

# **PDC ENERGY**

**WELD COUNTY, COLORADO  
SW NW SEC. 17 T5N R64W 6th P.M.  
SCHAUMBERG 17F-202ST**

**JOB #2016-52-135 - SIDETRACK**

**26 May, 2016**

**Plan: PROPOSAL #3 - SIDETRACK**





Project: WELD COUNTY, COLORADO  
Site: SW NW SEC. 17 T5N R64W 6th P.M.  
Well: SCHAUMBERG 17F-202ST  
Wellbore: JOB #2016-52-135 - SIDETRACK  
Design: PROPOSAL #3 - SIDETRACK

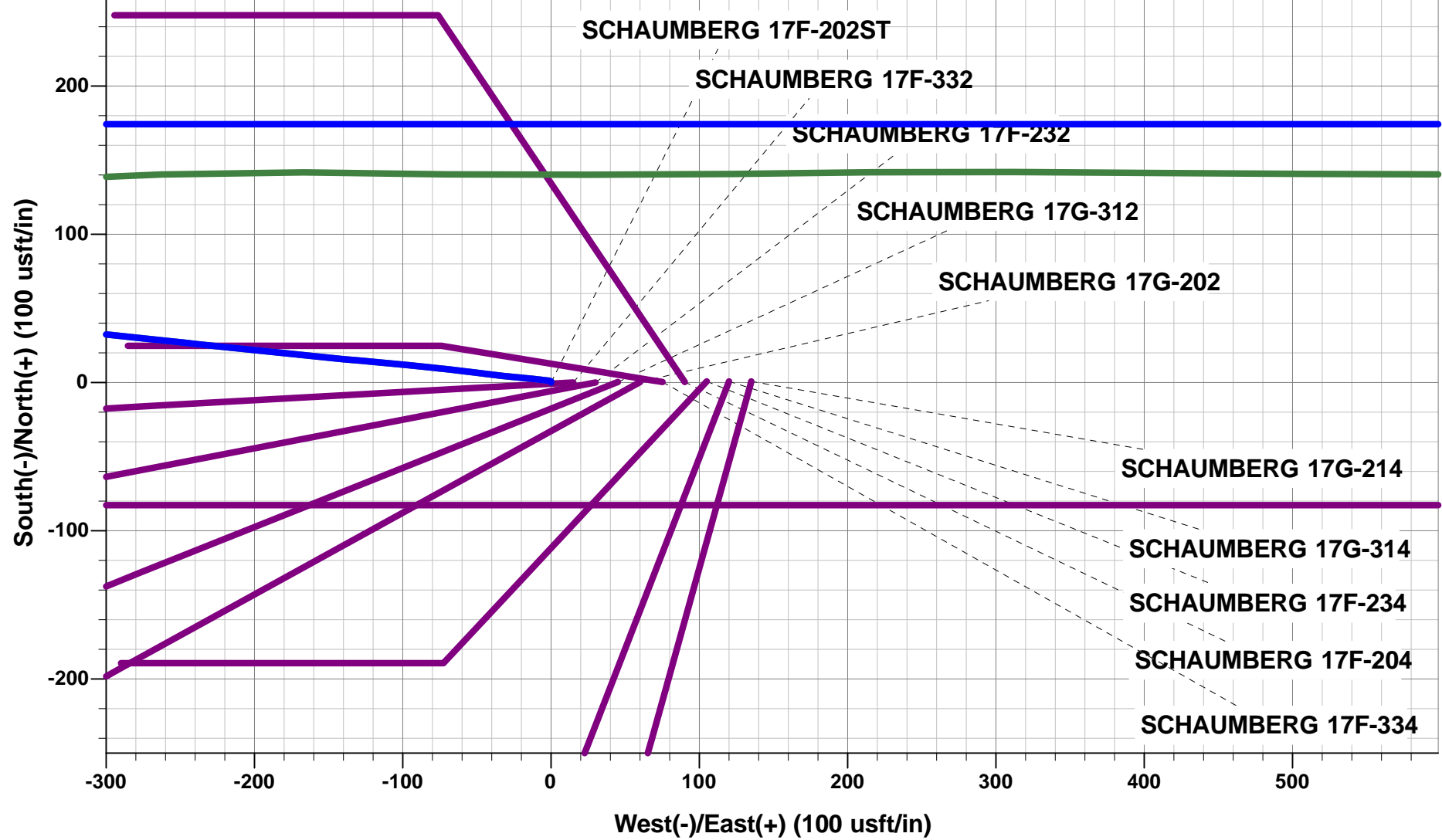


ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	Vsect	Dep	Annotation
5211.7	5412.0	12.00	271.90	152.4	-1366.4	-1358.2	0.0	TIE ON TO SURVEYS
5377.7	5581.0	9.58	266.23	152.0	-1398.0	-1389.7	31.6	SIDETRACK POINT
5711.1	5917.0	5.04	308.04	159.3	-1437.6	-1428.9	74.4	EOD & T 5.04° INC & 308.04° AZ
5860.5	6067.0	5.04	308.04	167.4	-1447.9	-1438.9	87.5	END OF TANGENT
6111.9	6318.8	0.00	0.00	174.2	-1456.7	-1447.3	98.6	EOD TO VERTICAL
6237.6	6444.4	0.00	0.00	174.2	-1456.7	-1447.3	98.6	KOP (12°/100ft BUR)
6715.0	7198.8	90.53	90.00	174.2	-974.8	-965.9	580.5	HZ LANDING PNT - SCHAUMBERG 17F-202ST (P3)
6670.0	12036.2	90.54	90.00	174.2	3862.4	3866.3	5417.7	BHL - SCHAUMBERG 17F-202ST (P3)

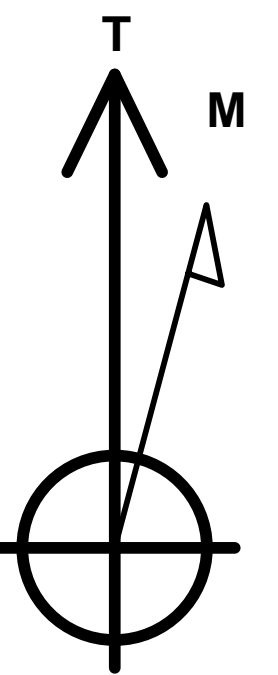
WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
BHL - SCHAUMBERG 17F-202ST (P3)	6670.0	174.2	3862.4	40.402477	-104.566250
HZ LP - SCHAUMBERG 17F-202ST (P3)	6715.0	174.2	-974.8	40.402478	-104.583618



