

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: State 36QT-208

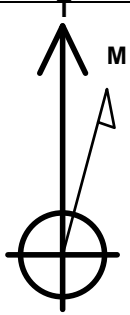
Surface Location: State Pad Sec.36-T6N-R63W
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4714.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1403668.06	3311646.01	40.436070	-104.380400	

RKB Ensign 32 -15' WELL @ 4729.0ft (RKB Ensign 32 -15')

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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
HARDLINE BHL 460'FWL								
HARDLINE SHL 460'FSL	1.0	2892.2	-3524.9	1406515.41	3308085.02	40.444008	-104.393064	Polygon
SECTION LINE 170'S OF SHL	1.0	290.0	-900.0	1403946.66	3310742.45	40.436866	-104.383633	Polygon
BHL 2640'FNL & 500'FWL	1.0	-170.0	-900.0	1403486.72	3310748.26	40.435603	-104.383633	Polygon
	6489.0	2492.2	-3484.9	1406115.93	3308130.08	40.442910	-104.392920	Point



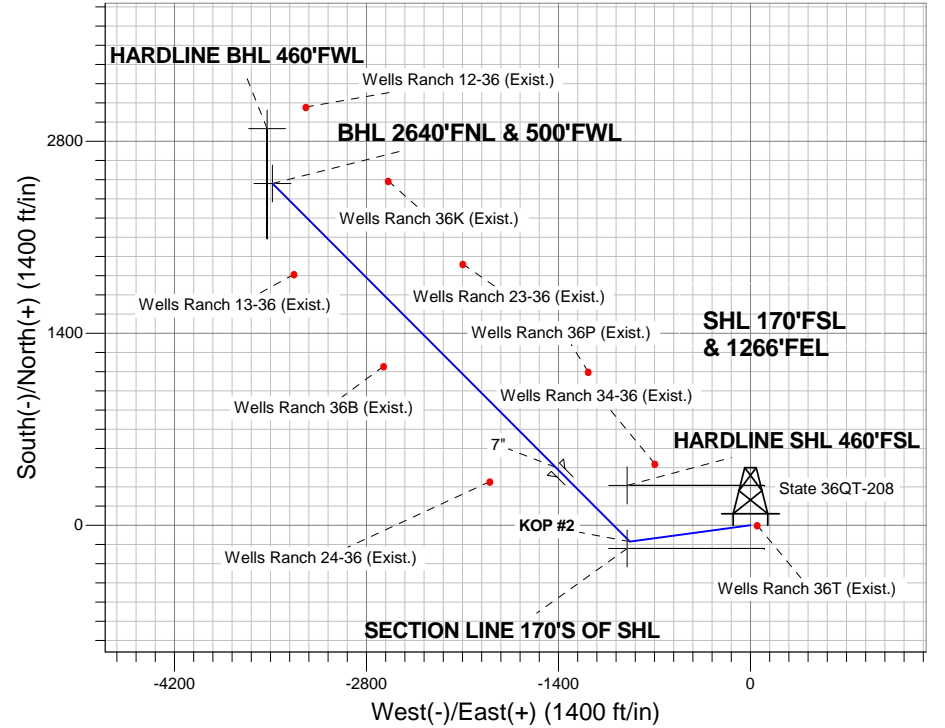
Azimuths to True North
Magnetic North: 8.57°

Magnetic Field
Strength: 53121.8nT
Dip Angle: 67.12°
Date: 2/13/2012
Model: IGRF2010

