

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Alles 22S-432**

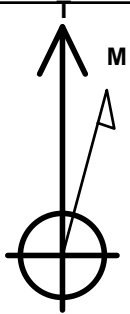
Surface Location: Alles 22S-HZ Pad Sec.22-T5N-R65W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4645.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1383673.18	3239030.56	40.383410	-104.641950	

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

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape Point
BHL 2326'FSL, 500'FEL	6953.0	157.2	5326.6	Point



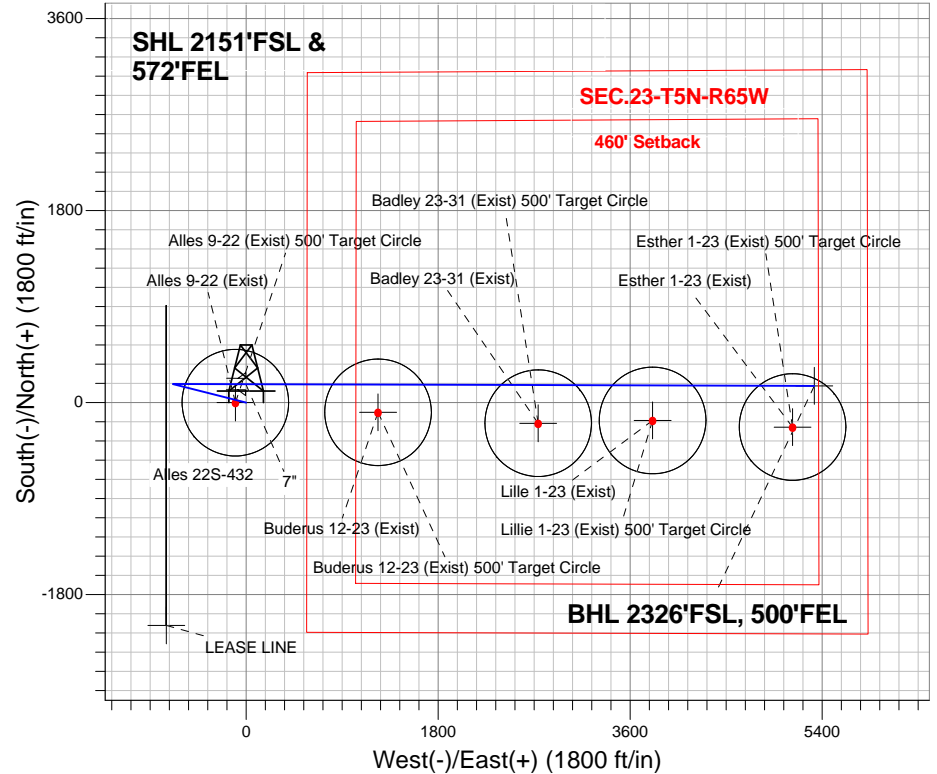
Azimuths to True North
Magnetic North: 8.54°

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

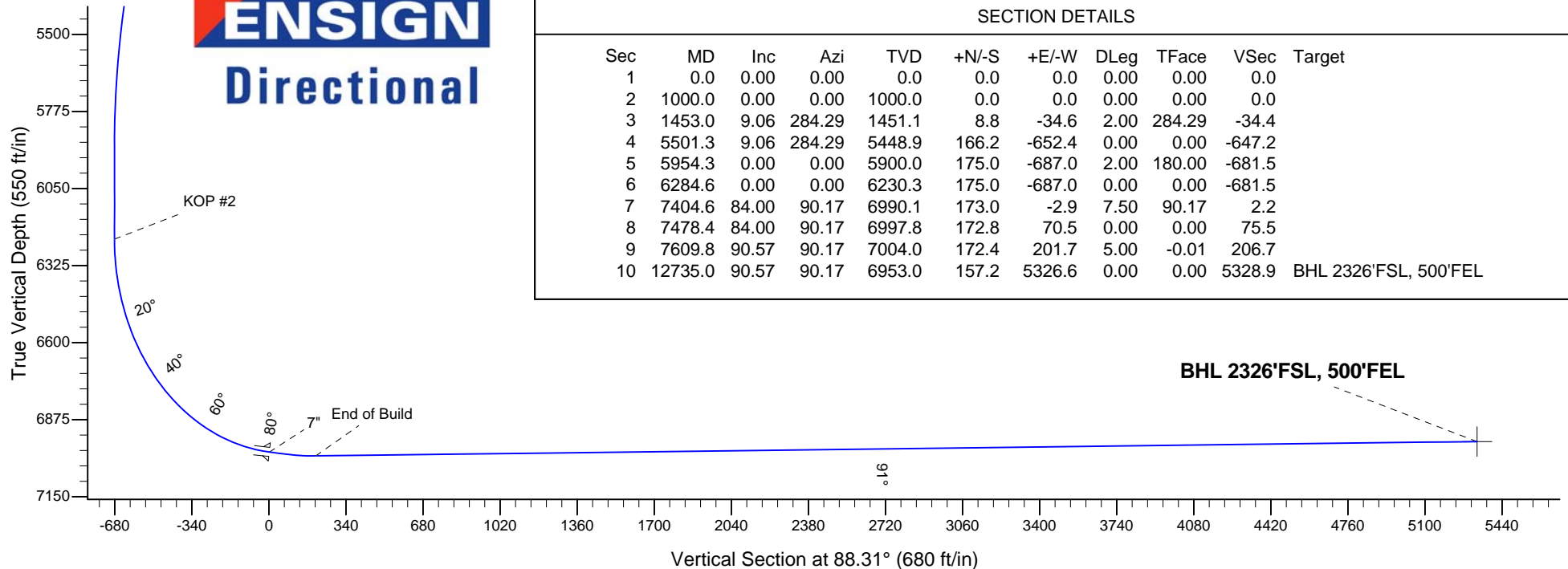
Alles 22S-432
Plan #1 (5-16-13)
9:22, May 24 2013

ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
6230.3	6284.6	KOP #2
7004.0	7609.8	End of Build



ENSIGN
Directional



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	1453.0	9.06	284.29	1451.1	8.8	-34.6	2.00	284.29	-34.4	
4	5501.3	9.06	284.29	5448.9	166.2	-652.4	0.00	0.00	-647.2	
5	5954.3	0.00	0.00	5900.0	175.0	-687.0	2.00	180.00	-681.5	
6	6284.6	0.00	0.00	6230.3	175.0	-687.0	0.00	0.00	-681.5	
7	7404.6	84.00	90.17	6990.1	173.0	-2.9	7.50	90.17	2.2	
8	7478.4	84.00	90.17	6997.8	172.8	70.5	0.00	0.00	75.5	
9	7609.8	90.57	90.17	7004.0	172.4	201.7	5.00	-0.01	206.7	
10	12735.0	90.57	90.17	6953.0	157.2	5326.6	0.00	0.00	5328.9	BHL 2326'FSL, 500'FEL



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R65W

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

Alles 22S-432

Wellbore #1

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

Standard Planning Report

23 May, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

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

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

Well	Alles 22S-432		
Well Position	+N/-S	54.6 ft	Northing:
	+E/-W	-25.1 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			ft
			Latitude:
			40.383410
			Longitude:
			-104.641950
			Ground Level:
			4,645.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/22/2013	8.54	66.99	52,933

Design	Plan #1 (5-16-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	88.31

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,453.0	9.06	284.29	1,451.1	8.8	-34.6	2.00	2.00	0.00	284.29	
5,501.3	9.06	284.29	5,448.9	166.2	-652.4	0.00	0.00	0.00	0.00	
5,954.3	0.00	0.00	5,900.0	175.0	-687.0	2.00	-2.00	0.00	180.00	
6,284.6	0.00	0.00	6,230.3	175.0	-687.0	0.00	0.00	0.00	0.00	
7,404.6	84.00	90.17	6,990.1	173.0	-2.9	7.50	7.50	0.00	90.17	
7,478.4	84.00	90.17	6,997.8	172.8	70.5	0.00	0.00	0.00	0.00	
7,609.8	90.57	90.17	7,004.0	172.4	201.7	5.00	5.00	0.00	-0.01	
12,735.0	90.57	90.17	6,953.0	157.2	5,326.6	0.00	0.00	0.00	0.00	BHL 2326'FSL, 500

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Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
Alles 9-22 (Exist) 500' Target Circle									
2.0	0.00	0.00	2.0	0.0	0.0	0.0	0.00	0.00	0.00
Badley 23-31 (Exist) 500' Target Circle - Lillie 1-23 (Exist) 500' Target Circle - Buderus 12-23 (Exist) 500' Target Circle									
4.0	0.00	0.00	4.0	0.0	0.0	0.0	0.00	0.00	0.00
Esther 1-23 (Exist) 500' Target Circle									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,040.0	0.80	284.29	1,040.0	0.1	-0.3	-0.3	2.00	2.00	0.00
1,080.0	1.60	284.29	1,080.0	0.3	-1.1	-1.1	2.00	2.00	0.00
1,120.0	2.40	284.29	1,120.0	0.6	-2.4	-2.4	2.00	2.00	0.00
1,160.0	3.20	284.29	1,159.9	1.1	-4.3	-4.3	2.00	2.00	0.00
1,200.0	4.00	284.29	1,199.8	1.7	-6.8	-6.7	2.00	2.00	0.00
1,240.0	4.80	284.29	1,239.7	2.5	-9.7	-9.7	2.00	2.00	0.00
1,280.0	5.60	284.29	1,279.6	3.4	-13.2	-13.1	2.00	2.00	0.00
1,320.0	6.40	284.29	1,319.3	4.4	-17.3	-17.2	2.00	2.00	0.00
1,360.0	7.20	284.29	1,359.1	5.6	-21.9	-21.7	2.00	2.00	0.00
1,400.0	8.00	284.29	1,398.7	6.9	-27.0	-26.8	2.00	2.00	0.00
1,440.0	8.80	284.29	1,438.3	8.3	-32.7	-32.4	2.00	2.00	0.00
1,453.0	9.06	284.29	1,451.1	8.8	-34.6	-34.4	2.00	2.00	0.00
1,480.0	9.06	284.29	1,477.8	9.9	-38.8	-38.4	0.00	0.00	0.00
1,520.0	9.06	284.29	1,517.3	11.4	-44.9	-44.5	0.00	0.00	0.00
1,560.0	9.06	284.29	1,556.8	13.0	-51.0	-50.6	0.00	0.00	0.00
1,600.0	9.06	284.29	1,596.3	14.5	-57.1	-56.6	0.00	0.00	0.00
1,640.0	9.06	284.29	1,635.8	16.1	-63.2	-62.7	0.00	0.00	0.00
1,680.0	9.06	284.29	1,675.3	17.6	-69.3	-68.7	0.00	0.00	0.00
1,720.0	9.06	284.29	1,714.8	19.2	-75.4	-74.8	0.00	0.00	0.00
1,760.0	9.06	284.29	1,754.3	20.8	-81.5	-80.8	0.00	0.00	0.00
1,800.0	9.06	284.29	1,793.8	22.3	-87.6	-86.9	0.00	0.00	0.00

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Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,840.0	9.06	284.29	1,833.3	23.9	-93.7	-92.9	0.00	0.00	0.00
1,880.0	9.06	284.29	1,872.8	25.4	-99.8	-99.0	0.00	0.00	0.00
1,920.0	9.06	284.29	1,912.3	27.0	-105.9	-105.1	0.00	0.00	0.00
1,960.0	9.06	284.29	1,951.8	28.5	-112.0	-111.1	0.00	0.00	0.00
2,000.0	9.06	284.29	1,991.3	30.1	-118.1	-117.2	0.00	0.00	0.00
2,040.0	9.06	284.29	2,030.8	31.6	-124.2	-123.2	0.00	0.00	0.00
2,080.0	9.06	284.29	2,070.3	33.2	-130.3	-129.3	0.00	0.00	0.00
2,120.0	9.06	284.29	2,109.8	34.7	-136.4	-135.3	0.00	0.00	0.00
2,160.0	9.06	284.29	2,149.3	36.3	-142.5	-141.4	0.00	0.00	0.00
2,200.0	9.06	284.29	2,188.8	37.9	-148.6	-147.4	0.00	0.00	0.00
2,240.0	9.06	284.29	2,228.3	39.4	-154.7	-153.5	0.00	0.00	0.00
2,280.0	9.06	284.29	2,267.8	41.0	-160.8	-159.5	0.00	0.00	0.00
2,320.0	9.06	284.29	2,307.3	42.5	-166.9	-165.6	0.00	0.00	0.00
2,360.0	9.06	284.29	2,346.8	44.1	-173.0	-171.7	0.00	0.00	0.00
2,400.0	9.06	284.29	2,386.3	45.6	-179.1	-177.7	0.00	0.00	0.00
2,440.0	9.06	284.29	2,425.8	47.2	-185.2	-183.8	0.00	0.00	0.00
2,480.0	9.06	284.29	2,465.3	48.7	-191.3	-189.8	0.00	0.00	0.00
2,520.0	9.06	284.29	2,504.8	50.3	-197.4	-195.9	0.00	0.00	0.00
2,560.0	9.06	284.29	2,544.3	51.9	-203.6	-201.9	0.00	0.00	0.00
2,600.0	9.06	284.29	2,583.8	53.4	-209.7	-208.0	0.00	0.00	0.00
2,640.0	9.06	284.29	2,623.3	55.0	-215.8	-214.0	0.00	0.00	0.00
2,680.0	9.06	284.29	2,662.8	56.5	-221.9	-220.1	0.00	0.00	0.00
2,720.0	9.06	284.29	2,702.3	58.1	-228.0	-226.2	0.00	0.00	0.00
2,760.0	9.06	284.29	2,741.8	59.6	-234.1	-232.2	0.00	0.00	0.00
2,800.0	9.06	284.29	2,781.3	61.2	-240.2	-238.3	0.00	0.00	0.00
2,840.0	9.06	284.29	2,820.8	62.7	-246.3	-244.3	0.00	0.00	0.00
2,880.0	9.06	284.29	2,860.3	64.3	-252.4	-250.4	0.00	0.00	0.00
2,920.0	9.06	284.29	2,899.8	65.8	-258.5	-256.4	0.00	0.00	0.00
2,960.0	9.06	284.29	2,939.3	67.4	-264.6	-262.5	0.00	0.00	0.00
3,000.0	9.06	284.29	2,978.8	69.0	-270.7	-268.5	0.00	0.00	0.00
3,040.0	9.06	284.29	3,018.3	70.5	-276.8	-274.6	0.00	0.00	0.00
3,080.0	9.06	284.29	3,057.8	72.1	-282.9	-280.7	0.00	0.00	0.00
3,120.0	9.06	284.29	3,097.3	73.6	-289.0	-286.7	0.00	0.00	0.00
3,160.0	9.06	284.29	3,136.8	75.2	-295.1	-292.8	0.00	0.00	0.00
3,200.0	9.06	284.29	3,176.3	76.7	-301.2	-298.8	0.00	0.00	0.00
3,240.0	9.06	284.29	3,215.8	78.3	-307.3	-304.9	0.00	0.00	0.00
3,280.0	9.06	284.29	3,255.3	79.8	-313.4	-310.9	0.00	0.00	0.00
3,320.0	9.06	284.29	3,294.8	81.4	-319.5	-317.0	0.00	0.00	0.00
3,360.0	9.06	284.29	3,334.3	82.9	-325.6	-323.0	0.00	0.00	0.00
3,400.0	9.06	284.29	3,373.8	84.5	-331.7	-329.1	0.00	0.00	0.00
3,440.0	9.06	284.29	3,413.3	86.1	-337.8	-335.1	0.00	0.00	0.00
3,480.0	9.06	284.29	3,452.8	87.6	-343.9	-341.2	0.00	0.00	0.00
3,520.0	9.06	284.29	3,492.3	89.2	-350.0	-347.3	0.00	0.00	0.00
3,560.0	9.06	284.29	3,531.8	90.7	-356.1	-353.3	0.00	0.00	0.00
3,600.0	9.06	284.29	3,571.3	92.3	-362.2	-359.4	0.00	0.00	0.00
3,640.0	9.06	284.29	3,610.8	93.8	-368.4	-365.4	0.00	0.00	0.00
3,680.0	9.06	284.29	3,650.3	95.4	-374.5	-371.5	0.00	0.00	0.00
3,720.0	9.06	284.29	3,689.8	96.9	-380.6	-377.5	0.00	0.00	0.00
3,760.0	9.06	284.29	3,729.3	98.5	-386.7	-383.6	0.00	0.00	0.00
3,800.0	9.06	284.29	3,768.8	100.0	-392.8	-389.6	0.00	0.00	0.00
3,840.0	9.06	284.29	3,808.3	101.6	-398.9	-395.7	0.00	0.00	0.00
3,880.0	9.06	284.29	3,847.8	103.2	-405.0	-401.8	0.00	0.00	0.00
3,920.0	9.06	284.29	3,887.3	104.7	-411.1	-407.8	0.00	0.00	0.00