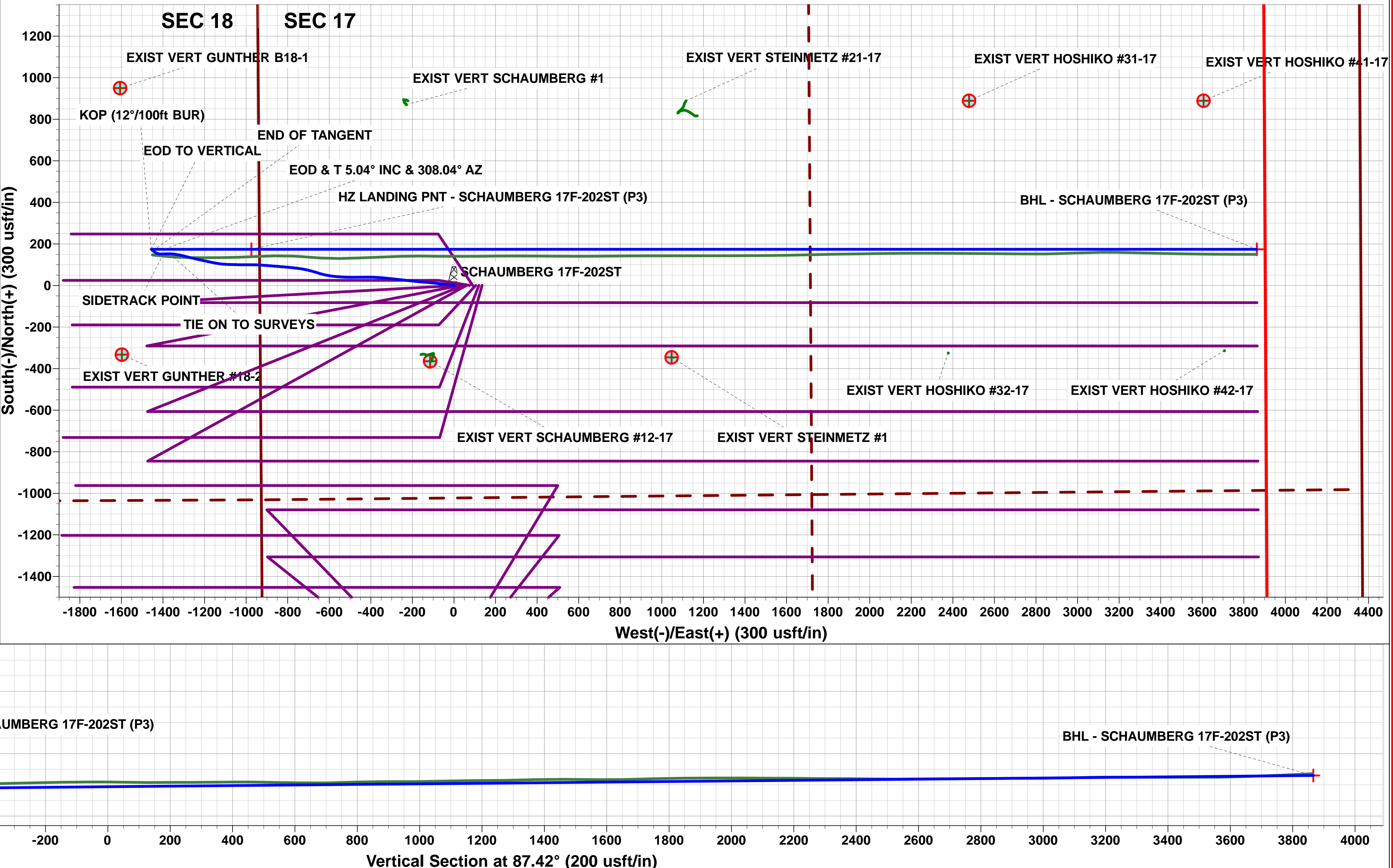
