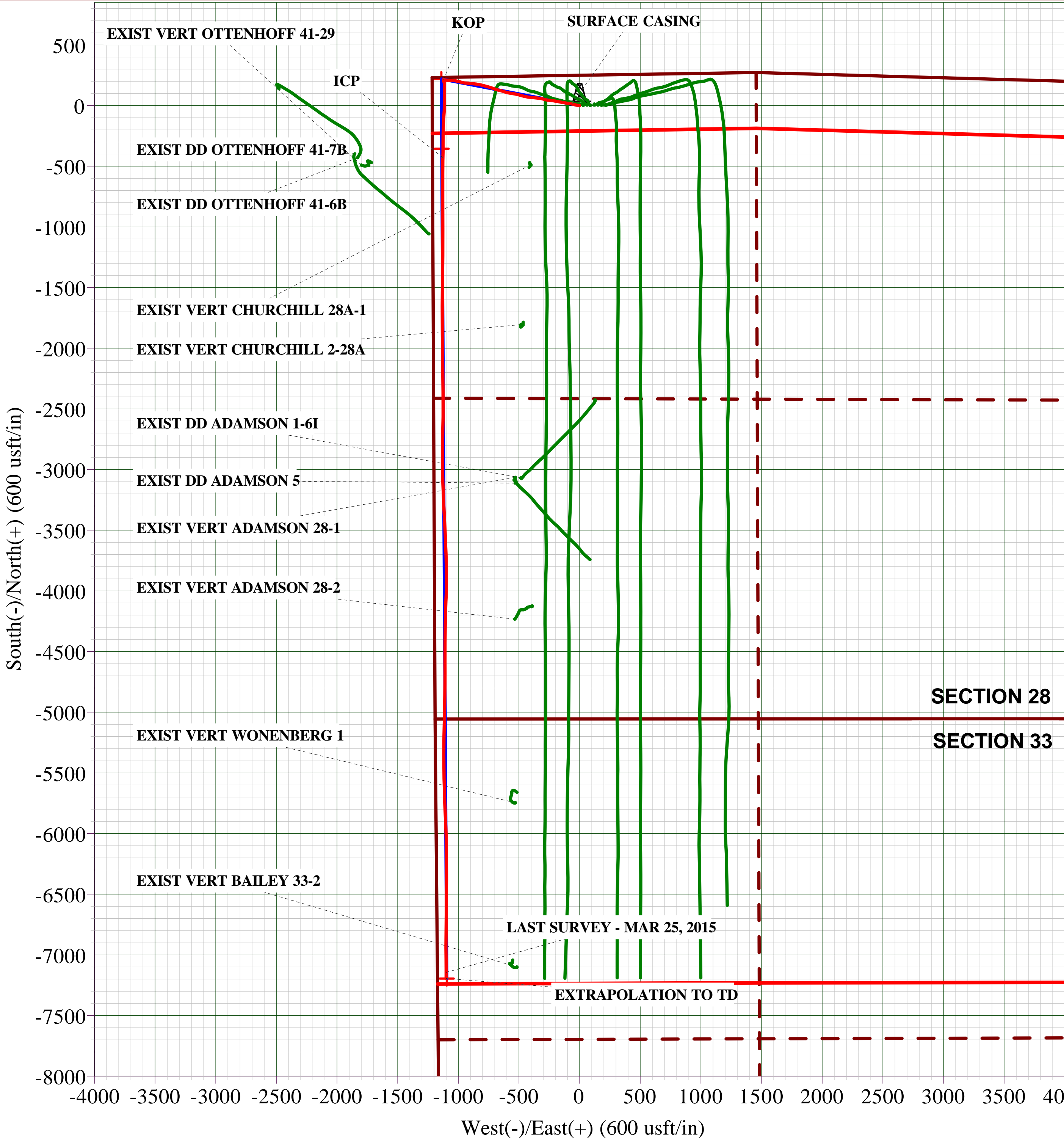
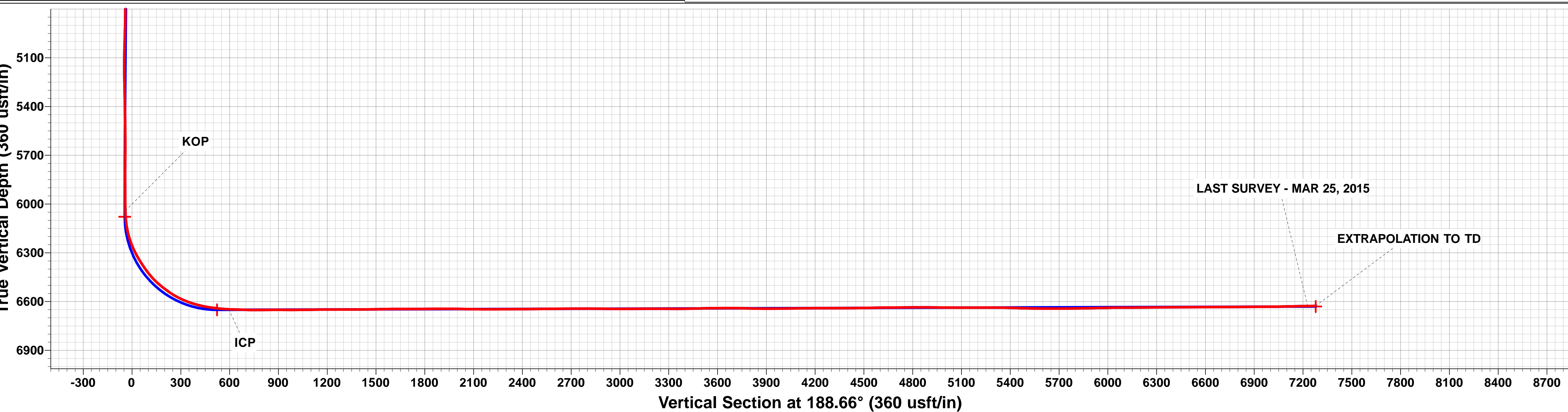
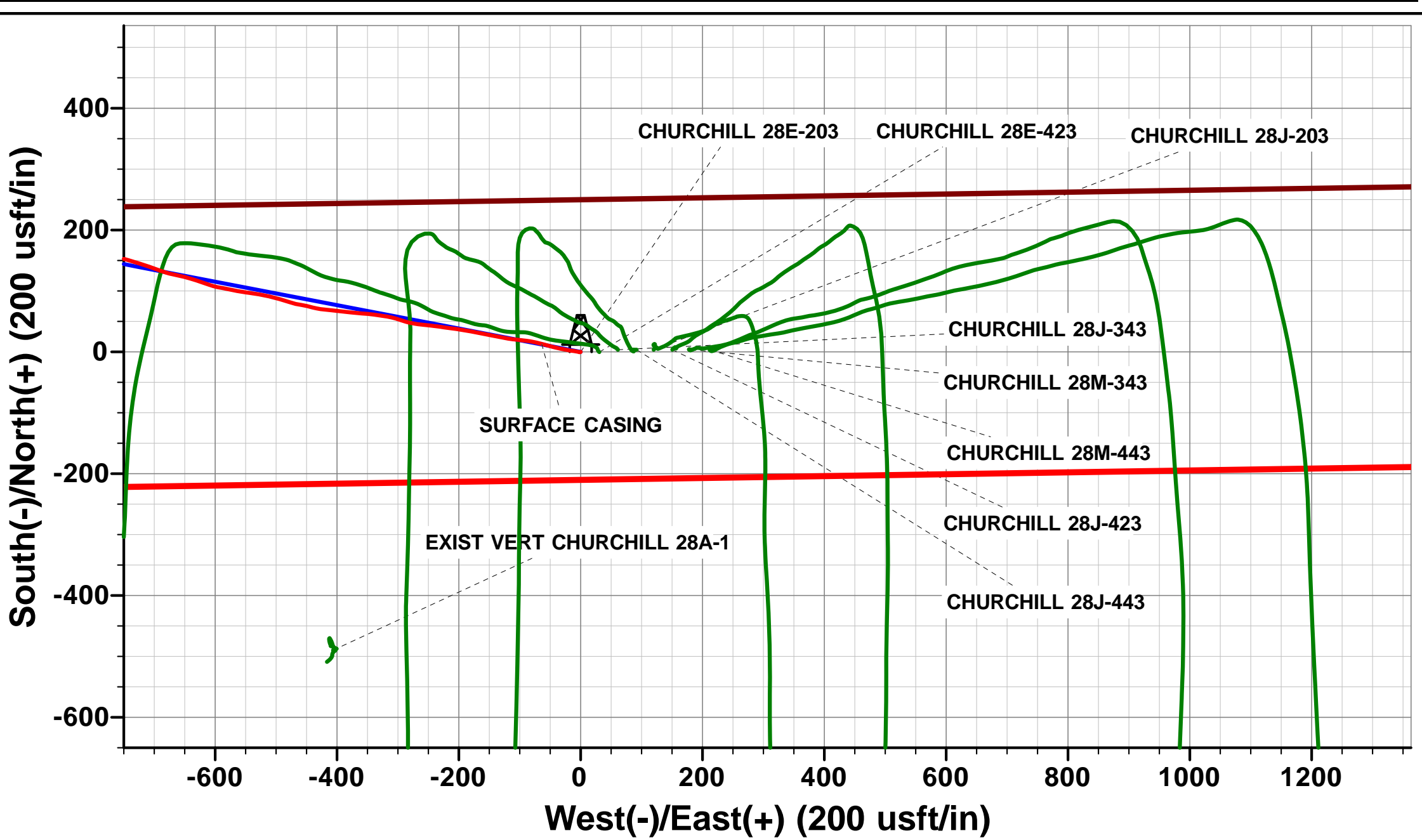
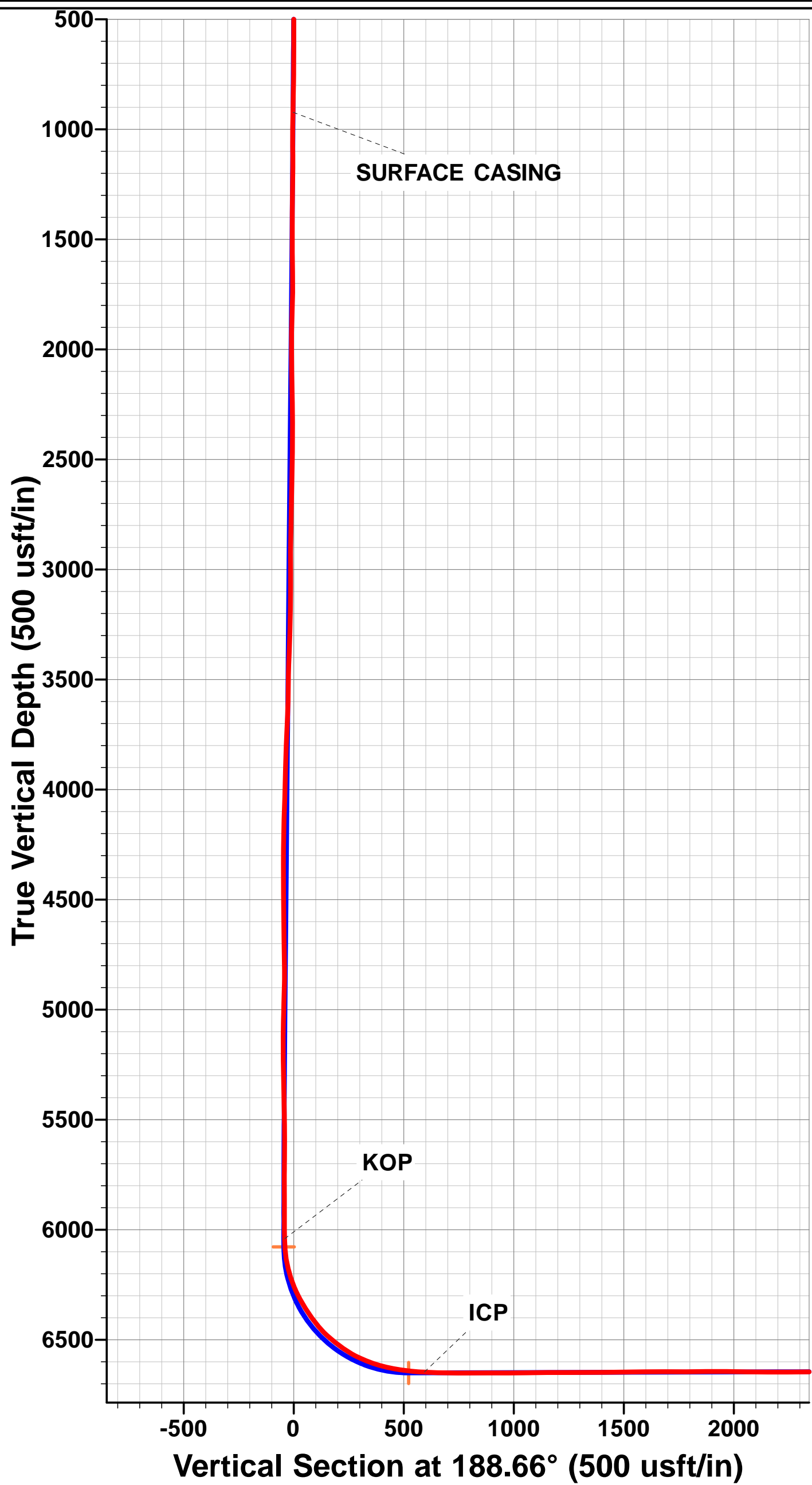
SHL: 250ft FNL & 1215ft FWL Sec 28

7" ICP : 605.5ft FNL & 75ft FWL Sec 28

BHL: 2143ft FNL & 75ft FWL Sec 33

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
7" ICP - CHURCHILL 28E-203 (P2)	6651.0	-355.5	-1136.3	40.375924	-104.564008
BHL - CHURCHILL 28E-203	6630.5	-7195.1	-1095.3	40.357150	-104.563860
KOP - CHURCHILL 28E-203	6078.0	219.1	-1139.7	40.377501	-104.564021



Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CHURCHILL 28E-203
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4648.0usft (ENS 136)
Site:	NW NW SEC. 28 T5N R64W 6th P.M.	MD Reference:	KB @ 4648.0usft (ENS 136)
Well:	CHURCHILL 28E-203	North Reference:	True
Wellbore:	JOB # 2015-17-136	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	NW NW SEC. 28 T5N R64W 6th P.M.				
