

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Dalton 24L-441**

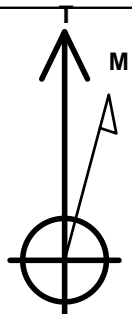
Surface Location: Dalton SW-24L Pad Sec.24-T7N-R66W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4880.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445686.75	3213114.75	40.554280	-104.733050	

RKB Ensign 32 - 15' WELL @ 4895.0ft (RKB Ensign 32 - 15')

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
HARDLINE BHL 460'FNL	1.0	4630.5	-172.2	Polygon
HARDLINE SHL 460'FSL	1.0	210.0	-200.0	Polygon
SECTIONLINE 250'S OF SHL	1.0	-250.0	-200.0	Polygon
BHL 500'FNL & 660'FEL	7375.0	4590.5	27.8	Point



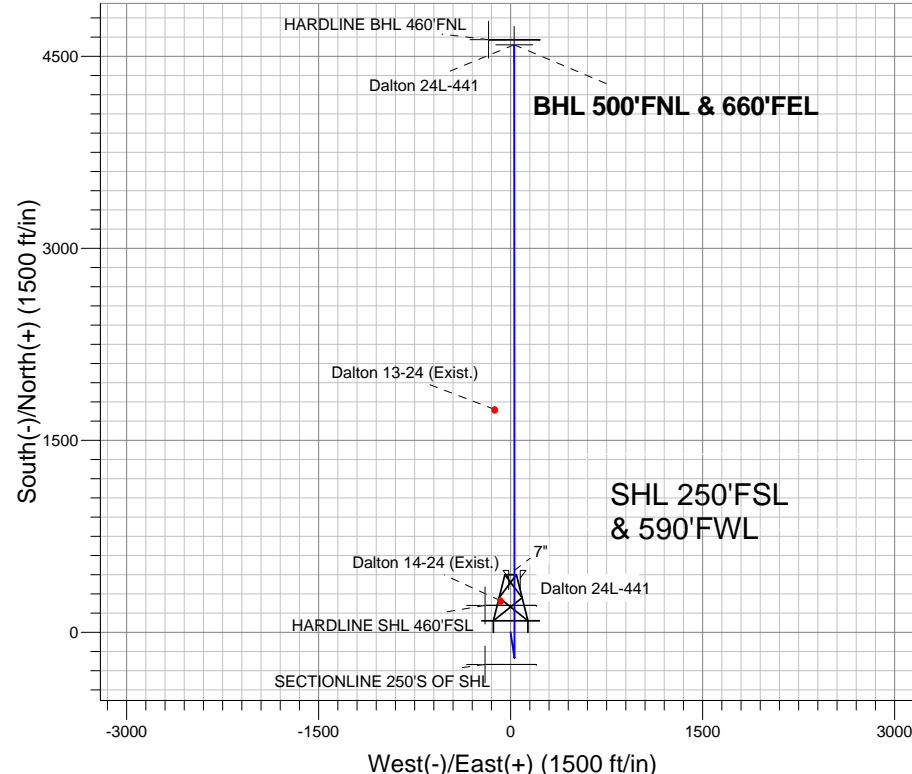
Azimuths to True North  
Magnetic North: 8.74°

Magnetic Field  
Strength: 53116.6nT  
Dip Angle: 67.15°  
Date: 5/21/2012  
Model: IGRF2010

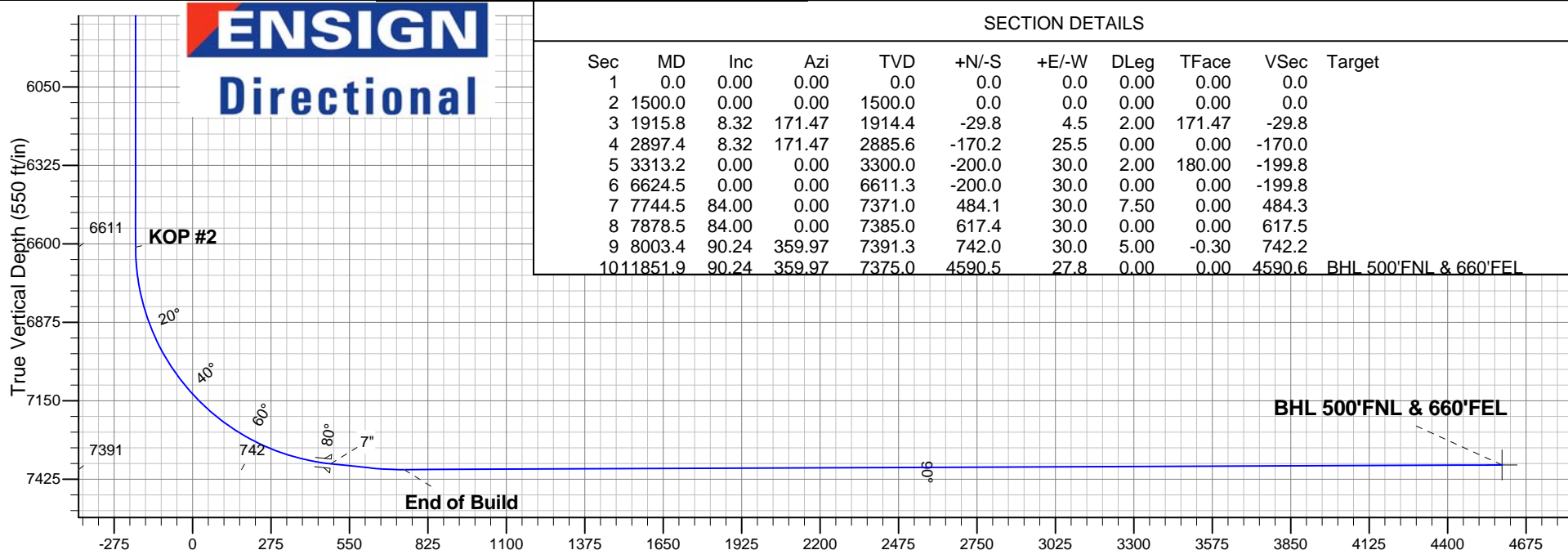
Dalton SW-24L Pad Sec.24-T7N-R66W  
Dalton 24L-441  
Plan #1 (5-21-12)  
13:05, May 24 2012

## ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6611.3	6624.5	KOP #2
7391.3	8003.4	End of Build



**ENSIGN**  
Directional



## 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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	1915.8	8.32	171.47	1914.4	-29.8	4.5	2.00	171.47	-29.8	
4	2897.4	8.32	171.47	2885.6	-170.2	25.5	0.00	0.00	-170.0	
5	3313.2	0.00	0.00	3300.0	-200.0	30.0	2.00	180.00	-199.8	
6	6624.5	0.00	0.00	6611.3	-200.0	30.0	0.00	0.00	-199.8	
7	7744.5	84.00	0.00	7371.0	484.1	30.0	7.50	0.00	484.3	
8	7878.5	84.00	0.00	7385.0	617.4	30.0	0.00	0.00	617.5	
9	8003.4	90.24	359.97	7391.3	742.0	30.0	5.00	-0.30	742.2	
10	11851.9	90.24	359.97	7375.0	4590.5	27.8	0.00	0.00	4590.6	BHL 500'FNL & 660'FEL

Vertical Section at 0.35° (550 ft/in)



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

**Dalton SW-24L Pad Sec.24-T7N-R66W**

**Dalton 24L-441**

**Wellbore #1**

**Plan: Plan #1 (5-21-12)**

## **Standard Planning Report**

**24 May, 2012**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

<b>Project</b>	SEC.24-T7N-R66W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site						Dalton SW-24L Pad Sec.24-T7N-R66W											
Site Position:						Northing:			1,445,686.99ft			Latitude:			40.554280		
From:			Lat/Long			Easting:			3,213,142.53ft			Longitude:			-104.732950		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.50 °		

Well	Dalton 24L-441					
Well Position	+N/-S	0.0 ft	Northing:	1,445,686.75 ft	Latitude:	40.554280
	+E/-W	-27.8 ft	Easting:	3,213,114.75 ft	Longitude:	-104.733050
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,880.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	5/21/2012	8.74	67.15	53,117

<b>Design</b>	Plan #1 (5-21-12)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	0.35

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,915.8	8.32	171.47	1,914.4	-29.8	4.5	2.00	2.00	0.00	171.47	
2,897.4	8.32	171.47	2,885.6	-170.2	25.5	0.00	0.00	0.00	0.00	
3,313.2	0.00	0.00	3,300.0	-200.0	30.0	2.00	-2.00	0.00	180.00	
6,624.5	0.00	0.00	6,611.3	-200.0	30.0	0.00	0.00	0.00	0.00	
7,744.5	84.00	0.00	7,371.0	484.1	30.0	7.50	7.50	0.00	0.00	
7,878.5	84.00	0.00	7,385.0	617.4	30.0	0.00	0.00	0.00	0.00	
8,003.4	90.24	359.97	7,391.3	742.0	30.0	5.00	5.00	-0.03	-0.30	
11,851.9	90.24	359.97	7,375.0	4,590.5	27.8	0.00	0.00	0.00	0.00	BHL 500'FNL & 66C

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SECTIONLINE 250'S OF SHL - HARDLINE BHL 460'FNL - HARDLINE SHL 460'FSL									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,520.0	0.40	171.47	1,520.0	-0.1	0.0	-0.1	2.00	2.00	0.00
1,560.0	1.20	171.47	1,560.0	-0.6	0.1	-0.6	2.00	2.00	0.00
1,600.0	2.00	171.47	1,600.0	-1.7	0.3	-1.7	2.00	2.00	0.00
1,640.0	2.80	171.47	1,639.9	-3.4	0.5	-3.4	2.00	2.00	0.00
1,680.0	3.60	171.47	1,679.9	-5.6	0.8	-5.6	2.00	2.00	0.00
1,720.0	4.40	171.47	1,719.8	-8.3	1.3	-8.3	2.00	2.00	0.00
1,760.0	5.20	171.47	1,759.6	-11.7	1.7	-11.6	2.00	2.00	0.00
1,800.0	6.00	171.47	1,799.5	-15.5	2.3	-15.5	2.00	2.00	0.00
1,840.0	6.80	171.47	1,839.2	-19.9	3.0	-19.9	2.00	2.00	0.00
1,880.0	7.60	171.47	1,878.9	-24.9	3.7	-24.9	2.00	2.00	0.00
1,915.8	8.32	171.47	1,914.4	-29.8	4.5	-29.8	2.00	2.00	0.00