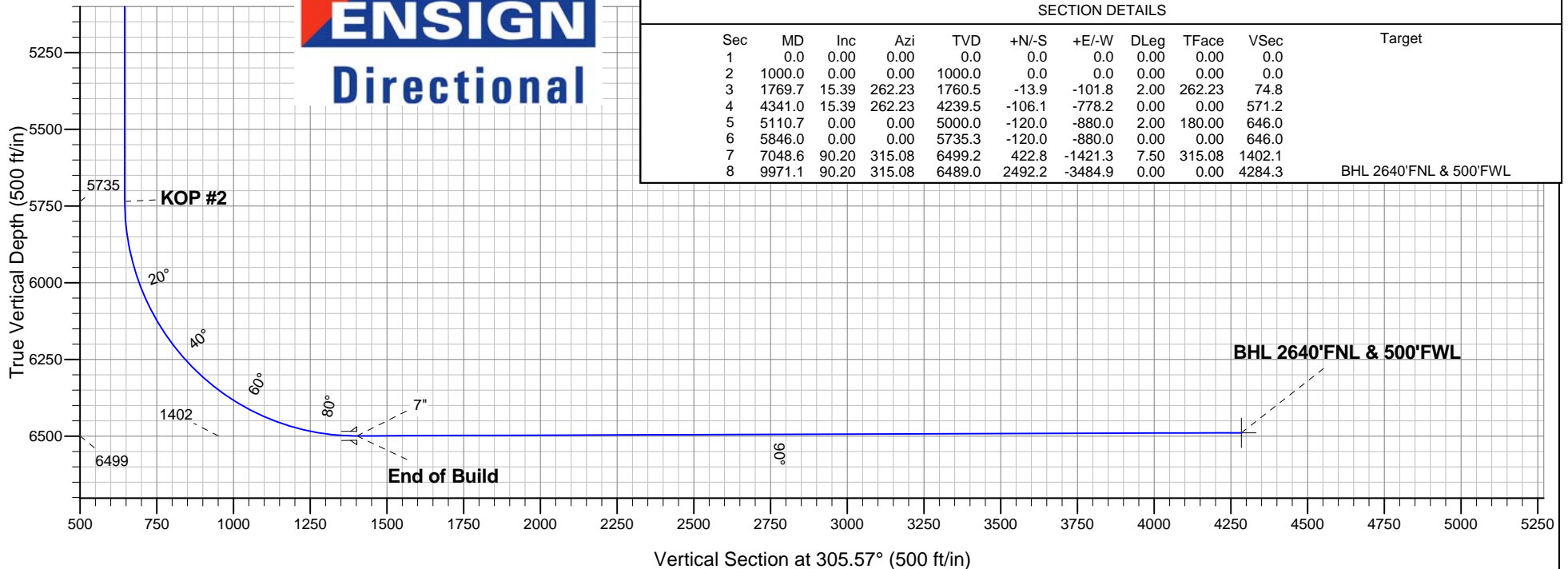
ANNOTATIONS

TVD	MD	Annotation
1000.0	1000.0	KOP #1
5735.3	5846.0	KOP #2
6499.2	7048.6	End of Build

State Pad Sec.36-T6N-R63W
State 36QT-208
Plan #1 (2-13-12)
14:40, February 17 2012



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	1769.7	15.39	262.23	1760.5	-13.9	-101.8	2.00	262.23	74.8	
4	4341.0	15.39	262.23	4239.5	-106.1	-778.2	0.00	0.00	571.2	
5	5110.7	0.00	0.00	5000.0	-120.0	-880.0	2.00	180.00	646.0	
6	5846.0	0.00	0.00	5735.3	-120.0	-880.0	0.00	0.00	646.0	
7	7048.6	90.20	315.08	6499.2	422.8	-1421.3	7.50	315.08	1402.1	
8	9971.1	90.20	315.08	6489.0	2492.2	-3484.9	0.00	0.00	4284.3	BHL 2640'FNL & 500'FWL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.36-T6N-R63W

State Pad Sec.36-T6N-R63W

State 36QT-208

Wellbore #1

Plan: Plan #1 (2-13-12)

Standard Planning Report

17 February, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well State 36QT-208
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Project	SEC.36-T6N-R63W, Weld County, CO		
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	State Pad Sec.36-T6N-R63W		
Site Position:		Northing:	1,408,611.38 ft
From:	Lat/Long	Easting:	3,309,279.03 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.449720
		Longitude:	-104.388680
		Grid Convergence:	0.72 °