Site Position:		Northing:	1,381,533.43 usft	Latitude:	40.376900
From:	Lat/Long	Easting:	3,261,903.54 usft	Longitude:	-104.559930
Position Uncertainty:	0.0 usft	Slot Radius:	1.10000 ft	Grid Convergence:	0.61 °

Well	CHURCHILL 28E-203					
Well Position	+N/-S	0.0 usft	Northing:	1,381,533.43 usft	Latitude:	40.376900
	+E/-W	0.0 usft	Easting:	3,261,903.54 usft	Longitude:	-104.559930
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,635.0 usft

Wellbore	JOB # 2015-17-136				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/03/2015	8.34	66.93	52,663

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	188.66

Survey Program	Date	25/03/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
44.0	13,915.0	FINAL SURVEYS (JOB # 2015-17-136)	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	4,648.0	0.0	0.0	0.0	0.00	0.00	0.00
44.0	0.30	284.30	44.0	4,604.0	0.0	-0.1	0.0	0.68	0.68	0.00
133.0	0.30	254.10	133.0	4,515.0	0.0	-0.6	0.1	0.18	0.00	-33.93
223.0	0.30	204.20	223.0	4,425.0	-0.3	-0.9	0.4	0.28	0.00	-55.44
254.0	0.30	222.00	254.0	4,394.0	-0.4	-1.0	0.5	0.30	0.00	57.42
348.0	1.30	289.50	348.0	4,300.0	-0.2	-2.1	0.5	1.29	1.06	71.81
442.0	2.20	283.80	441.9	4,206.1	0.6	-4.9	0.2	0.97	0.96	-6.06
535.0	4.10	277.00	534.8	4,113.2	1.4	-9.9	0.1	2.08	2.04	-7.31
629.0	5.90	279.10	628.4	4,019.6	2.6	-18.0	0.2	1.92	1.91	2.23
722.0	7.60	281.00	720.8	3,927.2	4.5	-28.8	-0.1	1.84	1.83	2.04
816.0	10.30	284.10	813.6	3,834.4	7.7	-43.1	-1.2	2.92	2.87	3.30
888.0	11.60	284.70	884.3	3,763.7	11.1	-56.3	-2.5	1.81	1.81	0.83

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CHURCHILL 28E-203
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4648.0usft (ENS 136)
Site:	NW NW SEC. 28 T5N R64W 6th P.M.	MD Reference:	KB @ 4648.0usft (ENS 136)
Well:	CHURCHILL 28E-203	North Reference:	True
Wellbore:	JOB # 2015-17-136	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)
SURFACE CASING										
927.0	11.92	285.10	922.5	3,725.5	13.2	-64.0	-3.4	0.86	0.83	1.01
948.0	12.10	285.30	943.0	3,705.0	14.3	-68.2	-3.9	0.86	0.83	0.97
1,038.0	14.80	277.00	1,030.6	3,617.4	18.2	-88.7	-4.7	3.68	3.00	-9.22
1,129.0	14.10	276.80	1,118.7	3,529.3	21.0	-111.3	-4.0	0.77	-0.77	-0.22
1,219.0	16.60	281.70	1,205.5	3,442.5	24.9	-134.7	-4.3	3.13	2.78	5.44
1,309.0	16.20	281.40	1,291.8	3,356.2	29.9	-159.6	-5.6	0.45	-0.44	-0.33
1,400.0	15.60	279.60	1,379.3	3,268.7	34.5	-184.1	-6.4	0.85	-0.66	-1.98
1,493.0	15.20	277.60	1,469.0	3,179.0	38.2	-208.6	-6.4	0.71	-0.43	-2.15
1,587.0	13.20	278.90	1,560.1	3,087.9	41.5	-231.4	-6.2	2.15	-2.13	1.38
1,680.0	13.10	274.40	1,650.7	2,997.3	43.9	-252.4	-5.5	1.11	-0.11	-4.84
1,774.0	13.80	279.50	1,742.1	2,905.9	46.6	-274.1	-4.8	1.46	0.74	5.43
1,868.0	14.30	290.20	1,833.3	2,814.7	52.5	-296.0	-7.3	2.81	0.53	11.38
1,961.0	13.80	279.00	1,923.6	2,724.4	58.2	-317.7	-9.7	2.97	-0.54	-12.04
2,055.0	12.90	277.90	2,015.0	2,633.0	61.4	-339.2	-9.6	0.99	-0.96	-1.17
2,148.0	12.70	273.30	2,105.7	2,542.3	63.4	-359.7	-8.5	1.12	-0.22	-4.95
2,242.0	12.80	275.70	2,197.4	2,450.6	65.0	-380.4	-7.0	0.57	0.11	2.55
2,336.0	12.60	278.30	2,289.1	2,358.9	67.5	-400.9	-6.4	0.64	-0.21	2.77
2,429.0	11.90	274.00	2,380.0	2,268.0	69.7	-420.5	-5.6	1.24	-0.75	-4.62
2,523.0	11.90	285.80	2,472.0	2,176.0	73.0	-439.5	-6.0	2.58	0.00	12.55
2,617.0	11.90	279.00	2,563.9	2,084.1	77.1	-458.4	-7.3	1.49	0.00	-7.23
