

PDC ENERGY

**WELD COUNTY, COLORADO
SW NW SEC. 17 T5N R64W 6th P.M.
SCHAUMBERG 17G-314
JOB #2016-60-135**

01 December, 2016

Survey: FINAL SURVEYS





Project: WELD COUNTY, COLORADO
 Site: SW NW SEC. 17 T5N R64W 6th P.M.
 Well: SCHAUMBERG 17G-314
 Wellbore: JOB #2016-60-135
 Design: FINAL SURVEYS

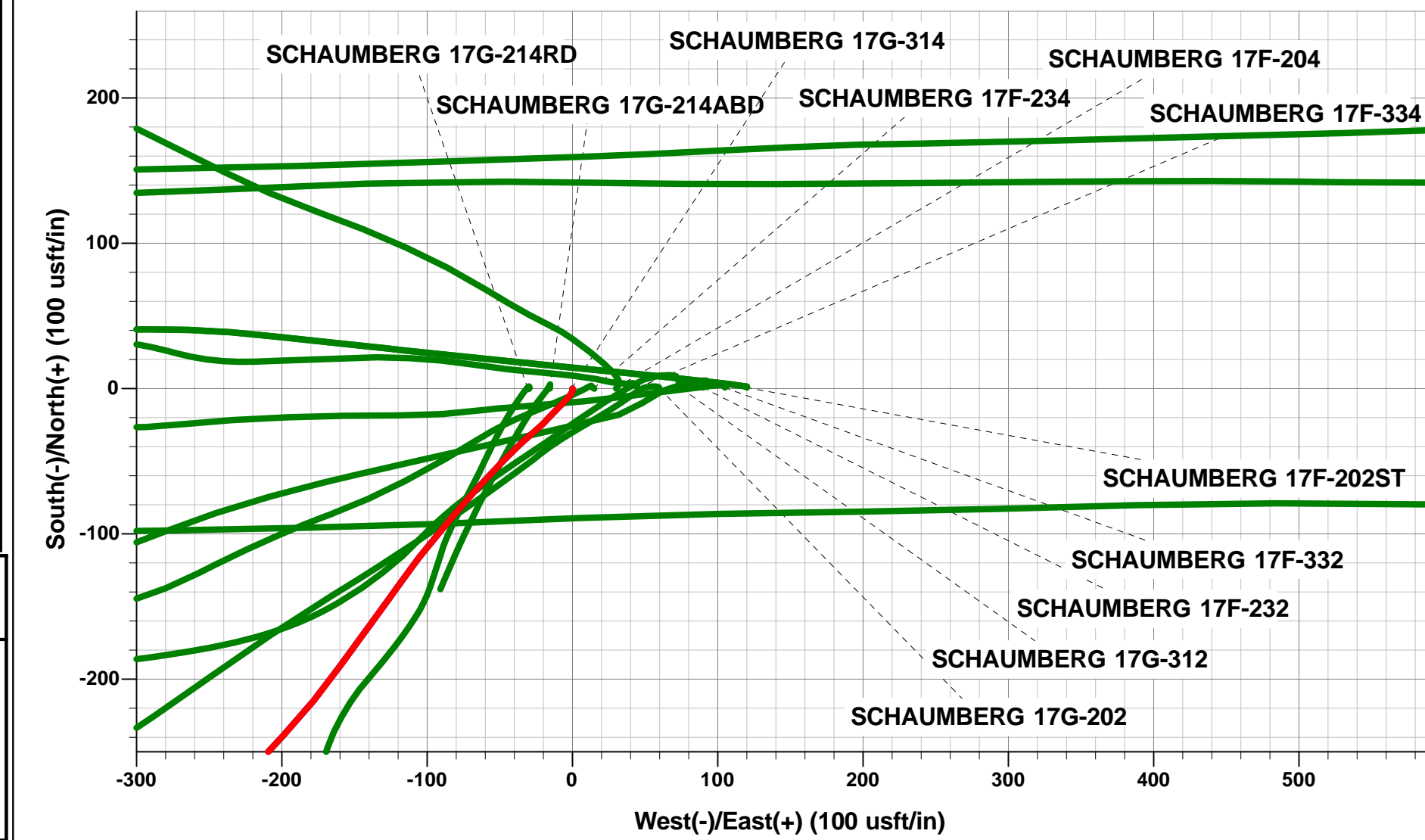


ANNOTATIONS

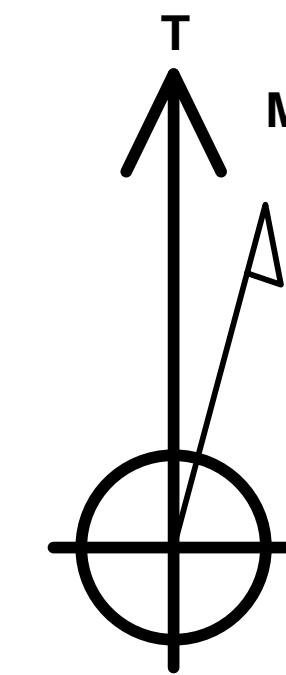
TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation
1471.4	1491.0	12.31	216.64	-152.7	-132.1	144.2	203.1	9 5/8" SURFACE CASING
6179.3	6243.0	1.21	241.54	-487.3	-424.3	463.0	679.5	KOP
6824.9	7016.5	69.10	269.33	-500.0	-770.9	809.5	1028.0	FORMATION ENTRY POINT
6849.1	7135.0	86.33	271.69	-498.4	-886.4	924.5	1142.5	HZ LANDING POINT
6782.5	12213.0	91.20	268.30	-483.8	-5962.3	5981.9	6219.3	LAST SURVEY - JULY 30, 2016
6781.4	12268.0	91.20	268.30	-485.5	-6017.2	6036.8	6274.3	EXTRAPOLATION TO TD