Well	State 36QT-208					
Well Position	+N/-S	-4,973.0 ft	Northing:	1,403,668.06 ft	Latitude:	40.436070
	+E/-W	2,304.5 ft	Easting:	3,311,646.01 ft	Longitude:	-104.380400
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,714.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/13/2012	8.57	67.12	53,122

Design	Plan #1 (2-13-12)			
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	305.57

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	
1,769.7	15.39	262.23	1,760.5	-13.9	-101.8	2.00	2.00	0.00	262.23	
4,341.0	15.39	262.23	4,239.5	-106.1	-778.2	0.00	0.00	0.00	0.00	
5,110.7	0.00	0.00	5,000.0	-120.0	-880.0	2.00	-2.00	0.00	180.00	
5,846.0	0.00	0.00	5,735.3	-120.0	-880.0	0.00	0.00	0.00	0.00	
7,048.6	90.20	315.08	6,499.2	422.8	-1,421.3	7.50	7.50	0.00	315.08	
9,971.1	90.20	315.08	6,489.0	2,492.2	-3,484.9	0.00	0.00	0.00	0.00	BHL 2640°FNL & 5C

Database:	Landmark	Local Co-ordinate Reference:	Well State 36QT-208
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
SECTION LINE 170'S OF SHL - HARDLINE BHL 460'FWL - HARDLINE SHL 460'FSL									
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,040.0	0.80	262.23	1,040.0	0.0	-0.3	0.2	2.00	2.00	0.00
1,080.0	1.60	262.23	1,080.0	-0.2	-1.1	0.8	2.00	2.00	0.00
1,120.0	2.40	262.23	1,120.0	-0.3	-2.5	1.8	2.00	2.00	0.00
1,160.0	3.20	262.23	1,159.9	-0.6	-4.4	3.2	2.00	2.00	0.00
1,200.0	4.00	262.23	1,199.8	-0.9	-6.9	5.1	2.00	2.00	0.00
1,240.0	4.80	262.23	1,239.7	-1.4	-10.0	7.3	2.00	2.00	0.00
1,280.0	5.60	262.23	1,279.6	-1.8	-13.5	9.9	2.00	2.00	0.00
1,320.0	6.40	262.23	1,319.3	-2.4	-17.7	13.0	2.00	2.00	0.00
1,360.0	7.20	262.23	1,359.1	-3.1	-22.4	16.4	2.00	2.00	0.00
1,400.0	8.00	262.23	1,398.7	-3.8	-27.6	20.3	2.00	2.00	0.00
1,440.0	8.80	262.23	1,438.3	-4.6	-33.4	24.5	2.00	2.00	0.00
1,480.0	9.60	262.23	1,477.8	-5.4	-39.8	29.2	2.00	2.00	0.00
1,520.0	10.40	262.23	1,517.1	-6.4	-46.6	34.2	2.00	2.00	0.00
1,560.0	11.20	262.23	1,556.4	-7.4	-54.1	39.7	2.00	2.00	0.00
1,600.0	12.00	262.23	1,595.6	-8.5	-62.0	45.5	2.00	2.00	0.00
1,640.0	12.80	262.23	1,634.7	-9.6	-70.5	51.8	2.00	2.00	0.00
1,680.0	13.60	262.23	1,673.6	-10.9	-79.6	58.4	2.00	2.00	0.00
1,720.0	14.40	262.23	1,712.4	-12.2	-89.2	65.5	2.00	2.00	0.00
1,760.0	15.20	262.23	1,751.1	-13.5	-99.3	72.9	2.00	2.00	0.00
1,769.7	15.39	262.23	1,760.5	-13.9	-101.8	74.8	2.00	2.00	0.00
1,800.0	15.39	262.23	1,789.7	-15.0	-109.8	80.6	0.00	0.00	0.00
1,840.0	15.39	262.23	1,828.3	-16.4	-120.3	88.3	0.00	0.00	0.00
1,880.0	15.39	262.23	1,866.8	-17.8	-130.8	96.1	0.00	0.00	0.00
1,920.0	15.39	262.23	1,905.4	-19.3	-141.4	103.8	0.00	0.00	0.00

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Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
1,960.0	15.39	262.23	1,943.9	-20.7	-151.9	111.5	0.00	0.00	0.00
2,000.0	15.39	262.23	1,982.5	-22.1	-162.4	119.2	0.00	0.00	0.00
2,040.0	15.39	262.23	2,021.1	-23.6	-172.9	126.9	0.00	0.00	0.00
2,080.0	15.39	262.23	2,059.6	-25.0	-183.5	134.7	0.00	0.00	0.00
2,120.0	15.39	262.23	2,098.2	-26.5	-194.0	142.4	0.00	0.00	0.00
2,160.0	15.39	262.23	2,136.8	-27.9	-204.5	150.1	0.00	0.00	0.00
2,200.0	15.39	262.23	2,175.3	-29.3	-215.0	157.8	0.00	0.00	0.00
2,240.0	15.39	262.23	2,213.9	-30.8	-225.5	165.6	0.00	0.00	0.00
2,280.0	15.39	262.23	2,252.5	-32.2	-236.1	173.3	0.00	0.00	0.00
2,320.0	15.39	262.23	2,291.0	-33.6	-246.6	181.0	0.00	0.00	0.00
2,360.0	15.39	262.23	2,329.6	-35.1	-257.1	188.7	0.00	0.00	0.00
2,400.0	15.39	262.23	2,368.2	-36.5	-267.6	196.5	0.00	0.00	0.00
2,440.0	15.39	262.23	2,406.7	-37.9	-278.1	204.2	0.00	0.00	0.00
2,480.0	15.39	262.23	2,445.3	-39.4	-288.7	211.9	0.00	0.00	0.00
2,520.0	15.39	262.23	2,483.9	-40.8	-299.2	219.6	0.00	0.00	0.00
2,560.0	15.39	262.23	2,522.4	-42.2	-309.7	227.4	0.00	0.00	0.00
2,600.0	15.39	262.23	2,561.0	-43.7	-320.2	235.1	0.00	0.00	0.00
2,640.0	15.39	262.23	2,599.5	-45.1	-330.8	242.8	0.00	0.00	0.00
2,680.0	15.39	262.23	2,638.1	-46.5	-341.3	250.5	0.00	0.00	0.00
2,720.0	15.39	262.23	2,676.7	-48.0	-351.8	258.2	0.00	0.00	0.00
2,760.0	15.39	262.23	2,715.2	-49.4	-362.3	266.0	0.00	0.00	0.00
2,800.0	15.39	262.23	2,753.8	-50.8	-372.8	273.7	0.00	0.00	0.00
2,840.0	15.39	262.23	2,792.4	-52.3	-383.4	281.4	0.00	0.00	0.00
2,880.0	15.39	262.23	2,830.9	-53.7	-393.9	289.1	0.00	0.00	0.00
2,920.0	15.39	262.23	2,869.5	-55.1	-404.4	296.9	0.00	0.00	0.00
2,960.0	15.39	262.23	2,908.1	-56.6	-414.9	304.6	0.00	0.00	0.00
3,000.0	15.39	262.23	2,946.6	-58.0	-425.4	312.3	0.00	0.00	0.00
3,040.0	15.39	262.23	2,985.2	-59.4	-436.0	320.0	0.00	0.00	0.00
3,080.0	15.39	262.23	3,023.8	-60.9	-446.5	327.8	0.00	0.00	0.00
3,120.0	15.39	262.23	3,062.3	-62.3	-457.0	335.5	0.00	0.00	0.00
3,160.0	15.39	262.23	3,100.9	-63.8	-467.5	343.2	0.00	0.00	0.00
3,200.0	15.39	262.23	3,139.5	-65.2	-478.0	350.9	0.00	0.00	0.00
3,240.0	15.39	262.23	3,178.0	-66.6	-488.6	358.6	0.00	0.00	0.00
3,280.0	15.39	262.23	3,216.6	-68.1	-499.1	366.4	0.00	0.00	0.00
3,320.0	15.39	262.23	3,255.2	-69.5	-509.6	374.1	0.00	0.00	0.00
3,360.0	15.39	262.23	3,293.7	-70.9	-520.1	381.8	0.00	0.00	0.00
3,400.0	15.39	262.23	3,332.3	-72.4	-530.7	389.5	0.00	0.00	0.00
3,440.0	15.39	262.23	3,370.8	-73.8	-541.2	397.3	0.00	0.00	0.00
3,480.0	15.39	262.23	3,409.4	-75.2	-551.7	405.0	0.00	0.00	0.00
3,520.0	15.39	262.23	3,448.0	-76.7	-562.2	412.7	0.00	0.00	0.00
3,560.0	15.39	262.23	3,486.5	-78.1	-572.7	420.4	0.00	0.00	0.00
3,600.0	15.39	262.23	3,525.1	-79.5	-583.3	428.2	0.00	0.00	0.00
3,640.0	15.39	262.23	3,563.7	-81.0	-593.8	435.9	0.00	0.00	0.00
3,680.0	15.39	262.23	3,602.2	-82.4	-604.3	443.6	0.00	0.00	0.00
3,720.0	15.39	262.23	3,640.8	-83.8	-614.8	451.3	0.00	0.00	0.00
3,760.0	15.39	262.23	3,679.4	-85.3	-625.3	459.1	0.00	0.00	0.00
3,800.0	15.39	262.23	3,717.9	-86.7	-635.9	466.8	0.00	0.00	0.00
3,840.0	15.39	262.23	3,756.5	-88.1	-646.4	474.5	0.00	0.00	0.00
3,880.0	15.39	262.23	3,795.1	-89.6	-656.9	482.2	0.00	0.00	0.00
3,920.0	15.39	262.23	3,833.6	-91.0	-667.4	489.9	0.00	0.00	0.00
3,960.0	15.39	262.23	3,872.2	-92.4	-677.9	497.7	0.00	0.00	0.00
4,000.0	15.39	262.23	3,910.8	-93.9	-688.5	505.4	0.00	0.00	0.00
4,040.0	15.39	262.23	3,949.3	-95.3	-699.0	513.1	0.00	0.00	0.00

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Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,080.0	15.39	262.23	3,987.9	-96.8	-709.5	520.8	0.00	0.00	0.00
4,120.0	15.39	262.23	4,026.4	-98.2	-720.0	528.6	0.00	0.00	0.00
4,160.0	15.39	262.23	4,065.0	-99.6	-730.6	536.3	0.00	0.00	0.00
4,200.0	15.39	262.23	4,103.6	-101.1	-741.1	544.0	0.00	0.00	0.00
4,240.0	15.39	262.23	4,142.1	-102.5	-751.6	551.7	0.00	0.00	0.00
4,280.0	15.39	262.23	4,180.7	-103.9	-762.1	559.5	0.00	0.00	0.00
4,320.0	15.39	262.23	4,219.3	-105.4	-772.6	567.2	0.00	0.00	0.00
4,341.0	15.39	262.23	4,239.5	-106.1	-778.2	571.2	0.00	0.00	0.00
4,360.0	15.01	262.23	4,257.9	-106.8	-783.1	574.9	2.00	-2.00	0.00
4,400.0	14.21	262.23	4,296.6	-108.1	-793.1	582.2	2.00	-2.00	0.00
4,440.0	13.41	262.23	4,335.4	-109.4	-802.6	589.1	2.00	-2.00	0.00
4,480.0	12.61	262.23	4,374.4	-110.7	-811.5	595.7	2.00	-2.00	0.00
4,520.0	11.81	262.23	4,413.5	-111.8	-819.9	601.9	2.00	-2.00	0.00
4,560.0	11.01	262.23	4,452.7	-112.9	-827.7	607.6	2.00	-2.00	0.00
4,600.0	10.21	262.23	4,492.0	-113.9	-835.0	613.0	2.00	-2.00	0.00
4,640.0	9.41	262.23	4,531.4	-114.8	-841.8	617.9	2.00	-2.00	0.00
4,680.0	8.61	262.23	4,570.9	-115.6	-848.0	622.5	2.00	-2.00	0.00
4,720.0	7.81	262.23	4,610.5	-116.4	-853.6	626.6	2.00	-2.00	0.00
4,760.0	7.01	262.23	4,650.2	-117.1	-858.8	630.4	2.00	-2.00	0.00
4,800.0	6.21	262.23	4,689.9	-117.7	-863.3	633.8	2.00	-2.00	0.00
4,840.0	5.41	262.23	4,729.7	-118.3	-867.3	636.7	2.00	-2.00	0.00
4,880.0	4.61	262.23	4,769.5	-118.7	-870.8	639.2	2.00	-2.00	0.00
4,920.0	3.81	262.23	4,809.4	-119.1	-873.7	641.4	2.00	-2.00	0.00
4,960.0	3.01	262.23	4,849.4	-119.5	-876.1	643.1	2.00	-2.00	0.00
5,000.0	2.21	262.23	4,889.3	-119.7	-877.9	644.4	2.00	-2.00	0.00
5,040.0	1.41	262.23	4,929.3	-119.9	-879.1	645.4	2.00	-2.00	0.00
5,080.0	0.61	262.23	4,969.3	-120.0	-879.8	645.9	2.00	-2.00	0.00
5,110.7	0.00	0.00	5,000.0	-120.0	-880.0	646.0	2.00	-2.00	0.00
5,120.0	0.00	0.00	5,009.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,160.0	0.00	0.00	5,049.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,089.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,240.0	0.00	0.00	5,129.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,280.0	0.00	0.00	5,169.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,320.0	0.00	0.00	5,209.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,360.0	0.00	0.00	5,249.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,400.0	0.00	0.00	5,289.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,440.0	0.00	0.00	5,329.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,480.0	0.00	0.00	5,369.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,520.0	0.00	0.00	5,409.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,560.0	0.00	0.00	5,449.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,489.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,640.0	0.00	0.00	5,529.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,680.0	0.00	0.00	5,569.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,720.0	0.00	0.00	5,609.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,760.0	0.00	0.00	5,649.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,689.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,840.0	0.00	0.00	5,729.3	-120.0	-880.0	646.0	0.00	0.00	0.00
