

# PETROLEUM DEVELOPMENT CORP Weld County CO

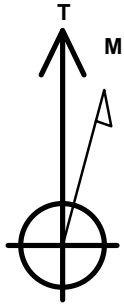
Well Name: **Alles 22D-312**

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	1383640.56	3239047.59	40.383320	-104.641890	
RKB - 15' WELL @ 4660.0ft (RKB - 15')						

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
LEASE LINE	1.0	-2056.0	-765.0	Polygon
SHL 2118'FSL, 555'FEL, SEC.22	1.0	0.0	0.0	Point
BHL 1830'FSL, 500'FEL, SEC. 23	6843.0	-305.4	5310.0	Point



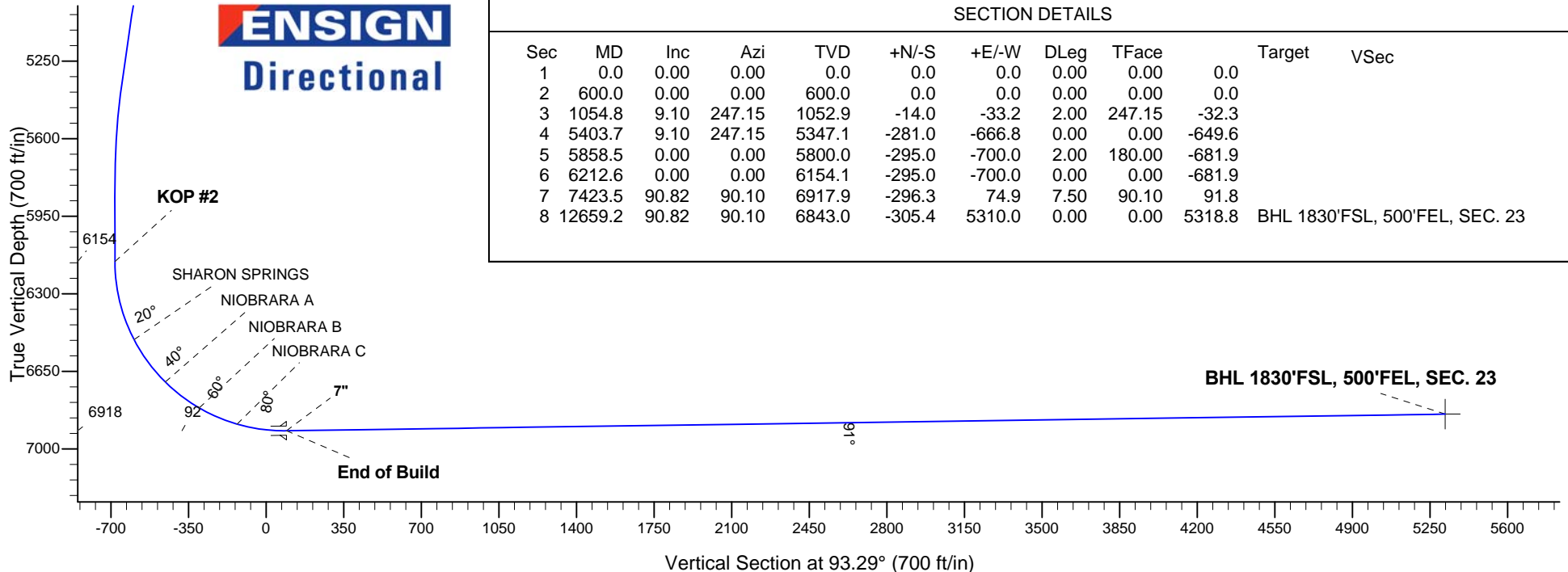
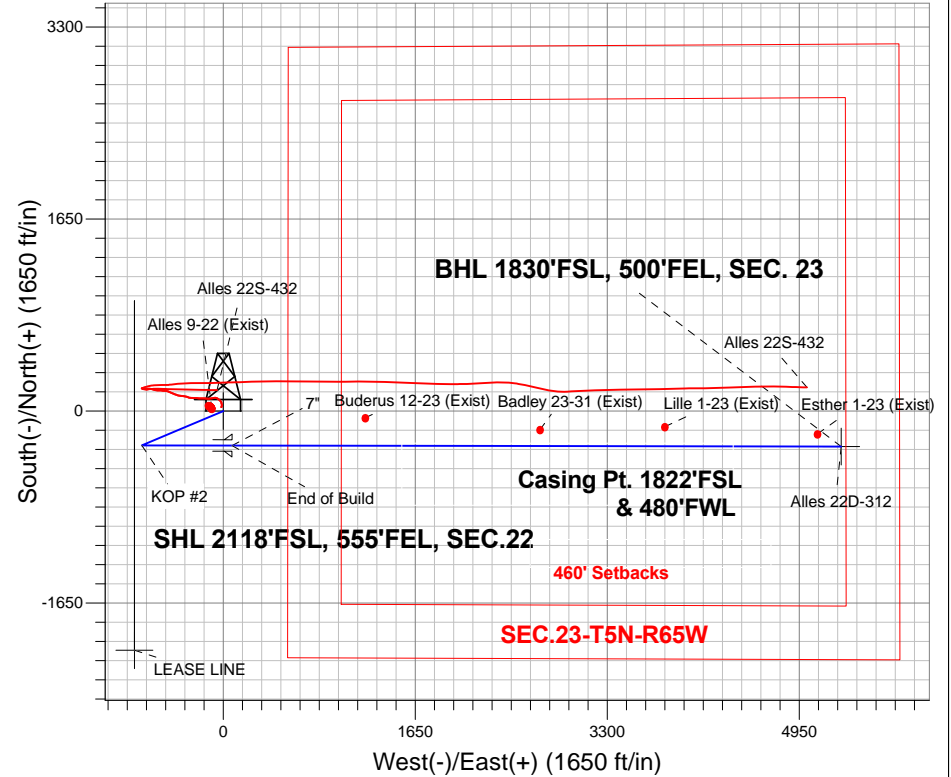
Azimuths to True North  
 Magnetic North: 8.42°

Magnetic Field  
 Strength: 52842.7snT  
 Dip Angle: 66.96°  
 Date: 3/31/2014  
 Model: IGRF2010

## ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP #1
6154.2	6212.7	KOP #2
6917.9	7423.6	End of Build

Alles 22S-HZ Pad Sec.22-T5N-R65W  
 Alles 22D-312  
 Plan #3 (3-31-14)  
 8:21, April 02 2014



## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1054.8	9.10	247.15	1052.9	-14.0	-33.2	2.00	247.15	-32.3	
4	5403.7	9.10	247.15	5347.1	-281.0	-666.8	0.00	0.00	-649.6	
5	5858.5	0.00	0.00	5800.0	-295.0	-700.0	2.00	180.00	-681.9	
6	6212.6	0.00	0.00	6154.1	-295.0	-700.0	0.00	0.00	-681.9	
7	7423.5	90.82	90.10	6917.9	-296.3	74.9	7.50	90.10	91.8	
8	12659.2	90.82	90.10	6843.0	-305.4	5310.0	0.00	0.00	5318.8	BHL 1830'FSL, 500'FEL, SEC. 23



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R65W**

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

**Alles 22D-312**

**Wellbore #1**

**Plan: Plan #3 (3-31-14)**

## **Standard Planning Report**

**02 April, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 (3-31-14)		

<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-312		
<b>Well Position</b>	<b>+N/-S</b>	21.8 ft	<b>Northing:</b>
	<b>+E/-W</b>	-8.4 ft	<b>Easting:</b>
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>
			ft
			<b>Latitude:</b>
			40.383320
			<b>Longitude:</b>
			-104.641890
			<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	3/31/2014	8.42	66.96	52,843

<b>Design</b>	Plan #3 (3-31-14)			
<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	93.29

<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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,054.8	9.10	247.15	1,052.9	-14.0	-33.2	2.00	2.00	0.00	247.15	
5,403.7	9.10	247.15	5,347.1	-281.0	-666.8	0.00	0.00	0.00	0.00	
5,858.5	0.00	0.00	5,800.0	-295.0	-700.0	2.00	-2.00	0.00	180.00	
6,212.6	0.00	0.00	6,154.1	-295.0	-700.0	0.00	0.00	0.00	0.00	
7,423.5	90.82	90.10	6,917.9	-296.3	74.9	7.50	7.50	0.00	90.10	
12,659.2	90.82	90.10	6,843.0	-305.4	5,310.0	0.00	0.00	0.00	0.00	BHL 1830°FSL, 500

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
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<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-312	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 (3-31-14)		

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>SHL 2118°FSL, 555°FEL, SEC.22 - LEASE LINE</b>									
100.0	0.00	0.00	100.0	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
300.0	0.00	0.00	300.0	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
500.0	0.00	0.00	500.0	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
<b>KOP #1</b>									
700.0	2.00	247.15	700.0	-0.7	-1.6	-1.6	2.00	2.00	0.00
800.0	4.00	247.15	799.8	-2.7	-6.4	-6.3	2.00	2.00	0.00
900.0	6.00	247.15	899.5	-6.1	-14.5	-14.1	2.00	2.00	0.00
1,000.0	8.00	247.15	998.7	-10.8	-25.7	-25.0	2.00	2.00	0.00
1,054.8	9.10	247.15	1,052.9	-14.0	-33.2	-32.3	2.00	2.00	0.00
1,100.0	9.10	247.15	1,097.5	-16.8	-39.8	-38.8	0.00	0.00	0.00
1,200.0	9.10	247.15	1,196.3	-22.9	-54.4	-52.9	0.00	0.00	0.00
1,300.0	9.10	247.15	1,295.0	-29.0	-68.9	-67.1	0.00	0.00	0.00
1,400.0	9.10	247.15	1,393.8	-35.2	-83.5	-81.3	0.00	0.00	0.00
1,500.0	9.10	247.15	1,492.5	-41.3	-98.1	-95.5	0.00	0.00	0.00
1,600.0	9.10	247.15	1,591.2	-47.5	-112.6	-109.7	0.00	0.00	0.00
1,700.0	9.10	247.15	1,690.0	-53.6	-127.2	-123.9	0.00	0.00	0.00
1,800.0	9.10	247.15	1,788.7	-59.7	-141.8	-138.1	0.00	0.00	0.00
1,900.0	9.10	247.15	1,887.5	-65.9	-156.3	-152.3	0.00	0.00	0.00
2,000.0	9.10	247.15	1,986.2	-72.0	-170.9	-166.5	0.00	0.00	0.00
2,100.0	9.10	247.15	2,084.9	-78.2	-185.5	-180.7	0.00	0.00	0.00
2,200.0	9.10	247.15	2,183.7	-84.3	-200.0	-194.9	0.00	0.00	0.00
2,300.0	9.10	247.15	2,282.4	-90.4	-214.6	-209.1	0.00	0.00	0.00
2,400.0	9.10	247.15	2,381.2	-96.6	-229.2	-223.3	0.00	0.00	0.00
2,500.0	9.10	247.15	2,479.9	-102.7	-243.8	-237.5	0.00	0.00	0.00
2,600.0	9.10	247.15	2,578.7	-108.9	-258.3	-251.6	0.00	0.00	0.00
2,700.0	9.10	247.15	2,677.4	-115.0	-272.9	-265.8	0.00	0.00	0.00
2,800.0	9.10	247.15	2,776.1	-121.1	-287.5	-280.0	0.00	0.00	0.00
2,900.0	9.10	247.15	2,874.9	-127.3	-302.0	-294.2	0.00	0.00	0.00
3,000.0	9.10	247.15	2,973.6	-133.4	-316.6	-308.4	0.00	0.00	0.00
3,100.0	9.10	247.15	3,072.4	-139.6	-331.2	-322.6	0.00	0.00	0.00
3,200.0	9.10	247.15	3,171.1	-145.7	-345.7	-336.8	0.00	0.00	0.00
3,300.0	9.10	247.15	3,269.9	-151.8	-360.3	-351.0	0.00	0.00	0.00
3,400.0	9.10	247.15	3,368.6	-158.0	-374.9	-365.2	0.00	0.00	0.00
3,500.0	9.10	247.15	3,467.3	-164.1	-389.4	-379.4	0.00	0.00	0.00
3,600.0	9.10	247.15	3,566.1	-170.3	-404.0	-393.6	0.00	0.00	0.00
3,609.0	9.10	247.15	3,575.0	-170.8	-405.3	-394.9	0.00	0.00	0.00
<b>PARKMAN</b>									
3,700.0	9.10	247.15	3,664.8	-176.4	-418.6	-407.8	0.00	0.00	0.00
3,800.0	9.10	247.15	3,763.6	-182.5	-433.2	-422.0	0.00	0.00	0.00
3,900.0	9.10	247.15	3,862.3	-188.7	-447.7	-436.1	0.00	0.00	0.00
4,000.0	9.10	247.15	3,961.0	-194.8	-462.3	-450.3	0.00	0.00	0.00
4,100.0	9.10	247.15	4,059.8	-201.0	-476.9	-464.5	0.00	0.00	0.00
4,200.0	9.10	247.15	4,158.5	-207.1	-491.4	-478.7	0.00	0.00	0.00
4,300.0	9.10	247.15	4,257.3	-213.2	-506.0	-492.9	0.00	0.00	0.00
4,300.7	9.10	247.15	4,258.0	-213.3	-506.1	-493.0	0.00	0.00	0.00
<b>SUSSEX</b>									
4,400.0	9.10	247.15	4,356.0	-219.4	-520.6	-507.1	0.00	0.00	0.00

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<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-312	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 (3-31-14)		

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)
4,500.0	9.10	247.15	4,454.8	-225.5	-535.1	-521.3	0.00	0.00	0.00
4,600.0	9.10	247.15	4,553.5	-231.7	-549.7	-535.5	0.00	0.00	0.00
4,700.0	9.10	247.15	4,652.2	-237.8	-564.3	-549.7	0.00	0.00	0.00
4,800.0	9.10	247.15	4,751.0	-243.9	-578.8	-563.9	0.00	0.00	0.00
4,892.2	9.10	247.15	4,842.0	-249.6	-592.3	-577.0	0.00	0.00	0.00
<b>SHANNON</b>									
4,900.0	9.10	247.15	4,849.7	-250.1	-593.4	-578.1	0.00	0.00	0.00
5,000.0	9.10	247.15	4,948.5	-256.2	-608.0	-592.3	0.00	0.00	0.00
5,100.0	9.10	247.15	5,047.2	-262.4	-622.6	-606.5	0.00	0.00	0.00
5,200.0	9.10	247.15	5,146.0	-268.5	-637.1	-620.7	0.00	0.00	0.00
5,300.0	9.10	247.15	5,244.7	-274.6	-651.7	-634.8	0.00	0.00	0.00
5,400.0	9.10	247.15	5,343.4	-280.8	-666.3	-649.0	0.00	0.00	0.00
5,403.7	9.10	247.15	5,347.1	-281.0	-666.8	-649.6	0.00	0.00	0.00
5,500.0	7.17	247.15	5,442.4	-286.3	-679.4	-661.8	2.00	-2.00	0.00
5,600.0	5.17	247.15	5,541.8	-290.5	-689.3	-671.4	2.00	-2.00	0.00
5,700.0	3.17	247.15	5,641.6	-293.3	-696.0	-678.0	2.00	-2.00	0.00
5,800.0	1.17	247.15	5,741.5	-294.8	-699.4	-681.4	2.00	-2.00	0.00
5,858.5	0.00	0.00	5,800.0	-295.0	-700.0	-681.9	2.00	-2.00	0.00
5,900.0	0.00	0.00	5,841.5	-295.0	-700.0	-681.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,941.5	-295.0	-700.0	-681.9	0.00	0.00	0.00
6,100.0	0.00	0.00	6,041.5	-295.0	-700.0	-681.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,141.5	-295.0	-700.0	-681.9	0.00	0.00	0.00
6,212.6	0.00	0.00	6,154.1	-295.0	-700.0	-681.9	0.00	0.00	0.00
6,212.7	0.00	90.10	6,154.2	-295.0	-700.0	-681.9	0.00	0.00	0.00
<b>KOP #2</b>									
6,300.0	6.56	90.10	6,241.3	-295.0	-695.0	-676.9	7.51	7.51	0.00
6,400.0	14.06	90.10	6,339.6	-295.0	-677.1	-659.1	7.50	7.50	0.00
6,500.0	21.56	90.10	6,434.8	-295.1	-646.6	-628.6	7.50	7.50	0.00
6,579.5	27.52	90.10	6,507.0	-295.2	-613.6	-595.6	7.50	7.50	0.00
<b>SHARON SPRINGS</b>									
6,600.0	29.06	90.10	6,525.1	-295.2	-603.8	-585.9	7.50	7.50	0.00
6,700.0	36.56	90.10	6,609.1	-295.3	-549.7	-531.8	7.50	7.50	0.00
6,800.0	44.06	90.10	6,685.3	-295.4	-485.1	-467.3	7.50	7.50	0.00
6,817.9	45.40	90.10	6,698.0	-295.4	-472.5	-454.7	7.50	7.50	0.00
<b>NIOBRARA A</b>									
6,900.0	51.56	90.10	6,752.4	-295.5	-411.0	-393.4	7.50	7.50	0.00
7,000.0	59.06	90.10	6,809.3	-295.6	-328.9	-311.3	7.50	7.50	0.00
7,011.3	59.90	90.10	6,815.0	-295.7	-319.2	-301.7	7.50	7.50	0.00
<b>NIOBRARA B</b>									
7,100.0	66.56	90.10	6,854.9	-295.8	-240.0	-222.6	7.50	7.50	0.00
7,197.7	73.89	90.10	6,888.0	-296.0	-148.1	-130.8	7.50	7.50	0.00
<b>NIOBRARA C</b>									
7,200.0	74.06	90.10	6,888.6	-296.0	-145.9	-128.7	7.50	7.50	0.00
7,300.0	81.56	90.10	6,909.7	-296.1	-48.2	-31.1	7.50	7.50	0.00
7,400.0	89.06	90.10	6,917.9	-296.3	51.4	68.3	7.50	7.50	0.00
7,423.5	90.82	90.10	6,917.9	-296.3	74.9	91.8	7.50	7.50	0.00
7,423.6	90.82	90.10	6,917.9	-296.3	75.0	91.9	0.00	0.00	0.00
<b>End of Build - 7"</b>									
7,500.0	90.82	90.10	6,916.8	-296.5	151.4	168.1	0.00	0.00	0.00
7,600.0	90.82	90.10	6,915.4	-296.7	251.3	268.0	0.00	0.00	0.00
7,700.0	90.82	90.10	6,914.0	-296.8	351.3	367.8	0.00	0.00	0.00
7,800.0	90.82	90.10	6,912.5	-297.0	451.3	467.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
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<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-312	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 (3-31-14)		

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)
7,900.0	90.82	90.10	6,911.1	-297.2	551.3	567.5	0.00	0.00	0.00
8,000.0	90.82	90.10	6,909.7	-297.3	651.3	667.3	0.00	0.00	0.00
8,100.0	90.82	90.10	6,908.2	-297.5	751.3	767.1	0.00	0.00	0.00
8,200.0	90.82	90.10	6,906.8	-297.7	851.3	867.0	0.00	0.00	0.00
8,300.0	90.82	90.10	6,905.4	-297.9	951.3	966.8	0.00	0.00	0.00
8,400.0	90.82	90.10	6,904.0	-298.0	1,051.3	1,066.6	0.00	0.00	0.00
8,500.0	90.82	90.10	6,902.5	-298.2	1,151.3	1,166.5	0.00	0.00	0.00
8,600.0	90.82	90.10	6,901.1	-298.4	1,251.2	1,266.3	0.00	0.00	0.00
8,700.0	90.82	90.10	6,899.7	-298.6	1,351.2	1,366.1	0.00	0.00	0.00
8,800.0	90.82	90.10	6,898.2	-298.7	1,451.2	1,466.0	0.00	0.00	0.00
8,900.0	90.82	90.10	6,896.8	-298.9	1,551.2	1,565.8	0.00	0.00	0.00
9,000.0	90.82	90.10	6,895.4	-299.1	1,651.2	1,665.7	0.00	0.00	0.00
9,100.0	90.82	90.10	6,893.9	-299.3	1,751.2	1,765.5	0.00	0.00	0.00
9,200.0	90.82	90.10	6,892.5	-299.4	1,851.2	1,865.3	0.00	0.00	0.00
9,300.0	90.82	90.10	6,891.1	-299.6	1,951.2	1,965.2	0.00	0.00	0.00
9,400.0	90.82	90.10	6,889.6	-299.8	2,051.2	2,065.0	0.00	0.00	0.00
9,500.0	90.82	90.10	6,888.2	-300.0	2,151.2	2,164.8	0.00	0.00	0.00
9,600.0	90.82	90.10	6,886.8	-300.1	2,251.1	2,264.7	0.00	0.00	0.00
9,700.0	90.82	90.10	6,885.3	-300.3	2,351.1	2,364.5	0.00	0.00	0.00
9,800.0	90.82	90.10	6,883.9	-300.5	2,451.1	2,464.3	0.00	0.00	0.00
9,900.0	90.82	90.10	6,882.5	-300.6	2,551.1	2,564.2	0.00	0.00	0.00
10,000.0	90.82	90.10	6,881.1	-300.8	2,651.1	2,664.0	0.00	0.00	0.00
10,100.0	90.82	90.10	6,879.6	-301.0	2,751.1	2,763.8	0.00	0.00	0.00
10,200.0	90.82	90.10	6,878.2	-301.2	2,851.1	2,863.7	0.00	0.00	0.00
10,300.0	90.82	90.10	6,876.8	-301.3	2,951.1	2,963.5	0.00	0.00	0.00
10,400.0	90.82	90.10	6,875.3	-301.5	3,051.1	3,063.3	0.00	0.00	0.00
10,500.0	90.82	90.10	6,873.9	-301.7	3,151.0	3,163.2	0.00	0.00	0.00
10,600.0	90.82	90.10	6,872.5	-301.9	3,251.0	3,263.0	0.00	0.00	0.00
10,700.0	90.82	90.10	6,871.0	-302.0	3,351.0	3,362.8	0.00	0.00	0.00
10,800.0	90.82	90.10	6,869.6	-302.2	3,451.0	3,462.7	0.00	0.00	0.00
10,900.0	90.82	90.10	6,868.2	-302.4	3,551.0	3,562.5	0.00	0.00	0.00
11,000.0	90.82	90.10	6,866.7	-302.6	3,651.0	3,662.3	0.00	0.00	0.00
11,100.0	90.82	90.10	6,865.3	-302.7	3,751.0	3,762.2	0.00	0.00	0.00
11,200.0	90.82	90.10	6,863.9	-302.9	3,851.0	3,862.0	0.00	0.00	0.00
11,300.0	90.82	90.10	6,862.5	-303.1	3,951.0	3,961.8	0.00	0.00	0.00
11,400.0	90.82	90.10	6,861.0	-303.3	4,051.0	4,061.7	0.00	0.00	0.00
11,500.0	90.82	90.10	6,859.6	-303.4	4,150.9	4,161.5	0.00	0.00	0.00
11,600.0	90.82	90.10	6,858.2	-303.6	4,250.9	4,261.4	0.00	0.00	0.00
11,700.0	90.82	90.10	6,856.7	-303.8	4,350.9	4,361.2	0.00	0.00	0.00
11,800.0	90.82	90.10	6,855.3	-303.9	4,450.9	4,461.0	0.00	0.00	0.00
11,900.0	90.82	90.10	6,853.9	-304.1	4,550.9	4,560.9	0.00	0.00	0.00
12,000.0	90.82	90.10	6,852.4	-304.3	4,650.9	4,660.7	0.00	0.00	0.00
12,100.0	90.82	90.10	6,851.0	-304.5	4,750.9	4,760.5	0.00	0.00	0.00
12,200.0	90.82	90.10	6,849.6	-304.6	4,850.9	4,860.4	0.00	0.00	0.00
12,300.0	90.82	90.10	6,848.1	-304.8	4,950.9	4,960.2	0.00	0.00	0.00
12,400.0	90.82	90.10	6,846.7	-305.0	5,050.8	5,060.0	0.00	0.00	0.00
12,500.0	90.82	90.10	6,845.3	-305.2	5,150.8	5,159.9	0.00	0.00	0.00
12,600.0	90.82	90.10	6,843.8	-305.3	5,250.8	5,259.7	0.00	0.00	0.00
12,659.2	90.82	90.10	6,843.0	-305.4	5,310.0	5,318.8	0.00	0.00	0.00
BHL 1830°FSL, 500°FEL, SEC. 23									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #3 (3-31-14)		

#### Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,423.6	6,917.9	7"	7	7-1/2

#### Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,609.0	3,575.0	PARKMAN		0.00	
4,300.7	4,258.0	SUSSEX		0.00	
4,892.2	4,842.0	SHANNON		0.00	
6,579.5	6,507.0	SHARON SPRINGS		0.00	
6,817.9	6,698.0	NIOBRARA A		0.00	
7,011.3	6,815.0	NIOBRARA B		0.00	
7,197.7	6,888.0	NIOBRARA C		0.00	

#### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.0	600.0	0.0	0.0	KOP #1
6,212.7	6,154.2	-295.0	-700.0	KOP #2
7,423.6	6,917.9	-296.3	75.0	End of Build



# **PETROLEUM DEVELOPMENT CORP Weld County CO**

**SEC.22-T5N-R65W**

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

**Alles 22D-312**

**Wellbore #1**

**Plan #3 (3-31-14)**

## **Anticollision Report**

**02 April, 2014**





<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #3 (3-31-14)
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria
<b>Interpolation Method:</b>	MD Interval 100.0ft
<b>Depth Range:</b>	Unlimited
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.0ft
<b>Warning Levels Evaluated at:</b>	2.00 Sigma
<b>Error Model:</b>	ISCWSA
<b>Scan Method:</b>	Closest Approach 3D
<b>Error Surface:</b>	Elliptical Conic

Survey Tool Program		Date	3/31/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,659.2	Plan #3 (3-31-14) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)	200.0	200.0	23.4	22.7	34.711	CC, ES
Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)	12,659.2	12,774.4	426.1	114.4	1.367	Level 3, SF
Alles 22S-232 - Wellbore #1 - Plan #1 (3-28-14)	735.3	735.2	21.1	18.1	6.915	CC, ES
Alles 22S-232 - Wellbore #1 - Plan #1 (3-28-14)	12,659.2	11,926.8	498.1	189.4	1.614	SF
Alles 22S-432 - Wellbore #1 - Wellbore #1	0.0	0.0	36.8			
Alles 22S-432 - Wellbore #1 - Wellbore #1	100.0	99.9	36.9	36.7	164.386	ES
Alles 22S-432 - Wellbore #1 - Wellbore #1	7,400.0	7,321.0	490.0	447.9	11.649	SF
Alles 22S-432 - Wellbore #2 - Wellbore #2	0.0	0.0	36.8			
Alles 22S-432 - Wellbore #2 - Wellbore #2	100.0	99.9	36.9	36.7	164.386	ES
Alles 22S-432 - Wellbore #2 - Wellbore #2	12,400.0	12,379.0	521.9	222.8	1.745	SF
Lofland 22T & Alles 22S-HZ Existing Wells						
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	1,397.7	1,393.0	80.2	73.7	12.315	CC
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	1,400.0	1,395.2	80.2	73.7	12.295	ES
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	7,300.0	6,915.8	315.3	281.8	9.390	SF
Badley 23-31 (Exist) - Wellbore #1 - Wellbore #1	10,070.5	6,878.0	140.8	-86.1	0.621	Level 1, CC, ES, SF
Buderus 12-23 (Exist) - Wellbore #1 - Wellbore #1	8,568.6	6,899.5	240.1	53.1	1.284	Level 3, CC, ES, SF
Esther 1-23 (Exist) - Wellbore #1 - Wellbore #1	12,455.6	6,841.9	108.9	-183.4	0.373	Level 1, CC, ES, SF
Lille 1-23 (Exist) - Wellbore #1 - Wellbore #1	11,143.1	6,862.7	168.3	-87.9	0.657	Level 1, CC, ES, SF

<b>Offset Design</b>	Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)											<b>Offset Site Error:</b>	0.0ft
<b>Survey Program:</b>	0-MWD											<b>Offset Well Error:</b>	0.0ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		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	Warning
0.0	0.0	0.0	0.0	0.0	0.0	159.08	-21.9	8.4	23.4				
100.0	100.0	100.0	100.0	0.1	0.1	159.08	-21.9	8.4	23.4	23.2	0.22	104.134	
200.0	200.0	200.0	200.0	0.3	0.3	159.08	-21.9	8.4	23.4	22.7	0.67	34.711	CC, ES
300.0	300.0	299.6	299.6	0.6	0.5	162.88	-23.1	7.1	24.1	23.0	1.10	21.851	
400.0	400.0	399.1	398.9	0.8	0.8	172.84	-26.6	3.3	26.9	25.3	1.54	17.435	
500.0	500.0	498.0	497.4	1.0	1.0	-174.96	-32.5	-2.9	32.8	30.7	2.01	16.311	
600.0	600.0	596.2	594.9	1.2	1.3	-164.25	-40.7	-11.5	42.6	40.1	2.52	16.921	
700.0	700.0	693.8	691.3	1.4	1.6	-44.51	-51.1	-22.4	55.2	52.3	2.91	18.955	