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<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,920.0	8.32	171.47	1,918.5	-30.4	4.6	-30.4	0.00	0.00	0.00
1,960.0	8.32	171.47	1,958.1	-36.1	5.4	-36.1	0.00	0.00	0.00
2,000.0	8.32	171.47	1,997.7	-41.8	6.3	-41.8	0.00	0.00	0.00
2,040.0	8.32	171.47	2,037.2	-47.6	7.1	-47.5	0.00	0.00	0.00
2,080.0	8.32	171.47	2,076.8	-53.3	8.0	-53.2	0.00	0.00	0.00
2,120.0	8.32	171.47	2,116.4	-59.0	8.8	-58.9	0.00	0.00	0.00
2,160.0	8.32	171.47	2,156.0	-64.7	9.7	-64.7	0.00	0.00	0.00
2,200.0	8.32	171.47	2,195.6	-70.4	10.6	-70.4	0.00	0.00	0.00
2,240.0	8.32	171.47	2,235.1	-76.2	11.4	-76.1	0.00	0.00	0.00
2,280.0	8.32	171.47	2,274.7	-81.9	12.3	-81.8	0.00	0.00	0.00
2,320.0	8.32	171.47	2,314.3	-87.6	13.1	-87.5	0.00	0.00	0.00
2,360.0	8.32	171.47	2,353.9	-93.3	14.0	-93.2	0.00	0.00	0.00
2,400.0	8.32	171.47	2,393.4	-99.1	14.9	-99.0	0.00	0.00	0.00
2,440.0	8.32	171.47	2,433.0	-104.8	15.7	-104.7	0.00	0.00	0.00
2,480.0	8.32	171.47	2,472.6	-110.5	16.6	-110.4	0.00	0.00	0.00
2,520.0	8.32	171.47	2,512.2	-116.2	17.4	-116.1	0.00	0.00	0.00
2,560.0	8.32	171.47	2,551.8	-121.9	18.3	-121.8	0.00	0.00	0.00
2,600.0	8.32	171.47	2,591.3	-127.7	19.1	-127.5	0.00	0.00	0.00
2,640.0	8.32	171.47	2,630.9	-133.4	20.0	-133.3	0.00	0.00	0.00
2,680.0	8.32	171.47	2,670.5	-139.1	20.9	-139.0	0.00	0.00	0.00
2,720.0	8.32	171.47	2,710.1	-144.8	21.7	-144.7	0.00	0.00	0.00
2,760.0	8.32	171.47	2,749.7	-150.6	22.6	-150.4	0.00	0.00	0.00
2,800.0	8.32	171.47	2,789.2	-156.3	23.4	-156.1	0.00	0.00	0.00
2,840.0	8.32	171.47	2,828.8	-162.0	24.3	-161.8	0.00	0.00	0.00
2,880.0	8.32	171.47	2,868.4	-167.7	25.2	-167.6	0.00	0.00	0.00
2,897.4	8.32	171.47	2,885.6	-170.2	25.5	-170.0	0.00	0.00	0.00
2,920.0	7.86	171.47	2,908.0	-173.4	26.0	-173.2	2.00	-2.00	0.00
2,960.0	7.06	171.47	2,947.7	-178.5	26.8	-178.3	2.00	-2.00	0.00
3,000.0	6.26	171.47	2,987.4	-183.1	27.5	-182.9	2.00	-2.00	0.00
3,040.0	5.46	171.47	3,027.2	-187.1	28.1	-186.9	2.00	-2.00	0.00
3,080.0	4.66	171.47	3,067.0	-190.6	28.6	-190.4	2.00	-2.00	0.00
3,120.0	3.86	171.47	3,106.9	-193.6	29.0	-193.4	2.00	-2.00	0.00
3,160.0	3.06	171.47	3,146.8	-195.9	29.4	-195.8	2.00	-2.00	0.00
3,200.0	2.26	171.47	3,186.8	-197.8	29.7	-197.6	2.00	-2.00	0.00
3,240.0	1.46	171.47	3,226.8	-199.1	29.9	-198.9	2.00	-2.00	0.00
3,280.0	0.66	171.47	3,266.8	-199.8	30.0	-199.6	2.00	-2.00	0.00
3,313.2	0.00	0.00	3,300.0	-200.0	30.0	-199.8	2.00	-2.00	0.00
3,320.0	0.00	0.00	3,306.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,360.0	0.00	0.00	3,346.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,400.0	0.00	0.00	3,386.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,440.0	0.00	0.00	3,426.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,480.0	0.00	0.00	3,466.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,520.0	0.00	0.00	3,506.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,560.0	0.00	0.00	3,546.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,600.0	0.00	0.00	3,586.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,640.0	0.00	0.00	3,626.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,680.0	0.00	0.00	3,666.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,720.0	0.00	0.00	3,706.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,760.0	0.00	0.00	3,746.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,800.0	0.00	0.00	3,786.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,840.0	0.00	0.00	3,826.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,880.0	0.00	0.00	3,866.8	-200.0	30.0	-199.8	0.00	0.00	0.00
3,920.0	0.00	0.00	3,906.8	-200.0	30.0	-199.8	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,960.0	0.00	0.00	3,946.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,000.0	0.00	0.00	3,986.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,040.0	0.00	0.00	4,026.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,080.0	0.00	0.00	4,066.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,120.0	0.00	0.00	4,106.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,160.0	0.00	0.00	4,146.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,200.0	0.00	0.00	4,186.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,240.0	0.00	0.00	4,226.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,280.0	0.00	0.00	4,266.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,320.0	0.00	0.00	4,306.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,360.0	0.00	0.00	4,346.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,400.0	0.00	0.00	4,386.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,440.0	0.00	0.00	4,426.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,480.0	0.00	0.00	4,466.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,520.0	0.00	0.00	4,506.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,560.0	0.00	0.00	4,546.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,600.0	0.00	0.00	4,586.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,640.0	0.00	0.00	4,626.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,680.0	0.00	0.00	4,666.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,720.0	0.00	0.00	4,706.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,760.0	0.00	0.00	4,746.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,800.0	0.00	0.00	4,786.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,840.0	0.00	0.00	4,826.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,880.0	0.00	0.00	4,866.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,920.0	0.00	0.00	4,906.8	-200.0	30.0	-199.8	0.00	0.00	0.00
4,960.0	0.00	0.00	4,946.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,000.0	0.00	0.00	4,986.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,040.0	0.00	0.00	5,026.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,080.0	0.00	0.00	5,066.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,120.0	0.00	0.00	5,106.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,160.0	0.00	0.00	5,146.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,200.0	0.00	0.00	5,186.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,240.0	0.00	0.00	5,226.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,280.0	0.00	0.00	5,266.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,320.0	0.00	0.00	5,306.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,360.0	0.00	0.00	5,346.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,400.0	0.00	0.00	5,386.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,440.0	0.00	0.00	5,426.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,480.0	0.00	0.00	5,466.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,520.0	0.00	0.00	5,506.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,560.0	0.00	0.00	5,546.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,600.0	0.00	0.00	5,586.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,640.0	0.00	0.00	5,626.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,680.0	0.00	0.00	5,666.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,720.0	0.00	0.00	5,706.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,760.0	0.00	0.00	5,746.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,786.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,840.0	0.00	0.00	5,826.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,880.0	0.00	0.00	5,866.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,920.0	0.00	0.00	5,906.8	-200.0	30.0	-199.8	0.00	0.00	0.00
5,960.0	0.00	0.00	5,946.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,986.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,040.0	0.00	0.00	6,026.8	-200.0	30.0	-199.8	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,080.0	0.00	0.00	6,066.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,120.0	0.00	0.00	6,106.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,160.0	0.00	0.00	6,146.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,186.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,240.0	0.00	0.00	6,226.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,266.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,306.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,360.0	0.00	0.00	6,346.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,386.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,440.0	0.00	0.00	6,426.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,480.0	0.00	0.00	6,466.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,520.0	0.00	0.00	6,506.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,560.0	0.00	0.00	6,546.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,586.8	-200.0	30.0	-199.8	0.00	0.00	0.00
6,624.5	0.00	0.00	6,611.3	-200.0	30.0	-199.8	0.00	0.00	0.00
<b>KOP #2</b>									
6,640.0	1.16	0.00	6,626.8	-199.8	30.0	-199.7	7.50	7.50	0.00
6,680.0	4.16	0.00	6,666.7	-198.0	30.0	-197.8	7.50	7.50	0.00
6,720.0	7.16	0.00	6,706.5	-194.0	30.0	-193.9	7.50	7.50	0.00
6,760.0	10.16	0.00	6,746.1	-188.0	30.0	-187.8	7.50	7.50	0.00
6,800.0	13.16	0.00	6,785.2	-179.9	30.0	-179.7	7.50	7.50	0.00
6,840.0	16.16	0.00	6,823.9	-169.8	30.0	-169.6	7.50	7.50	0.00
6,880.0	19.16	0.00	6,862.0	-157.7	30.0	-157.5	7.50	7.50	0.00
6,920.0	22.16	0.00	6,899.4	-143.6	30.0	-143.4	7.50	7.50	0.00
6,960.0	25.16	0.00	6,936.1	-127.5	30.0	-127.3	7.50	7.50	0.00
7,000.0	28.16	0.00	6,971.8	-109.6	30.0	-109.4	7.50	7.50	0.00
7,040.0	31.16	0.00	7,006.6	-89.8	30.0	-89.6	7.50	7.50	0.00
7,080.0	34.16	0.00	7,040.2	-68.2	30.0	-68.0	7.50	7.50	0.00
7,120.0	37.16	0.00	7,072.7	-44.9	30.0	-44.7	7.50	7.50	0.00
7,160.0	40.16	0.00	7,104.0	-19.9	30.0	-19.7	7.50	7.50	0.00
7,200.0	43.16	0.00	7,133.9	6.7	30.0	6.9	7.50	7.50	0.00
7,240.0	46.16	0.00	7,162.3	34.8	30.0	35.0	7.50	7.50	0.00
7,280.0	49.16	0.00	7,189.2	64.4	30.0	64.6	7.50	7.50	0.00
7,320.0	52.16	0.00	7,214.6	95.3	30.0	95.5	7.50	7.50	0.00
7,360.0	55.16	0.00	7,238.3	127.5	30.0	127.7	7.50	7.50	0.00
7,400.0	58.16	0.00	7,260.3	161.0	30.0	161.1	7.50	7.50	0.00
7,440.0	61.16	0.00	7,280.5	195.5	30.0	195.7	7.50	7.50	0.00
7,480.0	64.16	0.00	7,298.8	231.0	30.0	231.2	7.50	7.50	0.00
7,520.0	67.16	0.00	7,315.3	267.4	30.0	267.6	7.50	7.50	0.00
7,560.0	70.16	0.00	7,329.9	304.7	30.0	304.9	7.50	7.50	0.00
7,600.0	73.16	0.00	7,342.5	342.7	30.0	342.8	7.50	7.50	0.00
7,640.0	76.16	0.00	7,353.0	381.2	30.0	381.4	7.50	7.50	0.00
7,680.0	79.16	0.00	7,361.6	420.3	30.0	420.5	7.50	7.50	0.00
7,720.0	82.16	0.00	7,368.1	459.8	30.0	459.9	7.50	7.50	0.00
7,744.5	84.00	0.00	7,371.0	484.1	30.0	484.3	7.50	7.50	0.00
<b>End of Build - 7"</b>									
7,760.0	84.00	0.00	7,372.6	499.5	30.0	499.7	0.00	0.00	0.00
7,800.0	84.00	0.00	7,376.8	539.3	30.0	539.5	0.00	0.00	0.00
7,840.0	84.00	0.00	7,381.0	579.1	30.0	579.2	0.00	0.00	0.00
7,878.5	84.00	0.00	7,385.0	617.4	30.0	617.5	0.00	0.00	0.00
7,880.0	84.07	360.00	7,385.2	618.8	30.0	619.0	5.00	5.00	-0.03
7,920.0	86.07	359.99	7,388.6	658.7	30.0	658.9	5.00	5.00	-0.03
7,960.0	88.07	359.98	7,390.7	698.6	30.0	698.8	5.00	5.00	-0.03



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,000.0	90.07	359.97	7,391.3	738.6	30.0	738.8	5.00	5.00	-0.03
8,003.4	90.24	359.97	7,391.3	742.0	30.0	742.2	5.00	5.00	-0.03
8,040.0	90.24	359.97	7,391.1	778.6	29.9	778.8	0.00	0.00	0.00
8,080.0	90.24	359.97	7,391.0	818.6	29.9	818.8	0.00	0.00	0.00
8,120.0	90.24	359.97	7,390.8	858.6	29.9	858.8	0.00	0.00	0.00
8,160.0	90.24	359.97	7,390.6	898.6	29.9	898.8	0.00	0.00	0.00
8,200.0	90.24	359.97	7,390.5	938.6	29.9	938.8	0.00	0.00	0.00
8,240.0	90.24	359.97	7,390.3	978.6	29.8	978.8	0.00	0.00	0.00
8,280.0	90.24	359.97	7,390.1	1,018.6	29.8	1,018.8	0.00	0.00	0.00
8,320.0	90.24	359.97	7,390.0	1,058.6	29.8	1,058.8	0.00	0.00	0.00
8,360.0	90.24	359.97	7,389.8	1,098.6	29.8	1,098.8	0.00	0.00	0.00
8,400.0	90.24	359.97	7,389.6	1,138.6	29.7	1,138.8	0.00	0.00	0.00
8,440.0	90.24	359.97	7,389.4	1,178.6	29.7	1,178.8	0.00	0.00	0.00
8,480.0	90.24	359.97	7,389.3	1,218.6	29.7	1,218.8	0.00	0.00	0.00
8,520.0	90.24	359.97	7,389.1	1,258.6	29.7	1,258.8	0.00	0.00	0.00
8,560.0	90.24	359.97	7,388.9	1,298.6	29.6	1,298.8	0.00	0.00	0.00
8,600.0	90.24	359.97	7,388.8	1,338.6	29.6	1,338.8	0.00	0.00	0.00
8,640.0	90.24	359.97	7,388.6	1,378.6	29.6	1,378.8	0.00	0.00	0.00
8,680.0	90.24	359.97	7,388.4	1,418.6	29.6	1,418.8	0.00	0.00	0.00
8,720.0	90.24	359.97	7,388.3	1,458.6	29.6	1,458.8	0.00	0.00	0.00
8,760.0	90.24	359.97	7,388.1	1,498.6	29.5	1,498.8	0.00	0.00	0.00
8,800.0	90.24	359.97	7,387.9	1,538.6	29.5	1,538.8	0.00	0.00	0.00
8,840.0	90.24	359.97	7,387.8	1,578.6	29.5	1,578.8	0.00	0.00	0.00
8,880.0	90.24	359.97	7,387.6	1,618.6	29.5	1,618.8	0.00	0.00	0.00
8,920.0	90.24	359.97	7,387.4	1,658.6	29.4	1,658.8	0.00	0.00	0.00
8,960.0	90.24	359.97	7,387.2	1,698.6	29.4	1,698.8	0.00	0.00	0.00
9,000.0	90.24	359.97	7,387.1	1,738.6	29.4	1,738.8	0.00	0.00	0.00
9,040.0	90.24	359.97	7,386.9	1,778.6	29.4	1,778.8	0.00	0.00	0.00
9,080.0	90.24	359.97	7,386.7	1,818.6	29.4	1,818.8	0.00	0.00	0.00
9,120.0	90.24	359.97	7,386.6	1,858.6	29.3	1,858.8	0.00	0.00	0.00
9,160.0	90.24	359.97	7,386.4	1,898.6	29.3	1,898.8	0.00	0.00	0.00
9,200.0	90.24	359.97	7,386.2	1,938.6	29.3	1,938.8	0.00	0.00	0.00
9,240.0	90.24	359.97	7,386.1	1,978.6	29.3	1,978.8	0.00	0.00	0.00
9,280.0	90.24	359.97	7,385.9	2,018.6	29.2	2,018.8	0.00	0.00	0.00
9,320.0	90.24	359.97	7,385.7	2,058.6	29.2	2,058.8	0.00	0.00	0.00
9,360.0	90.24	359.97	7,385.6	2,098.6	29.2	2,098.8	0.00	0.00	0.00
9,400.0	90.24	359.97	7,385.4	2,138.6	29.2	2,138.8	0.00	0.00	0.00
9,440.0	90.24	359.97	7,385.2	2,178.6	29.2	2,178.8	0.00	0.00	0.00
9,480.0	90.24	359.97	7,385.0	2,218.6	29.1	2,218.8	0.00	0.00	0.00
9,520.0	90.24	359.97	7,384.9	2,258.6	29.1	2,258.8	0.00	0.00	0.00
9,560.0	90.24	359.97	7,384.7	2,298.6	29.1	2,298.8	0.00	0.00	0.00
9,600.0	90.24	359.97	7,384.5	2,338.6	29.1	2,338.8	0.00	0.00	0.00
9,640.0	90.24	359.97	7,384.4	2,378.6	29.0	2,378.8	0.00	0.00	0.00
9,680.0	90.24	359.97	7,384.2	2,418.6	29.0	2,418.8	0.00	0.00	0.00
9,720.0	90.24	359.97	7,384.0	2,458.6	29.0	2,458.8	0.00	0.00	0.00
9,760.0	90.24	359.97	7,383.9	2,498.6	29.0	2,498.7	0.00	0.00	0.00
9,800.0	90.24	359.97	7,383.7	2,538.6	28.9	2,538.7	0.00	0.00	0.00
9,840.0	90.24	359.97	7,383.5	2,578.6	28.9	2,578.7	0.00	0.00	0.00
9,880.0	90.24	359.97	7,383.3	2,618.6	28.9	2,618.7	0.00	0.00	0.00
9,920.0	90.24	359.97	7,383.2	2,658.6	28.9	2,658.7	0.00	0.00	0.00
9,960.0	90.24	359.97	7,383.0	2,698.6	28.9	2,698.7	0.00	0.00	0.00
10,000.0	90.24	359.97	7,382.8	2,738.6	28.8	2,738.7	0.00	0.00	0.00
10,040.0	90.24	359.97	7,382.7	2,778.6	28.8	2,778.7	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

## Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,080.0	90.24	359.97	7,382.5	2,818.6	28.8	2,818.7	0.00	0.00	0.00
10,120.0	90.24	359.97	7,382.3	2,858.6	28.8	2,858.7	0.00	0.00	0.00
10,160.0	90.24	359.97	7,382.2	2,898.6	28.7	2,898.7	0.00	0.00	0.00
10,200.0	90.24	359.97	7,382.0	2,938.6	28.7	2,938.7	0.00	0.00	0.00
10,240.0	90.24	359.97	7,381.8	2,978.6	28.7	2,978.7	0.00	0.00	0.00
10,280.0	90.24	359.97	7,381.7	3,018.6	28.7	3,018.7	0.00	0.00	0.00
10,320.0	90.24	359.97	7,381.5	3,058.6	28.7	3,058.7	0.00	0.00	0.00
10,360.0	90.24	359.97	7,381.3	3,098.6	28.6	3,098.7	0.00	0.00	0.00
10,400.0	90.24	359.97	7,381.1	3,138.6	28.6	3,138.7	0.00	0.00	0.00
10,440.0	90.24	359.97	7,381.0	3,178.6	28.6	3,178.7	0.00	0.00	0.00
10,480.0	90.24	359.97	7,380.8	3,218.6	28.6	3,218.7	0.00	0.00	0.00
10,520.0	90.24	359.97	7,380.6	3,258.6	28.5	3,258.7	0.00	0.00	0.00
10,560.0	90.24	359.97	7,380.5	3,298.6	28.5	3,298.7	0.00	0.00	0.00
10,600.0	90.24	359.97	7,380.3	3,338.6	28.5	3,338.7	0.00	0.00	0.00
10,640.0	90.24	359.97	7,380.1	3,378.6	28.5	3,378.7	0.00	0.00	0.00
10,680.0	90.24	359.97	7,380.0	3,418.6	28.4	3,418.7	0.00	0.00	0.00
10,720.0	90.24	359.97	7,379.8	3,458.6	28.4	3,458.7	0.00	0.00	0.00
10,760.0	90.24	359.97	7,379.6	3,498.6	28.4	3,498.7	0.00	0.00	0.00
10,800.0	90.24	359.97	7,379.5	3,538.6	28.4	3,538.7	0.00	0.00	0.00
10,840.0	90.24	359.97	7,379.3	3,578.6	28.4	3,578.7	0.00	0.00	0.00
10,880.0	90.24	359.97	7,379.1	3,618.6	28.3	3,618.7	0.00	0.00	0.00
10,920.0	90.24	359.97	7,378.9	3,658.6	28.3	3,658.7	0.00	0.00	0.00
10,960.0	90.24	359.97	7,378.8	3,698.6	28.3	3,698.7	0.00	0.00	0.00
11,000.0	90.24	359.97	7,378.6	3,738.6	28.3	3,738.7	0.00	0.00	0.00
11,040.0	90.24	359.97	7,378.4	3,778.6	28.2	3,778.7	0.00	0.00	0.00
11,080.0	90.24	359.97	7,378.3	3,818.6	28.2	3,818.7	0.00	0.00	0.00
11,120.0	90.24	359.97	7,378.1	3,858.6	28.2	3,858.7	0.00	0.00	0.00
11,160.0	90.24	359.97	7,377.9	3,898.6	28.2	3,898.7	0.00	0.00	0.00
11,200.0	90.24	359.97	7,377.8	3,938.6	28.2	3,938.7	0.00	0.00	0.00
11,240.0	90.24	359.97	7,377.6	3,978.6	28.1	3,978.7	0.00	0.00	0.00
11,280.0	90.24	359.97	7,377.4	4,018.6	28.1	4,018.7	0.00	0.00	0.00
11,320.0	90.24	359.97	7,377.3	4,058.6	28.1	4,058.7	0.00	0.00	0.00
11,360.0	90.24	359.97	7,377.1	4,098.6	28.1	4,098.7	0.00	0.00	0.00
11,400.0	90.24	359.97	7,376.9	4,138.6	28.0	4,138.7	0.00	0.00	0.00
11,440.0	90.24	359.97	7,376.7	4,178.6	28.0	4,178.7	0.00	0.00	0.00
11,480.0	90.24	359.97	7,376.6	4,218.6	28.0	4,218.7	0.00	0.00	0.00
11,520.0	90.24	359.97	7,376.4	4,258.6	28.0	4,258.7	0.00	0.00	0.00
11,560.0	90.24	359.97	7,376.2	4,298.6	27.9	4,298.7	0.00	0.00	0.00
11,600.0	90.24	359.97	7,376.1	4,338.6	27.9	4,338.7	0.00	0.00	0.00
11,640.0	90.24	359.97	7,375.9	4,378.6	27.9	4,378.7	0.00	0.00	0.00
11,680.0	90.24	359.97	7,375.7	4,418.6	27.9	4,418.7	0.00	0.00	0.00
11,720.0	90.24	359.97	7,375.6	4,458.6	27.9	4,458.7	0.00	0.00	0.00
11,760.0	90.24	359.97	7,375.4	4,498.6	27.8	4,498.7	0.00	0.00	0.00
11,800.0	90.24	359.97	7,375.2	4,538.6	27.8	4,538.7	0.00	0.00	0.00
11,840.0	90.24	359.97	7,375.1	4,578.6	27.8	4,578.7	0.00	0.00	0.00
11,851.9	90.24	359.97	7,375.0	4,590.5	27.8	4,590.6	0.00	0.00	0.00

BHL 500°FNL & 660°FEL

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-21-12)		

## Targets

### Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
SECTIONLINE 250'S	0.00	0.00	1.0	-250.0	-200.0	1,445,435.03	3,212,916.92	40.553594	-104.733770
- plan misses target center by 320.2ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,445,435.03	3,212,916.92		
Point 2			1.0	0.0	400.0	1,445,438.49	3,213,316.89		
BHL 500'FNL & 660'F	0.00	0.00	7,375.0	4,590.5	27.8	1,450,277.14	3,213,102.83	40.566880	-104.732950
- plan hits target center									
- Point									
HARDLINE BHL 460'	0.00	0.00	1.0	4,630.5	-172.2	1,450,315.44	3,212,902.51	40.566990	-104.733670
- plan misses target center by 4633.7ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,450,315.44	3,212,902.51		
Point 2			1.0	0.0	400.0	1,450,318.90	3,213,302.48		
HARDLINE SHL 460'	0.00	0.00	1.0	210.0	-200.0	1,445,895.00	3,212,912.94	40.554856	-104.733770
- plan misses target center by 290.0ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,445,895.00	3,212,912.94		
Point 2			1.0	0.0	400.0	1,445,898.46	3,213,312.92		

## Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,744.5	7,371.0	7"	7	7-1/2

## Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
1,500.0	1,500.0	0.0	0.0	KOP #1
6,624.5	6,611.3	-200.0	30.0	KOP #2
7,744.5	7,371.0	484.1	30.0	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

**Dalton SW-24L Pad Sec.24-T7N-R66W**

**Dalton 24L-441**

**Wellbore #1**

**Plan #1 (5-21-12)**

## **Anticollision Report**

**24 May, 2012**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #1 (5-21-12)		
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 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	5/22/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,851.9	Plan #1 (5-21-12) (Wellbore #1)	MWD	MWD - Standard	

<b>Summary</b>							
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>	
<b>Offset Well - Wellbore - Design</b>							
Dalton SW-24L Pad Sec.24-T7N-R66W							
Dalton 13-24 (Exist.) - Wellbore #1 - Design #1	9,003.7	7,215.0	231.2	191.3	5.798	CC, ES, SF	
Dalton 14-24 (Exist.) - Wellbore #1 - Design #1	7,455.9	7,215.0	137.9	109.2	4.803	CC, ES, SF	
Dalton 24L-201 - Wellbore #1 - Plan #2 (5-21-12)	500.0	500.0	27.8	25.8	13.737	CC, ES	
Dalton 24L-201 - Wellbore #1 - Plan #2 (5-21-12)	11,852.4	11,729.2	686.7	510.8	3.904	SF	

Offset Design		Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 13-24 (Exist.) - Wellbore #1 - Design #1										Offset Site Error:		0.0 ft		
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
	0.0	0.0	0.0	0.0	0.0	-4.11	1,741.5	-125.0	1,745.9							
	100.0	100.0	100.0	0.1	0.1	-4.11	1,741.5	-125.0	1,745.9	1,745.7	0.22	7,767.825				
	200.0	200.0	200.0	0.3	0.3	-4.11	1,741.5	-125.0	1,745.9	1,745.3	0.67	2,589.275				
	300.0	300.0	300.0	0.6	0.6	-4.11	1,741.5	-125.0	1,745.9	1,744.8	1.12	1,553.565				
	400.0	400.0	400.0	0.8	0.8	-4.11	1,741.5	-125.0	1,745.9	1,744.4	1.57	1,109.689				
	500.0	500.0	500.0	1.0	1.0	-4.11	1,741.5	-125.0	1,745.9	1,743.9	2.02	863.092				
	600.0	600.0	600.0	1.2	1.2	-4.11	1,741.5	-125.0	1,745.9	1,743.5	2.47	706.166				
	700.0	700.0	700.0	1.5	1.5	-4.11	1,741.5	-125.0	1,745.9	1,743.0	2.92	597.525				
	800.0	800.0	800.0	1.7	1.7	-4.11	1,741.5	-125.0	1,745.9	1,742.6	3.37	517.855				
	900.0	900.0	900.0	1.9	1.9	-4.11	1,741.5	-125.0	1,745.9	1,742.1	3.82	456.931				
	1,000.0	1,000.0	1,000.0	2.1	2.1	-4.11	1,741.5	-125.0	1,745.9	1,741.7	4.27	408.833				
	1,100.0	1,100.0	1,100.0	2.4	2.4	-4.11	1,741.5	-125.0	1,745.9	1,741.2	4.72	369.896				
	1,200.0	1,200.0	1,200.0	2.6	2.6	-4.11	1,741.5	-125.0	1,745.9	1,740.8	5.17	337.732				
	1,300.0	1,300.0	1,300.0	2.8	2.8	-4.11	1,741.5	-125.0	1,745.9	1,740.3	5.62	310.713				
	1,400.0	1,400.0	1,400.0	3.0	3.0	-4.11	1,741.5	-125.0	1,745.9	1,739.9	6.07	287.697				
	1,500.0	1,500.0	1,500.0	3.3	3.3	-4.11	1,741.5	-125.0	1,745.9	1,739.4	6.52	267.856				
	1,600.0	1,600.0	1,600.0	3.5	3.5	-175.58	1,741.5	-125.0	1,747.7	1,740.7	6.94	251.952				
	1,700.0	1,699.8	1,699.8	3.6	3.7	-175.58	1,741.5	-125.0	1,752.9	1,745.6	7.32	239.322				
	1,800.0	1,799.5	1,799.5	3.8	3.9	-175.59	1,741.5	-125.0	1,761.6	1,753.9	7.71	228.483				
	1,900.0	1,898.7	1,898.7	4.0	4.2	-175.60	1,741.5	-125.0	1,773.7	1,765.6	8.09	219.200				
	1,915.8	1,914.4	1,914.4	4.0	4.2	-175.61	1,741.5	-125.0	1,776.0	1,767.8	8.15	217.859				
	2,000.0	1,997.7	1,997.7	4.2	4.4	-175.63	1,741.5	-125.0	1,788.1	1,779.6	8.50	210.412				