2,710.0	11.70	288.00	2,655.0	1,993.0	81.5	-476.8	-8.9	1.99	-0.22	9.68
2,801.0	11.70	286.00	2,744.1	1,903.9	86.9	-494.5	-11.5	0.45	0.00	-2.20
2,891.0	11.00	282.90	2,832.3	1,815.7	91.4	-511.6	-13.3	1.03	-0.78	-3.44
2,982.0	10.90	279.80	2,921.7	1,726.3	94.8	-528.6	-14.1	0.66	-0.11	-3.41
3,072.0	10.30	276.40	3,010.1	1,637.9	97.1	-544.9	-14.0	0.96	-0.67	-3.78
3,178.0	14.50	281.90	3,113.7	1,534.3	100.9	-567.3	-14.4	4.11	3.96	5.19
3,272.0	13.40	279.10	3,204.9	1,443.1	105.1	-589.6	-15.1	1.37	-1.17	-2.98
3,365.0	13.50	290.20	3,295.3	1,352.7	110.5	-610.4	-17.4	2.77	0.11	11.94
3,459.0	13.10	287.40	3,386.8	1,261.2	117.5	-630.9	-21.2	0.81	-0.43	-2.98
3,552.0	12.00	284.30	3,477.6	1,170.4	123.0	-650.3	-23.8	1.39	-1.18	-3.33
3,646.0	11.50	281.60	3,569.6	1,078.4	127.3	-669.0	-25.2	0.79	-0.53	-2.87
3,739.0	12.90	290.00	3,660.5	987.5	132.7	-687.8	-27.7	2.43	1.51	9.03
3,833.0	13.30	289.00	3,752.1	895.9	139.8	-707.9	-31.7	0.49	0.43	-1.06
3,910.0	13.20	287.40	3,827.0	821.0	145.4	-724.7	-34.6	0.49	-0.13	-2.08
4,000.0	12.50	286.10	3,914.8	733.2	151.1	-743.8	-37.5	0.84	-0.78	-1.44
4,090.0	11.40	285.10	4,002.8	645.2	156.2	-761.8	-39.7	1.24	-1.22	-1.11
4,181.0	13.50	286.60	4,091.7	556.3	161.5	-780.6	-42.2	2.33	2.31	1.65
4,271.0	12.30	285.20	4,179.4	468.6	167.0	-800.0	-44.8	1.38	-1.33	-1.56
4,362.0	12.80	281.30	4,268.2	379.8	171.6	-819.2	-46.3	1.08	0.55	-4.29
4,452.0	11.50	278.00	4,356.2	291.8	174.8	-837.9	-46.7	1.64	-1.44	-3.67
4,542.0	13.90	277.40	4,444.0	204.0	177.4	-857.5	-46.3	2.67	2.67	-0.67
4,633.0	11.70	276.10	4,532.8	115.2	179.8	-877.5	-45.7	2.44	-2.42	-1.43
4,723.0	14.10	276.70	4,620.5	27.5	182.0	-897.5	-44.9	2.67	2.67	0.67
4,814.0	12.50	274.10	4,709.0	-61.0	184.0	-918.3	-43.7	1.88	-1.76	-2.86
4,904.0	14.40	273.20	4,796.6	-148.6	185.4	-939.2	-41.9	2.12	2.11	-1.00
4,994.0	15.60	285.50	4,883.5	-235.5	189.2	-962.0	-42.3	3.77	1.33	13.67
5,084.0	14.70	284.10	4,970.4	-322.4	195.2	-984.8	-44.8	1.08	-1.00	-1.56
5,175.0	13.10	283.50	5,058.7	-410.7	200.5	-1,006.0	-46.8	1.77	-1.76	-0.66
5,265.0	11.50	280.60	5,146.7	-498.7	204.5	-1,024.7	-47.9	1.91	-1.78	-3.22
5,355.0	9.80	274.60	5,235.1	-587.1	206.8	-1,041.2	-47.7	2.25	-1.89	-6.67
5,446.0	8.80	266.90	5,324.9	-676.9	207.0	-1,055.8	-45.7	1.75	-1.10	-8.46
5,536.0	7.90	271.50	5,414.0	-766.0	206.8	-1,068.9	-43.6	1.24	-1.00	5.11

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CHURCHILL 28E-203
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4648.0usft (ENS 136)
Site:	NW NW SEC. 28 T5N R64W 6th P.M.	MD Reference:	KB @ 4648.0usft (ENS 136)
Well:	CHURCHILL 28E-203	North Reference:	True
Wellbore:	JOB # 2015-17-136	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)
5,627.0	8.50	276.10	5,504.0	-856.0	207.7	-1,081.8	-42.5	0.98	0.66	5.05
5,717.0	7.50	270.70	5,593.1	-945.1	208.4	-1,094.3	-41.4	1.39	-1.11	-6.00
5,808.0	7.60	288.80	5,683.4	-1,035.4	210.5	-1,106.0	-41.6	2.60	0.11	19.89
5,898.0	4.50	277.00	5,772.9	-1,124.9	212.8	-1,115.1	-42.6	3.69	-3.44	-13.11
5,988.0	2.70	279.00	5,862.7	-1,214.7	213.6	-1,120.7	-42.5	2.00	-2.00	2.22
6,078.0	0.40	247.20	5,952.6	-1,304.6	213.8	-1,123.1	-42.3	2.63	-2.56	-35.33
6,123.0	0.50	181.10	5,997.6	-1,349.6	213.5	-1,123.2	-42.0	1.11	0.22	-146.89
KOP										
6,167.0	1.65	155.43	6,041.6	-1,393.6	212.8	-1,123.0	-41.3	2.76	2.60	-58.34
6,169.0	1.70	155.10	6,043.6	-1,395.6	212.7	-1,123.0	-41.3	2.76	2.72	-16.59
