

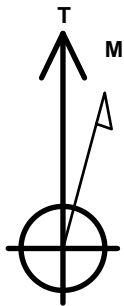
PETROLEUM DEVELOPMENT CORP DJ Basin

Well Name: **Williams 28V-214**

Surface Location: Williams 5N67W28R Pad Sec.28-T5N-R67W
 North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
 Ground Elevation: 4926.0
 +N/-S +E/-W Northing Easting Latitude Longitude Slot
 0.0 0.0 1380565.04 3169313.76 40.376460 -104.892280
 Original Well Elev WELL @ 4949.0ft (Original Well Elev)

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 529'FNL, 1146'FEL	1.0	0.0	0.0	Point
BHL 940'FNL, 500'FWL	6921.0	-440.5	-3747.5	Point
LP - 970'FNL & 824'FNL	6975.0	-440.5	321.9	Point



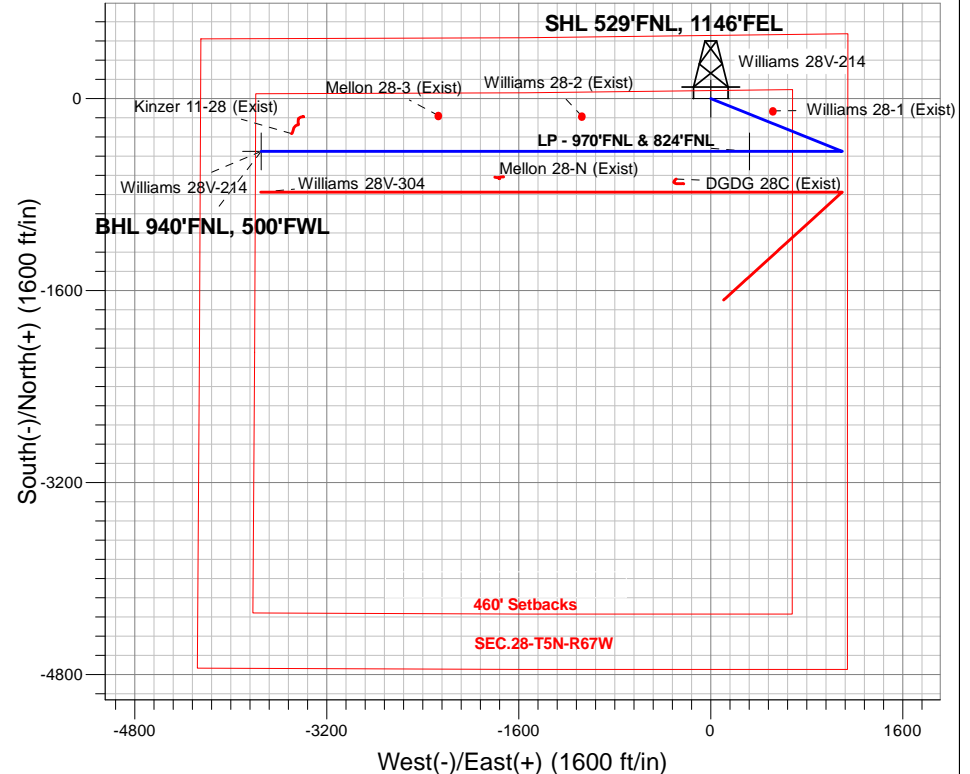
Azimuths to True North
 Magnetic North: 8.27°

Magnetic Field
 Strength: 52592.0snT
 Dip Angle: 66.84°
 Date: 4/28/2016
 Model: IGRF2010

Williams 5N67W28R Pad Sec.28-T5N-R67W
 Williams 28V-214
 Plan #1 (4-25-16)
 7:37, April 28 2016