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 13-24 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
2,100.0	2,096.6	2,096.6	2,096.6	4.5	4.6	-175.67	1,741.5	-125.0	1,802.5	1,793.6	8.91	202.194		
2,200.0	2,195.6	2,195.6	2,195.6	4.7	4.8	-175.70	1,741.5	-125.0	1,817.0	1,807.6	9.34	194.606		
2,300.0	2,294.5	2,294.5	2,294.5	5.0	5.0	-175.74	1,741.5	-125.0	1,831.4	1,821.6	9.76	187.590		
2,400.0	2,393.4	2,393.4	2,393.4	5.3	5.3	-175.77	1,741.5	-125.0	1,845.8	1,835.6	10.19	181.092		
2,500.0	2,492.4	2,492.4	2,492.4	5.6	5.5	-175.80	1,741.5	-125.0	1,860.2	1,849.6	10.63	175.065		
2,600.0	2,591.3	2,591.3	2,591.3	5.9	5.7	-175.84	1,741.5	-125.0	1,874.7	1,863.6	11.06	169.465		
2,700.0	2,690.3	2,690.3	2,690.3	6.2	5.9	-175.87	1,741.5	-125.0	1,889.1	1,877.6	11.50	164.252		
2,800.0	2,789.2	2,789.2	2,789.2	6.5	6.2	-175.90	1,741.5	-125.0	1,903.5	1,891.6	11.94	159.392		
2,897.4	2,885.6	2,885.6	2,885.6	6.8	6.4	-175.93	1,741.5	-125.0	1,917.6	1,905.2	12.37	154.967		
2,900.0	2,888.2	2,888.2	2,888.2	6.8	6.4	-175.93	1,741.5	-125.0	1,918.0	1,905.6	12.39	154.838		
3,000.0	2,987.4	2,987.4	2,987.4	7.1	6.6	-175.98	1,741.5	-125.0	1,930.6	1,917.7	12.87	150.025		
3,100.0	3,087.0	3,087.0	3,087.0	7.3	6.8	-176.01	1,741.5	-125.0	1,939.7	1,926.4	13.34	145.455		
3,200.0	3,186.8	3,186.8	3,186.8	7.5	7.1	-176.03	1,741.5	-125.0	1,945.4	1,931.6	13.79	141.111		
3,300.0	3,286.8	3,286.8	3,286.8	7.7	7.3	-176.03	1,741.5	-125.0	1,947.6	1,933.4	14.22	136.972		
3,313.2	3,300.0	3,300.0	3,300.0	7.8	7.3	-4.57	1,741.5	-125.0	1,947.6	1,933.4	14.27	136.445		
3,400.0	3,386.8	3,386.8	3,386.8	7.9	7.5	-4.57	1,741.5	-125.0	1,947.6	1,933.0	14.65	132.980		
3,500.0	3,486.8	3,486.8	3,486.8	8.1	7.7	-4.57	1,741.5	-125.0	1,947.6	1,932.6	15.08	129.147		
3,600.0	3,586.8	3,586.8	3,586.8	8.3	7.9	-4.57	1,741.5	-125.0	1,947.6	1,932.1	15.52	125.521		
3,700.0	3,686.8	3,686.8	3,686.8	8.5	8.2	-4.57	1,741.5	-125.0	1,947.6	1,931.7	15.95	122.088		
3,800.0	3,786.8	3,786.8	3,786.8	8.7	8.4	-4.57	1,741.5	-125.0	1,947.6	1,931.3	16.39	118.832		
3,900.0	3,886.8	3,886.8	3,886.8	8.9	8.6	-4.57	1,741.5	-125.0	1,947.6	1,930.8	16.83	115.741		
4,000.0	3,986.8	3,986.8	3,986.8	9.1	8.8	-4.57	1,741.5	-125.0	1,947.6	1,930.4	17.27	112.802		
4,100.0	4,086.8	4,086.8	4,086.8	9.3	9.1	-4.57	1,741.5	-125.0	1,947.6	1,929.9	17.70	110.006		
4,200.0	4,186.8	4,186.8	4,186.8	9.5	9.3	-4.57	1,741.5	-125.0	1,947.6	1,929.5	18.14	107.341		
4,300.0	4,286.8	4,286.8	4,286.8	9.7	9.5	-4.57	1,741.5	-125.0	1,947.6	1,929.1	18.58	104.800		
4,400.0	4,386.8	4,386.8	4,386.8	9.9	9.7	-4.57	1,741.5	-125.0	1,947.6	1,928.6	19.02	102.374		
4,500.0	4,486.8	4,486.8	4,486.8	10.1	10.0	-4.57	1,741.5	-125.0	1,947.6	1,928.2	19.47	100.056		
4,600.0	4,586.8	4,586.8	4,586.8	10.3	10.2	-4.57	1,741.5	-125.0	1,947.6	1,927.7	19.91	97.838		
4,700.0	4,686.8	4,686.8	4,686.8	10.5	10.4	-4.57	1,741.5	-125.0	1,947.6	1,927.3	20.35	95.715		
4,800.0	4,786.8	4,786.8	4,786.8	10.7	10.6	-4.57	1,741.5	-125.0	1,947.6	1,926.9	20.79	93.680		
4,900.0	4,886.8	4,886.8	4,886.8	10.9	10.9	-4.57	1,741.5	-125.0	1,947.6	1,926.4	21.23	91.729		
5,000.0	4,986.8	4,986.8	4,986.8	11.1	11.1	-4.57	1,741.5	-125.0	1,947.6	1,926.0	21.68	89.856		
5,100.0	5,086.8	5,086.8	5,086.8	11.3	11.3	-4.57	1,741.5	-125.0	1,947.6	1,925.5	22.12	88.057		
5,200.0	5,186.8	5,186.8	5,186.8	11.5	11.5	-4.57	1,741.5	-125.0	1,947.6	1,925.1	22.56	86.328		
5,300.0	5,286.8	5,286.8	5,286.8	11.7	11.8	-4.57	1,741.5	-125.0	1,947.6	1,924.6	23.00	84.664		
5,400.0	5,386.8	5,386.8	5,386.8	11.9	12.0	-4.57	1,741.5	-125.0	1,947.6	1,924.2	23.45	83.062		
5,500.0	5,486.8	5,486.8	5,486.8	12.1	12.2	-4.57	1,741.5	-125.0	1,947.6	1,923.7	23.89	81.519		
5,600.0	5,586.8	5,586.8	5,586.8	12.3	12.4	-4.57	1,741.5	-125.0	1,947.6	1,923.3	24.34	80.032		
5,700.0	5,686.8	5,686.8	5,686.8	12.6	12.7	-4.57	1,741.5	-125.0	1,947.6	1,922.9	24.78	78.597		
5,800.0	5,786.8	5,786.8	5,786.8	12.8	12.9	-4.57	1,741.5	-125.0	1,947.6	1,922.4	25.22	77.212		
5,900.0	5,886.8	5,886.8	5,886.8	13.0	13.1	-4.57	1,741.5	-125.0	1,947.6	1,922.0	25.67	75.875		
6,000.0	5,986.8	5,986.8	5,986.8	13.2	13.3	-4.57	1,741.5	-125.0	1,947.6	1,921.5	26.11	74.582		
6,100.0	6,086.8	6,086.8	6,086.8	13.4	13.6	-4.57	1,741.5	-125.0	1,947.6	1,921.1	26.56	73.333		
6,200.0	6,186.8	6,186.8	6,186.8	13.6	13.8	-4.57	1,741.5	-125.0	1,947.6	1,920.6	27.00	72.124		
6,300.0	6,286.8	6,286.8	6,286.8	13.8	14.0	-4.57	1,741.5	-125.0	1,947.6	1,920.2	27.45	70.954		
6,400.0	6,386.8	6,386.8	6,386.8	14.0	14.2	-4.57	1,741.5	-125.0	1,947.6	1,919.7	27.89	69.821		
6,500.0	6,486.8	6,486.8	6,486.8	14.3	14.5	-4.57	1,741.5	-125.0	1,947.6	1,919.3	28.34	68.724		
6,600.0	6,586.8	6,586.8	6,586.8	14.5	14.7	-4.57	1,741.5	-125.0	1,947.6	1,918.9	28.79	67.660		
6,624.5	6,611.3	6,611.3	6,611.3	14.5	14.7	-4.57	1,741.5	-125.0	1,947.6	1,918.7	28.90	67.404		
6,650.0	6,636.8	6,636.8	6,636.8	14.6	14.8	-4.57	1,741.5	-125.0	1,947.2	1,918.2	28.99	67.180		
6,700.0	6,686.6	6,686.6	6,686.6	14.7	14.9	-4.60	1,741.5	-125.0	1,943.9	1,914.8	29.09	66.829		