6,214.0	4.50	167.90	6,088.6	-1,440.6	210.4	-1,122.3	-39.1	6.37	6.22	28.44
6,259.0	9.50	163.70	6,133.2	-1,485.2	205.1	-1,120.9	-34.1	11.16	11.11	-9.33
6,304.0	15.30	162.90	6,177.1	-1,529.1	195.8	-1,118.1	-25.3	12.89	12.89	-1.78
6,350.0	19.00	173.80	6,221.1	-1,573.1	182.6	-1,115.5	-12.6	10.62	8.04	23.70
6,395.0	23.10	180.90	6,263.1	-1,615.1	166.5	-1,114.9	3.2	10.71	9.11	15.78
6,440.0	27.60	180.00	6,303.8	-1,655.8	147.2	-1,115.0	22.3	10.04	10.00	-2.00
6,485.0	31.50	178.40	6,342.9	-1,694.9	125.0	-1,114.7	44.2	8.84	8.67	-3.56
6,531.0	34.50	179.10	6,381.5	-1,733.5	100.0	-1,114.1	68.8	6.57	6.52	1.52
6,576.0	37.30	181.80	6,417.9	-1,769.9	73.6	-1,114.4	95.0	7.15	6.22	6.00
6,621.0	42.40	180.90	6,452.5	-1,804.5	44.8	-1,115.0	123.5	11.41	11.33	-2.00
6,666.0	48.10	180.00	6,484.1	-1,836.1	12.8	-1,115.3	155.2	12.75	12.67	-2.00
6,711.0	52.20	181.10	6,513.0	-1,865.0	-21.7	-1,115.6	189.4	9.30	9.11	2.44
6,757.0	54.80	183.90	6,540.3	-1,892.3	-58.6	-1,117.2	226.1	7.48	5.65	6.09
6,802.0	60.40	183.70	6,564.4	-1,916.4	-96.5	-1,119.7	264.0	12.45	12.44	-0.44
6,847.0	65.70	183.10	6,584.8	-1,936.8	-136.6	-1,122.1	303.9	11.84	11.78	-1.33
6,893.0	69.50	181.90	6,602.3	-1,954.3	-179.0	-1,124.0	346.2	8.61	8.26	-2.61
6,938.0	74.20	181.40	6,616.3	-1,968.3	-221.8	-1,125.2	388.6	10.50	10.44	-1.11
6,983.0	77.80	180.50	6,627.2	-1,979.2	-265.4	-1,125.9	431.8	8.23	8.00	-2.00
7,028.0	81.20	179.90	6,635.4	-1,987.4	-309.7	-1,126.1	475.6	7.67	7.56	-1.33
7,073.0	83.80	180.50	6,641.3	-1,993.3	-354.3	-1,126.2	519.7	5.93	5.78	1.33
7,104.0	84.70	180.40	6,644.4	-1,996.4	-385.1	-1,126.5	550.3	2.92	2.90	-0.32
ICP										
7,148.0	87.28	180.97	6,647.5	-1,999.5	-429.0	-1,127.0	593.7	6.00	5.86	1.29
7,174.0	88.80	181.30	6,648.4	-2,000.4	-455.0	-1,127.5	619.5	6.00	5.86	1.28
7,264.0	87.70	179.20	6,651.1	-2,003.1	-544.9	-1,127.9	708.5	2.63	-1.22	-2.33
7,354.0	91.50	180.70	6,651.8	-2,003.8	-634.9	-1,127.8	797.4	4.54	4.22	1.67
7,445.0	89.90	180.40	6,650.6	-2,002.6	-725.9	-1,128.7	887.5	1.79	-1.76	-0.33
7,535.0	89.40	179.20	6,651.2	-2,003.2	-815.9	-1,128.4	976.4	1.44	-0.56	-1.33
7,625.0	91.60	180.50	6,650.4	-2,002.4	-905.9	-1,128.1	1,065.3	2.84	2.44	1.44
7,715.0	90.10	179.60	6,649.1	-2,001.1	-995.9	-1,128.2	1,154.3	1.94	-1.67	-1.00
7,806.0	89.90	179.50	6,649.1	-2,001.1	-1,086.9	-1,127.5	1,244.2	0.25	-0.22	-0.11
7,882.0	90.40	180.70	6,648.9	-2,000.9	-1,162.9	-1,127.6	1,319.3	1.71	0.66	1.58
7,976.0	90.10	180.20	6,648.5	-2,000.5	-1,256.9	-1,128.4	1,412.4	0.62	-0.32	-0.53
8,069.0	91.30	180.80	6,647.3	-1,999.3	-1,349.8	-1,129.2	1,504.4	1.44	1.29	0.65
8,163.0	90.80	180.60	6,645.6	-1,997.6	-1,443.8	-1,130.3	1,597.5	0.57	-0.53	-0.21
8,256.0	89.50	180.80	6,645.4	-1,997.4	-1,536.8	-1,131.5	1,689.6	1.41	-1.40	0.22
8,350.0	90.20	180.30	6,645.6	-1,997.6	-1,630.8	-1,132.4	1,782.7	0.92	0.74	-0.53
8,444.0	91.10	180.40	6,644.5	-1,996.5	-1,724.8	-1,132.9	1,875.7	0.96	0.96	0.11
8,537.0	88.80	179.10	6,644.6	-1,996.6	-1,817.8	-1,132.5	1,967.5	2.84	-2.47	-1.40
8,631.0	89.30	179.30	6,646.2	-1,998.2	-1,911.8	-1,131.2	2,060.2	0.57	0.53	0.21
8,724.0	89.30	179.10	6,647.3	-1,999.3	-2,004.8	-1,129.9	2,152.0	0.22	0.00	-0.22
8,818.0	90.60	179.50	6,647.4	-1,999.4	-2,098.7	-1,128.8	2,244.7	1.45	1.38	0.43
8,912.0	90.50	179.50	6,646.5	-1,998.5	-2,192.7	-1,128.0	2,337.5	0.11	-0.11	0.00

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CHURCHILL 28E-203
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4648.0usft (ENS 136)
Site:	NW NW SEC. 28 T5N R64W 6th P.M.	MD Reference:	KB @ 4648.0usft (ENS 136)
Well:	CHURCHILL 28E-203	North Reference:	True
Wellbore:	JOB # 2015-17-136	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)
9,005.0	90.00	179.40	6,646.1	-1,998.1	-2,285.7	-1,127.1	2,429.3	0.55	-0.54	-0.11
9,099.0	90.90	179.60	6,645.4	-1,997.4	-2,379.7	-1,126.2	2,522.1	0.98	0.96	0.21
9,193.0	90.70	179.60	6,644.0	-1,996.0	-2,473.7	-1,125.6	2,614.9	0.21	-0.21	0.00
9,286.0	90.10	180.70	6,643.4	-1,995.4	-2,566.7	-1,125.8	2,706.9	1.35	-0.65	1.18
9,380.0	90.00	181.20	6,643.3	-1,995.3	-2,660.7	-1,127.4	2,800.1	0.54	-0.11	0.53
9,473.0	89.20	181.10	6,644.0	-1,996.0	-2,753.7	-1,129.3	2,892.3	0.87	-0.86	-0.11
9,567.0	89.40	180.30	6,645.1	-1,997.1	-2,847.7	-1,130.4	2,985.3	0.88	0.21	-0.85
9,661.0	90.80	179.60	6,644.9	-1,996.9	-2,941.7	-1,130.3	3,078.3	1.67	1.49	-0.74
9,754.0	90.20	178.70	6,644.1	-1,996.1	-3,034.6	-1,128.9	3,170.0	1.16	-0.65	-0.97
9,848.0	89.80	178.80	6,644.1	-1,996.1	-3,128.6	-1,126.9	3,262.6	0.44	-0.43	0.11
9,941.0	89.40	177.10	6,644.8	-1,996.8	-3,221.6	-1,123.6	3,354.0	1.88	-0.43	-1.83
10,035.0	92.50	177.00	6,643.2	-1,995.2	-3,315.4	-1,118.7	3,446.0	3.30	3.30	-0.11
10,128.0	90.00	177.40	6,641.2	-1,993.2	-3,408.3	-1,114.2	3,537.1	2.72	-2.69	0.43
10,222.0	91.20	177.00	6,640.2	-1,992.2	-3,502.1	-1,109.6	3,629.2	1.35	1.28	-0.43
10,316.0	88.80	177.70	6,640.2	-1,992.2	-3,596.0	-1,105.3	3,721.4	2.66	-2.55	0.74
10,406.0	88.30	177.80	6,642.5	-1,994.5	-3,685.9	-1,101.7	3,809.8	0.57	-0.56	0.11
10,496.0	90.20	179.60	6,643.7	-1,995.7	-3,775.9	-1,099.7	3,898.4	2.91	2.11	2.00
10,587.0	90.50	179.10	6,643.1	-1,995.1	-3,866.9	-1,098.7	3,988.2	0.64	0.33	-0.55
10,677.0	90.90	180.30	6,642.0	-1,994.0	-3,956.9	-1,098.2	4,077.1	1.41	0.44	1.33
10,767.0	90.50	181.80	6,640.9	-1,992.9	-4,046.9	-1,099.8	4,166.3	1.72	-0.44	1.67
10,858.0	90.20	182.50	6,640.4	-1,992.4	-4,137.8	-1,103.2	4,256.7	0.84	-0.33	0.77
10,948.0	89.50	182.00	6,640.6	-1,992.6	-4,227.7	-1,106.8	4,346.1	0.96	-0.78	-0.56
11,039.0	90.90	180.50	6,640.3	-1,992.3	-4,318.7	-1,108.8	4,436.4	2.25	1.54	-1.65
11,129.0	91.10	180.40	6,638.7	-1,990.7	-4,408.7	-1,109.5	4,525.4	0.25	0.22	-0.11
11,220.0	90.70	179.80	6,637.3	-1,989.3	-4,499.7	-1,109.6	4,615.4	0.79	-0.44	-0.66
11,310.0	90.40	180.00	6,636.4	-1,988.4	-4,589.7	-1,109.5	4,704.4	0.40	-0.33	0.22
11,400.0	90.50	180.00	6,635.7	-1,987.7	-4,679.7	-1,109.5	4,793.3	0.11	0.11	0.00
11,490.0	89.80	180.70	6,635.5	-1,987.5	-4,769.7	-1,110.0	4,882.4	1.10	-0.78	0.78
11,580.0	89.00	180.70	6,636.4	-1,988.4	-4,859.6	-1,111.1	4,971.5	0.89	-0.89	0.00
11,671.0	89.60	181.20	6,637.5	-1,989.5	-4,950.6	-1,112.6	5,061.7	0.86	0.66	0.55
11,761.0	90.20	181.00	6,637.7	-1,989.7	-5,040.6	-1,114.4	5,150.9	0.70	0.67	-0.22
11,852.0	90.30	181.50	6,637.3	-1,989.3	-5,131.6	-1,116.3	5,241.1	0.56	0.11	0.55
11,942.0	89.60	181.30	6,637.4	-1,989.4	-5,221.6	-1,118.5	5,330.4	0.81	-0.78	-0.22
12,033.0	88.40	180.00	6,638.9	-1,990.9	-5,312.5	-1,119.6	5,420.5	1.94	-1.32	-1.43
12,123.0	88.40	179.60	6,641.5	-1,993.5	-5,402.5	-1,119.3	5,509.4	0.44	0.00	-0.44
12,214.0	89.50	178.80	6,643.1	-1,995.1	-5,493.5	-1,118.0	5,599.2	1.49	1.21	-0.88
12,304.0	90.00	179.20	6,643.5	-1,995.5	-5,583.5	-1,116.4	5,687.9	0.71	0.56	0.44
12,394.0	90.60	178.40	6,643.1	-1,995.1	-5,673.4	-1,114.5	5,776.5	1.11	0.67	-0.89
12,485.0	91.70	177.40	6,641.2	-1,993.2	-5,764.3	-1,111.2	5,865.9	1.63	1.21	-1.10
12,575.0	91.20	177.40	6,638.9	-1,990.9	-5,854.2	-1,107.1	5,954.2	0.56	-0.56	0.00
12,665.0	90.40	177.30	6,637.7	-1,989.7	-5,944.1	-1,103.0	6,042.4	0.90	-0.89	-0.11
12,756.0	90.10	179.10	6,637.3	-1,989.3	-6,035.1	-1,100.1	6,131.9	2.01	-0.33	1.98
12,846.0	90.70	179.10	6,636.7	-1,988.7	-6,125.1	-1,098.7	6,220.6	0.67	0.67	0.00
12,937.0	90.60	179.70	6,635.6	-1,987.6	-6,216.0	-1,097.7	6,310.5	0.67	-0.11	0.66
13,027.0	90.30	179.50	6,634.9	-1,986.9	-6,306.0	-1,097.1	6,399.3	0.40	-0.33	-0.22
13,117.0	90.20	180.40	6,634.5	-1,986.5	-6,396.0	-1,097.0	6,488.3	1.01	-0.11	1.00
13,208.0	90.10	180.30	6,634.3	-1,986.3	-6,487.0	-1,097.6	6,578.3	0.16	-0.11	-0.11
13,298.0	90.50	180.80	6,633.8	-1,985.8	-6,577.0	-1,098.4	6,667.4	0.71	0.44	0.56
13,389.0	90.50	180.50	6,633.0	-1,985.0	-6,668.0	-1,099.5	6,757.5	0.33	0.00	-0.33
13,479.0	90.30	181.10	6,632.4	-1,984.4	-6,758.0	-1,100.7	6,846.7	0.70	-0.22	0.67
13,570.0	90.00	180.60	6,632.2	-1,984.2	-6,849.0	-1,102.1	6,936.9	0.64	-0.33	-0.55
13,660.0	90.90	179.30	6,631.5	-1,983.5	-6,939.0	-1,102.0	7,025.8	1.76	1.00	-1.44
13,750.0	91.40	179.60	6,629.6	-1,981.6	-7,029.0	-1,101.1	7,114.6	0.65	0.56	0.33

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well CHURCHILL 28E-203
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4648.0usft (ENS 136)
Site:	NW NW SEC. 28 T5N R64W 6th P.M.	MD Reference:	KB @ 4648.0usft (ENS 136)
Well:	CHURCHILL 28E-203	North Reference:	True
Wellbore:	JOB # 2015-17-136	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)
13,841.0	90.90	179.70	6,627.8	-1,979.8	-7,120.0	-1,100.6	7,204.5	0.56	-0.55	0.11
LAST SURVEY - MAR 25, 2015										
13,865.0	90.70	180.10	6,627.5	-1,979.5	-7,143.9	-1,100.5	7,228.2	1.86	-0.83	1.67
EXTRAPOLATION TO TD										
13,915.0	90.70	180.10	6,626.9	-1,978.9	-7,193.9	-1,100.6	7,277.7	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
- hit/miss target									
- Shape									
7" ICP - CHURCHILL 28	0.00	0.00	6,650.1	-582.1	-1,095.1	1,380,939.78	3,260,814.71	40.375302	-104.563860
- survey misses target center by 32.5usft at 7301.2usft MD (6652.1 TVD, -582.1 N, -1127.6 E)									
- Point									
7" ICP - CHURCHILL 28	0.00	0.00	6,651.0	-355.5	-1,136.3	1,381,165.92	3,260,771.12	40.375924	-104.564008
- survey misses target center by 13.8usft at 7075.3usft MD (6641.6 TVD, -356.5 N, -1126.2 E)									
- Point									
KOP - CHURCHILL 28E	0.00	0.00	6,078.0	219.1	-1,139.7	1,381,740.43	3,260,761.63	40.377501	-104.564021
- survey misses target center by 19.0usft at 6202.7usft MD (6077.3 TVD, 211.2 N, -1122.5 E)									
- Point									
BHL - CHURCHILL 28E-	0.00	0.00	6,630.5	-7,195.1	-1,095.3	1,374,327.43	3,260,884.63	40.357150	-104.563860
- survey misses target center by 6.6usft at 13915.0usft MD (6626.9 TVD, -7193.9 N, -1100.6 E)									
- Point									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
927.0	922.5	13.2	-64.0	SURFACE CASING
6,167.0	6,041.6	212.8	-1,123.0	KOP
7,148.0	6,647.5	-429.0	-1,127.0	ICP
13,865.0	6,627.5	-7,143.9	-1,100.5	LAST SURVEY - MAR 25, 2015
13,915.0	6,626.9	-7,193.9	-1,100.6	EXTRAPOLATION TO TD

Checked By: _____ Approved By: _____ Date: _____