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL - SCHAUMBERG 17G-314 (P3)	6773.0	-489.3	-5913.8	40.400655	-104.601295
HZ LP *NEW* - SCHAUMBERG 17G-314 (P3)	6773.0	-489.3	-804.6	40.400657	-104.582951
KOP - SCHAUMBERG 17G-314 (P3)	6229.7	-489.3	-317.8	40.400657	-104.581203

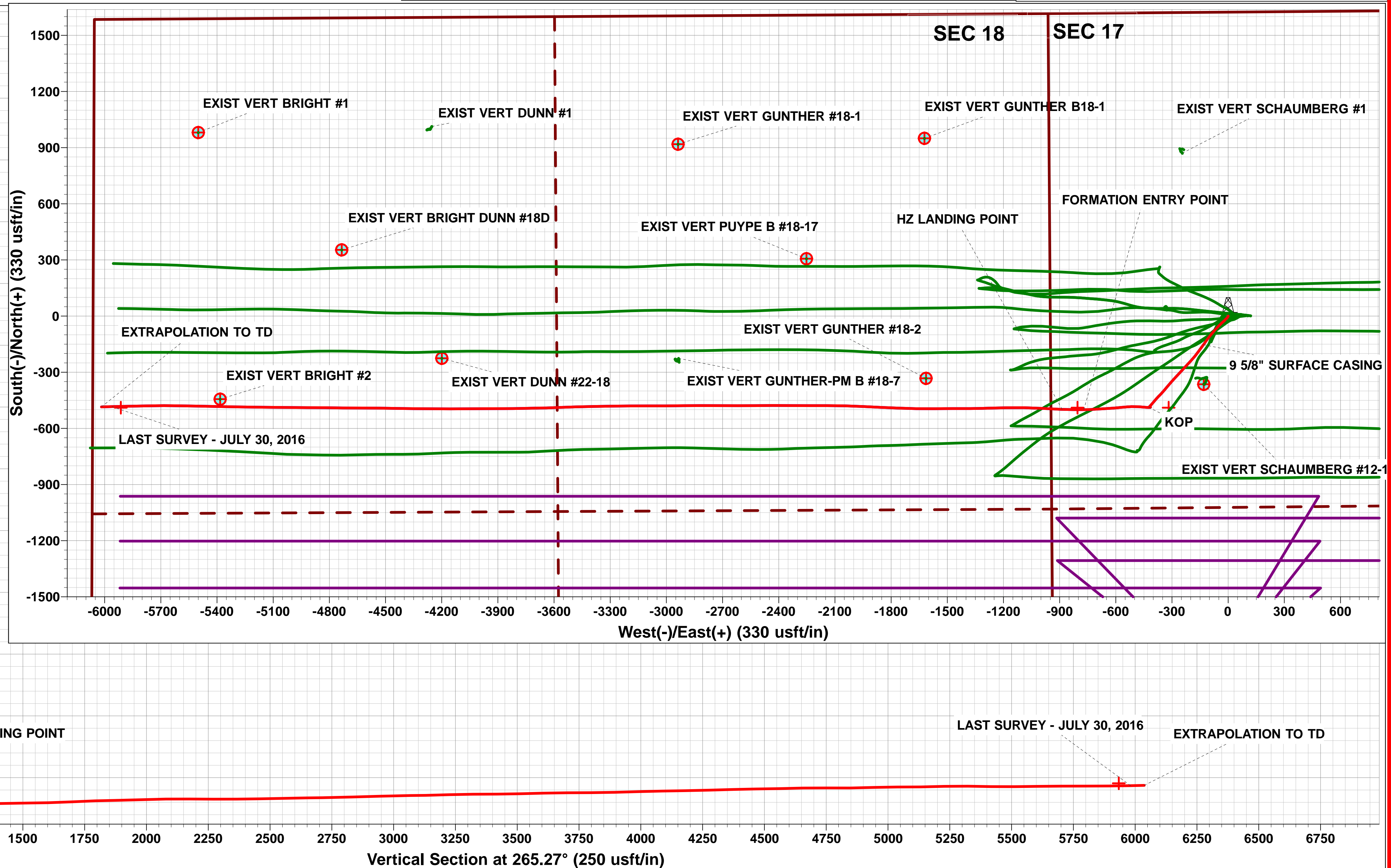
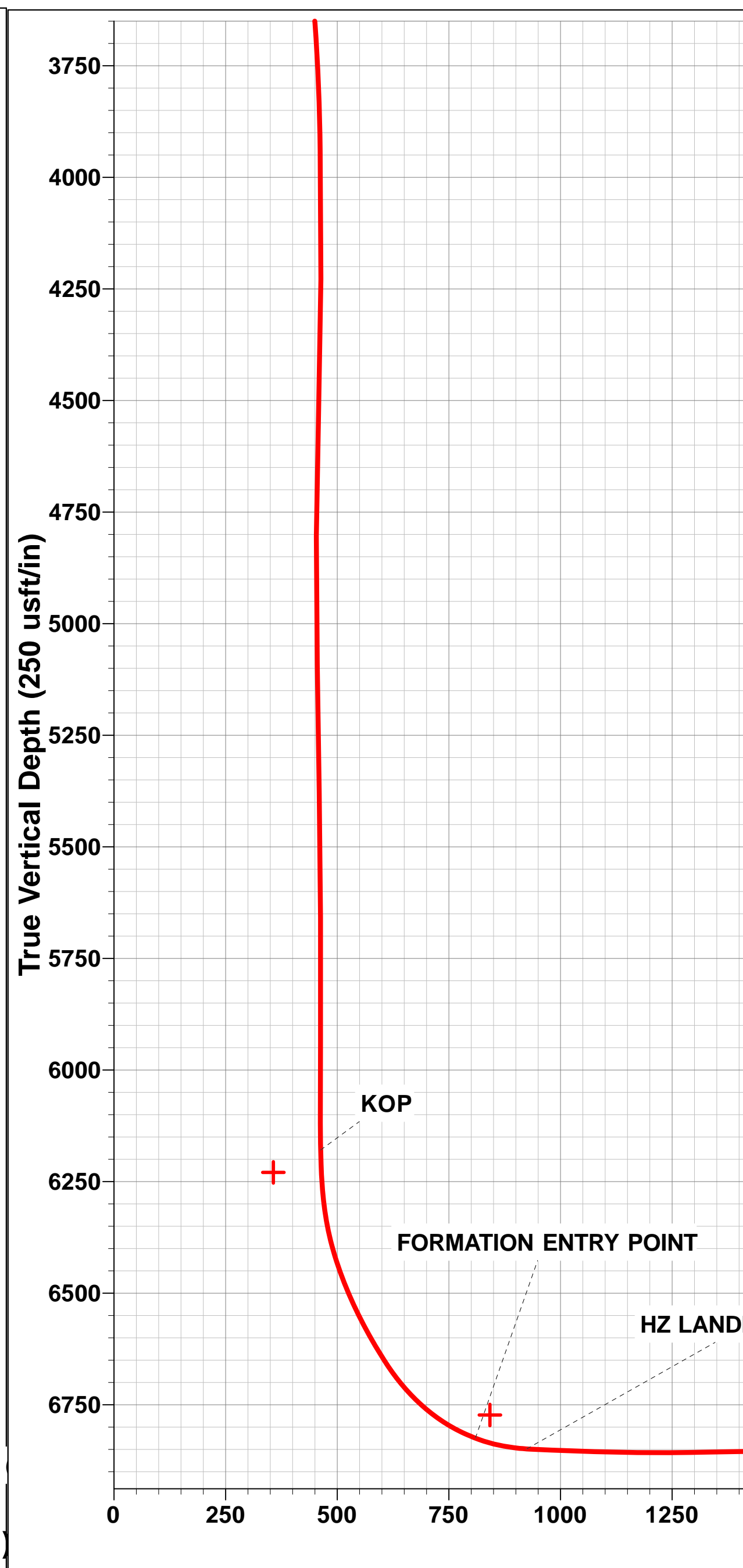
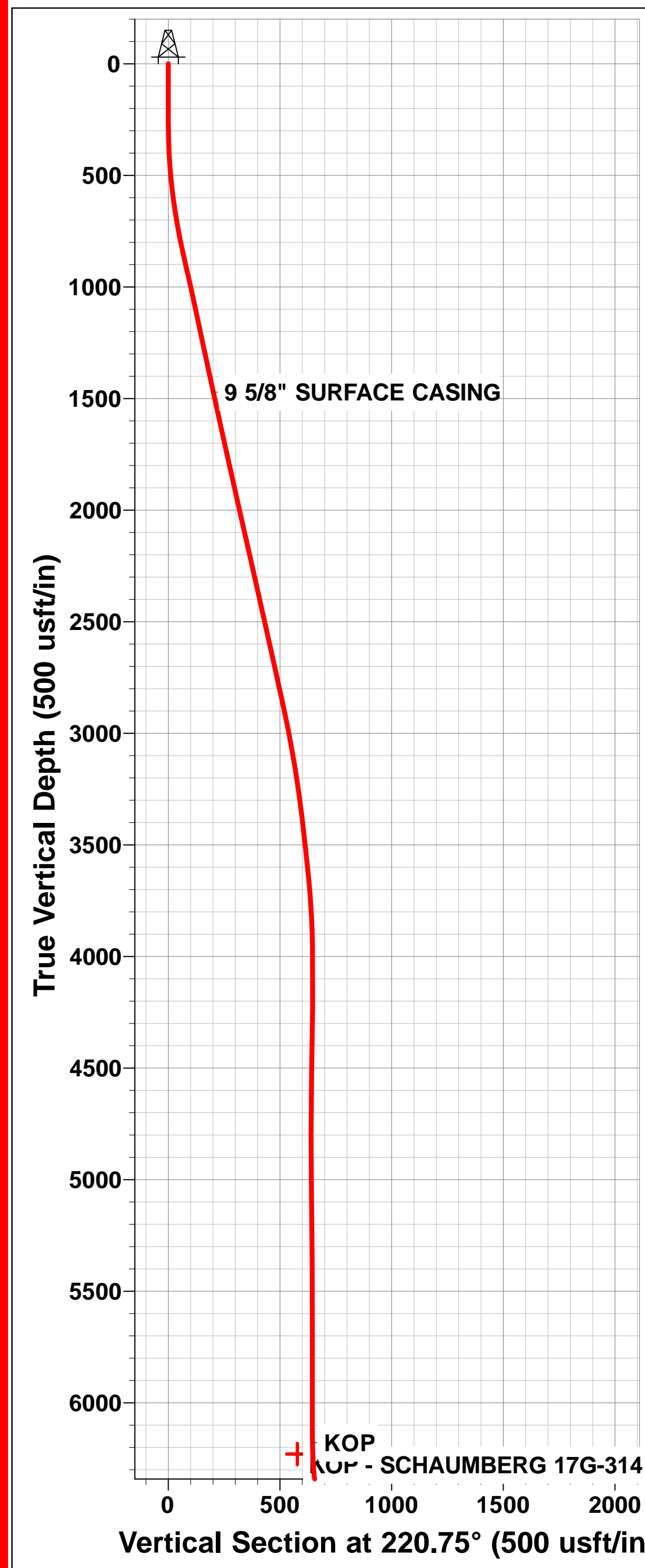