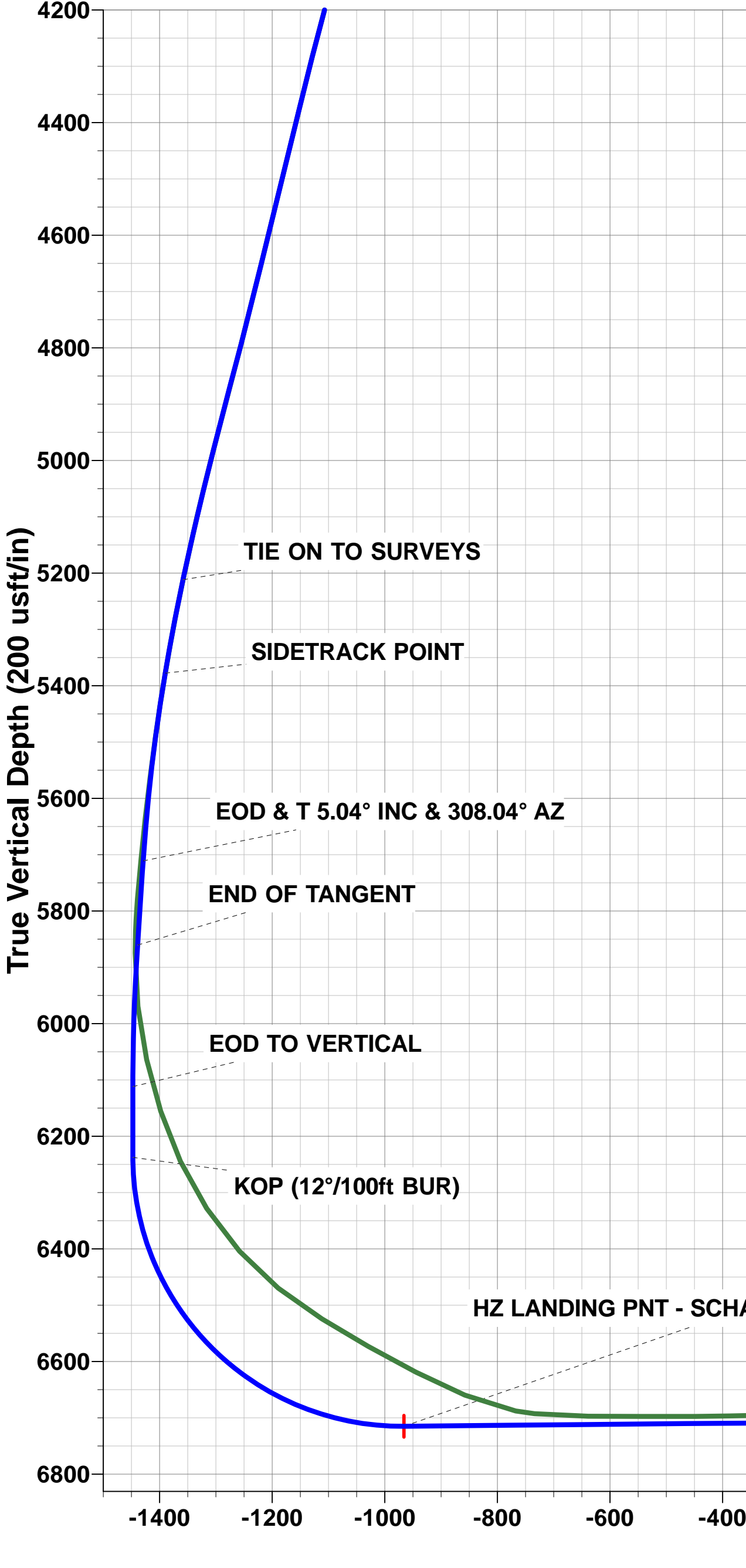