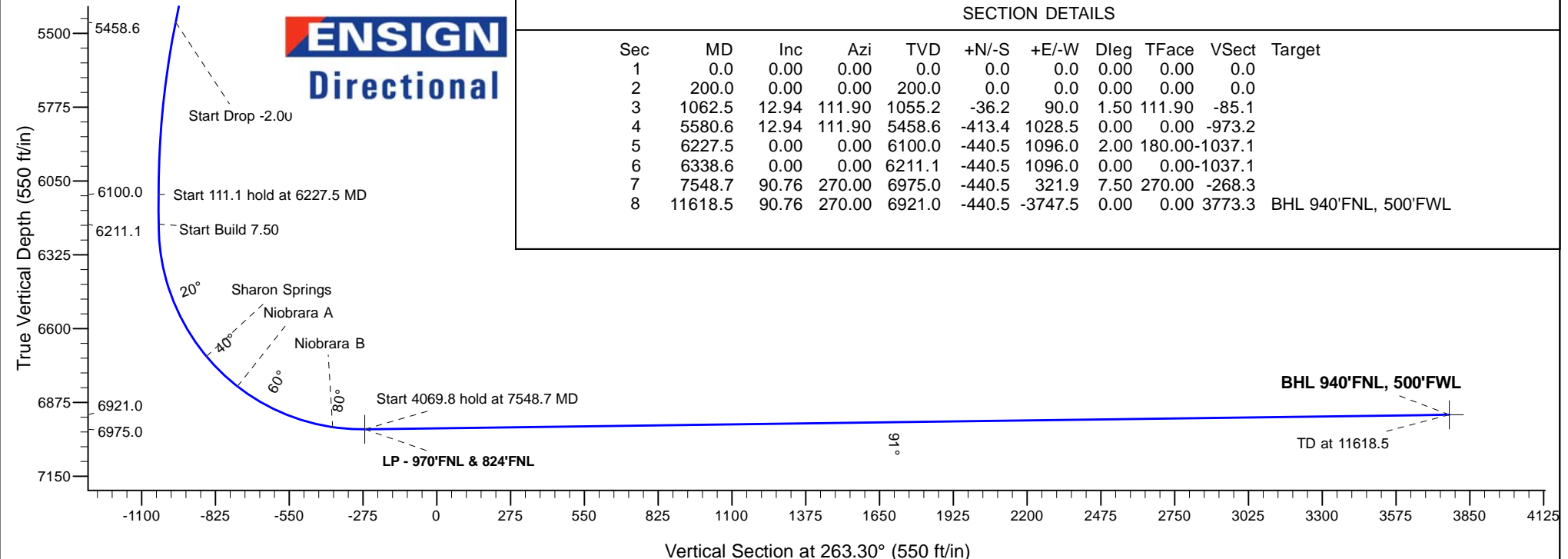
ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP - Start Build 1.50
5458.6	5580.6	Start Drop -2.00
6100.0	6227.5	Start 111.1 hold at 6227.5 MD
6211.1	6338.6	Start Build 7.50
6975.0	7548.7	Start 4069.8 hold at 7548.7 MD
6921.0	11618.5	TD at 11618.5



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	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	1062.5	12.94	111.90	1055.2	-36.2	90.0	1.50	111.90	-85.1	
4	5580.6	12.94	111.90	5458.6	-413.4	1028.5	0.00	0.00	-973.2	
5	6227.5	0.00	0.00	6100.0	-440.5	1096.0	2.00	180.00	-1037.1	
6	6338.6	0.00	0.00	6211.1	-440.5	1096.0	0.00	0.00	-1037.1	
7	7548.7	90.76	270.00	6975.0	-440.5	321.9	7.50	270.00	-268.3	
8	11618.5	90.76	270.00	6921.0	-440.5	-3747.5	0.00	0.00	3773.3	BHL 940'FNL, 500'FWL





PETROLEUM DEVELOPMENT CORP DJ Basin

SEC.28-T5N-R67W

Williams 5N67W28R Pad Sec.28-T5N-R67W

Williams 28V-214

Wellbore #1

Plan #1 (4-25-16)