AS DRILLED LOCAL COORDINATES:
 SHL: 1624ft FNL & 950ft FWL of Sec 17
 HZ LP: 2116.2ft FNL & 59.5ft FWL of Sec 17
 BHL: 2070.5ft FNL & 46.5ft FWL of Sec 18



Azimuths to True North
 Magnetic North: 8.27°

Magnetic Field
 Strength: 52587.4snT
 Dip Angle: 66.92°
 Date: 11/12/2015
 Model: IGRF2015



Survey Report



Company: PDC ENERGY	Local Co-ordinate Reference: Well SCHAUMBERG 17G-314
Project: WELD COUNTY, COLORADO	TVD Reference: KB @ 4633.0usft (ENS 135)
Site: SW NW SEC. 17 T5N R64W 6th P.M.	MD Reference: KB @ 4633.0usft (ENS 135)
Well: SCHAUMBERG 17G-314	North Reference: True
Wellbore: JOB #2016-60-135	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 SW NW SEC. 17 T5N R64W 6th P.M.					
Site Position:		Northing: 1,390,619.91 usft	Latitude: 40.402002		
From: Lat/Long		Easting: 3,256,319.57 usft	Longitude: -104.579633		
Position Uncertainty: 0.0 usft		Slot Radius: 1.10000ft	Grid Convergence: 0.59 °		

Well SCHAUMBERG 17G-314					
Well Position	+N-S 0.0 usft	Northing: 1,390,617.93 usft	Latitude: 40.402000		
	+E-W 0.0 usft	Easting: 3,256,200.11 usft	Longitude: -104.580062		
Position Uncertainty	0.0 usft	Wellhead Elevation: usft	Ground Level: 4,620.0 usft		

Wellbore JOB #2016-60-135					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/12/2015	8.27	66.92	52,587

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	265.27	

Survey Program Date 06/09/2016					
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
172.0	12,268.0	FINAL SURVEYS (JOB #2016-60-135)	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	4,633.0	0.0	0.0	0.0	0.00	0.00	0.00	0.00
172.0	0.30	148.50	172.0	4,461.0	-0.4	0.2	-0.2	0.17	0.17	0.00	0.00
264.0	0.40	183.80	264.0	4,369.0	-0.9	0.3	-0.3	0.25	0.11	38.37	38.37
356.0	2.10	208.80	356.0	4,277.0	-2.7	-0.5	0.7	1.90	1.85	27.17	27.17
449.0	3.70	219.50	448.9	4,184.1	-6.5	-3.2	3.7	1.81	1.72	11.51	11.51
541.0	6.30	226.10	540.5	4,092.5	-12.3	-8.7	9.7	2.89	2.83	7.17	7.17
633.0	8.20	222.30	631.8	4,001.2	-20.7	-16.8	18.4	2.13	2.07	-4.13	-4.13
725.0	10.00	229.90	722.6	3,910.4	-30.7	-27.3	29.8	2.35	1.96	8.26	8.26
817.0	12.10	225.70	812.9	3,820.1	-42.5	-40.3	43.7	2.44	2.28	-4.57	-4.57
910.0	13.00	223.30	903.7	3,729.3	-57.0	-54.5	59.0	1.12	0.97	-2.58	-2.58
1,002.0	12.60	222.60	993.4	3,639.6	-71.9	-68.4	74.1	0.47	-0.43	-0.76	-0.76
1,094.0	11.90	219.30	1,083.3	3,549.7	-86.6	-81.2	88.0	1.08	-0.76	-3.59	-3.59
1,186.0	12.20	219.90	1,173.3	3,459.7	-101.4	-93.4	101.5	0.35	0.33	0.65	0.65