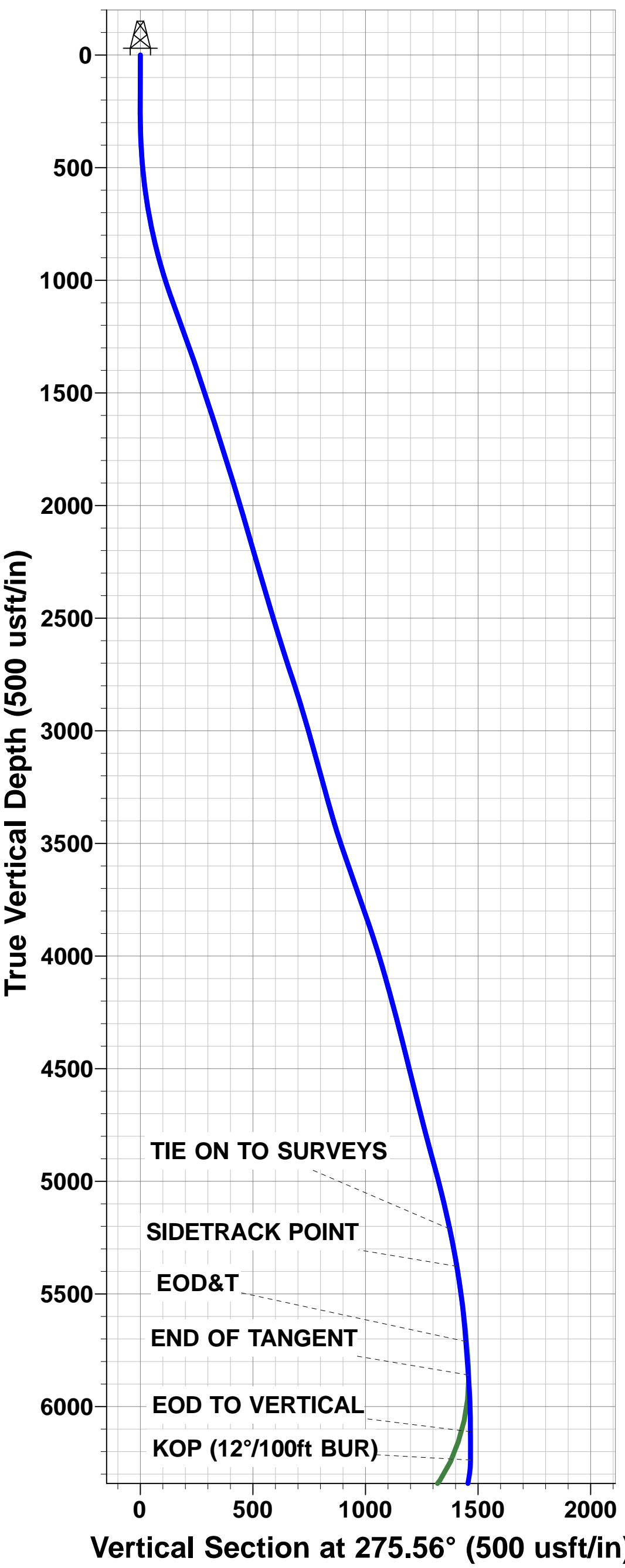
PROPOSED LOCAL COORDINATES:

SHL: 1624ft FNL & 935ft FWL of Sec 17  
HZ LP \*NEW\*: 1473.6ft FNL & 39.5ft FEL of Sec 18  
BHL: 1541ft FNL & 500ft FEL of Sec 17



Azimuths to True North  
Magnetic North: 8.22°

Magnetic Field  
Strength: 52535.3snT  
Dip Angle: 66.91°  
Date: 26/05/2016  
Model: IGRF2015



# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SCHAUMBERG 17F-202ST
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Site:</b>	SW NW SEC. 17 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	SCHAUMBERG 17F-202ST	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	JOB #2016-52-135 - SIDETRACK		
<b>Design:</b>	PROPOSAL #3 - SIDETRACK		

<b>Project</b>	WELD COUNTY, COLORADO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	SW NW SEC. 17 T5N R64W 6th P.M.		
<b>Site Position:</b>		<b>Northing:</b>	1,390,619.91 usft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,256,319.57 usft
<b>Position Uncertainty:</b>	0.0 usft	<b>Slot Radius:</b>	1.10000ft
		<b>Latitude:</b>	40.402002
		<b>Longitude:</b>	-104.579633
		<b>Grid Convergence:</b>	0.59 °

<b>Well</b>	SCHAUMBERG 17F-202ST		
<b>Well Position</b>	<b>+N/-S</b>	-0.7 usft	<b>Northing:</b>
	<b>+E/-W</b>	-135.1 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.0 usft	<b>Wellhead Elevation:</b>	usft
		<b>Latitude:</b>	40.402000
		<b>Longitude:</b>	-104.580118
		<b>Ground Level:</b>	4,620.0 usft

<b>Wellbore</b>	JOB #2016-52-135 - SIDETRACK				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2015	26/05/2016	8.22	66.91	52,535

<b>Design</b>	PROPOSAL #3 - SIDETRACK				
<b>Audit Notes:</b>					
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	5,412.0	
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	87.42	

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
5,412.0	12.00	271.90	5,211.7	578.7	152.4	-1,366.4	0.00	0.00	0.00	0.00	
5,581.0	9.58	266.23	5,377.7	744.7	152.0	-1,398.0	1.56	-1.43	-3.35	-159.05	
5,917.0	5.04	308.04	5,711.1	1,078.1	159.3	-1,437.6	2.00	-1.35	12.44	150.00	
6,067.0	5.04	308.04	5,860.5	1,227.5	167.4	-1,447.9	0.00	0.00	0.00	0.00	
6,318.8	0.00	0.00	6,111.9	1,478.9	174.2	-1,456.7	2.00	-2.00	20.64	180.00	
6,444.4	0.00	0.00	6,237.6	1,604.6	174.2	-1,456.7	0.00	0.00	0.00	0.00	
7,198.8	90.53	90.00	6,715.0	2,082.0	174.2	-974.8	12.00	12.00	0.00	90.00	
12,036.2	90.54	90.00	6,670.0	2,037.0	174.2	3,862.4	0.00	0.00	0.00	0.44	BHL - SCHAUMBEI

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SCHAUMBERG 17F-202ST
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Site:</b>	SW NW SEC. 17 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	SCHAUMBERG 17F-202ST	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	JOB #2016-52-135 - SIDETRACK		
<b>Design:</b>	PROPOSAL #3 - SIDETRACK		

## Planned Survey

MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>TIE ON TO SURVEYS</b>										
5,412.0	12.00	271.90	5,211.7	-578.67	152.4	-1,366.4	-1,358.2	1.62	-1.14	-5.53
5,500.0	10.73	269.26	5,297.9	-664.95	152.6	-1,383.7	-1,375.5	1.56	-1.44	-3.00
<b>SIDETRACK POINT</b>										
5,581.0	9.58	266.23	5,377.7	-744.68	152.0	-1,398.0	-1,389.7	1.56	-1.41	-3.74
5,600.0	9.26	267.41	5,396.4	-763.42	151.8	-1,401.1	-1,392.9	2.00	-1.72	6.22
5,700.0	7.62	275.25	5,495.3	-862.34	152.1	-1,415.8	-1,407.5	2.00	-1.64	7.83
5,800.0	6.19	286.98	5,594.6	-961.62	154.3	-1,427.5	-1,419.1	2.00	-1.43	11.74
5,900.0	5.15	304.45	5,694.1	-1,061.13	158.4	-1,436.4	-1,427.8	2.00	-1.03	17.47
<b>EOD &amp; T 5.04° INC &amp; 308.04° AZ</b>										
5,917.0	5.04	308.04	5,711.1	-1,078.07	159.3	-1,437.6	-1,428.9	2.00	-0.69	21.13
6,000.0	5.04	308.04	5,793.7	-1,160.75	163.8	-1,443.3	-1,434.5	0.00	0.00	0.00
<b>END OF TANGENT</b>										
6,067.0	5.04	308.04	5,860.5	-1,227.49	167.4	-1,447.9	-1,438.9	0.00	0.00	0.00
6,100.0	4.38	308.04	5,893.4	-1,260.38	169.1	-1,450.1	-1,441.0	2.00	-2.00	0.00
6,200.0	2.38	308.04	5,993.2	-1,360.20	172.7	-1,454.7	-1,445.5	2.00	-2.00	0.00
6,300.0	0.38	308.04	6,093.2	-1,460.16	174.2	-1,456.6	-1,447.3	2.00	-2.00	0.00
<b>EOD TO VERTICAL</b>										
6,318.8	0.00	0.00	6,111.9	-1,478.92	174.2	-1,456.7	-1,447.3	2.00	-2.00	277.06
6,400.0	0.00	0.00	6,193.2	-1,560.16	174.2	-1,456.7	-1,447.3	0.00	0.00	0.00
<b>KOP (12°/100ft BUR)</b>										
6,444.4	0.00	0.00	6,237.6	-1,604.59	174.2	-1,456.7	-1,447.3	0.00	0.00	0.00
6,500.0	6.67	90.00	6,293.0	-1,660.04	174.2	-1,453.4	-1,444.1	12.00	12.00	161.96
6,600.0	18.67	90.00	6,390.4	-1,757.43	174.2	-1,431.5	-1,422.2	12.00	12.00	0.00