Anticollision Report

28 April, 2016



Company:	PETROLEUM DEVELOPMENT CORP DJ Basin	Local Co-ordinate Reference:	Well Williams 28V-214
Project:	SEC.28-T5N-R67W	TVD Reference:	WELL @ 4949.0ft (Original Well Elev)
Reference Site:	Williams 5N67W28R Pad Sec.28-T5N-R67W	MD Reference:	WELL @ 4949.0ft (Original Well Elev)
Site Error:	0.0 ft	North Reference:	True
Reference Well:	Williams 28V-214	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	US_EDM
Reference Design:	Plan #1 (4-25-16)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (4-25-16)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 800.0 ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program	Date 4/27/2016			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,618.5	Plan #1 (4-25-16) (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						
Existing Wells Sec.28-T5N-R67W						
DGDG 28C (Exist) - Wellbore #1 - Wellbore #1	8,171.0	6,949.3	238.2	186.4	4.601	CC, ES
DGDG 28C (Exist) - Wellbore #1 - Wellbore #1	8,200.0	6,948.4	239.9	187.6	4.581	SF
Kinzer 11-28 (Exist) - Wellbore #1 - Wellbore #1	11,354.9	6,884.1	171.4	36.1	1.267	Level 3, CC, ES, SF
Mellon 28-3 (Exist) - Wellbore #1 - Wellbore #1	10,141.6	6,890.6	298.5	73.8	1.328	Level 3, CC, ES, SF
Mellon 28-N (Exist) - Wellbore #1 - Wellbore #1	9,666.2	6,911.4	217.1	129.5	2.479	CC, ES, SF
Williams 28-1 (Exist) - Wellbore #1 - Wellbore #1	2,935.5	2,833.7	97.6	28.9	1.422	Level 3, CC
Williams 28-1 (Exist) - Wellbore #1 - Wellbore #1	3,000.0	2,896.5	98.7	28.6	1.407	Level 3, ES, SF
Williams 28-2 (Exist) - Wellbore #1 - Wellbore #1	8,946.2	6,930.4	294.8	100.7	1.519	CC, ES, SF
Williams 5N67W28R Pad Sec.28-T5N-R67W						
Williams 28U-204 - Wellbore #1 - Plan #1 (4-26-16)	200.0	200.0	44.2	43.6	65.589	CC, ES
Williams 28U-204 - Wellbore #1 - Plan #1 (4-26-16)	4,900.0	4,846.0	764.5	723.6	18.690	SF
Williams 28U-334 - Wellbore #1 - Plan #1 (4-26-16)	200.0	200.0	13.8	13.1	20.405	CC, ES
Williams 28U-334 - Wellbore #1 - Plan #1 (4-26-16)	11,618.5	11,709.7	427.3	175.3	1.696	SF
Williams 28U-434 - Wellbore #1 - Plan #1 (4-26-16)	200.0	200.0	27.5	26.8	40.810	CC, ES
Williams 28U-434 - Wellbore #1 - Plan #1 (4-26-16)	11,618.5	11,761.1	710.0	465.0	2.897	SF
Williams 5N67W28S Pad Sec.28-T5N-R67W						
Williams 28V-304 - Wellbore #1 - Plan #1 (4-26-16)	6,380.0	6,429.6	338.8	289.6	6.893	CC
Williams 28V-304 - Wellbore #1 - Plan #1 (4-26-16)	11,618.5	11,716.0	344.4	93.0	1.370	Level 3, ES, SF

Offset Design Existing Wells Sec.28-T5N-R67W - DGDG 28C (Exist) - Wellbore #1 - Wellbore #1											
Survey Program: 500-NS-GYRO-MS											
Reference Offset Semi Major Axis Distance											
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)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)
0.0	0.0	0.0	0.0	0.0	0.0	-162.38	-710.4	-225.7	745.7		
100.0	100.0	79.2	79.2	0.1	0.1	-162.37	-710.4	-225.7	745.4	745.2	0.22
200.0	200.0	179.3	179.3	0.3	0.2	-162.35	-710.3	-226.0	745.4	744.8	0.58
300.0	300.0	279.5	279.5	0.5	0.4	85.89	-710.1	-226.4	745.2	744.3	0.92
400.0	399.9	379.6	379.6	0.8	0.5	86.25	-709.8	-227.0	744.8	743.6	1.26
500.0	499.7	479.5	479.5	1.0	0.6	86.82	-709.4	-227.8	744.4	742.7	1.63
600.0	599.3	579.2	579.1	1.3	0.9	87.61	-709.0	-228.7	743.8	741.7	2.13
700.0	698.6	677.8	677.8	1.5	1.1	88.59	-708.6	-229.6	743.3	740.6	2.68
											3425.091
											1,295.466
											811.866
											589.459
											456.411
											349.616
											277.577

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