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well SCHAUMBERG 17G-314
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4633.0usft (ENS 135)
Site:	SW NW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB @ 4633.0usft (ENS 135)
Well:	SCHAUMBERG 17G-314	North Reference:	True
Wellbore:	JOB #2016-60-135	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)
1,278.0	12.10	218.10	1,263.2	3,369.8	-116.5	-105.6	114.9	0.43	-0.11	-1.96
1,371.0	12.10	214.70	1,354.1	3,278.9	-132.1	-117.2	127.7	0.77	0.00	-3.66
1,466.0	12.30	216.80	1,447.0	3,186.0	-148.4	-128.9	140.7	0.51	0.21	2.21
9 5/8" SURFACE CASING										
1,491.0	12.31	216.64	1,471.4	3,161.6	-152.7	-132.1	144.2	0.14	0.04	-0.63
1,706.0	12.40	215.30	1,681.4	2,951.6	-189.9	-159.1	174.2	0.14	0.04	-0.62
1,993.0	12.90	222.90	1,961.5	2,671.5	-238.5	-198.7	217.7	0.61	0.17	2.65
2,280.0	12.70	222.70	2,241.4	2,391.6	-285.2	-241.9	264.6	0.07	-0.07	-0.07
2,568.0	12.40	223.40	2,522.5	2,110.5	-330.9	-284.6	311.0	0.12	-0.10	0.24
2,855.0	12.70	219.00	2,802.6	1,830.4	-377.8	-325.7	355.7	0.35	0.10	-1.53
3,142.0	10.10	224.60	3,083.9	1,549.1	-420.3	-363.2	396.6	0.98	-0.91	1.95
3,429.0	6.90	219.40	3,367.8	1,265.2	-451.5	-391.8	427.7	1.15	-1.11	-1.81
3,716.0	5.60	223.00	3,653.0	980.0	-475.1	-412.3	450.1	0.47	-0.45	1.25
4,004.0	1.00	210.50	3,940.5	692.5	-487.5	-423.2	461.9	1.61	-1.60	-4.34
4,292.0	0.80	348.20	4,228.5	404.5	-487.7	-424.9	463.6	0.58	-0.07	47.81
4,580.0	2.10	91.10	4,516.4	116.6	-485.9	-420.0	458.6	0.84	0.45	35.73
4,868.0	0.40	169.40	4,804.3	-171.3	-487.0	-414.5	453.3	0.71	-0.59	27.19
5,155.0	0.90	255.60	5,091.3	-458.3	-488.5	-416.5	455.4	0.33	0.17	30.03
5,442.0	1.00	291.00	5,378.3	-745.3	-488.2	-421.1	459.9	0.20	0.03	12.33
5,722.0	0.30	319.80	5,658.3	-1,025.3	-486.7	-423.8	462.5	0.27	-0.25	10.29
5,999.0	0.20	151.60	5,935.3	-1,302.3	-486.6	-424.1	462.7	0.18	-0.04	-60.72
6,183.0	0.10	107.60	6,119.3	-1,486.3	-486.9	-423.7	462.5	0.08	-0.05	-23.91
KOP										
6,243.0	1.21	241.54	6,179.3	-1,546.3	-487.3	-424.3	463.0	2.14	1.86	223.24
6,275.0	1.90	242.70	6,211.3	-1,578.3	-487.7	-425.0	463.8	2.14	2.14	3.62
6,368.0	7.00	272.90	6,303.9	-1,670.9	-488.1	-432.1	470.8	5.85	5.48	32.47
6,460.0	15.30	275.80	6,394.1	-1,761.1	-486.6	-449.8	488.4	9.04	9.02	3.15
6,552.0	22.30	274.40	6,481.2	-1,848.2	-484.0	-479.3	517.6	7.62	7.61	-1.52
6,644.0	27.20	266.80	6,564.7	-1,931.7	-483.8	-517.7	555.8	6.34	5.33	-8.26
6,766.0	34.30	264.50	6,669.5	-2,036.5	-488.7	-579.9	618.2	5.90	5.82	-1.89
6,859.0	45.70	266.20	6,740.6	-2,107.6	-493.4	-639.3	677.8	12.31	12.26	1.83
6,954.0	59.80	266.70	6,798.0	-2,165.0	-498.1	-714.6	753.3	14.85	14.84	0.53
FORMATION ENTRY POINT										
7,016.5	69.10	269.33	6,824.9	-2,191.9	-500.0	-770.9	809.5	15.35	14.88	4.21
7,050.0	74.10	270.60	6,835.5	-2,202.5	-500.0	-802.7	841.2	15.35	14.93	3.79
7,080.0	79.50	270.80	6,842.3	-2,209.3	-499.6	-831.9	870.2	18.01	18.00	0.67
HZ LANDING POINT										
7,135.0	86.33	271.69	6,849.1	-2,216.1	-498.4	-886.4	924.5	12.52	12.42	1.62
7,142.0	87.20	271.80	6,849.5	-2,216.5	-498.2	-893.4	931.4	12.52	12.42	1.59
7,243.0	88.10	274.30	6,853.7	-2,220.7	-492.9	-994.2	1,031.4	2.63	0.89	2.48
7,339.0	88.50	270.00	6,856.5	-2,223.5	-489.3	-1,090.0	1,126.7	4.50	0.42	-4.48
7,434.0	90.50	269.30	6,857.3	-2,224.3	-489.8	-1,185.0	1,221.4	2.23	2.11	-0.74
7,530.0	90.50	268.00	6,856.5	-2,223.5	-492.1	-1,281.0	1,317.2	1.35	0.00	-1.35
7,626.0	91.30	269.90	6,855.0	-2,222.0	-493.9	-1,377.0	1,413.0	2.15	0.83	1.98
7,721.0	90.80	269.90	6,853.2	-2,220.2	-494.0	-1,471.9	1,507.7	0.53	-0.53	0.00
7,817.0	91.10	268.80	6,851.7	-2,218.7	-495.1	-1,567.9	1,603.4	1.19	0.31	-1.15
7,913.0	93.20	271.60	6,848.1	-2,215.1	-494.8	-1,663.8	1,699.0	3.64	2.19	2.92
8,009.0	91.70	272.10	6,843.9	-2,210.9	-491.7	-1,759.7	1,794.2	1.65	-1.56	0.52
8,104.0	90.90	272.80	6,841.8	-2,208.8	-487.6	-1,854.6	1,888.5	1.12	-0.84	0.74
8,200.0	91.90	272.60	6,839.4	-2,206.4	-483.1	-1,950.4	1,983.6	1.06	1.04	-0.21
8,296.0	91.10	271.60	6,836.9	-2,203.9	-479.6	-2,046.3	2,078.9	1.33	-0.83	-1.04
8,392.0	89.30	269.90	6,836.6	-2,203.6	-478.3	-2,142.3	2,174.5	2.58	-1.87	-1.77
8,488.0	89.80	269.80	6,837.4	-2,204.4	-478.6	-2,238.3	2,270.2	0.53	0.52	-0.10