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 13-24 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,750.0	6,736.2	6,736.2	6,736.2	14.7	15.0	-4.65	-4.65	1,741.5	-125.0	1,937.4	1,908.3	29.09	66.596	
6,800.0	6,785.2	6,785.2	6,785.2	14.8	15.1	-4.74	-4.74	1,741.5	-125.0	1,927.6	1,898.6	29.00	66.479	
6,850.0	6,833.5	6,833.5	6,833.5	14.9	15.2	-4.85	-4.85	1,741.5	-125.0	1,914.7	1,885.9	28.80	66.474	
6,900.0	6,880.8	6,880.8	6,880.8	14.9	15.4	-5.00	-5.00	1,741.5	-125.0	1,898.7	1,870.1	28.52	66.583	
6,950.0	6,927.0	6,927.0	6,927.0	15.0	15.5	-5.19	-5.19	1,741.5	-125.0	1,879.6	1,851.4	28.14	66.802	
7,000.0	6,971.8	6,971.8	6,971.8	15.0	15.6	-5.43	-5.43	1,741.5	-125.0	1,857.5	1,829.8	27.67	67.129	
7,050.0	7,015.1	7,015.1	7,015.1	15.1	15.7	-5.71	-5.71	1,741.5	-125.0	1,832.6	1,805.4	27.12	67.561	
7,100.0	7,056.6	7,056.6	7,056.6	15.1	15.7	-6.06	-6.06	1,741.5	-125.0	1,804.9	1,778.4	26.51	68.091	
7,150.0	7,096.3	7,096.3	7,096.3	15.2	15.8	-6.48	-6.48	1,741.5	-125.0	1,774.5	1,748.7	25.83	68.708	
7,200.0	7,133.9	7,133.9	7,133.9	15.3	15.9	-6.99	-6.99	1,741.5	-125.0	1,741.7	1,716.6	25.10	69.393	
7,250.0	7,169.2	7,169.2	7,169.2	15.4	16.0	-7.61	-7.61	1,741.5	-125.0	1,706.4	1,682.1	24.34	70.118	
7,300.0	7,202.1	7,202.1	7,202.1	15.6	16.1	-8.37	-8.37	1,741.5	-125.0	1,669.0	1,645.4	23.56	70.836	
7,350.0	7,232.5	7,215.0	7,215.0	15.8	16.1	-9.19	-9.19	1,741.5	-125.0	1,629.6	1,606.8	22.76	71.609	
7,400.0	7,260.3	7,215.0	7,215.0	16.0	16.1	-10.08	-10.08	1,741.5	-125.0	1,588.7	1,566.8	21.96	72.341	
7,450.0	7,285.2	7,215.0	7,215.0	16.3	16.1	-11.16	-11.16	1,741.5	-125.0	1,546.6	1,525.4	21.24	72.813	
7,500.0	7,307.3	7,215.0	7,215.0	16.6	16.1	-12.50	-12.50	1,741.5	-125.0	1,503.2	1,482.6	20.64	72.839	
7,550.0	7,326.4	7,215.0	7,215.0	16.9	16.1	-14.20	-14.20	1,741.5	-125.0	1,458.7	1,438.5	20.21	72.168	
7,600.0	7,342.5	7,215.0	7,215.0	17.3	16.1	-16.39	-16.39	1,741.5	-125.0	1,413.1	1,393.1	20.05	70.489	
7,650.0	7,355.4	7,215.0	7,215.0	17.7	16.1	-19.31	-19.31	1,741.5	-125.0	1,366.6	1,346.3	20.26	67.441	
7,700.0	7,365.1	7,215.0	7,215.0	18.2	16.1	-23.34	-23.34	1,741.5	-125.0	1,319.2	1,298.2	21.05	62.683	
7,744.5	7,371.0	7,215.0	7,215.0	18.6	16.1	-28.41	-28.41	1,741.5	-125.0	1,276.5	1,254.0	22.45	56.850	
7,800.0	7,376.8	7,215.0	7,215.0	19.2	16.1	-28.41	-28.41	1,741.5	-125.0	1,222.9	1,200.1	22.78	53.692	
7,878.5	7,385.0	7,215.0	7,215.0	20.1	16.1	-28.41	-28.41	1,741.5	-125.0	1,147.4	1,124.1	23.27	49.308	
7,900.0	7,387.1	7,215.0	7,215.0	20.4	16.1	-30.21	-30.21	1,741.5	-125.0	1,126.8	1,102.8	23.93	47.081	
8,003.4	7,391.3	7,215.0	7,215.0	21.7	16.1	-41.91	-41.91	1,741.5	-125.0	1,026.7	998.1	28.55	35.959	
8,100.0	7,390.9	7,215.0	7,215.0	23.0	16.1	-41.91	-41.91	1,741.5	-125.0	932.8	903.3	29.48	31.645	
8,200.0	7,390.5	7,215.0	7,215.0	24.4	16.1	-41.91	-41.91	1,741.5	-125.0	836.2	805.8	30.49	27.428	
8,300.0	7,390.0	7,215.0	7,215.0	25.9	16.1	-41.91	-41.91	1,741.5	-125.0	740.7	709.1	31.55	23.476	
8,400.0	7,389.6	7,215.0	7,215.0	27.5	16.1	-41.91	-41.91	1,741.5	-125.0	646.4	613.8	32.65	19.797	
8,500.0	7,389.2	7,215.0	7,215.0	29.1	16.1	-41.91	-41.91	1,741.5	-125.0	554.2	520.4	33.79	16.402	
8,600.0	7,388.8	7,215.0	7,215.0	30.7	16.1	-41.91	-41.91	1,741.5	-125.0	465.2	430.2	34.95	13.309	
8,700.0	7,388.3	7,215.0	7,215.0	32.4	16.1	-41.91	-41.91	1,741.5	-125.0	381.7	345.5	36.14	10.559	
8,800.0	7,387.9	7,215.0	7,215.0	34.1	16.1	-41.91	-41.91	1,741.5	-125.0	308.1	270.8	37.35	8.248	
8,900.0	7,387.5	7,215.0	7,215.0	35.8	16.1	-41.91	-41.91	1,741.5	-125.0	253.4	214.8	38.58	6.567	
9,000.0	7,387.1	7,215.0	7,215.0	37.5	16.1	-41.91	-41.91	1,741.5	-125.0	231.2	191.4	39.83	5.806	
9,003.7	7,387.1	7,215.0	7,215.0	37.6	16.1	-41.91	-41.91	1,741.5	-125.0	231.2	191.3	39.88	5.798 CC, ES, SF	
9,100.0	7,386.7	7,215.0	7,215.0	39.3	16.1	-41.91	-41.91	1,741.5	-125.0	250.5	209.4	41.09	6.096	
9,200.0	7,386.2	7,215.0	7,215.0	41.0	16.1	-41.91	-41.91	1,741.5	-125.0	303.3	261.0	42.36	7.161	
9,300.0	7,385.8	7,215.0	7,215.0	42.8	16.1	-41.91	-41.91	1,741.5	-125.0	375.9	332.2	43.64	8.613	
9,400.0	7,385.4	7,215.0	7,215.0	44.6	16.1	-41.91	-41.91	1,741.5	-125.0	458.9	413.9	44.93	10.212	
9,500.0	7,385.0	7,215.0	7,215.0	46.4	16.1	-41.91	-41.91	1,741.5	-125.0	547.6	501.3	46.23	11.843	
9,600.0	7,384.5	7,215.0	7,215.0	48.2	16.1	-41.91	-41.91	1,741.5	-125.0	639.6	592.1	47.54	13.454	
9,700.0	7,384.1	7,215.0	7,215.0	50.1	16.1	-41.91	-41.91	1,741.5	-125.0	733.7	684.9	48.85	15.019	
9,800.0	7,383.7	7,215.0	7,215.0	51.9	16.1	-41.91	-41.91	1,741.5	-125.0	829.2	779.1	50.17	16.527	
9,900.0	7,383.3	7,215.0	7,215.0	53.7	16.1	-41.91	-41.91	1,741.5	-125.0	925.7	874.2	51.50	17.975	
10,000.0	7,382.8	7,215.0	7,215.0	55.6	16.1	-41.91	-41.91	1,741.5	-125.0	1,022.8	970.0	52.83	19.361	
10,100.0	7,382.4	7,215.0	7,215.0	57.4	16.1	-41.91	-41.91	1,741.5	-125.0	1,120.5	1,066.3	54.16	20.687	
10,200.0	7,382.0	7,215.0	7,215.0	59.3	16.1	-41.91	-41.91	1,741.5	-125.0	1,218.5	1,163.0	55.50	21.955	
10,300.0	7,381.6	7,215.0	7,215.0	61.1	16.1	-41.91	-41.91	1,741.5	-125.0	1,316.8	1,260.0	56.84	23.166	
10,400.0	7,381.1	7,215.0	7,215.0	63.0	16.1	-41.91	-41.91	1,741.5	-125.0	1,415.4	1,357.2	58.19	24.325	
10,500.0	7,380.7	7,215.0	7,215.0	64.8	16.1	-41.91	-41.91	1,741.5	-125.0	1,514.1	1,454.6	59.53	25.433	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 13-24 (Exist.) - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,600.0	7,380.3	7,215.0	7,215.0	66.7	16.1	-41.91	1,741.5	-125.0	1,613.0	1,552.1	60.88	26.493	
10,700.0	7,379.9	7,215.0	7,215.0	68.6	16.1	-41.91	1,741.5	-125.0	1,712.0	1,649.8	62.24	27.508	
10,800.0	7,379.5	7,215.0	7,215.0	70.5	16.1	-41.91	1,741.5	-125.0	1,811.2	1,747.6	63.59	28.481	
10,900.0	7,379.0	7,215.0	7,215.0	72.3	16.1	-41.91	1,741.5	-125.0	1,910.4	1,845.4	64.95	29.413	
11,000.0	7,378.6	7,215.0	7,215.0	74.2	16.1	-41.91	1,741.5	-125.0	2,009.7	1,943.4	66.31	30.308	
11,100.0	7,378.2	7,215.0	7,215.0	76.1	16.1	-41.91	1,741.5	-125.0	2,109.1	2,041.4	67.67	31.167	
11,200.0	7,377.8	7,215.0	7,215.0	78.0	16.1	-41.91	1,741.5	-125.0	2,208.5	2,139.5	69.03	31.992	
11,300.0	7,377.3	7,215.0	7,215.0	79.9	16.1	-41.91	1,741.5	-125.0	2,308.0	2,237.6	70.40	32.785	
11,400.0	7,376.9	7,215.0	7,215.0	81.8	16.1	-41.91	1,741.5	-125.0	2,407.5	2,335.7	71.76	33.548	
11,500.0	7,376.5	7,215.0	7,215.0	83.6	16.1	-41.91	1,741.5	-125.0	2,507.0	2,433.9	73.13	34.282	
11,600.0	7,376.1	7,215.0	7,215.0	85.5	16.1	-41.91	1,741.5	-125.0	2,606.6	2,532.1	74.50	34.989	
11,700.0	7,375.6	7,215.0	7,215.0	87.4	16.1	-41.91	1,741.5	-125.0	2,706.2	2,630.4	75.87	35.670	
11,800.0	7,375.2	7,215.0	7,215.0	89.3	16.1	-41.91	1,741.5	-125.0	2,805.9	2,728.7	77.24	36.327	
11,851.9	7,375.0	7,215.0	7,215.0	90.3	16.1	-41.91	1,741.5	-125.0	2,857.6	2,779.6	77.95	36.659	
11,852.4	7,375.0	7,215.0	7,215.0	90.3	16.1	-41.91	1,741.5	-125.0	2,858.1	2,780.1	77.96	36.663	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 14-24 (Exist.) - Wellbore #1 - Design #1													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
0.0	0.0	0.0	0.0	0.0	0.0	-18.02	247.7	-80.6	260.5				
100.0	100.0	100.0	100.0	0.1	0.1	-18.02	247.7	-80.6	260.5	260.3	0.22	1,159.055	
200.0	200.0	200.0	200.0	0.3	0.3	-18.02	247.7	-80.6	260.5	259.8	0.67	386.352	
300.0	300.0	300.0	300.0	0.6	0.6	-18.02	247.7	-80.6	260.5	259.4	1.12	231.811	
400.0	400.0	400.0	400.0	0.8	0.8	-18.02	247.7	-80.6	260.5	258.9	1.57	165.579	
500.0	500.0	500.0	500.0	1.0	1.0	-18.02	247.7	-80.6	260.5	258.5	2.02	128.784	
600.0	600.0	600.0	600.0	1.2	1.2	-18.02	247.7	-80.6	260.5	258.0	2.47	105.369	
700.0	700.0	700.0	700.0	1.5	1.5	-18.02	247.7	-80.6	260.5	257.6	2.92	89.158	
800.0	800.0	800.0	800.0	1.7	1.7	-18.02	247.7	-80.6	260.5	257.1	3.37	77.270	
900.0	900.0	900.0	900.0	1.9	1.9	-18.02	247.7	-80.6	260.5	256.7	3.82	68.180	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-18.02	247.7	-80.6	260.5	256.2	4.27	61.003	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-18.02	247.7	-80.6	260.5	255.8	4.72	55.193	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-18.02	247.7	-80.6	260.5	255.3	5.17	50.394	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-18.02	247.7	-80.6	260.5	254.9	5.62	46.362	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-18.02	247.7	-80.6	260.5	254.4	6.07	42.928	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-18.02	247.7	-80.6	260.5	254.0	6.52	39.967	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	170.57	247.7	-80.6	262.2	255.3	6.94	37.806	
1,700.0	1,699.8	1,699.8	1,699.8	3.6	3.7	170.74	247.7	-80.6	267.4	260.1	7.32	36.509	
1,800.0	1,799.5	1,799.5	1,799.5	3.8	3.9	171.00	247.7	-80.6	276.0	268.3	7.71	35.800	
1,900.0	1,898.7	1,898.7	1,898.7	4.0	4.2	171.34	247.7	-80.6	288.1	280.0	8.09	35.598	
1,915.8	1,914.4	1,914.4	1,914.4	4.0	4.2	171.40	247.7	-80.6	290.3	282.1	8.15	35.608	
2,000.0	1,997.7	1,997.7	1,997.7	4.2	4.4	171.75	247.7	-80.6	302.3	293.8	8.50	35.575	
2,100.0	2,096.6	2,096.6	2,096.6	4.5	4.6	172.12	247.7	-80.6	316.6	307.7	8.92	35.518	
2,200.0	2,195.6	2,195.6	2,195.6	4.7	4.8	172.47	247.7	-80.6	331.0	321.6	9.34	35.448	
2,300.0	2,294.5	2,294.5	2,294.5	5.0	5.0	172.78	247.7	-80.6	345.3	335.6	9.76	35.370	
2,400.0	2,393.4	2,393.4	2,393.4	5.3	5.3	173.07	247.7	-80.6	359.7	349.5	10.19	35.285	
2,500.0	2,492.4	2,492.4	2,492.4	5.6	5.5	173.34	247.7	-80.6	374.1	363.4	10.63	35.197	
2,600.0	2,591.3	2,591.3	2,591.3	5.9	5.7	173.59	247.7	-80.6	388.4	377.4	11.06	35.107	
2,700.0	2,690.3	2,690.3	2,690.3	6.2	5.9	173.82	247.7	-80.6	402.8	391.3	11.50	35.016	
2,800.0	2,789.2	2,789.2	2,789.2	6.5	6.2	174.03	247.7	-80.6	417.2	405.2	11.94	34.926	
2,897.4	2,885.6	2,885.6	2,885.6	6.8	6.4	174.22	247.7	-80.6	431.2	418.8	12.38	34.840	
2,900.0	2,888.2	2,888.2	2,888.2	6.8	6.4	174.23	247.7	-80.6	431.6	419.2	12.39	34.834	
