

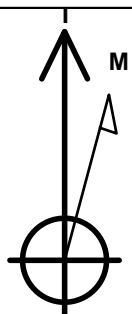
# PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Paul 27Y-314**

Surface Location: Paul 5N67W27D Pad Sec.27-T5N-R67W  
 North American Datum 1983 , US State Plane 1983, Colorado Northern Zone  
 Ground Elevation: 4928.0  
 +N/-S+E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1376984.023174560.29 40.366530 -104.873540  
 RKB - 23' WELL @ 4951.0ft (RKB - 23')

## DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 1130'FSL & 1047'FEL	1.0	0.0	0.0	Point
BHL 410'FSL & 75'FWL	7015.0	-728.3	-4001.7	Point
LP - 402'FSL & 829'FEL	7097.5	-728.3	218.1	Point



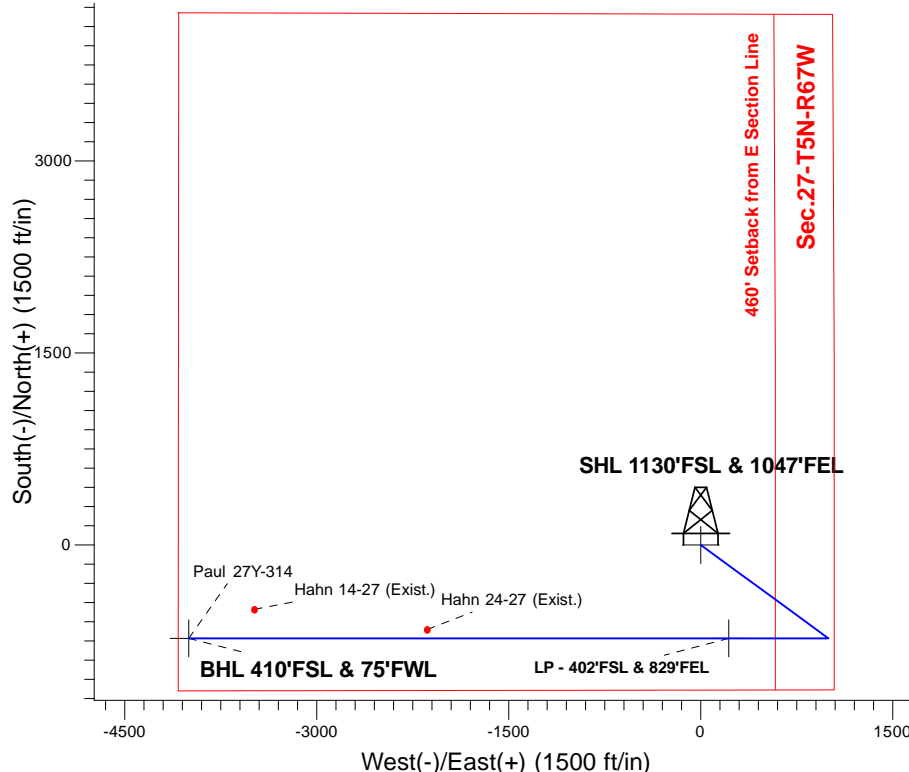
Azimuths to True North  
 Magnetic North: 8.25°

Magnetic Field  
 Strength: 52581.3nT  
 Dip Angle: 66.83°  
 Date: 5/24/2016  
 Model: IGRF2010