6,700.0	30.67	90.00	6,481.1	-1,848.13	174.2	-1,389.9	-1,380.6	12.00	12.00	0.00
6,800.0	42.67	90.00	6,561.2	-1,928.20	174.2	-1,330.3	-1,321.1	12.00	12.00	0.00
6,900.0	54.67	90.00	6,627.1	-1,994.12	174.2	-1,255.3	-1,246.2	12.00	12.00	0.00
7,000.0	66.67	90.00	6,676.0	-2,043.02	174.2	-1,168.3	-1,159.3	12.00	12.00	0.00
7,100.0	78.67	90.00	6,705.8	-2,072.75	174.2	-1,073.0	-1,064.1	12.00	12.00	0.00
<b>HZ LANDING PNT - SCHAUMBERG 17F-202ST (P3)</b>										
7,198.8	90.53	90.00	6,715.0	-2,082.04	174.2	-974.8	-965.9	12.00	12.00	0.00
7,200.0	90.53	90.00	6,715.0	-2,082.03	174.2	-973.6	-964.8	0.00	0.00	0.00
7,300.0	90.53	90.00	6,714.1	-2,081.10	174.2	-873.6	-864.9	0.00	0.00	0.00
7,400.0	90.53	90.00	6,713.2	-2,080.18	174.2	-773.6	-765.0	0.00	0.00	0.00
7,500.0	90.53	90.00	6,712.3	-2,079.25	174.2	-673.6	-665.1	0.00	0.00	0.00
7,600.0	90.53	90.00	6,711.3	-2,078.33	174.2	-573.6	-565.2	0.00	0.00	0.00
7,700.0	90.53	90.00	6,710.4	-2,077.40	174.2	-473.6	-465.3	0.00	0.00	0.00
7,800.0	90.53	90.00	6,709.5	-2,076.47	174.2	-373.6	-365.4	0.00	0.00	0.00
7,900.0	90.53	90.00	6,708.5	-2,075.55	174.2	-273.7	-265.5	0.00	0.00	0.00
8,000.0	90.53	90.00	6,707.6	-2,074.62	174.2	-173.7	-165.6	0.00	0.00	0.00
8,100.0	90.53	90.00	6,706.7	-2,073.69	174.2	-73.7	-65.7	0.00	0.00	0.00
8,200.0	90.53	90.00	6,705.8	-2,072.76	174.2	26.3	34.2	0.00	0.00	0.00
8,300.0	90.53	90.00	6,704.8	-2,071.84	174.2	126.3	134.1	0.00	0.00	0.00
8,400.0	90.53	90.00	6,703.9	-2,070.91	174.2	226.3	233.9	0.00	0.00	0.00
8,500.0	90.53	90.00	6,703.0	-2,069.98	174.2	326.3	333.8	0.00	0.00	0.00
8,600.0	90.53	90.00	6,702.1	-2,069.05	174.2	426.3	433.7	0.00	0.00	0.00
8,700.0	90.53	90.00	6,701.1	-2,068.12	174.2	526.3	533.6	0.00	0.00	0.00
8,800.0	90.53	90.00	6,700.2	-2,067.20	174.2	626.3	633.5	0.00	0.00	0.00
8,900.0	90.53	90.00	6,699.3	-2,066.27	174.2	726.3	733.4	0.00	0.00	0.00
9,000.0	90.53	90.00	6,698.3	-2,065.34	174.2	826.3	833.3	0.00	0.00	0.00
9,100.0	90.53	90.00	6,697.4	-2,064.41	174.2	926.3	933.2	0.00	0.00	0.00
9,200.0	90.53	90.00	6,696.5	-2,063.48	174.2	1,026.3	1,033.1	0.00	0.00	0.00
9,300.0	90.53	90.00	6,695.5	-2,062.55	174.2	1,126.3	1,133.0	0.00	0.00	0.00