3,000.0	2,987.4	2,987.4	2,987.4	7.1	6.6	174.42	247.7	-80.6	444.2	431.3	12.87	34.510	
3,100.0	3,087.0	3,087.0	3,087.0	7.3	6.8	174.55	247.7	-80.6	453.3	440.0	13.34	33.986	
3,200.0	3,186.8	3,186.8	3,186.8	7.5	7.1	174.63	247.7	-80.6	459.0	445.2	13.79	33.287	
3,300.0	3,286.8	3,286.8	3,286.8	7.7	7.3	174.66	247.7	-80.6	461.2	446.9	14.22	32.429	
3,313.2	3,300.0	3,300.0	3,300.0	7.8	7.3	-13.87	247.7	-80.6	461.2	446.9	14.28	32.306	
3,400.0	3,386.8	3,386.8	3,386.8	7.9	7.5	-13.87	247.7	-80.6	461.2	446.5	14.65	31.486	
3,500.0	3,486.8	3,486.8	3,486.8	8.1	7.7	-13.87	247.7	-80.6	461.2	446.1	15.08	30.579	
3,600.0	3,586.8	3,586.8	3,586.8	8.3	7.9	-13.87	247.7	-80.6	461.2	445.7	15.52	29.721	
3,700.0	3,686.8	3,686.8	3,686.8	8.5	8.2	-13.87	247.7	-80.6	461.2	445.2	15.95	28.909	
3,800.0	3,786.8	3,786.8	3,786.8	8.7	8.4	-13.87	247.7	-80.6	461.2	444.8	16.39	28.138	
3,900.0	3,886.8	3,886.8	3,886.8	8.9	8.6	-13.87	247.7	-80.6	461.2	444.4	16.83	27.407	
4,000.0	3,986.8	3,986.8	3,986.8	9.1	8.8	-13.87	247.7	-80.6	461.2	443.9	17.27	26.711	
4,100.0	4,086.8	4,086.8	4,086.8	9.3	9.1	-13.87	247.7	-80.6	461.2	443.5	17.70	26.049	
4,200.0	4,186.8	4,186.8	4,186.8	9.5	9.3	-13.87	247.7	-80.6	461.2	443.0	18.14	25.418	
4,300.0	4,286.8	4,286.8	4,286.8	9.7	9.5	-13.87	247.7	-80.6	461.2	442.6	18.58	24.817	
4,400.0	4,386.8	4,386.8	4,386.8	9.9	9.7	-13.87	247.7	-80.6	461.2	442.2	19.02	24.243	
4,500.0	4,486.8	4,486.8	4,486.8	10.1	10.0	-13.87	247.7	-80.6	461.2	441.7	19.46	23.694	
4,600.0	4,586.8	4,586.8	4,586.8	10.3	10.2	-13.87	247.7	-80.6	461.2	441.3	19.91	23.169	
4,700.0	4,686.8	4,686.8	4,686.8	10.5	10.4	-13.87	247.7	-80.6	461.2	440.8	20.35	22.666	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 14-24 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,800.0	4,786.8	4,786.8	4,786.8	10.7	10.6	-13.87		247.7	-80.6	461.2	440.4	20.79	22.184	
4,900.0	4,886.8	4,886.8	4,886.8	10.9	10.9	-13.87		247.7	-80.6	461.2	440.0	21.23	21.723	
5,000.0	4,986.8	4,986.8	4,986.8	11.1	11.1	-13.87		247.7	-80.6	461.2	439.5	21.67	21.279	
5,100.0	5,086.8	5,086.8	5,086.8	11.3	11.3	-13.87		247.7	-80.6	461.2	439.1	22.12	20.853	
5,200.0	5,186.8	5,186.8	5,186.8	11.5	11.5	-13.87		247.7	-80.6	461.2	438.6	22.56	20.444	
5,300.0	5,286.8	5,286.8	5,286.8	11.7	11.8	-13.87		247.7	-80.6	461.2	438.2	23.00	20.050	
5,400.0	5,386.8	5,386.8	5,386.8	11.9	12.0	-13.87		247.7	-80.6	461.2	437.7	23.45	19.670	
5,500.0	5,486.8	5,486.8	5,486.8	12.1	12.2	-13.87		247.7	-80.6	461.2	437.3	23.89	19.305	
5,600.0	5,586.8	5,586.8	5,586.8	12.3	12.4	-13.87		247.7	-80.6	461.2	436.9	24.33	18.953	
5,700.0	5,686.8	5,686.8	5,686.8	12.6	12.7	-13.87		247.7	-80.6	461.2	436.4	24.78	18.613	
5,800.0	5,786.8	5,786.8	5,786.8	12.8	12.9	-13.87		247.7	-80.6	461.2	436.0	25.22	18.285	
5,900.0	5,886.8	5,886.8	5,886.8	13.0	13.1	-13.87		247.7	-80.6	461.2	435.5	25.67	17.969	
6,000.0	5,986.8	5,986.8	5,986.8	13.2	13.3	-13.87		247.7	-80.6	461.2	435.1	26.11	17.663	
6,100.0	6,086.8	6,086.8	6,086.8	13.4	13.6	-13.87		247.7	-80.6	461.2	434.6	26.56	17.367	
6,200.0	6,186.8	6,186.8	6,186.8	13.6	13.8	-13.87		247.7	-80.6	461.2	434.2	27.00	17.080	
6,300.0	6,286.8	6,286.8	6,286.8	13.8	14.0	-13.87		247.7	-80.6	461.2	433.7	27.45	16.803	
6,400.0	6,386.8	6,386.8	6,386.8	14.0	14.2	-13.87		247.7	-80.6	461.2	433.3	27.89	16.535	
6,500.0	6,486.8	6,486.8	6,486.8	14.3	14.5	-13.87		247.7	-80.6	461.2	432.9	28.34	16.275	
6,600.0	6,586.8	6,586.8	6,586.8	14.5	14.7	-13.87		247.7	-80.6	461.2	432.4	28.78	16.023	
6,624.5	6,611.3	6,611.3	6,611.3	14.5	14.7	-13.87		247.7	-80.6	461.2	432.3	28.89	15.963	
6,650.0	6,636.8	6,636.8	6,636.8	14.6	14.8	-13.89		247.7	-80.6	460.8	431.8	28.98	15.898	
6,700.0	6,686.6	6,686.6	6,686.6	14.7	14.9	-14.05		247.7	-80.6	457.6	428.5	29.09	15.729	
6,750.0	6,736.2	6,736.2	6,736.2	14.7	15.0	-14.37		247.7	-80.6	451.2	422.1	29.11	15.502	
6,800.0	6,785.2	6,785.2	6,785.2	14.8	15.1	-14.87		247.7	-80.6	441.7	412.7	29.03	15.217	
6,850.0	6,833.5	6,833.5	6,833.5	14.9	15.2	-15.57		247.7	-80.6	429.2	400.3	28.87	14.868	
6,900.0	6,880.8	6,880.8	6,880.8	14.9	15.4	-16.52		247.7	-80.6	413.7	385.0	28.62	14.452	
6,950.0	6,927.0	6,927.0	6,927.0	15.0	15.5	-17.75		247.7	-80.6	395.2	366.9	28.31	13.960	
7,000.0	6,971.8	6,971.8	6,971.8	15.0	15.6	-19.34		247.7	-80.6	374.0	346.1	27.95	13.381	
7,050.0	7,015.1	7,015.1	7,015.1	15.1	15.7	-21.41		247.7	-80.6	350.2	322.6	27.57	12.703	
7,100.0	7,056.6	7,056.6	7,056.6	15.1	15.7	-24.09		247.7	-80.6	323.9	296.7	27.21	11.906	
7,150.0	7,096.3	7,096.3	7,096.3	15.2	15.8	-27.58		247.7	-80.6	295.5	268.5	26.94	10.968	
7,200.0	7,133.9	7,133.9	7,133.9	15.3	15.9	-32.17		247.7	-80.6	265.2	238.3	26.87	9.868	
7,250.0	7,169.2	7,169.2	7,169.2	15.4	16.0	-38.21		247.7	-80.6	233.5	206.3	27.15	8.599	
7,300.0	7,202.1	7,202.1	7,202.1	15.6	16.1	-46.07		247.7	-80.6	201.2	173.2	27.94	7.201	
7,350.0	7,232.5	7,215.0	7,215.0	15.8	16.1	-51.19		247.7	-80.6	170.3	141.8	28.52	5.973	
7,400.0	7,260.3	7,215.0	7,215.0	16.0	16.1	-52.70		247.7	-80.6	147.7	119.0	28.65	5.154	
7,450.0	7,285.2	7,215.0	7,215.0	16.3	16.1	-53.30		247.7	-80.6	138.0	109.3	28.71	4.807	
7,455.9	7,288.0	7,215.0	7,215.0	16.3	16.1	-53.31		247.7	-80.6	137.9	109.2	28.71	4.803 CC, ES, SF	
7,500.0	7,307.3	7,215.0	7,215.0	16.6	16.1	-52.93		247.7	-80.6	144.1	115.4	28.65	5.028	
7,550.0	7,326.4	7,215.0	7,215.0	16.9	16.1	-51.62		247.7	-80.6	164.0	135.6	28.44	5.768	
7,600.0	7,342.5	7,215.0	7,215.0	17.3	16.1	-49.49		247.7	-80.6	193.6	165.6	28.05	6.903	
7,650.0	7,355.4	7,215.0	7,215.0	17.7	16.1	-46.68		247.7	-80.6	229.0	201.5	27.48	8.334	
7,700.0	7,365.1	7,215.0	7,215.0	18.2	16.1	-43.41		247.7	-80.6	267.8	241.0	26.75	10.010	
7,744.5	7,371.0	7,215.0	7,215.0	18.6	16.1	-40.29		247.7	-80.6	304.0	278.0	26.02	11.683	
7,800.0	7,376.8	7,215.0	7,215.0	19.2	16.1	-40.29		247.7	-80.6	351.3	324.9	26.43	13.292	
7,878.5	7,385.0	7,215.0	7,215.0	20.1	16.1	-40.29		247.7	-80.6	421.6	394.6	27.05	15.587	
7,900.0	7,387.1	7,215.0	7,215.0	20.4	16.1	-38.74		247.7	-80.6	441.3	414.6	26.70	16.529	
8,003.4	7,391.3	7,215.0	7,215.0	21.7	16.1	-31.85		247.7	-80.6	536.3	511.2	25.11	21.353	
8,100.0	7,390.9	7,215.0	7,215.0	23.0	16.1	-31.85		247.7	-80.6	626.3	600.5	25.89	24.194	
8,200.0	7,390.5	7,215.0	7,215.0	24.4	16.1	-31.85		247.7	-80.6	721.3	694.6	26.74	26.978	
8,300.0	7,390.0	7,215.0	7,215.0	25.9	16.1	-31.85		247.7	-80.6	817.5	789.9	27.63	29.590	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 14-24 (Exist.) - Wellbore #1 - Design #1											Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
8,400.0	7,389.6	7,215.0	7,215.0	27.5	16.1	-31.85	247.7	-80.6	914.5	886.0	28.55	32.027		
8,500.0	7,389.2	7,215.0	7,215.0	29.1	16.1	-31.85	247.7	-80.6	1,012.1	982.6	29.51	34.295		
8,600.0	7,388.8	7,215.0	7,215.0	30.7	16.1	-31.85	247.7	-80.6	1,110.1	1,079.6	30.49	36.405		
8,700.0	7,388.3	7,215.0	7,215.0	32.4	16.1	-31.85	247.7	-80.6	1,208.5	1,177.0	31.50	38.366		
8,800.0	7,387.9	7,215.0	7,215.0	34.1	16.1	-31.85	247.7	-80.6	1,307.1	1,274.5	32.52	40.191		
8,900.0	7,387.5	7,215.0	7,215.0	35.8	16.1	-31.85	247.7	-80.6	1,405.9	1,372.3	33.56	41.889		
9,000.0	7,387.1	7,215.0	7,215.0	37.5	16.1	-31.85	247.7	-80.6	1,504.8	1,470.2	34.62	43.472		
9,100.0	7,386.7	7,215.0	7,215.0	39.3	16.1	-31.85	247.7	-80.6	1,603.9	1,568.2	35.68	44.950		
9,200.0	7,386.2	7,215.0	7,215.0	41.0	16.1	-31.85	247.7	-80.6	1,703.1	1,666.3	36.76	46.331		
9,300.0	7,385.8	7,215.0	7,215.0	42.8	16.1	-31.85	247.7	-80.6	1,802.4	1,764.5	37.85	47.624		
9,400.0	7,385.4	7,215.0	7,215.0	44.6	16.1	-31.85	247.7	-80.6	1,901.7	1,862.8	38.94	48.835		
9,500.0	7,385.0	7,215.0	7,215.0	46.4	16.1	-31.85	247.7	-80.6	2,001.1	1,961.1	40.04	49.973		
9,600.0	7,384.5	7,215.0	7,215.0	48.2	16.1	-31.85	247.7	-80.6	2,100.6	2,059.5	41.15	51.043		
9,700.0	7,384.1	7,215.0	7,215.0	50.1	16.1	-31.85	247.7	-80.6	2,200.1	2,157.9	42.27	52.051		
9,800.0	7,383.7	7,215.0	7,215.0	51.9	16.1	-31.85	247.7	-80.6	2,299.7	2,256.3	43.39	53.001		
9,900.0	7,383.3	7,215.0	7,215.0	53.7	16.1	-31.85	247.7	-80.6	2,399.3	2,354.8	44.52	53.898		
10,000.0	7,382.8	7,215.0	7,215.0	55.6	16.1	-31.85	247.7	-80.6	2,498.9	2,453.3	45.65	54.746		
10,100.0	7,382.4	7,215.0	7,215.0	57.4	16.1	-31.85	247.7	-80.6	2,598.6	2,551.8	46.78	55.550		
10,200.0	7,382.0	7,215.0	7,215.0	59.3	16.1	-31.85	247.7	-80.6	2,698.3	2,650.4	47.92	56.312		
10,300.0	7,381.6	7,215.0	7,215.0	61.1	16.1	-31.85	247.7	-80.6	2,798.0	2,748.9	49.06	57.035		
10,400.0	7,381.1	7,215.0	7,215.0	63.0	16.1	-31.85	247.7	-80.6	2,897.7	2,847.5	50.20	57.722		
10,500.0	7,380.7	7,215.0	7,215.0	64.8	16.1	-31.85	247.7	-80.6	2,997.4	2,946.1	51.35	58.376		
10,600.0	7,380.3	7,215.0	7,215.0	66.7	16.1	-31.85	247.7	-80.6	3,097.2	3,044.7	52.50	58.998		
10,700.0	7,379.9	7,215.0	7,215.0	68.6	16.1	-31.85	247.7	-80.6	3,197.0	3,143.3	53.65	59.592		
10,800.0	7,379.5	7,215.0	7,215.0	70.5	16.1	-31.85	247.7	-80.6	3,296.8	3,242.0	54.80	60.159		
10,900.0	7,379.0	7,215.0	7,215.0	72.3	16.1	-31.85	247.7	-80.6	3,396.6	3,340.6	55.96	60.701		
11,000.0	7,378.6	7,215.0	7,215.0	74.2	16.1	-31.85	247.7	-80.6	3,496.4	3,439.3	57.11	61.219		
11,100.0	7,378.2	7,215.0	7,215.0	76.1	16.1	-31.85	247.7	-80.6	3,596.2	3,537.9	58.27	61.714		
11,200.0	7,377.8	7,215.0	7,215.0	78.0	16.1	-31.85	247.7	-80.6	3,696.1	3,636.6	59.43	62.189		
11,300.0	7,377.3	7,215.0	7,215.0	79.9	16.1	-31.85	247.7	-80.6	3,795.9	3,735.3	60.59	62.645		
11,400.0	7,376.9	7,215.0	7,215.0	81.8	16.1	-31.85	247.7	-80.6	3,895.7	3,834.0	61.76	63.082		
11,500.0	7,376.5	7,215.0	7,215.0	83.6	16.1	-31.85	247.7	-80.6	3,995.6	3,932.7	62.92	63.501		
11,600.0	7,376.1	7,215.0	7,215.0	85.5	16.1	-31.85	247.7	-80.6	4,095.5	4,031.4	64.09	63.905		
11,700.0	7,375.6	7,215.0	7,215.0	87.4	16.1	-31.85	247.7	-80.6	4,195.3	4,130.1	65.25	64.293		