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Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
3,960.0	9.06	284.29	3,926.8	106.3	-417.2	-413.9	0.00	0.00	0.00
4,000.0	9.06	284.29	3,966.3	107.8	-423.3	-419.9	0.00	0.00	0.00
4,040.0	9.06	284.29	4,005.8	109.4	-429.4	-426.0	0.00	0.00	0.00
4,080.0	9.06	284.29	4,045.3	110.9	-435.5	-432.0	0.00	0.00	0.00
4,120.0	9.06	284.29	4,084.8	112.5	-441.6	-438.1	0.00	0.00	0.00
4,160.0	9.06	284.29	4,124.3	114.0	-447.7	-444.1	0.00	0.00	0.00
4,200.0	9.06	284.29	4,163.8	115.6	-453.8	-450.2	0.00	0.00	0.00
4,240.0	9.06	284.29	4,203.3	117.2	-459.9	-456.2	0.00	0.00	0.00
4,280.0	9.06	284.29	4,242.8	118.7	-466.0	-462.3	0.00	0.00	0.00
4,320.0	9.06	284.29	4,282.3	120.3	-472.1	-468.4	0.00	0.00	0.00
4,360.0	9.06	284.29	4,321.8	121.8	-478.2	-474.4	0.00	0.00	0.00
4,400.0	9.06	284.29	4,361.4	123.4	-484.3	-480.5	0.00	0.00	0.00
4,440.0	9.06	284.29	4,400.9	124.9	-490.4	-486.5	0.00	0.00	0.00
4,480.0	9.06	284.29	4,440.4	126.5	-496.5	-492.6	0.00	0.00	0.00
4,520.0	9.06	284.29	4,479.9	128.0	-502.6	-498.6	0.00	0.00	0.00
4,560.0	9.06	284.29	4,519.4	129.6	-508.7	-504.7	0.00	0.00	0.00
4,600.0	9.06	284.29	4,558.9	131.1	-514.8	-510.7	0.00	0.00	0.00
4,640.0	9.06	284.29	4,598.4	132.7	-520.9	-516.8	0.00	0.00	0.00
4,680.0	9.06	284.29	4,637.9	134.3	-527.0	-522.9	0.00	0.00	0.00
4,720.0	9.06	284.29	4,677.4	135.8	-533.1	-528.9	0.00	0.00	0.00
4,760.0	9.06	284.29	4,716.9	137.4	-539.3	-535.0	0.00	0.00	0.00
4,800.0	9.06	284.29	4,756.4	138.9	-545.4	-541.0	0.00	0.00	0.00
4,840.0	9.06	284.29	4,795.9	140.5	-551.5	-547.1	0.00	0.00	0.00
4,880.0	9.06	284.29	4,835.4	142.0	-557.6	-553.1	0.00	0.00	0.00
4,920.0	9.06	284.29	4,874.9	143.6	-563.7	-559.2	0.00	0.00	0.00
4,960.0	9.06	284.29	4,914.4	145.1	-569.8	-565.2	0.00	0.00	0.00
5,000.0	9.06	284.29	4,953.9	146.7	-575.9	-571.3	0.00	0.00	0.00
5,040.0	9.06	284.29	4,993.4	148.2	-582.0	-577.4	0.00	0.00	0.00
5,080.0	9.06	284.29	5,032.9	149.8	-588.1	-583.4	0.00	0.00	0.00
5,120.0	9.06	284.29	5,072.4	151.4	-594.2	-589.5	0.00	0.00	0.00
5,160.0	9.06	284.29	5,111.9	152.9	-600.3	-595.5	0.00	0.00	0.00
5,200.0	9.06	284.29	5,151.4	154.5	-606.4	-601.6	0.00	0.00	0.00
5,240.0	9.06	284.29	5,190.9	156.0	-612.5	-607.6	0.00	0.00	0.00
5,280.0	9.06	284.29	5,230.4	157.6	-618.6	-613.7	0.00	0.00	0.00
5,320.0	9.06	284.29	5,269.9	159.1	-624.7	-619.7	0.00	0.00	0.00
5,360.0	9.06	284.29	5,309.4	160.7	-630.8	-625.8	0.00	0.00	0.00
5,400.0	9.06	284.29	5,348.9	162.2	-636.9	-631.8	0.00	0.00	0.00
5,440.0	9.06	284.29	5,388.4	163.8	-643.0	-637.9	0.00	0.00	0.00
5,480.0	9.06	284.29	5,427.9	165.4	-649.1	-644.0	0.00	0.00	0.00
5,501.3	9.06	284.29	5,448.9	166.2	-652.4	-647.2	0.00	0.00	0.00
5,520.0	8.69	284.29	5,467.4	166.9	-655.2	-650.0	2.00	-2.00	0.00
5,560.0	7.89	284.29	5,507.0	168.3	-660.7	-655.5	2.00	-2.00	0.00
5,600.0	7.09	284.29	5,546.6	169.6	-665.8	-660.5	2.00	-2.00	0.00
5,640.0	6.29	284.29	5,586.4	170.7	-670.3	-665.0	2.00	-2.00	0.00
5,680.0	5.49	284.29	5,626.1	171.8	-674.3	-668.9	2.00	-2.00	0.00
5,720.0	4.69	284.29	5,666.0	172.6	-677.7	-672.3	2.00	-2.00	0.00
5,760.0	3.89	284.29	5,705.9	173.4	-680.6	-675.2	2.00	-2.00	0.00
5,800.0	3.09	284.29	5,745.8	174.0	-683.0	-677.5	2.00	-2.00	0.00
5,840.0	2.29	284.29	5,785.8	174.4	-684.8	-679.3	2.00	-2.00	0.00
5,880.0	1.49	284.29	5,825.7	174.8	-686.1	-680.6	2.00	-2.00	0.00
5,920.0	0.69	284.29	5,865.7	174.9	-686.8	-681.3	2.00	-2.00	0.00
5,954.3	0.00	0.00	5,900.0	175.0	-687.0	-681.5	2.00	-2.00	0.00
5,960.0	0.00	0.00	5,905.7	175.0	-687.0	-681.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,000.0	0.00	0.00	5,945.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,040.0	0.00	0.00	5,985.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,080.0	0.00	0.00	6,025.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,120.0	0.00	0.00	6,065.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,160.0	0.00	0.00	6,105.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,200.0	0.00	0.00	6,145.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,240.0	0.00	0.00	6,185.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,280.0	0.00	0.00	6,225.7	175.0	-687.0	-681.5	0.00	0.00	0.00
6,284.6	0.00	0.00	6,230.3	175.0	-687.0	-681.5	0.00	0.00	0.00
KOP #2									
6,320.0	2.65	90.17	6,265.7	175.0	-686.2	-680.7	7.50	7.50	0.00
6,360.0	5.65	90.17	6,305.6	175.0	-683.3	-677.8	7.50	7.50	0.00
6,400.0	8.65	90.17	6,345.3	175.0	-678.3	-672.8	7.50	7.50	0.00
6,440.0	11.65	90.17	6,384.7	175.0	-671.2	-665.8	7.50	7.50	0.00
6,480.0	14.65	90.17	6,423.6	174.9	-662.1	-656.7	7.50	7.50	0.00
6,520.0	17.65	90.17	6,462.0	174.9	-651.0	-645.6	7.50	7.50	0.00
6,560.0	20.65	90.17	6,499.8	174.9	-637.9	-632.5	7.50	7.50	0.00
6,600.0	23.65	90.17	6,536.8	174.8	-622.8	-617.4	7.50	7.50	0.00
6,640.0	26.65	90.17	6,573.0	174.8	-605.8	-600.4	7.50	7.50	0.00
6,680.0	29.65	90.17	6,608.3	174.7	-586.9	-581.5	7.50	7.50	0.00
6,720.0	32.65	90.17	6,642.5	174.6	-566.2	-560.8	7.50	7.50	0.00
6,757.7	35.48	90.17	6,673.7	174.6	-545.2	-539.8	7.50	7.50	0.00
LEASE LINE									
6,760.0	35.65	90.17	6,675.6	174.6	-543.8	-538.4	7.50	7.50	0.00
6,800.0	38.65	90.17	6,707.5	174.5	-519.6	-514.3	7.50	7.50	0.00
6,840.0	41.65	90.17	6,738.1	174.4	-493.8	-488.5	7.50	7.50	0.00
6,880.0	44.65	90.17	6,767.3	174.3	-466.5	-461.1	7.50	7.50	0.00
6,920.0	47.65	90.17	6,795.0	174.3	-437.6	-432.3	7.50	7.50	0.00
6,960.0	50.65	90.17	6,821.1	174.2	-407.4	-402.1	7.50	7.50	0.00
7,000.0	53.65	90.17	6,845.7	174.1	-375.8	-370.5	7.50	7.50	0.00
7,040.0	56.65	90.17	6,868.5	174.0	-343.0	-337.7	7.50	7.50	0.00
7,080.0	59.65	90.17	6,889.6	173.9	-309.0	-303.7	7.50	7.50	0.00
7,120.0	62.65	90.17	6,908.9	173.8	-274.0	-268.7	7.50	7.50	0.00
7,160.0	65.65	90.17	6,926.3	173.7	-238.0	-232.8	7.50	7.50	0.00
7,200.0	68.65	90.17	6,941.9	173.6	-201.1	-195.9	7.50	7.50	0.00
7,240.0	71.65	90.17	6,955.4	173.4	-163.5	-158.3	7.50	7.50	0.00
7,280.0	74.65	90.17	6,967.0	173.3	-125.2	-120.1	7.50	7.50	0.00
7,320.0	77.65	90.17	6,976.6	173.2	-86.4	-81.2	7.50	7.50	0.00
7,360.0	80.65	90.17	6,984.1	173.1	-47.1	-42.0	7.50	7.50	0.00
7,400.0	83.65	90.17	6,989.6	173.0	-7.5	-2.4	7.50	7.50	0.00
7,404.6	84.00	90.17	6,990.1	173.0	-2.9	2.2	7.50	7.50	0.00
7"									
7,440.0	84.00	90.17	6,993.8	172.9	32.3	37.4	0.00	0.00	0.00
7,478.4	84.00	90.17	6,997.8	172.8	70.5	75.5	0.00	0.00	0.00
7,480.0	84.08	90.17	6,998.0	172.7	72.1	77.1	5.00	5.00	0.00
7,520.0	86.08	90.17	7,001.4	172.6	111.9	117.0	5.00	5.00	0.00
7,560.0	88.08	90.17	7,003.4	172.5	151.9	156.9	5.00	5.00	0.00
7,600.0	90.08	90.17	7,004.1	172.4	191.9	196.9	5.00	5.00	0.00
7,609.8	90.57	90.17	7,004.0	172.4	201.7	206.7	5.00	5.00	0.00
End of Build									
7,640.0	90.57	90.17	7,003.7	172.3	231.9	236.8	0.00	0.00	0.00
7,680.0	90.57	90.17	7,003.3	172.2	271.9	276.8	0.00	0.00	0.00
7,720.0	90.57	90.17	7,002.9	172.0	311.9	316.8	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,760.0	90.57	90.17	7,002.5	171.9	351.9	356.8	0.00	0.00	0.00
7,800.0	90.57	90.17	7,002.1	171.8	391.9	396.8	0.00	0.00	0.00
7,840.0	90.57	90.17	7,001.7	171.7	431.8	436.7	0.00	0.00	0.00
7,880.0	90.57	90.17	7,001.3	171.6	471.8	476.7	0.00	0.00	0.00
7,920.0	90.57	90.17	7,000.9	171.4	511.8	516.7	0.00	0.00	0.00
7,960.0	90.57	90.17	7,000.5	171.3	551.8	556.7	0.00	0.00	0.00
8,000.0	90.57	90.17	7,000.1	171.2	591.8	596.6	0.00	0.00	0.00
8,040.0	90.57	90.17	6,999.7	171.1	631.8	636.6	0.00	0.00	0.00
8,080.0	90.57	90.17	6,999.3	171.0	671.8	676.6	0.00	0.00	0.00
8,120.0	90.57	90.17	6,998.9	170.9	711.8	716.6	0.00	0.00	0.00
8,160.0	90.57	90.17	6,998.5	170.7	751.8	756.5	0.00	0.00	0.00
8,200.0	90.57	90.17	6,998.1	170.6	791.8	796.5	0.00	0.00	0.00
8,240.0	90.57	90.17	6,997.7	170.5	831.8	836.5	0.00	0.00	0.00
8,280.0	90.57	90.17	6,997.3	170.4	871.8	876.5	0.00	0.00	0.00
8,320.0	90.57	90.17	6,997.0	170.3	911.8	916.5	0.00	0.00	0.00
8,360.0	90.57	90.17	6,996.6	170.2	951.8	956.4	0.00	0.00	0.00
8,400.0	90.57	90.17	6,996.2	170.0	991.8	996.4	0.00	0.00	0.00
8,440.0	90.57	90.17	6,995.8	169.9	1,031.8	1,036.4	0.00	0.00	0.00
8,480.0	90.57	90.17	6,995.4	169.8	1,071.8	1,076.4	0.00	0.00	0.00
8,520.0	90.57	90.17	6,995.0	169.7	1,111.8	1,116.3	0.00	0.00	0.00
8,560.0	90.57	90.17	6,994.6	169.6	1,151.8	1,156.3	0.00	0.00	0.00
8,600.0	90.57	90.17	6,994.2	169.4	1,191.8	1,196.3	0.00	0.00	0.00
8,640.0	90.57	90.17	6,993.8	169.3	1,231.8	1,236.3	0.00	0.00	0.00
8,680.0	90.57	90.17	6,993.4	169.2	1,271.8	1,276.2	0.00	0.00	0.00
8,720.0	90.57	90.17	6,993.0	169.1	1,311.8	1,316.2	0.00	0.00	0.00
8,760.0	90.57	90.17	6,992.6	169.0	1,351.8	1,356.2	0.00	0.00	0.00
8,800.0	90.57	90.17	6,992.2	168.9	1,391.8	1,396.2	0.00	0.00	0.00
8,840.0	90.57	90.17	6,991.8	168.7	1,431.8	1,436.2	0.00	0.00	0.00
8,880.0	90.57	90.17	6,991.4	168.6	1,471.8	1,476.1	0.00	0.00	0.00
8,920.0	90.57	90.17	6,991.0	168.5	1,511.8	1,516.1	0.00	0.00	0.00
8,960.0	90.57	90.17	6,990.6	168.4	1,551.8	1,556.1	0.00	0.00	0.00
9,000.0	90.57	90.17	6,990.2	168.3	1,591.8	1,596.1	0.00	0.00	0.00
9,040.0	90.57	90.17	6,989.8	168.1	1,631.8	1,636.0	0.00	0.00	0.00
9,080.0	90.57	90.17	6,989.4	168.0	1,671.8	1,676.0	0.00	0.00	0.00
9,120.0	90.57	90.17	6,989.0	167.9	1,711.8	1,716.0	0.00	0.00	0.00
9,160.0	90.57	90.17	6,988.6	167.8	1,751.8	1,756.0	0.00	0.00	0.00
9,200.0	90.57	90.17	6,988.2	167.7	1,791.8	1,795.9	0.00	0.00	0.00
9,240.0	90.57	90.17	6,987.8	167.6	1,831.8	1,835.9	0.00	0.00	0.00
9,280.0	90.57	90.17	6,987.4	167.4	1,871.8	1,875.9	0.00	0.00	0.00
9,320.0	90.57	90.17	6,987.0	167.3	1,911.8	1,915.9	0.00	0.00	0.00
9,360.0	90.57	90.17	6,986.6	167.2	1,951.8	1,955.9	0.00	0.00	0.00
9,400.0	90.57	90.17	6,986.2	167.1	1,991.8	1,995.8	0.00	0.00	0.00
9,440.0	90.57	90.17	6,985.8	167.0	2,031.8	2,035.8	0.00	0.00	0.00
9,480.0	90.57	90.17	6,985.4	166.8	2,071.8	2,075.8	0.00	0.00	0.00
9,520.0	90.57	90.17	6,985.0	166.7	2,111.8	2,115.8	0.00	0.00	0.00
9,560.0	90.57	90.17	6,984.6	166.6	2,151.8	2,155.7	0.00	0.00	0.00
9,600.0	90.57	90.17	6,984.2	166.5	2,191.8	2,195.7	0.00	0.00	0.00
9,640.0	90.57	90.17	6,983.8	166.4	2,231.8	2,235.7	0.00	0.00	0.00
9,680.0	90.57	90.17	6,983.4	166.3	2,271.7	2,275.7	0.00	0.00	0.00
9,720.0	90.57	90.17	6,983.0	166.1	2,311.7	2,315.6	0.00	0.00	0.00
9,760.0	90.57	90.17	6,982.6	166.0	2,351.7	2,355.6	0.00	0.00	0.00
9,800.0	90.57	90.17	6,982.2	165.9	2,391.7	2,395.6	0.00	0.00	0.00
9,840.0	90.57	90.17	6,981.8	165.8	2,431.7	2,435.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,880.0	90.57	90.17	6,981.4	165.7	2,471.7	2,475.6	0.00	0.00	0.00
9,920.0	90.57	90.17	6,981.0	165.5	2,511.7	2,515.5	0.00	0.00	0.00
9,960.0	90.57	90.17	6,980.6	165.4	2,551.7	2,555.5	0.00	0.00	0.00
10,000.0	90.57	90.17	6,980.2	165.3	2,591.7	2,595.5	0.00	0.00	0.00
10,040.0	90.57	90.17	6,979.8	165.2	2,631.7	2,635.5	0.00	0.00	0.00
10,080.0	90.57	90.17	6,979.4	165.1	2,671.7	2,675.4	0.00	0.00	0.00
10,120.0	90.57	90.17	6,979.0	165.0	2,711.7	2,715.4	0.00	0.00	0.00
10,160.0	90.57	90.17	6,978.6	164.8	2,751.7	2,755.4	0.00	0.00	0.00
10,200.0	90.57	90.17	6,978.2	164.7	2,791.7	2,795.4	0.00	0.00	0.00
10,240.0	90.57	90.17	6,977.8	164.6	2,831.7	2,835.3	0.00	0.00	0.00
10,280.0	90.57	90.17	6,977.4	164.5	2,871.7	2,875.3	0.00	0.00	0.00
10,320.0	90.57	90.17	6,977.0	164.4	2,911.7	2,915.3	0.00	0.00	0.00
10,360.0	90.57	90.17	6,976.6	164.3	2,951.7	2,955.3	0.00	0.00	0.00
10,400.0	90.57	90.17	6,976.2	164.1	2,991.7	2,995.3	0.00	0.00	0.00
10,440.0	90.57	90.17	6,975.8	164.0	3,031.7	3,035.2	0.00	0.00	0.00
10,480.0	90.57	90.17	6,975.4	163.9	3,071.7	3,075.2	0.00	0.00	0.00
10,520.0	90.57	90.17	6,975.1	163.8	3,111.7	3,115.2	0.00	0.00	0.00
10,560.0	90.57	90.17	6,974.7	163.7	3,151.7	3,155.2	0.00	0.00	0.00
10,600.0	90.57	90.17	6,974.3	163.5	3,191.7	3,195.1	0.00	0.00	0.00
10,640.0	90.57	90.17	6,973.9	163.4	3,231.7	3,235.1	0.00	0.00	0.00
10,680.0	90.57	90.17	6,973.5	163.3	3,271.7	3,275.1	0.00	0.00	0.00
10,720.0	90.57	90.17	6,973.1	163.2	3,311.7	3,315.1	0.00	0.00	0.00
10,760.0	90.57	90.17	6,972.7	163.1	3,351.7	3,355.0	0.00	0.00	0.00
10,800.0	90.57	90.17	6,972.3	163.0	3,391.7	3,395.0	0.00	0.00	0.00
10,840.0	90.57	90.17	6,971.9	162.8	3,431.7	3,435.0	0.00	0.00	0.00
10,880.0	90.57	90.17	6,971.5	162.7	3,471.7	3,475.0	0.00	0.00	0.00
10,920.0	90.57	90.17	6,971.1	162.6	3,511.7	3,515.0	0.00	0.00	0.00
10,960.0	90.57	90.17	6,970.7	162.5	3,551.7	3,554.9	0.00	0.00	0.00
11,000.0	90.57	90.17	6,970.3	162.4	3,591.7	3,594.9	0.00	0.00	0.00
11,040.0	90.57	90.17	6,969.9	162.2	3,631.7	3,634.9	0.00	0.00	0.00
11,080.0	90.57	90.17	6,969.5	162.1	3,671.7	3,674.9	0.00	0.00	0.00
11,120.0	90.57	90.17	6,969.1	162.0	3,711.7	3,714.8	0.00	0.00	0.00
11,160.0	90.57	90.17	6,968.7	161.9	3,751.7	3,754.8	0.00	0.00	0.00
11,200.0	90.57	90.17	6,968.3	161.8	3,791.7	3,794.8	0.00	0.00	0.00
11,240.0	90.57	90.17	6,967.9	161.7	3,831.7	3,834.8	0.00	0.00	0.00
11,280.0	90.57	90.17	6,967.5	161.5	3,871.7	3,874.7	0.00	0.00	0.00
11,320.0	90.57	90.17	6,967.1	161.4	3,911.7	3,914.7	0.00	0.00	0.00
11,360.0	90.57	90.17	6,966.7	161.3	3,951.7	3,954.7	0.00	0.00	0.00
11,400.0	90.57	90.17	6,966.3	161.2	3,991.7	3,994.7	0.00	0.00	0.00
11,440.0	90.57	90.17	6,965.9	161.1	4,031.7	4,034.7	0.00	0.00	0.00
11,480.0	90.57	90.17	6,965.5	160.9	4,071.7	4,074.6	0.00	0.00	0.00
11,520.0	90.57	90.17	6,965.1	160.8	4,111.7	4,114.6	0.00	0.00	0.00
11,560.0	90.57	90.17	6,964.7	160.7	4,151.6	4,154.6	0.00	0.00	0.00
11,600.0	90.57	90.17	6,964.3	160.6	4,191.6	4,194.6	0.00	0.00	0.00
11,640.0	90.57	90.17	6,963.9	160.5	4,231.6	4,234.5	0.00	0.00	0.00
11,680.0	90.57	90.17	6,963.5	160.4	4,271.6	4,274.5	0.00	0.00	0.00
11,720.0	90.57	90.17	6,963.1	160.2	4,311.6	4,314.5	0.00	0.00	0.00
11,760.0	90.57	90.17	6,962.7	160.1	4,351.6	4,354.5	0.00	0.00	0.00
11,800.0	90.57	90.17	6,962.3	160.0	4,391.6	4,394.4	0.00	0.00	0.00
11,840.0	90.57	90.17	6,961.9	159.9	4,431.6	4,434.4	0.00	0.00	0.00
11,880.0	90.57	90.17	6,961.5	159.8	4,471.6	4,474.4	0.00	0.00	0.00
11,920.0	90.57	90.17	6,961.1	159.6	4,511.6	4,514.4	0.00	0.00	0.00
11,960.0	90.57	90.17	6,960.7	159.5	4,551.6	4,554.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,000.0	90.57	90.17	6,960.3	159.4	4,591.6	4,594.3	0.00	0.00	0.00
12,040.0	90.57	90.17	6,959.9	159.3	4,631.6	4,634.3	0.00	0.00	0.00
12,080.0	90.57	90.17	6,959.5	159.2	4,671.6	4,674.3	0.00	0.00	0.00
12,120.0	90.57	90.17	6,959.1	159.1	4,711.6	4,714.3	0.00	0.00	0.00
12,160.0	90.57	90.17	6,958.7	158.9	4,751.6	4,754.2	0.00	0.00	0.00
12,200.0	90.57	90.17	6,958.3	158.8	4,791.6	4,794.2	0.00	0.00	0.00
12,240.0	90.57	90.17	6,957.9	158.7	4,831.6	4,834.2	0.00	0.00	0.00
12,280.0	90.57	90.17	6,957.5	158.6	4,871.6	4,874.2	0.00	0.00	0.00
12,320.0	90.57	90.17	6,957.1	158.5	4,911.6	4,914.1	0.00	0.00	0.00
12,360.0	90.57	90.17	6,956.7	158.4	4,951.6	4,954.1	0.00	0.00	0.00
12,400.0	90.57	90.17	6,956.3	158.2	4,991.6	4,994.1	0.00	0.00	0.00
12,440.0	90.57	90.17	6,955.9	158.1	5,031.6	5,034.1	0.00	0.00	0.00
12,480.0	90.57	90.17	6,955.5	158.0	5,071.6	5,074.1	0.00	0.00	0.00
12,520.0	90.57	90.17	6,955.1	157.9	5,111.6	5,114.0	0.00	0.00	0.00
12,560.0	90.57	90.17	6,954.7	157.8	5,151.6	5,154.0	0.00	0.00	0.00
12,600.0	90.57	90.17	6,954.3	157.6	5,191.6	5,194.0	0.00	0.00	0.00
12,640.0	90.57	90.17	6,953.9	157.5	5,231.6	5,234.0	0.00	0.00	0.00
12,680.0	90.57	90.17	6,953.5	157.4	5,271.6	5,273.9	0.00	0.00	0.00
12,720.0	90.57	90.17	6,953.1	157.3	5,311.6	5,313.9	0.00	0.00	0.00
12,735.0	90.57	90.17	6,953.0	157.2	5,326.6	5,328.9	0.00	0.00	0.00
BHL 2326'FSL, 500'FEL									

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Badley 23-31 (Exist) 5	0.00	0.00	2.0	-192.9	2,738.6	1,383,506.77	3,241,770.75	40.382880	-104.632120
- plan misses target center by 2745.4ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 500.0)									
Lillie 1-23 (Exist) 500'	0.00	0.00	2.0	-167.3	3,811.1	1,383,542.79	3,242,842.98	40.382950	-104.628270
- plan misses target center by 3814.8ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 500.0)									
Buderus 12-23 (Exist)	0.00	0.00	2.0	-91.0	1,236.9	1,383,594.12	3,240,268.28	40.383160	-104.637510
- plan misses target center by 1240.3ft at 2.0ft MD (2.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 500.0)									
Esther 1-23 (Exist) 50	0.00	0.00	4.0	-229.0	5,123.3	1,383,493.80	3,244,155.64	40.382780	-104.623560
- plan misses target center by 5128.4ft at 4.0ft MD (4.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 500.0)									
BHL 2326'FSL, 500'FI	0.00	0.00	6,953.0	157.2	5,326.6	1,383,881.95	3,244,355.18	40.383840	-104.622830
- plan hits target center									
- Point									
Alles 9-22 (Exist) 500'	0.00	0.00	-1.0	0.0	-100.3	1,383,672.23	3,238,930.28	40.383410	-104.642310
- plan misses target center by 100.3ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E)									
- Circle (radius 500.0)									
LEASE LINE	0.00	0.00	6,807.0	-2,088.7	-748.3	1,381,577.39	3,238,302.52	40.377677	-104.644636
- plan misses target center by 2276.3ft at 6757.7ft MD (6673.7 TVD, 174.6 N, -545.2 E)									
- Polygon									
Point 1			6,807.0	0.0	0.0	1,381,577.39	3,238,302.52		
Point 2			6,807.0	3,000.0	0.0	1,384,577.12	3,238,273.49		

Database:	Landmark	Local Co-ordinate Reference:	Well Alles 22S-432
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Project:	SEC.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	North Reference:	True
Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-16-13)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,404.6	6,990.1	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
6,284.6	6,230.3	175.0	-687.0	KOP #2
7,609.8	7,004.0	172.4	201.7	End of Build



Directional

PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.22-T5N-R65W

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

Alles 22S-432

Wellbore #1

Plan #1 (5-16-13)

Anticollision Report

24 May, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (5-16-13)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	5/23/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	12,735.0	Plan #1 (5-16-13) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Alles 22S-HZ Pad Sec.22-T5N-R65W						
Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)	645.6	645.6	27.8	25.2	10.427	CC
Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)	700.0	700.0	27.9	25.0	9.596	ES
Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)	12,735.0	12,584.9	516.0	205.2	1.660	SF
Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)	200.0	200.0	60.1	59.4	89.166	CC, ES
Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)	12,735.0	12,771.7	907.1	584.7	2.813	SF
Lofland 22T & Alles 22S-HZ Existing Wells						
Alles 9-22 (Exist) - Wellbore #1 - Wellbore #1	1,843.3	1,837.5	24.7	-16.4	0.602	Level 1, CC, ES, SF
Badley 23-31 (Exist) - Wellbore #1 - Wellbore #1	10,147.9	6,976.8	357.8	128.5	1.560	CC, ES, SF
Buderus 12-23 (Exist) - Wellbore #1 - Wellbore #1	8,645.9	6,991.7	260.3	71.1	1.376	Level 3, CC, ES, SF
Esther 1-23 (Exist) - Wellbore #1 - Wellbore #1	12,532.9	6,951.0	386.8	91.9	1.312	Level 3, CC, ES, SF
Lille 1-23 (Exist) - Wellbore #1 - Wellbore #1	11,220.4	6,966.1	329.0	70.3	1.272	Level 3, CC, ES, SF

