

# PETROLEUM DEVELOPMENT CORP Weld County CO

## Well Name: Dalton 24Q-241

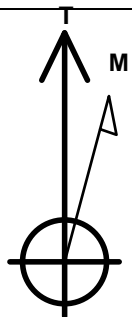
Surface Location: Dalton Pad Sec.24-T7N-R66W  
North American Datum 1983 , US State Plane 1983Colorado Northern Zone  
Ground Elevation: 4865.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1445711.49	3215123.65	40.554300	-104.725820	

RKB Ensign 32 - 15'WELL @ 4880.0ft (RKB Ensign 32 - 15')

### WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HARD LINE BHL 460'FNL	1.0	4608.3	151.9	1450320.80	3215235.31	40.566949	-104.725273	Polygon
HARD LINE SHL 460'FSL	1.0	202.8	400.0	1445917.76	3215521.86	40.554857	-104.724381	Polygon
SECTION LINE 250'S OF BHL	7.0	-257.2	400.0	1445457.80	3215525.87	40.553594	-104.724381	Polygon
BHL 500'FNL & 2400'FWL	7185.0	4568.3	-248.1	1450277.27	3214835.65	40.566839	-104.726713	Point



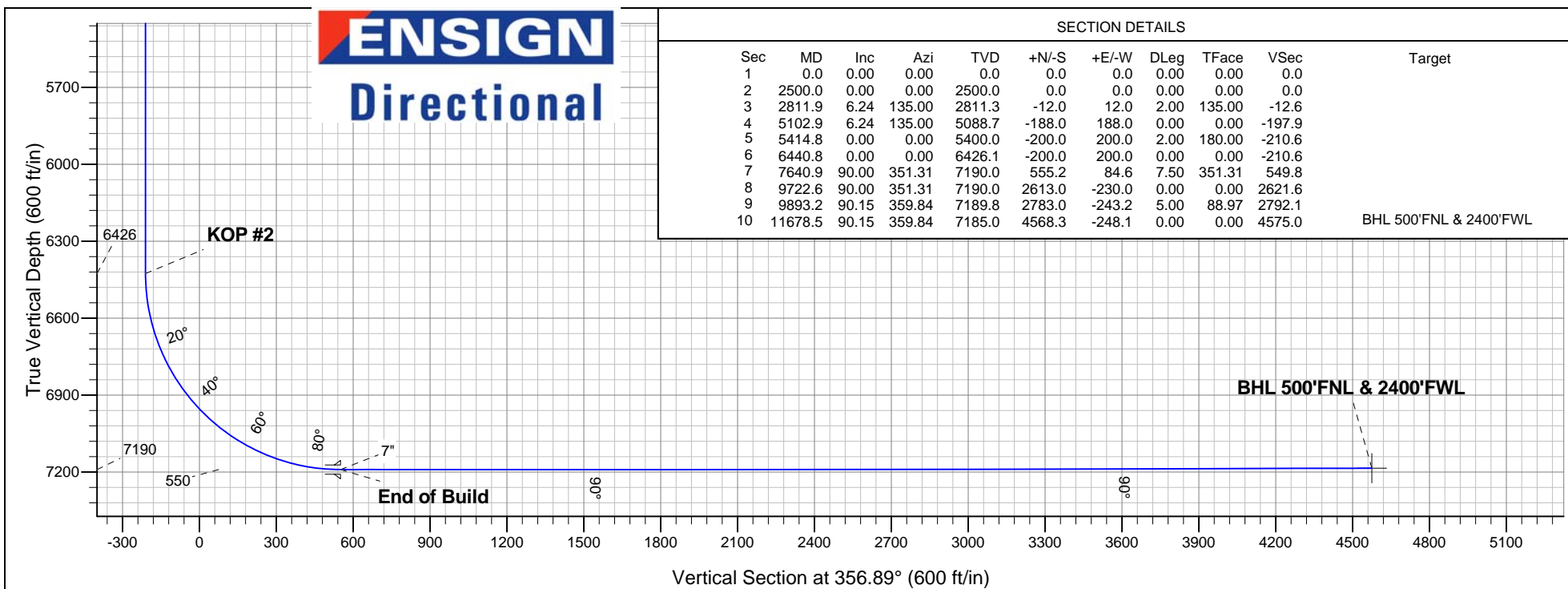
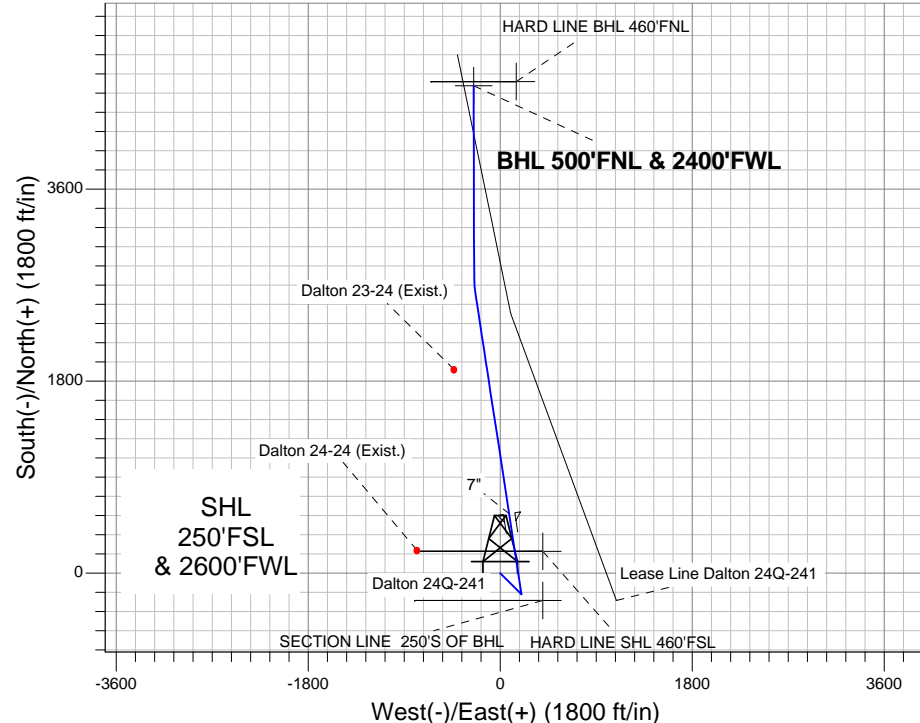
Azimuths to True North  
Magnetic North: 8.77°

Magnetic Field  
Strength: 53149.8snT  
Dip Angle: 67.16°  
Date: 1/30/2012  
Model: IGRF2010

### ANNOTATIONS

TVD	MD	Annotation
2500.0	2500.0	KOP #1
6426.0	6440.8	KOP #2
7190.0	7640.9	End of Build

Dalton Pad Sec.24-T7N-R66W  
Dalton 24Q-241  
Plan #1 (1-30-12)  
15:49, February 10 2012





# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

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

**Dalton 24Q-241**

**Wellbore #1**

**Plan: Plan #1 (1-30-12)**

## **Standard Planning Report**

**10 February, 2012**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

<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

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

<b>Well</b>	Dalton 24Q-241		
<b>Well Position</b>	<b>+N/-S</b>	7.2 ft	<b>Northing:</b>
	<b>+E/-W</b>	1,981.3 ft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>
			<b>Latitude:</b>
			<b>Longitude:</b>
			<b>Ground Level:</b>

<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	1/30/2012	8.77	67.16	53,150

<b>Design</b>	Plan #1 (1-30-12)			
<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	356.89

<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	
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,811.9	6.24	135.00	2,811.3	-12.0	12.0	2.00	2.00	0.00	135.00	
5,102.9	6.24	135.00	5,088.7	-188.0	188.0	0.00	0.00	0.00	0.00	
5,414.8	0.00	0.00	5,400.0	-200.0	200.0	2.00	-2.00	0.00	180.00	
6,440.8	0.00	0.00	6,426.1	-200.0	200.0	0.00	0.00	0.00	0.00	
7,640.9	90.00	351.31	7,190.0	555.2	84.6	7.50	7.50	0.00	351.31	
9,722.6	90.00	351.31	7,190.0	2,613.0	-230.0	0.00	0.00	0.00	0.00	
9,893.2	90.15	359.84	7,189.8	2,783.0	-243.2	5.00	0.09	5.00	88.97	
11,678.5	90.15	359.84	7,185.0	4,568.3	-248.1	0.00	0.00	0.00	0.00	BHL 500'FNL & 24C

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
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<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

## 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
<b>HARD LINE BHL 460'FNL - HARD LINE SHL 460'FSL</b>									
7.0	0.00	0.00	7.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SECTION LINE 250'S OF BHL</b>									
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
1,520.0	0.00	0.00	1,520.0	0.0	0.0	0.0	0.00	0.00	0.00
1,560.0	0.00	0.00	1,560.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,640.0	0.00	0.00	1,640.0	0.0	0.0	0.0	0.00	0.00	0.00
1,680.0	0.00	0.00	1,680.0	0.0	0.0	0.0	0.00	0.00	0.00
1,720.0	0.00	0.00	1,720.0	0.0	0.0	0.0	0.00	0.00	0.00
1,760.0	0.00	0.00	1,760.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,840.0	0.00	0.00	1,840.0	0.0	0.0	0.0	0.00	0.00	0.00
1,880.0	0.00	0.00	1,880.0	0.0	0.0	0.0	0.00	0.00	0.00
1,920.0	0.00	0.00	1,920.0	0.0	0.0	0.0	0.00	0.00	0.00

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<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

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)
1,960.0	0.00	0.00	1,960.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,040.0	0.00	0.00	2,040.0	0.0	0.0	0.0	0.00	0.00	0.00
2,080.0	0.00	0.00	2,080.0	0.0	0.0	0.0	0.00	0.00	0.00
2,120.0	0.00	0.00	2,120.0	0.0	0.0	0.0	0.00	0.00	0.00
2,160.0	0.00	0.00	2,160.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,240.0	0.00	0.00	2,240.0	0.0	0.0	0.0	0.00	0.00	0.00
2,280.0	0.00	0.00	2,280.0	0.0	0.0	0.0	0.00	0.00	0.00
2,320.0	0.00	0.00	2,320.0	0.0	0.0	0.0	0.00	0.00	0.00
2,360.0	0.00	0.00	2,360.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,440.0	0.00	0.00	2,440.0	0.0	0.0	0.0	0.00	0.00	0.00
2,480.0	0.00	0.00	2,480.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP #1</b>									
2,520.0	0.40	135.00	2,520.0	0.0	0.0	-0.1	2.00	2.00	0.00
2,560.0	1.20	135.00	2,560.0	-0.4	0.4	-0.5	2.00	2.00	0.00
2,600.0	2.00	135.00	2,600.0	-1.2	1.2	-1.3	2.00	2.00	0.00
2,640.0	2.80	135.00	2,639.9	-2.4	2.4	-2.5	2.00	2.00	0.00
2,680.0	3.60	135.00	2,679.9	-4.0	4.0	-4.2	2.00	2.00	0.00
2,720.0	4.40	135.00	2,719.8	-6.0	6.0	-6.3	2.00	2.00	0.00
2,760.0	5.20	135.00	2,759.6	-8.3	8.3	-8.8	2.00	2.00	0.00
2,800.0	6.00	135.00	2,799.5	-11.1	11.1	-11.7	2.00	2.00	0.00
2,811.9	6.24	135.00	2,811.3	-12.0	12.0	-12.6	2.00	2.00	0.00
2,840.0	6.24	135.00	2,839.2	-14.2	14.2	-14.9	0.00	0.00	0.00
2,880.0	6.24	135.00	2,879.0	-17.2	17.2	-18.1	0.00	0.00	0.00
2,920.0	6.24	135.00	2,918.7	-20.3	20.3	-21.4	0.00	0.00	0.00
2,960.0	6.24	135.00	2,958.5	-23.4	23.4	-24.6	0.00	0.00	0.00
3,000.0	6.24	135.00	2,998.3	-26.4	26.4	-27.8	0.00	0.00	0.00
3,040.0	6.24	135.00	3,038.0	-29.5	29.5	-31.1	0.00	0.00	0.00
3,080.0	6.24	135.00	3,077.8	-32.6	32.6	-34.3	0.00	0.00	0.00
3,120.0	6.24	135.00	3,117.6	-35.7	35.7	-37.5	0.00	0.00	0.00
3,160.0	6.24	135.00	3,157.3	-38.7	38.7	-40.8	0.00	0.00	0.00
3,200.0	6.24	135.00	3,197.1	-41.8	41.8	-44.0	0.00	0.00	0.00
3,240.0	6.24	135.00	3,236.8	-44.9	44.9	-47.3	0.00	0.00	0.00
3,280.0	6.24	135.00	3,276.6	-48.0	48.0	-50.5	0.00	0.00	0.00
3,320.0	6.24	135.00	3,316.4	-51.0	51.0	-53.7	0.00	0.00	0.00
3,360.0	6.24	135.00	3,356.1	-54.1	54.1	-57.0	0.00	0.00	0.00
3,400.0	6.24	135.00	3,395.9	-57.2	57.2	-60.2	0.00	0.00	0.00
3,440.0	6.24	135.00	3,435.7	-60.2	60.2	-63.4	0.00	0.00	0.00
3,480.0	6.24	135.00	3,475.4	-63.3	63.3	-66.7	0.00	0.00	0.00
3,520.0	6.24	135.00	3,515.2	-66.4	66.4	-69.9	0.00	0.00	0.00
3,560.0	6.24	135.00	3,555.0	-69.5	69.5	-73.1	0.00	0.00	0.00
3,600.0	6.24	135.00	3,594.7	-72.5	72.5	-76.4	0.00	0.00	0.00
3,640.0	6.24	135.00	3,634.5	-75.6	75.6	-79.6	0.00	0.00	0.00
3,680.0	6.24	135.00	3,674.2	-78.7	78.7	-82.8	0.00	0.00	0.00
3,720.0	6.24	135.00	3,714.0	-81.8	81.8	-86.1	0.00	0.00	0.00
3,760.0	6.24	135.00	3,753.8	-84.8	84.8	-89.3	0.00	0.00	0.00
3,800.0	6.24	135.00	3,793.5	-87.9	87.9	-92.5	0.00	0.00	0.00
3,840.0	6.24	135.00	3,833.3	-91.0	91.0	-95.8	0.00	0.00	0.00
3,880.0	6.24	135.00	3,873.1	-94.1	94.1	-99.0	0.00	0.00	0.00
3,920.0	6.24	135.00	3,912.8	-97.1	97.1	-102.3	0.00	0.00	0.00

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<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

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	6.24	135.00	3,952.6	-100.2	100.2	-105.5	0.00	0.00	0.00
4,000.0	6.24	135.00	3,992.4	-103.3	103.3	-108.7	0.00	0.00	0.00
4,040.0	6.24	135.00	4,032.1	-106.3	106.3	-112.0	0.00	0.00	0.00
4,080.0	6.24	135.00	4,071.9	-109.4	109.4	-115.2	0.00	0.00	0.00
4,120.0	6.24	135.00	4,111.6	-112.5	112.5	-118.4	0.00	0.00	0.00
4,160.0	6.24	135.00	4,151.4	-115.6	115.6	-121.7	0.00	0.00	0.00
4,200.0	6.24	135.00	4,191.2	-118.6	118.6	-124.9	0.00	0.00	0.00
4,240.0	6.24	135.00	4,230.9	-121.7	121.7	-128.1	0.00	0.00	0.00
4,280.0	6.24	135.00	4,270.7	-124.8	124.8	-131.4	0.00	0.00	0.00
4,320.0	6.24	135.00	4,310.5	-127.9	127.9	-134.6	0.00	0.00	0.00
4,360.0	6.24	135.00	4,350.2	-130.9	130.9	-137.8	0.00	0.00	0.00
4,400.0	6.24	135.00	4,390.0	-134.0	134.0	-141.1	0.00	0.00	0.00
4,440.0	6.24	135.00	4,429.7	-137.1	137.1	-144.3	0.00	0.00	0.00
4,480.0	6.24	135.00	4,469.5	-140.2	140.2	-147.5	0.00	0.00	0.00
4,520.0	6.24	135.00	4,509.3	-143.2	143.2	-150.8	0.00	0.00	0.00
4,560.0	6.24	135.00	4,549.0	-146.3	146.3	-154.0	0.00	0.00	0.00
4,600.0	6.24	135.00	4,588.8	-149.4	149.4	-157.3	0.00	0.00	0.00
4,640.0	6.24	135.00	4,628.6	-152.4	152.4	-160.5	0.00	0.00	0.00
4,680.0	6.24	135.00	4,668.3	-155.5	155.5	-163.7	0.00	0.00	0.00
4,720.0	6.24	135.00	4,708.1	-158.6	158.6	-167.0	0.00	0.00	0.00
4,760.0	6.24	135.00	4,747.9	-161.7	161.7	-170.2	0.00	0.00	0.00
4,800.0	6.24	135.00	4,787.6	-164.7	164.7	-173.4	0.00	0.00	0.00
4,840.0	6.24	135.00	4,827.4	-167.8	167.8	-176.7	0.00	0.00	0.00
4,880.0	6.24	135.00	4,867.1	-170.9	170.9	-179.9	0.00	0.00	0.00
4,920.0	6.24	135.00	4,906.9	-174.0	174.0	-183.1	0.00	0.00	0.00
4,960.0	6.24	135.00	4,946.7	-177.0	177.0	-186.4	0.00	0.00	0.00
5,000.0	6.24	135.00	4,986.4	-180.1	180.1	-189.6	0.00	0.00	0.00
5,040.0	6.24	135.00	5,026.2	-183.2	183.2	-192.8	0.00	0.00	0.00
5,080.0	6.24	135.00	5,066.0	-186.2	186.2	-196.1	0.00	0.00	0.00
5,102.9	6.24	135.00	5,088.7	-188.0	188.0	-197.9	0.00	0.00	0.00
5,120.0	5.90	135.00	5,105.7	-189.3	189.3	-199.3	2.00	-2.00	0.00
5,160.0	5.10	135.00	5,145.5	-192.0	192.0	-202.1	2.00	-2.00	0.00
5,200.0	4.30	135.00	5,185.4	-194.3	194.3	-204.6	2.00	-2.00	0.00
5,240.0	3.50	135.00	5,225.3	-196.2	196.2	-206.6	2.00	-2.00	0.00
5,280.0	2.70	135.00	5,265.3	-197.8	197.8	-208.2	2.00	-2.00	0.00
5,320.0	1.90	135.00	5,305.2	-198.9	198.9	-209.4	2.00	-2.00	0.00
5,360.0	1.10	135.00	5,345.2	-199.6	199.6	-210.2	2.00	-2.00	0.00
5,400.0	0.30	135.00	5,385.2	-200.0	200.0	-210.5	2.00	-2.00	0.00
5,414.8	0.00	0.00	5,400.0	-200.0	200.0	-210.6	2.00	-2.00	0.00
5,440.0	0.00	0.00	5,425.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,480.0	0.00	0.00	5,465.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,520.0	0.00	0.00	5,505.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,560.0	0.00	0.00	5,545.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,585.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,625.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,665.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,705.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,745.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,785.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,825.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,865.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,920.0	0.00	0.00	5,905.2	-200.0	200.0	-210.6	0.00	0.00	0.00
5,960.0	0.00	0.00	5,945.2	-200.0	200.0	-210.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

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)
6,000.0	0.00	0.00	5,985.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,040.0	0.00	0.00	6,025.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,080.0	0.00	0.00	6,065.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,120.0	0.00	0.00	6,105.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,145.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,185.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,240.0	0.00	0.00	6,225.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,280.0	0.00	0.00	6,265.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,320.0	0.00	0.00	6,305.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,360.0	0.00	0.00	6,345.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,385.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,440.0	0.00	0.00	6,425.2	-200.0	200.0	-210.6	0.00	0.00	0.00
6,440.8	0.00	0.00	6,426.0	-200.0	200.0	-210.6	0.00	0.00	0.00
<b>KOP #2</b>									
6,480.0	2.94	351.31	6,465.2	-199.0	199.8	-209.6	7.49	7.49	0.00
6,520.0	5.94	351.31	6,505.1	-196.0	199.4	-206.5	7.50	7.50	0.00
6,560.0	8.94	351.31	6,544.7	-190.8	198.6	-201.3	7.50	7.50	0.00
6,600.0	11.94	351.31	6,584.1	-183.7	197.5	-194.1	7.50	7.50	0.00
6,640.0	14.94	351.31	6,623.0	-174.5	196.1	-184.9	7.50	7.50	0.00
6,680.0	17.94	351.31	6,661.3	-163.3	194.4	-173.6	7.50	7.50	0.00
6,720.0	20.94	351.31	6,699.0	-150.1	192.4	-160.4	7.50	7.50	0.00
6,760.0	23.94	351.31	6,736.0	-135.1	190.1	-145.2	7.50	7.50	0.00
6,800.0	26.94	351.31	6,772.1	-118.1	187.5	-128.1	7.50	7.50	0.00
6,840.0	29.94	351.31	6,807.3	-99.2	184.6	-109.1	7.50	7.50	0.00
6,880.0	32.94	351.31	6,841.4	-78.6	181.4	-88.4	7.50	7.50	0.00
6,920.0	35.94	351.31	6,874.4	-56.3	178.0	-65.8	7.50	7.50	0.00
6,960.0	38.94	351.31	6,906.2	-32.2	174.4	-41.6	7.50	7.50	0.00
7,000.0	41.94	351.31	6,936.6	-6.6	170.4	-15.8	7.50	7.50	0.00
7,040.0	44.94	351.31	6,965.6	20.6	166.3	11.5	7.50	7.50	0.00
7,080.0	47.94	351.31	6,993.2	49.2	161.9	40.4	7.50	7.50	0.00
7,120.0	50.94	351.31	7,019.2	79.3	157.3	70.6	7.50	7.50	0.00
7,160.0	53.94	351.31	7,043.6	110.6	152.5	102.2	7.50	7.50	0.00
7,200.0	56.94	351.31	7,066.3	143.2	147.5	135.0	7.50	7.50	0.00
7,240.0	59.94	351.31	7,087.2	176.9	142.4	168.9	7.50	7.50	0.00
7,280.0	62.94	351.31	7,106.3	211.6	137.1	203.8	7.50	7.50	0.00
7,320.0	65.94	351.31	7,123.6	247.2	131.6	239.7	7.50	7.50	0.00
7,360.0	68.94	351.31	7,139.0	283.8	126.1	276.5	7.50	7.50	0.00
7,400.0	71.94	351.31	7,152.3	321.0	120.4	314.0	7.50	7.50	0.00
7,440.0	74.94	351.31	7,163.7	358.9	114.6	352.2	7.50	7.50	0.00
7,480.0	77.94	351.31	7,173.1	397.3	108.7	390.9	7.50	7.50	0.00
7,520.0	80.94	351.31	7,180.5	436.2	102.7	430.0	7.50	7.50	0.00
7,560.0	83.94	351.31	7,185.7	475.4	96.8	469.5	7.50	7.50	0.00
7,600.0	86.94	351.31	7,188.9	514.8	90.7	509.1	7.50	7.50	0.00
7,640.0	89.94	351.31	7,190.0	554.3	84.7	548.9	7.50	7.50	0.00
7,640.9	90.00	351.31	7,190.0	555.2	84.6	549.8	7.10	7.10	0.00
<b>End of Build - 7"</b>									
7,680.0	90.00	351.31	7,190.0	593.9	78.6	588.7	0.00	0.00	0.00
7,720.0	90.00	351.31	7,190.0	633.4	72.6	628.5	0.00	0.00	0.00
7,760.0	90.00	351.31	7,190.0	673.0	66.6	668.4	0.00	0.00	0.00
7,800.0	90.00	351.31	7,190.0	712.5	60.5	708.2	0.00	0.00	0.00
7,840.0	90.00	351.31	7,190.0	752.0	54.5	748.0	0.00	0.00	0.00
7,880.0	90.00	351.31	7,190.0	791.6	48.4	787.8	0.00	0.00	0.00
7,920.0	90.00	351.31	7,190.0	831.1	42.4	827.6	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

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)
7,960.0	90.00	351.31	7,190.0	870.7	36.3	867.4	0.00	0.00	0.00
8,000.0	90.00	351.31	7,190.0	910.2	30.3	907.2	0.00	0.00	0.00
8,040.0	90.00	351.31	7,190.0	949.7	24.2	947.0	0.00	0.00	0.00
8,080.0	90.00	351.31	7,190.0	989.3	18.2	986.8	0.00	0.00	0.00
8,120.0	90.00	351.31	7,190.0	1,028.8	12.2	1,026.6	0.00	0.00	0.00
8,160.0	90.00	351.31	7,190.0	1,068.4	6.1	1,066.5	0.00	0.00	0.00
8,200.0	90.00	351.31	7,190.0	1,107.9	0.1	1,106.3	0.00	0.00	0.00
8,240.0	90.00	351.31	7,190.0	1,147.4	-6.0	1,146.1	0.00	0.00	0.00
8,280.0	90.00	351.31	7,190.0	1,187.0	-12.0	1,185.9	0.00	0.00	0.00
8,320.0	90.00	351.31	7,190.0	1,226.5	-18.1	1,225.7	0.00	0.00	0.00
8,360.0	90.00	351.31	7,190.0	1,266.1	-24.1	1,265.5	0.00	0.00	0.00
8,400.0	90.00	351.31	7,190.0	1,305.6	-30.1	1,305.3	0.00	0.00	0.00
8,440.0	90.00	351.31	7,190.0	1,345.1	-36.2	1,345.1	0.00	0.00	0.00
8,480.0	90.00	351.31	7,190.0	1,384.7	-42.2	1,384.9	0.00	0.00	0.00
8,520.0	90.00	351.31	7,190.0	1,424.2	-48.3	1,424.7	0.00	0.00	0.00
8,560.0	90.00	351.31	7,190.0	1,463.8	-54.3	1,464.6	0.00	0.00	0.00
8,600.0	90.00	351.31	7,190.0	1,503.3	-60.4	1,504.4	0.00	0.00	0.00
8,640.0	90.00	351.31	7,190.0	1,542.8	-66.4	1,544.2	0.00	0.00	0.00
8,680.0	90.00	351.31	7,190.0	1,582.4	-72.5	1,584.0	0.00	0.00	0.00
8,720.0	90.00	351.31	7,190.0	1,621.9	-78.5	1,623.8	0.00	0.00	0.00
8,760.0	90.00	351.31	7,190.0	1,661.5	-84.5	1,663.6	0.00	0.00	0.00
8,800.0	90.00	351.31	7,190.0	1,701.0	-90.6	1,703.4	0.00	0.00	0.00
8,840.0	90.00	351.31	7,190.0	1,740.6	-96.6	1,743.2	0.00	0.00	0.00
8,880.0	90.00	351.31	7,190.0	1,780.1	-102.7	1,783.0	0.00	0.00	0.00
8,920.0	90.00	351.31	7,190.0	1,819.6	-108.7	1,822.9	0.00	0.00	0.00
8,960.0	90.00	351.31	7,190.0	1,859.2	-114.8	1,862.7	0.00	0.00	0.00
9,000.0	90.00	351.31	7,190.0	1,898.7	-120.8	1,902.5	0.00	0.00	0.00
9,040.0	90.00	351.31	7,190.0	1,938.3	-126.9	1,942.3	0.00	0.00	0.00
9,080.0	90.00	351.31	7,190.0	1,977.8	-132.9	1,982.1	0.00	0.00	0.00
9,120.0	90.00	351.31	7,190.0	2,017.3	-138.9	2,021.9	0.00	0.00	0.00
9,160.0	90.00	351.31	7,190.0	2,056.9	-145.0	2,061.7	0.00	0.00	0.00
9,200.0	90.00	351.31	7,190.0	2,096.4	-151.0	2,101.5	0.00	0.00	0.00
9,240.0	90.00	351.31	7,190.0	2,136.0	-157.1	2,141.3	0.00	0.00	0.00
9,280.0	90.00	351.31	7,190.0	2,175.5	-163.1	2,181.1	0.00	0.00	0.00
9,320.0	90.00	351.31	7,190.0	2,215.0	-169.2	2,221.0	0.00	0.00	0.00
9,360.0	90.00	351.31	7,190.0	2,254.6	-175.2	2,260.8	0.00	0.00	0.00
9,400.0	90.00	351.31	7,190.0	2,294.1	-181.3	2,300.6	0.00	0.00	0.00
9,440.0	90.00	351.31	7,190.0	2,333.7	-187.3	2,340.4	0.00	0.00	0.00
9,480.0	90.00	351.31	7,190.0	2,373.2	-193.3	2,380.2	0.00	0.00	0.00
9,520.0	90.00	351.31	7,190.0	2,412.7	-199.4	2,420.0	0.00	0.00	0.00
9,560.0	90.00	351.31	7,190.0	2,452.3	-205.4	2,459.8	0.00	0.00	0.00
9,600.0	90.00	351.31	7,190.0	2,491.8	-211.5	2,499.6	0.00	0.00	0.00
9,640.0	90.00	351.31	7,190.0	2,531.4	-217.5	2,539.4	0.00	0.00	0.00
9,680.0	90.00	351.31	7,190.0	2,570.9	-223.6	2,579.2	0.00	0.00	0.00
9,720.0	90.00	351.31	7,190.0	2,610.4	-229.6	2,619.1	0.00	0.00	0.00
9,722.6	90.00	351.31	7,190.0	2,613.0	-230.0	2,621.6	0.00	0.00	0.00
9,760.0	90.03	353.18	7,190.0	2,650.1	-235.0	2,658.9	5.00	0.09	5.00
9,800.0	90.07	355.18	7,190.0	2,689.9	-239.1	2,698.9	5.00	0.09	5.00
9,840.0	90.11	357.18	7,189.9	2,729.8	-241.8	2,738.9	5.00	0.09	5.00
9,880.0	90.14	359.18	7,189.8	2,769.8	-243.0	2,778.9	5.00	0.09	5.00
9,893.2	90.15	359.84	7,189.8	2,783.0	-243.2	2,792.1	5.00	0.09	5.00
9,920.0	90.15	359.84	7,189.7	2,809.8	-243.2	2,818.8	0.00	0.00	0.00
9,960.0	90.15	359.84	7,189.6	2,849.8	-243.3	2,858.8	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