11,800.0	7,375.2	7,215.0	7,215.0	89.3	16.1	-31.85	247.7	-80.6	4,295.2	4,228.8	66.42	64.666		
11,851.9	7,375.0	7,215.0	7,215.0	90.3	16.1	-31.85	247.7	-80.6	4,347.0	4,280.0	67.03	64.855		
11,852.4	7,375.0	7,215.0	7,215.0	90.3	16.1	-31.85	247.7	-80.6	4,347.5	4,280.5	67.03	64.858		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 24L-201 - Wellbore #1 - Plan #2 (5-21-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.00	90.00	0.0	27.8	27.8				
100.0	100.0	100.0	100.0	0.1	0.1	90.00	90.00	0.0	27.8	27.8	27.6	0.22	123.633	
200.0	200.0	200.0	200.0	0.3	0.3	90.00	90.00	0.0	27.8	27.8	27.1	0.67	41.211	
300.0	300.0	300.0	300.0	0.6	0.6	90.00	90.00	0.0	27.8	27.8	26.7	1.12	24.727	
400.0	400.0	400.0	400.0	0.8	0.8	90.00	90.00	0.0	27.8	27.8	26.2	1.57	17.662	
500.0	500.0	500.0	500.0	1.0	1.0	90.00	90.00	0.0	27.8	27.8	25.8	2.02	13.737 CC, ES	
600.0	600.0	599.0	599.0	1.2	1.2	90.92	90.92	-0.5	29.4	29.5	27.0	2.45	12.001	
700.0	700.0	697.8	697.7	1.5	1.4	93.13	93.13	-1.9	34.4	34.5	31.6	2.88	11.968	
800.0	800.0	796.2	795.6	1.7	1.6	95.65	95.65	-4.2	42.5	42.9	39.6	3.32	12.938	
900.0	900.0	893.8	892.6	1.9	1.9	97.86	97.86	-7.4	53.8	54.8	51.0	3.76	14.569	
1,000.0	1,000.0	991.6	989.3	2.1	2.2	99.58	99.58	-11.5	67.9	69.7	65.5	4.21	16.545	
1,100.0	1,100.0	1,090.4	1,086.9	2.4	2.5	100.73	100.73	-15.7	82.6	85.0	80.4	4.66	18.265	
1,200.0	1,200.0	1,189.2	1,184.5	2.6	2.8	101.53	101.53	-19.8	97.2	100.4	95.3	5.11	19.674	
1,300.0	1,300.0	1,288.0	1,282.1	2.8	3.2	102.12	102.12	-24.0	111.9	115.9	110.3	5.56	20.844	
1,400.0	1,400.0	1,386.8	1,379.7	3.0	3.5	102.57	102.57	-28.2	126.6	131.3	125.3	6.01	21.828	
1,500.0	1,500.0	1,485.6	1,477.4	3.3	3.9	102.93	102.93	-32.4	141.3	146.7	140.2	6.47	22.667	
1,600.0	1,600.0	1,584.5	1,575.1	3.5	4.2	-68.56	-68.56	-36.6	156.0	161.5	154.6	6.91	23.390	
1,700.0	1,699.8	1,683.5	1,672.9	3.6	4.6	-69.62	-69.62	-40.8	170.7	175.1	167.8	7.32	23.928	
1,800.0	1,799.5	1,782.5	1,770.7	3.8	4.9	-71.52	-71.52	-45.0	185.4	187.6	179.9	7.75	24.218	
1,900.0	1,898.7	1,881.3	1,868.3	4.0	5.3	-74.12	-74.12	-49.2	200.1	199.5	191.3	8.21	24.303	
1,915.8	1,914.4	1,897.0	1,883.8	4.0	5.3	-74.59	-74.59	-49.9	202.4	201.3	193.0	8.28	24.300	
2,000.0	1,997.7	1,980.0	1,965.8	4.2	5.6	-77.18	-77.18	-53.4	214.7	211.2	202.5	8.70	24.266	
2,100.0	2,096.6	2,078.7	2,063.3	4.5	6.0	-79.95	-79.95	-57.6	229.4	223.5	214.3	9.23	24.218	
2,200.0	2,195.6	2,177.4	2,160.8	4.7	6.4	-82.44	-82.44	-61.8	244.1	236.2	226.5	9.78	24.164	
2,300.0	2,294.5	2,276.1	2,258.3	5.0	6.7	-84.66	-84.66	-66.0	258.7	249.4	239.0	10.34	24.107	
2,400.0	2,393.4	2,374.8	2,355.8	5.3	7.1	-86.67	-86.67	-70.2	273.4	262.8	251.9	10.93	24.050	
2,500.0	2,492.4	2,473.5	2,453.3	5.6	7.5	-88.48	-88.48	-74.4	288.1	276.6	265.1	11.53	23.996	
2,600.0	2,591.3	2,572.1	2,550.8	5.9	7.8	-90.11	-90.11	-78.6	302.7	290.6	278.5	12.14	23.945	
2,700.0	2,690.3	2,670.8	2,648.3	6.2	8.2	-91.60	-91.60	-82.7	317.4	304.9	292.1	12.76	23.898	
2,800.0	2,789.2	2,769.5	2,745.8	6.5	8.5	-92.95	-92.95	-86.9	332.0	319.3	305.9	13.38	23.856	
2,897.4	2,885.6	2,865.6	2,840.8	6.8	8.9	-94.16	-94.16	-91.0	346.3	333.5	319.5	14.00	23.820	
2,900.0	2,888.2	2,868.2	2,843.3	6.8	8.9	-94.20	-94.20	-91.1	346.7	333.8	319.8	14.02	23.819	
3,000.0	2,987.4	2,967.0	2,940.9	7.1	9.3	-95.32	-95.32	-95.3	361.4	348.4	333.8	14.61	23.853	
3,100.0	3,087.0	3,066.0	3,038.7	7.3	9.6	-95.82	-95.82	-99.5	376.1	362.6	347.5	15.16	23.926	
3,200.0	3,186.8	3,165.0	3,136.5	7.5	10.0	-95.76	-95.76	-103.7	390.8	376.6	360.9	15.66	24.039	
3,300.0	3,286.8	3,263.9	3,234.2	7.7	10.4	-95.21	-95.21	-107.9	405.5	390.2	374.0	16.13	24.195	
3,313.2	3,300.0	3,277.0	3,247.2	7.8	10.4	76.37	76.37	-108.5	407.4	392.0	375.8	16.18	24.220	
3,400.0	3,386.8	3,362.7	3,331.9	7.9	10.7	77.31	77.31	-112.1	420.2	403.7	387.2	16.54	24.403	
3,500.0	3,486.8	3,461.5	3,429.5	8.1	11.1	78.32	78.32	-116.3	434.9	417.4	400.4	16.96	24.607	
3,600.0	3,586.8	3,560.3	3,527.1	8.3	11.5	79.27	79.27	-120.5	449.5	431.2	413.8	17.38	24.806	
3,700.0	3,686.8	3,659.1	3,624.7	8.5	11.8	80.16	80.16	-124.7	464.2	445.0	427.2	17.80	24.999	
3,800.0	3,786.8	3,757.9	3,722.3	8.7	12.2	81.00	81.00	-128.9	478.9	459.0	440.8	18.22	25.188	
3,900.0	3,886.8	3,856.7	3,819.9	8.9	12.6	81.79	81.79	-133.1	493.6	473.1	454.5	18.65	25.370	
4,000.0	3,986.8	3,955.5	3,917.5	9.1	12.9	82.53	82.53	-137.3	508.3	487.3	468.2	19.07	25.547	
4,100.0	4,086.8	4,054.3	4,015.1	9.3	13.3	83.23	83.23	-141.5	522.9	501.5	482.0	19.50	25.718	
4,200.0	4,186.8	4,153.1	4,112.8	9.5	13.7	83.89	83.89	-145.7	537.6	515.8	495.9	19.93	25.883	
4,300.0	4,286.8	4,251.9	4,210.4	9.7	14.0	84.52	84.52	-149.9	552.3	530.2	509.9	20.36	26.042	
4,400.0	4,386.8	4,350.7	4,308.0	9.9	14.4	85.11	85.11	-154.1	567.0	544.7	523.9	20.79	26.196	
4,500.0	4,486.8	4,449.5	4,405.6	10.1	14.8	85.67	85.67	-158.2	581.7	559.2	537.9	21.22	26.345	
4,600.0	4,586.8	4,548.3	4,503.2	10.3	15.1	86.21	86.21	-162.4	596.3	573.7	552.0	21.66	26.488	
4,700.0	4,686.8	4,647.1	4,600.8	10.5	15.5	86.71	86.71	-166.6	611.0	588.3	566.2	22.09	26.626	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 24L-201 - Wellbore #1 - Plan #2 (5-21-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
4,800.0	4,786.8	4,745.9	4,698.4	10.7	15.9	87.20		-170.8	625.7	602.9	580.4	22.53	26.760	
4,900.0	4,886.8	4,844.7	4,796.0	10.9	16.2	87.66		-175.0	640.4	617.6	594.6	22.97	26.888	
5,000.0	4,986.8	4,943.5	4,893.7	11.1	16.6	88.10		-179.2	655.1	632.3	608.9	23.41	27.012	
5,100.0	5,086.8	5,042.3	4,991.3	11.3	17.0	88.51		-183.4	669.7	647.0	623.2	23.85	27.132	
5,200.0	5,186.8	5,141.1	5,088.9	11.5	17.4	88.92		-187.6	684.4	661.8	637.5	24.29	27.247	
5,300.0	5,286.8	5,248.5	5,195.1	11.7	17.7	89.32		-192.1	700.1	676.4	651.7	24.74	27.343	
5,400.0	5,386.8	5,377.2	5,322.9	11.9	18.1	89.69		-196.3	714.9	687.9	662.7	25.18	27.315	
5,500.0	5,486.8	5,507.1	5,452.3	12.1	18.3	89.91		-199.0	724.1	695.0	669.4	25.61	27.141	
5,600.0	5,586.8	5,637.5	5,582.7	12.3	18.5	90.00		-200.0	727.7	697.8	671.7	26.03	26.808	
5,700.0	5,686.8	5,741.6	5,686.8	12.6	18.6	90.00		-200.0	727.8	697.8	671.4	26.42	26.412	
5,800.0	5,786.8	5,841.6	5,786.8	12.8	18.8	90.00		-200.0	727.8	697.8	671.0	26.80	26.033	
5,900.0	5,886.8	5,941.6	5,886.8	13.0	18.9	90.00		-200.0	727.8	697.8	670.6	27.19	25.663	
6,000.0	5,986.8	6,041.6	5,986.8	13.2	19.1	90.00		-200.0	727.8	697.8	670.2	27.58	25.301	
6,100.0	6,086.8	6,141.6	6,086.8	13.4	19.2	90.00		-200.0	727.8	697.8	669.8	27.97	24.948	
6,200.0	6,186.8	6,241.6	6,186.8	13.6	19.3	90.00		-200.0	727.8	697.8	669.4	28.36	24.604	
6,300.0	6,286.8	6,341.6	6,286.8	13.8	19.5	90.00		-200.0	727.8	697.8	669.0	28.75	24.267	
6,400.0	6,386.8	6,441.6	6,386.8	14.0	19.6	90.00		-200.0	727.8	697.8	668.6	29.15	23.938	
6,500.0	6,486.8	6,541.8	6,487.0	14.3	19.8	89.93		-199.2	727.8	697.8	668.2	29.55	23.616	
6,557.3	6,544.0	6,599.1	6,544.0	14.4	19.8	89.54		-194.4	727.7	697.8	668.0	29.78	23.431	
6,600.0	6,586.8	6,641.1	6,585.6	14.5	19.9	89.02		-188.1	727.7	697.8	667.8	29.95	23.296	
6,624.5	6,611.3	6,664.9	6,609.0	14.5	19.9	88.65		-183.6	727.7	697.9	667.8	30.05	23.220	
6,650.0	6,636.8	6,689.4	6,632.9	14.6	19.9	88.23		-178.1	727.6	698.0	667.8	30.16	23.144	
6,700.0	6,686.8	6,737.1	6,678.8	14.7	20.0	87.41		-165.4	727.5	698.2	667.9	30.34	23.013	
6,750.0	6,736.2	6,784.1	6,723.2	14.7	20.0	86.61		-150.0	727.4	698.6	668.1	30.50	22.903	
6,800.0	6,785.2	6,830.6	6,766.1	14.8	20.0	85.82		-132.1	727.2	699.1	668.5	30.65	22.813	
6,850.0	6,833.5	6,876.6	6,807.5	14.9	20.0	85.06		-111.9	727.1	699.7	669.0	30.77	22.738	
6,900.0	6,880.8	6,922.1	6,847.1	14.9	20.0	84.32		-89.5	726.9	700.4	669.5	30.89	22.676	
6,950.0	6,927.0	6,967.2	6,884.9	15.0	20.1	83.60		-65.0	726.7	701.1	670.1	30.99	22.622	
7,000.0	6,971.8	7,011.9	6,920.9	15.0	20.1	82.92		-38.6	726.5	701.9	670.8	31.10	22.571	
7,050.0	7,015.1	7,056.1	6,955.0	15.1	20.1	82.26		-10.4	726.3	702.8	671.5	31.21	22.516	
7,100.0	7,056.6	7,100.0	6,987.2	15.1	20.1	81.63		19.4	726.0	703.6	672.3	31.34	22.452	
7,150.0	7,096.3	7,143.6	7,017.4	15.2	20.1	81.04		50.9	725.8	704.5	673.0	31.49	22.372	
7,200.0	7,133.9	7,186.9	7,045.5	15.3	20.2	80.48		83.8	725.5	705.3	673.6	31.67	22.271	
7,250.0	7,169.2	7,229.8	7,071.5	15.4	20.2	79.96		117.9	725.2	706.1	674.2	31.91	22.126	
7,300.0	7,202.1	7,272.6	7,095.5	15.6	20.2	79.48		153.3	724.9	706.9	674.7	32.18	21.970	
7,350.0	7,232.5	7,315.0	7,117.3	15.8	20.3	79.03		189.7	724.6	707.6	675.1	32.51	21.769	
7,400.0	7,260.3	7,357.3	7,137.0	16.0	20.4	78.63		227.1	724.3	708.3	675.4	32.90	21.527	
7,450.0	7,285.2	7,400.0	7,154.7	16.3	20.5	78.27		265.9	724.0	708.9	675.5	33.37	21.240	
7,500.0	7,307.3	7,441.3	7,169.8	16.6	20.6	77.95		304.4	723.7	709.4	675.4	33.92	20.912	
7,550.0	7,326.4	7,483.1	7,182.9	16.9	20.7	77.68		344.0	723.4	709.7	675.2	34.55	20.543	
7,600.0	7,342.5	7,524.7	7,193.8	17.3	20.9	77.45		384.2	723.1	710.0	674.8	35.26	20.139	
7,650.0	7,355.4	7,566.3	7,202.5	17.7	21.2	77.26		424.9	722.7	710.2	674.2	36.04	19.704	
7,700.0	7,365.1	7,607.7	7,208.9	18.2	21.4	77.12		465.8	722.4	710.3	673.3	36.91	19.245	
7,744.5	7,371.0	7,644.6	7,212.8	18.6	21.7	77.04		502.5	722.1	710.2	672.5	37.74	18.820	
7,756.2	7,372.2	7,654.3	7,213.5	18.8	21.8	77.01		512.2	722.0	710.2	672.2	37.96	18.711	
7,800.0	7,376.8	7,690.4	7,215.1	19.2	22.1	76.84		548.2	721.7	710.4	671.7	38.78	18.322	
7,878.5	7,385.0	7,764.1	7,214.9	20.1	22.8	76.21		621.9	721.1	711.8	671.4	40.42	17.609	
7,900.0	7,387.1	7,785.5	7,214.8	20.4	23.0	76.02		643.3	721.0	712.1	671.2	40.92	17.405	
8,003.4	7,391.3	7,888.7	7,214.1	21.7	24.1	75.60		746.5	720.1	712.6	669.0	43.51	16.376	
8,100.0	7,390.9	7,985.3	7,213.5	23.0	25.3	75.57		843.1	719.3	711.9	665.8	46.05	15.459	
8,200.0	7,390.5	8,085.3	7,212.9	24.4	26.6	75.54		943.1	718.5	711.2	662.4	48.82	14.568	