5,846.0	0.00	0.00	5,735.3	-120.0	-880.0	646.0	0.00	0.00	0.00
KOP #2									
5,880.0	2.55	315.08	5,769.3	-119.5	-880.5	646.7	7.51	7.51	0.00
5,920.0	5.55	315.08	5,809.2	-117.5	-882.5	649.5	7.50	7.50	0.00
5,960.0	8.55	315.08	5,848.9	-114.0	-886.0	654.4	7.50	7.50	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well State 36QT-208
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,000.0	11.55	315.08	5,888.2	-109.0	-890.9	661.3	7.50	7.50	0.00
6,040.0	14.55	315.08	5,927.2	-102.6	-897.3	670.2	7.50	7.50	0.00
6,080.0	17.55	315.08	5,965.6	-94.8	-905.1	681.1	7.50	7.50	0.00
6,120.0	20.55	315.08	6,003.5	-85.6	-914.3	693.9	7.50	7.50	0.00
6,160.0	23.55	315.08	6,040.5	-74.9	-924.9	708.8	7.50	7.50	0.00
6,200.0	26.55	315.08	6,076.8	-62.9	-936.9	725.5	7.50	7.50	0.00
6,240.0	29.55	315.08	6,112.1	-49.6	-950.2	744.0	7.50	7.50	0.00
6,280.0	32.55	315.08	6,146.3	-35.0	-964.7	764.4	7.50	7.50	0.00
6,320.0	35.55	315.08	6,179.5	-19.2	-980.6	786.4	7.50	7.50	0.00
6,360.0	38.55	315.08	6,211.4	-2.1	-997.6	810.2	7.50	7.50	0.00
6,400.0	41.55	315.08	6,242.0	16.1	-1,015.7	835.6	7.50	7.50	0.00
6,440.0	44.55	315.08	6,271.2	35.5	-1,035.0	862.5	7.50	7.50	0.00
6,480.0	47.55	315.08	6,299.0	55.9	-1,055.4	890.9	7.50	7.50	0.00
6,520.0	50.55	315.08	6,325.2	77.2	-1,076.7	920.7	7.50	7.50	0.00
6,560.0	53.55	315.08	6,349.8	99.6	-1,099.0	951.8	7.50	7.50	0.00
6,600.0	56.55	315.08	6,372.7	122.8	-1,122.1	984.2	7.50	7.50	0.00
6,640.0	59.55	315.08	6,393.9	146.8	-1,146.1	1,017.6	7.50	7.50	0.00
6,680.0	62.55	315.08	6,413.2	171.6	-1,170.8	1,052.1	7.50	7.50	0.00
6,720.0	65.55	315.08	6,430.7	197.1	-1,196.2	1,087.6	7.50	7.50	0.00
6,760.0	68.55	315.08	6,446.3	223.1	-1,222.2	1,123.9	7.50	7.50	0.00
6,800.0	71.55	315.08	6,459.9	249.8	-1,248.7	1,161.0	7.50	7.50	0.00
6,840.0	74.55	315.08	6,471.6	276.9	-1,275.8	1,198.8	7.50	7.50	0.00
6,880.0	77.55	315.08	6,481.2	304.3	-1,303.2	1,237.0	7.50	7.50	0.00
6,920.0	80.55	315.08	6,488.8	332.1	-1,330.9	1,275.8	7.50	7.50	0.00
6,960.0	83.55	315.08	6,494.4	360.2	-1,358.9	1,314.8	7.50	7.50	0.00
7,000.0	86.55	315.08	6,497.8	388.4	-1,387.0	1,354.1	7.50	7.50	0.00
7,040.0	89.55	315.08	6,499.2	416.7	-1,415.2	1,393.5	7.50	7.50	0.00
7,048.6	90.20	315.08	6,499.2	422.8	-1,421.3	1,402.0	7.50	7.50	0.00
End of Build - 7"									
7,080.0	90.20	315.08	6,499.1	445.0	-1,443.5	1,433.0	0.01	0.01	0.00
7,120.0	90.20	315.08	6,499.0	473.4	-1,471.7	1,472.4	0.00	0.00	0.00
7,160.0	90.20	315.08	6,498.8	501.7	-1,500.0	1,511.9	0.00	0.00	0.00
7,200.0	90.20	315.08	6,498.7	530.0	-1,528.2	1,551.3	0.00	0.00	0.00
7,240.0	90.20	315.08	6,498.5	558.3	-1,556.4	1,590.8	0.00	0.00	0.00
7,280.0	90.20	315.08	6,498.4	586.7	-1,584.7	1,630.2	0.00	0.00	0.00