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)
10,000.0	90.15	359.84	7,189.5	2,889.8	-243.5	2,898.7	0.00	0.00	0.00
10,040.0	90.15	359.84	7,189.4	2,929.8	-243.6	2,938.6	0.00	0.00	0.00
10,080.0	90.15	359.84	7,189.3	2,969.8	-243.7	2,978.6	0.00	0.00	0.00
10,120.0	90.15	359.84	7,189.2	3,009.8	-243.8	3,018.5	0.00	0.00	0.00
10,160.0	90.15	359.84	7,189.1	3,049.8	-243.9	3,058.5	0.00	0.00	0.00
10,200.0	90.15	359.84	7,189.0	3,089.7	-244.0	3,098.4	0.00	0.00	0.00
10,240.0	90.15	359.84	7,188.8	3,129.7	-244.1	3,138.4	0.00	0.00	0.00
10,280.0	90.15	359.84	7,188.7	3,169.7	-244.2	3,178.3	0.00	0.00	0.00
10,320.0	90.15	359.84	7,188.6	3,209.7	-244.3	3,218.3	0.00	0.00	0.00
10,360.0	90.15	359.84	7,188.5	3,249.7	-244.5	3,258.2	0.00	0.00	0.00
10,400.0	90.15	359.84	7,188.4	3,289.7	-244.6	3,298.2	0.00	0.00	0.00
10,440.0	90.15	359.84	7,188.3	3,329.7	-244.7	3,338.1	0.00	0.00	0.00
10,480.0	90.15	359.84	7,188.2	3,369.7	-244.8	3,378.1	0.00	0.00	0.00
10,520.0	90.15	359.84	7,188.1	3,409.7	-244.9	3,418.0	0.00	0.00	0.00
10,560.0	90.15	359.84	7,188.0	3,449.7	-245.0	3,458.0	0.00	0.00	0.00
10,600.0	90.15	359.84	7,187.9	3,489.7	-245.1	3,497.9	0.00	0.00	0.00
10,640.0	90.15	359.84	7,187.8	3,529.7	-245.2	3,537.9	0.00	0.00	0.00
10,680.0	90.15	359.84	7,187.7	3,569.7	-245.4	3,577.8	0.00	0.00	0.00
10,720.0	90.15	359.84	7,187.6	3,609.7	-245.5	3,617.7	0.00	0.00	0.00
10,760.0	90.15	359.84	7,187.5	3,649.7	-245.6	3,657.7	0.00	0.00	0.00
10,800.0	90.15	359.84	7,187.3	3,689.7	-245.7	3,697.6	0.00	0.00	0.00
10,840.0	90.15	359.84	7,187.2	3,729.7	-245.8	3,737.6	0.00	0.00	0.00
10,880.0	90.15	359.84	7,187.1	3,769.7	-245.9	3,777.5	0.00	0.00	0.00
10,920.0	90.15	359.84	7,187.0	3,809.7	-246.0	3,817.5	0.00	0.00	0.00
10,960.0	90.15	359.84	7,186.9	3,849.7	-246.1	3,857.4	0.00	0.00	0.00
11,000.0	90.15	359.84	7,186.8	3,889.7	-246.2	3,897.4	0.00	0.00	0.00
11,040.0	90.15	359.84	7,186.7	3,929.7	-246.4	3,937.3	0.00	0.00	0.00
11,080.0	90.15	359.84	7,186.6	3,969.7	-246.5	3,977.3	0.00	0.00	0.00
11,120.0	90.15	359.84	7,186.5	4,009.7	-246.6	4,017.2	0.00	0.00	0.00
11,160.0	90.15	359.84	7,186.4	4,049.7	-246.7	4,057.2	0.00	0.00	0.00
11,200.0	90.15	359.84	7,186.3	4,089.7	-246.8	4,097.1	0.00	0.00	0.00
11,240.0	90.15	359.84	7,186.2	4,129.7	-246.9	4,137.1	0.00	0.00	0.00
11,280.0	90.15	359.84	7,186.1	4,169.7	-247.0	4,177.0	0.00	0.00	0.00
11,320.0	90.15	359.84	7,186.0	4,209.7	-247.1	4,216.9	0.00	0.00	0.00
11,360.0	90.15	359.84	7,185.9	4,249.7	-247.2	4,256.9	0.00	0.00	0.00
11,400.0	90.15	359.84	7,185.7	4,289.7	-247.4	4,296.8	0.00	0.00	0.00
11,440.0	90.15	359.84	7,185.6	4,329.7	-247.5	4,336.8	0.00	0.00	0.00
11,480.0	90.15	359.84	7,185.5	4,369.7	-247.6	4,376.7	0.00	0.00	0.00
11,520.0	90.15	359.84	7,185.4	4,409.7	-247.7	4,416.7	0.00	0.00	0.00
11,560.0	90.15	359.84	7,185.3	4,449.7	-247.8	4,456.6	0.00	0.00	0.00
11,600.0	90.15	359.84	7,185.2	4,489.7	-247.9	4,496.6	0.00	0.00	0.00
11,640.0	90.15	359.84	7,185.1	4,529.7	-248.0	4,536.5	0.00	0.00	0.00
11,678.5	90.15	359.84	7,185.0	4,568.3	-248.1	4,575.0	0.00	0.00	0.00
BHL 500'FNL & 2400'FWL									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Project:</b>	SEC.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>North Reference:</b>	True
<b>Well:</b>	Dalton 24Q-241	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (1-30-12)		