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-312
<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-312	<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 #3 (3-31-14)	<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 22D-402 - 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)					
800.0	799.8	791.7	787.5	1.6	2.0	-41.14	-63.6	-35.6	68.6	65.3	3.36	20.435	
900.0	899.5	891.0	885.0	1.9	2.4	-40.27	-76.7	-49.4	80.1	76.3	3.82	20.963	
1,000.0	998.7	990.6	982.8	2.1	2.8	-41.06	-89.8	-63.2	88.9	84.6	4.32	20.593	
1,100.0	1,097.5	1,090.3	1,080.7	2.4	3.2	-43.01	-103.0	-77.1	95.4	90.6	4.87	19.617	
1,200.0	1,196.3	1,190.1	1,178.6	2.7	3.6	-44.95	-116.1	-90.9	101.7	96.3	5.45	18.661	
1,300.0	1,295.0	1,289.8	1,276.5	3.1	4.1	-46.67	-129.3	-104.8	108.1	102.0	6.06	17.838	
1,400.0	1,393.8	1,389.6	1,374.4	3.4	4.5	-48.20	-142.4	-118.6	114.5	107.8	6.69	17.125	
1,500.0	1,492.5	1,489.3	1,472.3	3.8	4.9	-49.57	-155.6	-132.5	121.0	113.7	7.33	16.509	
1,600.0	1,591.2	1,589.1	1,570.2	4.1	5.4	-50.79	-168.8	-146.3	127.6	119.6	7.99	15.973	
1,700.0	1,690.0	1,688.8	1,668.1	4.5	5.8	-51.89	-181.9	-160.2	134.3	125.6	8.66	15.505	
1,800.0	1,788.7	1,788.6	1,766.0	4.8	6.2	-52.89	-195.1	-174.0	141.0	131.6	9.34	15.094	
1,900.0	1,887.5	1,888.3	1,863.9	5.2	6.7	-53.80	-208.2	-187.9	147.7	137.7	10.03	14.731	
2,000.0	1,986.2	1,988.1	1,961.8	5.6	7.1	-54.63	-221.4	-201.7	154.4	143.7	10.72	14.408	
2,100.0	2,084.9	2,087.8	2,059.7	5.9	7.5	-55.39	-234.5	-215.6	161.2	149.8	11.42	14.121	
2,200.0	2,183.7	2,187.6	2,157.6	6.3	8.0	-56.09	-247.7	-229.4	168.0	155.9	12.12	13.863	
2,300.0	2,282.4	2,287.3	2,255.5	6.7	8.4	-56.73	-260.8	-243.3	174.9	162.0	12.83	13.631	
2,400.0	2,381.2	2,387.1	2,353.4	7.1	8.8	-57.33	-274.0	-257.2	181.7	168.2	13.54	13.421	
2,500.0	2,479.9	2,486.8	2,451.3	7.4	9.3	-57.88	-287.1	-271.0	188.6	174.3	14.25	13.231	
2,600.0	2,578.7	2,586.5	2,549.2	7.8	9.7	-58.39	-300.3	-284.9	195.5	180.5	14.97	13.057	
2,700.0	2,677.4	2,686.3	2,647.1	8.2	10.1	-58.87	-313.4	-298.7	202.4	186.7	15.69	12.898	
2,800.0	2,776.1	2,786.0	2,745.0	8.6	10.6	-59.32	-326.6	-312.6	209.3	192.9	16.41	12.753	
2,900.0	2,874.9	2,885.8	2,842.9	8.9	11.0	-59.74	-339.8	-326.4	216.2	199.1	17.14	12.619	
3,000.0	2,973.6	2,985.5	2,940.8	9.3	11.4	-60.13	-352.9	-340.3	223.2	205.3	17.86	12.495	
3,100.0	3,072.4	3,085.3	3,038.7	9.7	11.9	-60.50	-366.1	-354.1	230.1	211.5	18.59	12.380	
3,200.0	3,171.1	3,185.0	3,136.6	10.1	12.3	-60.84	-379.2	-368.0	237.1	217.8	19.32	12.274	
3,300.0	3,269.9	3,284.8	3,234.5	10.4	12.7	-61.17	-392.4	-381.8	244.1	224.0	20.05	12.175	
3,400.0	3,368.6	3,384.5	3,332.4	10.8	13.2	-61.48	-405.5	-395.7	251.0	230.3	20.78	12.083	
3,500.0	3,467.3	3,484.3	3,430.3	11.2	13.6	-61.77	-418.7	-409.5	258.0	236.5	21.51	11.996	
3,600.0	3,566.1	3,584.0	3,528.2	11.6	14.0	-62.05	-431.8	-423.4	265.0	242.8	22.24	11.916	
3,700.0	3,664.8	3,683.8	3,626.1	12.0	14.5	-62.31	-445.0	-437.2	272.0	249.0	22.97	11.840	
3,800.0	3,763.6	3,783.5	3,724.0	12.3	14.9	-62.56	-458.1	-451.1	279.0	255.3	23.71	11.769	
3,900.0	3,862.3	3,883.3	3,821.9	12.7	15.3	-62.80	-471.3	-464.9	286.0	261.6	24.44	11.701	
4,000.0	3,961.0	3,983.0	3,919.8	13.1	15.8	-63.02	-484.4	-478.8	293.0	267.8	25.18	11.638	
4,100.0	4,059.8	4,082.8	4,017.7	13.5	16.2	-63.24	-497.6	-492.6	300.0	274.1	25.91	11.578	
4,200.0	4,158.5	4,182.5	4,115.6	13.9	16.6	-63.44	-510.8	-506.5	307.0	280.4	26.65	11.522	
4,300.0	4,257.3	4,282.3	4,213.5	14.2	17.1	-63.64	-523.9	-520.3	314.1	286.7	27.38	11.468	
4,400.0	4,356.0	4,382.0	4,311.4	14.6	17.5	-63.83	-537.1	-534.2	321.1	293.0	28.12	11.418	
4,500.0	4,454.8	4,481.8	4,409.3	15.0	17.9	-64.01	-550.2	-548.0	328.1	299.3	28.86	11.369	
4,600.0	4,553.5	4,581.5	4,507.2	15.4	18.4	-64.18	-563.4	-561.9	335.1	305.5	29.60	11.323	
4,700.0	4,652.2	4,681.2	4,605.1	15.8	18.8	-64.34	-576.5	-575.8	342.2	311.8	30.34	11.280	
4,800.0	4,751.0	4,781.0	4,703.0	16.1	19.2	-64.50	-589.7	-589.6	349.2	318.1	31.07	11.238	
4,900.0	4,849.7	4,880.7	4,800.9	16.5	19.7	-64.65	-602.8	-603.5	356.3	324.4	31.81	11.198	
5,000.0	4,948.5	4,980.5	4,898.8	16.9	20.1	-64.80	-616.0	-617.3	363.3	330.7	32.55	11.160	
5,100.0	5,047.2	5,080.2	4,996.7	17.3	20.6	-64.94	-629.1	-631.2	370.3	337.0	33.29	11.124	
5,200.0	5,146.0	5,180.0	5,094.6	17.7	21.0	-65.08	-642.3	-645.0	377.4	343.3	34.03	11.089	
5,300.0	5,244.7	5,279.7	5,192.5	18.0	21.4	-65.21	-655.4	-658.9	384.4	349.7	34.77	11.056	
5,400.0	5,343.4	5,383.7	5,294.7	18.4	21.8	-65.37	-668.9	-673.1	391.3	355.7	35.51	11.018	
5,500.0	5,442.4	5,494.3	5,403.8	18.7	22.2	-65.76	-680.9	-685.7	396.5	360.4	36.15	10.969	
5,600.0	5,541.8	5,605.0	5,513.8	18.9	22.4	-66.04	-690.0	-695.2	400.5	363.9	36.65	10.929	
5,700.0	5,641.6	5,715.9	5,624.3	19.1	22.6	-66.24	-696.1	-701.7	403.3	366.2	37.06	10.882	
5,800.0	5,741.5	5,826.8	5,735.1	19.3	22.8	-66.33	-699.4	-705.1	404.7	367.3	37.38	10.825	

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-312
<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-312	<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 #3 (3-31-14)	<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		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)					
5,900.0	5,841.5	5,933.2	5,841.5	19.4	22.9	-179.20	-699.9	-705.6	404.9	370.9	33.98	11.916	
6,000.0	5,941.5	6,033.2	5,941.5	19.5	23.0	-179.20	-699.9	-705.6	404.9	370.6	34.26	11.818	
6,100.0	6,041.5	6,133.2	6,041.5	19.7	23.1	-179.20	-699.9	-705.6	404.9	370.4	34.55	11.720	
6,200.0	6,141.5	6,233.2	6,141.5	19.8	23.2	-179.20	-699.9	-705.6	404.9	370.1	34.84	11.623	
6,300.0	6,241.3	6,333.2	6,241.4	19.9	23.3	91.39	-699.9	-705.6	405.0	366.5	38.52	10.513	
6,400.0	6,339.6	6,434.6	6,342.4	19.9	23.3	92.78	-699.9	-697.4	405.4	367.1	38.24	10.601	
6,500.0	6,434.8	6,537.4	6,442.8	19.7	23.3	94.13	-699.9	-675.5	406.0	368.2	37.77	10.748	
6,600.0	6,525.1	6,641.5	6,540.6	19.6	23.1	95.41	-700.1	-639.8	406.8	369.6	37.19	10.938	
6,700.0	6,609.1	6,747.0	6,633.7	19.4	22.9	96.60	-700.2	-590.5	407.7	371.1	36.60	11.140	
6,800.0	6,685.3	6,853.8	6,720.1	19.2	22.7	97.67	-700.4	-527.9	408.8	372.6	36.14	11.311	
6,900.0	6,752.4	6,961.7	6,797.8	19.2	22.4	98.60	-700.6	-453.1	409.8	373.8	35.98	11.388	
7,000.0	6,809.3	7,070.7	6,864.8	19.3	22.2	99.38	-700.8	-367.2	410.8	374.4	36.32	11.309	
7,100.0	6,854.9	7,180.5	6,919.2	19.6	22.1	99.99	-701.1	-271.9	411.6	374.3	37.31	11.032	
7,200.0	6,888.6	7,291.0	6,959.6	20.3	22.1	100.41	-701.4	-169.2	412.3	373.2	39.02	10.566	
7,300.0	6,909.7	7,402.0	6,984.8	21.4	22.4	100.63	-701.7	-61.3	412.7	371.3	41.43	9.961	
7,400.0	6,917.9	7,505.9	6,996.7	22.8	23.2	101.02	-702.0	41.9	413.4	369.1	44.27	9.338	
7,500.0	6,916.8	7,612.6	7,003.9	24.3	24.6	102.10	-702.3	148.4	415.1	367.7	47.39	8.759	
7,600.0	6,915.4	7,715.3	7,003.4	26.2	26.4	102.22	-702.6	251.1	415.4	364.4	50.97	8.150	
7,700.0	6,914.0	7,815.3	7,002.4	28.2	28.3	102.28	-702.9	351.1	415.6	360.7	54.83	7.579	
7,800.0	6,912.5	7,915.3	7,001.4	30.3	30.4	102.34	-703.2	451.0	415.8	356.8	58.95	7.053	
7,900.0	6,911.1	8,015.3	7,000.4	32.5	32.7	102.39	-703.5	551.0	416.0	352.7	63.28	6.574	
8,000.0	6,909.7	8,115.3	6,999.4	34.8	35.0	102.45	-703.8	651.0	416.2	348.4	67.77	6.141	
8,100.0	6,908.2	8,215.3	6,998.4	37.2	37.3	102.50	-704.0	751.0	416.4	344.0	72.40	5.751	
8,200.0	6,906.8	8,315.3	6,997.4	39.6	39.8	102.56	-704.3	851.0	416.6	339.5	77.14	5.401	
8,300.0	6,905.4	8,415.3	6,996.4	42.1	42.3	102.61	-704.6	951.0	416.8	334.8	81.97	5.085	
8,400.0	6,904.0	8,515.3	6,995.4	44.6	44.8	102.67	-704.9	1,051.0	417.0	330.1	86.87	4.800	
8,500.0	6,902.5	8,615.3	6,994.4	47.2	47.3	102.72	-705.2	1,151.0	417.2	325.4	91.84	4.543	
8,600.0	6,901.1	8,715.3	6,993.4	49.8	49.9	102.78	-705.5	1,251.0	417.4	320.6	96.86	4.310	
8,700.0	6,899.7	8,815.3	6,992.4	52.4	52.5	102.83	-705.8	1,351.0	417.6	315.7	101.92	4.097	
8,800.0	6,898.2	8,915.3	6,991.4	55.0	55.1	102.89	-706.0	1,451.0	417.8	310.8	107.02	3.904	
8,900.0	6,896.8	9,015.3	6,990.4	57.7	57.8	102.94	-706.3	1,551.0	418.0	305.9	112.16	3.727	
9,000.0	6,895.4	9,115.3	6,989.4	60.3	60.4	103.00	-706.6	1,651.0	418.2	300.9	117.32	3.565	
9,100.0	6,893.9	9,215.3	6,988.4	63.0	63.1	103.05	-706.9	1,751.0	418.5	295.9	122.51	3.416	
9,200.0	6,892.5	9,315.3	6,987.4	65.7	65.8	103.11	-707.2	1,851.0	418.7	291.0	127.71	3.278	
9,300.0	6,891.1	9,415.3	6,986.4	68.4	68.5	103.16	-707.5	1,951.0	418.9	285.9	132.94	3.151	
9,400.0	6,889.6	9,515.3	6,985.5	71.1	71.1	103.22	-707.8	2,050.9	419.1	280.9	138.18	3.033	
9,500.0	6,888.2	9,615.3	6,984.5	73.8	73.9	103.27	-708.0	2,150.9	419.3	275.9	143.43	2.923	
9,600.0	6,886.8	9,715.3	6,983.5	76.5	76.6	103.32	-708.3	2,250.9	419.5	270.8	148.70	2.821	
9,700.0	6,885.3	9,815.3	6,982.5	79.2	79.3	103.38	-708.6	2,350.9	419.7	265.7	153.98	2.726	
9,800.0	6,883.9	9,915.3	6,981.5	81.9	82.0	103.43	-708.9	2,450.9	419.9	260.7	159.26	2.637	
9,900.0	6,882.5	10,015.3	6,980.5	84.7	84.7	103.49	-709.2	2,550.9	420.1	255.6	164.56	2.553	
10,000.0	6,881.1	10,115.3	6,979.5	87.4	87.5	103.54	-709.5	2,650.9	420.3	250.5	169.86	2.475	
10,100.0	6,879.6	10,215.3	6,978.5	90.2	90.2	103.60	-709.8	2,750.9	420.6	245.4	175.16	2.401	
10,200.0	6,878.2	10,315.3	6,977.5	92.9	93.0	103.65	-710.1	2,850.9	420.8	240.3	180.48	2.331	
10,300.0	6,876.8	10,415.3	6,976.5	95.7	95.7	103.70	-710.3	2,950.9	421.0	235.2	185.79	2.266	
10,400.0	6,875.3	10,515.3	6,975.5	98.4	98.4	103.76	-710.6	3,050.9	421.2	230.1	191.11	2.204	
10,500.0	6,873.9	10,615.3	6,974.5	101.2	101.2	103.81	-710.9	3,150.9	421.4	225.0	196.44	2.145	
10,600.0	6,872.5	10,715.3	6,973.5	103.9	104.0	103.87	-711.2	3,250.9	421.6	219.9	201.77	2.090	
10,700.0	6,871.0	10,815.3	6,972.5	106.7	106.7	103.92	-711.5	3,350.9	421.8	214.7	207.10	2.037	
10,800.0	6,869.6	10,915.3	6,971.5	109.5	109.5	103.97	-711.8	3,450.9	422.1	209.6	212.43	1.987	
10,900.0	6,868.2	11,015.3	6,970.5	112.2	112.2	104.03	-712.1	3,550.8	422.3	204.5	217.76	1.939	

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-402 - 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
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
11,000.0	6,866.7	11,115.3	6,969.5	115.0	115.0	104.08	-712.3	3,650.8	422.5	199.4	223.10	1.894	
11,100.0	6,865.3	11,215.3	6,968.5	117.8	117.8	104.13	-712.6	3,750.8	422.7	194.3	228.44	1.850	
11,200.0	6,863.9	11,315.3	6,967.5	120.5	120.5	104.19	-712.9	3,850.8	422.9	189.1	233.78	1.809	
11,300.0	6,862.5	11,415.3	6,966.6	123.3	123.3	104.24	-713.2	3,950.8	423.1	184.0	239.12	1.770	
11,400.0	6,861.0	11,515.3	6,965.6	126.1	126.1	104.30	-713.5	4,050.8	423.4	178.9	244.45	1.732	
11,500.0	6,859.6	11,615.3	6,964.6	128.9	128.9	104.35	-713.8	4,150.8	423.6	173.8	249.79	1.696	
11,600.0	6,858.2	11,715.3	6,963.6	131.6	131.6	104.40	-714.1	4,250.8	423.8	168.7	255.14	1.661	
11,700.0	6,856.7	11,815.3	6,962.6	134.4	134.4	104.46	-714.4	4,350.8	424.0	163.5	260.48	1.628	
11,800.0	6,855.3	11,915.3	6,961.6	137.2	137.2	104.51	-714.6	4,450.8	424.2	158.4	265.82	1.596	
11,900.0	6,853.9	12,015.3	6,960.6	140.0	140.0	104.56	-714.9	4,550.8	424.4	153.3	271.15	1.565	
12,000.0	6,852.4	12,115.3	6,959.6	142.8	142.8	104.61	-715.2	4,650.8	424.7	148.2	276.49	1.536	
12,100.0	6,851.0	12,215.2	6,958.6	145.5	145.5	104.67	-715.5	4,750.8	424.9	143.0	281.83	1.508	
12,200.0	6,849.6	12,315.2	6,957.6	148.3	148.3	104.72	-715.8	4,850.8	425.1	137.9	287.17	1.480 Level 3	
12,300.0	6,848.1	12,415.2	6,956.6	151.1	151.1	104.77	-716.1	4,950.8	425.3	132.8	292.51	1.454 Level 3	
12,400.0	6,846.7	12,515.2	6,955.6	153.9	153.9	104.83	-716.4	5,050.8	425.5	127.7	297.84	1.429 Level 3	
12,500.0	6,845.3	12,615.2	6,954.6	156.7	156.7	104.88	-716.6	5,150.7	425.8	122.6	303.18	1.404 Level 3	
12,600.0	6,843.8	12,715.2	6,953.6	159.5	159.5	104.93	-716.9	5,250.7	426.0	117.5	308.51	1.381 Level 3	
12,659.2	6,843.0	12,774.4	6,953.0	161.1	161.1	104.96	-717.1	5,309.9	426.1	114.4	311.67	1.367 Level 3, SF	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-232 - Wellbore #1 - Plan #1 (3-28-14)		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)							
0.0	0.0	0.0	0.0	0.0	0.0	-31.45	18.2	-11.1	21.4						
100.0	100.0	100.0	100.0	0.1	0.1	-31.45	18.2	-11.1	21.4	21.1	0.22	95.020			
200.0	200.0	200.0	200.0	0.3	0.3	-31.45	18.2	-11.1	21.4	20.7	0.67	31.673			
300.0	300.0	300.0	300.0	0.6	0.6	-31.45	18.2	-11.1	21.4	20.2	1.12	19.004			
400.0	400.0	400.0	400.0	0.8	0.8	-31.45	18.2	-11.1	21.4	19.8	1.57	13.574			
500.0	500.0	500.0	500.0	1.0	1.0	-31.45	18.2	-11.1	21.4	19.3	2.02	10.558			
600.0	600.0	600.0	600.0	1.2	1.2	-31.45	18.2	-11.1	21.4	18.9	2.47	8.638			
700.0	700.0	700.0	700.0	1.4	1.5	86.08	18.2	-11.1	21.2	18.3	2.90	7.289			
735.3	735.2	735.2	735.2	1.5	1.5	90.00	18.2	-11.1	21.1	18.1	3.05	6.915 CC, ES			
800.0	799.8	799.8	799.8	1.6	1.7	100.14	18.2	-11.1	21.5	18.1	3.33	6.444			
900.0	899.5	899.1	899.1	1.9	1.9	119.22	19.0	-11.6	25.2	21.5	3.77	6.691			
1,000.0	998.7	998.0	998.0	2.1	2.1	134.29	21.2	-12.9	34.5	30.3	4.22	8.179			
1,100.0	1,097.5	1,096.4	1,096.3	2.4	2.3	143.14	24.8	-15.0	48.4	43.8	4.67	10.378			
1,200.0	1,196.3	1,194.7	1,194.4	2.7	2.6	146.90	30.0	-18.0	64.2	59.1	5.13	12.507			
1,300.0	1,295.0	1,292.8	1,292.2	3.1	2.8	148.06	36.5	-21.8	80.8	75.2	5.61	14.391			
1,400.0	1,393.8	1,390.7	1,389.7	3.4	3.0	147.93	44.5	-26.4	98.1	92.0	6.12	16.039			
1,500.0	1,492.5	1,489.2	1,487.6	3.8	3.3	147.54	53.1	-31.4	115.6	109.0	6.63	17.442			
1,600.0	1,591.2	1,587.6	1,585.6	4.1	3.6	147.26	61.6	-36.4	133.2	126.0	7.15	18.623			
1,700.0	1,690.0	1,686.1	1,683.5	4.5	3.8	147.04	70.2	-41.4	150.8	143.1	7.68	19.626			
1,800.0	1,788.7	1,784.5	1,781.5	4.8	4.1	146.87	78.7	-46.4	168.3	160.1	8.22	20.486			
1,900.0	1,887.5	1,883.0	1,879.4	5.2	4.3	146.73	87.3	-51.3	185.9	177.1	8.75	21.232			
2,000.0	1,986.2	1,981.4	1,977.4	5.6	4.6	146.62	95.8	-56.3	203.4	194.1	9.30	21.882			
2,100.0	2,084.9	2,079.9	2,075.3	5.9	4.9	146.52	104.4	-61.3	221.0	211.2	9.84	22.453			
2,200.0	2,183.7	2,178.3	2,173.3	6.3	5.2	146.44	113.0	-66.3	238.6	228.2	10.39	22.959			
2,300.0	2,282.4	2,276.7	2,271.2	6.7	5.4	146.37	121.5	-71.3	256.1	245.2	10.94	23.410			
2,400.0	2,381.2	2,375.2	2,369.2	7.1	5.7	146.31	130.1	-76.2	273.7	262.2	11.49	23.813			
2,500.0	2,479.9	2,473.6	2,467.1	7.4	6.0	146.25	138.6	-81.2	291.3	279.2	12.05	24.176			
2,600.0	2,578.7	2,572.1	2,565.0	7.8	6.3	146.20	147.2	-86.2	308.8	296.2	12.60	24.505			
2,700.0	2,677.4	2,670.5	2,663.0	8.2	6.5	146.16	155.7	-91.2	326.4	313.2	13.16	24.804			
2,800.0	2,776.1	2,769.0	2,760.9	8.6	6.8	146.12	164.3	-96.2	343.9	330.2	13.72	25.076			
2,900.0	2,874.9	2,867.4	2,858.9	8.9	7.1	146.09	172.8	-101.1	361.5	347.2	14.27	25.325			
3,000.0	2,973.6	2,968.6	2,959.6	9.3	7.4	146.11	181.3	-106.1	378.9	364.1	14.82	25.567			
3,100.0	3,072.4	3,073.5	3,064.3	9.7	7.6	146.56	187.2	-109.5	395.0	379.7	15.30	25.809			
3,200.0	3,171.1	3,178.6	3,169.3	10.1	7.8	147.47	189.9	-111.1	409.5	393.8	15.74	26.018			
3,300.0	3,269.9	3,279.1	3,269.9	10.4	7.9	148.62	190.0	-111.1	423.0	406.9	16.16	26.181			
3,400.0	3,368.6	3,377.9	3,368.6	10.8	8.1	149.69	190.0	-111.1	436.7	420.1	16.59	26.315			
3,500.0	3,467.3	3,476.6	3,467.3	11.2	8.3	150.70	190.0	-111.1	450.4	433.4	17.03	26.445			
3,600.0	3,566.1	3,575.4	3,566.1	11.6	8.5	151.66	190.0	-111.1	464.3	446.8	17.47	26.576			
3,700.0	3,664.8	3,674.1	3,664.8	12.0	8.7	152.55	190.0	-111.1	478.3	460.4	17.91	26.707			
3,800.0	3,763.6	3,772.9	3,763.6	12.3	8.9	153.40	190.0	-111.1	492.4	474.1	18.35	26.837			
3,900.0	3,862.3	3,871.6	3,862.3	12.7	9.1	154.20	190.0	-111.1	506.7	487.9	18.79	26.966			
4,000.0	3,961.0	3,970.3	3,961.0	13.1	9.3	154.95	190.0	-111.1	521.0	501.7	19.23	27.094			
4,100.0	4,059.8	4,069.1	4,059.8	13.5	9.5	155.67	190.0	-111.1	535.4	515.7	19.67	27.219			
4,200.0	4,158.5	4,167.8	4,158.5	13.9	9.7	156.35	190.0	-111.1	549.8	529.7	20.11	27.342			
4,300.0	4,257.3	4,266.6	4,257.3	14.2	9.9	156.99	190.0	-111.1	564.4	543.8	20.55	27.462			
4,400.0	4,356.0	4,365.3	4,356.0	14.6	10.1	157.60	190.0	-111.1	579.0	558.0	20.99	27.579			
4,500.0	4,454.8	4,464.0	4,454.8	15.0	10.3	158.18	190.0	-111.1	593.7	572.2	21.44	27.694			
4,600.0	4,553.5	4,562.8	4,553.5	15.4	10.6	158.73	190.0	-111.1	608.4	586.5	21.88	27.806			
4,700.0	4,652.2	4,661.5	4,652.2	15.8	10.8	159.26	190.0	-111.1	623.2	600.9	22.33	27.914			
4,800.0	4,751.0	4,760.3	4,751.0	16.1	11.0	159.76	190.0	-111.1	638.0	615.3	22.77	28.020			
4,900.0	4,849.7	4,859.0	4,849.7	16.5	11.2	160.24	190.0	-111.1	652.9	629.7	23.22	28.123			

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-312
<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-312	<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 #3 (3-31-14)	<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-232 - Wellbore #1 - Plan #1 (3-28-14)													
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	4,948.5	4,957.8	4,948.5	16.9	11.4	160.70	190.0	-111.1	667.8	644.2	23.66	28.223	
5,100.0	5,047.2	5,056.5	5,047.2	17.3	11.6	161.14	190.0	-111.1	682.8	658.7	24.11	28.320	
5,200.0	5,146.0	5,155.2	5,146.0	17.7	11.8	161.55	190.0	-111.1	697.8	673.2	24.56	28.414	
5,300.0	5,244.7	5,254.0	5,244.7	18.0	12.0	161.96	190.0	-111.1	712.8	687.8	25.01	28.505	
5,400.0	5,343.4	5,352.7	5,343.4	18.4	12.2	162.34	190.0	-111.1	727.9	702.4	25.46	28.594	
5,500.0	5,442.4	5,451.7	5,442.4	18.7	12.4	162.75	190.0	-111.1	741.5	715.5	25.92	28.602	
5,600.0	5,541.8	5,551.1	5,541.8	18.9	12.6	163.06	190.0	-111.1	751.7	725.4	26.34	28.536	
5,700.0	5,641.6	5,650.9	5,641.6	19.1	12.9	163.26	190.0	-111.1	758.7	732.0	26.73	28.379	
5,800.0	5,741.5	5,750.8	5,741.5	19.3	13.1	163.36	190.0	-111.1	762.3	735.2	27.10	28.134	
5,900.0	5,841.5	5,850.8	5,841.5	19.4	13.3	50.52	190.0	-111.1	762.9	731.0	31.93	23.890	
6,000.0	5,941.5	5,950.8	5,941.5	19.5	13.5	50.52	190.0	-111.1	762.9	730.6	32.29	23.628	
6,100.0	6,041.5	6,050.8	6,041.5	19.7	13.7	50.52	190.0	-111.1	762.9	730.2	32.64	23.370	
6,200.0	6,141.5	6,150.8	6,141.5	19.8	13.9	50.59	190.0	-109.8	764.8	731.8	32.92	23.232	
6,300.0	6,241.3	6,250.6	6,241.3	19.9	13.9	-39.25	190.0	-104.4	768.4	739.8	28.57	26.892	
6,400.0	6,339.6	6,348.9	6,339.6	19.9	14.0	-39.31	190.0	-94.9	767.6	739.3	28.32	27.101	
6,500.0	6,434.8	6,444.1	6,434.8	19.7	14.1	-39.74	190.0	-81.3	762.5	734.6	27.87	27.357	
6,600.0	6,525.1	6,534.4	6,525.1	19.6	14.2	-40.61	190.0	-60.3	753.1	725.8	27.32	27.570	
6,700.0	6,609.1	6,618.4	6,609.1	19.4	14.3	-41.78	190.0	-40.9	739.3	712.6	26.73	27.664	
6,800.0	6,685.3	6,694.6	6,685.3	19.2	14.3	-43.32	190.0	-18.5	721.8	695.5	26.29	27.459	
6,900.0	6,752.4	6,761.7	6,752.4	19.2	14.4	-45.47	190.0	12.4	700.6	674.4	26.24	26.704	
7,000.0	6,809.3	6,818.6	6,809.3	19.3	14.6	-48.07	190.0	45.4	676.3	649.6	26.73	25.301	
7,100.0	6,854.9	6,864.2	6,854.9	19.6	14.8	-51.23	190.0	82.1	649.5	621.6	27.90	23.277	
7,200.0	6,888.6	6,897.9	6,888.6	20.3	15.2	-54.97	190.0	122.4	621.0	591.2	29.81	20.831	
7,300.0	6,909.7	6,919.0	6,909.7	21.4	15.6	-59.65	190.0	172.2	591.7	559.2	32.52	18.194	
7,400.0	6,917.9	6,927.2	6,917.9	22.8	16.1	-64.13	190.0	212.0	562.9	527.4	35.43	15.885	
7,500.0	6,916.8	6,926.1	6,916.8	24.3	16.8	-68.13	190.0	266.8	537.4	498.9	38.53	13.949	
7,600.0	6,915.4	6,924.7	6,915.4	26.2	17.7	-71.57	190.0	328.1	519.1	477.3	41.81	12.413	
7,700.0	6,914.0	6,923.3	6,914.0	28.2	18.8	-74.79	190.0	398.4	506.9	461.5	45.44	11.157	
7,800.0	6,912.5	6,921.8	6,912.5	30.3	20.2	-77.48	190.0	477.0	499.6	450.3	49.33	10.128	
7,900.0	6,911.1	6,920.4	6,911.1	32.5	21.8	-79.32	190.0	562.3	495.9	442.5	53.43	9.282	
8,000.0	6,909.7	6,919.0	6,909.7	34.8	23.6	-80.09	190.0	651.5	494.8	437.1	57.62	8.587	
8,016.6	6,909.4	6,918.7	6,909.4	35.2	24.0	-80.10	190.0	667.3	494.8	436.4	58.34	8.480	
8,100.0	6,908.2	6,917.5	6,908.2	37.2	25.8	-80.18	190.0	750.7	494.8	432.7	62.11	7.966	
8,200.0	6,906.8	6,916.1	6,906.8	39.6	28.1	-80.26	190.0	850.7	494.8	428.1	66.78	7.410	
8,300.0	6,905.4	6,914.7	6,905.4	42.1	30.4	-80.35	190.0	950.7	494.9	423.3	71.58	6.914	
8,400.0	6,904.0	6,913.3	6,904.0	44.6	32.9	-80.44	190.0	1,050.7	494.9	418.5	76.49	6.471	
8,500.0	6,902.5	6,911.8	6,902.5	47.2	35.4	-80.52	190.0	1,150.7	495.0	413.5	81.49	6.074	
8,600.0	6,901.1	6,910.4	6,901.1	49.8	37.9	-80.61	190.0	1,250.7	495.0	408.5	86.57	5.719	
8,700.0	6,899.7	6,909.0	6,899.7	52.4	40.5	-80.70	190.0	1,350.7	495.1	403.4	91.70	5.399	
8,800.0	6,898.2	6,907.5	6,898.2	55.0	43.1	-80.78	190.0	1,450.7	495.2	398.3	96.89	5.111	
8,900.0	6,896.8	6,906.1	6,896.8	57.7	45.7	-80.87	190.0	1,550.7	495.2	393.1	102.12	4.849	
9,000.0	6,895.4	6,904.7	6,895.4	60.3	48.3	-80.96	190.0	1,650.7	495.3	387.9	107.38	4.612	
9,100.0	6,893.9	6,903.2	6,893.9	63.0	51.0	-81.05	190.0	1,750.7	495.3	382.6	112.68	4.396	
9,200.0	6,892.5	6,901.8	6,892.5	65.7	53.7	-81.13	190.0	1,850.6	495.4	377.4	118.01	4.198	
9,300.0	6,891.1	6,900.4	6,891.1	68.4	56.4	-81.22	190.0	1,950.6	495.4	372.1	123.36	4.016	
9,400.0	6,889.6	6,908.9	6,889.6	71.1	59.1	-81.31	190.0	2,050.6	495.5	366.8	128.73	3.849	
9,500.0	6,888.2	6,907.5	6,888.2	73.8	61.8	-81.39	190.0	2,150.6	495.6	361.4	134.13	3.695	
9,600.0	6,886.8	6,906.1	6,886.8	76.5	64.5	-81.48	190.0	2,250.6	495.6	356.1	139.54	3.552	
9,700.0	6,885.3	6,904.6	6,885.3	79.2	67.2	-81.57	190.0	2,350.6	495.7	350.7	144.96	3.419	
9,800.0	6,883.9	6,903.2	6,883.9	81.9	70.0	-81.65	190.0	2,450.6	495.8	345.3	150.40	3.296	
9,900.0	6,882.5	6,901.8	6,882.5	84.7	72.7	-81.74	190.0	2,550.6	495.8	340.0	155.85	3.181	

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-232 - Wellbore #1 - Plan #1 (3-28-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,000.0	6,881.1	9,267.7	6,810.6	87.4	75.5	-81.83	190.0	2,650.6	495.9	334.6	161.32	3.074		
10,100.0	6,879.6	9,367.7	6,809.9	90.2	78.2	-81.91	190.0	2,750.6	496.0	329.2	166.79	2.973		
10,200.0	6,878.2	9,467.7	6,809.2	92.9	81.0	-82.00	190.0	2,850.6	496.0	323.7	172.28	2.879		
10,300.0	6,876.8	9,567.7	6,808.5	95.7	83.7	-82.09	190.0	2,950.6	496.1	318.3	177.77	2.791		
10,400.0	6,875.3	9,667.7	6,807.8	98.4	86.5	-82.17	190.0	3,050.6	496.2	312.9	183.27	2.707		
10,500.0	6,873.9	9,767.7	6,807.1	101.2	89.2	-82.26	190.0	3,150.6	496.2	307.5	188.78	2.629		
10,600.0	6,872.5	9,867.7	6,806.4	103.9	92.0	-82.35	190.0	3,250.6	496.3	302.0	194.30	2.554		
10,700.0	6,871.0	9,967.7	6,805.7	106.7	94.8	-82.43	190.0	3,350.6	496.4	296.6	199.82	2.484		
10,800.0	6,869.6	10,067.7	6,805.0	109.5	97.5	-82.52	190.0	3,450.6	496.5	291.1	205.35	2.418		
10,900.0	6,868.2	10,167.7	6,804.3	112.2	100.3	-82.61	190.0	3,550.6	496.5	285.7	210.88	2.355		
11,000.0	6,866.7	10,267.7	6,803.6	115.0	103.1	-82.69	190.0	3,650.6	496.6	280.2	216.42	2.295		
11,100.0	6,865.3	10,367.7	6,802.9	117.8	105.9	-82.78	190.0	3,750.5	496.7	274.7	221.97	2.238		
11,200.0	6,863.9	10,467.7	6,802.2	120.5	108.6	-82.86	190.0	3,850.5	496.8	269.3	227.52	2.183		
11,300.0	6,862.5	10,567.7	6,801.5	123.3	111.4	-82.95	190.0	3,950.5	496.9	263.8	233.07	2.132		
11,400.0	6,861.0	10,667.7	6,800.8	126.1	114.2	-83.04	190.0	4,050.5	496.9	258.3	238.63	2.082		
11,500.0	6,859.6	10,767.7	6,800.1	128.9	117.0	-83.12	190.0	4,150.5	497.0	252.8	244.20	2.035		
11,600.0	6,858.2	10,867.6	6,799.4	131.6	119.8	-83.21	190.0	4,250.5	497.1	247.3	249.76	1.990		
11,700.0	6,856.7	10,967.6	6,798.7	134.4	122.5	-83.30	190.0	4,350.5	497.2	241.9	255.33	1.947		
11,800.0	6,855.3	11,067.6	6,798.0	137.2	125.3	-83.38	190.0	4,450.5	497.3	236.4	260.91	1.906		
11,900.0	6,853.9	11,167.6	6,797.3	140.0	128.1	-83.47	190.0	4,550.5	497.4	230.9	266.49	1.866		
12,000.0	6,852.4	11,267.6	6,796.6	142.8	130.9	-83.55	190.0	4,650.5	497.5	225.4	272.07	1.828		
12,100.0	6,851.0	11,367.6	6,795.9	145.5	133.7	-83.64	190.0	4,750.5	497.6	219.9	277.65	1.792		
12,200.0	6,849.6	11,467.6	6,795.2	148.3	136.5	-83.73	190.0	4,850.5	497.6	214.4	283.24	1.757		
12,300.0	6,848.1	11,567.6	6,794.5	151.1	139.3	-83.81	190.0	4,950.5	497.7	208.9	288.83	1.723		
12,400.0	6,846.7	11,667.6	6,793.8	153.9	142.1	-83.90	190.0	5,050.5	497.8	203.4	294.42	1.691		
12,500.0	6,845.3	11,767.6	6,793.1	156.7	144.9	-83.99	190.0	5,150.5	497.9	197.9	300.01	1.660		
12,600.0	6,843.8	11,867.6	6,792.4	159.5	147.7	-84.07	190.0	5,250.5	498.0	192.4	305.61	1.630		
12,659.2	6,843.0	11,926.8	6,792.0	161.1	149.0	-84.12	190.0	5,309.6	498.1	189.4	308.66	1.614 SF		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 125-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	0.0	0.0	0.0	0.0	-27.02	32.8	-16.7	36.8					
100.0	100.0	99.9	99.9	0.1	0.1	-26.76	33.0	-16.6	36.9	36.7	0.22	164.386 ES		
200.0	200.0	199.3	199.3	0.3	0.3	-25.31	34.2	-16.2	37.8	37.2	0.65	58.560		
300.0	300.0	298.6	298.6	0.6	0.5	-21.99	37.6	-15.2	40.5	39.4	1.10	36.957		
400.0	400.0	397.8	397.6	0.8	0.8	-18.54	42.6	-14.3	45.0	43.4	1.55	28.919		
500.0	500.0	496.1	495.6	1.0	1.0	-15.39	49.9	-13.7	51.9	49.9	2.03	25.640		
600.0	600.0	595.1	594.2	1.2	1.3	-13.44	59.3	-14.2	61.2	58.7	2.50	24.442		
700.0	700.0	692.8	691.3	1.4	1.5	100.76	69.7	-16.4	72.4	69.5	2.89	25.075		
800.0	799.8	790.5	788.1	1.6	1.8	101.89	81.4	-21.9	86.4	83.1	3.31	26.108		
900.0	899.5	889.3	885.7	1.9	2.1	101.99	93.2	-32.0	101.8	98.0	3.76	27.106		
1,000.0	998.7	988.8	983.6	2.1	2.5	101.86	104.4	-45.7	118.0	113.7	4.25	27.772		
1,100.0	1,097.5	1,095.6	1,088.7	2.4	2.8	102.21	112.2	-62.3	131.2	126.4	4.81	27.298		
1,200.0	1,196.3	1,203.3	1,194.8	2.7	3.1	101.47	112.5	-81.0	138.1	132.7	5.40	25.580		
1,300.0	1,295.0	1,303.6	1,293.4	3.1	3.3	100.36	109.9	-99.1	142.2	136.2	6.01	23.648		
1,400.0	1,393.8	1,403.3	1,391.6	3.4	3.6	99.66	107.4	-116.2	146.3	139.6	6.64	22.024		
1,500.0	1,492.5	1,500.1	1,487.2	3.8	3.9	99.74	106.0	-131.2	151.1	143.9	7.28	20.773		
1,600.0	1,591.2	1,597.5	1,583.6	4.1	4.2	100.39	107.6	-145.3	158.7	150.8	7.93	20.020		
1,700.0	1,690.0	1,700.1	1,685.0	4.5	4.5	100.72	108.4	-160.8	165.6	157.0	8.61	19.239		
1,800.0	1,788.7	1,799.6	1,783.3	4.8	4.8	100.80	108.2	-176.3	171.5	162.2	9.28	18.477		
1,900.0	1,887.5	1,898.9	1,881.5	5.2	5.1	101.09	108.5	-191.3	177.9	168.0	9.96	17.863		
2,000.0	1,986.2	1,999.1	1,980.7	5.6	5.4	101.65	108.9	-205.4	184.3	173.7	10.64	17.323		
2,100.0	2,084.9	2,097.7	2,078.3	5.9	5.7	102.30	109.6	-218.9	190.8	179.5	11.32	16.863		
2,200.0	2,183.7	2,196.9	2,176.5	6.3	6.1	102.74	110.9	-233.2	198.1	186.1	11.99	16.520		
2,300.0	2,282.4	2,299.7	2,278.3	6.7	6.4	103.49	111.6	-246.7	204.6	191.9	12.67	16.141		
2,400.0	2,381.2	2,399.0	2,376.9	7.1	6.7	104.46	111.6	-258.6	210.3	196.9	13.34	15.761		
2,500.0	2,479.9	2,497.7	2,474.8	7.4	7.0	105.20	112.1	-271.1	216.7	202.7	14.00	15.476		
2,600.0	2,578.7	2,597.7	2,574.2	7.8	7.2	106.28	113.0	-282.4	223.2	208.5	14.65	15.233		
2,700.0	2,677.4	2,692.5	2,668.5	8.2	7.5	107.56	114.4	-291.9	230.4	215.1	15.29	15.067		
2,800.0	2,776.1	2,784.0	2,759.2	8.6	7.8	108.10	118.5	-303.9	240.8	224.9	15.93	15.120		
2,900.0	2,874.9	2,887.9	2,861.7	8.9	8.2	108.24	124.0	-319.3	252.2	235.6	16.63	15.169		
3,000.0	2,973.6	2,992.7	2,965.4	9.3	8.5	108.45	127.2	-334.4	261.4	244.0	17.33	15.084		
3,100.0	3,072.4	3,096.7	3,068.4	9.7	8.8	108.78	128.6	-348.6	268.8	250.8	18.02	14.919		
3,200.0	3,171.1	3,195.9	3,166.8	10.1	9.1	109.25	129.2	-361.3	275.4	256.7	18.68	14.748		
3,300.0	3,269.9	3,293.3	3,263.5	10.4	9.4	109.91	130.4	-372.7	282.6	263.3	19.32	14.625		
3,400.0	3,368.6	3,388.0	3,357.6	10.8	9.7	110.61	132.8	-383.4	291.2	271.2	19.95	14.594		
3,500.0	3,467.3	3,486.5	3,455.4	11.2	10.0	111.32	136.6	-394.4	301.0	280.5	20.59	14.623		
3,600.0	3,566.1	3,583.0	3,551.2	11.6	10.3	111.93	140.0	-405.4	310.6	289.4	21.22	14.640		
3,700.0	3,664.8	3,680.5	3,647.8	12.0	10.6	112.27	144.2	-417.9	321.0	299.1	21.88	14.670		
3,800.0	3,763.6	3,775.4	3,741.4	12.3	10.9	112.21	150.0	-432.1	333.3	310.7	22.55	14.776		
3,900.0	3,862.3	3,874.0	3,838.6	12.7	11.3	112.05	156.6	-447.5	346.1	322.8	23.26	14.879		
4,000.0	3,961.0	3,976.2	3,939.4	13.1	11.6	111.99	163.2	-462.9	358.7	334.7	23.96	14.969		
4,100.0	4,059.8	4,080.7	4,042.9	13.5	12.0	112.20	168.8	-476.9	370.1	345.5	24.66	15.009		
4,200.0	4,158.5	4,189.0	4,150.0	13.9	12.3	112.31	172.4	-492.1	379.6	354.3	25.37	14.965		
4,300.0	4,257.3	4,291.7	4,251.4	14.2	12.7	112.18	174.1	-507.9	387.4	361.3	26.08	14.852		
4,400.0	4,356.0	4,392.5	4,350.9	14.6	13.0	111.90	175.4	-524.6	394.8	368.0	26.80	14.730		
4,500.0	4,454.8	4,494.1	4,451.1	15.0	13.4	111.70	176.3	-540.9	401.8	374.3	27.52	14.601		
4,600.0	4,553.5	4,594.5	4,550.5	15.4	13.7	111.69	176.8	-555.7	408.5	380.3	28.22	14.477		
4,700.0	4,652.2	4,693.0	4,648.0	15.8	14.0	111.81	177.3	-569.4	415.2	386.3	28.90	14.369		
4,800.0	4,751.0	4,788.0	4,742.3	16.1	14.3	112.18	178.3	-580.6	422.3	392.8	29.53	14.301		
4,900.0	4,849.7	4,883.0	4,836.8	16.5	14.6	112.75	180.8	-590.4	431.0	400.9	30.14	14.302		
5,000.0	4,948.5	4,979.8	4,932.9	16.9	14.9	113.17	184.4	-601.2	440.9	410.2	30.77	14.328		

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 125-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		
5,100.0	5,047.2	5,081.2	5,033.3	17.3	15.2	113.31	188.0	-614.8	450.7	419.2	31.44	14.332		
5,200.0	5,146.0	5,185.2	5,136.2	17.7	15.5	113.34	191.0	-629.6	459.6	427.5	32.14	14.299		
5,300.0	5,244.7	5,297.5	5,247.3	18.0	15.9	113.40	192.2	-645.5	466.9	434.0	32.86	14.208		
5,400.0	5,343.4	5,401.6	5,350.6	18.4	16.2	113.61	190.7	-658.8	471.6	438.1	33.54	14.064		
5,500.0	5,442.4	5,494.2	5,442.5	18.7	16.5	113.86	190.2	-669.6	476.6	442.5	34.12	13.971		
5,600.0	5,541.8	5,585.9	5,533.7	18.9	16.8	113.79	191.2	-680.0	481.8	447.2	34.62	13.918		
5,700.0	5,641.6	5,685.3	5,632.6	19.1	17.0	113.46	193.3	-690.0	486.8	451.7	35.10	13.869		
5,800.0	5,741.5	5,791.3	5,738.3	19.3	17.2	113.27	194.8	-695.8	489.6	454.1	35.48	13.798		
5,900.0	5,841.5	5,896.3	5,843.3	19.4	17.4	0.22	194.8	-698.1	489.8	461.6	28.16	17.391		
6,000.0	5,941.5	5,996.8	5,943.9	19.5	17.6	0.07	194.4	-699.4	489.4	460.9	28.52	17.162		
6,100.0	6,041.5	6,097.0	6,044.1	19.7	17.8	-0.08	193.8	-700.7	488.9	460.0	28.87	16.935		
6,200.0	6,141.5	6,199.0	6,146.0	19.8	17.9	-0.13	193.3	-701.1	488.3	459.0	29.23	16.706		
6,300.0	6,241.3	6,314.5	6,261.1	19.9	18.0	-90.09	189.9	-692.7	485.3	448.4	36.89	13.154		
6,400.0	6,339.6	6,415.2	6,358.9	19.9	17.9	-89.82	184.5	-669.9	479.9	443.2	36.75	13.059		
6,450.3	6,388.0	6,443.6	6,385.8	19.8	17.8	-89.75	183.9	-661.0	478.9	442.3	36.63	13.073		
6,500.0	6,434.8	6,468.0	6,408.7	19.7	17.8	-89.63	184.5	-652.6	480.3	443.8	36.52	13.152		
6,600.0	6,525.1	6,578.5	6,510.1	19.6	17.6	-89.80	190.5	-609.3	485.9	449.8	36.11	13.459		
6,700.0	6,609.1	6,700.1	6,614.6	19.4	17.3	-90.25	191.6	-547.4	486.9	451.3	35.64	13.661		
6,800.0	6,685.3	6,806.4	6,699.0	19.2	17.1	-91.00	188.5	-482.8	484.1	448.8	35.34	13.699		
6,900.0	6,752.4	6,902.8	6,768.8	19.2	17.0	-91.98	186.6	-416.4	482.4	447.1	35.32	13.658		
7,000.0	6,809.3	7,008.0	6,837.2	19.3	17.1	-93.37	185.2	-336.6	481.7	446.0	35.71	13.489		
7,061.1	6,838.6	7,064.8	6,869.7	19.5	17.3	-94.15	184.1	-290.1	481.1	444.9	36.22	13.281		
7,100.0	6,854.9	7,101.9	6,889.3	19.6	17.5	-94.68	183.9	-258.5	481.3	444.7	36.60	13.150		
7,200.0	6,888.6	7,221.1	6,939.4	20.3	18.4	-96.02	181.6	-150.7	480.2	441.9	38.33	12.528		
7,300.0	6,909.7	7,321.0	6,965.5	21.4	19.6	-96.73	179.8	-54.3	479.2	438.6	40.61	11.800		
7,301.3	6,909.9	7,321.0	6,965.4	21.4	19.6	-96.73	179.8	-54.3	479.2	438.6	40.63	11.795		
7,400.0	6,917.9	7,321.0	6,965.4	22.8	19.6	-95.91	179.8	-54.3	490.0	447.9	42.06	11.649 SF		
7,500.0	6,916.8	7,321.0	6,965.4	24.3	19.6	-95.48	179.8	-54.3	521.0	477.3	43.72	11.919		
7,600.0	6,915.4	7,321.0	6,965.4	26.2	19.6	-95.48	179.8	-54.3	568.3	522.7	45.54	12.478		
7,700.0	6,914.0	7,321.0	6,965.4	28.2	19.6	-95.48	179.8	-54.3	628.0	580.4	47.53	13.213		
7,800.0	6,912.5	7,321.0	6,965.4	30.3	19.6	-95.48	179.8	-54.3	697.0	647.3	49.64	14.040		
7,900.0	6,911.1	7,321.0	6,965.4	32.5	19.6	-95.48	179.8	-54.3	772.8	720.9	51.86	14.901		
8,000.0	6,909.7	7,321.0	6,965.4	34.8	19.6	-95.48	179.8	-54.3	853.6	799.4	54.16	15.760		
8,100.0	6,908.2	7,321.0	6,965.4	37.2	19.6	-95.48	179.8	-54.3	938.1	881.6	56.53	16.594		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22S-432 - Wellbore #2 - Wellbore #2												<b>Offset Site Error:</b>	0.0 ft
<b>Survey Program:</b> 125-MWD, 6034-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum		Separation		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	0.0	0.0	0.0	0.0	-27.02	32.8	-16.7	36.8				
100.0	100.0	99.9	99.9	0.1	0.1	-26.76	33.0	-16.6	36.9	36.7	0.22	164.386 ES	
200.0	200.0	199.3	199.3	0.3	0.3	-25.31	34.2	-16.2	37.8	37.2	0.65	58.560	
300.0	300.0	298.6	298.6	0.6	0.5	-21.99	37.6	-15.2	40.5	39.4	1.10	36.957	
400.0	400.0	397.8	397.6	0.8	0.8	-18.54	42.6	-14.3	45.0	43.4	1.55	28.919	
500.0	500.0	496.1	495.6	1.0	1.0	-15.39	49.9	-13.7	51.9	49.9	2.03	25.640	
600.0	600.0	595.1	594.2	1.2	1.3	-13.44	59.3	-14.2	61.2	58.7	2.50	24.442	
700.0	700.0	692.8	691.3	1.4	1.5	100.76	69.7	-16.4	72.4	69.5	2.89	25.075	
800.0	799.8	790.5	788.1	1.6	1.8	101.89	81.4	-21.9	86.4	83.1	3.31	26.108	
900.0	899.5	889.3	885.7	1.9	2.1	101.99	93.2	-32.0	101.8	98.0	3.76	27.106	
1,000.0	998.7	988.8	983.6	2.1	2.5	101.86	104.4	-45.7	118.0	113.7	4.25	27.772	
1,100.0	1,097.5	1,095.6	1,088.7	2.4	2.8	102.21	112.2	-62.3	131.2	126.4	4.81	27.298	
1,200.0	1,196.3	1,203.3	1,194.8	2.7	3.1	101.47	112.5	-81.0	138.1	132.7	5.40	25.580	
1,300.0	1,295.0	1,303.6	1,293.4	3.1	3.3	100.36	109.9	-99.1	142.2	136.2	6.01	23.647	
1,400.0	1,393.8	1,403.3	1,391.6	3.4	3.6	99.66	107.4	-116.2	146.3	139.6	6.64	22.024	
1,500.0	1,492.5	1,500.1	1,487.2	3.8	3.9	99.74	106.0	-131.2	151.1	143.9	7.28	20.773	
1,600.0	1,591.2	1,597.5	1,583.6	4.1	4.2	100.39	107.6	-145.3	158.7	150.8	7.93	20.020	
1,700.0	1,690.0	1,700.1	1,685.0	4.5	4.5	100.72	108.4	-160.8	165.6	157.0	8.61	19.239	
1,800.0	1,788.7	1,799.6	1,783.3	4.8	4.8	100.80	108.2	-176.3	171.5	162.2	9.28	18.477	
1,900.0	1,887.5	1,898.9	1,881.5	5.2	5.1	101.09	108.5	-191.3	177.9	168.0	9.96	17.863	
2,000.0	1,986.2	1,999.1	1,980.7	5.6	5.4	101.65	108.9	-205.4	184.3	173.7	10.64	17.323	
2,100.0	2,084.9	2,097.7	2,078.3	5.9	5.7	102.30	109.6	-218.9	190.8	179.5	11.32	16.863	
2,200.0	2,183.7	2,196.9	2,176.5	6.3	6.1	102.74	110.9	-233.2	198.1	186.1	11.99	16.520	
2,300.0	2,282.4	2,299.7	2,278.3	6.7	6.4	103.49	111.6	-246.7	204.6	191.9	12.67	16.141	
2,400.0	2,381.2	2,399.0	2,376.9	7.1	6.7	104.46	111.6	-258.6	210.3	196.9	13.34	15.761	
2,500.0	2,479.9	2,497.7	2,474.8	7.4	7.0	105.20	112.1	-271.1	216.7	202.7	14.00	15.476	
2,600.0	2,578.7	2,597.7	2,574.2	7.8	7.2	106.28	113.0	-282.4	223.2	208.5	14.65	15.233	
2,700.0	2,677.4	2,692.5	2,668.5	8.2	7.5	107.56	114.4	-291.9	230.4	215.1	15.29	15.067	
2,800.0	2,776.1	2,784.0	2,759.2	8.6	7.8	108.10	118.5	-303.9	240.8	224.9	15.93	15.120	
2,900.0	2,874.9	2,887.9	2,861.7	8.9	8.2	108.24	124.0	-319.3	252.2	235.6	16.63	15.169	
3,000.0	2,973.6	2,992.7	2,965.4	9.3	8.5	108.45	127.2	-334.4	261.4	244.0	17.33	15.084	
3,100.0	3,072.4	3,096.7	3,068.4	9.7	8.8	108.78	128.6	-348.6	268.8	250.8	18.02	14.919	
3,200.0	3,171.1	3,195.9	3,166.8	10.1	9.1	109.25	129.2	-361.3	275.4	256.7	18.68	14.748	
3,300.0	3,269.9	3,293.3	3,263.5	10.4	9.4	109.91	130.4	-372.7	282.6	263.3	19.32	14.625	
3,400.0	3,368.6	3,388.0	3,357.6	10.8	9.7	110.61	132.8	-383.4	291.2	271.2	19.95	14.593	
3,500.0	3,467.3	3,486.5	3,455.4	11.2	10.0	111.32	136.6	-394.4	301.0	280.5	20.59	14.623	
3,600.0	3,566.1	3,583.0	3,551.2	11.6	10.3	111.93	140.0	-405.4	310.6	289.4	21.22	14.640	
3,700.0	3,664.8	3,680.5	3,647.8	12.0	10.6	112.27	144.2	-417.9	321.0	299.1	21.88	14.670	
3,800.0	3,763.6	3,775.4	3,741.4	12.3	10.9	112.21	150.0	-432.1	333.3	310.7	22.55	14.776	
3,900.0	3,862.3	3,874.0	3,838.6	12.7	11.3	112.05	156.6	-447.5	346.1	322.8	23.26	14.879	
4,000.0	3,961.0	3,976.2	3,939.4	13.1	11.6	111.99	163.2	-462.9	358.7	334.7	23.96	14.969	
4,100.0	4,059.8	4,080.7	4,042.9	13.5	12.0	112.20	168.8	-476.9	370.1	345.5	24.66	15.009	
4,200.0	4,158.5	4,189.0	4,150.0	13.9	12.3	112.31	172.4	-492.1	379.6	354.3	25.37	14.965	
4,300.0	4,257.3	4,291.7	4,251.4	14.2	12.7	112.18	174.1	-507.9	387.4	361.3	26.08	14.852	
4,400.0	4,356.0	4,392.5	4,350.9	14.6	13.0	111.90	175.4	-524.6	394.8	368.0	26.80	14.730	
4,500.0	4,454.8	4,494.1	4,451.1	15.0	13.4	111.70	176.3	-540.9	401.8	374.3	27.52	14.601	
4,600.0	4,553.5	4,594.5	4,550.5	15.4	13.7	111.69	176.8	-555.7	408.5	380.3	28.22	14.477	
4,700.0	4,652.2	4,693.0	4,648.0	15.8	14.0	111.81	177.3	-569.4	415.2	386.3	28.90	14.369	
4,800.0	4,751.0	4,788.0	4,742.3	16.1	14.3	112.18	178.3	-580.6	422.3	392.8	29.53	14.301	
4,900.0	4,849.7	4,883.0	4,836.8	16.5	14.6	112.75	180.8	-590.4	431.0	400.9	30.14	14.302	
5,000.0	4,948.5	4,979.8	4,932.9	16.9	14.9	113.17	184.4	-601.2	440.9	410.2	30.78	14.328	

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 125-MWD, 6034-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	
5,100.0	5,047.2	5,081.2	5,033.3	17.3	15.2	113.31	188.0	-614.8	450.7	419.2	31.44	14.332	
5,200.0	5,146.0	5,185.2	5,136.2	17.7	15.5	113.34	191.0	-629.6	459.6	427.5	32.14	14.299	
5,300.0	5,244.7	5,297.5	5,247.3	18.0	15.9	113.40	192.2	-645.5	466.9	434.0	32.86	14.208	
5,400.0	5,343.4	5,401.6	5,350.6	18.4	16.2	113.61	190.7	-658.8	471.6	438.1	33.54	14.064	
5,500.0	5,442.4	5,494.2	5,442.5	18.7	16.5	113.86	190.2	-669.6	476.6	442.5	34.12	13.971	
5,600.0	5,541.8	5,585.9	5,533.7	18.9	16.8	113.79	191.2	-680.0	481.8	447.2	34.62	13.918	
5,700.0	5,641.6	5,685.3	5,632.6	19.1	17.0	113.46	193.3	-690.0	486.8	451.7	35.10	13.869	
5,800.0	5,741.5	5,791.3	5,738.3	19.3	17.2	113.27	194.8	-695.8	489.6	454.1	35.48	13.798	
5,900.0	5,841.5	5,896.5	5,843.5	19.4	17.4	0.22	194.8	-698.1	489.8	461.7	28.14	17.409	
6,000.0	5,941.5	5,997.7	5,944.7	19.5	17.5	0.06	194.3	-699.5	489.3	460.9	28.39	17.235	
6,100.0	6,041.5	6,097.0	6,044.0	19.7	17.5	-0.08	193.5	-700.7	488.5	459.9	28.58	17.090	
6,130.6	6,072.1	6,125.1	6,072.1	19.7	17.5	-0.10	193.4	-700.8	488.4	459.7	28.64	17.055	
6,200.0	6,141.5	6,181.7	6,128.7	19.8	17.5	0.00	194.0	-700.0	489.2	460.4	28.76	17.008	
6,300.0	6,241.3	6,255.0	6,201.5	19.9	17.5	-89.39	197.8	-693.4	494.4	458.0	36.36	13.598	
6,400.0	6,339.6	6,351.0	6,294.7	19.9	17.3	-88.29	205.8	-672.1	502.8	466.7	36.10	13.928	
6,500.0	6,434.8	6,444.3	6,382.6	19.7	17.1	-87.47	214.2	-642.1	512.0	476.3	35.71	14.338	
6,600.0	6,525.1	6,566.4	6,492.8	19.6	16.8	-87.02	221.4	-590.1	517.8	482.6	35.15	14.731	
6,700.0	6,609.1	6,683.1	6,591.8	19.4	16.4	-87.08	223.8	-528.6	519.8	485.1	34.64	15.005	
6,800.0	6,685.3	6,769.1	6,661.9	19.2	16.2	-87.78	224.8	-478.7	520.7	486.4	34.37	15.152	
6,900.0	6,752.4	6,841.7	6,717.4	19.2	16.1	-88.50	228.7	-432.1	525.8	491.4	34.33	15.315	
7,000.0	6,809.3	6,952.1	6,793.0	19.3	16.1	-89.84	237.2	-352.3	533.6	498.9	34.67	15.391	
7,100.0	6,854.9	7,077.9	6,869.1	19.6	16.5	-91.94	239.6	-252.1	535.8	500.1	35.67	15.018	
7,200.0	6,888.6	7,170.8	6,914.4	20.3	17.1	-93.41	241.1	-171.2	538.3	501.1	37.19	14.475	
7,300.0	6,909.7	7,285.7	6,955.6	21.4	18.4	-95.09	241.9	-64.1	540.2	500.6	39.58	13.649	
7,400.0	6,917.9	7,373.4	6,973.9	22.8	19.7	-95.97	244.3	21.6	544.3	502.1	42.22	12.893	
7,500.0	6,916.8	7,482.1	6,983.5	24.3	21.6	-96.95	247.7	129.7	548.7	503.1	45.65	12.019	
7,600.0	6,915.4	7,583.2	6,990.6	26.2	23.6	-97.79	250.7	230.6	552.9	503.6	49.36	11.201	
7,700.0	6,914.0	7,678.6	6,998.1	28.2	25.6	-98.65	253.7	325.6	557.5	504.3	53.22	10.476	
7,800.0	6,912.5	7,790.6	7,005.7	30.3	28.1	-99.54	256.2	437.3	561.1	503.4	57.68	9.728	
7,900.0	6,911.1	7,916.3	7,009.1	32.5	31.1	-100.06	256.0	563.0	561.9	499.2	62.71	8.960	
8,000.0	6,909.7	8,013.6	7,006.8	34.8	33.4	-100.00	254.2	660.2	560.1	492.7	67.32	8.319	
8,100.0	6,908.2	8,112.7	7,004.4	37.2	35.9	-99.92	253.0	759.3	558.9	486.8	72.10	7.752	
8,200.0	6,906.8	8,210.5	7,002.5	39.6	38.3	-99.87	252.2	857.1	558.1	481.2	76.93	7.255	
8,300.0	6,905.4	8,309.0	7,001.9	42.1	40.8	-99.97	251.4	955.6	557.7	475.8	81.84	6.814	
8,400.0	6,904.0	8,409.0	7,000.8	44.6	43.4	-100.01	251.0	1,055.5	557.5	470.6	86.87	6.418	
8,446.4	6,903.3	8,453.3	7,000.0	45.8	44.6	-99.99	250.8	1,099.8	557.3	468.2	89.18	6.250	
8,500.0	6,902.5	8,500.6	6,999.5	47.2	45.8	-100.01	250.9	1,147.2	557.6	465.9	91.74	6.078	
8,600.0	6,901.1	8,605.5	6,999.7	49.8	48.6	-100.16	251.8	1,252.0	559.0	462.0	96.96	5.765	
8,700.0	6,899.7	8,717.9	6,999.9	52.4	51.6	-100.36	250.8	1,364.4	558.6	456.2	102.42	5.454	
8,800.0	6,898.2	8,830.4	6,998.5	55.0	54.6	-100.44	247.0	1,476.8	555.5	447.5	107.94	5.146	
8,900.0	6,896.8	8,925.0	6,996.9	57.7	57.1	-100.49	243.3	1,571.4	551.7	438.7	113.03	4.881	
9,000.0	6,895.4	9,037.2	6,994.1	60.3	60.1	-100.45	238.4	1,683.4	547.4	428.8	118.64	4.614	
9,100.0	6,893.9	9,130.9	6,991.0	63.0	62.7	-100.36	233.5	1,776.9	542.1	418.3	123.79	4.379	
9,200.0	6,892.5	9,216.0	6,988.6	65.7	65.0	-100.29	230.9	1,861.9	539.1	410.4	128.73	4.188	
9,239.8	6,891.9	9,247.3	6,988.1	66.7	65.8	-100.28	230.7	1,893.3	538.8	408.2	130.63	4.125	
9,300.0	6,891.1	9,301.6	6,987.7	68.4	67.3	-100.32	230.8	1,947.5	539.2	405.5	133.66	4.034	
9,400.0	6,889.6	9,406.6	6,986.3	71.1	70.2	-100.29	232.5	2,052.5	541.0	401.8	139.14	3.888	
9,500.0	6,888.2	9,481.7	6,983.9	73.8	72.2	-100.13	233.7	2,127.6	542.6	398.8	143.89	3.771	
9,600.0	6,886.8	9,569.1	6,981.6	76.5	74.6	-99.92	238.9	2,214.8	548.5	399.5	148.99	3.681	
9,700.0	6,885.3	9,703.0	6,979.8	79.2	78.2	-99.82	245.2	2,348.5	553.6	398.3	155.31	3.565	
9,800.0	6,883.9	9,898.8	6,978.4	81.9	83.6	-100.19	232.2	2,543.4	548.8	385.7	163.13	3.364	