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well SCHAUMBERG 17G-314
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Site:	SW NW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB @ 4633.0usft (ENS 135)
Well:	SCHAUMBERG 17G-314	North Reference:	True
Wellbore:	JOB #2016-60-135	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)
8,584.0	90.60	270.90	6,837.0	-2,204.0	-478.0	-2,334.3	2,365.8	1.42	0.83	1.15
8,680.0	90.70	269.60	6,835.9	-2,202.9	-477.6	-2,430.3	2,461.4	1.36	0.10	-1.35
8,776.0	91.70	269.30	6,833.9	-2,200.9	-478.5	-2,526.3	2,557.1	1.09	1.04	-0.31
8,871.0	90.60	270.40	6,832.0	-2,199.0	-478.7	-2,621.3	2,651.8	1.64	-1.16	1.16
8,967.0	91.10	270.10	6,830.6	-2,197.6	-478.3	-2,717.3	2,747.4	0.61	0.52	-0.31
9,063.0	91.50	270.00	6,828.4	-2,195.4	-478.2	-2,813.2	2,843.1	0.43	0.42	-0.10
9,159.0	92.00	269.30	6,825.5	-2,192.5	-478.8	-2,909.2	2,938.8	0.90	0.52	-0.73
9,254.0	90.60	269.70	6,823.3	-2,190.3	-479.7	-3,004.2	3,033.5	1.53	-1.47	0.42
9,350.0	91.20	270.20	6,821.8	-2,188.8	-479.7	-3,100.1	3,129.1	0.81	0.62	0.52
9,446.0	91.90	269.30	6,819.2	-2,186.2	-480.2	-3,196.1	3,224.8	1.19	0.73	-0.94
9,542.0	90.20	269.40	6,817.5	-2,184.5	-481.2	-3,292.1	3,320.5	1.77	-1.77	0.10
9,638.0	90.60	268.80	6,816.8	-2,183.8	-482.8	-3,388.1	3,416.3	0.75	0.42	-0.62
9,733.0	91.10	268.30	6,815.4	-2,182.4	-485.2	-3,483.0	3,511.2	0.74	0.53	-0.53
9,829.0	91.90	267.70	6,812.9	-2,179.9	-488.5	-3,578.9	3,607.0	1.04	0.83	-0.62
9,924.0	89.80	269.10	6,811.5	-2,178.5	-491.2	-3,673.9	3,701.9	2.66	-2.21	1.47
10,021.0	90.50	268.50	6,811.2	-2,178.2	-493.2	-3,770.8	3,798.7	0.95	0.72	-0.62
10,117.0	91.30	270.20	6,809.7	-2,176.7	-494.3	-3,866.8	3,894.4	1.96	0.83	1.77
10,212.0	92.10	269.20	6,806.9	-2,173.9	-494.8	-3,961.8	3,989.1	1.35	0.84	-1.05
10,308.0	90.50	270.10	6,804.7	-2,171.7	-495.4	-4,057.7	4,084.8	1.91	-1.67	0.94
10,404.0	91.60	269.50	6,802.9	-2,169.9	-495.7	-4,153.7	4,180.5	1.31	1.15	-0.62
10,500.0	90.90	270.80	6,800.8	-2,167.8	-495.4	-4,249.7	4,276.1	1.54	-0.73	1.35
10,596.0	92.20	270.20	6,798.2	-2,165.2	-494.6	-4,345.7	4,371.6	1.49	1.35	-0.62
10,691.0	90.30	271.30	6,796.2	-2,163.2	-493.4	-4,440.6	4,466.2	2.31	-2.00	1.16
10,786.0	91.70	270.80	6,794.5	-2,161.5	-491.6	-4,535.6	4,560.7	1.56	1.47	-0.53
10,882.0	91.00	269.90	6,792.3	-2,159.3	-491.0	-4,631.6	4,656.3	1.19	-0.73	-0.94
10,978.0	89.40	270.70	6,791.9	-2,158.9	-490.5	-4,727.6	4,751.9	1.86	-1.67	0.83
11,074.0	90.50	270.50	6,792.0	-2,159.0	-489.5	-4,823.6	4,847.5	1.16	1.15	-0.21
11,169.0	92.10	270.00	6,789.8	-2,156.8	-489.1	-4,918.5	4,942.1	1.76	1.68	-0.53
11,265.0	90.00	270.80	6,788.1	-2,155.1	-488.4	-5,014.5	5,037.7	2.34	-2.19	0.83
11,361.0	90.60	270.60	6,787.6	-2,154.6	-487.3	-5,110.5	5,133.3	0.66	0.62	-0.21
11,456.0	92.00	270.50	6,785.4	-2,152.4	-486.4	-5,205.5	5,227.8	1.48	1.47	-0.11
11,552.0	88.80	271.20	6,784.8	-2,151.8	-484.9	-5,301.4	5,323.4	3.41	-3.33	0.73
11,647.0	89.40	271.00	6,786.3	-2,153.3	-483.1	-5,396.4	5,417.9	0.67	0.63	-0.21
11,742.0	90.30	271.20	6,786.5	-2,153.5	-481.3	-5,491.4	5,512.4	0.97	0.95	0.21
11,838.0	90.90	271.10	6,785.5	-2,152.5	-479.4	-5,587.4	5,607.9	0.63	0.62	-0.10
11,934.0	90.10	269.80	6,784.7	-2,151.7	-478.6	-5,683.3	5,703.5	1.59	-0.83	-1.35
12,030.0	90.20	268.80	6,784.4	-2,151.4	-479.8	-5,779.3	5,799.2	1.05	0.10	-1.04
12,125.0	90.50	268.90	6,783.8	-2,150.8	-481.7	-5,874.3	5,894.0	0.33	0.32	0.11
LAST SURVEY - JULY 30, 2016										
12,213.0	91.20	268.30	6,782.5	-2,149.5	-483.8	-5,962.3	5,981.9	1.05	0.80	-0.68
EXTRAPOLATION TO TD										
12,268.0	91.20	268.30	6,781.4	-2,148.4	-485.5	-6,017.2	6,036.8	0.00	0.00	0.00