# Planning Report



<b>Database:</b>	EDM 5000.1 Single User Db	<b>Local Co-ordinate Reference:</b>	Well SCHAUMBERG 17F-202ST
<b>Company:</b>	PDC ENERGY	<b>TVD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Project:</b>	WELD COUNTY, COLORADO	<b>MD Reference:</b>	KB @ 4633.0usft (ENS 135)
<b>Site:</b>	SW NW SEC. 17 T5N R64W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	SCHAUMBERG 17F-202ST	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	JOB #2016-52-135 - SIDETRACK		
<b>Design:</b>	PROPOSAL #3 - SIDETRACK		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,400.0	90.53	90.00	6,694.6	-2,061.62	174.2	1,226.3	1,232.9	0.00	0.00	0.00
9,500.0	90.53	90.00	6,693.7	-2,060.69	174.2	1,326.3	1,332.8	0.00	0.00	0.00
9,600.0	90.53	90.00	6,692.8	-2,059.76	174.2	1,426.3	1,432.7	0.00	0.00	0.00
9,700.0	90.53	90.00	6,691.8	-2,058.82	174.2	1,526.3	1,532.6	0.00	0.00	0.00
9,800.0	90.53	90.00	6,690.9	-2,057.89	174.2	1,626.3	1,632.5	0.00	0.00	0.00
9,900.0	90.53	90.00	6,690.0	-2,056.96	174.2	1,726.3	1,732.4	0.00	0.00	0.00
10,000.0	90.53	90.00	6,689.0	-2,056.03	174.2	1,826.3	1,832.3	0.00	0.00	0.00
10,100.0	90.53	90.00	6,688.1	-2,055.10	174.2	1,926.3	1,932.1	0.00	0.00	0.00
10,200.0	90.53	90.00	6,687.2	-2,054.16	174.2	2,026.2	2,032.0	0.00	0.00	0.00
10,300.0	90.53	90.00	6,686.2	-2,053.23	174.2	2,126.2	2,131.9	0.00	0.00	0.00
10,400.0	90.53	90.00	6,685.3	-2,052.30	174.2	2,226.2	2,231.8	0.00	0.00	0.00
10,500.0	90.53	90.00	6,684.4	-2,051.37	174.2	2,326.2	2,331.7	0.00	0.00	0.00
10,600.0	90.53	90.00	6,683.4	-2,050.43	174.2	2,426.2	2,431.6	0.00	0.00	0.00
10,700.0	90.54	90.00	6,682.5	-2,049.50	174.2	2,526.2	2,531.5	0.00	0.00	0.00
10,800.0	90.54	90.00	6,681.6	-2,048.57	174.2	2,626.2	2,631.4	0.00	0.00	0.00
10,900.0	90.54	90.00	6,680.6	-2,047.63	174.2	2,726.2	2,731.3	0.00	0.00	0.00
11,000.0	90.54	90.00	6,679.7	-2,046.70	174.2	2,826.2	2,831.2	0.00	0.00	0.00
11,100.0	90.54	90.00	6,678.8	-2,045.76	174.2	2,926.2	2,931.1	0.00	0.00	0.00
11,200.0	90.54	90.00	6,677.8	-2,044.83	174.2	3,026.2	3,031.0	0.00	0.00	0.00
11,300.0	90.54	90.00	6,676.9	-2,043.89	174.2	3,126.2	3,130.9	0.00	0.00	0.00
11,400.0	90.54	90.00	6,676.0	-2,042.96	174.2	3,226.2	3,230.8	0.00	0.00	0.00
11,500.0	90.54	90.00	6,675.0	-2,042.02	174.2	3,326.2	3,330.7	0.00	0.00	0.00
11,600.0	90.54	90.00	6,674.1	-2,041.09	174.2	3,426.2	3,430.6	0.00	0.00	0.00
11,700.0	90.54	90.00	6,673.1	-2,040.15	174.2	3,526.2	3,530.5	0.00	0.00	0.00
11,800.0	90.54	90.00	6,672.2	-2,039.21	174.2	3,626.2	3,630.3	0.00	0.00	0.00
11,900.0	90.54	90.00	6,671.3	-2,038.28	174.2	3,726.2	3,730.2	0.00	0.00	0.00
12,000.0	90.54	90.00	6,670.3	-2,037.34	174.2	3,826.2	3,830.1	0.00	0.00	0.00
<b>BHL - SCHAUMBERG 17F-202ST (P3)</b>										
<b>12,036.2</b>	<b>90.54</b>	<b>90.00</b>	<b>6,670.0</b>	<b>-2,037.00</b>	<b>174.2</b>	<b>3,862.4</b>	<b>3,866.3</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,412.0	5,211.7	152.4	-1,366.4	TIE ON TO SURVEYS
5,581.0	5,377.7	152.0	-1,398.0	SIDETRACK POINT
5,917.0	5,711.1	159.3	-1,437.6	EOD & T 5.04° INC & 308.04° AZ
6,067.0	5,860.5	167.4	-1,447.9	END OF TANGENT
6,318.8	6,111.9	174.2	-1,456.7	EOD TO VERTICAL
6,444.4	6,237.6	174.2	-1,456.7	KOP (12°/100ft BUR)
7,198.8	6,715.0	174.2	-974.8	HZ LANDING PNT - SCHAUMBERG 17F-202ST (P3)
12,036.2	6,670.0	174.2	3,862.4	BHL - SCHAUMBERG 17F-202ST (P3)