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

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton SW-24L Pad Sec.24-T7N-R66W - Dalton 24L-201 - Wellbore #1 - Plan #2 (5-21-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)		
8,300.0	7,390.0	8,185.3	7,212.3	25.9	28.0	75.51	1,043.1	717.7	710.5	658.8	51.71	13.740	
8,400.0	7,389.6	8,285.3	7,211.6	27.5	29.5	75.48	1,143.1	716.9	709.9	655.2	54.71	12.975	
8,500.0	7,389.2	8,385.3	7,211.0	29.1	31.0	75.45	1,243.1	716.1	709.2	651.4	57.79	12.272	
8,600.0	7,388.8	8,485.3	7,210.4	30.7	32.5	75.42	1,343.1	715.3	708.5	647.6	60.95	11.625	
8,700.0	7,388.3	8,585.3	7,209.8	32.4	34.1	75.39	1,443.1	714.5	707.8	643.7	64.16	11.032	
8,800.0	7,387.9	8,685.3	7,209.1	34.1	35.8	75.36	1,543.0	713.7	707.2	639.7	67.43	10.486	
8,900.0	7,387.5	8,785.3	7,208.5	35.8	37.4	75.32	1,643.0	712.9	706.5	635.7	70.75	9.985	
9,000.0	7,387.1	8,885.3	7,207.9	37.5	39.1	75.29	1,743.0	712.1	705.8	631.7	74.11	9.524	
9,100.0	7,386.7	8,985.3	7,207.2	39.3	40.8	75.26	1,843.0	711.2	705.1	627.6	77.50	9.099	
9,200.0	7,386.2	9,085.3	7,206.6	41.0	42.5	75.23	1,943.0	710.4	704.4	623.5	80.92	8.706	
9,300.0	7,385.8	9,185.3	7,206.0	42.8	44.3	75.20	2,043.0	709.6	703.8	619.4	84.36	8.342	
9,400.0	7,385.4	9,285.3	7,205.4	44.6	46.0	75.17	2,143.0	708.8	703.1	615.3	87.83	8.005	
9,500.0	7,385.0	9,385.3	7,204.7	46.4	47.8	75.13	2,243.0	708.0	702.4	611.1	91.32	7.692	
9,600.0	7,384.5	9,485.3	7,204.1	48.2	49.6	75.10	2,343.0	707.2	701.7	606.9	94.83	7.400	
9,700.0	7,384.1	9,585.3	7,203.5	50.1	51.3	75.07	2,443.0	706.4	701.1	602.7	98.35	7.128	
9,800.0	7,383.7	9,685.3	7,202.8	51.9	53.1	75.04	2,543.0	705.6	700.4	598.5	101.89	6.874	
9,900.0	7,383.3	9,785.3	7,202.2	53.7	55.0	75.01	2,643.0	704.8	699.7	594.3	105.44	6.636	
10,000.0	7,382.8	9,885.3	7,201.6	55.6	56.8	74.97	2,742.9	704.0	699.0	590.1	109.00	6.413	
10,100.0	7,382.4	9,985.3	7,201.0	57.4	58.6	74.94	2,842.9	703.2	698.4	585.8	112.57	6.204	
10,200.0	7,382.0	10,085.3	7,200.3	59.3	60.4	74.91	2,942.9	702.3	697.7	581.6	116.15	6.007	
10,300.0	7,381.6	10,185.3	7,199.7	61.1	62.2	74.88	3,042.9	701.5	697.0	577.3	119.73	5.821	
10,400.0	7,381.1	10,285.2	7,199.1	63.0	64.1	74.84	3,142.9	700.7	696.4	573.0	123.33	5.646	
10,500.0	7,380.7	10,385.2	7,198.4	64.8	65.9	74.81	3,242.9	699.9	695.7	568.8	126.93	5.481	
10,600.0	7,380.3	10,485.2	7,197.8	66.7	67.8	74.78	3,342.9	699.1	695.0	564.5	130.54	5.324	
10,700.0	7,379.9	10,585.2	7,197.2	68.6	69.6	74.75	3,442.9	698.3	694.3	560.2	134.15	5.176	
10,800.0	7,379.5	10,685.2	7,196.6	70.5	71.5	74.71	3,542.9	697.5	693.7	555.9	137.77	5.035	
10,900.0	7,379.0	10,785.2	7,195.9	72.3	73.3	74.68	3,642.9	696.7	693.0	551.6	141.39	4.901	
11,000.0	7,378.6	10,885.2	7,195.3	74.2	75.2	74.65	3,742.9	695.9	692.3	547.3	145.01	4.774	
11,100.0	7,378.2	10,985.2	7,194.7	76.1	77.1	74.62	3,842.9	695.1	691.6	543.0	148.64	4.653	
11,200.0	7,377.8	11,085.2	7,194.0	78.0	78.9	74.58	3,942.8	694.2	691.0	538.7	152.27	4.538	
11,300.0	7,377.3	11,185.2	7,193.4	79.9	80.8	74.55	4,042.8	693.4	690.3	534.4	155.91	4.428	
11,400.0	7,376.9	11,285.2	7,192.8	81.8	82.7	74.52	4,142.8	692.6	689.6	530.1	159.55	4.322	
11,500.0	7,376.5	11,385.2	7,192.2	83.6	84.6	74.48	4,242.8	691.8	689.0	525.8	163.19	4.222	
11,600.0	7,376.1	11,485.2	7,191.5	85.5	86.5	74.45	4,342.8	691.0	688.3	521.5	166.83	4.126	
11,700.0	7,375.6	11,585.2	7,190.9	87.4	88.3	74.42	4,442.8	690.2	687.6	517.2	170.47	4.034	
11,800.0	7,375.2	11,685.2	7,190.3	89.3	90.2	74.38	4,542.8	689.4	687.0	512.8	174.12	3.945	
11,848.6	7,375.0	11,729.2	7,190.0	90.2	91.0	74.37	4,586.8	689.0	686.6	510.8	175.81	3.906	
11,851.9	7,375.0	11,729.2	7,190.0	90.3	91.0	74.37	4,586.8	689.0	686.6	510.8	175.87	3.904	
11,852.4	7,375.0	11,729.2	7,190.0	90.3	91.0	74.37	4,586.8	689.0	686.7	510.8	175.88	3.904 SF	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
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<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4895.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Dalton 24L-441  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.50°





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24L-441
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton SW-24L Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4895.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24L-441	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (5-21-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4895.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Dalton 24L-441  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.50°