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 125-MWD, 6034-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)					
9,900.0	6,882.5	10,027.9	6,977.8	84.7	87.1	-100.83	206.2	2,669.9	529.3	360.3	168.96	3.133	
10,000.0	6,881.1	10,122.9	6,976.9	87.4	89.6	-101.34	184.8	2,762.4	507.4	333.5	173.89	2.918	
10,100.0	6,879.6	10,182.8	6,977.0	90.2	91.3	-101.71	173.3	2,821.2	489.2	311.3	177.97	2.749	
10,200.0	6,878.2	10,236.7	6,978.5	92.9	92.8	-102.11	167.7	2,874.7	480.0	298.2	181.87	2.639	
10,250.1	6,877.5	10,265.5	6,980.1	94.3	93.5	-102.37	166.6	2,903.5	479.0	295.2	183.84	2.606	
10,300.0	6,876.8	10,298.7	6,982.1	95.7	94.5	-102.67	166.6	2,936.7	479.9	294.0	185.88	2.582	
10,400.0	6,875.3	10,384.6	6,988.1	98.4	96.8	-103.40	170.1	3,022.3	485.7	295.4	190.35	2.552	
10,500.0	6,873.9	10,488.9	6,994.6	101.2	99.7	-104.18	174.4	3,126.2	491.8	296.6	195.23	2.519	
10,600.0	6,872.5	10,600.8	6,997.0	103.9	102.8	-104.52	178.0	3,238.1	496.0	295.3	200.64	2.472	
10,700.0	6,871.0	10,702.4	6,992.9	106.7	105.6	-104.13	181.3	3,339.5	498.6	292.3	206.36	2.416	
10,800.0	6,869.6	10,807.0	6,987.0	109.5	108.5	-103.54	184.8	3,443.9	501.0	288.6	212.34	2.359	
10,900.0	6,868.2	10,912.0	6,984.0	112.2	111.4	-103.33	186.3	3,548.8	502.2	284.2	218.03	2.303	
11,000.0	6,866.7	11,014.1	6,981.8	115.0	114.2	-103.22	187.1	3,650.9	503.0	279.4	223.58	2.250	
11,100.0	6,865.3	11,114.7	6,979.7	117.8	117.0	-103.13	187.7	3,751.5	503.6	274.5	229.08	2.198	
11,200.0	6,863.9	11,204.4	6,977.7	120.5	119.5	-103.02	188.8	3,841.2	504.8	270.5	234.31	2.155	
11,300.0	6,862.5	11,295.5	6,976.8	123.3	122.0	-102.98	191.7	3,932.2	508.2	268.7	239.51	2.122	
11,400.0	6,861.0	11,404.9	6,977.0	126.1	125.0	-103.08	195.5	4,041.5	512.2	267.1	245.08	2.090	
11,500.0	6,859.6	11,508.8	6,976.6	128.9	127.9	-103.16	196.6	4,145.4	513.6	263.1	250.53	2.050	
11,600.0	6,858.2	11,601.4	6,976.5	131.6	130.5	-103.24	198.4	4,238.0	516.0	260.3	255.67	2.018	
11,700.0	6,856.7	11,699.7	6,975.4	134.4	133.2	-103.19	201.3	4,336.2	519.1	258.0	261.08	1.988	
11,800.0	6,855.3	11,799.4	6,973.1	137.2	136.0	-103.01	204.7	4,435.9	522.3	255.6	266.67	1.958	
11,900.0	6,853.9	11,894.9	6,972.4	140.0	138.6	-103.01	207.7	4,531.3	525.8	253.8	271.97	1.933	
12,000.0	6,852.4	12,004.1	6,973.6	142.8	141.7	-103.24	210.2	4,640.5	528.7	251.3	277.41	1.906	
12,100.0	6,851.0	12,123.8	6,972.1	145.5	145.0	-103.24	210.8	4,760.1	529.4	246.0	283.37	1.868	
12,200.0	6,849.6	12,239.6	6,968.0	148.3	148.2	-103.06	207.3	4,875.8	526.1	236.6	289.44	1.818	
12,300.0	6,848.1	12,335.7	6,963.3	151.1	150.9	-102.78	204.1	4,971.7	522.2	227.2	295.07	1.770	
12,361.6	6,847.3	12,379.0	6,961.4	152.8	152.1	-102.67	202.9	5,015.0	520.5	222.4	298.05	1.746	
12,400.0	6,846.7	12,379.0	6,961.4	153.9	152.1	-102.67	202.9	5,015.0	521.9	222.8	299.09	1.745 SF	
12,500.0	6,845.3	12,379.0	6,961.4	156.7	152.1	-102.67	202.9	5,015.0	538.6	236.7	301.82	1.784	
12,600.0	6,843.8	12,379.0	6,961.4	159.5	152.1	-102.67	202.9	5,015.0	572.5	267.9	304.54	1.880	
12,659.2	6,843.0	12,379.0	6,961.4	161.1	152.1	-102.67	202.9	5,015.0	599.5	293.4	306.15	1.958	

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Lofland 22T & Alles 22S-HZ Existing Wells - Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													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)	+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	-74.34	32.8	-117.0	121.5	121.5	0.00	N/A		
100.0	100.0	100.4	100.4	0.1	0.1	-74.15	33.3	-117.1	121.8	121.5	0.25	494.457		
200.0	200.0	200.6	200.6	0.3	0.4	-73.90	33.9	-117.4	122.2	121.4	0.73	166.691		
300.0	300.0	300.8	300.8	0.6	0.7	-73.82	34.1	-117.6	122.4	121.2	1.22	100.315		
400.0	400.0	401.5	401.5	0.8	0.9	-73.55	34.6	-117.3	122.3	120.6	1.67	73.179		
500.0	500.0	501.2	501.2	1.0	1.1	-73.08	35.5	-116.7	122.0	119.9	2.11	57.718		
600.0	600.0	601.3	601.3	1.2	1.3	-72.70	36.2	-116.3	121.8	119.2	2.58	47.303		
700.0	700.0	701.3	701.3	1.4	1.6	41.11	37.0	-115.8	120.2	117.2	3.02	39.764		
800.0	799.8	801.0	801.0	1.6	1.8	43.32	37.8	-115.3	116.1	112.7	3.47	33.473		
900.0	899.5	900.7	900.7	1.9	2.1	46.94	38.4	-114.8	109.8	105.9	3.93	27.928		
1,000.0	998.7	999.9	999.9	2.1	2.3	52.53	39.1	-114.3	101.7	97.3	4.42	23.021		
1,100.0	1,097.5	1,098.7	1,098.6	2.4	2.6	60.57	39.7	-113.7	93.0	88.1	4.95	18.796		
1,200.0	1,196.3	1,197.5	1,197.4	2.7	2.8	70.09	40.1	-113.2	86.2	80.7	5.50	15.663		
1,300.0	1,295.0	1,296.5	1,296.5	3.1	3.0	80.71	40.1	-112.6	81.8	75.7	6.03	13.561		
1,397.7	1,391.5	1,393.0	1,392.9	3.4	3.1	91.81	39.8	-112.0	80.2	73.7	6.51	12.315 CC		
1,400.0	1,393.8	1,395.2	1,395.1	3.4	3.1	92.07	39.8	-112.0	80.2	73.7	6.52	12.295 ES		
1,500.0	1,492.5	1,493.9	1,493.9	3.8	3.2	103.25	39.4	-111.5	81.9	74.9	6.95	11.779		
1,600.0	1,591.2	1,593.0	1,592.9	4.1	3.3	113.37	38.8	-111.5	86.3	79.0	7.29	11.846		
1,700.0	1,690.0	1,691.7	1,691.7	4.5	3.3	122.10	38.1	-111.8	93.0	85.4	7.57	12.278		
1,800.0	1,788.7	1,790.5	1,790.5	4.8	3.4	129.43	37.4	-112.3	101.5	93.7	7.84	12.944		
1,900.0	1,887.5	1,889.6	1,889.6	5.2	3.5	135.50	36.7	-112.9	111.5	103.3	8.12	13.720		
2,000.0	1,986.2	1,988.0	1,988.0	5.6	3.6	140.48	36.1	-113.5	122.4	114.0	8.42	14.545		
2,100.0	2,084.9	2,086.6	2,086.5	5.9	3.7	144.50	36.0	-114.2	134.5	125.8	8.74	15.391		
2,200.0	2,183.7	2,185.5	2,185.4	6.3	3.8	147.75	36.0	-115.2	147.3	138.2	9.09	16.196		
2,300.0	2,282.4	2,283.9	2,283.9	6.7	4.0	150.41	36.3	-116.1	160.5	151.0	9.47	16.947		
2,400.0	2,381.2	2,382.6	2,382.5	7.1	4.2	152.62	36.8	-117.1	174.2	164.3	9.87	17.653		
2,500.0	2,479.9	2,481.8	2,481.8	7.4	4.4	154.40	37.5	-118.3	188.1	177.8	10.29	18.290		
2,600.0	2,578.7	2,581.4	2,581.3	7.8	4.6	155.82	38.3	-120.1	201.9	191.2	10.71	18.846		
2,700.0	2,677.4	2,680.5	2,680.4	8.2	4.8	157.06	38.9	-122.0	215.5	204.4	11.14	19.342		
2,800.0	2,776.1	2,779.5	2,779.3	8.6	5.0	158.14	39.5	-123.9	229.2	217.6	11.58	19.795		
2,900.0	2,874.9	2,876.7	2,876.6	8.9	5.2	159.10	40.2	-125.6	243.3	231.3	12.03	20.231		
3,000.0	2,973.6	2,974.8	2,974.6	9.3	5.4	159.96	41.4	-126.8	258.1	245.6	12.48	20.672		
3,100.0	3,072.4	3,073.1	3,072.9	9.7	5.6	160.74	42.7	-127.9	273.1	260.1	12.95	21.089		
3,200.0	3,171.1	3,171.2	3,171.0	10.1	5.8	161.48	44.0	-128.6	288.3	274.9	13.41	21.494		
3,300.0	3,269.9	3,269.5	3,269.3	10.4	6.1	162.24	45.0	-128.9	303.8	289.9	13.87	21.897		
3,400.0	3,368.6	3,368.6	3,368.4	10.8	6.3	163.04	45.6	-128.8	319.4	305.1	14.29	22.343		
3,500.0	3,467.3	3,467.0	3,466.8	11.2	6.4	163.89	45.5	-128.3	334.9	320.3	14.66	22.847		
3,600.0	3,566.1	3,564.6	3,564.4	11.6	6.5	164.77	45.1	-127.2	350.8	335.8	15.00	23.380		
3,700.0	3,664.8	3,662.6	3,662.4	12.0	6.6	165.69	44.3	-125.4	366.9	351.6	15.35	23.909		
3,800.0	3,763.6	3,762.3	3,762.0	12.3	6.7	166.57	43.2	-123.6	383.1	367.4	15.70	24.406		
3,900.0	3,862.3	3,861.0	3,860.7	12.7	6.9	167.39	41.9	-122.0	399.1	383.1	16.05	24.860		
4,000.0	3,961.0	3,959.3	3,959.0	13.1	7.0	168.15	40.6	-120.2	415.3	398.9	16.42	25.294		
4,100.0	4,059.8	4,058.3	4,057.9	13.5	7.1	168.85	39.4	-118.5	431.5	414.7	16.79	25.695		
4,200.0	4,158.5	4,156.9	4,156.6	13.9	7.3	169.50	38.1	-116.9	447.7	430.5	17.17	26.067		
4,300.0	4,257.3	4,255.4	4,255.0	14.2	7.4	170.07	37.0	-115.4	463.9	446.3	17.57	26.411		
4,400.0	4,356.0	4,354.4	4,354.0	14.6	7.6	170.54	36.3	-114.2	480.2	462.2	17.97	26.726		
4,500.0	4,454.8	4,453.1	4,452.7	15.0	7.8	171.00	35.6	-113.0	496.4	478.0	18.37	27.016		
4,600.0	4,553.5	4,551.1	4,550.6	15.4	7.9	171.47	34.4	-111.5	512.7	493.9	18.78	27.298		
4,700.0	4,652.2	4,648.5	4,648.1	15.8	8.1	172.03	32.5	-109.4	529.2	510.0	19.19	27.578		
4,800.0	4,751.0	4,746.8	4,746.3	16.1	8.3	172.60	30.2	-106.8	545.9	526.3	19.60	27.850		
4,900.0	4,849.7	4,846.3	4,845.7	16.5	8.5	173.10	28.2	-104.6	562.5	542.5	20.02	28.093		

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-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 100-NS-GYRO-MS													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)						
5,000.0	4,948.5	4,945.5	4,945.0	16.9	8.7	173.47	27.1	-103.0	579.0	558.6	20.45	28.309		
5,100.0	5,047.2	5,045.4	5,044.8	17.3	8.9	173.78	26.2	-101.7	595.5	574.6	20.89	28.502		
5,200.0	5,146.0	5,146.5	5,145.9	17.7	9.1	174.05	25.5	-100.8	611.6	590.2	21.33	28.669		
5,300.0	5,244.7	5,248.0	5,247.4	18.0	9.2	174.27	24.8	-100.6	627.2	605.5	21.76	28.822		
5,400.0	5,343.4	5,348.0	5,347.4	18.4	9.4	174.45	24.2	-100.7	642.6	620.4	22.17	28.977		
5,500.0	5,442.4	5,447.9	5,447.3	18.7	9.6	174.61	23.8	-101.0	656.2	633.6	22.59	29.046		
5,600.0	5,541.8	5,548.5	5,547.9	18.9	9.7	174.73	23.4	-101.6	666.2	643.3	22.96	29.017		
5,700.0	5,641.6	5,646.1	5,645.5	19.1	9.9	174.79	23.1	-102.2	672.8	649.5	23.29	28.889		
5,800.0	5,741.5	5,742.1	5,741.4	19.3	10.0	174.81	23.3	-102.5	676.4	652.8	23.59	28.673		
5,900.0	5,841.5	5,840.0	5,839.4	19.4	10.2	61.98	23.2	-102.0	677.4	647.8	29.59	22.891		
6,000.0	5,941.5	5,941.5	5,940.9	19.5	10.4	62.08	22.4	-101.1	677.8	647.8	29.93	22.648		
6,100.0	6,041.5	6,046.0	6,045.4	19.7	10.6	62.22	20.9	-100.4	677.8	647.5	30.26	22.395		
6,200.0	6,141.5	6,148.3	6,147.6	19.8	10.8	62.32	19.5	-100.5	677.0	646.4	30.59	22.131		
6,300.0	6,241.3	6,246.2	6,245.5	19.9	11.0	-28.07	18.4	-100.6	672.0	646.8	25.14	26.727		
6,400.0	6,339.6	6,343.6	6,342.9	19.9	11.2	-29.34	17.7	-100.6	655.8	630.9	24.92	26.315		
6,500.0	6,434.8	6,438.5	6,437.9	19.7	11.4	-31.73	17.1	-100.7	628.8	604.3	24.51	25.657		
6,600.0	6,525.1	6,528.7	6,528.0	19.6	11.5	-35.52	16.8	-100.9	591.9	567.8	24.10	24.555		
6,700.0	6,609.1	6,611.6	6,611.0	19.4	11.7	-41.00	16.5	-100.9	546.4	522.4	24.04	22.733		
6,800.0	6,685.3	6,686.0	6,685.3	19.2	11.8	-48.49	16.3	-100.8	494.8	470.1	24.72	20.016		
6,900.0	6,752.4	6,753.2	6,752.5	19.2	12.0	-58.23	16.2	-100.5	440.0	413.6	26.40	16.666		
7,000.0	6,809.3	6,811.0	6,810.3	19.3	12.1	-69.40	16.0	-100.2	386.6	357.9	28.69	13.474		
7,100.0	6,854.9	6,858.3	6,857.6	19.6	12.2	-80.17	15.7	-99.8	341.6	310.8	30.78	11.096		
7,200.0	6,888.6	6,893.6	6,892.9	20.3	12.3	-88.26	15.3	-99.5	314.7	282.4	32.30	9.743		
7,248.3	6,900.4	6,906.0	6,905.3	20.8	12.3	-90.73	15.1	-99.4	311.2	278.3	32.95	9.444		
7,300.0	6,909.7	6,915.8	6,915.1	21.4	12.3	-92.19	15.0	-99.3	315.3	281.8	33.58	9.390 SF		
7,400.0	6,917.9	6,924.8	6,924.2	22.8	12.3	-91.43	14.9	-99.2	345.8	310.7	35.02	9.873		
7,500.0	6,916.8	6,924.6	6,924.0	24.3	12.3	-90.47	14.9	-99.2	399.7	363.1	36.65	10.906		
7,600.0	6,915.4	6,924.1	6,923.4	26.2	12.3	-90.37	14.9	-99.2	469.1	430.6	38.48	12.188		
7,700.0	6,914.0	6,923.5	6,922.9	28.2	12.3	-90.27	14.9	-99.2	547.9	507.5	40.48	13.537		
7,800.0	6,912.5	6,923.0	6,922.3	30.3	12.3	-90.17	14.9	-99.2	632.8	590.2	42.60	14.855		
7,900.0	6,911.1	6,922.5	6,921.8	32.5	12.3	-90.07	14.9	-99.2	721.6	676.8	44.83	16.098		
8,000.0	6,909.7	6,921.9	6,921.3	34.8	12.3	-89.97	14.9	-99.2	813.0	765.8	47.14	17.248		
8,100.0	6,908.2	6,921.4	6,920.7	37.2	12.3	-89.87	15.0	-99.2	906.2	856.7	49.51	18.301		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Lofland 22T & Alles 22S-HZ Existing Wells - Badley 23-31 (Exist) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7300-UNKNOWN												<b>Offset Well Error:</b>	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	
9,100.0	6,893.9	6,891.9	6,891.9	63.0	137.8	-95.63	-160.1	2,721.8	980.6	780.6	199.93	4.905	
9,200.0	6,892.5	6,890.5	6,890.5	65.7	137.8	-95.06	-160.1	2,721.8	881.7	679.0	202.75	4.349	
9,300.0	6,891.1	6,889.1	6,889.1	68.4	137.8	-94.48	-160.1	2,721.8	783.2	577.6	205.56	3.810	
9,400.0	6,889.6	6,887.6	6,887.6	71.1	137.8	-93.90	-160.1	2,721.8	685.1	476.7	208.37	3.288	
9,500.0	6,888.2	6,886.2	6,886.2	73.8	137.7	-93.32	-160.1	2,721.8	587.6	376.4	211.17	2.782	
9,600.0	6,886.8	6,884.8	6,884.8	76.5	137.7	-92.74	-160.1	2,721.8	491.1	277.1	213.96	2.295	
9,700.0	6,885.3	6,883.3	6,883.3	79.2	137.7	-92.16	-160.1	2,721.8	396.3	179.6	216.73	1.829	
9,800.0	6,883.9	6,881.9	6,881.9	81.9	137.6	-91.57	-160.1	2,721.8	304.9	85.4	219.50	1.389 Level 3	
9,900.0	6,882.5	6,880.5	6,880.5	84.7	137.6	-90.99	-160.1	2,721.8	221.1	-1.1	222.24	0.995 Level 1	
10,000.0	6,881.1	6,879.1	6,879.1	87.4	137.6	-90.41	-160.1	2,721.8	157.5	-67.5	224.98	0.700 Level 1	
10,070.5	6,880.0	6,878.0	6,878.0	89.3	137.6	-90.00	-160.1	2,721.8	140.8	-86.1	226.89	0.621 Level 1, CC, ES, SF	
10,100.0	6,879.6	6,877.6	6,877.6	90.2	137.6	-89.83	-160.1	2,721.8	143.9	-83.8	227.69	0.632 Level 1	
10,200.0	6,878.2	6,876.2	6,876.2	92.9	137.5	-89.25	-160.1	2,721.8	191.3	-39.1	230.38	0.830 Level 1	
10,300.0	6,876.8	6,874.8	6,874.8	95.7	137.5	-88.66	-160.1	2,721.8	269.2	36.2	233.06	1.155 Level 2	
10,400.0	6,875.3	6,873.3	6,873.3	98.4	137.5	-88.08	-160.1	2,721.8	358.3	122.6	235.71	1.520	
10,500.0	6,873.9	6,871.9	6,871.9	101.2	137.4	-87.50	-160.1	2,721.8	451.9	213.6	238.35	1.896	
10,600.0	6,872.5	6,870.5	6,870.5	103.9	137.4	-86.92	-160.1	2,721.8	547.8	306.9	240.96	2.274	
10,700.0	6,871.0	6,869.0	6,869.0	106.7	137.4	-86.34	-160.1	2,721.8	645.0	401.4	243.54	2.648	
10,800.0	6,869.6	6,867.6	6,867.6	109.5	137.4	-85.76	-160.1	2,721.8	742.9	496.8	246.10	3.019	
10,900.0	6,868.2	6,866.2	6,866.2	112.2	137.3	-85.18	-160.1	2,721.8	841.3	592.6	248.64	3.384	
11,000.0	6,866.7	6,864.7	6,864.7	115.0	137.3	-84.60	-160.1	2,721.8	940.0	688.9	251.15	3.743	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7300-UNKNOWN												<b>Offset Well Error:</b>	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
7,600.0	6,915.4	6,913.4	6,913.4	26.2	138.3	-93.30	-58.3	1,220.2	997.8	833.6	164.19	6.077	
7,700.0	6,914.0	6,912.0	6,912.0	28.2	138.2	-92.96	-58.3	1,220.2	901.0	734.8	166.21	5.421	
7,800.0	6,912.5	6,910.5	6,910.5	30.3	138.2	-92.62	-58.3	1,220.2	805.1	636.8	168.34	4.783	
7,900.0	6,911.1	6,909.1	6,909.1	32.5	138.2	-92.28	-58.3	1,220.2	710.3	539.7	170.58	4.164	
8,000.0	6,909.7	6,907.7	6,907.7	34.8	138.2	-91.94	-58.3	1,220.2	617.1	444.2	172.89	3.569	
8,100.0	6,908.2	6,906.2	6,906.2	37.2	138.1	-91.60	-58.3	1,220.2	526.4	351.2	175.27	3.004	
8,200.0	6,906.8	6,904.8	6,904.8	39.6	138.1	-91.26	-58.3	1,220.2	439.8	262.1	177.70	2.475	
8,300.0	6,905.4	6,903.4	6,903.4	42.1	138.1	-90.92	-58.3	1,220.2	360.2	180.0	180.17	1.999	
8,400.0	6,904.0	6,902.0	6,902.0	44.6	138.0	-90.58	-58.3	1,220.2	293.3	110.7	182.67	1.606	
8,500.0	6,902.5	6,900.5	6,900.5	47.2	138.0	-90.23	-58.3	1,220.2	249.7	64.5	185.20	1.348	Level 3
8,568.6	6,901.5	6,899.5	6,899.5	49.0	138.0	-90.00	-58.3	1,220.2	240.1	53.1	186.95	1.284	Level 3, CC, ES, SF
8,600.0	6,901.1	6,899.1	6,899.1	49.8	138.0	-89.89	-58.3	1,220.2	242.1	54.4	187.75	1.290	Level 3
8,700.0	6,899.7	6,897.7	6,897.7	52.4	138.0	-89.55	-58.3	1,220.2	273.7	83.4	190.32	1.438	Level 3
8,800.0	6,898.2	6,896.2	6,896.2	55.0	137.9	-89.21	-58.3	1,220.2	333.4	140.5	192.90	1.729	
8,900.0	6,896.8	6,894.8	6,894.8	57.7	137.9	-88.87	-58.3	1,220.2	409.2	213.7	195.49	2.093	
9,000.0	6,895.4	6,893.4	6,893.4	60.3	137.9	-88.53	-58.3	1,220.2	493.7	295.6	198.09	2.492	
9,100.0	6,893.9	6,891.9	6,891.9	63.0	137.8	-88.19	-58.3	1,220.2	583.1	382.4	200.70	2.905	
9,200.0	6,892.5	6,890.5	6,890.5	65.7	137.8	-87.84	-58.3	1,220.2	675.5	472.2	203.30	3.322	
9,300.0	6,891.1	6,889.1	6,889.1	68.4	137.8	-87.50	-58.3	1,220.2	769.8	563.8	205.91	3.738	
9,400.0	6,889.6	6,887.6	6,887.6	71.1	137.8	-87.16	-58.3	1,220.2	865.3	656.8	208.53	4.150	
9,500.0	6,888.2	6,886.2	6,886.2	73.8	137.7	-86.82	-58.3	1,220.2	961.8	750.6	211.14	4.555	



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design Lofland 22T & Alles 22S-HZ Existing Wells - Esther 1-23 (Exist) - Wellbore #1 - Wellbore #1											Offset Site Error:		0.0 ft	
Survey Program: 7300-UNKNOWN											Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
11,500.0	6,859.6	6,855.6	6,855.6	128.9	137.1	-97.16	-196.2	5,106.6	961.7	697.7	264.00	3.643		
11,600.0	6,858.2	6,854.2	6,854.2	131.6	137.1	-96.42	-196.2	5,106.6	862.4	595.3	267.12	3.228		
11,700.0	6,856.7	6,852.7	6,852.7	134.4	137.1	-95.67	-196.2	5,106.6	763.3	493.1	270.21	2.825		
11,800.0	6,855.3	6,851.3	6,851.3	137.2	137.0	-94.92	-196.2	5,106.6	664.5	391.2	273.26	2.432		
11,900.0	6,853.9	6,849.9	6,849.9	140.0	137.0	-94.18	-196.2	5,106.6	566.1	289.8	276.27	2.049		
12,000.0	6,852.4	6,848.4	6,848.4	142.8	137.0	-93.43	-196.2	5,106.6	468.4	189.1	279.25	1.677		
12,100.0	6,851.0	6,847.0	6,847.0	145.5	136.9	-92.68	-196.2	5,106.6	371.8	89.7	282.18	1.318 Level 3		
12,200.0	6,849.6	6,845.6	6,845.6	148.3	136.9	-91.92	-196.2	5,106.6	277.8	-7.3	285.08	0.974 Level 1		
12,300.0	6,848.1	6,844.1	6,844.1	151.1	136.9	-91.17	-196.2	5,106.6	189.9	-98.0	287.92	0.659 Level 1		
12,400.0	6,846.7	6,842.7	6,842.7	153.9	136.9	-90.42	-196.2	5,106.6	122.2	-168.5	290.73	0.420 Level 1		
12,455.6	6,845.9	6,841.9	6,841.9	155.4	136.8	-90.00	-196.2	5,106.6	108.9	-183.4	292.27	0.373 Level 1, CC, ES, SF		
12,500.0	6,845.3	6,841.3	6,841.3	156.7	136.8	-89.67	-196.2	5,106.6	117.6	-175.9	293.49	0.401 Level 1		
12,600.0	6,843.8	6,839.8	6,839.8	159.5	136.8	-88.91	-196.2	5,106.6	180.9	-115.3	296.19	0.611 Level 1		
12,659.2	6,843.0	6,839.0	6,839.0	161.1	136.8	-88.47	-196.2	5,106.6	230.9	-66.9	297.77	0.775 Level 1		

<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Lofland 22T & Ailes 22S-HZ Existing Wells - Lille 1-23 (Exist) - Wellbore #1 - Wellbore #1										Offset Site Error:		0.0 ft			
Survey Program: 7300-UNKNOWN														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor					
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
10,200.0	6,878.2	6,876.2	6,876.2	92.9	137.5	-94.58	-134.5	3,794.4	958.0	728.2	229.74	4.170					
10,300.0	6,876.8	6,874.8	6,874.8	95.7	137.5	-94.10	-134.5	3,794.4	859.7	627.1	232.59	3.696					
10,400.0	6,875.3	6,873.3	6,873.3	98.4	137.5	-93.62	-134.5	3,794.4	761.9	526.5	235.43	3.236					
10,500.0	6,873.9	6,871.9	6,871.9	101.2	137.4	-93.13	-134.5	3,794.4	664.7	426.5	238.27	2.790					
10,600.0	6,872.5	6,870.5	6,870.5	103.9	137.4	-92.64	-134.5	3,794.4	568.6	327.5	241.09	2.358					
10,700.0	6,871.0	6,869.0	6,869.0	106.7	137.4	-92.16	-134.5	3,794.4	474.0	230.1	243.90	1.943					
10,800.0	6,869.6	6,867.6	6,867.6	109.5	137.4	-91.67	-134.5	3,794.4	382.2	135.5	246.70	1.549					
10,900.0	6,868.2	6,866.2	6,866.2	112.2	137.3	-91.18	-134.5	3,794.4	295.7	46.2	249.48	1.185 Level 2					
11,000.0	6,866.7	6,864.7	6,864.7	115.0	137.3	-90.70	-134.5	3,794.4	220.9	-31.3	252.25	0.876 Level 1					
11,100.0	6,865.3	6,863.3	6,863.3	117.8	137.3	-90.21	-134.5	3,794.4	173.7	-81.3	255.00	0.681 Level 1					
11,143.1	6,864.7	6,862.7	6,862.7	119.0	137.3	-90.00	-134.5	3,794.4	168.3	-87.9	256.19	0.657 Level 1, CC, ES, SF					
11,200.0	6,863.9	6,861.9	6,861.9	120.5	137.2	-89.72	-134.5	3,794.4	177.6	-80.1	257.74	0.689 Level 1					
11,300.0	6,862.5	6,860.5	6,860.5	123.3	137.2	-89.24	-134.5	3,794.4	230.0	-30.4	260.47	0.883 Level 1					
11,400.0	6,861.0	6,859.0	6,859.0	126.1	137.2	-88.75	-134.5	3,794.4	307.1	43.9	263.17	1.167 Level 2					
11,500.0	6,859.6	6,857.6	6,857.6	128.9	137.2	-88.26	-134.5	3,794.4	394.5	128.7	265.86	1.484 Level 3					
11,600.0	6,858.2	6,856.2	6,856.2	131.6	137.1	-87.78	-134.5	3,794.4	486.8	218.3	268.53	1.813					
11,700.0	6,856.7	6,854.7	6,854.7	134.4	137.1	-87.29	-134.5	3,794.4	581.7	310.5	271.18	2.145					
11,800.0	6,855.3	6,853.3	6,853.3	137.2	137.1	-86.80	-134.5	3,794.4	678.0	404.2	273.81	2.476					
11,900.0	6,853.9	6,851.9	6,851.9	140.0	137.0	-86.32	-134.5	3,794.4	775.3	498.8	276.42	2.805					
12,000.0	6,852.4	6,850.4	6,850.4	142.8	137.0	-85.83	-134.5	3,794.4	873.1	594.1	279.01	3.129					
12,100.0	6,851.0	6,849.0	6,849.0	145.5	137.0	-85.35	-134.5	3,794.4	971.4	689.9	281.58	3.450					

Reference Depths are relative to WELL @ 4660.0ft (RKB - 15')	Coordinates are relative to: Alles 22D-312
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 °	Grid Convergence at Surface is: 0.55°



<b>Company:</b>	PETROLEUM DEVELOPMENT CORP Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Alles 22D-312
<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-312	<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 #3 (3-31-14)	<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-312  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.55°