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	156.40	-25.5	11.1	27.8					
100.0	100.0	100.0	100.0	0.1	0.1	156.40	-25.5	11.1	27.8	27.6	0.22	123.835		
200.0	200.0	200.0	200.0	0.3	0.3	156.40	-25.5	11.1	27.8	27.2	0.67	41.278		
300.0	300.0	300.0	300.0	0.6	0.6	156.40	-25.5	11.1	27.8	26.7	1.12	24.767		
400.0	400.0	400.0	400.0	0.8	0.8	156.40	-25.5	11.1	27.8	26.3	1.57	17.691		
500.0	500.0	500.0	500.0	1.0	1.0	156.40	-25.5	11.1	27.8	25.8	2.02	13.759		
600.0	600.0	600.0	600.0	1.2	1.2	156.40	-25.5	11.1	27.8	25.4	2.47	11.258		
645.6	645.6	645.6	645.6	1.3	1.3	157.15	-25.6	10.8	27.8	25.2	2.67	10.427	CC	
700.0	700.0	700.0	700.0	1.5	1.4	159.99	-26.2	9.5	27.9	25.0	2.90	9.596	ES	
800.0	800.0	799.7	799.5	1.7	1.6	170.48	-28.2	4.7	28.6	25.3	3.33	8.596		
900.0	900.0	898.9	898.4	1.9	1.9	-174.18	-31.6	-3.2	31.8	28.0	3.76	8.445		
1,000.0	1,000.0	997.5	996.2	2.1	2.1	-158.54	-36.2	-14.2	39.1	34.9	4.21	9.279		
1,100.0	1,100.0	1,095.9	1,093.5	2.4	2.4	-72.23	-42.0	-28.0	50.4	45.7	4.68	10.776		
1,200.0	1,199.8	1,195.1	1,191.5	2.6	2.7	-68.19	-48.1	-42.5	61.9	56.8	5.12	12.089		
1,300.0	1,299.5	1,294.6	1,289.7	2.8	3.0	-67.91	-54.2	-57.0	72.2	66.6	5.59	12.919		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design												Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)		Offset Site Error:		0.0 ft
Survey Program: 0-MWDD												Offset Well Error:		0.0 ft		
Reference		Offset		Semi Major Axis			Distance									
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)					
1,400.0	1,398.7	1,394.1	1,388.0	3.0	3.4	-69.97	-60.3	-71.5	81.3	75.2	6.10	13.323				
1,453.0	1,451.1	1,446.9	1,440.0	3.2	3.6	-71.77	-63.6	-79.2	85.7	79.3	6.40	13.396				
1,500.0	1,497.5	1,493.6	1,486.2	3.3	3.7	-73.55	-66.4	-86.0	89.6	82.9	6.67	13.422				
1,600.0	1,596.3	1,593.1	1,584.5	3.6	4.1	-76.87	-72.5	-100.5	98.0	90.7	7.28	13.460				
1,700.0	1,695.0	1,692.6	1,682.7	3.9	4.4	-79.65	-78.7	-115.0	106.8	98.8	7.92	13.484				
1,800.0	1,793.8	1,792.1	1,780.9	4.2	4.8	-82.01	-84.8	-129.5	115.7	107.1	8.57	13.499				
1,900.0	1,892.5	1,891.6	1,879.2	4.6	5.2	-84.03	-90.9	-144.0	124.8	115.6	9.24	13.508				
2,000.0	1,991.3	1,991.1	1,977.4	4.9	5.5	-85.77	-97.0	-158.5	134.0	124.1	9.92	13.513				
2,100.0	2,090.0	2,090.6	2,075.7	5.2	5.9	-87.29	-103.1	-173.0	143.4	132.8	10.61	13.516				
2,200.0	2,188.8	2,190.1	2,173.9	5.6	6.3	-88.62	-109.2	-187.5	152.8	141.5	11.31	13.518				
2,300.0	2,287.5	2,289.6	2,272.2	5.9	6.6	-89.80	-115.3	-202.0	162.3	150.3	12.01	13.520				
2,400.0	2,386.3	2,389.1	2,370.4	6.3	7.0	-90.84	-121.4	-216.5	171.9	159.2	12.71	13.522				
2,500.0	2,485.1	2,488.6	2,468.7	6.6	7.4	-91.78	-127.5	-230.9	181.5	168.1	13.42	13.523				
2,600.0	2,583.8	2,588.1	2,566.9	7.0	7.8	-92.62	-133.6	-245.4	191.2	177.1	14.14	13.524				
2,700.0	2,682.6	2,687.6	2,665.1	7.3	8.1	-93.38	-139.7	-259.9	200.9	186.0	14.85	13.526				
2,800.0	2,781.3	2,787.1	2,763.4	7.7	8.5	-94.07	-145.9	-274.4	210.6	195.0	15.57	13.528				
2,900.0	2,880.1	2,886.6	2,861.6	8.1	8.9	-94.69	-152.0	-288.9	220.4	204.1	16.29	13.529				
3,000.0	2,978.8	2,986.1	2,959.9	8.4	9.3	-95.27	-158.1	-303.4	230.2	213.1	17.01	13.531				
3,100.0	3,077.6	3,085.6	3,058.1	8.8	9.6	-95.80	-164.2	-317.9	240.0	222.2	17.73	13.533				
3,200.0	3,176.3	3,185.1	3,156.4	9.2	10.0	-96.28	-170.3	-332.4	249.8	231.3	18.45	13.535				
3,300.0	3,275.1	3,284.6	3,254.6	9.5	10.4	-96.73	-176.4	-346.9	259.6	240.4	19.18	13.537				
3,400.0	3,373.8	3,384.0	3,352.8	9.9	10.8	-97.15	-182.5	-361.4	269.5	249.6	19.90	13.539				
3,500.0	3,472.6	3,483.5	3,451.1	10.3	11.1	-97.54	-188.6	-375.9	279.3	258.7	20.63	13.542				
3,600.0	3,571.3	3,583.0	3,549.3	10.6	11.5	-97.90	-194.7	-390.4	289.2	267.9	21.35	13.544				
3,700.0	3,670.1	3,682.5	3,647.6	11.0	11.9	-98.24	-200.8	-404.9	299.1	277.0	22.08	13.546				
3,800.0	3,768.8	3,782.0	3,745.8	11.4	12.3	-98.55	-206.9	-419.4	309.0	286.2	22.81	13.548				
3,900.0	3,867.6	3,881.5	3,844.1	11.7	12.6	-98.85	-213.1	-433.9	318.9	295.4	23.54	13.550				
4,000.0	3,966.3	3,981.0	3,942.3	12.1	13.0	-99.13	-219.2	-448.4	328.8	304.6	24.26	13.552				
4,100.0	4,065.1	4,080.5	4,040.5	12.5	13.4	-99.39	-225.3	-462.9	338.8	313.8	24.99	13.554				
4,200.0	4,163.8	4,180.0	4,138.8	12.8	13.8	-99.64	-231.4	-477.4	348.7	323.0	25.72	13.556				
4,300.0	4,262.6	4,279.5	4,237.0	13.2	14.2	-99.87	-237.5	-491.9	358.6	332.2	26.45	13.558				
4,400.0	4,361.4	4,379.0	4,335.3	13.6	14.5	-100.09	-243.6	-506.4	368.6	341.4	27.18	13.560				
4,500.0	4,460.1	4,478.5	4,433.5	14.0	14.9	-100.30	-249.7	-520.9	378.5	350.6	27.91	13.562				
4,600.0	4,558.9	4,578.0	4,531.8	14.3	15.3	-100.50	-255.8	-535.4	388.5	359.8	28.64	13.564				
4,700.0	4,657.6	4,677.5	4,630.0	14.7	15.7	-100.69	-261.9	-549.9	398.4	369.0	29.37	13.566				
4,800.0	4,756.4	4,777.0	4,728.3	15.1	16.0	-100.87	-268.0	-564.3	408.4	378.3	30.10	13.568				
4,900.0	4,855.1	4,876.5	4,826.5	15.4	16.4	-101.04	-274.1	-578.8	418.3	387.5	30.83	13.570				
5,000.0	4,953.9	4,976.0	4,924.7	15.8	16.8	-101.20	-280.3	-593.3	428.3	396.7	31.56	13.572				
5,100.0	5,052.6	5,075.5	5,023.0	16.2	17.2	-101.36	-286.4	-607.8	438.3	406.0	32.29	13.573				
5,200.0	5,151.4	5,175.0	5,121.2	16.6	17.6	-101.50	-292.5	-622.3	448.2	415.2	33.02	13.575				
5,300.0	5,250.1	5,274.5	5,219.5	16.9	17.9	-101.65	-298.6	-636.8	458.2	424.5	33.75	13.577				
5,400.0	5,348.9	5,373.9	5,317.7	17.3	18.3	-101.78	-304.7	-651.3	468.2	433.7	34.48	13.578				
5,501.3	5,448.9	5,480.0	5,422.6	17.7	18.7	-102.03	-310.8	-665.9	477.9	442.7	35.20	13.577				
5,600.0	5,546.6	5,585.8	5,527.7	18.0	18.9	-102.61	-315.5	-676.9	485.6	449.8	35.78	13.570				
5,700.0	5,646.1	5,693.0	5,634.6	18.2	19.1	-103.15	-318.6	-684.5	491.1	454.8	36.24	13.550				
5,800.0	5,745.8	5,800.3	5,741.8	18.4	19.3	-103.63	-320.3	-688.3	494.3	457.7	36.63	13.496				
5,900.0	5,845.7	5,904.2	5,845.7	18.6	19.4	-104.02	-320.5	-688.9	495.4	458.4	36.94	13.409				
5,954.3	5,900.0	5,958.5	5,900.0	18.6	19.5	-179.79	-320.5	-688.9	495.5	466.6	28.87	17.162				
6,000.0	5,945.7	6,004.2	5,945.7	18.7	19.6	-179.79	-320.5	-688.9	495.5	466.5	29.03	17.069				
6,100.0	6,045.7	6,104.2	6,045.7	18.8	19.7	-179.79	-320.5	-688.9	495.5	466.1	29.39	16.861				
6,156.0	6,101.7	6,160.3	6,101.7	18.9	19.8	-179.83	-320.5	-688.5	495.5	465.9	29.58	16.749				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,200.0	6,145.7	6,204.1	6,145.5	19.0	19.8	179.86		-320.5	-685.8	495.5	465.8	29.72	16.674	
6,284.6	6,230.3	6,286.9	6,227.4	19.1	19.8	178.49		-320.5	-673.9	495.7	465.8	29.94	16.559	
6,300.0	6,245.7	6,301.7	6,241.9	19.2	19.8	87.98		-320.6	-670.9	495.8	457.9	37.96	13.061	
6,350.0	6,295.6	6,350.0	6,288.7	19.2	19.7	86.86		-320.6	-659.0	496.3	458.3	37.98	13.066	
6,400.0	6,345.3	6,396.4	6,332.9	19.2	19.7	85.79		-320.6	-644.8	496.9	459.0	37.95	13.095	
6,450.0	6,394.4	6,443.0	6,376.2	19.2	19.6	84.73		-320.7	-627.9	497.7	459.8	37.86	13.144	
6,500.0	6,442.9	6,489.1	6,418.1	19.2	19.5	83.70		-320.7	-608.6	498.6	460.9	37.74	13.212	
6,550.0	6,490.4	6,534.7	6,458.3	19.1	19.4	82.70		-320.8	-587.0	499.7	462.1	37.58	13.296	
6,600.0	6,536.8	6,579.9	6,496.8	19.0	19.3	81.74		-320.9	-563.3	500.9	463.5	37.40	13.393	
6,650.0	6,582.0	6,624.7	6,533.4	18.9	19.3	80.81		-321.0	-537.6	502.1	464.9	37.20	13.498	
6,700.0	6,625.6	6,669.1	6,568.3	18.9	19.2	79.93		-321.0	-510.0	503.5	466.5	37.00	13.606	
6,750.0	6,667.5	6,713.2	6,601.2	18.8	19.1	79.08		-321.1	-480.7	504.8	468.0	36.81	13.713	
6,800.0	6,707.5	6,756.9	6,632.2	18.7	19.1	78.29		-321.2	-449.8	506.2	469.6	36.65	13.813	
6,850.0	6,745.5	6,800.0	6,660.9	18.7	19.0	77.55		-321.3	-417.7	507.7	471.1	36.53	13.898	
6,900.0	6,781.3	6,843.6	6,688.0	18.6	19.0	76.84		-321.4	-383.6	509.1	472.6	36.47	13.958	
6,950.0	6,814.7	6,886.5	6,712.8	18.7	19.1	76.20		-321.5	-348.6	510.4	473.9	36.49	13.987	
7,000.0	6,845.7	6,929.2	6,735.5	18.7	19.2	75.61		-321.6	-312.4	511.7	475.1	36.60	13.980	
7,050.0	6,873.9	6,971.7	6,756.0	18.9	19.3	75.07		-321.7	-275.2	513.0	476.1	36.82	13.930	
7,100.0	6,899.5	7,014.1	6,774.4	19.1	19.5	74.59		-321.8	-237.1	514.1	476.9	37.16	13.834	
7,150.0	6,922.2	7,056.2	6,790.5	19.3	19.7	74.16		-322.0	-198.1	515.2	477.5	37.63	13.690	
7,200.0	6,941.9	7,100.0	6,805.0	19.7	20.0	73.78		-322.1	-156.8	516.1	477.8	38.25	13.493	
7,250.0	6,958.5	7,140.2	6,816.2	20.1	20.4	73.48		-322.2	-118.2	516.9	477.9	38.99	13.257	
7,300.0	6,972.1	7,182.0	6,825.7	20.6	20.8	73.23		-322.3	-77.5	517.5	477.7	39.88	12.978	
7,350.0	6,982.4	7,223.8	6,832.9	21.2	21.3	73.04		-322.4	-36.4	518.0	477.1	40.90	12.667	
7,404.6	6,990.1	7,269.3	6,838.2	22.0	21.9	72.90		-322.6	8.8	518.4	476.3	42.15	12.300	
7,478.4	6,997.8	7,330.6	6,841.1	23.1	22.8	72.52		-322.7	70.1	519.7	475.7	44.01	11.809	
7,500.0	6,999.9	7,350.1	6,841.0	23.4	23.1	72.29		-322.8	89.6	520.3	475.8	44.59	11.670	
7,609.8	7,004.0	7,459.8	6,840.3	25.3	24.9	71.72		-323.1	199.2	521.8	473.8	48.07	10.855	
7,700.0	7,003.1	7,550.0	6,839.8	27.0	26.6	71.75		-323.4	289.4	521.7	470.4	51.34	10.163	
7,800.0	7,002.1	7,650.0	6,839.2	29.1	28.6	71.79		-323.7	389.4	521.6	466.4	55.23	9.444	
7,900.0	7,001.1	7,750.0	6,838.6	31.2	30.8	71.83		-324.0	489.4	521.5	462.1	59.35	8.786	
8,000.0	7,000.1	7,850.0	6,837.9	33.5	33.1	71.87		-324.3	589.4	521.4	457.7	63.66	8.190	
8,100.0	6,999.1	7,950.0	6,837.3	35.8	35.4	71.91		-324.6	689.4	521.2	453.1	68.12	7.652	
8,200.0	6,998.1	8,050.0	6,836.7	38.2	37.8	71.95		-324.9	789.4	521.1	448.4	72.71	7.167	
8,300.0	6,997.2	8,150.0	6,836.1	40.7	40.3	71.99		-325.2	889.4	521.0	443.6	77.40	6.732	
8,400.0	6,996.2	8,250.0	6,835.5	43.2	42.8	72.03		-325.4	989.4	520.9	438.7	82.17	6.339	
8,500.0	6,995.2	8,349.9	6,834.9	45.7	45.3	72.08		-325.7	1,089.4	520.8	433.7	87.02	5.985	
8,600.0	6,994.2	8,449.9	6,834.3	48.3	47.9	72.12		-326.0	1,189.4	520.6	428.7	91.93	5.664	
8,700.0	6,993.2	8,549.9	6,833.7	50.8	50.5	72.16		-326.3	1,289.4	520.5	423.6	96.88	5.373	
8,800.0	6,992.2	8,649.9	6,833.1	53.4	53.1	72.20		-326.6	1,389.4	520.4	418.5	101.89	5.108	
8,900.0	6,991.2	8,749.9	6,832.4	56.1	55.7	72.24		-326.9	1,489.4	520.3	413.4	106.93	4.866	
9,000.0	6,990.2	8,849.9	6,831.8	58.7	58.3	72.28		-327.2	1,589.4	520.2	408.2	112.01	4.644	
9,100.0	6,989.2	8,949.9	6,831.2	61.4	61.0	72.32		-327.5	1,689.4	520.1	402.9	117.11	4.441	
9,200.0	6,988.2	9,049.9	6,830.6	64.1	63.7	72.36		-327.8	1,789.4	519.9	397.7	122.25	4.253	
9,300.0	6,987.2	9,149.9	6,830.0	66.7	66.4	72.40		-328.1	1,889.4	519.8	392.4	127.40	4.080	
9,400.0	6,986.2	9,249.9	6,829.4	69.4	69.1	72.44		-328.4	1,989.3	519.7	387.1	132.58	3.920	
9,500.0	6,985.2	9,349.9	6,828.8	72.1	71.8	72.48		-328.7	2,089.3	519.6	381.8	137.78	3.771	
9,600.0	6,984.2	9,449.9	6,828.2	74.8	74.5	72.52		-329.0	2,189.3	519.5	376.5	142.99	3.633	
9,700.0	6,983.2	9,549.9	6,827.6	77.6	77.2	72.56		-329.3	2,289.3	519.4	371.1	148.22	3.504	
9,800.0	6,982.2	9,649.9	6,826.9	80.3	79.9	72.60		-329.6	2,389.3	519.2	365.8	153.46	3.384	
9,900.0	6,981.2	9,749.9	6,826.3	83.0	82.7	72.64		-329.9	2,489.3	519.1	360.4	158.71	3.271	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-212 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,980.2	9,849.9	6,825.7	85.7	85.4	72.68		-330.2	2,589.3	519.0	355.0	163.98	3.165	
10,100.0	6,979.2	9,949.9	6,825.1	88.5	88.1	72.72		-330.5	2,689.3	518.9	349.6	169.26	3.066	
10,200.0	6,978.2	10,049.9	6,824.5	91.2	90.9	72.76		-330.8	2,789.3	518.8	344.2	174.55	2.972	
10,300.0	6,977.2	10,149.9	6,823.9	94.0	93.6	72.80		-331.0	2,889.3	518.7	338.8	179.85	2.884	
10,400.0	6,976.2	10,249.9	6,823.3	96.7	96.4	72.84		-331.3	2,989.3	518.6	333.4	185.15	2.801	
10,500.0	6,975.2	10,349.9	6,822.7	99.5	99.1	72.88		-331.6	3,089.3	518.4	328.0	190.47	2.722	
10,600.0	6,974.3	10,449.9	6,822.1	102.2	101.9	72.92		-331.9	3,189.3	518.3	322.5	195.79	2.647	
10,700.0	6,973.3	10,549.9	6,821.4	105.0	104.7	72.96		-332.2	3,289.3	518.2	317.1	201.12	2.577	
10,800.0	6,972.3	10,649.9	6,820.8	107.8	107.4	73.01		-332.5	3,389.3	518.1	311.6	206.46	2.509	
10,900.0	6,971.3	10,749.9	6,820.2	110.5	110.2	73.05		-332.8	3,489.3	518.0	306.2	211.80	2.446	
11,000.0	6,970.3	10,849.9	6,819.6	113.3	113.0	73.09		-333.1	3,589.3	517.9	300.7	217.15	2.385	
11,100.0	6,969.3	10,949.9	6,819.0	116.1	115.7	73.13		-333.4	3,689.3	517.8	295.3	222.51	2.327	
11,200.0	6,968.3	11,049.9	6,818.4	118.8	118.5	73.17		-333.7	3,789.3	517.7	289.8	227.87	2.272	
11,300.0	6,967.3	11,149.9	6,817.8	121.6	121.3	73.21		-334.0	3,889.3	517.5	284.3	233.23	2.219	
11,400.0	6,966.3	11,249.9	6,817.2	124.4	124.0	73.25		-334.3	3,989.3	517.4	278.8	238.61	2.169	
11,500.0	6,965.3	11,349.9	6,816.6	127.1	126.8	73.29		-334.6	4,089.3	517.3	273.3	243.98	2.120	
11,600.0	6,964.3	11,449.9	6,815.9	129.9	129.6	73.33		-334.9	4,189.3	517.2	267.8	249.36	2.074	
11,700.0	6,963.3	11,549.9	6,815.3	132.7	132.4	73.37		-335.2	4,289.3	517.1	262.3	254.75	2.030	
11,800.0	6,962.3	11,649.9	6,814.7	135.5	135.2	73.41		-335.5	4,389.3	517.0	256.8	260.14	1.987	
11,900.0	6,961.3	11,749.9	6,814.1	138.3	137.9	73.45		-335.8	4,489.3	516.9	251.3	265.54	1.947	
12,000.0	6,960.3	11,849.9	6,813.5	141.0	140.7	73.49		-336.1	4,589.3	516.8	245.8	270.93	1.907	
12,100.0	6,959.3	11,949.9	6,812.9	143.8	143.5	73.54		-336.3	4,689.3	516.7	240.3	276.34	1.870	
12,200.0	6,958.3	12,049.9	6,812.3	146.6	146.3	73.58		-336.6	4,789.3	516.5	234.8	281.74	1.833	
12,300.0	6,957.3	12,149.9	6,811.7	149.4	149.1	73.62		-336.9	4,889.3	516.4	229.3	287.16	1.798	
12,400.0	6,956.3	12,249.9	6,811.1	152.2	151.9	73.66		-337.2	4,989.3	516.3	223.8	292.57	1.765	
12,500.0	6,955.3	12,349.9	6,810.5	155.0	154.6	73.70		-337.5	5,089.3	516.2	218.2	297.99	1.732	
12,600.0	6,954.3	12,449.9	6,809.8	157.7	157.4	73.74		-337.8	5,189.3	516.1	212.7	303.41	1.701	
12,700.0	6,953.3	12,549.9	6,809.2	160.5	160.2	73.78		-338.1	5,289.2	516.0	207.2	308.83	1.671	
12,735.0	6,953.0	12,584.9	6,809.0	161.5	161.2	73.80		-338.2	5,324.3	516.0	205.2	310.73	1.660 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	155.35	155.35	-54.6	25.1	60.1				
100.0	100.0	100.0	100.0	0.1	0.1	155.35	155.35	-54.6	25.1	60.1	59.9	0.22	267.497	
200.0	200.0	200.0	200.0	0.3	0.3	155.35	155.35	-54.6	25.1	60.1	59.4	0.67	89.166 CC, ES	
300.0	300.0	299.3	299.3	0.6	0.5	156.89	156.89	-55.8	23.8	60.7	59.6	1.10	54.945	
400.0	400.0	398.3	398.2	0.8	0.8	161.30	161.30	-59.4	20.1	62.7	61.2	1.54	40.684	
500.0	500.0	496.9	496.4	1.0	1.0	167.95	167.95	-65.2	13.9	66.8	64.8	1.99	33.522	
600.0	600.0	594.8	593.5	1.2	1.3	175.81	175.81	-73.3	5.4	73.8	71.4	2.46	30.002	
700.0	700.0	691.7	689.3	1.5	1.6	-176.27	-176.27	-83.6	-5.5	84.5	81.5	2.96	28.549	
800.0	800.0	788.6	784.5	1.7	2.0	-169.12	-169.12	-96.0	-18.5	99.0	95.5	3.51	28.231	
900.0	900.0	886.7	880.8	1.9	2.4	-163.59	-163.59	-108.9	-32.1	115.2	111.1	4.08	28.202	
1,000.0	1,000.0	984.9	977.2	2.1	2.8	-159.44	-159.44	-121.9	-45.7	132.1	127.5	4.68	28.206	
1,100.0	1,100.0	1,083.2	1,073.6	2.4	3.2	-80.85	-80.85	-134.8	-59.4	149.4	144.5	4.88	30.583	
1,200.0	1,199.8	1,181.7	1,170.4	2.6	3.6	-79.70	-79.70	-147.8	-73.0	166.2	160.9	5.35	31.039	
1,300.0	1,299.5	1,280.4	1,267.2	2.8	4.0	-79.80	-79.80	-160.8	-86.8	182.4	176.6	5.85	31.161	
1,400.0	1,398.7	1,379.0	1,364.0	3.0	4.5	-80.85	-80.85	-173.8	-100.5	198.1	191.7	6.40	30.981	
1,453.0	1,451.1	1,431.3	1,415.3	3.2	4.7	-81.72	-81.72	-180.7	-107.7	206.3	199.6	6.70	30.778	
1,500.0	1,497.5	1,477.6	1,460.8	3.3	4.9	-82.68	-82.68	-186.8	-114.1	213.5	206.5	6.99	30.556	
1,600.0	1,596.3	1,576.1	1,557.5	3.6	5.3	-84.53	-84.53	-199.8	-127.8	229.1	221.4	7.61	30.091	
1,700.0	1,695.0	1,674.7	1,654.2	3.9	5.7	-86.14	-86.14	-212.8	-141.5	244.8	236.6	8.26	29.650	
1,800.0	1,793.8	1,773.2	1,750.9	4.2	6.2	-87.56	-87.56	-225.8	-155.2	260.7	251.8	8.92	29.239	
1,900.0	1,892.5	1,871.7	1,847.6	4.6	6.6	-88.81	-88.81	-238.8	-168.9	276.8	267.2	9.59	28.862	
2,000.0	1,991.3	1,970.3	1,944.3	4.9	7.0	-89.93	-89.93	-251.8	-182.6	293.0	282.7	10.27	28.519	
2,100.0	2,090.0	2,068.8	2,041.0	5.2	7.4	-90.93	-90.93	-264.8	-196.2	309.2	298.3	10.96	28.207	
2,200.0	2,188.8	2,167.3	2,137.7	5.6	7.9	-91.83	-91.83	-277.8	-209.9	325.6	313.9	11.66	27.924	
2,300.0	2,287.5	2,265.8	2,234.4	5.9	8.3	-92.64	-92.64	-290.8	-223.6	342.0	329.6	12.36	27.667	
2,400.0	2,386.3	2,364.4	2,331.1	6.3	8.7	-93.38	-93.38	-303.8	-237.3	358.5	345.4	13.07	27.434	
2,500.0	2,485.1	2,462.9	2,427.8	6.6	9.1	-94.05	-94.05	-316.8	-251.0	375.0	361.2	13.78	27.221	
2,600.0	2,583.8	2,561.4	2,524.5	7.0	9.6	-94.67	-94.67	-329.8	-264.7	391.6	377.1	14.49	27.028	
2,700.0	2,682.6	2,660.0	2,621.2	7.3	10.0	-95.24	-95.24	-342.8	-278.3	408.2	393.0	15.20	26.850	
2,800.0	2,781.3	2,758.5	2,718.0	7.7	10.4	-95.76	-95.76	-355.8	-292.0	424.9	409.0	15.92	26.688	
2,900.0	2,880.1	2,857.0	2,814.7	8.1	10.9	-96.24	-96.24	-368.7	-305.7	441.6	424.9	16.64	26.539	
3,000.0	2,978.8	2,955.6	2,911.4	8.4	11.3	-96.69	-96.69	-381.7	-319.4	458.3	440.9	17.36	26.401	
3,100.0	3,077.6	3,054.1	3,008.1	8.8	11.7	-97.11	-97.11	-394.7	-333.1	475.1	457.0	18.08	26.274	
3,200.0	3,176.3	3,152.6	3,104.8	9.2	12.2	-97.50	-97.50	-407.7	-346.8	491.8	473.0	18.80	26.156	
3,300.0	3,275.1	3,251.2	3,201.5	9.5	12.6	-97.86	-97.86	-420.7	-360.4	508.6	489.1	19.53	26.047	
3,400.0	3,373.8	3,349.7	3,298.2	9.9	13.0	-98.20	-98.20	-433.7	-374.1	525.4	505.2	20.25	25.945	
3,500.0	3,472.6	3,448.2	3,394.9	10.3	13.4	-98.52	-98.52	-446.7	-387.8	542.2	521.3	20.98	25.851	
3,600.0	3,571.3	3,546.8	3,491.6	10.6	13.9	-98.82	-98.82	-459.7	-401.5	559.1	537.4	21.70	25.762	
3,700.0	3,670.1	3,645.3	3,588.3	11.0	14.3	-99.10	-99.10	-472.7	-415.2	575.9	553.5	22.43	25.679	
3,800.0	3,768.8	3,743.8	3,685.0	11.4	14.7	-99.36	-99.36	-485.7	-428.9	592.8	569.6	23.15	25.602	
3,900.0	3,867.6	3,842.3	3,781.7	11.7	15.2	-99.61	-99.61	-498.7	-442.5	609.7	585.8	23.88	25.529	
4,000.0	3,966.3	3,940.9	3,878.4	12.1	15.6	-99.85	-99.85	-511.7	-456.2	626.6	602.0	24.61	25.460	
4,100.0	4,065.1	4,039.4	3,975.2	12.5	16.0	-100.08	-100.08	-524.7	-469.9	643.5	618.1	25.34	25.396	
4,200.0	4,163.8	4,137.9	4,071.9	12.8	16.4	-100.29	-100.29	-537.7	-483.6	660.4	634.3	26.07	25.335	
4,300.0	4,262.6	4,236.5	4,168.6	13.2	16.9	-100.49	-100.49	-550.7	-497.3	677.3	650.5	26.79	25.277	
4,400.0	4,361.4	4,335.0	4,265.3	13.6	17.3	-100.69	-100.69	-563.6	-511.0	694.2	666.7	27.52	25.223	
4,500.0	4,460.1	4,433.5	4,362.0	14.0	17.7	-100.87	-100.87	-576.6	-524.6	711.1	682.9	28.25	25.171	
4,600.0	4,558.9	4,532.1	4,458.7	14.3	18.2	-101.04	-101.04	-589.6	-538.3	728.1	699.1	28.98	25.122	
4,700.0	4,657.6	4,630.6	4,555.4	14.7	18.6	-101.21	-101.21	-602.6	-552.0	745.0	715.3	29.71	25.075	
4,800.0	4,756.4	4,729.1	4,652.1	15.1	19.0	-101.37	-101.37	-615.6	-565.7	762.0	731.5	30.44	25.031	
4,900.0	4,855.1	4,827.7	4,748.8	15.4	19.5	-101.52	-101.52	-628.6	-579.4	778.9	747.8	31.17	24.988	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design Alles 22S-HZ Pad Sec.22-T5N-R65W - Alles 22D-402 - Wellbore #1 - Plan #1 (5-16-13)													Offset Site Error:	0.0 ft
Survey Program: 0-MWDD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,000.0	4,953.9	4,926.2	4,845.5	15.8	19.9	-101.67	-641.6	-593.1	795.9	764.0	31.90	24.948		
5,100.0	5,052.6	5,024.7	4,942.2	16.2	20.3	-101.81	-654.6	-606.7	812.9	780.2	32.63	24.910		
5,200.0	5,151.4	5,123.3	5,038.9	16.6	20.7	-101.95	-667.6	-620.4	829.8	796.5	33.36	24.873		
5,300.0	5,250.1	5,221.8	5,135.6	16.9	21.2	-102.07	-680.6	-634.1	846.8	812.7	34.09	24.838		
5,400.0	5,348.9	5,320.3	5,232.4	17.3	21.6	-102.20	-693.6	-647.8	863.8	829.0	34.82	24.804		
5,501.3	5,448.9	5,442.2	5,352.4	17.7	22.0	-102.43	-708.4	-663.4	880.0	844.4	35.58	24.736		
5,600.0	5,546.6	5,567.2	5,476.1	18.0	22.3	-103.01	-720.0	-675.6	892.4	856.2	36.24	24.625		
5,700.0	5,646.1	5,694.5	5,602.9	18.2	22.6	-103.50	-728.0	-684.0	901.3	864.5	36.78	24.505		
5,800.0	5,745.8	5,822.3	5,730.6	18.4	22.8	-103.88	-732.1	-688.3	906.2	869.0	37.22	24.345		
5,900.0	5,845.7	5,937.5	5,845.7	18.6	22.9	-104.14	-732.6	-688.9	907.5	870.0	37.57	24.154		
5,954.3	5,900.0	5,991.7	5,900.0	18.6	22.9	-179.88	-732.6	-688.9	907.6	874.6	33.06	27.451		
6,000.0	5,945.7	6,037.5	5,945.7	18.7	23.0	-179.88	-732.6	-688.9	907.6	874.4	33.20	27.336		
6,100.0	6,045.7	6,137.5	6,045.7	18.8	23.1	-179.88	-732.6	-688.9	907.6	874.1	33.52	27.081		
6,200.0	6,145.7	6,237.5	6,145.7	19.0	23.2	-179.88	-732.6	-688.9	907.6	873.8	33.83	26.828		
6,256.4	6,202.1	6,293.8	6,202.1	19.1	23.3	-179.88	-732.6	-688.9	907.6	873.6	34.01	26.687		
6,284.6	6,230.3	6,322.1	6,230.3	19.1	23.3	-179.88	-732.6	-688.9	907.6	873.5	34.10	26.616		
6,300.0	6,245.7	6,337.4	6,245.7	19.2	23.3	89.95	-732.6	-688.8	907.6	869.0	38.68	23.463		
6,350.0	6,295.6	6,387.4	6,295.6	19.2	23.3	89.95	-732.7	-686.1	907.6	868.9	38.76	23.418		
6,400.0	6,345.3	6,437.4	6,345.2	19.2	23.3	89.95	-732.7	-680.2	907.6	868.9	38.78	23.408		
6,450.0	6,394.4	6,487.3	6,394.3	19.2	23.3	89.95	-732.7	-671.1	907.6	868.9	38.74	23.431		
6,500.0	6,442.9	6,537.3	6,442.7	19.2	23.3	89.95	-732.7	-658.8	907.6	869.0	38.65	23.484		
6,550.0	6,490.4	6,587.2	6,490.2	19.1	23.2	89.95	-732.8	-643.3	907.6	869.1	38.52	23.562		
6,600.0	6,536.8	6,637.2	6,536.6	19.0	23.1	89.95	-732.8	-624.8	907.6	869.3	38.36	23.662		
6,650.0	6,582.0	6,687.2	6,581.7	18.9	23.0	89.96	-732.9	-603.3	907.6	869.5	38.17	23.776		
6,700.0	6,625.6	6,737.1	6,625.3	18.9	22.9	89.96	-733.0	-578.9	907.6	869.6	37.98	23.897		
6,750.0	6,667.5	6,787.1	6,667.2	18.8	22.8	89.96	-733.0	-551.7	907.6	869.8	37.79	24.017		
6,800.0	6,707.5	6,837.1	6,707.2	18.7	22.7	89.96	-733.1	-521.8	907.6	870.0	37.62	24.124		
6,850.0	6,745.5	6,887.0	6,745.2	18.7	22.6	89.96	-733.2	-489.3	907.6	870.1	37.50	24.205		
6,900.0	6,781.3	6,937.0	6,781.0	18.6	22.5	89.96	-733.3	-454.5	907.6	870.2	37.43	24.248		
6,950.0	6,814.7	6,987.0	6,814.4	18.7	22.4	89.97	-733.4	-417.3	907.6	870.2	37.45	24.237		
7,000.0	6,845.7	7,036.9	6,845.3	18.7	22.3	89.97	-733.5	-378.1	907.6	870.0	37.57	24.160		
7,050.0	6,873.9	7,086.9	6,873.6	18.9	22.2	89.97	-733.6	-336.9	907.6	869.8	37.81	24.006		
7,100.0	6,899.5	7,136.9	6,899.2	19.1	22.1	89.97	-733.7	-294.0	907.6	869.4	38.19	23.767		
7,150.0	6,922.2	7,186.9	6,921.9	19.3	22.1	89.98	-733.9	-249.5	907.6	868.9	38.72	23.441		
7,200.0	6,941.9	7,236.9	6,941.6	19.7	22.0	89.98	-734.0	-203.6	907.6	868.2	39.41	23.031		
7,250.0	6,958.5	7,286.8	6,958.3	20.1	22.1	89.98	-734.1	-156.5	907.6	867.3	40.26	22.544		
7,300.0	6,972.1	7,336.8	6,971.9	20.6	22.1	89.98	-734.3	-108.4	907.5	866.3	41.26	21.993		
7,350.0	6,982.4	7,386.8	6,982.3	21.2	22.3	89.99	-734.4	-59.5	907.5	865.1	42.42	21.393		
7,404.6	6,990.1	7,441.4	6,990.0	22.0	22.6	89.99	-734.6	-5.4	907.5	863.7	43.84	20.702		
7,478.4	6,997.8	7,515.2	6,997.7	23.1	23.3	89.99	-734.8	68.0	907.5	861.5	46.00	19.728		
7,500.0	6,999.9	7,536.8	6,999.7	23.4	23.6	89.99	-734.8	89.4	907.5	860.8	46.70	19.434		
7,609.8	7,004.0	7,646.5	7,004.0	25.3	25.2	90.00	-735.1	199.1	907.5	857.1	50.42	17.999		
7,700.0	7,003.1	7,736.7	7,003.1	27.0	26.8	90.00	-735.4	289.2	907.5	853.7	53.82	16.863		
7,800.0	7,002.1	7,836.7	7,002.1	29.1	28.8	90.00	-735.7	389.2	907.5	849.6	57.85	15.688		
7,900.0	7,001.1	7,936.7	7,001.1	31.2	30.9	90.00	-736.0	489.2	907.5	845.4	62.12	14.607		
8,000.0	7,000.1	8,036.7	7,000.1	33.5	33.1	90.00	-736.3	589.2	907.5	840.9	66.60	13.625		
8,100.0	6,999.1	8,136.7	6,999.1	35.8	35.5	90.00	-736.5	689.2	907.5	836.2	71.24	12.738		
8,200.0	6,998.1	8,236.7	6,998.1	38.2	37.9	90.00	-736.8	789.2	907.5	831.4	76.01	11.938		
8,300.0	6,997.2	8,336.7	6,997.1	40.7	40.3	90.00	-737.1	889.2	907.5	826.6	80.89	11.218		
8,400.0	6,996.2	8,436.7	6,996.1	43.2	42.8	90.00	-737.4	989.2	907.4	821.6	85.86	10.569		
8,500.0	6,995.2	8,536.7	6,995.1	45.7	45.3	90.00	-737.7	1,089.2	907.4	816.5	90.91	9.982		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	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)					
8,600.0	6,994.2	8,636.7	6,994.2	48.3	47.9	90.00	-738.0	1,189.2	907.4	811.4	96.02	9.451	
8,700.0	6,993.2	8,736.7	6,993.2	50.8	50.5	90.00	-738.3	1,289.2	907.4	806.2	101.18	8.968	
8,800.0	6,992.2	8,836.7	6,992.2	53.4	53.1	90.00	-738.6	1,389.2	907.4	801.0	106.39	8.529	
8,900.0	6,991.2	8,936.7	6,991.2	56.1	55.7	90.00	-738.8	1,489.2	907.4	795.8	111.64	8.128	
9,000.0	6,990.2	9,036.7	6,990.2	58.7	58.3	90.00	-739.1	1,589.2	907.4	790.5	116.92	7.761	
9,100.0	6,989.2	9,136.7	6,989.2	61.4	61.0	90.00	-739.4	1,689.2	907.4	785.2	122.23	7.423	
9,200.0	6,988.2	9,236.7	6,988.2	64.1	63.6	90.00	-739.7	1,789.2	907.4	779.8	127.57	7.113	
9,300.0	6,987.2	9,336.7	6,987.2	66.7	66.3	90.00	-740.0	1,889.2	907.4	774.4	132.93	6.826	
9,400.0	6,986.2	9,436.7	6,986.2	69.4	69.0	90.00	-740.3	1,989.2	907.4	769.1	138.32	6.560	
9,500.0	6,985.2	9,536.7	6,985.2	72.1	71.7	90.00	-740.6	2,089.1	907.4	763.6	143.72	6.314	
9,600.0	6,984.2	9,636.7	6,984.2	74.8	74.4	90.00	-740.9	2,189.1	907.4	758.2	149.13	6.084	
9,700.0	6,983.2	9,736.7	6,983.2	77.6	77.1	90.00	-741.1	2,289.1	907.3	752.8	154.56	5.870	
9,800.0	6,982.2	9,836.7	6,982.2	80.3	79.9	90.00	-741.4	2,389.1	907.3	747.3	160.00	5.671	
9,900.0	6,981.2	9,936.7	6,981.2	83.0	82.6	90.00	-741.7	2,489.1	907.3	741.9	165.46	5.484	
10,000.0	6,980.2	10,036.7	6,980.2	85.7	85.3	90.00	-742.0	2,589.1	907.3	736.4	170.92	5.308	
10,100.0	6,979.2	10,136.7	6,979.2	88.5	88.0	90.00	-742.3	2,689.1	907.3	730.9	176.40	5.144	
10,200.0	6,978.2	10,236.7	6,978.2	91.2	90.8	90.00	-742.6	2,789.1	907.3	725.4	181.88	4.988	
10,300.0	6,977.2	10,336.7	6,977.3	94.0	93.5	90.00	-742.9	2,889.1	907.3	719.9	187.37	4.842	
10,400.0	6,976.2	10,436.7	6,976.3	96.7	96.3	90.00	-743.2	2,989.1	907.3	714.4	192.87	4.704	
10,500.0	6,975.2	10,536.7	6,975.3	99.5	99.0	90.00	-743.5	3,089.1	907.3	708.9	198.38	4.574	
10,600.0	6,974.3	10,636.7	6,974.3	102.2	101.8	90.00	-743.7	3,189.1	907.3	703.4	203.89	4.450	
10,700.0	6,973.3	10,736.7	6,973.3	105.0	104.5	90.00	-744.0	3,289.1	907.3	697.9	209.41	4.333	
10,800.0	6,972.3	10,836.7	6,972.3	107.8	107.3	90.00	-744.3	3,389.1	907.3	692.3	214.93	4.221	
10,900.0	6,971.3	10,936.7	6,971.3	110.5	110.1	90.00	-744.6	3,489.1	907.3	686.8	220.45	4.115	
11,000.0	6,970.3	11,036.7	6,970.3	113.3	112.8	90.00	-744.9	3,589.1	907.3	681.3	225.99	4.015	
11,100.0	6,969.3	11,136.7	6,969.3	116.1	115.6	90.00	-745.2	3,689.1	907.2	675.7	231.52	3.919	
11,200.0	6,968.3	11,236.7	6,968.3	118.8	118.3	90.00	-745.5	3,789.1	907.2	670.2	237.06	3.827	
11,300.0	6,967.3	11,336.7	6,967.3	121.6	121.1	90.00	-745.8	3,889.1	907.2	664.6	242.60	3.740	
11,400.0	6,966.3	11,436.7	6,966.3	124.4	123.9	90.00	-746.0	3,989.0	907.2	659.1	248.15	3.656	
11,500.0	6,965.3	11,536.7	6,965.3	127.1	126.7	90.00	-746.3	4,089.0	907.2	653.5	253.70	3.576	
11,600.0	6,964.3	11,636.7	6,964.3	129.9	129.4	90.00	-746.6	4,189.0	907.2	648.0	259.25	3.499	
11,700.0	6,963.3	11,736.7	6,963.3	132.7	132.2	90.00	-746.9	4,289.0	907.2	642.4	264.81	3.426	
11,800.0	6,962.3	11,836.7	6,962.3	135.5	135.0	90.00	-747.2	4,389.0	907.2	636.8	270.36	3.355	
11,900.0	6,961.3	11,936.7	6,961.4	138.3	137.8	90.00	-747.5	4,489.0	907.2	631.3	275.92	3.288	
12,000.0	6,960.3	12,036.7	6,960.4	141.0	140.5	90.00	-747.8	4,589.0	907.2	625.7	281.49	3.223	
12,100.0	6,959.3	12,136.7	6,959.4	143.8	143.3	90.00	-748.1	4,689.0	907.2	620.1	287.05	3.160	
12,200.0	6,958.3	12,236.7	6,958.4	146.6	146.1	90.00	-748.3	4,789.0	907.2	614.6	292.62	3.100	
12,300.0	6,957.3	12,336.7	6,957.4	149.4	148.9	90.00	-748.6	4,889.0	907.2	609.0	298.18	3.042	
12,400.0	6,956.3	12,436.7	6,956.4	152.2	151.7	90.00	-748.9	4,989.0	907.2	603.4	303.75	2.986	
12,500.0	6,955.3	12,536.7	6,955.4	155.0	154.5	90.00	-749.2	5,089.0	907.1	597.8	309.33	2.933	
12,600.0	6,954.3	12,636.7	6,954.4	157.7	157.2	90.00	-749.5	5,189.0	907.1	592.2	314.90	2.881	
12,700.0	6,953.3	12,736.7	6,953.4	160.5	160.0	90.00	-749.8	5,289.0	907.1	586.7	320.47	2.831	
12,735.0	6,953.0	12,771.7	6,953.1	161.5	161.0	90.00	-749.9	5,324.0	907.1	584.7	322.43	2.813 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	1.0	1.0	0.0	0.0	-89.99	0.0	-100.3	100.3	100.3	0.02	4,964.983		
100.0	100.0	101.0	101.0	0.1	2.0	-89.99	0.0	-100.3	100.3	98.2	2.13	47.029		
174.4	174.4	175.4	175.4	0.3	3.5	-89.99	0.0	-100.3	100.3	96.5	3.79	26.475		
200.0	200.0	201.0	201.0	0.3	4.0	-89.99	0.0	-100.3	100.3	95.9	4.36	23.017		
274.1	274.1	275.1	275.1	0.5	5.5	-89.99	0.0	-100.3	100.3	94.3	6.01	16.696		
300.0	300.0	301.0	301.0	0.6	6.0	-89.99	0.0	-100.3	100.3	93.7	6.58	15.237		
378.9	378.9	379.9	379.9	0.7	7.6	-89.99	0.0	-100.3	100.3	92.0	8.34	12.030		
400.0	400.0	401.0	401.0	0.8	8.0	-89.99	0.0	-100.3	100.3	91.5	8.81	11.388		
478.9	478.9	479.9	479.9	1.0	9.6	-89.99	0.0	-100.3	100.3	89.7	10.56	9.496		
500.0	500.0	501.0	501.0	1.0	10.0	-89.99	0.0	-100.3	100.3	89.3	11.03	9.091		
574.0	574.0	575.0	575.0	1.2	11.5	-89.99	0.0	-100.3	100.3	87.6	12.68	7.911		
600.0	600.0	601.0	601.0	1.2	12.0	-89.99	0.0	-100.3	100.3	87.0	13.26	7.566		
678.9	678.9	679.9	679.9	1.4	13.6	-89.99	0.0	-100.3	100.3	85.3	15.01	6.681		
700.0	700.0	701.0	701.0	1.5	14.0	-89.99	0.0	-100.3	100.3	84.8	15.48	6.478		
778.9	778.9	779.9	779.9	1.6	15.6	-89.99	0.0	-100.3	100.3	83.1	17.24	5.819		
800.0	800.0	801.0	801.0	1.7	16.0	-89.99	0.0	-100.3	100.3	82.6	17.71	5.664		
878.9	878.9	879.9	879.9	1.9	17.6	-89.99	0.0	-100.3	100.3	80.8	19.46	5.154		
900.0	900.0	901.0	901.0	1.9	18.0	-89.99	0.0	-100.3	100.3	80.4	19.93	5.032		
978.9	978.9	979.9	979.9	2.1	19.6	-89.99	0.0	-100.3	100.3	78.6	21.69	4.625		
1,000.0	1,000.0	1,001.0	1,001.0	2.1	20.0	-89.99	0.0	-100.3	100.3	78.1	22.16	4.527		
1,100.0	1,100.0	1,101.0	1,101.0	2.4	22.0	-14.54	0.0	-100.3	98.6	74.2	24.36	4.048		
1,200.0	1,199.8	1,200.8	1,200.8	2.6	24.0	-15.37	0.0	-100.3	93.5	67.0	26.51	3.528		
1,300.0	1,299.5	1,300.5	1,300.5	2.8	26.0	-16.98	0.0	-100.3	85.2	56.5	28.64	2.974		
1,400.0	1,398.7	1,399.7	1,399.7	3.0	28.0	-19.83	0.0	-100.3	73.6	42.9	30.72	2.396		
1,453.0	1,451.1	1,452.1	1,452.1	3.2	29.0	-22.18	0.0	-100.3	66.2	34.4	31.81	2.082		
1,500.0	1,497.5	1,498.5	1,498.5	3.3	30.0	-24.87	0.0	-100.3	59.4	26.6	32.86	1.809		
1,600.0	1,596.3	1,597.3	1,597.3	3.6	31.9	-33.19	0.0	-100.3	45.6	10.5	35.12	1.299 Level 3		
1,700.0	1,695.0	1,696.0	1,696.0	3.9	33.9	-48.01	0.0	-100.3	33.5	-4.0	37.50	0.893 Level 1		
1,800.0	1,793.8	1,794.8	1,794.8	4.2	35.9	-74.79	0.0	-100.3	25.7	-14.4	40.06	0.641 Level 1		
1,843.3	1,836.5	1,837.5	1,837.5	4.4	36.8	-90.00	0.0	-100.3	24.7	-16.4	41.12	0.602 Level 1, CC, ES, SF		
1,900.0	1,892.5	1,893.5	1,893.5	4.6	37.9	-109.63	0.0	-100.3	26.3	-16.0	42.34	0.621 Level 1		
2,000.0	1,991.3	1,992.3	1,992.3	4.9	39.8	-134.57	0.0	-100.3	34.9	-9.3	44.25	0.790 Level 1		
2,100.0	2,090.0	2,091.0	2,091.0	5.2	41.8	-148.21	0.0	-100.3	47.4	1.2	46.23	1.025 Level 2		
2,200.0	2,188.8	2,189.8	2,189.8	5.6	43.8	-155.96	0.0	-100.3	61.4	13.1	48.31	1.271 Level 3		
2,300.0	2,287.5	2,288.5	2,288.5	5.9	45.8	-160.79	0.0	-100.3	76.1	25.6	50.43	1.508		
2,400.0	2,386.3	2,387.3	2,387.3	6.3	47.7	-164.05	0.0	-100.3	91.1	38.5	52.58	1.732		
2,500.0	2,485.1	2,486.1	2,486.1	6.6	49.7	-166.38	0.0	-100.3	106.3	51.6	54.75	1.942		
2,600.0	2,583.8	2,584.8	2,584.8	7.0	51.7	-168.12	0.0	-100.3	121.7	64.8	56.92	2.138		
2,700.0	2,682.6	2,683.6	2,683.6	7.3	53.7	-169.48	0.0	-100.3	137.2	78.1	59.10	2.321		
2,800.0	2,781.3	2,782.3	2,782.3	7.7	55.6	-170.56	0.0	-100.3	152.7	91.4	61.29	2.491		
2,900.0	2,880.1	2,881.1	2,881.1	8.1	57.6	-171.44	0.0	-100.3	168.2	104.8	63.47	2.650		
3,000.0	2,978.8	2,979.8	2,979.8	8.4	59.6	-172.17	0.0	-100.3	183.8	118.2	65.66	2.799		
3,100.0	3,077.6	3,078.6	3,078.6	8.8	61.6	-172.78	0.0	-100.3	199.4	131.6	67.85	2.939		
3,200.0	3,176.3	3,177.3	3,177.3	9.2	63.5	-173.31	0.0	-100.3	215.1	145.0	70.04	3.070		
3,300.0	3,275.1	3,276.1	3,276.1	9.5	65.5	-173.77	0.0	-100.3	230.7	158.5	72.24	3.194		
3,400.0	3,373.8	3,374.8	3,374.8	9.9	67.5	-174.16	0.0	-100.3	246.4	171.9	74.43	3.310		
3,500.0	3,472.6	3,473.6	3,473.6	10.3	69.5	-174.51	0.0	-100.3	262.0	185.4	76.62	3.420		
3,600.0	3,571.3	3,572.3	3,572.3	10.6	71.4	-174.82	0.0	-100.3	277.7	198.9	78.82	3.524		
3,700.0	3,670.1	3,671.1	3,671.1	11.0	73.4	-175.10	0.0	-100.3	293.4	212.4	81.01	3.622		
3,800.0	3,768.8	3,769.8	3,769.8	11.4	75.4	-175.35	0.0	-100.3	309.1	225.9	83.21	3.715		
3,900.0	3,867.6	3,868.6	3,868.6	11.7	77.4	-175.58	0.0	-100.3	324.8	239.4	85.41	3.803		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
4,000.0	3,966.3	3,967.3	3,967.3	12.1	79.3	-175.78	0.0	-100.3	340.5	252.9	87.60	3.887		
4,100.0	4,065.1	4,066.1	4,066.1	12.5	81.3	-175.97	0.0	-100.3	356.2	266.4	89.80	3.967		
4,200.0	4,163.8	4,164.8	4,164.8	12.8	83.3	-176.14	0.0	-100.3	371.9	279.9	92.00	4.043		
4,300.0	4,262.6	4,263.6	4,263.6	13.2	85.3	-176.29	0.0	-100.3	387.6	293.4	94.20	4.115		
4,400.0	4,361.4	4,362.4	4,362.4	13.6	87.2	-176.44	0.0	-100.3	403.4	307.0	96.39	4.184		
4,500.0	4,460.1	4,461.1	4,461.1	14.0	89.2	-176.57	0.0	-100.3	419.1	320.5	98.59	4.251		
4,600.0	4,558.9	4,559.9	4,559.9	14.3	91.2	-176.70	0.0	-100.3	434.8	334.0	100.79	4.314		
4,700.0	4,657.6	4,658.6	4,658.6	14.7	93.2	-176.81	0.0	-100.3	450.5	347.5	102.99	4.374		
4,800.0	4,756.4	4,757.4	4,757.4	15.1	95.1	-176.92	0.0	-100.3	466.2	361.1	105.19	4.432		
4,900.0	4,855.1	4,856.1	4,856.1	15.4	97.1	-177.02	0.0	-100.3	482.0	374.6	107.39	4.488		
5,000.0	4,953.9	4,954.9	4,954.9	15.8	99.1	-177.11	0.0	-100.3	497.7	388.1	109.58	4.542		
5,100.0	5,052.6	5,053.6	5,053.6	16.2	101.1	-177.20	0.0	-100.3	513.4	401.6	111.78	4.593		
5,200.0	5,151.4	5,152.4	5,152.4	16.6	103.0	-177.29	0.0	-100.3	529.1	415.2	113.98	4.642		
5,300.0	5,250.1	5,251.1	5,251.1	16.9	105.0	-177.36	0.0	-100.3	544.9	428.7	116.18	4.690		
5,400.0	5,348.9	5,349.9	5,349.9	17.3	107.0	-177.44	0.0	-100.3	560.6	442.2	118.38	4.736		
5,501.3	5,448.9	5,449.9	5,449.9	17.7	109.0	-177.51	0.0	-100.3	576.5	455.9	120.61	4.780		
5,600.0	5,546.6	5,547.6	5,547.6	18.0	111.0	-177.58	0.0	-100.3	590.4	467.1	123.30	4.788		
5,700.0	5,646.1	5,647.1	5,647.1	18.2	112.9	-177.63	0.0	-100.3	601.0	475.1	125.87	4.775		
5,800.0	5,745.8	5,746.8	5,746.8	18.4	114.9	-177.66	0.0	-100.3	608.1	479.8	128.30	4.740		
5,900.0	5,845.7	5,846.7	5,846.7	18.6	116.9	-177.68	0.0	-100.3	611.7	481.2	130.58	4.685		
5,954.3	5,900.0	5,901.0	5,901.0	18.6	118.0	106.61	0.0	-100.3	612.2	475.6	136.63	4.481		
6,000.0	5,945.7	5,946.7	5,946.7	18.7	118.9	106.61	0.0	-100.3	612.2	474.6	137.61	4.449		
6,100.0	6,045.7	6,046.7	6,046.7	18.8	120.9	106.61	0.0	-100.3	612.2	472.5	139.76	4.381		
6,200.0	6,145.7	6,146.7	6,146.7	19.0	122.9	106.61	0.0	-100.3	612.2	470.3	141.92	4.314		
6,284.6	6,230.3	6,231.3	6,231.3	19.1	124.6	106.61	0.0	-100.3	612.2	468.5	143.74	4.259		
6,300.0	6,245.7	6,246.7	6,246.7	19.2	124.9	16.44	0.0	-100.3	612.1	472.8	139.29	4.394		
6,350.0	6,295.6	6,296.6	6,296.6	19.2	125.9	16.57	0.0	-100.3	609.6	469.7	139.84	4.359		
6,400.0	6,345.3	6,346.3	6,346.3	19.2	126.9	16.85	0.0	-100.3	603.9	464.1	139.84	4.319		
6,450.0	6,394.4	6,395.4	6,395.4	19.2	127.9	17.30	0.0	-100.3	595.2	455.9	139.28	4.273		
6,500.0	6,442.9	6,443.9	6,443.9	19.2	128.9	17.94	0.0	-100.3	583.4	445.2	138.19	4.222		
6,550.0	6,490.4	6,491.4	6,491.4	19.1	129.8	18.79	0.0	-100.3	568.6	432.0	136.59	4.163		
6,600.0	6,536.8	6,537.8	6,537.8	19.0	130.8	19.88	0.0	-100.3	551.0	416.4	134.55	4.095		
6,650.0	6,582.0	6,583.0	6,583.0	18.9	131.7	21.26	0.0	-100.3	530.6	398.4	132.14	4.015		
6,700.0	6,625.6	6,626.6	6,626.6	18.9	132.5	23.00	0.0	-100.3	507.5	378.0	129.52	3.919		
6,750.0	6,667.5	6,668.5	6,668.5	18.8	133.4	25.16	0.0	-100.3	482.0	355.1	126.89	3.799		
6,800.0	6,707.5	6,708.5	6,708.5	18.7	134.2	27.85	0.0	-100.3	454.2	329.6	124.56	3.646		
6,850.0	6,745.5	6,746.5	6,746.5	18.7	134.9	31.20	0.0	-100.3	424.3	301.4	122.98	3.451		
6,900.0	6,781.3	6,782.3	6,782.3	18.6	135.6	35.36	0.0	-100.3	392.7	270.0	122.72	3.200		
6,950.0	6,814.7	6,815.7	6,815.7	18.7	136.3	40.47	0.0	-100.3	359.8	235.4	124.41	2.892		
7,000.0	6,845.7	6,846.7	6,846.7	18.7	136.9	46.64	0.0	-100.3	325.9	197.4	128.50	2.536		
7,050.0	6,873.9	6,874.9	6,874.9	18.9	137.5	53.87	0.0	-100.3	291.8	156.9	134.86	2.164		
7,100.0	6,899.5	6,900.5	6,900.5	19.1	138.0	61.89	0.0	-100.3	258.5	116.0	142.51	1.814		
7,150.0	6,922.2	6,923.2	6,923.2	19.3	138.5	70.17	0.0	-100.3	227.4	77.6	149.82	1.518		
7,200.0	6,941.9	6,942.9	6,942.9	19.7	138.9	77.98	0.0	-100.3	200.7	45.4	155.33	1.292 Level 3		
7,250.0	6,958.5	6,959.5	6,959.5	20.1	139.2	84.60	0.0	-100.3	181.5	23.0	158.57	1.145 Level 2		
7,300.0	6,972.1	6,973.1	6,973.1	20.6	139.5	89.52	0.0	-100.3	173.4	13.3	160.08	1.083 Level 2		
7,306.3	6,973.6	6,974.6	6,974.6	20.7	139.5	90.00	0.0	-100.3	173.2	13.1	160.19	1.081 Level 2		
7,350.0	6,982.4	6,983.4	6,983.4	21.2	139.7	92.48	0.0	-100.3	178.5	17.7	160.79	1.110 Level 2		
7,404.6	6,990.1	6,991.1	6,991.1	22.0	139.8	93.34	0.0	-100.3	198.5	36.9	161.56	1.229 Level 2		
7,478.4	6,997.8	6,998.8	6,998.8	23.1	140.0	95.87	0.0	-100.3	242.9	80.6	162.29	1.497 Level 3		
7,500.0	6,999.9	7,000.9	7,000.9	23.4	140.0	95.42	0.0	-100.3	258.4	95.6	162.79	1.588		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference														
Offset														
Semi Major Axis														
Distance														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,609.8	7,004.0	7,005.0	7,005.0	25.3	140.1	89.01	0.0	-100.3	347.7	182.3	165.39	2.102		
7,700.0	7,003.1	7,004.1	7,004.1	27.0	140.1	88.71	0.0	-100.3	428.2	261.2	167.06	2.563		
7,800.0	7,002.1	7,003.1	7,003.1	29.1	140.1	88.38	0.0	-100.3	521.3	352.2	169.05	3.083		
7,900.0	7,001.1	7,002.1	7,002.1	31.2	140.0	88.05	0.0	-100.3	616.5	445.3	171.15	3.602		
8,000.0	7,000.1	7,001.1	7,001.1	33.5	140.0	87.72	0.0	-100.3	713.0	539.6	173.35	4.113		
8,100.0	6,999.1	7,000.1	7,000.1	35.8	140.0	87.40	0.0	-100.3	810.4	634.7	175.61	4.614		
8,200.0	6,998.1	6,999.1	6,999.1	38.2	140.0	87.07	0.0	-100.3	908.3	730.4	177.93	5.105		
8,300.0	6,997.2	6,998.2	6,998.2	40.7	140.0	86.74	0.0	-100.3	1,006.6	826.3	180.30	5.583		
8,400.0	6,996.2	6,997.2	6,997.2	43.2	139.9	86.41	0.0	-100.3	1,105.3	922.6	182.71	6.049		
8,500.0	6,995.2	6,996.2	6,996.2	45.7	139.9	86.08	0.0	-100.3	1,204.1	1,019.0	185.14	6.504		
8,600.0	6,994.2	6,995.2	6,995.2	48.3	139.9	85.76	0.0	-100.3	1,303.2	1,115.6	187.60	6.947		
8,700.0	6,993.2	6,994.2	6,994.2	50.8	139.9	85.43	0.0	-100.3	1,402.3	1,212.3	190.07	7.378		
8,800.0	6,992.2	6,993.2	6,993.2	53.4	139.9	85.10	0.0	-100.3	1,501.6	1,309.0	192.56	7.798		
8,900.0	6,991.2	6,992.2	6,992.2	56.1	139.8	84.77	0.0	-100.3	1,601.0	1,405.9	195.06	8.207		
9,000.0	6,990.2	6,991.2	6,991.2	58.7	139.8	84.45	0.0	-100.3	1,700.4	1,502.9	197.57	8.607		
9,100.0	6,989.2	6,990.2	6,990.2	61.4	139.8	84.12	0.0	-100.3	1,799.9	1,599.8	200.09	8.996		
9,200.0	6,988.2	6,989.2	6,989.2	64.1	139.8	83.80	0.0	-100.3	1,899.5	1,696.9	202.60	9.375		
9,300.0	6,987.2	6,988.2	6,988.2	66.7	139.8	83.47	0.0	-100.3	1,999.1	1,794.0	205.12	9.746		
9,400.0	6,986.2	6,987.2	6,987.2	69.4	139.7	83.15	0.0	-100.3	2,098.7	1,891.1	207.64	10.107		
9,500.0	6,985.2	6,986.2	6,986.2	72.1	139.7	82.82	0.0	-100.3	2,198.4	1,988.2	210.16	10.461		
9,600.0	6,984.2	6,985.2	6,985.2	74.8	139.7	82.50	0.0	-100.3	2,298.1	2,085.4	212.68	10.806		
9,700.0	6,983.2	6,984.2	6,984.2	77.6	139.7	82.18	0.0	-100.3	2,397.8	2,182.6	215.19	11.143		
9,800.0	6,982.2	6,983.2	6,983.2	80.3	139.7	81.85	0.0	-100.3	2,497.6	2,279.9	217.70	11.473		
9,900.0	6,981.2	6,982.2	6,982.2	83.0	139.6	81.53	0.0	-100.3	2,597.3	2,377.1	220.20	11.795		
10,000.0	6,980.2	6,981.2	6,981.2	85.7	139.6	81.21	0.0	-100.3	2,697.1	2,474.4	222.70	12.111		
10,100.0	6,979.2	6,980.2	6,980.2	88.5	139.6	80.89	0.0	-100.3	2,796.9	2,571.7	225.19	12.420		
10,200.0	6,978.2	6,979.2	6,979.2	91.2	139.6	80.57	0.0	-100.3	2,896.7	2,669.0	227.68	12.723		
10,300.0	6,977.2	6,978.2	6,978.2	94.0	139.6	80.25	0.0	-100.3	2,996.5	2,766.4	230.16	13.019		
10,400.0	6,976.2	6,977.2	6,977.2	96.7	139.5	79.93	0.0	-100.3	3,096.4	2,863.7	232.63	13.310		
10,500.0	6,975.2	6,976.2	6,976.2	99.5	139.5	79.61	0.0	-100.3	3,196.2	2,961.1	235.09	13.596		
10,600.0	6,974.3	6,975.3	6,975.3	102.2	139.5	79.29	0.0	-100.3	3,296.1	3,058.5	237.54	13.876		
10,700.0	6,973.3	6,974.3	6,974.3	105.0	139.5	78.97	0.0	-100.3	3,395.9	3,155.9	239.99	14.150		
10,800.0	6,972.3	6,973.3	6,973.3	107.8	139.5	78.66	0.0	-100.3	3,495.8	3,253.4	242.42	14.420		
10,900.0	6,971.3	6,972.3	6,972.3	110.5	139.4	78.34	0.0	-100.3	3,595.7	3,350.8	244.85	14.685		
11,000.0	6,970.3	6,971.3	6,971.3	113.3	139.4	78.02	0.0	-100.3	3,695.5	3,448.3	247.26	14.946		
11,100.0	6,969.3	6,970.3	6,970.3	116.1	139.4	77.71	0.0	-100.3	3,795.4	3,545.8	249.67	15.202		
11,200.0	6,968.3	6,969.3	6,969.3	118.8	139.4	77.40	0.0	-100.3	3,895.3	3,643.3	252.06	15.454		
11,300.0	6,967.3	6,968.3	6,968.3	121.6	139.4	77.08	0.0	-100.3	3,995.2	3,740.8	254.44	15.702		
11,400.0	6,966.3	6,967.3	6,967.3	124.4	139.3	76.77	0.0	-100.3	4,095.1	3,838.3	256.81	15.946		
11,500.0	6,965.3	6,966.3	6,966.3	127.1	139.3	76.46	0.0	-100.3	4,195.0	3,935.9	259.17	16.186		
11,600.0	6,964.3	6,965.3	6,965.3	129.9	139.3	76.15	0.0	-100.3	4,294.9	4,033.4	261.52	16.423		
11,700.0	6,963.3	6,964.3	6,964.3	132.7	139.3	75.84	0.0	-100.3	4,394.9	4,131.0	263.86	16.656		
11,800.0	6,962.3	6,963.3	6,963.3	135.5	139.3	75.53	0.0	-100.3	4,494.8	4,228.6	266.18	16.886		
11,900.0	6,961.3	6,962.3	6,962.3	138.3	139.2	75.22	0.0	-100.3	4,594.7	4,326.2	268.49	17.113		
12,000.0	6,960.3	6,961.3	6,961.3	141.0	139.2	74.91	0.0	-100.3	4,694.6	4,423.8	270.79	17.337		
12,100.0	6,959.3	6,960.3	6,960.3	143.8	139.2	74.61	0.0	-100.3	4,794.6	4,521.5	273.08	17.557		
12,200.0	6,958.3	6,959.3	6,959.3	146.6	139.2	74.30	0.0	-100.3	4,894.5	4,619.1	275.36	17.775		
12,300.0	6,957.3	6,958.3	6,958.3	149.4	139.2	74.00	0.0	-100.3	4,994.4	4,716.8	277.62	17.990		
12,400.0	6,956.3	6,957.3	6,957.3	152.2	139.1	73.69	0.0	-100.3	5,094.4	4,814.5	279.87	18.203		
12,500.0	6,955.3	6,956.3	6,956.3	155.0	139.1	73.39	0.0	-100.3	5,194.3	4,912.2	282.10	18.413		
12,600.0	6,954.3	6,955.3	6,955.3	157.7	139.1	73.09	0.0	-100.3	5,294.2	5,009.9	284.32	18.620		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	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: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
12,700.0	6,953.3	6,954.3	6,954.3	160.5	139.1	72.79	0.0	-100.3	5,394.2	5,107.6	286.53	18.826		
12,735.0	6,953.0	6,954.0	6,954.0	161.5	139.1	72.68	0.0	-100.3	5,429.2	5,141.9	287.30	18.897		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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)					
0.0	0.0	0.0	0.0	0.0	0.0	94.03	-192.9	2,738.6	2,745.4				
100.0	100.0	98.0	98.0	0.1	2.0	94.03	-192.9	2,738.6	2,745.4	2,743.3	2.07	1,324.606	
200.0	200.0	198.0	198.0	0.3	4.0	94.03	-192.9	2,738.6	2,745.4	2,741.1	4.30	638.849	
300.0	300.0	298.0	298.0	0.6	6.0	94.03	-192.9	2,738.6	2,745.4	2,738.8	6.52	420.930	
400.0	400.0	398.0	398.0	0.8	8.0	94.03	-192.9	2,738.6	2,745.4	2,736.6	8.75	313.867	
500.0	500.0	498.0	498.0	1.0	10.0	94.03	-192.9	2,738.6	2,745.4	2,734.4	10.97	250.223	
600.0	600.0	598.0	598.0	1.2	12.0	94.03	-192.9	2,738.6	2,745.4	2,732.2	13.20	208.038	
700.0	700.0	698.0	698.0	1.5	14.0	94.03	-192.9	2,738.6	2,745.4	2,729.9	15.42	178.025	
800.0	800.0	798.0	798.0	1.7	16.0	94.03	-192.9	2,738.6	2,745.4	2,727.7	17.65	155.580	
900.0	900.0	898.0	898.0	1.9	18.0	94.03	-192.9	2,738.6	2,745.4	2,725.5	19.87	138.161	
1,000.0	1,000.0	998.0	998.0	2.1	20.0	94.03	-192.9	2,738.6	2,745.4	2,723.3	22.10	124.250	
1,100.0	1,100.0	1,098.0	1,098.0	2.4	22.0	169.74	-192.9	2,738.6	2,747.1	2,722.8	24.30	113.069	
1,200.0	1,199.8	1,197.8	1,197.8	2.6	24.0	169.74	-192.9	2,738.6	2,752.2	2,725.8	26.45	104.043	
1,300.0	1,299.5	1,297.5	1,297.5	2.8	25.9	169.74	-192.9	2,738.6	2,760.8	2,732.2	28.57	96.639	
1,400.0	1,398.7	1,396.7	1,396.7	3.0	27.9	169.74	-192.9	2,738.6	2,772.8	2,742.2	30.63	90.516	
1,453.0	1,451.1	1,449.1	1,449.1	3.2	29.0	169.74	-192.9	2,738.6	2,780.5	2,748.8	31.70	87.702	
1,500.0	1,497.5	1,495.5	1,495.5	3.3	29.9	169.77	-192.9	2,738.6	2,787.8	2,755.1	32.73	85.188	
1,600.0	1,596.3	1,594.3	1,594.3	3.6	31.9	169.83	-192.9	2,738.6	2,803.3	2,768.4	34.90	80.321	
1,700.0	1,695.0	1,693.0	1,693.0	3.9	33.9	169.89	-192.9	2,738.6	2,818.8	2,781.7	37.08	76.018	
1,800.0	1,793.8	1,791.8	1,791.8	4.2	35.8	169.94	-192.9	2,738.6	2,834.3	2,795.1	39.26	72.187	
1,900.0	1,892.5	1,890.5	1,890.5	4.6	37.8	170.00	-192.9	2,738.6	2,849.8	2,808.4	41.45	68.755	
2,000.0	1,991.3	1,989.3	1,989.3	4.9	39.8	170.05	-192.9	2,738.6	2,865.4	2,821.7	43.64	65.664	
2,100.0	2,090.0	2,088.0	2,088.0	5.2	41.8	170.11	-192.9	2,738.6	2,880.9	2,835.0	45.83	62.866	
2,200.0	2,188.8	2,186.8	2,186.8	5.6	43.7	170.16	-192.9	2,738.6	2,896.4	2,848.4	48.02	60.321	
2,300.0	2,287.5	2,285.5	2,285.5	5.9	45.7	170.21	-192.9	2,738.6	2,911.9	2,861.7	50.21	57.996	
2,400.0	2,386.3	2,384.3	2,384.3	6.3	47.7	170.26	-192.9	2,738.6	2,927.4	2,875.0	52.40	55.865	
2,500.0	2,485.1	2,483.1	2,483.1	6.6	49.7	170.32	-192.9	2,738.6	2,943.0	2,888.4	54.60	53.904	
2,600.0	2,583.8	2,581.8	2,581.8	7.0	51.6	170.37	-192.9	2,738.6	2,958.5	2,901.7	56.79	52.094	
2,700.0	2,682.6	2,680.6	2,680.6	7.3	53.6	170.42	-192.9	2,738.6	2,974.0	2,915.0	58.99	50.418	
2,800.0	2,781.3	2,779.3	2,779.3	7.7	55.6	170.47	-192.9	2,738.6	2,989.6	2,928.4	61.18	48.862	
2,900.0	2,880.1	2,878.1	2,878.1	8.1	57.6	170.52	-192.9	2,738.6	3,005.1	2,941.7	63.38	47.414	
3,000.0	2,978.8	2,976.8	2,976.8	8.4	59.5	170.57	-192.9	2,738.6	3,020.6	2,955.1	65.58	46.062	
3,100.0	3,077.6	3,075.6	3,075.6	8.8	61.5	170.62	-192.9	2,738.6	3,036.2	2,968.4	67.78	44.798	
3,200.0	3,176.3	3,174.3	3,174.3	9.2	63.5	170.66	-192.9	2,738.6	3,051.7	2,981.7	69.97	43.613	
3,300.0	3,275.1	3,273.1	3,273.1	9.5	65.5	170.71	-192.9	2,738.6	3,067.3	2,995.1	72.17	42.499	
3,400.0	3,373.8	3,371.8	3,371.8	9.9	67.4	170.76	-192.9	2,738.6	3,082.8	3,008.4	74.37	41.452	
3,500.0	3,472.6	3,470.6	3,470.6	10.3	69.4	170.81	-192.9	2,738.6	3,098.4	3,021.8	76.57	40.465	
3,600.0	3,571.3	3,569.3	3,569.3	10.6	71.4	170.85	-192.9	2,738.6	3,113.9	3,035.1	78.77	39.532	
3,700.0	3,670.1	3,668.1	3,668.1	11.0	73.4	170.90	-192.9	2,738.6	3,129.5	3,048.5	80.97	38.650	
3,800.0	3,768.8	3,766.8	3,766.8	11.4	75.3	170.94	-192.9	2,738.6	3,145.0	3,061.8	83.17	37.815	
3,900.0	3,867.6	3,865.6	3,865.6	11.7	77.3	170.99	-192.9	2,738.6	3,160.6	3,075.2	85.37	37.023	
4,000.0	3,966.3	3,964.3	3,964.3	12.1	79.3	171.03	-192.9	2,738.6	3,176.1	3,088.6	87.57	36.271	
4,100.0	4,065.1	4,063.1	4,063.1	12.5	81.3	171.08	-192.9	2,738.6	3,191.7	3,101.9	89.77	35.555	
4,200.0	4,163.8	4,161.8	4,161.8	12.8	83.2	171.12	-192.9	2,738.6	3,207.2	3,115.3	91.97	34.873	
4,300.0	4,262.6	4,260.6	4,260.6	13.2	85.2	171.16	-192.9	2,738.6	3,222.8	3,128.6	94.17	34.224	
4,400.0	4,361.4	4,359.4	4,359.4	13.6	87.2	171.21	-192.9	2,738.6	3,238.4	3,142.0	96.37	33.604	
4,500.0	4,460.1	4,458.1	4,458.1	14.0	89.2	171.25	-192.9	2,738.6	3,253.9	3,155.4	98.57	33.012	
4,600.0	4,558.9	4,556.9	4,556.9	14.3	91.1	171.29	-192.9	2,738.6	3,269.5	3,168.7	100.77	32.445	
4,700.0	4,657.6	4,655.6	4,655.6	14.7	93.1	171.33	-192.9	2,738.6	3,285.1	3,182.1	102.97	31.903	
4,800.0	4,756.4	4,754.4	4,754.4	15.1	95.1	171.37	-192.9	2,738.6	3,300.6	3,195.5	105.17	31.384	
4,900.0	4,855.1	4,853.1	4,853.1	15.4	97.1	171.41	-192.9	2,738.6	3,316.2	3,208.8	107.37	30.885	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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	4,953.9	4,951.9	4,951.9	15.8	99.0	171.45	-192.9	2,738.6	3,331.8	3,222.2	109.57	30.407		
5,100.0	5,052.6	5,050.6	5,050.6	16.2	101.0	171.49	-192.9	2,738.6	3,347.4	3,235.6	111.77	29.948		
5,200.0	5,151.4	5,149.4	5,149.4	16.6	103.0	171.53	-192.9	2,738.6	3,362.9	3,249.0	113.97	29.506		
5,300.0	5,250.1	5,248.1	5,248.1	16.9	105.0	171.57	-192.9	2,738.6	3,378.5	3,262.4	116.18	29.081		
5,400.0	5,348.9	5,346.9	5,346.9	17.3	106.9	171.61	-192.9	2,738.6	3,394.1	3,275.7	118.38	28.672		
5,501.3	5,448.9	5,446.9	5,446.9	17.7	108.9	171.65	-192.9	2,738.6	3,409.9	3,289.3	120.61	28.273		
5,600.0	5,546.6	5,544.6	5,544.6	18.0	110.9	171.73	-192.9	2,738.6	3,423.6	3,300.3	123.29	27.770		
5,700.0	5,646.1	5,644.1	5,644.1	18.2	112.9	171.78	-192.9	2,738.6	3,434.1	3,308.3	125.85	27.287		
5,800.0	5,745.8	5,743.8	5,743.8	18.4	114.9	171.82	-192.9	2,738.6	3,441.2	3,312.9	128.28	26.825		
5,900.0	5,845.7	5,843.7	5,843.7	18.6	116.9	171.84	-192.9	2,738.6	3,444.8	3,314.2	130.56	26.384		
5,954.3	5,900.0	5,898.0	5,898.0	18.6	118.0	96.13	-192.9	2,738.6	3,445.3	3,308.7	136.54	25.233		
6,000.0	5,945.7	5,943.7	5,943.7	18.7	118.9	96.13	-192.9	2,738.6	3,445.3	3,307.8	137.52	25.054		
6,100.0	6,045.7	6,043.7	6,043.7	18.8	120.9	96.13	-192.9	2,738.6	3,445.3	3,305.6	139.67	24.668		
6,200.0	6,145.7	6,143.7	6,143.7	19.0	122.9	96.13	-192.9	2,738.6	3,445.3	3,303.4	141.82	24.293		
6,284.6	6,230.3	6,228.3	6,228.3	19.1	124.6	96.13	-192.9	2,738.6	3,445.3	3,301.6	143.64	23.985		
6,300.0	6,245.7	6,243.7	6,243.7	19.2	124.9	5.96	-192.9	2,738.6	3,445.1	3,305.8	139.27	24.738		
6,350.0	6,295.6	6,293.6	6,293.6	19.2	125.9	5.99	-192.9	2,738.6	3,442.5	3,302.7	139.78	24.628		
6,400.0	6,345.3	6,343.3	6,343.3	19.2	126.9	6.04	-192.9	2,738.6	3,436.6	3,296.9	139.69	24.602		
6,450.0	6,394.4	6,392.4	6,392.4	19.2	127.8	6.13	-192.9	2,738.6	3,427.5	3,288.5	138.98	24.661		
6,500.0	6,442.9	6,440.9	6,440.9	19.2	128.8	6.26	-192.9	2,738.6	3,415.3	3,277.6	137.66	24.810		
6,550.0	6,490.4	6,488.4	6,488.4	19.1	129.8	6.42	-192.9	2,738.6	3,399.9	3,264.2	135.71	25.053		
6,600.0	6,536.8	6,534.8	6,534.8	19.0	130.7	6.63	-192.9	2,738.6	3,381.4	3,248.3	133.14	25.397		
6,650.0	6,582.0	6,580.0	6,580.0	18.9	131.6	6.88	-192.9	2,738.6	3,360.0	3,230.0	129.97	25.853		
6,700.0	6,625.6	6,623.6	6,623.6	18.9	132.5	7.18	-192.9	2,738.6	3,335.7	3,209.5	126.20	26.432		
6,750.0	6,667.5	6,665.5	6,665.5	18.8	133.3	7.55	-192.9	2,738.6	3,308.6	3,186.7	121.87	27.149		
6,800.0	6,707.5	6,705.5	6,705.5	18.7	134.1	8.00	-192.9	2,738.6	3,278.9	3,161.8	117.01	28.023		
6,850.0	6,745.5	6,743.5	6,743.5	18.7	134.9	8.54	-192.9	2,738.6	3,246.6	3,134.9	111.67	29.073		
6,900.0	6,781.3	6,779.3	6,779.3	18.6	135.6	9.19	-192.9	2,738.6	3,211.9	3,106.0	105.92	30.323		
6,950.0	6,814.7	6,812.7	6,812.7	18.7	136.3	9.99	-192.9	2,738.6	3,174.9	3,075.1	99.87	31.790		
7,000.0	6,845.7	6,843.7	6,843.7	18.7	136.9	10.97	-192.9	2,738.6	3,135.9	3,042.3	93.67	33.479		
7,050.0	6,873.9	6,871.9	6,871.9	18.9	137.4	12.19	-192.9	2,738.6	3,095.0	3,007.4	87.54	35.355		
7,100.0	6,899.5	6,897.5	6,897.5	19.1	137.9	13.75	-192.9	2,738.6	3,052.3	2,970.4	81.86	37.289		
7,150.0	6,922.2	6,920.2	6,920.2	19.3	138.4	15.77	-192.9	2,738.6	3,008.1	2,930.8	77.22	38.953		
7,200.0	6,941.9	6,939.9	6,939.9	19.7	138.8	18.48	-192.9	2,738.6	2,962.4	2,887.8	74.65	39.684		
7,250.0	6,958.5	6,956.5	6,956.5	20.1	139.1	22.24	-192.9	2,738.6	2,915.7	2,839.9	75.74	38.497		
7,300.0	6,972.1	6,970.1	6,970.1	20.6	139.4	27.72	-192.9	2,738.6	2,867.9	2,785.2	82.74	34.663		
7,350.0	6,982.4	6,980.4	6,980.4	21.2	139.6	36.12	-192.9	2,738.6	2,819.4	2,721.1	98.31	28.677		
7,404.6	6,990.1	6,988.1	6,988.1	22.0	139.8	51.29	-192.9	2,738.6	2,765.8	2,638.8	126.98	21.781		
7,478.4	6,997.8	6,995.8	6,995.8	23.1	139.9	52.05	-192.9	2,738.6	2,693.0	2,563.8	129.27	20.832		
7,500.0	6,999.9	6,997.9	6,997.9	23.4	140.0	57.60	-192.9	2,738.6	2,671.7	2,533.4	138.33	19.314		
7,609.8	7,004.0	7,002.0	7,002.0	25.3	140.0	94.04	-192.9	2,738.6	2,563.1	2,398.1	165.01	15.533		
7,700.0	7,003.1	7,001.1	7,001.1	27.0	140.0	93.90	-192.9	2,738.6	2,473.8	2,307.1	166.72	14.838		
7,800.0	7,002.1	7,000.1	7,000.1	29.1	140.0	93.74	-192.9	2,738.6	2,374.9	2,206.1	168.77	14.072		
7,900.0	7,001.1	6,999.1	6,999.1	31.2	140.0	93.58	-192.9	2,738.6	2,276.1	2,105.2	170.93	13.316		
8,000.0	7,000.1	6,998.1	6,998.1	33.5	140.0	93.42	-192.9	2,738.6	2,177.4	2,004.2	173.18	12.573		
8,100.0	6,999.1	6,997.1	6,997.1	35.8	139.9	93.26	-192.9	2,738.6	2,078.8	1,903.3	175.52	11.844		
8,200.0	6,998.1	6,996.1	6,996.1	38.2	139.9	93.10	-192.9	2,738.6	1,980.4	1,802.5	177.91	11.131		
8,300.0	6,997.2	6,995.2	6,995.2	40.7	139.9	92.94	-192.9	2,738.6	1,882.1	1,701.8	180.36	10.435		
8,400.0	6,996.2	6,994.2	6,994.2	43.2	139.9	92.78	-192.9	2,738.6	1,784.1	1,601.2	182.86	9.757		
8,500.0	6,995.2	6,993.2	6,993.2	45.7	139.9	92.62	-192.9	2,738.6	1,686.2	1,500.8	185.39	9.096		
8,600.0	6,994.2	6,992.2	6,992.2	48.3	139.8	92.47	-192.9	2,738.6	1,588.6	1,400.7	187.94	8.453		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
8,700.0	6,993.2	6,991.2	6,991.2	50.8	139.8	92.31	-192.9	2,738.6	1,491.4	1,300.9	190.53	7.828		
8,800.0	6,992.2	6,990.2	6,990.2	53.4	139.8	92.15	-192.9	2,738.6	1,394.5	1,201.4	193.13	7.220		
8,900.0	6,991.2	6,989.2	6,989.2	56.1	139.8	91.99	-192.9	2,738.6	1,298.1	1,102.4	195.76	6.631		
9,000.0	6,990.2	6,988.2	6,988.2	58.7	139.8	91.83	-192.9	2,738.6	1,202.3	1,003.9	198.40	6.060		
9,100.0	6,989.2	6,987.2	6,987.2	61.4	139.7	91.67	-192.9	2,738.6	1,107.2	906.2	201.05	5.507		
9,200.0	6,988.2	6,986.2	6,986.2	64.1	139.7	91.51	-192.9	2,738.6	1,013.1	809.4	203.72	4.973		
9,300.0	6,987.2	6,985.2	6,985.2	66.7	139.7	91.35	-192.9	2,738.6	920.3	713.9	206.39	4.459		
9,400.0	6,986.2	6,984.2	6,984.2	69.4	139.7	91.19	-192.9	2,738.6	829.0	620.0	209.07	3.965		
9,500.0	6,985.2	6,983.2	6,983.2	72.1	139.7	91.03	-192.9	2,738.6	740.1	528.3	211.77	3.495		
9,600.0	6,984.2	6,982.2	6,982.2	74.8	139.6	90.87	-192.9	2,738.6	654.4	439.9	214.46	3.051		
9,700.0	6,983.2	6,981.2	6,981.2	77.6	139.6	90.71	-192.9	2,738.6	573.2	356.1	217.17	2.640		
9,800.0	6,982.2	6,980.2	6,980.2	80.3	139.6	90.55	-192.9	2,738.6	499.0	279.2	219.87	2.270		
9,900.0	6,981.2	6,979.2	6,979.2	83.0	139.6	90.40	-192.9	2,738.6	435.3	212.7	222.59	1.956		
10,000.0	6,980.2	6,978.2	6,978.2	85.7	139.6	90.24	-192.9	2,738.6	387.2	161.9	225.30	1.718		
10,100.0	6,979.2	6,977.2	6,977.2	88.5	139.5	90.08	-192.9	2,738.6	361.0	133.0	228.02	1.583		
10,147.9	6,978.8	6,976.8	6,976.8	89.8	139.5	90.00	-192.9	2,738.6	357.8	128.5	229.32	1.560 CC, ES, SF		
10,200.0	6,978.2	6,976.2	6,976.2	91.2	139.5	89.92	-192.9	2,738.6	361.6	130.8	230.74	1.567		
10,300.0	6,977.2	6,975.2	6,975.2	94.0	139.5	89.76	-192.9	2,738.6	388.8	155.3	233.46	1.665		
10,400.0	6,976.2	6,974.2	6,974.2	96.7	139.5	89.60	-192.9	2,738.6	437.7	201.5	236.19	1.853		
10,500.0	6,975.2	6,973.2	6,973.2	99.5	139.5	89.44	-192.9	2,738.6	502.0	263.1	238.92	2.101		
10,600.0	6,974.3	6,972.3	6,972.3	102.2	139.4	89.28	-192.9	2,738.6	576.5	334.9	241.64	2.386		
10,700.0	6,973.3	6,971.3	6,971.3	105.0	139.4	89.12	-192.9	2,738.6	657.9	413.5	244.37	2.692		
10,800.0	6,972.3	6,970.3	6,970.3	107.8	139.4	88.96	-192.9	2,738.6	743.8	496.7	247.10	3.010		
10,900.0	6,971.3	6,969.3	6,969.3	110.5	139.4	88.80	-192.9	2,738.6	832.8	583.0	249.83	3.334		
11,000.0	6,970.3	6,968.3	6,968.3	113.3	139.4	88.64	-192.9	2,738.6	924.1	671.6	252.56	3.659		
11,100.0	6,969.3	6,967.3	6,967.3	116.1	139.3	88.48	-192.9	2,738.6	1,017.1	761.8	255.29	3.984		
11,200.0	6,968.3	6,966.3	6,966.3	118.8	139.3	88.32	-192.9	2,738.6	1,111.2	853.2	258.01	4.307		
11,300.0	6,967.3	6,965.3	6,965.3	121.6	139.3	88.16	-192.9	2,738.6	1,206.3	945.6	260.74	4.627		
11,400.0	6,966.3	6,964.3	6,964.3	124.4	139.3	88.00	-192.9	2,738.6	1,302.2	1,038.7	263.47	4.942		
11,500.0	6,965.3	6,963.3	6,963.3	127.1	139.3	87.85	-192.9	2,738.6	1,398.6	1,132.4	266.20	5.254		
11,600.0	6,964.3	6,962.3	6,962.3	129.9	139.2	87.69	-192.9	2,738.6	1,495.5	1,226.5	268.92	5.561		
11,700.0	6,963.3	6,961.3	6,961.3	132.7	139.2	87.53	-192.9	2,738.6	1,592.7	1,321.1	271.64	5.863		
11,800.0	6,962.3	6,960.3	6,960.3	135.5	139.2	87.37	-192.9	2,738.6	1,690.3	1,416.0	274.37	6.161		
11,900.0	6,961.3	6,959.3	6,959.3	138.3	139.2	87.21	-192.9	2,738.6	1,788.2	1,511.1	277.09	6.454		
12,000.0	6,960.3	6,958.3	6,958.3	141.0	139.2	87.05	-192.9	2,738.6	1,886.3	1,606.5	279.80	6.741		
12,100.0	6,959.3	6,957.3	6,957.3	143.8	139.1	86.89	-192.9	2,738.6	1,984.5	1,702.0	282.52	7.024		
12,200.0	6,958.3	6,956.3	6,956.3	146.6	139.1	86.73	-192.9	2,738.6	2,083.0	1,797.7	285.24	7.303		
12,300.0	6,957.3	6,955.3	6,955.3	149.4	139.1	86.57	-192.9	2,738.6	2,181.5	1,893.6	287.95	7.576		
12,400.0	6,956.3	6,954.3	6,954.3	152.2	139.1	86.41	-192.9	2,738.6	2,280.2	1,989.6	290.66	7.845		
12,500.0	6,955.3	6,953.3	6,953.3	155.0	139.1	86.26	-192.9	2,738.6	2,379.0	2,085.7	293.37	8.109		
12,600.0	6,954.3	6,952.3	6,952.3	157.7	139.0	86.10	-192.9	2,738.6	2,478.0	2,181.9	296.08	8.369		
12,700.0	6,953.3	6,951.3	6,951.3	160.5	139.0	85.94	-192.9	2,738.6	2,576.9	2,278.2	298.78	8.625		
12,735.0	6,953.0	6,951.0	6,951.0	161.5	139.0	85.88	-192.9	2,738.6	2,611.6	2,311.9	299.73	8.713		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference														
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	94.21	94.21	-91.0	1,236.9	1,240.3				
100.0	100.0	98.0	98.0	0.1	2.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,238.2	2.07	598.429	
200.0	200.0	198.0	198.0	0.3	4.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,236.0	4.30	288.618	
300.0	300.0	298.0	298.0	0.6	6.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,233.8	6.52	190.167	
400.0	400.0	398.0	398.0	0.8	8.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,231.5	8.75	141.798	
500.0	500.0	498.0	498.0	1.0	10.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,229.3	10.97	113.045	
600.0	600.0	598.0	598.0	1.2	12.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,227.1	13.20	93.987	
700.0	700.0	698.0	698.0	1.5	14.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,224.9	15.42	80.428	
800.0	800.0	798.0	798.0	1.7	16.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,222.6	17.65	70.288	
900.0	900.0	898.0	898.0	1.9	18.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,220.4	19.87	62.418	
1,000.0	1,000.0	998.0	998.0	2.1	20.0	94.21	94.21	-91.0	1,236.9	1,240.3	1,218.2	22.10	56.133	
1,100.0	1,100.0	1,098.0	1,098.0	2.4	22.0	169.93	169.93	-91.0	1,236.9	1,242.0	1,217.7	24.30	51.121	
1,200.0	1,199.8	1,197.8	1,197.8	2.6	24.0	169.95	169.95	-91.0	1,236.9	1,247.2	1,220.7	26.45	47.147	
1,300.0	1,299.5	1,297.5	1,297.5	2.8	25.9	169.99	169.99	-91.0	1,236.9	1,255.7	1,227.2	28.57	43.957	
1,400.0	1,398.7	1,396.7	1,396.7	3.0	27.9	170.04	170.04	-91.0	1,236.9	1,267.8	1,237.1	30.63	41.385	
1,453.0	1,451.1	1,449.1	1,449.1	3.2	29.0	170.08	170.08	-91.0	1,236.9	1,275.5	1,243.8	31.70	40.232	
1,500.0	1,497.5	1,495.5	1,495.5	3.3	29.9	170.13	170.13	-91.0	1,236.9	1,282.8	1,250.1	32.72	39.200	
1,600.0	1,596.3	1,594.3	1,594.3	3.6	31.9	170.25	170.25	-91.0	1,236.9	1,298.3	1,263.4	34.90	37.201	
1,700.0	1,695.0	1,693.0	1,693.0	3.9	33.9	170.37	170.37	-91.0	1,236.9	1,313.8	1,276.8	37.08	35.433	
1,800.0	1,793.8	1,791.8	1,791.8	4.2	35.8	170.48	170.48	-91.0	1,236.9	1,329.4	1,290.1	39.26	33.859	
1,900.0	1,892.5	1,890.5	1,890.5	4.6	37.8	170.59	170.59	-91.0	1,236.9	1,344.9	1,303.5	41.45	32.449	
2,000.0	1,991.3	1,989.3	1,989.3	4.9	39.8	170.70	170.70	-91.0	1,236.9	1,360.5	1,316.8	43.63	31.179	
2,100.0	2,090.0	2,088.0	2,088.0	5.2	41.8	170.81	170.81	-91.0	1,236.9	1,376.0	1,330.2	45.82	30.029	
2,200.0	2,188.8	2,186.8	2,186.8	5.6	43.7	170.91	170.91	-91.0	1,236.9	1,391.5	1,343.5	48.01	28.984	
2,300.0	2,287.5	2,285.5	2,285.5	5.9	45.7	171.01	171.01	-91.0	1,236.9	1,407.1	1,356.9	50.20	28.028	
2,400.0	2,386.3	2,384.3	2,384.3	6.3	47.7	171.11	171.11	-91.0	1,236.9	1,422.7	1,370.3	52.40	27.152	
2,500.0	2,485.1	2,483.1	2,483.1	6.6	49.7	171.21	171.21	-91.0	1,236.9	1,438.2	1,383.6	54.59	26.347	
2,600.0	2,583.8	2,581.8	2,581.8	7.0	51.6	171.30	171.30	-91.0	1,236.9	1,453.8	1,397.0	56.78	25.603	
2,700.0	2,682.6	2,680.6	2,680.6	7.3	53.6	171.40	171.40	-91.0	1,236.9	1,469.4	1,410.4	58.98	24.914	
2,800.0	2,781.3	2,779.3	2,779.3	7.7	55.6	171.49	171.49	-91.0	1,236.9	1,484.9	1,423.8	61.17	24.275	
2,900.0	2,880.1	2,878.1	2,878.1	8.1	57.6	171.58	171.58	-91.0	1,236.9	1,500.5	1,437.2	63.37	23.679	
3,000.0	2,978.8	2,976.8	2,976.8	8.4	59.5	171.66	171.66	-91.0	1,236.9	1,516.1	1,450.5	65.56	23.124	
3,100.0	3,077.6	3,075.6	3,075.6	8.8	61.5	171.75	171.75	-91.0	1,236.9	1,531.7	1,463.9	67.76	22.604	
3,200.0	3,176.3	3,174.3	3,174.3	9.2	63.5	171.83	171.83	-91.0	1,236.9	1,547.3	1,477.3	69.96	22.117	
3,300.0	3,275.1	3,273.1	3,273.1	9.5	65.5	171.92	171.92	-91.0	1,236.9	1,562.9	1,490.7	72.16	21.660	
3,400.0	3,373.8	3,371.8	3,371.8	9.9	67.4	172.00	172.00	-91.0	1,236.9	1,578.5	1,504.1	74.35	21.229	
3,500.0	3,472.6	3,470.6	3,470.6	10.3	69.4	172.07	172.07	-91.0	1,236.9	1,594.1	1,517.5	76.55	20.824	
3,600.0	3,571.3	3,569.3	3,569.3	10.6	71.4	172.15	172.15	-91.0	1,236.9	1,609.7	1,530.9	78.75	20.440	
3,700.0	3,670.1	3,668.1	3,668.1	11.0	73.4	172.23	172.23	-91.0	1,236.9	1,625.3	1,544.3	80.95	20.078	
3,800.0	3,768.8	3,766.8	3,766.8	11.4	75.3	172.30	172.30	-91.0	1,236.9	1,640.9	1,557.7	83.15	19.735	
3,900.0	3,867.6	3,865.6	3,865.6	11.7	77.3	172.37	172.37	-91.0	1,236.9	1,656.5	1,571.1	85.34	19.409	
4,000.0	3,966.3	3,964.3	3,964.3	12.1	79.3	172.45	172.45	-91.0	1,236.9	1,672.1	1,584.6	87.54	19.100	
4,100.0	4,065.1	4,063.1	4,063.1	12.5	81.3	172.52	172.52	-91.0	1,236.9	1,687.7	1,598.0	89.74	18.806	
4,200.0	4,163.8	4,161.8	4,161.8	12.8	83.2	172.59	172.59	-91.0	1,236.9	1,703.3	1,611.4	91.94	18.526	
4,300.0	4,262.6	4,260.6	4,260.6	13.2	85.2	172.65	172.65	-91.0	1,236.9	1,718.9	1,624.8	94.14	18.259	
4,400.0	4,361.4	4,359.4	4,359.4	13.6	87.2	172.72	172.72	-91.0	1,236.9	1,734.6	1,638.2	96.34	18.005	
4,500.0	4,460.1	4,458.1	4,458.1	14.0	89.2	172.78	172.78	-91.0	1,236.9	1,750.2	1,651.7	98.54	17.761	
4,600.0	4,558.9	4,556.9	4,556.9	14.3	91.1	172.85	172.85	-91.0	1,236.9	1,765.8	1,665.1	100.74	17.529	
4,700.0	4,657.6	4,655.6	4,655.6	14.7	93.1	172.91	172.91	-91.0	1,236.9	1,781.4	1,678.5	102.94	17.306	
4,800.0	4,756.4	4,754.4	4,754.4	15.1	95.1	172.97	172.97	-91.0	1,236.9	1,797.1	1,691.9	105.14	17.093	
4,900.0	4,855.1	4,853.1	4,853.1	15.4	97.1	173.03	173.03	-91.0	1,236.9	1,812.7	1,705.4	107.34	16.888	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design											Lofland 22T & Alles 22S-HZ Existing Wells - Buderus 12-23 (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		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)						
5,000.0	4,953.9	4,951.9	4,951.9	15.8	99.0	173.09	-91.0	1,236.9	1,828.3	1,718.8	109.54	16.692				
5,100.0	5,052.6	5,050.6	5,050.6	16.2	101.0	173.15	-91.0	1,236.9	1,844.0	1,732.2	111.74	16.503				
5,200.0	5,151.4	5,149.4	5,149.4	16.6	103.0	173.21	-91.0	1,236.9	1,859.6	1,745.7	113.94	16.322				
5,300.0	5,250.1	5,248.1	5,248.1	16.9	105.0	173.27	-91.0	1,236.9	1,875.3	1,759.1	116.14	16.147				
5,400.0	5,348.9	5,346.9	5,346.9	17.3	106.9	173.32	-91.0	1,236.9	1,890.9	1,772.6	118.34	15.979				
5,501.3	5,448.9	5,446.9	5,446.9	17.7	108.9	173.38	-91.0	1,236.9	1,906.7	1,786.2	120.56	15.815				
5,600.0	5,546.6	5,544.6	5,544.6	18.0	110.9	173.46	-91.0	1,236.9	1,920.5	1,797.3	123.25	15.583				
5,700.0	5,646.1	5,644.1	5,644.1	18.2	112.9	173.52	-91.0	1,236.9	1,931.0	1,805.2	125.82	15.348				
5,800.0	5,745.8	5,743.8	5,743.8	18.4	114.9	173.56	-91.0	1,236.9	1,938.1	1,809.9	128.25	15.112				
5,900.0	5,845.7	5,843.7	5,843.7	18.6	116.9	173.58	-91.0	1,236.9	1,941.7	1,811.2	130.53	14.876				
5,954.3	5,900.0	5,898.0	5,898.0	18.6	118.0	97.87	-91.0	1,236.9	1,942.3	1,805.7	136.56	14.222				
6,000.0	5,945.7	5,943.7	5,943.7	18.7	118.9	97.87	-91.0	1,236.9	1,942.3	1,804.7	137.54	14.121				
6,100.0	6,045.7	6,043.7	6,043.7	18.8	120.9	97.87	-91.0	1,236.9	1,942.3	1,802.6	139.69	13.904				
6,200.0	6,145.7	6,143.7	6,143.7	19.0	122.9	97.87	-91.0	1,236.9	1,942.3	1,800.4	141.85	13.693				
6,284.6	6,230.3	6,228.3	6,228.3	19.1	124.6	97.87	-91.0	1,236.9	1,942.3	1,798.6	143.67	13.519				
6,300.0	6,245.7	6,243.7	6,243.7	19.2	124.9	7.70	-91.0	1,236.9	1,942.1	1,802.9	139.23	13.948				
6,350.0	6,295.6	6,293.6	6,293.6	19.2	125.9	7.74	-91.0	1,236.9	1,939.5	1,799.7	139.75	13.878				
6,400.0	6,345.3	6,343.3	6,343.3	19.2	126.9	7.83	-91.0	1,236.9	1,933.6	1,794.0	139.67	13.844				
6,450.0	6,394.4	6,392.4	6,392.4	19.2	127.8	7.96	-91.0	1,236.9	1,924.6	1,785.6	138.98	13.848				
6,500.0	6,442.9	6,440.9	6,440.9	19.2	128.8	8.14	-91.0	1,236.9	1,912.4	1,774.7	137.67	13.891				
6,550.0	6,490.4	6,488.4	6,488.4	19.1	129.8	8.38	-91.0	1,236.9	1,897.0	1,761.3	135.75	13.974				
6,600.0	6,536.8	6,534.8	6,534.8	19.0	130.7	8.69	-91.0	1,236.9	1,878.7	1,745.4	133.23	14.101				
6,650.0	6,582.0	6,580.0	6,580.0	18.9	131.6	9.06	-91.0	1,236.9	1,857.3	1,727.2	130.12	14.274				
6,700.0	6,625.6	6,623.6	6,623.6	18.9	132.5	9.52	-91.0	1,236.9	1,833.1	1,706.7	126.44	14.498				
6,750.0	6,667.5	6,665.5	6,665.5	18.8	133.3	10.07	-91.0	1,236.9	1,806.2	1,683.9	122.23	14.777				
6,800.0	6,707.5	6,705.5	6,705.5	18.7	134.1	10.74	-91.0	1,236.9	1,776.5	1,659.0	117.55	15.113				
6,850.0	6,745.5	6,743.5	6,743.5	18.7	134.9	11.55	-91.0	1,236.9	1,744.4	1,631.9	112.47	15.510				
6,900.0	6,781.3	6,779.3	6,779.3	18.6	135.6	12.54	-91.0	1,236.9	1,709.9	1,602.8	107.11	15.964				
6,950.0	6,814.7	6,812.7	6,812.7	18.7	136.3	13.74	-91.0	1,236.9	1,673.2	1,571.6	101.63	16.464				
7,000.0	6,845.7	6,843.7	6,843.7	18.7	136.9	15.23	-91.0	1,236.9	1,634.4	1,538.1	96.28	16.975				
7,050.0	6,873.9	6,871.9	6,871.9	18.9	137.4	17.08	-91.0	1,236.9	1,593.7	1,502.3	91.46	17.425				
7,100.0	6,899.5	6,897.5	6,897.5	19.1	137.9	19.43	-91.0	1,236.9	1,551.3	1,463.6	87.75	17.679				
7,150.0	6,922.2	6,920.2	6,920.2	19.3	138.4	22.46	-91.0	1,236.9	1,507.4	1,421.4	86.03	17.522				
7,200.0	6,941.9	6,939.9	6,939.9	19.7	138.8	26.43	-91.0	1,236.9	1,462.2	1,374.7	87.51	16.709				
7,250.0	6,958.5	6,956.5	6,956.5	20.1	139.1	31.75	-91.0	1,236.9	1,415.9	1,322.3	93.59	15.129				
7,300.0	6,972.1	6,970.1	6,970.1	20.6	139.4	39.00	-91.0	1,236.9	1,368.6	1,263.2	105.40	12.985				
7,350.0	6,982.4	6,980.4	6,980.4	21.2	139.6	48.92	-91.0	1,236.9	1,320.6	1,197.7	122.91	10.745				
7,404.6	6,990.1	6,988.1	6,988.1	22.0	139.8	63.52	-91.0	1,236.9	1,267.7	1,122.7	144.99	8.743				
7,478.4	6,997.8	6,995.8	6,995.8	23.1	139.9	64.89	-91.0	1,236.9	1,195.9	1,048.1	147.78	8.092				
7,500.0	6,999.9	6,997.9	6,997.9	23.4	140.0	69.32	-91.0	1,236.9	1,174.9	1,022.0	152.91	7.684				
7,609.8	7,004.0	7,002.0	7,002.0	25.3	140.0	92.27	-91.0	1,236.9	1,068.3	903.0	165.26	6.464				
7,700.0	7,003.1	7,001.1	7,001.1	27.0	140.0	92.07	-91.0	1,236.9	981.0	814.1	166.97	5.875				
7,800.0	7,002.1	7,000.1	7,000.1	29.1	140.0	91.85	-91.0	1,236.9	885.0	716.0	169.01	5.237				
7,900.0	7,001.1	6,999.1	6,999.1	31.2	140.0	91.63	-91.0	1,236.9	790.0	618.8	171.16	4.616				
8,000.0	7,000.1	6,998.1	6,998.1	33.5	140.0	91.41	-91.0	1,236.9	696.4	523.0	173.41	4.016				
8,100.0	6,999.1	6,997.1	6,997.1	35.8	139.9	91.20	-91.0	1,236.9	604.8	429.1	175.73	3.441				
8,200.0	6,998.1	6,996.1	6,996.1	38.2	139.9	90.98	-91.0	1,236.9	516.3	338.2	178.12	2.899				
8,300.0	6,997.2	6,995.2	6,995.2	40.7	139.9	90.76	-91.0	1,236.9	432.9	252.4	180.56	2.398				
8,400.0	6,996.2	6,994.2	6,994.2	43.2	139.9	90.54	-91.0	1,236.9	358.1	175.1	183.04	1.957				
8,500.0	6,995.2	6,993.2	6,993.2	45.7	139.9	90.32	-91.0	1,236.9	298.4	112.9	185.55	1.608				
8,600.0	6,994.2	6,992.2	6,992.2	48.3	139.8	90.10	-91.0	1,236.9	264.4	76.3	188.09	1.406 Level 3				

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
8,645.9	6,993.7	6,991.7	6,991.7	49.4	139.8	90.00	-91.0	1,236.9	260.3	71.1	189.27	1.376	Level 3, CC, ES, SF	
8,700.0	6,993.2	6,991.2	6,991.2	50.8	139.8	89.88	-91.0	1,236.9	265.9	75.3	190.65	1.395	Level 3	
8,800.0	6,992.2	6,990.2	6,990.2	53.4	139.8	89.66	-91.0	1,236.9	302.5	109.3	193.24	1.566		
8,900.0	6,991.2	6,989.2	6,989.2	56.1	139.8	89.44	-91.0	1,236.9	363.8	167.9	195.84	1.858		
9,000.0	6,990.2	6,988.2	6,988.2	58.7	139.8	89.22	-91.0	1,236.9	439.5	241.0	198.45	2.215		
9,100.0	6,989.2	6,987.2	6,987.2	61.4	139.7	89.01	-91.0	1,236.9	523.4	322.3	201.08	2.603		
9,200.0	6,988.2	6,986.2	6,986.2	64.1	139.7	88.79	-91.0	1,236.9	612.2	408.5	203.71	3.005		
9,300.0	6,987.2	6,985.2	6,985.2	66.7	139.7	88.57	-91.0	1,236.9	704.0	497.6	206.35	3.411		
9,400.0	6,986.2	6,984.2	6,984.2	69.4	139.7	88.35	-91.0	1,236.9	797.7	588.7	209.00	3.817		
9,500.0	6,985.2	6,983.2	6,983.2	72.1	139.7	88.13	-91.0	1,236.9	892.9	681.2	211.66	4.218		
9,600.0	6,984.2	6,982.2	6,982.2	74.8	139.6	87.91	-91.0	1,236.9	988.9	774.6	214.32	4.614		
9,700.0	6,983.2	6,981.2	6,981.2	77.6	139.6	87.69	-91.0	1,236.9	1,085.7	868.7	216.98	5.004		
9,800.0	6,982.2	6,980.2	6,980.2	80.3	139.6	87.47	-91.0	1,236.9	1,183.0	963.4	219.64	5.386		
9,900.0	6,981.2	6,979.2	6,979.2	83.0	139.6	87.25	-91.0	1,236.9	1,280.8	1,058.5	222.31	5.761		
10,000.0	6,980.2	6,978.2	6,978.2	85.7	139.6	87.04	-91.0	1,236.9	1,378.8	1,153.9	224.98	6.129		
10,100.0	6,979.2	6,977.2	6,977.2	88.5	139.5	86.82	-91.0	1,236.9	1,477.1	1,249.5	227.64	6.489		
10,200.0	6,978.2	6,976.2	6,976.2	91.2	139.5	86.60	-91.0	1,236.9	1,575.7	1,345.4	230.31	6.841		
10,300.0	6,977.2	6,975.2	6,975.2	94.0	139.5	86.38	-91.0	1,236.9	1,674.4	1,441.4	232.98	7.187		
10,400.0	6,976.2	6,974.2	6,974.2	96.7	139.5	86.16	-91.0	1,236.9	1,773.2	1,537.6	235.65	7.525		
10,500.0	6,975.2	6,973.2	6,973.2	99.5	139.5	85.95	-91.0	1,236.9	1,872.2	1,633.9	238.31	7.856		
10,600.0	6,974.3	6,972.3	6,972.3	102.2	139.4	85.73	-91.0	1,236.9	1,971.3	1,730.3	240.97	8.180		
10,700.0	6,973.3	6,971.3	6,971.3	105.0	139.4	85.51	-91.0	1,236.9	2,070.4	1,826.8	243.63	8.498		
10,800.0	6,972.3	6,970.3	6,970.3	107.8	139.4	85.29	-91.0	1,236.9	2,169.7	1,923.4	246.29	8.809		
10,900.0	6,971.3	6,969.3	6,969.3	110.5	139.4	85.07	-91.0	1,236.9	2,269.0	2,020.0	248.95	9.114		
11,000.0	6,970.3	6,968.3	6,968.3	113.3	139.4	84.86	-91.0	1,236.9	2,368.3	2,116.7	251.60	9.413		
11,100.0	6,969.3	6,967.3	6,967.3	116.1	139.3	84.64	-91.0	1,236.9	2,467.7	2,213.5	254.25	9.706		
11,200.0	6,968.3	6,966.3	6,966.3	118.8	139.3	84.42	-91.0	1,236.9	2,567.2	2,310.3	256.90	9.993		
11,300.0	6,967.3	6,965.3	6,965.3	121.6	139.3	84.21	-91.0	1,236.9	2,666.7	2,407.2	259.54	10.275		
11,400.0	6,966.3	6,964.3	6,964.3	124.4	139.3	83.99	-91.0	1,236.9	2,766.2	2,504.1	262.18	10.551		
11,500.0	6,965.3	6,963.3	6,963.3	127.1	139.3	83.77	-91.0	1,236.9	2,865.8	2,601.0	264.81	10.822		
11,600.0	6,964.3	6,962.3	6,962.3	129.9	139.2	83.56	-91.0	1,236.9	2,965.4	2,698.0	267.44	11.088		
11,700.0	6,963.3	6,961.3	6,961.3	132.7	139.2	83.34	-91.0	1,236.9	3,065.0	2,794.9	270.07	11.349		
11,800.0	6,962.3	6,960.3	6,960.3	135.5	139.2	83.12	-91.0	1,236.9	3,164.7	2,892.0	272.69	11.605		
11,900.0	6,961.3	6,959.3	6,959.3	138.3	139.2	82.91	-91.0	1,236.9	3,264.3	2,989.0	275.31	11.857		
12,000.0	6,960.3	6,958.3	6,958.3	141.0	139.2	82.69	-91.0	1,236.9	3,364.0	3,086.1	277.92	12.104		
12,100.0	6,959.3	6,957.3	6,957.3	143.8	139.1	82.48	-91.0	1,236.9	3,463.7	3,183.2	280.53	12.347		
12,200.0	6,958.3	6,956.3	6,956.3	146.6	139.1	82.26	-91.0	1,236.9	3,563.4	3,280.3	283.13	12.586		
12,300.0	6,957.3	6,955.3	6,955.3	149.4	139.1	82.05	-91.0	1,236.9	3,663.2	3,377.4	285.72	12.821		
12,400.0	6,956.3	6,954.3	6,954.3	152.2	139.1	81.83	-91.0	1,236.9	3,762.9	3,474.6	288.31	13.051		
12,500.0	6,955.3	6,953.3	6,953.3	155.0	139.1	81.62	-91.0	1,236.9	3,862.7	3,571.8	290.90	13.278		
12,600.0	6,954.3	6,952.3	6,952.3	157.7	139.0	81.40	-91.0	1,236.9	3,962.5	3,669.0	293.48	13.502		
12,700.0	6,953.3	6,951.3	6,951.3	160.5	139.0	81.19	-91.0	1,236.9	4,062.2	3,766.2	296.05	13.721		
12,735.0	6,953.0	6,951.0	6,951.0	161.5	139.0	81.11	-91.0	1,236.9	4,097.2	3,800.2	296.95	13.798		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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	92.56	-229.0	5,123.3	5,128.4					
100.0	100.0	96.0	96.0	0.1	1.9	92.56	-229.0	5,123.3	5,128.4	5,126.4	2.03	2,523.117		
200.0	200.0	196.0	196.0	0.3	3.9	92.56	-229.0	5,123.3	5,128.4	5,124.2	4.26	1,204.610		
300.0	300.0	296.0	296.0	0.6	5.9	92.56	-229.0	5,123.3	5,128.4	5,122.0	6.48	791.168		
400.0	400.0	396.0	396.0	0.8	7.9	92.56	-229.0	5,123.3	5,128.4	5,119.7	8.71	589.011		
500.0	500.0	496.0	496.0	1.0	9.9	92.56	-229.0	5,123.3	5,128.4	5,117.5	10.93	469.137		
600.0	600.0	596.0	596.0	1.2	11.9	92.56	-229.0	5,123.3	5,128.4	5,115.3	13.16	389.806		
700.0	700.0	696.0	696.0	1.5	13.9	92.56	-229.0	5,123.3	5,128.4	5,113.1	15.38	333.423		
800.0	800.0	796.0	796.0	1.7	15.9	92.56	-229.0	5,123.3	5,128.4	5,110.8	17.61	291.291		
900.0	900.0	896.0	896.0	1.9	17.9	92.56	-229.0	5,123.3	5,128.4	5,108.6	19.83	258.611		
1,000.0	1,000.0	996.0	996.0	2.1	19.9	92.56	-229.0	5,123.3	5,128.4	5,106.4	22.06	232.525		
1,100.0	1,100.0	1,096.0	1,096.0	2.4	21.9	168.26	-229.0	5,123.3	5,130.1	5,105.9	24.26	211.503		
1,200.0	1,199.8	1,195.8	1,195.8	2.6	23.9	168.26	-229.0	5,123.3	5,135.3	5,108.9	26.41	194.419		
1,300.0	1,299.5	1,295.5	1,295.5	2.8	25.9	168.24	-229.0	5,123.3	5,143.8	5,115.3	28.53	180.295		
1,400.0	1,398.7	1,394.7	1,394.7	3.0	27.9	168.22	-229.0	5,123.3	5,155.7	5,125.1	30.60	168.506		
1,453.0	1,451.1	1,447.1	1,447.1	3.2	28.9	168.21	-229.0	5,123.3	5,163.4	5,131.8	31.67	163.043		
1,500.0	1,497.5	1,493.5	1,493.5	3.3	29.9	168.22	-229.0	5,123.3	5,170.7	5,138.0	32.69	158.170		
1,600.0	1,596.3	1,592.3	1,592.3	3.6	31.8	168.26	-229.0	5,123.3	5,186.1	5,151.2	34.87	148.738		
1,700.0	1,695.0	1,691.0	1,691.0	3.9	33.8	168.29	-229.0	5,123.3	5,201.5	5,164.5	37.05	140.400		
1,800.0	1,793.8	1,789.8	1,789.8	4.2	35.8	168.33	-229.0	5,123.3	5,217.0	5,177.7	39.23	132.978		
1,900.0	1,892.5	1,888.5	1,888.5	4.6	37.8	168.36	-229.0	5,123.3	5,232.4	5,191.0	41.42	126.330		
2,000.0	1,991.3	1,987.3	1,987.3	4.9	39.7	168.40	-229.0	5,123.3	5,247.8	5,204.2	43.61	120.343		
2,100.0	2,090.0	2,086.0	2,086.0	5.2	41.7	168.43	-229.0	5,123.3	5,263.3	5,217.5	45.80	114.924		
2,200.0	2,188.8	2,184.8	2,184.8	5.6	43.7	168.47	-229.0	5,123.3	5,278.7	5,230.7	47.99	109.996		
2,300.0	2,287.5	2,283.5	2,283.5	5.9	45.7	168.50	-229.0	5,123.3	5,294.1	5,243.9	50.18	105.496		
2,400.0	2,386.3	2,382.3	2,382.3	6.3	47.6	168.53	-229.0	5,123.3	5,309.6	5,257.2	52.38	101.370		
2,500.0	2,485.1	2,481.1	2,481.1	6.6	49.6	168.57	-229.0	5,123.3	5,325.0	5,270.4	54.57	97.575		
2,600.0	2,583.8	2,579.8	2,579.8	7.0	51.6	168.60	-229.0	5,123.3	5,340.5	5,283.7	56.77	94.071		
2,700.0	2,682.6	2,678.6	2,678.6	7.3	53.6	168.63	-229.0	5,123.3	5,355.9	5,296.9	58.97	90.828		
2,800.0	2,781.3	2,777.3	2,777.3	7.7	55.5	168.67	-229.0	5,123.3	5,371.3	5,310.2	61.17	87.817		
2,900.0	2,880.1	2,876.1	2,876.1	8.1	57.5	168.70	-229.0	5,123.3	5,386.8	5,323.4	63.36	85.013		
3,000.0	2,978.8	2,974.8	2,974.8	8.4	59.5	168.73	-229.0	5,123.3	5,402.2	5,336.7	65.56	82.398		
3,100.0	3,077.6	3,073.6	3,073.6	8.8	61.5	168.77	-229.0	5,123.3	5,417.7	5,349.9	67.76	79.951		
3,200.0	3,176.3	3,172.3	3,172.3	9.2	63.4	168.80	-229.0	5,123.3	5,433.1	5,363.2	69.96	77.658		
3,300.0	3,275.1	3,271.1	3,271.1	9.5	65.4	168.83	-229.0	5,123.3	5,448.6	5,376.4	72.16	75.505		
3,400.0	3,373.8	3,369.8	3,369.8	9.9	67.4	168.86	-229.0	5,123.3	5,464.1	5,389.7	74.36	73.478		
3,500.0	3,472.6	3,468.6	3,468.6	10.3	69.4	168.89	-229.0	5,123.3	5,479.5	5,402.9	76.56	71.568		
3,600.0	3,571.3	3,567.3	3,567.3	10.6	71.3	168.93	-229.0	5,123.3	5,495.0	5,416.2	78.76	69.764		
3,700.0	3,670.1	3,666.1	3,666.1	11.0	73.3	168.96	-229.0	5,123.3	5,510.4	5,429.5	80.97	68.059		
3,800.0	3,768.8	3,764.8	3,764.8	11.4	75.3	168.99	-229.0	5,123.3	5,525.9	5,442.7	83.17	66.443		
3,900.0	3,867.6	3,863.6	3,863.6	11.7	77.3	169.02	-229.0	5,123.3	5,541.4	5,456.0	85.37	64.911		
4,000.0	3,966.3	3,962.3	3,962.3	12.1	79.2	169.05	-229.0	5,123.3	5,556.8	5,469.3	87.57	63.455		
4,100.0	4,065.1	4,061.1	4,061.1	12.5	81.2	169.08	-229.0	5,123.3	5,572.3	5,482.5	89.77	62.071		
4,200.0	4,163.8	4,159.8	4,159.8	12.8	83.2	169.11	-229.0	5,123.3	5,587.8	5,495.8	91.97	60.753		
4,300.0	4,262.6	4,258.6	4,258.6	13.2	85.2	169.14	-229.0	5,123.3	5,603.2	5,509.1	94.18	59.497		
4,400.0	4,361.4	4,357.4	4,357.4	13.6	87.1	169.17	-229.0	5,123.3	5,618.7	5,522.3	96.38	58.298		
4,500.0	4,460.1	4,456.1	4,456.1	14.0	89.1	169.20	-229.0	5,123.3	5,634.2	5,535.6	98.58	57.153		
4,600.0	4,558.9	4,554.9	4,554.9	14.3	91.1	169.23	-229.0	5,123.3	5,649.7	5,548.9	100.78	56.057		
4,700.0	4,657.6	4,653.6	4,653.6	14.7	93.1	169.26	-229.0	5,123.3	5,665.1	5,562.1	102.99	55.009		
4,800.0	4,756.4	4,752.4	4,752.4	15.1	95.0	169.29	-229.0	5,123.3	5,680.6	5,575.4	105.19	54.004		
4,900.0	4,855.1	4,851.1	4,851.1	15.4	97.0	169.32	-229.0	5,123.3	5,696.1	5,588.7	107.39	53.041		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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	4,953.9	4,949.9	4,949.9	15.8	99.0	169.35	-229.0	5,123.3	5,711.6	5,602.0	109.59	52.116		
5,100.0	5,052.6	5,048.6	5,048.6	16.2	101.0	169.38	-229.0	5,123.3	5,727.0	5,615.3	111.80	51.227		
5,200.0	5,151.4	5,147.4	5,147.4	16.6	102.9	169.41	-229.0	5,123.3	5,742.5	5,628.5	114.00	50.373		
5,300.0	5,250.1	5,246.1	5,246.1	16.9	104.9	169.44	-229.0	5,123.3	5,758.0	5,641.8	116.20	49.552		
5,400.0	5,348.9	5,344.9	5,344.9	17.3	106.9	169.47	-229.0	5,123.3	5,773.5	5,655.1	118.40	48.761		
5,501.3	5,448.9	5,444.9	5,444.9	17.7	108.9	169.49	-229.0	5,123.3	5,789.2	5,668.6	120.64	47.989		
5,600.0	5,546.6	5,542.6	5,542.6	18.0	110.9	169.57	-229.0	5,123.3	5,802.8	5,679.5	123.31	47.059		
5,700.0	5,646.1	5,642.1	5,642.1	18.2	112.8	169.63	-229.0	5,123.3	5,813.3	5,687.4	125.87	46.183		
5,800.0	5,745.8	5,741.8	5,741.8	18.4	114.8	169.66	-229.0	5,123.3	5,820.3	5,692.0	128.30	45.365		
5,900.0	5,845.7	5,841.7	5,841.7	18.6	116.8	169.68	-229.0	5,123.3	5,823.8	5,693.3	130.58	44.600		
5,954.3	5,900.0	5,896.0	5,896.0	18.6	117.9	93.98	-229.0	5,123.3	5,824.4	5,687.9	136.45	42.683		
6,000.0	5,945.7	5,941.7	5,941.7	18.7	118.8	93.98	-229.0	5,123.3	5,824.4	5,686.9	137.43	42.380		
6,100.0	6,045.7	6,041.7	6,041.7	18.8	120.8	93.98	-229.0	5,123.3	5,824.4	5,684.8	139.58	41.726		
6,200.0	6,145.7	6,141.7	6,141.7	19.0	122.8	93.98	-229.0	5,123.3	5,824.4	5,682.6	141.74	41.092		
6,284.6	6,230.3	6,226.3	6,226.3	19.1	124.5	93.98	-229.0	5,123.3	5,824.4	5,680.8	143.56	40.571		
6,300.0	6,245.7	6,241.7	6,241.7	19.2	124.8	3.81	-229.0	5,123.3	5,824.2	5,684.9	139.28	41.817		
6,350.0	6,295.6	6,291.6	6,291.6	19.2	125.8	3.82	-229.0	5,123.3	5,821.6	5,681.8	139.79	41.644		
6,400.0	6,345.3	6,341.3	6,341.3	19.2	126.8	3.86	-229.0	5,123.3	5,815.7	5,676.0	139.70	41.631		
6,450.0	6,394.4	6,390.4	6,390.4	19.2	127.8	3.91	-229.0	5,123.3	5,806.6	5,667.6	138.98	41.780		
6,500.0	6,442.9	6,438.9	6,438.9	19.2	128.8	3.98	-229.0	5,123.3	5,794.3	5,656.6	137.63	42.099		
6,550.0	6,490.4	6,486.4	6,486.4	19.1	129.7	4.08	-229.0	5,123.3	5,778.8	5,643.2	135.66	42.597		
6,600.0	6,536.8	6,532.8	6,532.8	19.0	130.7	4.20	-229.0	5,123.3	5,760.3	5,627.2	133.06	43.291		
6,650.0	6,582.0	6,578.0	6,578.0	18.9	131.6	4.35	-229.0	5,123.3	5,738.8	5,609.0	129.84	44.200		
6,700.0	6,625.6	6,621.6	6,621.6	18.9	132.4	4.53	-229.0	5,123.3	5,714.4	5,588.4	126.01	45.351		
6,750.0	6,667.5	6,663.5	6,663.5	18.8	133.3	4.75	-229.0	5,123.3	5,687.2	5,565.6	121.58	46.776		
6,800.0	6,707.5	6,703.5	6,703.5	18.7	134.1	5.01	-229.0	5,123.3	5,657.4	5,540.8	116.60	48.521		
6,850.0	6,745.5	6,741.5	6,741.5	18.7	134.8	5.33	-229.0	5,123.3	5,625.0	5,513.9	111.08	50.640		
6,900.0	6,781.3	6,777.3	6,777.3	18.6	135.5	5.72	-229.0	5,123.3	5,590.1	5,485.1	105.07	53.202		
6,950.0	6,814.7	6,810.7	6,810.7	18.7	136.2	6.19	-229.0	5,123.3	5,553.1	5,454.4	98.65	56.293		
7,000.0	6,845.7	6,841.7	6,841.7	18.7	136.8	6.77	-229.0	5,123.3	5,513.9	5,422.0	91.88	60.014		
7,050.0	6,873.9	6,869.9	6,869.9	18.9	137.4	7.49	-229.0	5,123.3	5,472.8	5,387.9	84.89	64.472		
7,100.0	6,899.5	6,895.5	6,895.5	19.1	137.9	8.42	-229.0	5,123.3	5,429.9	5,352.0	77.86	69.740		
7,150.0	6,922.2	6,918.2	6,918.2	19.3	138.4	9.63	-229.0	5,123.3	5,385.5	5,314.4	71.11	75.733		
7,200.0	6,941.9	6,937.9	6,937.9	19.7	138.8	11.28	-229.0	5,123.3	5,339.6	5,274.4	65.21	81.881		
7,250.0	6,958.5	6,954.5	6,954.5	20.1	139.1	13.62	-229.0	5,123.3	5,292.6	5,231.3	61.28	86.364		
7,300.0	6,972.1	6,968.1	6,968.1	20.6	139.4	17.17	-229.0	5,123.3	5,244.6	5,183.1	61.51	85.258		
7,350.0	6,982.4	6,978.4	6,978.4	21.2	139.6	23.07	-229.0	5,123.3	5,195.9	5,126.0	69.91	74.317		
7,404.6	6,990.1	6,986.1	6,986.1	22.0	139.7	35.81	-229.0	5,123.3	5,142.0	5,045.3	96.69	53.178		
7,478.4	6,997.8	6,993.8	6,993.8	23.1	139.9	36.21	-229.0	5,123.3	5,068.8	4,970.5	98.33	51.548		
7,500.0	6,999.9	6,995.9	6,995.9	23.4	139.9	41.86	-229.0	5,123.3	5,047.3	4,937.0	110.31	45.756		
7,609.8	7,004.0	7,000.0	7,000.0	25.3	140.0	97.22	-229.0	5,123.3	4,938.0	4,773.9	164.12	30.087		
7,700.0	7,003.1	6,999.1	6,999.1	27.0	140.0	97.09	-229.0	5,123.3	4,848.1	4,682.2	165.85	29.232		
7,800.0	7,002.1	6,998.1	6,998.1	29.1	140.0	96.94	-229.0	5,123.3	4,748.4	4,580.5	167.90	28.281		
7,900.0	7,001.1	6,997.1	6,997.1	31.2	139.9	96.80	-229.0	5,123.3	4,648.8	4,478.7	170.07	27.334		
8,000.0	7,000.1	6,996.1	6,996.1	33.5	139.9	96.65	-229.0	5,123.3	4,549.1	4,376.8	172.34	26.396		
8,100.0	6,999.1	6,995.1	6,995.1	35.8	139.9	96.51	-229.0	5,123.3	4,449.5	4,274.8	174.69	25.471		
8,200.0	6,998.1	6,994.1	6,994.1	38.2	139.9	96.36	-229.0	5,123.3	4,349.9	4,172.8	177.09	24.562		
8,300.0	6,997.2	6,993.2	6,993.2	40.7	139.9	96.22	-229.0	5,123.3	4,250.3	4,070.7	179.56	23.671		
8,400.0	6,996.2	6,992.2	6,992.2	43.2	139.8	96.07	-229.0	5,123.3	4,150.7	3,968.7	182.06	22.798		
8,500.0	6,995.2	6,991.2	6,991.2	45.7	139.8	95.93	-229.0	5,123.3	4,051.2	3,866.6	184.61	21.945		
8,600.0	6,994.2	6,990.2	6,990.2	48.3	139.8	95.78	-229.0	5,123.3	3,951.7	3,764.5	187.18	21.112		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
8,700.0	6,993.2	6,989.2	6,989.2	50.8	139.8	95.63	-229.0	5,123.3	3,852.1	3,662.4	189.78	20.298		
8,800.0	6,992.2	6,988.2	6,988.2	53.4	139.8	95.49	-229.0	5,123.3	3,752.7	3,560.3	192.40	19.504		
8,900.0	6,991.2	6,987.2	6,987.2	56.1	139.7	95.34	-229.0	5,123.3	3,653.2	3,458.2	195.04	18.730		
9,000.0	6,990.2	6,986.2	6,986.2	58.7	139.7	95.19	-229.0	5,123.3	3,553.8	3,356.1	197.70	17.976		
9,100.0	6,989.2	6,985.2	6,985.2	61.4	139.7	95.05	-229.0	5,123.3	3,454.4	3,254.1	200.37	17.240		
9,200.0	6,988.2	6,984.2	6,984.2	64.1	139.7	94.90	-229.0	5,123.3	3,355.1	3,152.0	203.06	16.523		
9,300.0	6,987.2	6,983.2	6,983.2	66.7	139.7	94.76	-229.0	5,123.3	3,255.8	3,050.0	205.75	15.824		
9,400.0	6,986.2	6,982.2	6,982.2	69.4	139.6	94.61	-229.0	5,123.3	3,156.5	2,948.0	208.46	15.142		
9,500.0	6,985.2	6,981.2	6,981.2	72.1	139.6	94.46	-229.0	5,123.3	3,057.3	2,846.1	211.17	14.478		
9,600.0	6,984.2	6,980.2	6,980.2	74.8	139.6	94.32	-229.0	5,123.3	2,958.1	2,744.2	213.90	13.830		
9,700.0	6,983.2	6,979.2	6,979.2	77.6	139.6	94.17	-229.0	5,123.3	2,859.0	2,642.4	216.62	13.198		
9,800.0	6,982.2	6,978.2	6,978.2	80.3	139.6	94.02	-229.0	5,123.3	2,760.0	2,540.6	219.36	12.582		
9,900.0	6,981.2	6,977.2	6,977.2	83.0	139.5	93.88	-229.0	5,123.3	2,661.0	2,438.9	222.10	11.981		
10,000.0	6,980.2	6,976.2	6,976.2	85.7	139.5	93.73	-229.0	5,123.3	2,562.1	2,337.3	224.84	11.395		
10,100.0	6,979.2	6,975.2	6,975.2	88.5	139.5	93.58	-229.0	5,123.3	2,463.3	2,235.7	227.59	10.824		
10,200.0	6,978.2	6,974.2	6,974.2	91.2	139.5	93.44	-229.0	5,123.3	2,364.6	2,134.3	230.34	10.266		
10,300.0	6,977.2	6,973.2	6,973.2	94.0	139.5	93.29	-229.0	5,123.3	2,266.0	2,032.9	233.09	9.721		
10,400.0	6,976.2	6,972.2	6,972.2	96.7	139.4	93.14	-229.0	5,123.3	2,167.6	1,931.7	235.85	9.190		
10,500.0	6,975.2	6,971.2	6,971.2	99.5	139.4	92.99	-229.0	5,123.3	2,069.2	1,830.6	238.61	8.672		
10,600.0	6,974.3	6,970.3	6,970.3	102.2	139.4	92.85	-229.0	5,123.3	1,971.1	1,729.7	241.37	8.166		
10,700.0	6,973.3	6,969.3	6,969.3	105.0	139.4	92.70	-229.0	5,123.3	1,873.2	1,629.0	244.14	7.673		
10,800.0	6,972.3	6,968.3	6,968.3	107.8	139.4	92.55	-229.0	5,123.3	1,775.4	1,528.5	246.90	7.191		
10,900.0	6,971.3	6,967.3	6,967.3	110.5	139.3	92.41	-229.0	5,123.3	1,678.0	1,428.3	249.67	6.721		
11,000.0	6,970.3	6,966.3	6,966.3	113.3	139.3	92.26	-229.0	5,123.3	1,580.8	1,328.4	252.44	6.262		
11,100.0	6,969.3	6,965.3	6,965.3	116.1	139.3	92.11	-229.0	5,123.3	1,484.1	1,228.9	255.21	5.815		
11,200.0	6,968.3	6,964.3	6,964.3	118.8	139.3	91.96	-229.0	5,123.3	1,387.8	1,129.8	257.98	5.380		
11,300.0	6,967.3	6,963.3	6,963.3	121.6	139.3	91.82	-229.0	5,123.3	1,292.1	1,031.3	260.75	4.955		
11,400.0	6,966.3	6,962.3	6,962.3	124.4	139.2	91.67	-229.0	5,123.3	1,197.0	933.5	263.52	4.543		
11,500.0	6,965.3	6,961.3	6,961.3	127.1	139.2	91.52	-229.0	5,123.3	1,102.9	836.6	266.29	4.142		
11,600.0	6,964.3	6,960.3	6,960.3	129.9	139.2	91.38	-229.0	5,123.3	1,009.8	740.8	269.06	3.753		
11,700.0	6,963.3	6,959.3	6,959.3	132.7	139.2	91.23	-229.0	5,123.3	918.3	646.4	271.83	3.378		
11,800.0	6,962.3	6,958.3	6,958.3	135.5	139.2	91.08	-229.0	5,123.3	828.7	554.1	274.60	3.018		
11,900.0	6,961.3	6,957.3	6,957.3	138.3	139.1	90.93	-229.0	5,123.3	741.7	464.3	277.37	2.674		
12,000.0	6,960.3	6,956.3	6,956.3	141.0	139.1	90.79	-229.0	5,123.3	658.4	378.3	280.14	2.350		
12,100.0	6,959.3	6,955.3	6,955.3	143.8	139.1	90.64	-229.0	5,123.3	580.5	297.6	282.91	2.052		
12,200.0	6,958.3	6,954.3	6,954.3	146.6	139.1	90.49	-229.0	5,123.3	510.3	224.6	285.68	1.786		
12,300.0	6,957.3	6,953.3	6,953.3	149.4	139.1	90.34	-229.0	5,123.3	451.5	163.1	288.45	1.565		
12,400.0	6,956.3	6,952.3	6,952.3	152.2	139.0	90.20	-229.0	5,123.3	409.0	117.8	291.22	1.404 Level 3		
12,500.0	6,955.3	6,951.3	6,951.3	155.0	139.0	90.05	-229.0	5,123.3	388.2	94.2	293.98	1.321 Level 3		
12,532.9	6,955.0	6,951.0	6,951.0	155.9	139.0	90.00	-229.0	5,123.3	386.8	91.9	294.89	1.312 Level 3, CC, ES, SF		
12,600.0	6,954.3	6,950.3	6,950.3	157.7	139.0	89.90	-229.0	5,123.3	392.6	95.9	296.75	1.323 Level 3		
12,700.0	6,953.3	6,949.3	6,949.3	160.5	139.0	89.75	-229.0	5,123.3	421.4	121.9	299.51	1.407 Level 3		
12,735.0	6,953.0	6,949.0	6,949.0	161.5	139.0	89.70	-229.0	5,123.3	436.5	136.0	300.48	1.453 Level 3		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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	92.51	-167.3	3,811.1	3,814.8					
100.0	100.0	98.0	98.0	0.1	2.0	92.51	-167.3	3,811.1	3,814.8	3,812.7	2.07	1,840.610		
200.0	200.0	198.0	198.0	0.3	4.0	92.51	-167.3	3,811.1	3,814.8	3,810.5	4.30	887.714		
300.0	300.0	298.0	298.0	0.6	6.0	92.51	-167.3	3,811.1	3,814.8	3,808.3	6.52	584.905		
400.0	400.0	398.0	398.0	0.8	8.0	92.51	-167.3	3,811.1	3,814.8	3,806.1	8.75	436.134		
500.0	500.0	498.0	498.0	1.0	10.0	92.51	-167.3	3,811.1	3,814.8	3,803.8	10.97	347.698		
600.0	600.0	598.0	598.0	1.2	12.0	92.51	-167.3	3,811.1	3,814.8	3,801.6	13.20	289.080		
700.0	700.0	698.0	698.0	1.5	14.0	92.51	-167.3	3,811.1	3,814.8	3,799.4	15.42	247.375		
800.0	800.0	798.0	798.0	1.7	16.0	92.51	-167.3	3,811.1	3,814.8	3,797.2	17.65	216.187		
900.0	900.0	898.0	898.0	1.9	18.0	92.51	-167.3	3,811.1	3,814.8	3,794.9	19.87	191.982		
1,000.0	1,000.0	998.0	998.0	2.1	20.0	92.51	-167.3	3,811.1	3,814.8	3,792.7	22.10	172.651		
1,100.0	1,100.0	1,098.0	1,098.0	2.4	22.0	168.22	-167.3	3,811.1	3,816.5	3,792.2	24.30	157.086		
1,200.0	1,199.8	1,197.8	1,197.8	2.6	24.0	168.22	-167.3	3,811.1	3,821.6	3,795.2	26.45	144.468		
1,300.0	1,299.5	1,297.5	1,297.5	2.8	25.9	168.21	-167.3	3,811.1	3,830.2	3,801.6	28.57	134.064		
1,400.0	1,398.7	1,396.7	1,396.7	3.0	27.9	168.20	-167.3	3,811.1	3,842.1	3,811.5	30.64	125.409		
1,453.0	1,451.1	1,449.1	1,449.1	3.2	29.0	168.19	-167.3	3,811.1	3,849.8	3,818.1	31.71	121.412		
1,500.0	1,497.5	1,495.5	1,495.5	3.3	29.9	168.21	-167.3	3,811.1	3,857.1	3,824.3	32.73	117.843		
1,600.0	1,596.3	1,594.3	1,594.3	3.6	31.9	168.26	-167.3	3,811.1	3,872.5	3,837.6	34.91	110.937		
1,700.0	1,695.0	1,693.0	1,693.0	3.9	33.9	168.30	-167.3	3,811.1	3,887.9	3,850.8	37.09	104.831		
1,800.0	1,793.8	1,791.8	1,791.8	4.2	35.8	168.35	-167.3	3,811.1	3,903.3	3,864.1	39.27	99.394		
1,900.0	1,892.5	1,890.5	1,890.5	4.6	37.8	168.40	-167.3	3,811.1	3,918.8	3,877.3	41.46	94.524		
2,000.0	1,991.3	1,989.3	1,989.3	4.9	39.8	168.44	-167.3	3,811.1	3,934.2	3,890.6	43.65	90.138		
2,100.0	2,090.0	2,088.0	2,088.0	5.2	41.8	168.49	-167.3	3,811.1	3,949.6	3,903.8	45.84	86.167		
2,200.0	2,188.8	2,186.8	2,186.8	5.6	43.7	168.54	-167.3	3,811.1	3,965.1	3,917.0	48.03	82.556		
2,300.0	2,287.5	2,285.5	2,285.5	5.9	45.7	168.58	-167.3	3,811.1	3,980.5	3,930.3	50.22	79.258		
2,400.0	2,386.3	2,384.3	2,384.3	6.3	47.7	168.62	-167.3	3,811.1	3,996.0	3,943.5	52.42	76.234		
2,500.0	2,485.1	2,483.1	2,483.1	6.6	49.7	168.67	-167.3	3,811.1	4,011.4	3,956.8	54.61	73.453		
2,600.0	2,583.8	2,581.8	2,581.8	7.0	51.6	168.71	-167.3	3,811.1	4,026.9	3,970.0	56.81	70.885		
2,700.0	2,682.6	2,680.6	2,680.6	7.3	53.6	168.76	-167.3	3,811.1	4,042.3	3,983.3	59.01	68.507		
2,800.0	2,781.3	2,779.3	2,779.3	7.7	55.6	168.80	-167.3	3,811.1	4,057.8	3,996.6	61.20	66.300		
2,900.0	2,880.1	2,878.1	2,878.1	8.1	57.6	168.84	-167.3	3,811.1	4,073.2	4,009.8	63.40	64.245		
3,000.0	2,978.8	2,976.8	2,976.8	8.4	59.5	168.89	-167.3	3,811.1	4,088.7	4,023.1	65.60	62.327		
3,100.0	3,077.6	3,075.6	3,075.6	8.8	61.5	168.93	-167.3	3,811.1	4,104.1	4,036.3	67.80	60.533		
3,200.0	3,176.3	3,174.3	3,174.3	9.2	63.5	168.97	-167.3	3,811.1	4,119.6	4,049.6	70.00	58.852		
3,300.0	3,275.1	3,273.1	3,273.1	9.5	65.5	169.01	-167.3	3,811.1	4,135.0	4,062.9	72.20	57.273		
3,400.0	3,373.8	3,371.8	3,371.8	9.9	67.4	169.05	-167.3	3,811.1	4,150.5	4,076.1	74.40	55.787		
3,500.0	3,472.6	3,470.6	3,470.6	10.3	69.4	169.09	-167.3	3,811.1	4,166.0	4,089.4	76.60	54.387		
3,600.0	3,571.3	3,569.3	3,569.3	10.6	71.4	169.14	-167.3	3,811.1	4,181.5	4,102.7	78.80	53.064		
3,700.0	3,670.1	3,668.1	3,668.1	11.0	73.4	169.18	-167.3	3,811.1	4,196.9	4,115.9	81.00	51.813		
3,800.0	3,768.8	3,766.8	3,766.8	11.4	75.3	169.22	-167.3	3,811.1	4,212.4	4,129.2	83.20	50.629		
3,900.0	3,867.6	3,865.6	3,865.6	11.7	77.3	169.26	-167.3	3,811.1	4,227.9	4,142.5	85.40	49.505		
4,000.0	3,966.3	3,964.3	3,964.3	12.1	79.3	169.30	-167.3	3,811.1	4,243.4	4,155.7	87.60	48.438		
4,100.0	4,065.1	4,063.1	4,063.1	12.5	81.3	169.33	-167.3	3,811.1	4,258.8	4,169.0	89.81	47.423		
4,200.0	4,163.8	4,161.8	4,161.8	12.8	83.2	169.37	-167.3	3,811.1	4,274.3	4,182.3	92.01	46.456		
4,300.0	4,262.6	4,260.6	4,260.6	13.2	85.2	169.41	-167.3	3,811.1	4,289.8	4,195.6	94.21	45.535		
4,400.0	4,361.4	4,359.4	4,359.4	13.6	87.2	169.45	-167.3	3,811.1	4,305.3	4,208.9	96.41	44.656		
4,500.0	4,460.1	4,458.1	4,458.1	14.0	89.2	169.49	-167.3	3,811.1	4,320.8	4,222.2	98.61	43.816		
4,600.0	4,558.9	4,556.9	4,556.9	14.3	91.1	169.53	-167.3	3,811.1	4,336.3	4,235.4	100.81	43.012		
4,700.0	4,657.6	4,655.6	4,655.6	14.7	93.1	169.57	-167.3	3,811.1	4,351.8	4,248.7	103.02	42.243		
4,800.0	4,756.4	4,754.4	4,754.4	15.1	95.1	169.60	-167.3	3,811.1	4,367.2	4,262.0	105.22	41.506		
4,900.0	4,855.1	4,853.1	4,853.1	15.4	97.1	169.64	-167.3	3,811.1	4,382.7	4,275.3	107.42	40.800		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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	4,953.9	4,951.9	4,951.9	15.8	99.0	169.68	-167.3	3,811.1	4,398.2	4,288.6	109.62	40.122		
5,100.0	5,052.6	5,050.6	5,050.6	16.2	101.0	169.71	-167.3	3,811.1	4,413.7	4,301.9	111.83	39.470		
5,200.0	5,151.4	5,149.4	5,149.4	16.6	103.0	169.75	-167.3	3,811.1	4,429.2	4,315.2	114.03	38.844		
5,300.0	5,250.1	5,248.1	5,248.1	16.9	105.0	169.79	-167.3	3,811.1	4,444.7	4,328.5	116.23	38.241		
5,400.0	5,348.9	5,346.9	5,346.9	17.3	106.9	169.82	-167.3	3,811.1	4,460.2	4,341.8	118.43	37.661		
5,501.3	5,448.9	5,446.9	5,446.9	17.7	108.9	169.86	-167.3	3,811.1	4,475.9	4,355.3	120.66	37.095		
5,600.0	5,546.6	5,544.6	5,544.6	18.0	110.9	169.94	-167.3	3,811.1	4,489.6	4,366.3	123.34	36.401		
5,700.0	5,646.1	5,644.1	5,644.1	18.2	112.9	170.00	-167.3	3,811.1	4,500.0	4,374.1	125.90	35.742		
5,800.0	5,745.8	5,743.8	5,743.8	18.4	114.9	170.04	-167.3	3,811.1	4,507.1	4,378.7	128.33	35.121		
5,900.0	5,845.7	5,843.7	5,843.7	18.6	116.9	170.06	-167.3	3,811.1	4,510.6	4,380.0	130.61	34.536		
5,954.3	5,900.0	5,898.0	5,898.0	18.6	118.0	94.35	-167.3	3,811.1	4,511.1	4,374.6	136.50	33.048		
6,000.0	5,945.7	5,943.7	5,943.7	18.7	118.9	94.35	-167.3	3,811.1	4,511.1	4,373.7	137.48	32.813		
6,100.0	6,045.7	6,043.7	6,043.7	18.8	120.9	94.35	-167.3	3,811.1	4,511.1	4,371.5	139.63	32.307		
6,200.0	6,145.7	6,143.7	6,143.7	19.0	122.9	94.35	-167.3	3,811.1	4,511.1	4,369.4	141.79	31.817		
6,284.6	6,230.3	6,228.3	6,228.3	19.1	124.6	94.35	-167.3	3,811.1	4,511.1	4,367.5	143.61	31.413		
6,300.0	6,245.7	6,243.7	6,243.7	19.2	124.9	4.18	-167.3	3,811.1	4,511.0	4,371.7	139.31	32.381		
6,350.0	6,295.6	6,293.6	6,293.6	19.2	125.9	4.20	-167.3	3,811.1	4,508.4	4,368.5	139.82	32.244		
6,400.0	6,345.3	6,343.3	6,343.3	19.2	126.9	4.24	-167.3	3,811.1	4,502.5	4,362.7	139.73	32.224		
6,450.0	6,394.4	6,392.4	6,392.4	19.2	127.8	4.30	-167.3	3,811.1	4,493.4	4,354.3	139.01	32.324		
6,500.0	6,442.9	6,440.9	6,440.9	19.2	128.8	4.38	-167.3	3,811.1	4,481.1	4,343.4	137.67	32.550		
6,550.0	6,490.4	6,488.4	6,488.4	19.1	129.8	4.49	-167.3	3,811.1	4,465.6	4,329.9	135.70	32.909		
6,600.0	6,536.8	6,534.8	6,534.8	19.0	130.7	4.63	-167.3	3,811.1	4,447.1	4,314.0	133.10	33.412		
6,650.0	6,582.0	6,580.0	6,580.0	18.9	131.6	4.80	-167.3	3,811.1	4,425.6	4,295.8	129.88	34.074		
6,700.0	6,625.6	6,623.6	6,623.6	18.9	132.5	5.01	-167.3	3,811.1	4,401.3	4,275.2	126.06	34.914		
6,750.0	6,667.5	6,665.5	6,665.5	18.8	133.3	5.25	-167.3	3,811.1	4,374.1	4,252.4	121.65	35.957		
6,800.0	6,707.5	6,705.5	6,705.5	18.7	134.1	5.55	-167.3	3,811.1	4,344.2	4,227.6	116.68	37.232		
6,850.0	6,745.5	6,743.5	6,743.5	18.7	134.9	5.92	-167.3	3,811.1	4,311.9	4,200.7	111.19	38.780		
6,900.0	6,781.3	6,779.3	6,779.3	18.6	135.6	6.35	-167.3	3,811.1	4,277.1	4,171.8	105.22	40.649		
6,950.0	6,814.7	6,812.7	6,812.7	18.7	136.3	6.89	-167.3	3,811.1	4,240.0	4,141.1	98.85	42.894		
7,000.0	6,845.7	6,843.7	6,843.7	18.7	136.9	7.55	-167.3	3,811.1	4,200.8	4,108.7	92.17	45.579		
7,050.0	6,873.9	6,871.9	6,871.9	18.9	137.4	8.38	-167.3	3,811.1	4,159.8	4,074.4	85.31	48.761		
7,100.0	6,899.5	6,897.5	6,897.5	19.1	137.9	9.43	-167.3	3,811.1	4,116.9	4,038.4	78.50	52.444		
7,150.0	6,922.2	6,920.2	6,920.2	19.3	138.4	10.82	-167.3	3,811.1	4,072.5	4,000.4	72.11	56.474		
7,200.0	6,941.9	6,939.9	6,939.9	19.7	138.8	12.69	-167.3	3,811.1	4,026.7	3,959.9	66.82	60.261		
7,250.0	6,958.5	6,956.5	6,956.5	20.1	139.1	15.34	-167.3	3,811.1	3,979.7	3,915.8	63.90	62.277		
7,300.0	6,972.1	6,970.1	6,970.1	20.6	139.4	19.33	-167.3	3,811.1	3,931.8	3,866.1	65.71	59.838		
7,350.0	6,982.4	6,980.4	6,980.4	21.2	139.6	25.87	-167.3	3,811.1	3,883.1	3,806.9	76.16	50.987		
7,404.6	6,990.1	6,988.1	6,988.1	22.0	139.8	39.52	-167.3	3,811.1	3,829.2	3,724.6	104.59	36.610		
7,478.4	6,997.8	6,995.8	6,995.8	23.1	139.9	40.06	-167.3	3,811.1	3,756.1	3,649.5	106.57	35.244		
7,500.0	6,999.9	6,997.9	6,997.9	23.4	140.0	45.87	-167.3	3,811.1	3,734.7	3,616.4	118.28	31.574		
7,609.8	7,004.0	7,002.0	7,002.0	25.3	140.0	96.23	-167.3	3,811.1	3,625.4	3,460.9	164.48	22.042		
7,700.0	7,003.1	7,001.1	7,001.1	27.0	140.0	96.08	-167.3	3,811.1	3,535.6	3,369.4	166.21	21.272		
7,800.0	7,002.1	7,000.1	7,000.1	29.1	140.0	95.91	-167.3	3,811.1	3,436.1	3,267.8	168.26	20.421		
7,900.0	7,001.1	6,999.1	6,999.1	31.2	140.0	95.74	-167.3	3,811.1	3,336.5	3,166.1	170.44	19.576		
8,000.0	7,000.1	6,998.1	6,998.1	33.5	140.0	95.57	-167.3	3,811.1	3,237.0	3,064.3	172.71	18.743		
8,100.0	6,999.1	6,997.1	6,997.1	35.8	139.9	95.39	-167.3	3,811.1	3,137.6	2,962.5	175.06	17.923		
8,200.0	6,998.1	6,996.1	6,996.1	38.2	139.9	95.22	-167.3	3,811.1	3,038.2	2,860.7	177.47	17.119		
8,300.0	6,997.2	6,995.2	6,995.2	40.7	139.9	95.05	-167.3	3,811.1	2,938.8	2,758.8	179.94	16.332		
8,400.0	6,996.2	6,994.2	6,994.2	43.2	139.9	94.88	-167.3	3,811.1	2,839.4	2,657.0	182.44	15.563		
8,500.0	6,995.2	6,993.2	6,993.2	45.7	139.9	94.71	-167.3	3,811.1	2,740.1	2,555.1	184.99	14.812		
8,600.0	6,994.2	6,992.2	6,992.2	48.3	139.8	94.53	-167.3	3,811.1	2,640.9	2,453.3	187.56	14.080		

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 7300-UNKNOWN													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		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)						
8,700.0	6,993.2	6,991.2	6,991.2	50.8	139.8	94.36	-167.3	3,811.1	2,541.7	2,351.5	190.16	13.366		
8,800.0	6,992.2	6,990.2	6,990.2	53.4	139.8	94.19	-167.3	3,811.1	2,442.6	2,249.8	192.79	12.670		
8,900.0	6,991.2	6,989.2	6,989.2	56.1	139.8	94.02	-167.3	3,811.1	2,343.5	2,148.1	195.43	11.992		
9,000.0	6,990.2	6,988.2	6,988.2	58.7	139.8	93.84	-167.3	3,811.1	2,244.6	2,046.5	198.08	11.331		
9,100.0	6,989.2	6,987.2	6,987.2	61.4	139.7	93.67	-167.3	3,811.1	2,145.7	1,945.0	200.76	10.688		
9,200.0	6,988.2	6,986.2	6,986.2	64.1	139.7	93.50	-167.3	3,811.1	2,047.0	1,843.5	203.44	10.062		
9,300.0	6,987.2	6,985.2	6,985.2	66.7	139.7	93.33	-167.3	3,811.1	1,948.3	1,742.2	206.13	9.452		
9,400.0	6,986.2	6,984.2	6,984.2	69.4	139.7	93.15	-167.3	3,811.1	1,849.8	1,641.0	208.83	8.858		
9,500.0	6,985.2	6,983.2	6,983.2	72.1	139.7	92.98	-167.3	3,811.1	1,751.5	1,540.0	211.54	8.280		
9,600.0	6,984.2	6,982.2	6,982.2	74.8	139.6	92.81	-167.3	3,811.1	1,653.4	1,439.2	214.26	7.717		
9,700.0	6,983.2	6,981.2	6,981.2	77.6	139.6	92.63	-167.3	3,811.1	1,555.6	1,338.6	216.98	7.169		
9,800.0	6,982.2	6,980.2	6,980.2	80.3	139.6	92.46	-167.3	3,811.1	1,458.0	1,238.3	219.71	6.636		
9,900.0	6,981.2	6,979.2	6,979.2	83.0	139.6	92.29	-167.3	3,811.1	1,360.8	1,138.3	222.44	6.117		
10,000.0	6,980.2	6,978.2	6,978.2	85.7	139.6	92.11	-167.3	3,811.1	1,264.0	1,038.8	225.18	5.613		
10,100.0	6,979.2	6,977.2	6,977.2	88.5	139.5	91.94	-167.3	3,811.1	1,167.7	939.8	227.91	5.123		
10,200.0	6,978.2	6,976.2	6,976.2	91.2	139.5	91.77	-167.3	3,811.1	1,072.1	841.5	230.66	4.648		
10,300.0	6,977.2	6,975.2	6,975.2	94.0	139.5	91.60	-167.3	3,811.1	977.4	744.0	233.40	4.188		
10,400.0	6,976.2	6,974.2	6,974.2	96.7	139.5	91.42	-167.3	3,811.1	883.9	647.8	236.15	3.743		
10,500.0	6,975.2	6,973.2	6,973.2	99.5	139.5	91.25	-167.3	3,811.1	792.0	553.1	238.89	3.315		
10,600.0	6,974.3	6,972.3	6,972.3	102.2	139.4	91.08	-167.3	3,811.1	702.2	460.6	241.64	2.906		
10,700.0	6,973.3	6,971.3	6,971.3	105.0	139.4	90.90	-167.3	3,811.1	615.7	371.3	244.39	2.519		
10,800.0	6,972.3	6,970.3	6,970.3	107.8	139.4	90.73	-167.3	3,811.1	533.8	286.7	247.14	2.160		
10,900.0	6,971.3	6,969.3	6,969.3	110.5	139.4	90.56	-167.3	3,811.1	459.3	209.4	249.89	1.838		
11,000.0	6,970.3	6,968.3	6,968.3	113.3	139.4	90.38	-167.3	3,811.1	396.0	143.4	252.64	1.568		
11,100.0	6,969.3	6,967.3	6,967.3	116.1	139.3	90.21	-167.3	3,811.1	350.3	95.0	255.39	1.372 Level 3		
11,200.0	6,968.3	6,966.3	6,966.3	118.8	139.3	90.04	-167.3	3,811.1	329.6	71.5	258.14	1.277 Level 3		
11,220.4	6,968.1	6,966.1	6,966.1	119.4	139.3	90.00	-167.3	3,811.1	329.0	70.3	258.70	1.272 Level 3, CC, ES, SF		
11,300.0	6,967.3	6,965.3	6,965.3	121.6	139.3	89.86	-167.3	3,811.1	338.5	77.6	260.89	1.297 Level 3		
11,400.0	6,966.3	6,964.3	6,964.3	124.4	139.3	89.69	-167.3	3,811.1	374.8	111.2	263.64	1.422 Level 3		
11,500.0	6,965.3	6,963.3	6,963.3	127.1	139.3	89.52	-167.3	3,811.1	431.7	165.3	266.39	1.621		
11,600.0	6,964.3	6,962.3	6,962.3	129.9	139.2	89.34	-167.3	3,811.1	502.3	233.1	269.13	1.866		
11,700.0	6,963.3	6,961.3	6,961.3	132.7	139.2	89.17	-167.3	3,811.1	581.5	309.7	271.88	2.139		
11,800.0	6,962.3	6,960.3	6,960.3	135.5	139.2	89.00	-167.3	3,811.1	666.4	391.8	274.62	2.427		
11,900.0	6,961.3	6,959.3	6,959.3	138.3	139.2	88.82	-167.3	3,811.1	755.0	477.6	277.37	2.722		
12,000.0	6,960.3	6,958.3	6,958.3	141.0	139.2	88.65	-167.3	3,811.1	846.1	566.0	280.11	3.021		
12,100.0	6,959.3	6,957.3	6,957.3	143.8	139.1	88.48	-167.3	3,811.1	939.0	656.2	282.85	3.320		
12,200.0	6,958.3	6,956.3	6,956.3	146.6	139.1	88.30	-167.3	3,811.1	1,033.3	747.7	285.58	3.618		
12,300.0	6,957.3	6,955.3	6,955.3	149.4	139.1	88.13	-167.3	3,811.1	1,128.5	840.2	288.32	3.914		
12,400.0	6,956.3	6,954.3	6,954.3	152.2	139.1	87.96	-167.3	3,811.1	1,224.5	933.5	291.05	4.207		
12,500.0	6,955.3	6,953.3	6,953.3	155.0	139.1	87.78	-167.3	3,811.1	1,321.1	1,027.3	293.78	4.497		
12,600.0	6,954.3	6,952.3	6,952.3	157.7	139.0	87.61	-167.3	3,811.1	1,418.2	1,121.7	296.51	4.783		
12,700.0	6,953.3	6,951.3	6,951.3	160.5	139.0	87.44	-167.3	3,811.1	1,515.6	1,216.4	299.23	5.065		
12,735.0	6,953.0	6,951.0	6,951.0	161.5	139.0	87.38	-167.3	3,811.1	1,549.8	1,249.6	300.19	5.163		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
Reference Site:	Alles 22S-HZ Pad Sec.22-T5N-R65W	MD Reference:	WELL @ 4660.0ft (RKB - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Alles 22S-432	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (5-16-13)	Offset TVD Reference:	Offset Datum

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

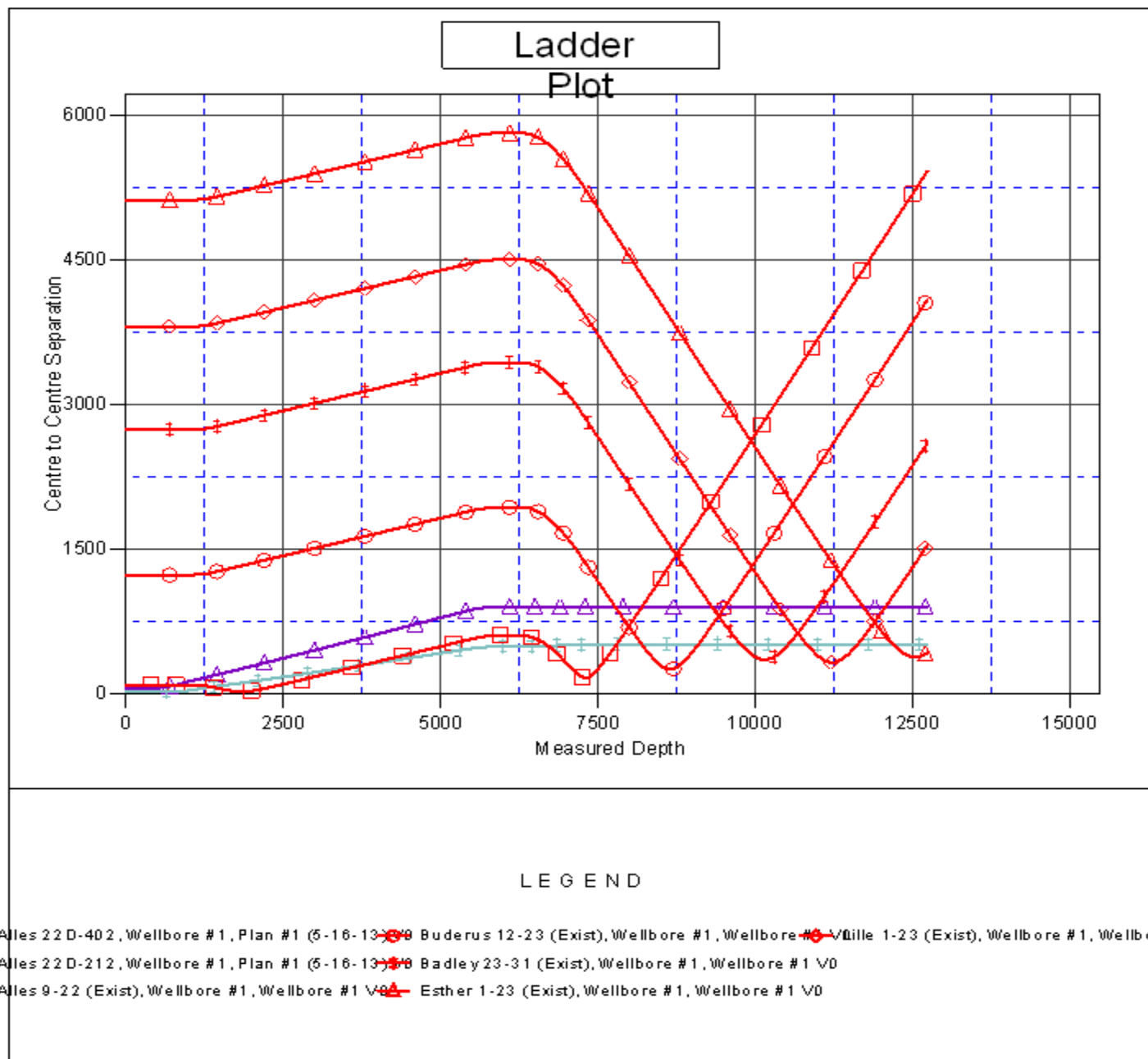
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Alles 22S-432

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.55°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Alles 22S-432
Project:	SEC.22-T5N-R65W	TVD Reference:	WELL @ 4660.0ft (RKB - 15')
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