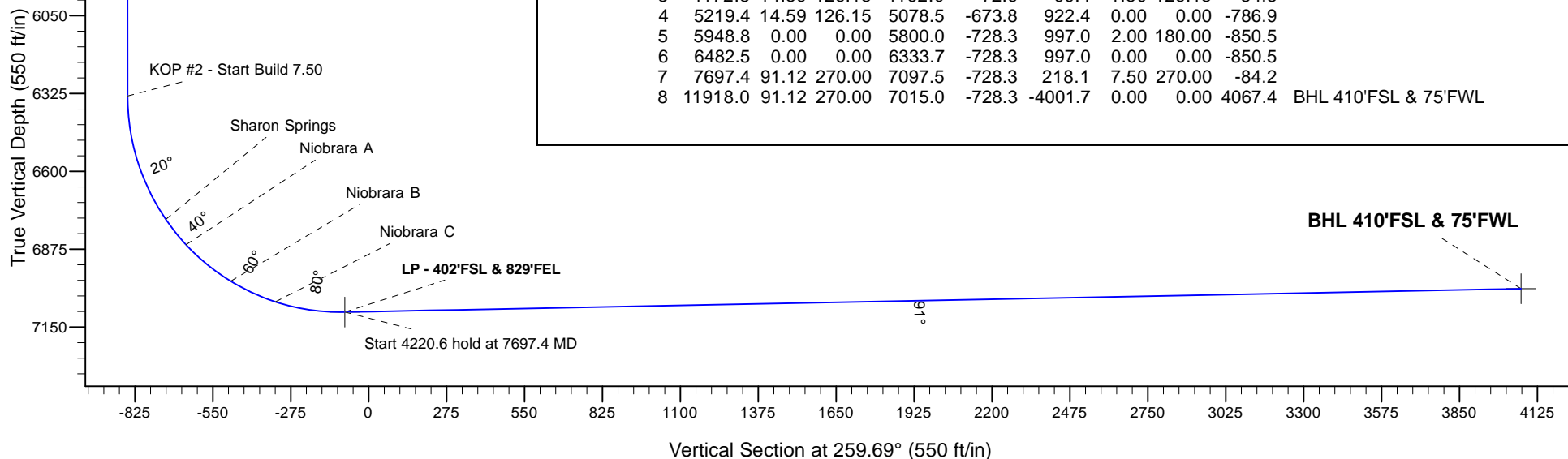
Paul 5N67W27D Pad Sec.27-T5N-R67W  
 Paul 27Y-314  
 Plan #1 (5-24-16)  
 11:08, May 26 2016

## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.50
5078.5	5219.4	Start Drop -2.00
6333.7	6482.5	KOP #2 - Start Build 7.50
7097.5	7697.4	Start 4220.6 hold at 7697.4 MD
7015.0	11918.0	TD at 11918.0



## ENSIGN Directional



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	1172.5	14.59	126.15	1162.0	-72.6	99.4	1.50	126.15	-84.8	
4	5219.4	14.59	126.15	5078.5	-673.8	922.4	0.00	0.00	-786.9	
5	5948.8	0.00	0.00	5800.0	-728.3	997.0	2.00	180.00	-850.5	
6	6482.5	0.00	0.00	6333.7	-728.3	997.0	0.00	0.00	-850.5	
7	7697.4	91.12	270.00	7097.5	-728.3	218.1	7.50	270.00	-84.2	
8	11918.0	91.12	270.00	7015.0	-728.3	-4001.7	0.00	0.00	4067.4	BHL 410'FSL & 75'FWL



# **PETROLEUM DEVELOPMENT CORP DJ Basin**

**SEC.27-T5N-R67W**

**Paul 5N67W27D Pad Sec.27-T5N-R67W**

**Paul 27Y-314**

**Wellbore #1**

**Plan #1 (5-24-16)**

## **Anticollision Report**

**26 May, 2016**

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP DJ Basin	<b>Local Co-ordinate Reference:</b>	Well Paul 27Y-314
<b>Project:</b>	SEC.27-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4951.0ft (RKB - 23')
<b>Reference Site:</b>	Paul 5N67W27D Pad Sec.27-T5N-R67W	<b>MD Reference:</b>	WELL @ 4951.0ft (RKB - 23')
<b>Site Error:</b>	0.0 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Paul 27Y-314	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0 ft	<b>Output errors are at</b>	2.45 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	US_EDM
<b>Reference Design:</b>	Plan #1 (5-24-16)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (5-24-16)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD Interval 100.0ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0 ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.45 Sigma	<b>Casing Method:</b>	Not applied