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well SCHAUMBERG 17G-314
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4633.0usft (ENS 135)
Site:	SW NW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB @ 4633.0usft (ENS 135)
Well:	SCHAUMBERG 17G-314	North Reference:	True
Wellbore:	JOB #2016-60-135	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
BHL - SCHAUMBERG - survey misses target center by 15.0usft at 12164.8usft MD (6783.4 TVD, -482.5 N, -5914.2 E) - Point	0.00	0.00	6,770.0	-489.3	-5,913.8	1,390,067.35	3,250,291.95	40.400655	-104.601295
EXIST VERT B&H #1 - survey misses target center by 1493.3usft at 11771.5usft MD (6786.3 TVD, -480.7 N, -5520.9 E) - Circle (radius 30.0)	0.00	0.00	7,091.0	-1,942.2	-5,553.4	1,388,618.26	3,250,667.34	40.396667	-104.600000
EXIST VERT BRIGHT - survey misses target center by 287.6usft at 11639.0usft MD (6786.2 TVD, -483.3 N, -5388.4 E) - Circle (radius 30.0)	0.00	0.00	7,071.0	-443.9	-5,383.2	1,390,118.26	3,250,822.01	40.400780	-104.599390
EXIST VERT SCHAU - survey misses target center by 635.3usft at 6806.1usft MD (6701.6 TVD, -490.8 N, -603.8 E) - Circle (radius 30.0)	0.00	0.00	7,106.0	-364.3	-130.3	1,390,252.31	3,256,073.55	40.401000	-104.580530
KOP - SCHAUMBERG - survey misses target center by 107.9usft at 6285.3usft MD (6221.5 TVD, -487.8 N, -425.4 E) - Point	0.00	0.00	6,229.7	-489.3	-317.8	1,390,125.41	3,255,887.46	40.400657	-104.581203
BHL - SCHAUMBERG - survey misses target center by 12.4usft at 12164.8usft MD (6783.4 TVD, -482.5 N, -5914.1 E) - Point	0.00	0.00	6,773.0	-489.3	-5,913.8	1,390,067.35	3,250,291.95	40.400655	-104.601295
EXIST VERT SOLIS # - survey misses target center by 4391.2usft at 6368.0usft MD (6303.9 TVD, -488.1 N, -432.1 E) - Circle (radius 30.0)	0.00	0.00	7,065.0	-1,810.3	3,685.6	1,388,845.99	3,259,904.10	40.397030	-104.566830
HZ LP *NEW* - SCHA - survey misses target center by 61.2usft at 7032.0usft MD (6830.2 TVD, -500.1 N, -785.5 E) - Point	0.00	0.00	6,773.0	-489.3	-804.6	1,390,120.36	3,255,400.70	40.400657	-104.582951
EXIST VERT DUNN/M - survey misses target center by 1933.6usft at 6552.0usft MD (6481.2 TVD, -484.0 N, -479.3 E) - Circle (radius 30.0)	0.00	0.00	7,051.0	-1,548.3	1,031.1	1,389,080.48	3,257,247.19	40.397750	-104.576360
EXIST VERT BRIGHT - survey misses target center by 901.4usft at 10993.7usft MD (6792.1 TVD, -490.3 N, -4743.2 E) - Circle (radius 30.0)	0.00	0.00	7,108.0	353.8	-4,734.1	1,390,922.63	3,251,462.78	40.402970	-104.597060
HZ LP *NEW* - SCHA - survey misses target center by 45.4usft at 7037.3usft MD (6831.8 TVD, -500.1 N, -790.5 E) - Point	0.00	0.00	6,790.0	-489.3	-804.5	1,390,120.36	3,255,400.80	40.400657	-104.582950
EXIST VERT GUNTH - survey misses target center by 1459.0usft at 7868.7usft MD (6850.2 TVD, -495.5 N, -1619.6 E) - Circle (radius 30.0)	0.00	0.00	7,049.0	949.8	-1,622.0	1,391,550.83	3,254,568.41	40.404607	-104.585886
EXIST VERT HOSHIA - survey misses target center by 4325.9usft at 6406.7usft MD (6342.2 TVD, -487.7 N, -437.9 E) - Circle (radius 30.0)	0.00	0.00	7,110.0	889.2	3,590.5	1,391,544.28	3,259,781.01	40.404440	-104.567170
EXIST VERT HETTIN - survey misses target center by 1171.6usft at 7841.6usft MD (6851.1 TVD, -495.5 N, -1592.6 E) - Circle (radius 30.0)	0.00	0.00	6,968.0	-1,661.2	-1,601.0	1,388,940.27	3,254,616.49	40.397440	-104.585810
EXIST VERT PUYPE - survey misses target center by 814.4usft at 8505.7usft MD (6837.4 TVD, -478.6 N, -2256.1 E) - Circle (radius 30.0)	0.00	0.00	7,054.0	306.5	-2,252.0	1,390,901.03	3,253,945.11	40.402841	-104.588148
EXIST VERT STEINM - survey misses target center by 1596.0usft at 6542.2usft MD (6472.1 TVD, -484.3 N, -475.6 E) - Circle (radius 30.0)	0.00	0.00	6,979.0	-345.7	1,031.3	1,390,282.96	3,257,234.94	40.401051	-104.576359
EXIST VERT GUNTH - survey misses target center by 1406.1usft at 9171.7usft MD (6825.1 TVD, -479.0 N, -2921.9 E) - Circle (radius 30.0)	0.00	0.00	6,982.0	918.2	-2,937.6	1,391,505.62	3,253,253.21	40.404520	-104.590610

Survey Report



Company:	PDC ENERGY	Local Co-ordinate Reference:	Well SCHAUMBERG 17G-314
Project:	WELD COUNTY, COLORADO	TVD Reference:	KB @ 4633.0usft (ENS 135)
Site:	SW NW SEC. 17 T5N R64W 6th P.M.	MD Reference:	KB @ 4633.0usft (ENS 135)
Well:	SCHAUMBERG 17G-314	North Reference:	True
Wellbore:	JOB #2016-60-135	Survey Calculation Method:	Minimum Curvature
Design:	FINAL SURVEYS	Database:	EDM 5000.1 Single User Db

EXIST VERT DUNN #	0.00	0.00	7,105.0	-225.5	-4,199.5	1,390,348.88	3,252,003.38	40.401380	-104.595140
- survey misses target center by 406.2usft at 10443.8usft MD (6801.9 TVD, -495.9 N, -4193.6 E)									
- Circle (radius 30.0)									
KOP - SCHAUMBERG	0.00	0.00	6,073.8	-489.3	-85.6	1,390,127.82	3,256,119.63	40.400657	-104.580369
- survey misses target center by 338.3usft at 6138.1usft MD (6074.4 TVD, -486.9 N, -423.8 E)									
- Point									
EXIST VERT HOSHIK	0.00	0.00	7,110.0	889.1	2,462.5	1,391,532.44	3,258,653.18	40.404440	-104.571220
- survey misses target center by 3299.4usft at 6460.0usft MD (6394.1 TVD, -486.6 N, -449.8 E)									
- Circle (radius 30.0)									
EXIST VERT BRIGHT	0.00	0.00	7,083.0	980.6	-5,499.9	1,391,541.40	3,250,690.59	40.404690	-104.599810
- survey misses target center by 1491.3usft at 11776.7usft MD (6786.3 TVD, -480.6 N, -5526.1 E)									
- Circle (radius 30.0)									
EXIST VERT HETTIN	0.00	0.00	7,062.0	-1,779.1	-2,925.4	1,388,808.63	3,253,293.40	40.397116	-104.590565
- survey misses target center by 1321.5usft at 9181.2usft MD (6824.8 TVD, -479.1 N, -2931.4 E)									
- Circle (radius 30.0)									
EXIST VERT GUNTH	0.00	0.00	6,973.0	-332.6	-1,613.4	1,390,268.67	3,254,590.26	40.401087	-104.585855
- survey misses target center by 203.9usft at 7858.5usft MD (6850.5 TVD, -495.5 N, -1609.4 E)									
- Circle (radius 30.0)									

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,491.0	1,471.4	-152.7	-132.1	9 5/8" SURFACE CASING
6,243.0	6,179.3	-487.3	-424.3	KOP
7,016.5	6,824.9	-500.0	-770.9	FORMATION ENTRY POINT
7,135.0	6,849.1	-498.4	-886.4	HZ LANDING POINT
12,213.0	6,782.5	-483.8	-5,962.3	LAST SURVEY - JULY 30, 2016
12,268.0	6,781.4	-485.5	-6,017.2	EXTRAPOLATION TO TD

Checked By: _____	Approved By: _____	Date: _____
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