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude Longitude
SECTION LINE 250'	- plan misses target center by 475.6ft at 7.0ft MD (7.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	7.0	-257.2	400.0	1,445,457.80	3,215,525.87	40.553594 -104.724381
- Polygon									
Point 1				7.0	0.0	0.0	1,445,457.80	3,215,525.87	
Point 2				7.0	0.0	-1,200.0	1,445,447.32	3,214,325.95	
HARD LINE BHL 460'	- plan misses target center by 4610.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	4,608.3	151.9	1,450,320.80	3,215,235.31	40.566949 -104.725273
- Polygon									
Point 1				1.0	0.0	0.0	1,450,320.80	3,215,235.31	
Point 2				1.0	0.0	-800.0	1,450,313.81	3,214,435.37	
HARD LINE SHL 460'	- plan misses target center by 448.5ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	202.8	400.0	1,445,917.76	3,215,521.86	40.554857 -104.724381
- Polygon									
Point 1				1.0	0.0	0.0	1,445,917.76	3,215,521.86	
Point 2				1.0	0.0	-1,200.0	1,445,907.29	3,214,321.94	
BHL 500'FNL & 2400'	- plan hits target center	0.00	0.00	7,185.0	4,568.3	-248.1	1,450,277.27	3,214,835.65	40.566839 -104.726713
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,640.9	7,190.0	7"	7	7-1/2	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
2,500.0	2,500.0	0.0	0.0	KOP #1
6,440.8	6,426.0	-200.0	200.0	KOP #2
7,640.9	7,190.0	555.2	84.6	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.24-T7N-R66W**

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

**Dalton 24Q-241**

**Wellbore #1**

**Plan #1 (1-30-12)**

## **Anticollision Report**

**10 February, 2012**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24Q-241	<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 (1-30-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (1-30-12)		
<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 1,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 2/8/2012			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	11,678.5	Plan #1 (1-30-12) (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 Pad Sec.24-T7N-R66W						
Dalton 23-24 (Exist.) - Wellbore #1 - Design #1	9,057.5	7,205.0	307.5	248.5	5.209	CC, ES
Dalton 23-24 (Exist.) - Wellbore #1 - Design #1	9,100.0	7,205.0	310.4	250.6	5.189	SF
Dalton 24-24 (Exist.) - Wellbore #1 - Design #1	2,500.0	2,515.0	809.9	798.9	73.312	CC, ES
Dalton 24-24 (Exist.) - Wellbore #1 - Design #1	7,800.0	7,205.0	977.5	939.9	26.013	SF
Dalton 24L-201 - Wellbore #1 - Plan #1 (1-30-12)						Out of range

<b>Offset Design</b> Dalton Pad Sec.24-T7N-R66W - Dalton 23-24 (Exist.) - Wellbore #1 - Design #1												
<b>Survey Program:</b> 0-MWD												
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>								
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>
8,200.0	7,190.0	7,205.0	7,205.0	27.7	16.1	-90.00	1,909.1	-433.5	910.9	867.2	43.73	20.832
8,300.0	7,190.0	7,205.0	7,205.0	29.4	16.1	-90.00	1,909.1	-433.5	817.5	772.1	45.41	18.004
8,400.0	7,190.0	7,205.0	7,205.0	31.1	16.1	-90.00	1,909.1	-433.5	725.8	678.7	47.12	15.403
8,500.0	7,190.0	7,205.0	7,205.0	32.8	16.1	-90.00	1,909.1	-433.5	636.6	587.8	48.87	13.027
8,600.0	7,190.0	7,205.0	7,205.0	34.6	16.1	-90.00	1,909.1	-433.5	551.2	500.6	50.65	10.883
8,700.0	7,190.0	7,205.0	7,205.0	36.4	16.1	-90.00	1,909.1	-433.5	471.5	419.1	52.45	8.990
8,800.0	7,190.0	7,205.0	7,205.0	38.2	16.1	-90.00	1,909.1	-433.5	401.1	346.8	54.27	7.390
8,900.0	7,190.0	7,205.0	7,205.0	40.1	16.1	-90.00	1,909.1	-433.5	345.5	289.4	56.11	6.157
9,000.0	7,190.0	7,205.0	7,205.0	41.9	16.1	-90.00	1,909.1	-433.5	312.8	254.9	57.96	5.397
9,057.5	7,190.0	7,205.0	7,205.0	43.0	16.1	-90.00	1,909.1	-433.5	307.5	248.5	59.03	5.209 CC, ES
9,100.0	7,190.0	7,205.0	7,205.0	43.8	16.1	-90.00	1,909.1	-433.5	310.4	250.6	59.83	5.189 SF
9,200.0	7,190.0	7,205.0	7,205.0	45.7	16.1	-90.00	1,909.1	-433.5	338.9	277.2	61.70	5.493
9,300.0	7,190.0	7,205.0	7,205.0	47.5	16.1	-90.00	1,909.1	-433.5	391.6	328.0	63.59	6.159
9,400.0	7,190.0	7,205.0	7,205.0	49.4	16.1	-90.00	1,909.1	-433.5	460.3	394.8	65.49	7.029
9,500.0	7,190.0	7,205.0	7,205.0	51.3	16.1	-90.00	1,909.1	-433.5	538.9	471.5	67.39	7.996
9,600.0	7,190.0	7,205.0	7,205.0	53.3	16.1	-90.00	1,909.1	-433.5	623.6	554.3	69.31	8.998
9,700.0	7,190.0	7,205.0	7,205.0	55.2	16.1	-90.00	1,909.1	-433.5	712.3	641.1	71.23	10.001
9,800.0	7,190.0	7,205.0	7,205.0	57.0	16.1	-89.80	1,909.1	-433.5	804.6	731.6	73.04	11.017
9,900.0	7,189.8	7,204.8	7,204.8	58.6	16.1	-89.30	1,909.1	-433.5	901.0	826.7	74.33	12.122
10,000.0	7,189.5	7,204.5	7,204.5	60.4	16.1	-89.22	1,909.1	-433.5	998.9	922.8	76.17	13.115

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24Q-241	<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 (1-30-12)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Dalton Pad Sec.24-T7N-R66W - Dalton 24-24 (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 +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	15.0	15.0	0.0	0.0	-74.61	215.0	-780.9	809.9	809.9	0.02	N/A		
100.0	100.0	115.0	115.0	0.1	0.1	-74.61	215.0	-780.9	809.9	809.6	0.26	3,133.302		
200.0	200.0	215.0	215.0	0.3	0.4	-74.61	215.0	-780.9	809.9	809.2	0.71	1,143.904		
300.0	300.0	315.0	315.0	0.6	0.6	-74.61	215.0	-780.9	809.9	808.7	1.16	699.669		
400.0	400.0	415.0	415.0	0.8	0.8	-74.61	215.0	-780.9	809.9	808.3	1.61	503.958		
500.0	500.0	515.0	515.0	1.0	1.0	-74.61	215.0	-780.9	809.9	807.8	2.06	393.803		
600.0	600.0	615.0	615.0	1.2	1.3	-74.61	215.0	-780.9	809.9	807.4	2.51	323.166		
700.0	700.0	715.0	715.0	1.5	1.5	-74.61	215.0	-780.9	809.9	806.9	2.96	274.015		
800.0	800.0	815.0	815.0	1.7	1.7	-74.61	215.0	-780.9	809.9	806.5	3.41	237.841		
900.0	900.0	915.0	915.0	1.9	1.9	-74.61	215.0	-780.9	809.9	806.0	3.85	210.105		
1,000.0	1,000.0	1,015.0	1,015.0	2.1	2.2	-74.61	215.0	-780.9	809.9	805.6	4.30	188.162		
1,100.0	1,100.0	1,115.0	1,115.0	2.4	2.4	-74.61	215.0	-780.9	809.9	805.1	4.75	170.369		
1,200.0	1,200.0	1,215.0	1,215.0	2.6	2.6	-74.61	215.0	-780.9	809.9	804.7	5.20	155.650		
1,300.0	1,300.0	1,315.0	1,315.0	2.8	2.8	-74.61	215.0	-780.9	809.9	804.2	5.65	143.272		
1,400.0	1,400.0	1,415.0	1,415.0	3.0	3.1	-74.61	215.0	-780.9	809.9	803.8	6.10	132.718		
1,500.0	1,500.0	1,515.0	1,515.0	3.3	3.3	-74.61	215.0	-780.9	809.9	803.3	6.55	123.612		
1,600.0	1,600.0	1,615.0	1,615.0	3.5	3.5	-74.61	215.0	-780.9	809.9	802.9	7.00	115.676		
1,700.0	1,700.0	1,715.0	1,715.0	3.7	3.7	-74.61	215.0	-780.9	809.9	802.4	7.45	108.697		
1,800.0	1,800.0	1,815.0	1,815.0	3.9	4.0	-74.61	215.0	-780.9	809.9	802.0	7.90	102.512		
1,900.0	1,900.0	1,915.0	1,915.0	4.2	4.2	-74.61	215.0	-780.9	809.9	801.5	8.35	96.993		
2,000.0	2,000.0	2,015.0	2,015.0	4.4	4.4	-74.61	215.0	-780.9	809.9	801.1	8.80	92.038		
2,100.0	2,100.0	2,115.0	2,115.0	4.6	4.6	-74.61	215.0	-780.9	809.9	800.6	9.25	87.565		
2,200.0	2,200.0	2,215.0	2,215.0	4.8	4.9	-74.61	215.0	-780.9	809.9	800.2	9.70	83.506		
2,300.0	2,300.0	2,315.0	2,315.0	5.1	5.1	-74.61	215.0	-780.9	809.9	799.8	10.15	79.807		
2,400.0	2,400.0	2,415.0	2,415.0	5.3	5.3	-74.61	215.0	-780.9	809.9	799.3	10.60	76.422		
2,500.0	2,500.0	2,515.0	2,515.0	5.5	5.5	-74.61	215.0	-780.9	809.9	798.9	11.05	73.312 CC, ES		
2,600.0	2,600.0	2,615.0	2,615.0	5.7	5.8	150.44	215.0	-780.9	811.4	799.9	11.47	70.760		
2,700.0	2,699.8	2,714.8	2,714.8	5.9	6.0	150.57	215.0	-780.9	816.0	804.1	11.85	68.830		
2,800.0	2,799.5	2,814.5	2,814.5	6.1	6.2	150.80	215.0	-780.9	823.6	811.3	12.24	67.311		
2,900.0	2,898.9	2,913.9	2,913.9	6.3	6.4	151.15	215.0	-780.9	833.1	820.4	12.64	65.910		
3,000.0	2,998.3	3,013.3	3,013.3	6.5	6.7	151.51	215.0	-780.9	842.6	829.6	13.05	64.559		
3,100.0	3,097.7	3,112.7	3,112.7	6.7	6.9	151.85	215.0	-780.9	852.2	838.7	13.47	63.273		
3,200.0	3,197.1	3,212.1	3,212.1	6.9	7.1	152.19	215.0	-780.9	861.8	847.9	13.89	62.048		
3,300.0	3,296.5	3,311.5	3,311.5	7.1	7.3	152.53	215.0	-780.9	871.4	857.1	14.31	60.882		
3,400.0	3,395.9	3,410.9	3,410.9	7.4	7.6	152.85	215.0	-780.9	881.1	866.4	14.74	59.772		
3,500.0	3,495.3	3,510.3	3,510.3	7.6	7.8	153.17	215.0	-780.9	890.8	875.6	15.17	58.715		
3,600.0	3,594.7	3,609.7	3,609.7	7.9	8.0	153.48	215.0	-780.9	900.5	884.9	15.60	57.709		
3,700.0	3,694.1	3,709.1	3,709.1	8.1	8.2	153.79	215.0	-780.9	910.3	894.2	16.04	56.751		
3,800.0	3,793.5	3,808.5	3,808.5	8.4	8.4	154.09	215.0	-780.9	920.0	903.6	16.48	55.837		
3,900.0	3,892.9	3,907.9	3,907.9	8.6	8.7	154.38	215.0	-780.9	929.8	912.9	16.92	54.966		
4,000.0	3,992.4	4,007.4	4,007.4	8.9	8.9	154.66	215.0	-780.9	939.7	922.3	17.36	54.136		
4,100.0	4,091.8	4,106.8	4,106.8	9.1	9.1	154.94	215.0	-780.9	949.5	931.7	17.80	53.343		
4,200.0	4,191.2	4,206.2	4,206.2	9.4	9.3	155.22	215.0	-780.9	959.4	941.1	18.24	52.586		
4,300.0	4,290.6	4,305.6	4,305.6	9.7	9.6	155.49	215.0	-780.9	969.2	950.6	18.69	51.862		
4,400.0	4,390.0	4,405.0	4,405.0	9.9	9.8	155.75	215.0	-780.9	979.2	960.0	19.14	51.170		
4,500.0	4,489.4	4,504.4	4,504.4	10.2	10.0	156.01	215.0	-780.9	989.1	969.5	19.58	50.508		
4,600.0	4,588.8	4,603.8	4,603.8	10.5	10.2	156.26	215.0	-780.9	999.0	979.0	20.03	49.875		
7,000.0	6,936.6	6,951.6	6,951.6	15.2	15.5	-73.43	215.0	-780.9	976.7	946.9	29.85	32.720		
7,100.0	7,006.4	7,021.4	7,021.4	15.3	15.7	-78.20	215.0	-780.9	952.5	922.0	30.47	31.259		
7,200.0	7,066.3	7,081.3	7,081.3	15.6	15.8	-82.76	215.0	-780.9	931.2	900.0	31.21	29.840		
7,300.0	7,115.2	7,130.2	7,130.2	16.2	15.9	-86.62	215.0	-780.9	915.3	883.3	32.02	28.589		