<b>Survey Tool Program</b>	<b>Date</b> 5/26/2016			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,917.3	Plan #1 (5-24-16) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Offset Wells Sec.27-T5N-R67W						
Hahn 14-27 (Exist.) - Wellbore #1 - Wellbore #1	11,402.3	6,897.1	225.8	-87.6	0.720	Level 1, CC, ES, SF
Hahn 24-27 (Exist.) - Wellbore #1 - Wellbore #1	10,053.4	6,983.4	69.0	-201.5	0.255	Level 1, CC, ES, SF
Paul 5N67W27D Pad Sec.27-T5N-R67W						
Paul 27W-204 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	133.2	132.3	161.754	CC, ES
Paul 27W-204 - Wellbore #1 - Plan #1 (5-24-16)	3,000.0	2,807.1	972.4	945.3	35.990	SF
Paul 27W-334 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	119.8	119.0	145.578	CC, ES
Paul 27W-334 - Wellbore #1 - Plan #1 (5-24-16)	3,400.0	3,229.1	997.8	966.9	32.292	SF
Paul 27W-434 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	104.2	103.4	126.583	CC, ES
Paul 27W-434 - Wellbore #1 - Plan #1 (5-24-16)	3,700.0	3,557.1	973.5	939.7	28.831	SF
Paul 27X-214 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	88.9	88.1	107.989	CC, ES
Paul 27X-214 - Wellbore #1 - Plan #1 (5-24-16)	4,200.0	4,077.1	992.6	953.3	25.246	SF
Paul 27X-234 - Wellbore #1 - Plan #1 (5-24-16)	200.0	200.0	29.0	28.2	35.115	CC, ES
Paul 27X-234 - Wellbore #1 - Plan #1 (5-24-16)	11,918.0	11,787.6	532.2	211.4	1.659	SF
Paul 27X-304 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	59.9	59.1	72.789	CC, ES
Paul 27X-304 - Wellbore #1 - Plan #1 (5-24-16)	11,918.0	11,904.9	990.4	667.8	3.070	SF
Paul 27X-404 - Wellbore #1 - Plan #1 (5-24-16)	200.0	200.0	42.3	41.5	51.221	CC, ES
Paul 27X-404 - Wellbore #1 - Plan #1 (5-24-16)	11,918.0	11,992.7	763.3	441.2	2.370	SF
Paul 27X-414 - Wellbore #1 - Plan #1 (5-24-16)	200.0	199.0	73.2	72.4	88.964	CC, ES
Paul 27X-414 - Wellbore #1 - Plan #1 (5-24-16)	4,800.0	4,708.5	980.7	935.8	21.837	SF
Paul 27X-434 - Wellbore #1 - Plan #1 (5-24-16)	200.0	200.0	13.3	12.5	16.121	CC, ES
Paul 27X-434 - Wellbore #1 - Plan #1 (5-24-16)	11,918.0	11,973.1	324.9	27.5	1.093	Level 2, SF

<b>Offset Design</b> Offset Wells Sec.27-T5N-R67W - Hahn 14-27 (Exist.) - Wellbore #1 - Wellbore #1												
Survey Program: 7200-UNKNOWN												
Reference												
Offset												
Semi Major Axis												
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor
10,500.0	7,042.7	6,914.7	6,914.7	114.2	169.4	94.47	-502.5	-3,486.1	930.0	647.1	282.87	3.288
10,600.0	7,040.8	6,912.8	6,912.8	117.5	169.4	93.97	-502.5	-3,486.1	833.4	547.0	286.31	2.911
10,700.0	7,038.8	6,910.8	6,910.8	120.9	169.3	93.48	-502.5	-3,486.1	737.6	447.9	289.73	2.546
10,800.0	7,036.9	6,908.9	6,908.9	124.2	169.3	92.98	-502.5	-3,486.1	643.2	350.0	293.14	2.194
10,900.0	7,034.9	6,906.9	6,906.9	127.6	169.2	92.49	-502.5	-3,486.1	550.7	254.1	296.54	1.857
11,000.0	7,032.9	6,904.9	6,904.9	130.9	169.2	91.99	-502.5	-3,486.1	461.3	161.4	299.92	1.538

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation