

# PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alles 22D-402**

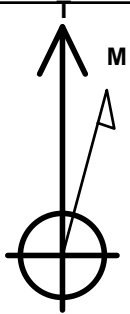
Surface Location: Alles 22S-HZ Pad Sec.22-T5N-R65W  
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
Ground Elevation: 4645.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1383618.78	3239056.16	40.383260	-104.641860	

RKB - 15' WELL @ 4660.0ft (RKB - 15')

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BHL 1420'FSL & 500'FEL	6953.0	-695.2	5304.5	Point



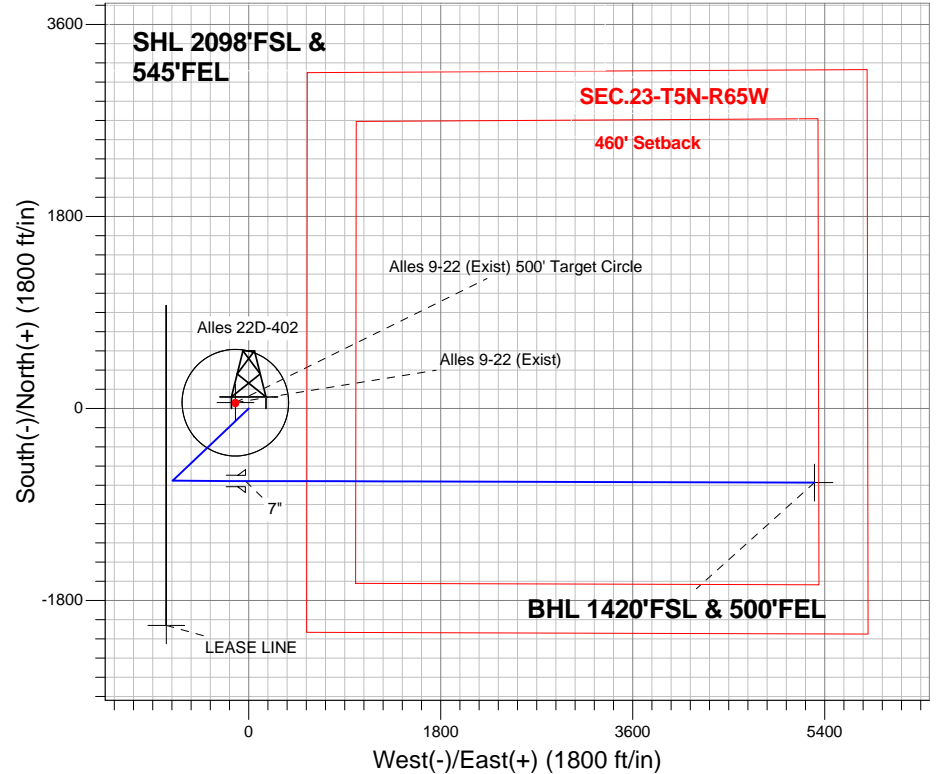
Azimuths to True North  
Magnetic North: 8.54°

Magnetic Field  
Strength: 52933.2snT  
Dip Angle: 66.99°  
Date: 5/22/2013  
Model: IGRF2010

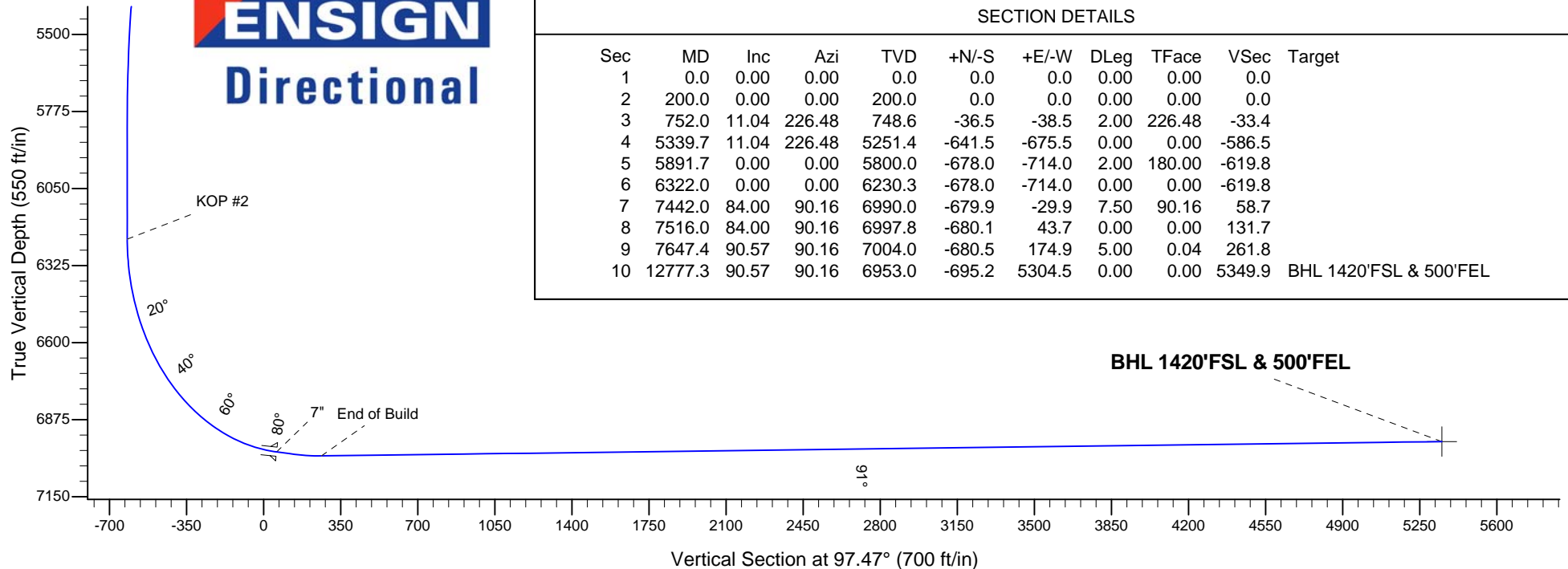
Alles 22D-402  
Plan #1 (5-16-13)  
9:10, May 24 2013

## ANNOTATIONS

TVD	MD	Annotation
200.0	200.0	KOP #1
6230.3	6322.0	KOP #2
7004.0	7647.6	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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	752.0	11.04	226.48	748.6	-36.5	-38.5	2.00	226.48	-33.4	
4	5339.7	11.04	226.48	5251.4	-641.5	-675.5	0.00	0.00	-586.5	
5	5891.7	0.00	0.00	5800.0	-678.0	-714.0	2.00	180.00	-619.8	
6	6322.0	0.00	0.00	6230.3	-678.0	-714.0	0.00	0.00	-619.8	
7	7442.0	84.00	90.16	6990.0	-679.9	-29.9	7.50	90.16	58.7	
8	7516.0	84.00	90.16	6997.8	-680.1	43.7	0.00	0.00	131.7	
9	7647.4	90.57	90.16	7004.0	-680.5	174.9	5.00	0.04	261.8	
10	12777.3	90.57	90.16	6953.0	-695.2	5304.5	0.00	0.00	5349.9	BHL 1420'FSL & 500'FEL



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R65W**

**Alles 22S-HZ Pad Sec.22-T5N-R65W**

**Alles 22D-402**

**Wellbore #1**

**Plan: Plan #1 (5-16-13)**

## **Standard Planning Report**

**23 May, 2013**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

<b>Project</b>	SEC.22-T5N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

<b>Site</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W		
<b>Site Position:</b>		<b>Northing:</b>	1,383,618.80 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,239,056.16 ft
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	"
		<b>Latitude:</b>	40.383260
		<b>Longitude:</b>	-104.641860
		<b>Grid Convergence:</b>	0.55 °

<b>Well</b>	Alles 22D-402		
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b> 1,383,618.78 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b> 3,239,056.16 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b> ft
			<b>Latitude:</b> 40.383260
			<b>Longitude:</b> -104.641860
			<b>Ground Level:</b> 4,645.0 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	5/22/2013	8.54	66.99	52,933

<b>Design</b>	Plan #1 (5-16-13)			
<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	97.47

<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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
752.0	11.04	226.48	748.6	-36.5	-38.5	2.00	2.00	0.00	226.48	
5,339.7	11.04	226.48	5,251.4	-641.5	-675.5	0.00	0.00	0.00	0.00	
5,891.7	0.00	0.00	5,800.0	-678.0	-714.0	2.00	-2.00	0.00	180.00	
6,322.0	0.00	0.00	6,230.3	-678.0	-714.0	0.00	0.00	0.00	0.00	
7,442.0	84.00	90.16	6,990.0	-679.9	-29.9	7.50	7.50	0.00	90.16	
7,516.0	84.00	90.16	6,997.8	-680.1	43.7	0.00	0.00	0.00	0.00	
7,647.4	90.57	90.16	7,004.0	-680.5	174.9	5.00	5.00	0.00	0.04	
12,777.3	90.57	90.16	6,953.0	-695.2	5,304.5	0.00	0.00	0.00	0.00	BHL 1420'FSL & 5C

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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
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
<b>KOP #1</b>									
240.0	0.80	226.48	240.0	-0.2	-0.2	-0.2	2.00	2.00	0.00
280.0	1.60	226.48	280.0	-0.8	-0.8	-0.7	2.00	2.00	0.00
320.0	2.40	226.48	320.0	-1.7	-1.8	-1.6	2.00	2.00	0.00
360.0	3.20	226.48	359.9	-3.1	-3.2	-2.8	2.00	2.00	0.00
400.0	4.00	226.48	399.8	-4.8	-5.1	-4.4	2.00	2.00	0.00
440.0	4.80	226.48	439.7	-6.9	-7.3	-6.3	2.00	2.00	0.00
480.0	5.60	226.48	479.6	-9.4	-9.9	-8.6	2.00	2.00	0.00
520.0	6.40	226.48	519.3	-12.3	-12.9	-11.2	2.00	2.00	0.00
560.0	7.20	226.48	559.1	-15.6	-16.4	-14.2	2.00	2.00	0.00
600.0	8.00	226.48	598.7	-19.2	-20.2	-17.6	2.00	2.00	0.00
640.0	8.80	226.48	638.3	-23.2	-24.5	-21.2	2.00	2.00	0.00
680.0	9.60	226.48	677.8	-27.6	-29.1	-25.3	2.00	2.00	0.00
720.0	10.40	226.48	717.1	-32.4	-34.1	-29.6	2.00	2.00	0.00
752.0	11.04	226.48	748.6	-36.5	-38.5	-33.4	2.00	2.00	0.00
760.0	11.04	226.48	756.4	-37.6	-39.6	-34.3	0.00	0.00	0.00
800.0	11.04	226.48	795.7	-42.8	-45.1	-39.2	0.00	0.00	0.00
840.0	11.04	226.48	835.0	-48.1	-50.7	-44.0	0.00	0.00	0.00
880.0	11.04	226.48	874.2	-53.4	-56.2	-48.8	0.00	0.00	0.00
920.0	11.04	226.48	913.5	-58.7	-61.8	-53.6	0.00	0.00	0.00
960.0	11.04	226.48	952.7	-63.9	-67.3	-58.5	0.00	0.00	0.00
1,000.0	11.04	226.48	992.0	-69.2	-72.9	-63.3	0.00	0.00	0.00
1,040.0	11.04	226.48	1,031.3	-74.5	-78.4	-68.1	0.00	0.00	0.00
1,080.0	11.04	226.48	1,070.5	-79.8	-84.0	-72.9	0.00	0.00	0.00
1,120.0	11.04	226.48	1,109.8	-85.0	-89.6	-77.7	0.00	0.00	0.00
1,160.0	11.04	226.48	1,149.0	-90.3	-95.1	-82.6	0.00	0.00	0.00
1,200.0	11.04	226.48	1,188.3	-95.6	-100.7	-87.4	0.00	0.00	0.00
1,240.0	11.04	226.48	1,227.6	-100.9	-106.2	-92.2	0.00	0.00	0.00
1,280.0	11.04	226.48	1,266.8	-106.1	-111.8	-97.0	0.00	0.00	0.00
1,320.0	11.04	226.48	1,306.1	-111.4	-117.3	-101.9	0.00	0.00	0.00
1,360.0	11.04	226.48	1,345.3	-116.7	-122.9	-106.7	0.00	0.00	0.00
1,400.0	11.04	226.48	1,384.6	-122.0	-128.4	-111.5	0.00	0.00	0.00
1,440.0	11.04	226.48	1,423.9	-127.2	-134.0	-116.3	0.00	0.00	0.00
1,480.0	11.04	226.48	1,463.1	-132.5	-139.5	-121.1	0.00	0.00	0.00
1,520.0	11.04	226.48	1,502.4	-137.8	-145.1	-126.0	0.00	0.00	0.00
1,560.0	11.04	226.48	1,541.6	-143.1	-150.7	-130.8	0.00	0.00	0.00
1,600.0	11.04	226.48	1,580.9	-148.3	-156.2	-135.6	0.00	0.00	0.00
1,640.0	11.04	226.48	1,620.2	-153.6	-161.8	-140.4	0.00	0.00	0.00
1,680.0	11.04	226.48	1,659.4	-158.9	-167.3	-145.3	0.00	0.00	0.00
1,720.0	11.04	226.48	1,698.7	-164.2	-172.9	-150.1	0.00	0.00	0.00
1,760.0	11.04	226.48	1,737.9	-169.4	-178.4	-154.9	0.00	0.00	0.00
1,800.0	11.04	226.48	1,777.2	-174.7	-184.0	-159.7	0.00	0.00	0.00
1,840.0	11.04	226.48	1,816.5	-180.0	-189.5	-164.5	0.00	0.00	0.00
1,880.0	11.04	226.48	1,855.7	-185.3	-195.1	-169.4	0.00	0.00	0.00
1,920.0	11.04	226.48	1,895.0	-190.5	-200.6	-174.2	0.00	0.00	0.00
1,960.0	11.04	226.48	1,934.2	-195.8	-206.2	-179.0	0.00	0.00	0.00
2,000.0	11.04	226.48	1,973.5	-201.1	-211.8	-183.8	0.00	0.00	0.00

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<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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)
2,040.0	11.04	226.48	2,012.8	-206.4	-217.3	-188.7	0.00	0.00	0.00
2,080.0	11.04	226.48	2,052.0	-211.6	-222.9	-193.5	0.00	0.00	0.00
2,120.0	11.04	226.48	2,091.3	-216.9	-228.4	-198.3	0.00	0.00	0.00
2,160.0	11.04	226.48	2,130.5	-222.2	-234.0	-203.1	0.00	0.00	0.00
2,200.0	11.04	226.48	2,169.8	-227.5	-239.5	-207.9	0.00	0.00	0.00
2,240.0	11.04	226.48	2,209.0	-232.7	-245.1	-212.8	0.00	0.00	0.00
2,280.0	11.04	226.48	2,248.3	-238.0	-250.6	-217.6	0.00	0.00	0.00
2,320.0	11.04	226.48	2,287.6	-243.3	-256.2	-222.4	0.00	0.00	0.00
2,360.0	11.04	226.48	2,326.8	-248.6	-261.8	-227.2	0.00	0.00	0.00
2,400.0	11.04	226.48	2,366.1	-253.8	-267.3	-232.1	0.00	0.00	0.00
2,440.0	11.04	226.48	2,405.3	-259.1	-272.9	-236.9	0.00	0.00	0.00
2,480.0	11.04	226.48	2,444.6	-264.4	-278.4	-241.7	0.00	0.00	0.00
2,520.0	11.04	226.48	2,483.9	-269.7	-284.0	-246.5	0.00	0.00	0.00
2,560.0	11.04	226.48	2,523.1	-274.9	-289.5	-251.3	0.00	0.00	0.00
2,600.0	11.04	226.48	2,562.4	-280.2	-295.1	-256.2	0.00	0.00	0.00
2,640.0	11.04	226.48	2,601.6	-285.5	-300.6	-261.0	0.00	0.00	0.00
2,680.0	11.04	226.48	2,640.9	-290.8	-306.2	-265.8	0.00	0.00	0.00
2,720.0	11.04	226.48	2,680.2	-296.0	-311.7	-270.6	0.00	0.00	0.00
2,760.0	11.04	226.48	2,719.4	-301.3	-317.3	-275.5	0.00	0.00	0.00
2,800.0	11.04	226.48	2,758.7	-306.6	-322.9	-280.3	0.00	0.00	0.00
2,840.0	11.04	226.48	2,797.9	-311.9	-328.4	-285.1	0.00	0.00	0.00
2,880.0	11.04	226.48	2,837.2	-317.1	-334.0	-289.9	0.00	0.00	0.00
2,920.0	11.04	226.48	2,876.5	-322.4	-339.5	-294.7	0.00	0.00	0.00
2,960.0	11.04	226.48	2,915.7	-327.7	-345.1	-299.6	0.00	0.00	0.00
3,000.0	11.04	226.48	2,955.0	-333.0	-350.6	-304.4	0.00	0.00	0.00
3,040.0	11.04	226.48	2,994.2	-338.2	-356.2	-309.2	0.00	0.00	0.00
3,080.0	11.04	226.48	3,033.5	-343.5	-361.7	-314.0	0.00	0.00	0.00
3,120.0	11.04	226.48	3,072.8	-348.8	-367.3	-318.9	0.00	0.00	0.00
3,160.0	11.04	226.48	3,112.0	-354.1	-372.9	-323.7	0.00	0.00	0.00
3,200.0	11.04	226.48	3,151.3	-359.3	-378.4	-328.5	0.00	0.00	0.00
3,240.0	11.04	226.48	3,190.5	-364.6	-384.0	-333.3	0.00	0.00	0.00
3,280.0	11.04	226.48	3,229.8	-369.9	-389.5	-338.1	0.00	0.00	0.00
3,320.0	11.04	226.48	3,269.1	-375.2	-395.1	-343.0	0.00	0.00	0.00
3,360.0	11.04	226.48	3,308.3	-380.4	-400.6	-347.8	0.00	0.00	0.00
3,400.0	11.04	226.48	3,347.6	-385.7	-406.2	-352.6	0.00	0.00	0.00
3,440.0	11.04	226.48	3,386.8	-391.0	-411.7	-357.4	0.00	0.00	0.00
3,480.0	11.04	226.48	3,426.1	-396.2	-417.3	-362.3	0.00	0.00	0.00
3,520.0	11.04	226.48	3,465.4	-401.5	-422.8	-367.1	0.00	0.00	0.00
3,560.0	11.04	226.48	3,504.6	-406.8	-428.4	-371.9	0.00	0.00	0.00
3,600.0	11.04	226.48	3,543.9	-412.1	-434.0	-376.7	0.00	0.00	0.00
3,640.0	11.04	226.48	3,583.1	-417.3	-439.5	-381.5	0.00	0.00	0.00
3,680.0	11.04	226.48	3,622.4	-422.6	-445.1	-386.4	0.00	0.00	0.00
3,720.0	11.04	226.48	3,661.7	-427.9	-450.6	-391.2	0.00	0.00	0.00
3,760.0	11.04	226.48	3,700.9	-433.2	-456.2	-396.0	0.00	0.00	0.00
3,800.0	11.04	226.48	3,740.2	-438.4	-461.7	-400.8	0.00	0.00	0.00
3,840.0	11.04	226.48	3,779.4	-443.7	-467.3	-405.7	0.00	0.00	0.00
3,880.0	11.04	226.48	3,818.7	-449.0	-472.8	-410.5	0.00	0.00	0.00
3,920.0	11.04	226.48	3,858.0	-454.3	-478.4	-415.3	0.00	0.00	0.00
3,960.0	11.04	226.48	3,897.2	-459.5	-483.9	-420.1	0.00	0.00	0.00
4,000.0	11.04	226.48	3,936.5	-464.8	-489.5	-424.9	0.00	0.00	0.00
4,040.0	11.04	226.48	3,975.7	-470.1	-495.1	-429.8	0.00	0.00	0.00
4,080.0	11.04	226.48	4,015.0	-475.4	-500.6	-434.6	0.00	0.00	0.00
4,120.0	11.04	226.48	4,054.3	-480.6	-506.2	-439.4	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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)
4,160.0	11.04	226.48	4,093.5	-485.9	-511.7	-444.2	0.00	0.00	0.00
4,200.0	11.04	226.48	4,132.8	-491.2	-517.3	-449.1	0.00	0.00	0.00
4,240.0	11.04	226.48	4,172.0	-496.5	-522.8	-453.9	0.00	0.00	0.00
4,280.0	11.04	226.48	4,211.3	-501.7	-528.4	-458.7	0.00	0.00	0.00
4,320.0	11.04	226.48	4,250.6	-507.0	-533.9	-463.5	0.00	0.00	0.00
4,360.0	11.04	226.48	4,289.8	-512.3	-539.5	-468.3	0.00	0.00	0.00
4,400.0	11.04	226.48	4,329.1	-517.6	-545.1	-473.2	0.00	0.00	0.00
4,440.0	11.04	226.48	4,368.3	-522.8	-550.6	-478.0	0.00	0.00	0.00
4,480.0	11.04	226.48	4,407.6	-528.1	-556.2	-482.8	0.00	0.00	0.00
4,520.0	11.04	226.48	4,446.8	-533.4	-561.7	-487.6	0.00	0.00	0.00
4,560.0	11.04	226.48	4,486.1	-538.7	-567.3	-492.5	0.00	0.00	0.00
4,600.0	11.04	226.48	4,525.4	-543.9	-572.8	-497.3	0.00	0.00	0.00
4,640.0	11.04	226.48	4,564.6	-549.2	-578.4	-502.1	0.00	0.00	0.00
4,680.0	11.04	226.48	4,603.9	-554.5	-583.9	-506.9	0.00	0.00	0.00
4,720.0	11.04	226.48	4,643.1	-559.8	-589.5	-511.7	0.00	0.00	0.00
4,760.0	11.04	226.48	4,682.4	-565.0	-595.0	-516.6	0.00	0.00	0.00
4,800.0	11.04	226.48	4,721.7	-570.3	-600.6	-521.4	0.00	0.00	0.00
4,840.0	11.04	226.48	4,760.9	-575.6	-606.2	-526.2	0.00	0.00	0.00
4,880.0	11.04	226.48	4,800.2	-580.9	-611.7	-531.0	0.00	0.00	0.00
4,920.0	11.04	226.48	4,839.4	-586.1	-617.3	-535.9	0.00	0.00	0.00
4,960.0	11.04	226.48	4,878.7	-591.4	-622.8	-540.7	0.00	0.00	0.00
5,000.0	11.04	226.48	4,918.0	-596.7	-628.4	-545.5	0.00	0.00	0.00
5,040.0	11.04	226.48	4,957.2	-602.0	-633.9	-550.3	0.00	0.00	0.00
5,080.0	11.04	226.48	4,996.5	-607.2	-639.5	-555.1	0.00	0.00	0.00
5,120.0	11.04	226.48	5,035.7	-612.5	-645.0	-560.0	0.00	0.00	0.00
5,160.0	11.04	226.48	5,075.0	-617.8	-650.6	-564.8	0.00	0.00	0.00
5,200.0	11.04	226.48	5,114.3	-623.1	-656.1	-569.6	0.00	0.00	0.00
5,240.0	11.04	226.48	5,153.5	-628.3	-661.7	-574.4	0.00	0.00	0.00
5,280.0	11.04	226.48	5,192.8	-633.6	-667.3	-579.3	0.00	0.00	0.00
5,320.0	11.04	226.48	5,232.0	-638.9	-672.8	-584.1	0.00	0.00	0.00
5,339.7	11.04	226.48	5,251.4	-641.5	-675.5	-586.5	0.00	0.00	0.00
5,360.0	10.63	226.48	5,271.3	-644.1	-678.3	-588.9	2.00	-2.00	0.00
5,400.0	9.83	226.48	5,310.7	-649.0	-683.5	-593.3	2.00	-2.00	0.00
5,440.0	9.03	226.48	5,350.1	-653.5	-688.2	-597.5	2.00	-2.00	0.00
5,480.0	8.23	226.48	5,389.7	-657.7	-692.6	-601.2	2.00	-2.00	0.00
5,520.0	7.43	226.48	5,429.3	-661.4	-696.5	-604.7	2.00	-2.00	0.00
5,560.0	6.63	226.48	5,469.0	-664.8	-700.1	-607.8	2.00	-2.00	0.00
5,600.0	5.83	226.48	5,508.8	-667.8	-703.2	-610.5	2.00	-2.00	0.00
5,640.0	5.03	226.48	5,548.6	-670.4	-706.0	-612.9	2.00	-2.00	0.00
5,680.0	4.23	226.48	5,588.5	-672.6	-708.3	-614.9	2.00	-2.00	0.00
5,720.0	3.43	226.48	5,628.4	-674.5	-710.3	-616.6	2.00	-2.00	0.00
5,760.0	2.63	226.48	5,668.3	-675.9	-711.8	-617.9	2.00	-2.00	0.00
5,800.0	1.83	226.48	5,708.3	-677.0	-712.9	-618.9	2.00	-2.00	0.00
5,840.0	1.03	226.48	5,748.3	-677.7	-713.7	-619.5	2.00	-2.00	0.00
5,880.0	0.23	226.48	5,788.3	-678.0	-714.0	-619.8	2.00	-2.00	0.00
5,891.7	0.00	0.00	5,800.0	-678.0	-714.0	-619.8	2.00	-2.00	0.00
5,920.0	0.00	0.00	5,828.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
5,960.0	0.00	0.00	5,868.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,908.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,040.0	0.00	0.00	5,948.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,080.0	0.00	0.00	5,988.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,120.0	0.00	0.00	6,028.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,160.0	0.00	0.00	6,068.3	-678.0	-714.0	-619.8	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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)
6,200.0	0.00	0.00	6,108.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,240.0	0.00	0.00	6,148.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,280.0	0.00	0.00	6,188.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,320.0	0.00	0.00	6,228.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
6,322.0	0.00	0.00	6,230.3	-678.0	-714.0	-619.8	0.00	0.00	0.00
<b>KOP #2</b>									
6,360.0	2.85	90.16	6,268.3	-678.0	-713.1	-618.9	7.50	7.50	0.00
6,400.0	5.85	90.16	6,308.1	-678.0	-710.0	-615.9	7.50	7.50	0.00
6,440.0	8.85	90.16	6,347.8	-678.0	-704.9	-610.8	7.50	7.50	0.00
6,480.0	11.85	90.16	6,387.1	-678.0	-697.7	-603.7	7.50	7.50	0.00
6,520.0	14.85	90.16	6,426.1	-678.1	-688.5	-594.5	7.50	7.50	0.00
6,560.0	17.85	90.16	6,464.4	-678.1	-677.2	-583.4	7.50	7.50	0.00
6,600.0	20.85	90.16	6,502.2	-678.1	-664.0	-570.2	7.50	7.50	0.00
6,640.0	23.85	90.16	6,539.2	-678.2	-648.8	-555.1	7.50	7.50	0.00
6,680.0	26.85	90.16	6,575.3	-678.2	-631.6	-538.1	7.50	7.50	0.00
6,720.0	29.85	90.16	6,610.5	-678.3	-612.6	-519.3	7.50	7.50	0.00
6,760.0	32.85	90.16	6,644.7	-678.3	-591.8	-498.7	7.50	7.50	0.00
6,793.7	35.38	90.16	6,672.6	-678.4	-572.9	-479.9	7.50	7.50	0.00
<b>LEASE LINE</b>									
6,800.0	35.85	90.16	6,677.7	-678.4	-569.3	-476.3	7.50	7.50	0.00
6,840.0	38.85	90.16	6,709.5	-678.5	-545.0	-452.2	7.50	7.50	0.00
6,880.0	41.85	90.16	6,740.0	-678.5	-519.1	-426.5	7.50	7.50	0.00
6,920.0	44.85	90.16	6,769.0	-678.6	-491.7	-399.3	7.50	7.50	0.00
6,960.0	47.85	90.16	6,796.6	-678.7	-462.7	-370.6	7.50	7.50	0.00
7,000.0	50.85	90.16	6,822.7	-678.8	-432.4	-340.5	7.50	7.50	0.00
7,040.0	53.85	90.16	6,847.1	-678.9	-400.7	-309.1	7.50	7.50	0.00
7,080.0	56.85	90.16	6,869.9	-679.0	-367.8	-276.5	7.50	7.50	0.00
7,120.0	59.85	90.16	6,890.9	-679.1	-333.8	-242.7	7.50	7.50	0.00
7,160.0	62.85	90.16	6,910.0	-679.2	-298.7	-207.9	7.50	7.50	0.00
7,200.0	65.85	90.16	6,927.3	-679.3	-262.6	-172.1	7.50	7.50	0.00
7,240.0	68.85	90.16	6,942.8	-679.4	-225.7	-135.5	7.50	7.50	0.00
7,280.0	71.85	90.16	6,956.2	-679.5	-188.0	-98.1	7.50	7.50	0.00
7,320.0	74.85	90.16	6,967.7	-679.6	-149.7	-60.1	7.50	7.50	0.00
7,360.0	77.85	90.16	6,977.1	-679.7	-110.8	-21.6	7.50	7.50	0.00
7,400.0	80.85	90.16	6,984.5	-679.8	-71.5	17.4	7.50	7.50	0.00
7,440.0	83.85	90.16	6,989.8	-679.9	-31.9	56.7	7.50	7.50	0.00
7,442.0	84.00	90.16	6,990.0	-679.9	-29.9	58.7	7.50	7.50	0.00
<b>7"</b>									
7,480.0	84.00	90.16	6,994.0	-680.0	7.9	96.2	0.00	0.00	0.00
7,516.0	84.00	90.16	6,997.8	-680.1	43.7	131.7	0.00	0.00	0.00
7,520.0	84.20	90.16	6,998.2	-680.1	47.7	135.6	5.00	5.00	0.00
7,560.0	86.20	90.16	7,001.5	-680.2	87.5	175.2	5.00	5.00	0.00
7,600.0	88.20	90.16	7,003.5	-680.4	127.5	214.8	5.00	5.00	0.00
7,640.0	90.20	90.16	7,004.0	-680.5	167.5	254.5	5.00	5.00	0.00
7,647.4	90.57	90.16	7,004.0	-680.5	174.9	261.8	5.00	5.00	0.00
7,647.6	90.57	90.16	7,004.0	-680.5	175.1	262.0	0.00	0.00	0.00
<b>End of Build</b>									
7,680.0	90.57	90.16	7,003.7	-680.6	207.5	294.1	0.00	0.00	0.00
7,720.0	90.57	90.16	7,003.3	-680.7	247.5	333.8	0.00	0.00	0.00
7,760.0	90.57	90.16	7,002.9	-680.8	287.5	373.5	0.00	0.00	0.00
7,800.0	90.57	90.16	7,002.5	-680.9	327.5	413.2	0.00	0.00	0.00
7,840.0	90.57	90.16	7,002.1	-681.0	367.5	452.8	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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)
7,880.0	90.57	90.16	7,001.7	-681.2	407.4	492.5	0.00	0.00	0.00
7,920.0	90.57	90.16	7,001.3	-681.3	447.4	532.2	0.00	0.00	0.00
7,960.0	90.57	90.16	7,000.9	-681.4	487.4	571.9	0.00	0.00	0.00
8,000.0	90.57	90.16	7,000.5	-681.5	527.4	611.5	0.00	0.00	0.00
8,040.0	90.57	90.16	7,000.1	-681.6	567.4	651.2	0.00	0.00	0.00
8,080.0	90.57	90.16	6,999.7	-681.7	607.4	690.9	0.00	0.00	0.00
8,120.0	90.57	90.16	6,999.3	-681.8	647.4	730.6	0.00	0.00	0.00
8,160.0	90.57	90.16	6,998.9	-682.0	687.4	770.2	0.00	0.00	0.00
8,200.0	90.57	90.16	6,998.5	-682.1	727.4	809.9	0.00	0.00	0.00
8,240.0	90.57	90.16	6,998.1	-682.2	767.4	849.6	0.00	0.00	0.00
8,280.0	90.57	90.16	6,997.7	-682.3	807.4	889.2	0.00	0.00	0.00
8,320.0	90.57	90.16	6,997.3	-682.4	847.4	928.9	0.00	0.00	0.00
8,360.0	90.57	90.16	6,996.9	-682.5	887.4	968.6	0.00	0.00	0.00
8,400.0	90.57	90.16	6,996.5	-682.7	927.4	1,008.3	0.00	0.00	0.00
8,440.0	90.57	90.16	6,996.1	-682.8	967.4	1,047.9	0.00	0.00	0.00
8,480.0	90.57	90.16	6,995.7	-682.9	1,007.4	1,087.6	0.00	0.00	0.00
8,520.0	90.57	90.16	6,995.3	-683.0	1,047.4	1,127.3	0.00	0.00	0.00
8,560.0	90.57	90.16	6,994.9	-683.1	1,087.4	1,167.0	0.00	0.00	0.00
8,600.0	90.57	90.16	6,994.5	-683.2	1,127.4	1,206.6	0.00	0.00	0.00
8,640.0	90.57	90.16	6,994.1	-683.3	1,167.4	1,246.3	0.00	0.00	0.00
8,680.0	90.57	90.16	6,993.7	-683.5	1,207.4	1,286.0	0.00	0.00	0.00
8,720.0	90.57	90.16	6,993.3	-683.6	1,247.4	1,325.7	0.00	0.00	0.00
8,760.0	90.57	90.16	6,992.9	-683.7	1,287.4	1,365.3	0.00	0.00	0.00
8,800.0	90.57	90.16	6,992.5	-683.8	1,327.4	1,405.0	0.00	0.00	0.00
8,840.0	90.57	90.16	6,992.1	-683.9	1,367.4	1,444.7	0.00	0.00	0.00
8,880.0	90.57	90.16	6,991.7	-684.0	1,407.4	1,484.4	0.00	0.00	0.00
8,920.0	90.57	90.16	6,991.3	-684.1	1,447.4	1,524.0	0.00	0.00	0.00
8,960.0	90.57	90.16	6,990.9	-684.3	1,487.4	1,563.7	0.00	0.00	0.00
9,000.0	90.57	90.16	6,990.5	-684.4	1,527.4	1,603.4	0.00	0.00	0.00
9,040.0	90.57	90.16	6,990.1	-684.5	1,567.4	1,643.0	0.00	0.00	0.00
9,080.0	90.57	90.16	6,989.7	-684.6	1,607.4	1,682.7	0.00	0.00	0.00
9,120.0	90.57	90.16	6,989.3	-684.7	1,647.4	1,722.4	0.00	0.00	0.00
9,160.0	90.57	90.16	6,989.0	-684.8	1,687.4	1,762.1	0.00	0.00	0.00
9,200.0	90.57	90.16	6,988.6	-685.0	1,727.4	1,801.7	0.00	0.00	0.00
9,240.0	90.57	90.16	6,988.2	-685.1	1,767.4	1,841.4	0.00	0.00	0.00
9,280.0	90.57	90.16	6,987.8	-685.2	1,807.4	1,881.1	0.00	0.00	0.00
9,320.0	90.57	90.16	6,987.4	-685.3	1,847.4	1,920.8	0.00	0.00	0.00
9,360.0	90.57	90.16	6,987.0	-685.4	1,887.4	1,960.4	0.00	0.00	0.00
9,400.0	90.57	90.16	6,986.6	-685.5	1,927.4	2,000.1	0.00	0.00	0.00
9,440.0	90.57	90.16	6,986.2	-685.6	1,967.4	2,039.8	0.00	0.00	0.00
9,480.0	90.57	90.16	6,985.8	-685.8	2,007.4	2,079.5	0.00	0.00	0.00
9,520.0	90.57	90.16	6,985.4	-685.9	2,047.4	2,119.1	0.00	0.00	0.00
9,560.0	90.57	90.16	6,985.0	-686.0	2,087.4	2,158.8	0.00	0.00	0.00
9,600.0	90.57	90.16	6,984.6	-686.1	2,127.4	2,198.5	0.00	0.00	0.00
9,640.0	90.57	90.16	6,984.2	-686.2	2,167.4	2,238.2	0.00	0.00	0.00
9,680.0	90.57	90.16	6,983.8	-686.3	2,207.4	2,277.8	0.00	0.00	0.00
9,720.0	90.57	90.16	6,983.4	-686.5	2,247.3	2,317.5	0.00	0.00	0.00
9,760.0	90.57	90.16	6,983.0	-686.6	2,287.3	2,357.2	0.00	0.00	0.00
9,800.0	90.57	90.16	6,982.6	-686.7	2,327.3	2,396.8	0.00	0.00	0.00
9,840.0	90.57	90.16	6,982.2	-686.8	2,367.3	2,436.5	0.00	0.00	0.00
9,880.0	90.57	90.16	6,981.8	-686.9	2,407.3	2,476.2	0.00	0.00	0.00
9,920.0	90.57	90.16	6,981.4	-687.0	2,447.3	2,515.9	0.00	0.00	0.00
9,960.0	90.57	90.16	6,981.0	-687.1	2,487.3	2,555.5	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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	90.57	90.16	6,980.6	-687.3	2,527.3	2,595.2	0.00	0.00	0.00
10,040.0	90.57	90.16	6,980.2	-687.4	2,567.3	2,634.9	0.00	0.00	0.00
10,080.0	90.57	90.16	6,979.8	-687.5	2,607.3	2,674.6	0.00	0.00	0.00
10,120.0	90.57	90.16	6,979.4	-687.6	2,647.3	2,714.2	0.00	0.00	0.00
10,160.0	90.57	90.16	6,979.0	-687.7	2,687.3	2,753.9	0.00	0.00	0.00
10,200.0	90.57	90.16	6,978.6	-687.8	2,727.3	2,793.6	0.00	0.00	0.00
10,240.0	90.57	90.16	6,978.2	-687.9	2,767.3	2,833.3	0.00	0.00	0.00
10,280.0	90.57	90.16	6,977.8	-688.1	2,807.3	2,872.9	0.00	0.00	0.00
10,320.0	90.57	90.16	6,977.4	-688.2	2,847.3	2,912.6	0.00	0.00	0.00
10,360.0	90.57	90.16	6,977.0	-688.3	2,887.3	2,952.3	0.00	0.00	0.00
10,400.0	90.57	90.16	6,976.6	-688.4	2,927.3	2,992.0	0.00	0.00	0.00
10,440.0	90.57	90.16	6,976.2	-688.5	2,967.3	3,031.6	0.00	0.00	0.00
10,480.0	90.57	90.16	6,975.8	-688.6	3,007.3	3,071.3	0.00	0.00	0.00
10,520.0	90.57	90.16	6,975.4	-688.8	3,047.3	3,111.0	0.00	0.00	0.00
10,560.0	90.57	90.16	6,975.0	-688.9	3,087.3	3,150.6	0.00	0.00	0.00
10,600.0	90.57	90.16	6,974.6	-689.0	3,127.3	3,190.3	0.00	0.00	0.00
10,640.0	90.57	90.16	6,974.2	-689.1	3,167.3	3,230.0	0.00	0.00	0.00
10,680.0	90.57	90.16	6,973.8	-689.2	3,207.3	3,269.7	0.00	0.00	0.00
10,720.0	90.57	90.16	6,973.4	-689.3	3,247.3	3,309.3	0.00	0.00	0.00
10,760.0	90.57	90.16	6,973.0	-689.4	3,287.3	3,349.0	0.00	0.00	0.00
10,800.0	90.57	90.16	6,972.7	-689.6	3,327.3	3,388.7	0.00	0.00	0.00
10,840.0	90.57	90.16	6,972.3	-689.7	3,367.3	3,428.4	0.00	0.00	0.00
10,880.0	90.57	90.16	6,971.9	-689.8	3,407.3	3,468.0	0.00	0.00	0.00
10,920.0	90.57	90.16	6,971.5	-689.9	3,447.3	3,507.7	0.00	0.00	0.00
10,960.0	90.57	90.16	6,971.1	-690.0	3,487.3	3,547.4	0.00	0.00	0.00
11,000.0	90.57	90.16	6,970.7	-690.1	3,527.3	3,587.1	0.00	0.00	0.00
11,040.0	90.57	90.16	6,970.3	-690.2	3,567.3	3,626.7	0.00	0.00	0.00
11,080.0	90.57	90.16	6,969.9	-690.4	3,607.3	3,666.4	0.00	0.00	0.00
11,120.0	90.57	90.16	6,969.5	-690.5	3,647.3	3,706.1	0.00	0.00	0.00
11,160.0	90.57	90.16	6,969.1	-690.6	3,687.3	3,745.8	0.00	0.00	0.00
11,200.0	90.57	90.16	6,968.7	-690.7	3,727.3	3,785.4	0.00	0.00	0.00
11,240.0	90.57	90.16	6,968.3	-690.8	3,767.3	3,825.1	0.00	0.00	0.00
11,280.0	90.57	90.16	6,967.9	-690.9	3,807.3	3,864.8	0.00	0.00	0.00
11,320.0	90.57	90.16	6,967.5	-691.1	3,847.3	3,904.4	0.00	0.00	0.00
11,360.0	90.57	90.16	6,967.1	-691.2	3,887.3	3,944.1	0.00	0.00	0.00
11,400.0	90.57	90.16	6,966.7	-691.3	3,927.3	3,983.8	0.00	0.00	0.00
11,440.0	90.57	90.16	6,966.3	-691.4	3,967.3	4,023.5	0.00	0.00	0.00
11,480.0	90.57	90.16	6,965.9	-691.5	4,007.3	4,063.1	0.00	0.00	0.00
11,520.0	90.57	90.16	6,965.5	-691.6	4,047.3	4,102.8	0.00	0.00	0.00
11,560.0	90.57	90.16	6,965.1	-691.7	4,087.3	4,142.5	0.00	0.00	0.00
11,600.0	90.57	90.16	6,964.7	-691.9	4,127.2	4,182.2	0.00	0.00	0.00
11,640.0	90.57	90.16	6,964.3	-692.0	4,167.2	4,221.8	0.00	0.00	0.00
11,680.0	90.57	90.16	6,963.9	-692.1	4,207.2	4,261.5	0.00	0.00	0.00
11,720.0	90.57	90.16	6,963.5	-692.2	4,247.2	4,301.2	0.00	0.00	0.00
11,760.0	90.57	90.16	6,963.1	-692.3	4,287.2	4,340.9	0.00	0.00	0.00
11,800.0	90.57	90.16	6,962.7	-692.4	4,327.2	4,380.5	0.00	0.00	0.00
11,840.0	90.57	90.16	6,962.3	-692.6	4,367.2	4,420.2	0.00	0.00	0.00
11,880.0	90.57	90.16	6,961.9	-692.7	4,407.2	4,459.9	0.00	0.00	0.00
11,920.0	90.57	90.16	6,961.5	-692.8	4,447.2	4,499.5	0.00	0.00	0.00
11,960.0	90.57	90.16	6,961.1	-692.9	4,487.2	4,539.2	0.00	0.00	0.00
12,000.0	90.57	90.16	6,960.7	-693.0	4,527.2	4,578.9	0.00	0.00	0.00
12,040.0	90.57	90.16	6,960.3	-693.1	4,567.2	4,618.6	0.00	0.00	0.00
12,080.0	90.57	90.16	6,959.9	-693.2	4,607.2	4,658.2	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Project:</b>	SEC.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Alles 22D-402	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (5-16-13)		

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)
12,120.0	90.57	90.16	6,959.5	-693.4	4,647.2	4,697.9	0.00	0.00	0.00
12,160.0	90.57	90.16	6,959.1	-693.5	4,687.2	4,737.6	0.00	0.00	0.00
12,200.0	90.57	90.16	6,958.7	-693.6	4,727.2	4,777.3	0.00	0.00	0.00
12,240.0	90.57	90.16	6,958.3	-693.7	4,767.2	4,816.9	0.00	0.00	0.00
12,280.0	90.57	90.16	6,957.9	-693.8	4,807.2	4,856.6	0.00	0.00	0.00
12,320.0	90.57	90.16	6,957.5	-693.9	4,847.2	4,896.3	0.00	0.00	0.00
12,360.0	90.57	90.16	6,957.1	-694.0	4,887.2	4,936.0	0.00	0.00	0.00
12,400.0	90.57	90.16	6,956.8	-694.2	4,927.2	4,975.6	0.00	0.00	0.00
12,440.0	90.57	90.16	6,956.4	-694.3	4,967.2	5,015.3	0.00	0.00	0.00
12,480.0	90.57	90.16	6,956.0	-694.4	5,007.2	5,055.0	0.00	0.00	0.00
12,520.0	90.57	90.16	6,955.6	-694.5	5,047.2	5,094.7	0.00	0.00	0.00
12,560.0	90.57	90.16	6,955.2	-694.6	5,087.2	5,134.3	0.00	0.00	0.00
12,600.0	90.57	90.16	6,954.8	-694.7	5,127.2	5,174.0	0.00	0.00	0.00
12,640.0	90.57	90.16	6,954.4	-694.9	5,167.2	5,213.7	0.00	0.00	0.00
12,680.0	90.57	90.16	6,954.0	-695.0	5,207.2	5,253.3	0.00	0.00	0.00
12,720.0	90.57	90.16	6,953.6	-695.1	5,247.2	5,293.0	0.00	0.00	0.00
12,760.0	90.57	90.16	6,953.2	-695.2	5,287.2	5,332.7	0.00	0.00	0.00
12,777.3	90.57	90.16	6,953.0	-695.2	5,304.5	5,349.9	0.00	0.00	0.00
BHL 1420'FSL & 500'FEL									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
BHL 1420'FSL & 500'I	0.00	0.00	6,953.0	-695.2	5,304.5	1,382,974.93	3,244,366.94	40.381350	-104.622820
- plan hits target center									
- Point									
LEASE LINE	0.00	0.00	6,807.0	-2,034.1	-773.4	1,381,577.39	3,238,302.52	40.377677	-104.644636
- plan misses target center by 1377.0ft at 6793.7ft MD (6672.6 TVD, -678.4 N, -572.9 E)									
- Polygon									
Point 1			6,807.0	0.0	0.0	1,381,577.39	3,238,302.52		
Point 2			6,807.0	3,000.0	0.0	1,384,577.12	3,238,273.49		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,442.0	6,990.0	7"		7	7-1/2

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP #1
6,322.0	6,230.3	-678.0	-714.0	KOP #2
7,647.6	7,004.0	-680.5	175.1	End of Build



## **Directional**

# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R65W**

**Alles 22S-HZ Pad Sec.22-T5N-R65W**

**Alles 22D-402**

**Wellbore #1**

**Plan #1 (5-16-13)**

## **Anticollision Report**

**24 May, 2013**



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (5-16-13)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<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 10,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	5/23/2013		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	12,777.3	Plan #1 (5-16-13) (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>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)	200.0	200.0	32.3	31.6	47.900	CC, ES
Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)	12,777.3	12,587.4	436.1	130.9	1.429	Level 3, SF
Alles 22S-432 - Wellbore #1 - Plan #1 (5-16-13)	200.0	200.0	60.1	59.4	89.166	CC, ES
Alles 22S-432 - Wellbore #1 - Plan #1 (5-16-13)	12,777.3	12,735.0	907.1	584.6	2.812	SF
<b>Lofland 22T &amp; Alles 22S-HZ Existing Wells</b>						
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	753.3	750.9	126.0	109.1	7.475	CC
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	800.0	796.7	126.3	108.3	7.035	ES
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	7,400.0	6,985.5	736.4	575.4	4.572	SF

Offset Design													Offset Site Error:		0.0 ft
Survey Program: 0-MWD													Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance								
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	-25.55	29.1	-13.9	32.3						
100.0	100.0	100.0	100.0	0.1	0.1	-25.55	29.1	-13.9	32.3	32.1	0.22	143.700			
200.0	200.0	200.0	200.0	0.3	0.3	-25.55	29.1	-13.9	32.3	31.6	0.67	47.900	CC, ES		
300.0	300.0	300.0	300.0	0.5	0.6	110.85	29.1	-13.9	32.9	31.8	1.11	29.737			
400.0	399.8	399.8	399.8	0.8	0.8	118.82	29.1	-13.9	35.1	33.5	1.54	22.718			
500.0	499.5	499.5	499.5	1.0	1.0	129.71	29.1	-13.9	40.0	38.0	2.01	19.930			
600.0	598.7	598.7	598.7	1.3	1.2	140.66	29.1	-13.9	48.7	46.3	2.48	19.630			
700.0	697.5	698.8	698.8	1.6	1.4	148.61	28.5	-15.5	60.6	57.7	2.94	20.618			
752.0	748.6	751.0	751.0	1.8	1.5	151.27	27.6	-17.6	67.5	64.3	3.18	21.245			
800.0	795.7	799.3	799.2	2.0	1.6	153.01	26.4	-20.3	73.7	70.3	3.39	21.737			
900.0	893.9	900.6	900.0	2.4	1.9	154.58	23.0	-28.4	85.0	81.1	3.87	21.984			
1,000.0	992.0	1,002.4	1,001.1	2.8	2.1	154.23	18.2	-39.9	93.8	89.5	4.38	21.406			
1,100.0	1,090.1	1,103.4	1,100.8	3.3	2.4	152.63	12.2	-54.2	100.6	95.6	4.95	20.309			
1,200.0	1,188.3	1,203.1	1,199.3	3.7	2.7	151.06	6.0	-68.7	107.1	101.5	5.55	19.281			
1,300.0	1,286.4	1,302.8	1,297.8	4.1	3.1	149.67	-0.1	-83.3	113.7	107.5	6.18	18.399			
1,400.0	1,384.6	1,402.6	1,396.3	4.5	3.4	148.43	-6.2	-97.8	120.3	113.5	6.82	17.642			
1,500.0	1,482.7	1,502.3	1,494.8	5.0	3.8	147.32	-12.3	-112.3	127.0	119.5	7.48	16.988			
1,600.0	1,580.9	1,602.1	1,593.3	5.4	4.1	146.33	-18.5	-126.9	133.7	125.6	8.14	16.421			

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													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
1,700.0	1,679.0	1,701.8	1,691.8	5.8	4.5	145.43		-24.6	-141.4	140.5	131.7	8.82	15.927	
1,800.0	1,777.2	1,801.6	1,790.3	6.3	4.8	144.61		-30.7	-155.9	147.3	137.8	9.51	15.493	
1,900.0	1,875.3	1,901.3	1,888.8	6.7	5.2	143.86		-36.8	-170.5	154.1	143.9	10.20	15.110	
2,000.0	1,973.5	2,001.1	1,987.3	7.1	5.6	143.18		-43.0	-185.0	161.0	150.1	10.90	14.770	
2,100.0	2,071.6	2,100.8	2,085.8	7.6	5.9	142.56		-49.1	-199.5	167.8	156.2	11.60	14.467	
2,200.0	2,169.8	2,200.6	2,184.3	8.0	6.3	141.98		-55.2	-214.1	174.7	162.4	12.31	14.195	
2,300.0	2,267.9	2,300.3	2,282.8	8.4	6.7	141.44		-61.3	-228.6	181.6	168.6	13.02	13.950	
2,400.0	2,366.1	2,400.1	2,381.2	8.9	7.1	140.95		-67.4	-243.1	188.6	174.8	13.73	13.729	
2,500.0	2,464.2	2,499.8	2,479.7	9.3	7.4	140.49		-73.6	-257.7	195.5	181.0	14.45	13.527	
2,600.0	2,562.4	2,599.6	2,578.2	9.7	7.8	140.06		-79.7	-272.2	202.4	187.3	15.17	13.344	
2,700.0	2,660.5	2,699.3	2,676.7	10.2	8.2	139.66		-85.8	-286.7	209.4	193.5	15.89	13.176	
2,800.0	2,758.7	2,799.1	2,775.2	10.6	8.5	139.29		-91.9	-301.3	216.3	199.7	16.62	13.021	
2,900.0	2,856.8	2,898.8	2,873.7	11.1	8.9	138.94		-98.1	-315.8	223.3	206.0	17.34	12.879	
3,000.0	2,955.0	2,998.6	2,972.2	11.5	9.3	138.61		-104.2	-330.3	230.3	212.2	18.07	12.747	
3,100.0	3,053.1	3,098.3	3,070.7	11.9	9.7	138.30		-110.3	-344.9	237.3	218.5	18.79	12.626	
3,200.0	3,151.3	3,198.1	3,169.2	12.4	10.1	138.01		-116.4	-359.4	244.3	224.8	19.52	12.512	
3,300.0	3,249.4	3,297.8	3,267.7	12.8	10.4	137.73		-122.6	-373.9	251.3	231.0	20.25	12.407	
3,400.0	3,347.6	3,397.5	3,366.2	13.2	10.8	137.47		-128.7	-388.4	258.3	237.3	20.98	12.309	
3,500.0	3,445.7	3,497.3	3,464.7	13.7	11.2	137.23		-134.8	-403.0	265.3	243.6	21.72	12.217	
3,600.0	3,543.9	3,597.0	3,563.2	14.1	11.6	136.99		-140.9	-417.5	272.3	249.9	22.45	12.130	
3,700.0	3,642.0	3,696.8	3,661.7	14.5	11.9	136.77		-147.1	-432.0	279.3	256.2	23.18	12.049	
3,800.0	3,740.2	3,796.5	3,760.1	15.0	12.3	136.56		-153.2	-446.6	286.4	262.4	23.92	11.973	
3,900.0	3,838.3	3,896.3	3,858.6	15.4	12.7	136.36		-159.3	-461.1	293.4	268.7	24.65	11.901	
4,000.0	3,936.5	3,996.0	3,957.1	15.8	13.1	136.16		-165.4	-475.6	300.4	275.0	25.39	11.833	
4,100.0	4,034.6	4,095.8	4,055.6	16.3	13.5	135.98		-171.6	-490.2	307.4	281.3	26.12	11.769	
4,200.0	4,132.8	4,195.5	4,154.1	16.7	13.8	135.80		-177.7	-504.7	314.5	287.6	26.86	11.709	
4,300.0	4,230.9	4,295.3	4,252.6	17.2	14.2	135.64		-183.8	-519.2	321.5	293.9	27.60	11.651	
4,400.0	4,329.1	4,395.0	4,351.1	17.6	14.6	135.48		-189.9	-533.8	328.6	300.2	28.33	11.597	
4,500.0	4,427.2	4,494.8	4,449.6	18.0	15.0	135.32		-196.1	-548.3	335.6	306.5	29.07	11.545	
4,600.0	4,525.4	4,594.5	4,548.1	18.5	15.4	135.18		-202.2	-562.8	342.7	312.9	29.81	11.495	
4,700.0	4,623.5	4,694.3	4,646.6	18.9	15.7	135.03		-208.3	-577.4	349.7	319.2	30.55	11.448	
4,800.0	4,721.7	4,794.0	4,745.1	19.3	16.1	134.90		-214.4	-591.9	356.8	325.5	31.29	11.403	
4,900.0	4,819.8	4,893.8	4,843.6	19.8	16.5	134.77		-220.6	-606.4	363.8	331.8	32.02	11.361	
5,000.0	4,918.0	4,993.5	4,942.1	20.2	16.9	134.64		-226.7	-621.0	370.9	338.1	32.76	11.320	
5,100.0	5,016.1	5,093.3	5,040.6	20.6	17.2	134.52		-232.8	-635.5	377.9	344.4	33.50	11.280	
5,200.0	5,114.3	5,193.0	5,139.1	21.1	17.6	134.41		-238.9	-650.0	385.0	350.7	34.24	11.243	
5,300.0	5,212.4	5,292.8	5,237.5	21.5	18.0	134.29		-245.1	-664.6	392.0	357.1	34.98	11.207	
5,339.7	5,251.4	5,332.3	5,276.6	21.7	18.2	134.25		-247.5	-670.3	394.8	359.6	35.28	11.193	
5,400.0	5,310.7	5,392.5	5,336.1	21.9	18.4	134.18		-251.2	-679.1	398.7	363.0	35.71	11.164	
5,500.0	5,409.5	5,487.7	5,430.2	22.2	18.7	133.93		-256.6	-691.8	403.6	367.3	36.31	11.115	
5,600.0	5,508.8	5,582.3	5,524.2	22.4	18.9	133.75		-260.7	-701.7	407.4	370.6	36.79	11.075	
5,700.0	5,608.4	5,676.9	5,618.6	22.6	19.1	133.62		-263.6	-708.6	410.1	372.9	37.17	11.032	
5,800.0	5,708.3	5,771.6	5,713.1	22.7	19.2	133.55		-265.3	-712.7	411.7	374.2	37.48	10.983	
5,891.7	5,800.0	5,858.5	5,800.0	22.8	19.4	0.01		-265.9	-713.9	412.1	378.5	33.66	12.243	
5,894.5	5,802.8	5,861.3	5,802.8	22.8	19.4	0.01		-265.9	-713.9	412.1	378.5	33.67	12.240	
5,900.0	5,808.3	5,866.8	5,808.3	22.8	19.4	0.01		-265.9	-713.9	412.1	378.5	33.69	12.234	
6,000.0	5,908.3	5,966.8	5,908.3	22.9	19.5	0.01		-265.9	-713.9	412.1	378.2	33.97	12.131	
6,100.0	6,008.3	6,066.8	6,008.3	23.1	19.6	0.01		-265.9	-713.9	412.1	377.9	34.26	12.030	
6,200.0	6,108.3	6,166.8	6,108.3	23.2	19.8	0.10		-265.9	-713.3	412.1	377.6	34.56	11.925	
6,214.4	6,122.7	6,181.2	6,122.7	23.2	19.8	0.20		-265.9	-712.6	412.1	377.5	34.62	11.904	
6,300.0	6,208.3	6,265.7	6,206.6	23.3	19.8	1.55		-265.9	-702.9	412.3	377.1	35.14	11.734	

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)		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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
6,322.0	6,230.3	6,287.0	6,227.5	23.3	19.8	2.09	-265.9	-699.0	412.4	377.1	35.31	11.680				
6,350.0	6,258.3	6,313.9	6,253.7	23.3	19.8	-87.33	-265.9	-693.2	412.6	374.5	38.11	10.826				
6,400.0	6,308.1	6,361.4	6,299.6	23.3	19.7	-86.01	-266.0	-680.8	413.2	375.4	37.81	10.928				
6,450.0	6,357.7	6,408.4	6,344.1	23.3	19.6	-84.71	-266.0	-665.8	414.0	376.5	37.46	11.050				
6,500.0	6,406.7	6,454.9	6,387.1	23.3	19.6	-83.45	-266.1	-648.2	414.9	377.8	37.08	11.189				
6,550.0	6,454.9	6,500.0	6,427.8	23.3	19.5	-82.24	-266.1	-628.7	416.1	379.4	36.69	11.340				
6,600.0	6,502.2	6,546.4	6,468.4	23.2	19.4	-81.04	-266.2	-606.1	417.4	381.1	36.28	11.505				
6,650.0	6,548.3	6,591.5	6,506.4	23.1	19.3	-79.89	-266.2	-581.9	418.8	382.9	35.88	11.674				
6,700.0	6,593.0	6,636.3	6,542.7	23.0	19.2	-78.80	-266.3	-555.7	420.3	384.8	35.49	11.844				
6,750.0	6,636.2	6,680.6	6,577.1	22.9	19.2	-77.76	-266.4	-527.6	421.9	386.8	35.13	12.010				
6,800.0	6,677.7	6,724.7	6,609.5	22.8	19.1	-76.77	-266.5	-497.9	423.6	388.8	34.82	12.165				
6,850.0	6,717.2	6,768.4	6,639.9	22.7	19.1	-75.84	-266.6	-466.5	425.3	390.7	34.57	12.303				
6,900.0	6,754.7	6,811.8	6,668.4	22.6	19.0	-74.97	-266.7	-433.8	426.9	392.5	34.39	12.416				
6,950.0	6,789.9	6,854.9	6,694.7	22.4	19.0	-74.16	-266.8	-399.6	428.6	394.3	34.29	12.497				
7,000.0	6,822.7	6,900.0	6,720.2	22.3	19.1	-73.39	-266.9	-362.4	430.2	395.9	34.31	12.538				
7,050.0	6,853.0	6,940.5	6,741.1	22.2	19.2	-72.74	-267.0	-327.7	431.7	397.3	34.45	12.530				
7,100.0	6,880.6	6,983.0	6,761.1	22.1	19.3	-72.12	-267.1	-290.3	433.2	398.4	34.73	12.473				
7,150.0	6,905.4	7,025.3	6,778.9	22.1	19.5	-71.57	-267.2	-251.9	434.5	399.3	35.14	12.365				
7,200.0	6,927.3	7,067.4	6,794.5	22.0	19.8	-71.09	-267.3	-212.7	435.7	400.0	35.69	12.206				
7,250.0	6,946.3	7,109.4	6,807.8	22.0	20.1	-70.67	-267.5	-172.9	436.8	400.4	36.40	12.000				
7,300.0	6,962.2	7,150.0	6,818.6	22.1	20.5	-70.33	-267.6	-133.8	437.7	400.4	37.22	11.757				
7,350.0	6,974.9	7,193.2	6,827.8	22.2	20.9	-70.04	-267.7	-91.6	438.4	400.2	38.23	11.469				
7,400.0	6,984.5	7,234.9	6,834.4	22.4	21.4	-69.83	-267.8	-50.4	439.0	399.6	39.34	11.158				
7,442.0	6,990.0	7,269.9	6,838.2	22.6	21.9	-69.71	-267.9	-15.6	439.3	398.9	40.37	10.883				
7,500.0	6,996.1	7,318.2	6,840.9	23.1	22.6	-69.41	-268.1	32.5	440.3	398.6	41.74	10.548				
7,516.0	6,997.8	7,331.4	6,841.1	23.3	22.8	-69.27	-268.1	45.8	440.8	398.7	42.12	10.465				
7,600.0	7,003.5	7,413.3	6,840.6	24.4	24.1	-68.44	-268.3	127.7	443.0	398.5	44.52	9.952				
7,647.4	7,004.0	7,460.7	6,840.3	25.2	24.9	-68.33	-268.5	175.1	443.3	397.2	46.10	9.617				
7,700.0	7,003.5	7,513.3	6,840.0	26.1	25.9	-68.36	-268.6	227.7	443.2	395.3	47.90	9.253				
7,800.0	7,002.5	7,613.3	6,839.4	28.0	27.9	-68.40	-268.9	327.7	443.1	391.5	51.59	8.589				
7,900.0	7,001.5	7,713.3	6,838.8	30.1	30.0	-68.45	-269.2	427.7	443.0	387.4	55.53	7.976				
8,000.0	7,000.5	7,813.3	6,838.2	32.3	32.2	-68.50	-269.5	527.7	442.8	383.1	59.69	7.419				
8,100.0	6,999.5	7,913.3	6,837.6	34.6	34.5	-68.54	-269.8	627.7	442.7	378.7	64.01	6.916				
8,200.0	6,998.5	8,013.3	6,836.9	37.0	36.9	-68.59	-270.1	727.7	442.5	374.1	68.46	6.464				
8,300.0	6,997.5	8,113.3	6,836.3	39.4	39.3	-68.63	-270.4	827.7	442.4	369.3	73.03	6.057				
8,400.0	6,996.5	8,213.3	6,835.7	41.9	41.8	-68.68	-270.7	927.7	442.2	364.5	77.69	5.692				
8,500.0	6,995.5	8,313.3	6,835.1	44.4	44.4	-68.73	-271.0	1,027.6	442.1	359.6	82.43	5.363				
8,600.0	6,994.5	8,413.3	6,834.5	46.9	46.9	-68.77	-271.3	1,127.6	441.9	354.7	87.23	5.066				
8,700.0	6,993.5	8,513.3	6,833.9	49.5	49.5	-68.82	-271.6	1,227.6	441.8	349.7	92.09	4.797				
8,800.0	6,992.5	8,613.3	6,833.3	52.1	52.1	-68.86	-271.9	1,327.6	441.6	344.6	97.00	4.553				
8,900.0	6,991.5	8,713.3	6,832.7	54.7	54.7	-68.91	-272.2	1,427.6	441.5	339.5	101.95	4.330				
9,000.0	6,990.5	8,813.3	6,832.1	57.4	57.4	-68.96	-272.5	1,527.6	441.4	334.4	106.94	4.127				
9,100.0	6,989.5	8,913.3	6,831.4	60.0	60.0	-69.00	-272.8	1,627.6	441.2	329.3	111.96	3.941				
9,200.0	6,988.6	9,013.3	6,830.8	62.7	62.7	-69.05	-273.1	1,727.6	441.1	324.1	117.00	3.770				
9,300.0	6,987.6	9,113.3	6,830.2	65.3	65.4	-69.09	-273.3	1,827.6	440.9	318.9	122.07	3.612				
9,400.0	6,986.6	9,213.3	6,829.6	68.0	68.1	-69.14	-273.6	1,927.6	440.8	313.6	127.17	3.466				
9,500.0	6,985.6	9,313.3	6,829.0	70.7	70.8	-69.19	-273.9	2,027.6	440.6	308.4	132.28	3.331				
9,600.0	6,984.6	9,413.3	6,828.4	73.4	73.5	-69.23	-274.2	2,127.6	440.5	303.1	137.41	3.206				
9,700.0	6,983.6	9,513.3	6,827.8	76.1	76.2	-69.28	-274.5	2,227.6	440.4	297.8	142.56	3.089				
9,800.0	6,982.6	9,613.3	6,827.2	78.9	78.9	-69.33	-274.8	2,327.6	440.2	292.5	147.72	2.980				
9,900.0	6,981.6	9,713.3	6,826.6	81.6	81.7	-69.37	-275.1	2,427.6	440.1	287.2	152.90	2.878				

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)												<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	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
10,000.0	6,980.6	9,813.3	6,825.9	84.3	84.4	-69.42	-275.4	2,527.6	439.9	281.8	158.09	2.783	
10,100.0	6,979.6	9,913.3	6,825.3	87.0	87.1	-69.46	-275.7	2,627.6	439.8	276.5	163.29	2.693	
10,200.0	6,978.6	10,013.3	6,824.7	89.8	89.9	-69.51	-276.0	2,727.6	439.6	271.1	168.50	2.609	
10,300.0	6,977.6	10,113.3	6,824.1	92.5	92.6	-69.56	-276.3	2,827.6	439.5	265.8	173.72	2.530	
10,400.0	6,976.6	10,213.3	6,823.5	95.3	95.4	-69.60	-276.6	2,927.6	439.4	260.4	178.95	2.455	
10,500.0	6,975.6	10,313.3	6,822.9	98.0	98.1	-69.65	-276.9	3,027.6	439.2	255.0	184.20	2.385	
10,600.0	6,974.6	10,413.3	6,822.3	100.8	100.9	-69.70	-277.2	3,127.6	439.1	249.6	189.45	2.318	
10,700.0	6,973.6	10,513.3	6,821.7	103.5	103.6	-69.74	-277.5	3,227.6	439.0	244.2	194.70	2.254	
10,800.0	6,972.7	10,613.3	6,821.1	106.3	106.4	-69.79	-277.8	3,327.6	438.8	238.8	199.97	2.194	
10,900.0	6,971.7	10,713.3	6,820.4	109.0	109.2	-69.84	-278.1	3,427.6	438.7	233.4	205.24	2.137	
11,000.0	6,970.7	10,813.3	6,819.8	111.8	111.9	-69.88	-278.4	3,527.6	438.5	228.0	210.52	2.083	
11,100.0	6,969.7	10,913.3	6,819.2	114.6	114.7	-69.93	-278.6	3,627.6	438.4	222.6	215.81	2.031	
11,200.0	6,968.7	11,013.3	6,818.6	117.3	117.5	-69.98	-278.9	3,727.6	438.3	217.2	221.10	1.982	
11,300.0	6,967.7	11,113.3	6,818.0	120.1	120.3	-70.02	-279.2	3,827.6	438.1	211.7	226.40	1.935	
11,400.0	6,966.7	11,213.3	6,817.4	122.9	123.0	-70.07	-279.5	3,927.6	438.0	206.3	231.71	1.890	
11,500.0	6,965.7	11,313.3	6,816.8	125.6	125.8	-70.12	-279.8	4,027.6	437.8	200.8	237.02	1.847	
11,600.0	6,964.7	11,413.3	6,816.2	128.4	128.6	-70.16	-280.1	4,127.6	437.7	195.4	242.33	1.806	
11,700.0	6,963.7	11,513.3	6,815.6	131.2	131.4	-70.21	-280.4	4,227.6	437.6	189.9	247.65	1.767	
11,800.0	6,962.7	11,613.3	6,815.0	134.0	134.1	-70.26	-280.7	4,327.5	437.4	184.5	252.98	1.729	
11,900.0	6,961.7	11,713.3	6,814.3	136.7	136.9	-70.30	-281.0	4,427.5	437.3	179.0	258.31	1.693	
12,000.0	6,960.7	11,813.3	6,813.7	139.5	139.7	-70.35	-281.3	4,527.5	437.2	173.5	263.65	1.658	
12,100.0	6,959.7	11,913.3	6,813.1	142.3	142.5	-70.40	-281.6	4,627.5	437.0	168.0	268.99	1.625	
12,200.0	6,958.7	12,013.3	6,812.5	145.1	145.3	-70.45	-281.9	4,727.5	436.9	162.6	274.33	1.593	
12,300.0	6,957.7	12,113.3	6,811.9	147.9	148.1	-70.49	-282.2	4,827.5	436.8	157.1	279.68	1.562	
12,400.0	6,956.8	12,213.3	6,811.3	150.7	150.8	-70.54	-282.5	4,927.5	436.6	151.6	285.04	1.532	
12,500.0	6,955.8	12,313.3	6,810.7	153.4	153.6	-70.59	-282.8	5,027.5	436.5	146.1	290.40	1.503	
12,600.0	6,954.8	12,413.3	6,810.1	156.2	156.4	-70.63	-283.1	5,127.5	436.4	140.6	295.76	1.475 Level 3	
12,700.0	6,953.8	12,513.3	6,809.5	159.0	159.2	-70.68	-283.4	5,227.5	436.2	135.1	301.13	1.449 Level 3	
12,757.0	6,953.2	12,570.3	6,809.1	160.6	160.8	-70.71	-283.5	5,284.6	436.2	132.0	304.19	1.434 Level 3	
12,777.3	6,953.0	12,587.4	6,809.0	161.2	161.3	-70.72	-283.6	5,301.6	436.1	130.9	305.19	1.429 Level 3, SF	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-432 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	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	-24.65	54.6	-25.1	60.1					
100.0	100.0	100.0	100.0	0.1	0.1	-24.65	54.6	-25.1	60.1	59.9	0.22	267.497		
200.0	200.0	200.0	200.0	0.3	0.3	-24.65	54.6	-25.1	60.1	59.4	0.67	89.166 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.6	110.42	54.6	-25.1	60.7	59.6	1.11	54.911		
400.0	399.8	399.8	399.8	0.8	0.8	114.86	54.6	-25.1	62.7	61.2	1.54	40.631		
500.0	499.5	499.5	499.5	1.0	1.0	121.56	54.6	-25.1	66.9	64.9	2.01	33.263		
600.0	598.7	598.7	598.7	1.3	1.2	129.48	54.6	-25.1	74.0	71.5	2.50	29.633		
700.0	697.5	697.5	697.5	1.6	1.5	137.47	54.6	-25.1	84.9	81.9	2.99	28.357		
752.0	748.6	748.6	748.6	1.8	1.6	141.35	54.6	-25.1	92.1	88.9	3.25	28.351		
800.0	795.7	795.7	795.7	2.0	1.7	144.63	54.6	-25.1	99.5	96.0	3.48	28.585		
900.0	893.9	893.9	893.9	2.4	1.9	150.10	54.6	-25.1	115.8	111.8	3.96	29.254		
1,000.0	992.0	992.0	992.0	2.8	2.1	154.21	54.6	-25.1	132.8	128.3	4.43	29.999		
1,100.0	1,090.1	1,090.9	1,090.9	3.3	2.3	156.85	55.0	-26.5	150.1	145.2	4.89	30.683		
1,200.0	1,188.3	1,190.4	1,190.3	3.7	2.5	157.78	56.2	-31.2	166.9	161.6	5.37	31.112		
1,300.0	1,286.4	1,290.2	1,289.7	4.1	2.8	157.47	58.3	-39.3	183.2	177.4	5.87	31.213		
1,400.0	1,384.6	1,389.9	1,388.7	4.5	3.0	156.20	61.2	-50.7	199.0	192.6	6.42	31.011		
1,500.0	1,482.7	1,489.1	1,486.8	5.0	3.3	154.27	64.9	-65.2	214.4	207.4	7.01	30.575		
1,600.0	1,580.9	1,587.7	1,584.1	5.4	3.6	152.44	68.7	-80.3	230.0	222.3	7.64	30.100		
1,700.0	1,679.0	1,686.2	1,681.4	5.8	3.9	150.84	72.5	-95.3	245.7	237.4	8.29	29.652		
1,800.0	1,777.2	1,784.7	1,778.7	6.3	4.2	149.43	76.4	-110.3	261.7	252.7	8.95	29.235		
1,900.0	1,875.3	1,883.2	1,876.0	6.7	4.5	148.19	80.2	-125.4	277.7	268.1	9.62	28.857		
2,000.0	1,973.5	1,981.8	1,973.3	7.1	4.8	147.08	84.0	-140.4	293.9	283.6	10.31	28.512		
2,100.0	2,071.6	2,080.3	2,070.6	7.6	5.2	146.09	87.9	-155.4	310.2	299.2	11.00	28.198		
2,200.0	2,169.8	2,178.8	2,167.9	8.0	5.5	145.19	91.7	-170.5	326.5	314.8	11.70	27.914		
2,300.0	2,267.9	2,277.4	2,265.2	8.4	5.8	144.38	95.5	-185.5	343.0	330.6	12.40	27.657		
2,400.0	2,366.1	2,375.9	2,362.5	8.9	6.2	143.65	99.3	-200.5	359.4	346.3	13.11	27.423		
2,500.0	2,464.2	2,474.4	2,459.8	9.3	6.5	142.98	103.2	-215.6	376.0	362.2	13.82	27.210		
2,600.0	2,562.4	2,573.0	2,557.1	9.7	6.9	142.37	107.0	-230.6	392.6	378.0	14.53	27.016		
2,700.0	2,660.5	2,671.5	2,654.4	10.2	7.2	141.80	110.8	-245.6	409.2	394.0	15.25	26.838		
2,800.0	2,758.7	2,770.0	2,751.7	10.6	7.6	141.28	114.7	-260.7	425.9	409.9	15.96	26.676		
2,900.0	2,856.8	2,868.6	2,849.0	11.1	8.0	140.80	118.5	-275.7	442.6	425.9	16.68	26.526		
3,000.0	2,955.0	2,967.1	2,946.3	11.5	8.3	140.35	122.3	-290.7	459.3	441.9	17.40	26.389		
3,100.0	3,053.1	3,065.6	3,043.6	11.9	8.7	139.94	126.2	-305.8	476.0	457.9	18.13	26.262		
3,200.0	3,151.3	3,164.2	3,140.9	12.4	9.0	139.55	130.0	-320.8	492.8	473.9	18.85	26.144		
3,300.0	3,249.4	3,262.7	3,238.2	12.8	9.4	139.19	133.8	-335.8	509.6	490.0	19.57	26.035		
3,400.0	3,347.6	3,361.2	3,335.5	13.2	9.7	138.85	137.6	-350.9	526.4	506.1	20.30	25.933		
3,500.0	3,445.7	3,459.7	3,432.8	13.7	10.1	138.54	141.5	-365.9	543.2	522.2	21.02	25.838		
3,600.0	3,543.9	3,558.3	3,530.1	14.1	10.5	138.24	145.3	-381.0	560.1	538.3	21.75	25.750		
3,700.0	3,642.0	3,656.8	3,627.4	14.5	10.8	137.96	149.1	-396.0	576.9	554.4	22.48	25.667		
3,800.0	3,740.2	3,755.3	3,724.7	15.0	11.2	137.69	153.0	-411.0	593.8	570.6	23.20	25.590		
3,900.0	3,838.3	3,853.9	3,822.0	15.4	11.6	137.44	156.8	-426.1	610.7	586.7	23.93	25.517		
4,000.0	3,936.5	3,952.4	3,919.3	15.8	11.9	137.21	160.6	-441.1	627.5	602.9	24.66	25.448		
4,100.0	4,034.6	4,050.9	4,016.6	16.3	12.3	136.98	164.4	-456.1	644.4	619.1	25.39	25.384		
4,200.0	4,132.8	4,149.5	4,113.9	16.7	12.7	136.77	168.3	-471.2	661.4	635.2	26.12	25.323		
4,300.0	4,230.9	4,248.0	4,211.2	17.2	13.0	136.57	172.1	-486.2	678.3	651.4	26.85	25.265		
4,400.0	4,329.1	4,346.5	4,308.5	17.6	13.4	136.37	175.9	-501.2	695.2	667.6	27.58	25.211		
4,500.0	4,427.2	4,445.1	4,405.8	18.0	13.7	136.19	179.8	-516.3	712.1	683.8	28.31	25.159		
4,600.0	4,525.4	4,543.6	4,503.1	18.5	14.1	136.02	183.6	-531.3	729.1	700.0	29.03	25.110		
4,700.0	4,623.5	4,642.1	4,600.4	18.9	14.5	135.85	187.4	-546.3	746.0	716.2	29.77	25.063		
4,800.0	4,721.7	4,740.7	4,697.8	19.3	14.8	135.69	191.3	-561.4	763.0	732.5	30.50	25.019		
4,900.0	4,819.8	4,839.2	4,795.1	19.8	15.2	135.54	195.1	-576.4	779.9	748.7	31.23	24.977		

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<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
Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-432 - Wellbore #1 - Plan #1 (5-16-13)													
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)					
5,000.0	4,918.0	4,937.7	4,892.4	20.2	15.6	135.39	198.9	-591.4	796.9	764.9	31.96	24.937	
5,100.0	5,016.1	5,036.2	4,989.7	20.6	15.9	135.25	202.7	-606.5	813.8	781.2	32.69	24.898	
5,200.0	5,114.3	5,134.8	5,087.0	21.1	16.3	135.12	206.6	-621.5	830.8	797.4	33.42	24.861	
5,300.0	5,212.4	5,233.3	5,184.3	21.5	16.7	134.99	210.4	-636.5	847.8	813.6	34.15	24.826	
5,339.7	5,251.4	5,272.4	5,222.9	21.7	16.8	134.94	211.9	-642.5	854.5	820.1	34.44	24.813	
5,400.0	5,310.7	5,331.9	5,281.6	21.9	17.0	134.97	214.2	-651.6	864.3	829.5	34.87	24.786	
5,500.0	5,409.5	5,430.8	5,379.3	22.2	17.4	134.88	218.1	-666.7	878.6	843.1	35.53	24.727	
5,600.0	5,508.8	5,532.0	5,479.2	22.4	17.8	134.60	222.0	-682.0	890.5	854.3	36.16	24.625	
5,700.0	5,608.4	5,639.0	5,585.4	22.6	18.1	134.28	225.4	-695.3	899.4	862.7	36.69	24.509	
5,800.0	5,708.3	5,746.7	5,692.6	22.7	18.3	134.00	227.8	-704.8	905.0	867.8	37.11	24.386	
5,891.7	5,800.0	5,845.9	5,791.7	22.8	18.5	0.25	229.1	-710.1	907.2	874.4	32.77	27.682	
5,900.0	5,808.3	5,854.9	5,800.6	22.8	18.5	0.23	229.2	-710.4	907.3	874.5	32.80	27.664	
6,000.0	5,908.3	5,962.5	5,908.3	22.9	18.6	0.12	229.6	-712.1	907.6	874.6	33.09	27.429	
6,100.0	6,008.3	6,062.5	6,008.3	23.1	18.8	0.12	229.6	-712.1	907.6	874.2	33.40	27.176	
6,200.0	6,108.3	6,162.5	6,108.3	23.2	18.9	0.12	229.6	-712.1	907.6	873.9	33.71	26.922	
6,300.0	6,208.3	6,262.5	6,208.3	23.3	19.1	0.12	229.6	-712.1	907.6	873.6	34.03	26.671	
6,322.0	6,230.3	6,284.5	6,230.3	23.3	19.1	0.12	229.6	-712.1	907.6	873.5	34.10	26.616	
6,350.0	6,258.3	6,312.6	6,258.3	23.3	19.2	-90.04	229.6	-711.6	907.6	868.9	38.71	23.448	
6,400.0	6,308.1	6,362.6	6,308.2	23.3	19.2	-90.04	229.6	-708.1	907.6	868.9	38.77	23.412	
6,450.0	6,357.7	6,412.7	6,357.8	23.3	19.2	-90.04	229.6	-701.4	907.6	868.9	38.77	23.410	
6,500.0	6,406.7	6,462.7	6,406.8	23.3	19.2	-90.04	229.6	-691.4	907.6	868.9	38.72	23.441	
6,550.0	6,454.9	6,512.8	6,455.1	23.3	19.1	-90.04	229.5	-678.3	907.6	869.0	38.62	23.501	
6,600.0	6,502.2	6,562.8	6,502.4	23.2	19.1	-90.04	229.5	-662.0	907.6	869.2	38.48	23.585	
6,650.0	6,548.3	6,612.9	6,548.6	23.1	19.0	-90.04	229.4	-642.6	907.6	869.3	38.31	23.689	
6,700.0	6,593.0	6,662.9	6,593.4	23.0	18.9	-90.04	229.4	-620.3	907.6	869.5	38.13	23.806	
6,750.0	6,636.2	6,713.0	6,636.6	22.9	18.8	-90.03	229.3	-595.1	907.6	869.7	37.93	23.928	
6,800.0	6,677.7	6,763.0	6,678.1	22.8	18.8	-90.03	229.2	-567.1	907.6	869.9	37.75	24.046	
6,850.0	6,717.2	6,813.0	6,717.6	22.7	18.7	-90.03	229.1	-536.5	907.6	870.0	37.59	24.147	
6,900.0	6,754.7	6,863.1	6,755.1	22.6	18.7	-90.03	229.0	-503.3	907.6	870.1	37.47	24.220	
6,950.0	6,789.9	6,913.1	6,790.3	22.4	18.6	-90.03	228.9	-467.8	907.6	870.2	37.43	24.250	
7,000.0	6,822.7	6,963.2	6,823.1	22.3	18.7	-90.03	228.8	-430.0	907.6	870.1	37.47	24.223	
7,050.0	6,853.0	7,013.2	6,853.4	22.2	18.8	-90.03	228.7	-390.2	907.6	870.0	37.62	24.126	
7,100.0	6,880.6	7,063.2	6,881.0	22.1	18.9	-90.02	228.6	-348.5	907.6	869.7	37.89	23.951	
7,150.0	6,905.4	7,113.2	6,905.8	22.1	19.1	-90.02	228.4	-305.0	907.6	869.3	38.31	23.689	
7,200.0	6,927.3	7,163.3	6,927.7	22.0	19.4	-90.02	228.3	-260.1	907.6	868.7	38.88	23.340	
7,250.0	6,946.3	7,213.3	6,946.6	22.0	19.8	-90.02	228.2	-213.8	907.6	867.9	39.62	22.909	
7,300.0	6,962.2	7,263.3	6,962.4	22.1	20.3	-90.01	228.0	-166.3	907.6	867.0	40.51	22.404	
7,350.0	6,974.9	7,313.3	6,975.2	22.2	20.8	-90.01	227.9	-118.0	907.5	866.0	41.56	21.838	
7,400.0	6,984.5	7,363.3	6,984.7	22.4	21.4	-90.01	227.7	-68.9	907.5	864.8	42.75	21.227	
7,442.0	6,990.0	7,405.4	6,990.2	22.6	22.0	-90.01	227.6	-27.2	907.5	863.7	43.86	20.693	
7,500.0	6,996.1	7,463.4	6,996.2	23.1	22.9	-90.01	227.4	30.4	907.5	862.0	45.55	19.925	
7,516.0	6,997.8	7,479.4	6,997.9	23.3	23.1	-90.01	227.4	46.4	907.5	861.5	46.03	19.716	
7,600.0	7,003.5	7,563.4	7,003.5	24.4	24.5	-90.00	227.1	130.1	907.5	858.7	48.81	18.592	
7,647.4	7,004.0	7,610.7	7,004.0	25.2	25.3	-90.00	227.0	177.5	907.5	857.0	50.45	17.987	
7,700.0	7,003.5	7,663.4	7,003.5	26.1	26.3	-90.00	226.9	230.1	907.5	855.1	52.41	17.316	
7,800.0	7,002.5	7,763.4	7,002.5	28.0	28.3	-90.00	226.6	330.1	907.5	851.2	56.34	16.108	
7,900.0	7,001.5	7,863.4	7,001.5	30.1	30.4	-90.00	226.3	430.1	907.5	847.0	60.53	14.992	
8,000.0	7,000.5	7,963.4	7,000.5	32.3	32.7	-90.00	226.0	530.1	907.5	842.5	64.94	13.974	
8,100.0	6,999.5	8,063.4	6,999.5	34.6	35.0	-90.00	225.7	630.1	907.5	837.9	69.52	13.053	
8,200.0	6,998.5	8,163.4	6,998.5	37.0	37.3	-90.00	225.4	730.1	907.5	833.2	74.25	12.222	
8,300.0	6,997.5	8,263.4	6,997.5	39.4	39.8	-90.00	225.1	830.1	907.5	828.4	79.09	11.474	

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<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
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)					
8,400.0	6,996.5	8,363.4	6,996.5	41.9	42.2	-90.00	224.8	930.1	907.4	823.4	84.03	10.799	
8,500.0	6,995.5	8,463.4	6,995.5	44.4	44.8	-90.00	224.5	1,030.1	907.4	818.4	89.05	10.190	
8,600.0	6,994.5	8,563.4	6,994.5	46.9	47.3	-90.00	224.2	1,130.1	907.4	813.3	94.14	9.640	
8,700.0	6,993.5	8,663.4	6,993.5	49.5	49.9	-90.00	223.9	1,230.1	907.4	808.1	99.28	9.140	
8,800.0	6,992.5	8,763.4	6,992.5	52.1	52.5	-90.00	223.6	1,330.1	907.4	802.9	104.47	8.686	
8,900.0	6,991.5	8,863.4	6,991.5	54.7	55.1	-90.00	223.3	1,430.1	907.4	797.7	109.71	8.271	
9,000.0	6,990.5	8,963.4	6,990.5	57.4	57.8	-90.00	223.0	1,530.1	907.4	792.4	114.98	7.892	
9,100.0	6,989.5	9,063.4	6,989.6	60.0	60.4	-90.00	222.7	1,630.1	907.4	787.1	120.28	7.544	
9,200.0	6,988.6	9,163.4	6,988.6	62.7	63.1	-90.00	222.4	1,730.1	907.4	781.8	125.61	7.224	
9,300.0	6,987.6	9,263.4	6,987.6	65.3	65.8	-90.00	222.1	1,830.0	907.4	776.4	130.96	6.928	
9,400.0	6,986.6	9,363.4	6,986.6	68.0	68.4	-90.00	221.8	1,930.0	907.4	771.0	136.34	6.655	
9,500.0	6,985.6	9,463.4	6,985.6	70.7	71.1	-90.00	221.5	2,030.0	907.4	765.6	141.73	6.402	
9,600.0	6,984.6	9,563.4	6,984.6	73.4	73.8	-90.00	221.2	2,130.0	907.4	760.2	147.14	6.167	
9,700.0	6,983.6	9,663.4	6,983.6	76.1	76.6	-90.00	221.0	2,230.0	907.4	754.8	152.57	5.947	
9,800.0	6,982.6	9,763.4	6,982.6	78.9	79.3	-90.00	220.7	2,330.0	907.3	749.3	158.01	5.742	
9,900.0	6,981.6	9,863.4	6,981.6	81.6	82.0	-90.00	220.4	2,430.0	907.3	743.9	163.46	5.551	
10,000.0	6,980.6	9,963.4	6,980.6	84.3	84.7	-90.00	220.1	2,530.0	907.3	738.4	168.92	5.371	
10,100.0	6,979.6	10,063.4	6,979.6	87.0	87.5	-90.00	219.8	2,630.0	907.3	732.9	174.39	5.203	
10,200.0	6,978.6	10,163.4	6,978.6	89.8	90.2	-90.00	219.5	2,730.0	907.3	727.4	179.87	5.044	
10,300.0	6,977.6	10,263.4	6,977.6	92.5	93.0	-90.00	219.2	2,830.0	907.3	721.9	185.36	4.895	
10,400.0	6,976.6	10,363.4	6,976.6	95.3	95.7	-90.00	218.9	2,930.0	907.3	716.4	190.85	4.754	
10,500.0	6,975.6	10,463.4	6,975.6	98.0	98.5	-90.00	218.6	3,030.0	907.3	710.9	196.36	4.621	
10,600.0	6,974.6	10,563.4	6,974.6	100.8	101.2	-90.00	218.3	3,130.0	907.3	705.4	201.87	4.494	
10,700.0	6,973.6	10,663.4	6,973.6	103.5	104.0	-90.00	218.0	3,230.0	907.3	699.9	207.38	4.375	
10,800.0	6,972.7	10,763.4	6,972.6	106.3	106.7	-90.00	217.7	3,330.0	907.3	694.4	212.90	4.261	
10,900.0	6,971.7	10,863.4	6,971.6	109.0	109.5	-90.00	217.4	3,430.0	907.3	688.8	218.43	4.154	
11,000.0	6,970.7	10,963.4	6,970.6	111.8	112.3	-90.00	217.1	3,530.0	907.3	683.3	223.96	4.051	
11,100.0	6,969.7	11,063.4	6,969.6	114.6	115.0	-90.00	216.8	3,630.0	907.2	677.8	229.49	3.953	
11,200.0	6,968.7	11,163.4	6,968.6	117.3	117.8	-90.00	216.5	3,729.9	907.2	672.2	235.03	3.860	
11,300.0	6,967.7	11,263.4	6,967.7	120.1	120.6	-90.00	216.2	3,829.9	907.2	666.7	240.57	3.771	
11,400.0	6,966.7	11,363.4	6,966.7	122.9	123.4	-90.00	215.9	3,929.9	907.2	661.1	246.11	3.686	
11,500.0	6,965.7	11,463.4	6,965.7	125.6	126.1	-90.00	215.6	4,029.9	907.2	655.6	251.66	3.605	
11,600.0	6,964.7	11,563.4	6,964.7	128.4	128.9	-90.00	215.3	4,129.9	907.2	650.0	257.21	3.527	
11,700.0	6,963.7	11,663.4	6,963.7	131.2	131.7	-90.00	215.1	4,229.9	907.2	644.4	262.77	3.452	
11,800.0	6,962.7	11,763.4	6,962.7	134.0	134.5	-90.00	214.8	4,329.9	907.2	638.9	268.32	3.381	
11,900.0	6,961.7	11,863.4	6,961.7	136.7	137.2	-90.00	214.5	4,429.9	907.2	633.3	273.88	3.312	
12,000.0	6,960.7	11,963.4	6,960.7	139.5	140.0	-90.00	214.2	4,529.9	907.2	627.7	279.44	3.246	
12,100.0	6,959.7	12,063.4	6,959.7	142.3	142.8	-90.00	213.9	4,629.9	907.2	622.2	285.01	3.183	
12,200.0	6,958.7	12,163.4	6,958.7	145.1	145.6	-90.00	213.6	4,729.9	907.2	616.6	290.57	3.122	
12,300.0	6,957.7	12,263.4	6,957.7	147.9	148.4	-90.00	213.3	4,829.9	907.2	611.0	296.14	3.063	
12,400.0	6,956.8	12,363.4	6,956.7	150.7	151.2	-90.00	213.0	4,929.9	907.2	605.4	301.71	3.007	
12,500.0	6,955.8	12,463.4	6,955.7	153.4	153.9	-90.00	212.7	5,029.9	907.1	599.9	307.28	2.952	
12,600.0	6,954.8	12,563.4	6,954.7	156.2	156.7	-90.00	212.4	5,129.9	907.1	594.3	312.85	2.900	
12,700.0	6,953.8	12,663.4	6,953.7	159.0	159.5	-90.00	212.1	5,229.9	907.1	588.7	318.43	2.849	
12,755.0	6,953.2	12,718.4	6,953.2	160.5	161.0	-90.00	211.9	5,284.9	907.1	585.6	321.50	2.822	
12,777.3	6,953.0	12,735.0	6,953.0	161.2	161.5	-90.00	211.9	5,301.5	907.1	584.6	322.58	2.812 SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-66.44	54.7	-125.4	136.8	136.7	0.02	6,770.466		
100.0	100.0	101.0	101.0	0.1	2.0	-66.44	54.7	-125.4	136.8	134.6	2.13	64.130		
200.0	200.0	201.0	201.0	0.3	4.0	-66.44	54.7	-125.4	136.8	132.4	4.36	31.387		
300.0	300.0	301.0	301.0	0.5	6.0	67.76	54.7	-125.4	136.1	129.5	6.56	20.740		
400.0	399.8	400.8	400.8	0.8	8.0	69.87	54.7	-125.4	134.2	125.4	8.77	15.304		
500.0	499.5	500.5	500.5	1.0	10.0	73.47	54.7	-125.4	131.4	120.4	11.01	11.944		
600.0	598.7	599.7	599.7	1.3	12.0	78.71	54.7	-125.4	128.5	115.2	13.28	9.677		
700.0	697.5	698.5	698.5	1.6	14.0	85.64	54.7	-125.4	126.3	110.7	15.60	8.100		
752.0	748.6	749.6	749.6	1.8	15.0	89.89	54.7	-125.4	126.0	109.1	16.82	7.489		
753.3	749.9	750.9	750.9	1.8	15.0	90.00	54.7	-125.4	126.0	109.1	16.85	7.475 CC		
800.0	795.7	796.7	796.7	2.0	15.9	93.98	54.7	-125.4	126.3	108.3	17.95	7.035 ES		
900.0	893.9	894.9	894.9	2.4	17.9	102.35	54.7	-125.4	129.1	108.8	20.28	6.362		
1,000.0	992.0	993.0	993.0	2.8	19.9	110.21	54.7	-125.4	134.5	111.9	22.58	5.958		
1,100.0	1,090.1	1,091.1	1,091.1	3.3	21.8	117.35	54.7	-125.4	142.4	117.6	24.83	5.734		
1,200.0	1,188.3	1,189.3	1,189.3	3.7	23.8	123.68	54.7	-125.4	152.3	125.2	27.05	5.629		
1,300.0	1,286.4	1,287.4	1,287.4	4.1	25.7	129.21	54.7	-125.4	163.8	134.6	29.23	5.603		
1,400.0	1,384.6	1,385.6	1,385.6	4.5	27.7	133.98	54.7	-125.4	176.6	145.2	31.40	5.626		
1,500.0	1,482.7	1,483.7	1,483.7	5.0	29.7	138.09	54.7	-125.4	190.6	157.0	33.55	5.680		
1,600.0	1,580.9	1,581.9	1,581.9	5.4	31.6	141.64	54.7	-125.4	205.3	169.6	35.69	5.752		
1,700.0	1,679.0	1,680.0	1,680.0	5.8	33.6	144.71	54.7	-125.4	220.8	182.9	37.84	5.834		
1,800.0	1,777.2	1,778.2	1,778.2	6.3	35.6	147.37	54.7	-125.4	236.7	196.8	39.98	5.921		
1,900.0	1,875.3	1,876.3	1,876.3	6.7	37.5	149.70	54.7	-125.4	253.2	211.0	42.12	6.010		
2,000.0	1,973.5	1,974.5	1,974.5	7.1	39.5	151.74	54.7	-125.4	269.9	225.7	44.27	6.098		
2,100.0	2,071.6	2,072.6	2,072.6	7.6	41.5	153.54	54.7	-125.4	287.0	240.6	46.42	6.183		
2,200.0	2,169.8	2,170.8	2,170.8	8.0	43.4	155.15	54.7	-125.4	304.3	255.8	48.57	6.266		
2,300.0	2,267.9	2,268.9	2,268.9	8.4	45.4	156.57	54.7	-125.4	321.9	271.1	50.72	6.346		
2,400.0	2,366.1	2,367.1	2,367.1	8.9	47.3	157.86	54.7	-125.4	339.6	286.7	52.88	6.422		
2,500.0	2,464.2	2,465.2	2,465.2	9.3	49.3	159.01	54.7	-125.4	357.4	302.4	55.04	6.494		
2,600.0	2,562.4	2,563.4	2,563.4	9.7	51.3	160.05	54.7	-125.4	375.4	318.2	57.20	6.563		
2,700.0	2,660.5	2,661.5	2,661.5	10.2	53.2	161.00	54.7	-125.4	393.5	334.1	59.36	6.629		
2,800.0	2,758.7	2,759.7	2,759.7	10.6	55.2	161.87	54.7	-125.4	411.7	350.2	61.52	6.692		
2,900.0	2,856.8	2,857.8	2,857.8	11.1	57.2	162.66	54.7	-125.4	430.0	366.3	63.69	6.751		
3,000.0	2,955.0	2,956.0	2,956.0	11.5	59.1	163.39	54.7	-125.4	448.3	382.5	65.86	6.807		
3,100.0	3,053.1	3,054.1	3,054.1	11.9	61.1	164.06	54.7	-125.4	466.7	398.7	68.03	6.861		
3,200.0	3,151.3	3,152.3	3,152.3	12.4	63.0	164.68	54.7	-125.4	485.2	415.0	70.20	6.912		
3,300.0	3,249.4	3,250.4	3,250.4	12.8	65.0	165.26	54.7	-125.4	503.7	431.3	72.37	6.960		
3,400.0	3,347.6	3,348.6	3,348.6	13.2	67.0	165.79	54.7	-125.4	522.3	447.7	74.54	7.006		
3,500.0	3,445.7	3,446.7	3,446.7	13.7	68.9	166.29	54.7	-125.4	540.9	464.2	76.72	7.050		
3,600.0	3,543.9	3,544.9	3,544.9	14.1	70.9	166.75	54.7	-125.4	559.5	480.6	78.89	7.092		
3,700.0	3,642.0	3,643.0	3,643.0	14.5	72.9	167.19	54.7	-125.4	578.2	497.1	81.07	7.132		
3,800.0	3,740.2	3,741.2	3,741.2	15.0	74.8	167.59	54.7	-125.4	596.9	513.7	83.25	7.170		
3,900.0	3,838.3	3,839.3	3,839.3	15.4	76.8	167.98	54.7	-125.4	615.6	530.2	85.42	7.207		
4,000.0	3,936.5	3,937.5	3,937.5	15.8	78.7	168.34	54.7	-125.4	634.4	546.8	87.60	7.242		
4,100.0	4,034.6	4,035.6	4,035.6	16.3	80.7	168.68	54.7	-125.4	653.2	563.4	89.78	7.275		
4,200.0	4,132.8	4,133.8	4,133.8	16.7	82.7	169.00	54.7	-125.4	672.0	580.0	91.96	7.307		
4,300.0	4,230.9	4,231.9	4,231.9	17.2	84.6	169.30	54.7	-125.4	690.8	596.7	94.14	7.338		
4,400.0	4,329.1	4,330.1	4,330.1	17.6	86.6	169.59	54.7	-125.4	709.6	613.3	96.32	7.368		
4,500.0	4,427.2	4,428.2	4,428.2	18.0	88.6	169.86	54.7	-125.4	728.5	630.0	98.50	7.396		
4,600.0	4,525.4	4,526.4	4,526.4	18.5	90.5	170.12	54.7	-125.4	747.4	646.7	100.68	7.423		
4,700.0	4,623.5	4,624.5	4,624.5	18.9	92.5	170.36	54.7	-125.4	766.2	663.4	102.86	7.449		
4,800.0	4,721.7	4,722.7	4,722.7	19.3	94.5	170.60	54.7	-125.4	785.1	680.1	105.04	7.474		

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
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	
4,900.0	4,819.8	4,820.8	4,820.8	19.8	96.4	170.82	54.7	-125.4	804.0	696.8	107.23	7.499		
5,000.0	4,918.0	4,919.0	4,919.0	20.2	98.4	171.03	54.7	-125.4	823.0	713.6	109.41	7.522		
5,100.0	5,016.1	5,017.1	5,017.1	20.6	100.3	171.24	54.7	-125.4	841.9	730.3	111.59	7.544		
5,200.0	5,114.3	5,115.3	5,115.3	21.1	102.3	171.43	54.7	-125.4	860.8	747.1	113.78	7.566		
5,300.0	5,212.4	5,213.4	5,213.4	21.5	104.3	171.62	54.7	-125.4	879.8	763.8	115.96	7.587		
5,339.7	5,251.4	5,252.4	5,252.4	21.7	105.0	171.69	54.7	-125.4	887.3	770.5	116.83	7.595		
5,400.0	5,310.7	5,311.7	5,311.7	21.9	106.2	171.82	54.7	-125.4	898.1	779.6	118.52	7.578		
5,500.0	5,409.5	5,410.5	5,410.5	22.2	108.2	172.00	54.7	-125.4	913.3	792.1	121.23	7.534		
5,600.0	5,508.8	5,509.8	5,509.8	22.4	110.2	172.13	54.7	-125.4	925.1	801.3	123.81	7.472		
5,700.0	5,608.4	5,609.4	5,609.4	22.6	112.2	172.23	54.7	-125.4	933.5	807.2	126.25	7.394		
5,800.0	5,708.3	5,709.3	5,709.3	22.7	114.2	172.28	54.7	-125.4	938.4	809.8	128.55	7.300		
5,891.7	5,800.0	5,801.0	5,801.0	22.8	116.0	38.78	54.7	-125.4	939.8	801.1	138.75	6.773		
5,900.0	5,808.3	5,809.3	5,809.3	22.8	116.2	38.78	54.7	-125.4	939.8	800.9	138.93	6.765		
6,000.0	5,908.3	5,909.3	5,909.3	22.9	118.2	38.78	54.7	-125.4	939.8	798.8	141.03	6.664		
6,100.0	6,008.3	6,009.3	6,009.3	23.1	120.2	38.78	54.7	-125.4	939.8	796.7	143.13	6.566		
6,200.0	6,108.3	6,109.3	6,109.3	23.2	122.2	38.78	54.7	-125.4	939.8	794.6	145.24	6.471		
6,300.0	6,208.3	6,209.3	6,209.3	23.3	124.2	38.78	54.7	-125.4	939.8	792.5	147.34	6.378		
6,322.0	6,230.3	6,231.3	6,231.3	23.3	124.6	38.78	54.7	-125.4	939.8	792.0	147.81	6.358		
6,350.0	6,258.3	6,259.3	6,259.3	23.3	125.2	-51.42	54.7	-125.4	939.5	799.1	140.37	6.693		
6,400.0	6,308.1	6,309.1	6,309.1	23.3	126.2	-51.72	54.7	-125.4	937.4	796.2	141.12	6.642		
6,450.0	6,357.7	6,358.7	6,358.7	23.3	127.2	-52.29	54.7	-125.4	933.2	791.5	141.67	6.587		
6,500.0	6,406.7	6,407.7	6,407.7	23.3	128.2	-53.13	54.7	-125.4	927.1	785.0	142.05	6.527		
6,550.0	6,454.9	6,455.9	6,455.9	23.3	129.1	-54.26	54.7	-125.4	919.1	776.8	142.31	6.459		
6,600.0	6,502.2	6,503.2	6,503.2	23.2	130.1	-55.67	54.7	-125.4	909.4	766.9	142.53	6.381		
6,650.0	6,548.3	6,549.3	6,549.3	23.1	131.0	-57.36	54.7	-125.4	898.2	755.4	142.80	6.290		
6,700.0	6,593.0	6,594.0	6,594.0	23.0	131.9	-59.32	54.7	-125.4	885.5	742.3	143.21	6.183		
6,750.0	6,636.2	6,637.2	6,637.2	22.9	132.7	-61.54	54.7	-125.4	871.7	727.9	143.85	6.060		
6,800.0	6,677.7	6,678.7	6,678.7	22.8	133.6	-64.00	54.7	-125.4	857.0	712.2	144.77	5.920		
6,850.0	6,717.2	6,718.2	6,718.2	22.7	134.4	-66.66	54.7	-125.4	841.6	695.6	145.99	5.765		
6,900.0	6,754.7	6,755.7	6,755.7	22.6	135.1	-69.47	54.7	-125.4	826.0	678.5	147.51	5.599		
6,950.0	6,789.9	6,790.9	6,790.9	22.4	135.8	-72.38	54.7	-125.4	810.3	661.1	149.23	5.430		
7,000.0	6,822.7	6,823.7	6,823.7	22.3	136.5	-75.31	54.7	-125.4	795.1	644.0	151.07	5.263		
7,050.0	6,853.0	6,854.0	6,854.0	22.2	137.1	-78.18	54.7	-125.4	780.7	627.8	152.90	5.106		
7,100.0	6,880.6	6,881.6	6,881.6	22.1	137.6	-80.93	54.7	-125.4	767.6	612.9	154.61	4.964		
7,150.0	6,905.4	6,906.4	6,906.4	22.1	138.1	-83.45	54.7	-125.4	756.1	599.9	156.14	4.842		
7,200.0	6,927.3	6,928.3	6,928.3	22.0	138.6	-85.69	54.7	-125.4	746.6	589.2	157.44	4.742		
7,250.0	6,946.3	6,947.3	6,947.3	22.0	138.9	-87.58	54.7	-125.4	739.7	581.1	158.54	4.665		
7,300.0	6,962.2	6,963.2	6,963.2	22.1	139.3	-89.07	54.7	-125.4	735.5	576.0	159.47	4.612		
7,343.0	6,973.3	6,974.3	6,974.3	22.2	139.5	-90.00	54.7	-125.4	734.3	574.1	160.19	4.584		
7,350.0	6,974.9	6,975.9	6,975.9	22.2	139.5	-90.12	54.7	-125.4	734.3	574.0	160.29	4.581		
7,400.0	6,984.5	6,985.5	6,985.5	22.4	139.7	-90.69	54.7	-125.4	736.4	575.4	161.07	4.572 SF		
7,442.0	6,990.0	6,991.0	6,991.0	22.6	139.8	-90.80	54.7	-125.4	740.7	579.0	161.72	4.580		
7,500.0	6,996.1	6,997.1	6,997.1	23.1	139.9	-91.27	54.7	-125.4	750.5	587.9	162.65	4.614		
7,516.0	6,997.8	6,998.8	6,998.8	23.3	140.0	-91.40	54.7	-125.4	754.0	591.1	162.92	4.628		
7,600.0	7,003.5	7,004.5	7,004.5	24.4	140.1	-90.62	54.7	-125.4	777.3	612.9	164.39	4.728		
7,647.4	7,004.0	7,005.0	7,005.0	25.2	140.1	-89.77	54.7	-125.4	794.1	628.9	165.20	4.807		
7,700.0	7,003.5	7,004.5	7,004.5	26.1	140.1	-89.72	54.7	-125.4	815.6	649.4	166.15	4.909		
7,800.0	7,002.5	7,003.5	7,003.5	28.0	140.1	-89.65	54.7	-125.4	863.8	695.7	168.07	5.140		
7,900.0	7,001.5	7,002.5	7,002.5	30.1	140.0	-89.57	54.7	-125.4	920.4	750.3	170.12	5.410		
8,000.0	7,000.5	7,001.5	7,001.5	32.3	140.0	-89.49	54.7	-125.4	983.9	811.6	172.29	5.711		
8,100.0	6,999.5	7,000.5	7,000.5	34.6	140.0	-89.41	54.7	-125.4	1,053.1	878.6	174.54	6.034		

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 Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
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	
8,200.0	6,998.5	6,999.5	6,999.5	37.0	140.0	-89.34	54.7	-125.4	1,127.0	950.1	176.87	6.372		
8,300.0	6,997.5	6,998.5	6,998.5	39.4	140.0	-89.26	54.7	-125.4	1,204.6	1,025.3	179.26	6.720		
8,400.0	6,996.5	6,997.5	6,997.5	41.9	140.0	-89.18	54.7	-125.4	1,285.3	1,103.6	181.70	7.074		
8,500.0	6,995.5	6,996.5	6,996.5	44.4	139.9	-89.10	54.7	-125.4	1,368.6	1,184.4	184.17	7.431		
8,600.0	6,994.5	6,995.5	6,995.5	46.9	139.9	-89.03	54.7	-125.4	1,453.9	1,267.2	186.69	7.788		
8,700.0	6,993.5	6,994.5	6,994.5	49.5	139.9	-88.95	54.7	-125.4	1,541.1	1,351.8	189.23	8.144		
8,800.0	6,992.5	6,993.5	6,993.5	52.1	139.9	-88.87	54.7	-125.4	1,629.7	1,437.9	191.79	8.497		
8,900.0	6,991.5	6,992.5	6,992.5	54.7	139.9	-88.79	54.7	-125.4	1,719.5	1,525.2	194.38	8.846		
9,000.0	6,990.5	6,991.5	6,991.5	57.4	139.8	-88.72	54.7	-125.4	1,810.5	1,613.5	196.98	9.191		
9,100.0	6,989.5	6,990.5	6,990.5	60.0	139.8	-88.64	54.7	-125.4	1,902.3	1,702.7	199.60	9.530		
9,200.0	6,988.6	6,989.6	6,989.6	62.7	139.8	-88.56	54.7	-125.4	1,994.9	1,792.7	202.23	9.864		
9,300.0	6,987.6	6,988.6	6,988.6	65.3	139.8	-88.48	54.7	-125.4	2,088.2	1,883.3	204.88	10.192		
9,400.0	6,986.6	6,987.6	6,987.6	68.0	139.8	-88.41	54.7	-125.4	2,182.1	1,974.6	207.54	10.514		
9,500.0	6,985.6	6,986.6	6,986.6	70.7	139.7	-88.33	54.7	-125.4	2,276.5	2,066.3	210.20	10.830		
9,600.0	6,984.6	6,985.6	6,985.6	73.4	139.7	-88.25	54.7	-125.4	2,371.4	2,158.5	212.87	11.140		
9,700.0	6,983.6	6,984.6	6,984.6	76.1	139.7	-88.17	54.7	-125.4	2,466.7	2,251.1	215.55	11.444		
9,800.0	6,982.6	6,983.6	6,983.6	78.9	139.7	-88.10	54.7	-125.4	2,562.3	2,344.1	218.24	11.741		
9,900.0	6,981.6	6,982.6	6,982.6	81.6	139.7	-88.02	54.7	-125.4	2,658.3	2,437.3	220.93	12.032		
10,000.0	6,980.6	6,981.6	6,981.6	84.3	139.6	-87.94	54.7	-125.4	2,754.5	2,530.9	223.62	12.318		
10,100.0	6,979.6	6,980.6	6,980.6	87.0	139.6	-87.86	54.7	-125.4	2,851.0	2,624.7	226.33	12.597		
10,200.0	6,978.6	6,979.6	6,979.6	89.8	139.6	-87.79	54.7	-125.4	2,947.7	2,718.7	229.03	12.871		
10,300.0	6,977.6	6,978.6	6,978.6	92.5	139.6	-87.71	54.7	-125.4	3,044.7	2,812.9	231.74	13.138		
10,400.0	6,976.6	6,977.6	6,977.6	95.3	139.6	-87.63	54.7	-125.4	3,141.8	2,907.4	234.45	13.401		
10,500.0	6,975.6	6,976.6	6,976.6	98.0	139.5	-87.55	54.7	-125.4	3,239.1	3,002.0	237.16	13.658		
10,600.0	6,974.6	6,975.6	6,975.6	100.8	139.5	-87.48	54.7	-125.4	3,336.6	3,096.7	239.88	13.909		
10,700.0	6,973.6	6,974.6	6,974.6	103.5	139.5	-87.40	54.7	-125.4	3,434.2	3,191.6	242.60	14.156		
10,800.0	6,972.7	6,973.7	6,973.7	106.3	139.5	-87.32	54.7	-125.4	3,532.0	3,286.6	245.32	14.397		
10,900.0	6,971.7	6,972.7	6,972.7	109.0	139.5	-87.25	54.7	-125.4	3,629.8	3,381.8	248.04	14.634		
11,000.0	6,970.7	6,971.7	6,971.7	111.8	139.4	-87.17	54.7	-125.4	3,727.8	3,477.0	250.77	14.866		
11,100.0	6,969.7	6,970.7	6,970.7	114.6	139.4	-87.09	54.7	-125.4	3,825.9	3,572.4	253.49	15.093		
11,200.0	6,968.7	6,969.7	6,969.7	117.3	139.4	-87.01	54.7	-125.4	3,924.1	3,667.9	256.22	15.315		
11,300.0	6,967.7	6,968.7	6,968.7	120.1	139.4	-86.94	54.7	-125.4	4,022.3	3,763.4	258.95	15.534		
11,400.0	6,966.7	6,967.7	6,967.7	122.9	139.4	-86.86	54.7	-125.4	4,120.7	3,859.0	261.67	15.747		
11,500.0	6,965.7	6,966.7	6,966.7	125.6	139.3	-86.78	54.7	-125.4	4,219.1	3,954.7	264.40	15.957		
11,600.0	6,964.7	6,965.7	6,965.7	128.4	139.3	-86.70	54.7	-125.4	4,317.6	4,050.5	267.13	16.163		
11,700.0	6,963.7	6,964.7	6,964.7	131.2	139.3	-86.63	54.7	-125.4	4,416.2	4,146.3	269.87	16.365		
11,800.0	6,962.7	6,963.7	6,963.7	134.0	139.3	-86.55	54.7	-125.4	4,514.8	4,242.2	272.60	16.562		
11,900.0	6,961.7	6,962.7	6,962.7	136.7	139.3	-86.47	54.7	-125.4	4,613.5	4,338.2	275.33	16.757		
12,000.0	6,960.7	6,961.7	6,961.7	139.5	139.2	-86.40	54.7	-125.4	4,712.3	4,434.2	278.06	16.947		
12,100.0	6,959.7	6,960.7	6,960.7	142.3	139.2	-86.32	54.7	-125.4	4,811.1	4,530.3	280.79	17.134		
12,200.0	6,958.7	6,959.7	6,959.7	145.1	139.2	-86.24	54.7	-125.4	4,909.9	4,626.4	283.52	17.317		
12,300.0	6,957.7	6,958.7	6,958.7	147.9	139.2	-86.16	54.7	-125.4	5,008.8	4,722.6	286.26	17.498		
12,400.0	6,956.8	6,957.8	6,957.8	150.7	139.2	-86.09	54.7	-125.4	5,107.8	4,818.8	288.99	17.675		
12,500.0	6,955.8	6,956.8	6,956.8	153.4	139.1	-86.01	54.7	-125.4	5,206.7	4,915.0	291.72	17.848		
12,600.0	6,954.8	6,955.8	6,955.8	156.2	139.1	-85.93	54.7	-125.4	5,305.8	5,011.3	294.45	18.019		
12,700.0	6,953.8	6,954.8	6,954.8	159.0	139.1	-85.85	54.7	-125.4	5,404.8	5,107.6	297.19	18.187		
12,777.3	6,953.0	6,954.0	6,954.0	161.2	139.1	-85.80	54.7	-125.4	5,481.4	5,182.1	299.30	18.314		



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-402
<b>Project:</b>	SEC.22-T5N-R65W	<b>TVD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Reference Site:</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W	<b>MD Reference:</b>	WELL @ 4660.0ft (RKB - 15')
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Alles 22D-402	<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 (5-16-13)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4660.0ft (RKB - 15')

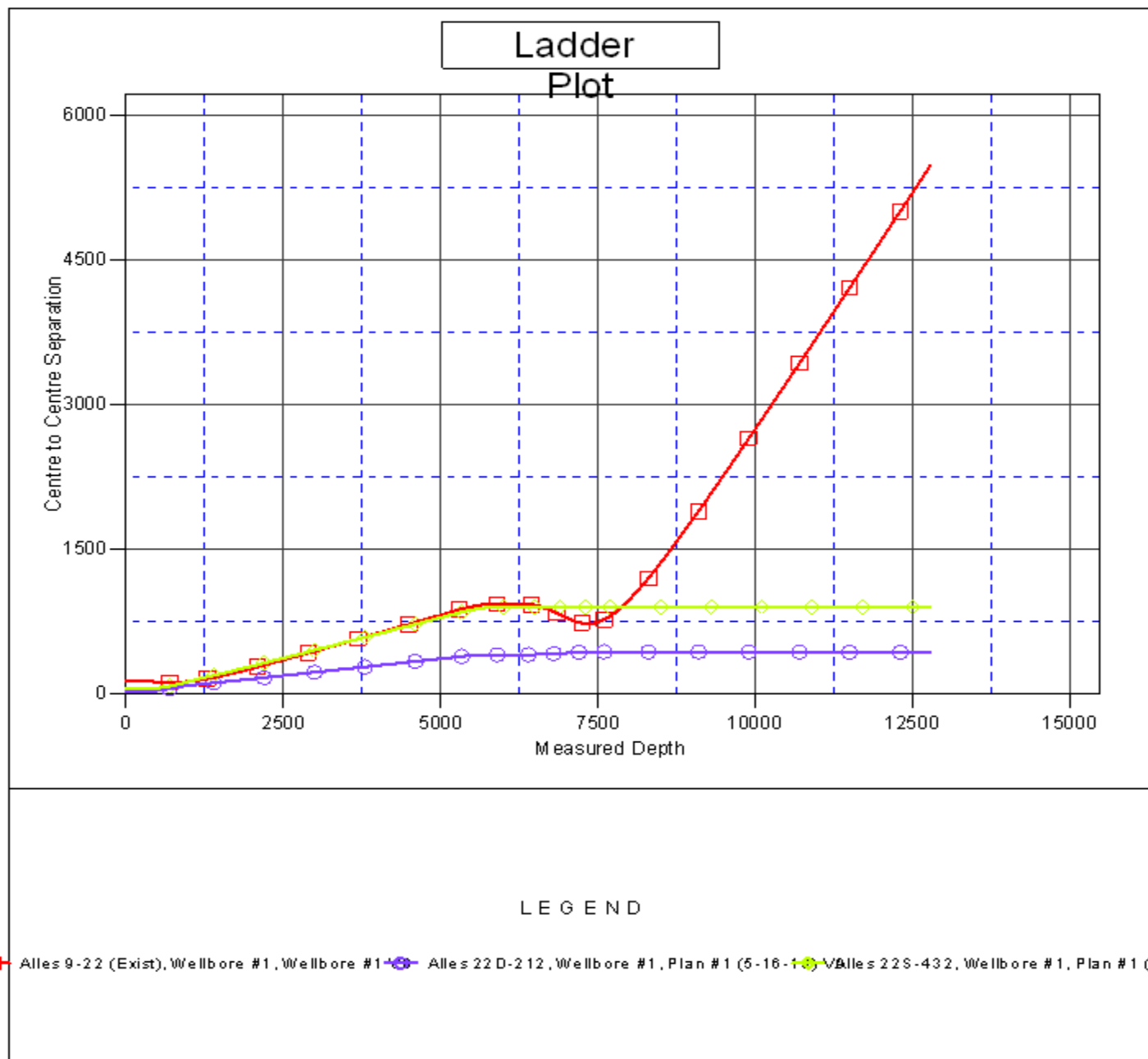
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Alles 22D-402

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.55°





Coordinates are relative to: Alles 22D-402  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.55°