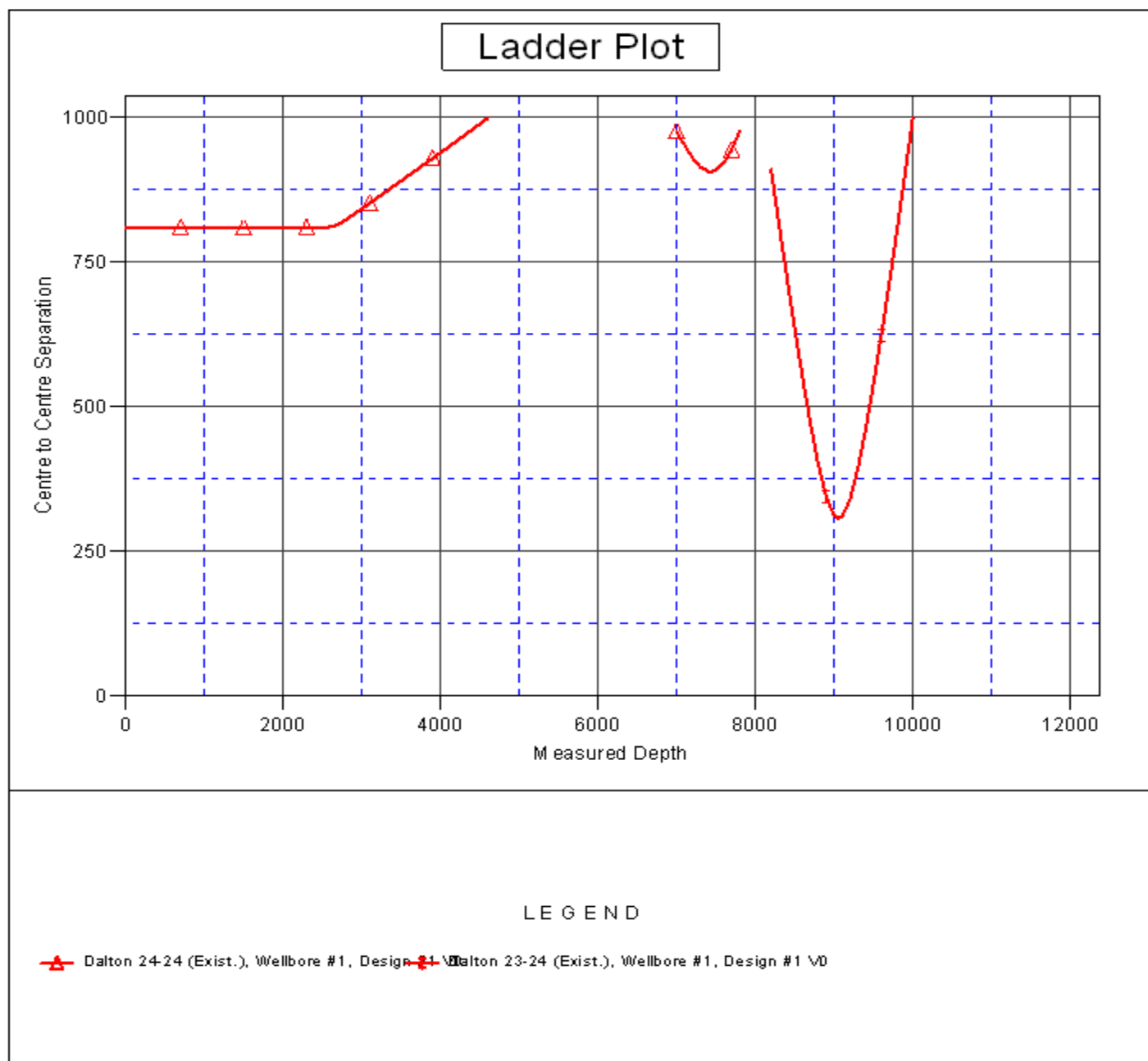
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24Q-241	<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 (1-30-12)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Dalton Pad Sec.24-T7N-R66W - Dalton 24-24 (Exist.) - Wellbore #1 - Design #1												<b>Offset Well Error:</b>	0.0 ft
Survey Program: 0-MWD													
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)	Separation Factor	Warning
7,400.0	7,152.3	7,167.3	7,167.3	16.9	16.0	-89.39	215.0	-780.9	907.4	874.5	32.91	27.573	
7,432.7	7,161.8	7,176.8	7,176.8	17.2	16.0	-90.00	215.0	-780.9	906.9	873.6	33.24	27.281	
7,500.0	7,177.1	7,192.1	7,192.1	17.9	16.1	-90.76	215.0	-780.9	909.2	875.3	33.91	26.814	
7,600.0	7,188.9	7,203.9	7,203.9	19.0	16.1	-90.56	215.0	-780.9	921.7	886.7	35.03	26.315	
7,700.0	7,190.0	7,205.0	7,205.0	20.2	16.1	-90.00	215.0	-780.9	944.7	908.5	36.24	26.067	
7,800.0	7,190.0	7,205.0	7,205.0	21.5	16.1	-90.00	215.0	-780.9	977.5	939.9	37.58	26.013 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Dalton 24Q-241
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24Q-241	<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 (1-30-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4880.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Dalton 24Q-241  
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 24Q-241
<b>Project:</b>	SEC.24-T7N-R66W	<b>TVD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Reference Site:</b>	Dalton Pad Sec.24-T7N-R66W	<b>MD Reference:</b>	WELL @ 4880.0ft (RKB Ensign 32 - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Dalton 24Q-241	<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 (1-30-12)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4880.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Dalton 24Q-241  
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