7,320.0	90.20	315.08	6,498.3	615.0	-1,612.9	1,669.7	0.00	0.00	0.00
7,360.0	90.20	315.08	6,498.1	643.3	-1,641.2	1,709.1	0.00	0.00	0.00
7,400.0	90.20	315.08	6,498.0	671.6	-1,669.4	1,748.6	0.00	0.00	0.00
7,440.0	90.20	315.08	6,497.8	700.0	-1,697.7	1,788.0	0.00	0.00	0.00
7,480.0	90.20	315.08	6,497.7	728.3	-1,725.9	1,827.5	0.00	0.00	0.00
7,520.0	90.20	315.08	6,497.6	756.6	-1,754.2	1,866.9	0.00	0.00	0.00
7,560.0	90.20	315.08	6,497.4	784.9	-1,782.4	1,906.4	0.00	0.00	0.00
7,600.0	90.20	315.08	6,497.3	813.2	-1,810.6	1,945.8	0.00	0.00	0.00
7,640.0	90.20	315.08	6,497.1	841.6	-1,838.9	1,985.3	0.00	0.00	0.00
7,680.0	90.20	315.08	6,497.0	869.9	-1,867.1	2,024.8	0.00	0.00	0.00
7,720.0	90.20	315.08	6,496.9	898.2	-1,895.4	2,064.2	0.00	0.00	0.00
7,760.0	90.20	315.08	6,496.7	926.5	-1,923.6	2,103.7	0.00	0.00	0.00
7,800.0	90.20	315.08	6,496.6	954.9	-1,951.9	2,143.1	0.00	0.00	0.00
7,840.0	90.20	315.08	6,496.4	983.2	-1,980.1	2,182.6	0.00	0.00	0.00
7,880.0	90.20	315.08	6,496.3	1,011.5	-2,008.4	2,222.0	0.00	0.00	0.00
7,920.0	90.20	315.08	6,496.2	1,039.8	-2,036.6	2,261.5	0.00	0.00	0.00
7,960.0	90.20	315.08	6,496.0	1,068.2	-2,064.8	2,300.9	0.00	0.00	0.00
8,000.0	90.20	315.08	6,495.9	1,096.5	-2,093.1	2,340.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well State 36QT-208
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
8,040.0	90.20	315.08	6,495.7	1,124.8	-2,121.3	2,379.8	0.00	0.00	0.00
8,080.0	90.20	315.08	6,495.6	1,153.1	-2,149.6	2,419.3	0.00	0.00	0.00
8,120.0	90.20	315.08	6,495.5	1,181.5	-2,177.8	2,458.7	0.00	0.00	0.00
8,160.0	90.20	315.08	6,495.3	1,209.8	-2,206.1	2,498.2	0.00	0.00	0.00
8,200.0	90.20	315.08	6,495.2	1,238.1	-2,234.3	2,537.6	0.00	0.00	0.00
8,240.0	90.20	315.08	6,495.0	1,266.4	-2,262.6	2,577.1	0.00	0.00	0.00
8,280.0	90.20	315.08	6,494.9	1,294.7	-2,290.8	2,616.5	0.00	0.00	0.00
8,320.0	90.20	315.08	6,494.8	1,323.1	-2,319.0	2,656.0	0.00	0.00	0.00
8,360.0	90.20	315.08	6,494.6	1,351.4	-2,347.3	2,695.4	0.00	0.00	0.00
8,400.0	90.20	315.08	6,494.5	1,379.7	-2,375.5	2,734.9	0.00	0.00	0.00
8,440.0	90.20	315.08	6,494.3	1,408.0	-2,403.8	2,774.3	0.00	0.00	0.00
8,480.0	90.20	315.08	6,494.2	1,436.4	-2,432.0	2,813.8	0.00	0.00	0.00
8,520.0	90.20	315.08	6,494.1	1,464.7	-2,460.3	2,853.2	0.00	0.00	0.00
8,560.0	90.20	315.08	6,493.9	1,493.0	-2,488.5	2,892.7	0.00	0.00	0.00
8,600.0	90.20	315.08	6,493.8	1,521.3	-2,516.8	2,932.1	0.00	0.00	0.00
8,640.0	90.20	315.08	6,493.6	1,549.7	-2,545.0	2,971.6	0.00	0.00	0.00
8,680.0	90.20	315.08	6,493.5	1,578.0	-2,573.2	3,011.0	0.00	0.00	0.00
8,720.0	90.20	315.08	6,493.4	1,606.3	-2,601.5	3,050.5	0.00	0.00	0.00
8,760.0	90.20	315.08	6,493.2	1,634.6	-2,629.7	3,089.9	0.00	0.00	0.00
8,800.0	90.20	315.08	6,493.1	1,663.0	-2,658.0	3,129.4	0.00	0.00	0.00
8,840.0	90.20	315.08	6,492.9	1,691.3	-2,686.2	3,168.8	0.00	0.00	0.00
8,880.0	90.20	315.08	6,492.8	1,719.6	-2,714.5	3,208.3	0.00	0.00	0.00
8,920.0	90.20	315.08	6,492.7	1,747.9	-2,742.7	3,247.7	0.00	0.00	0.00
8,960.0	90.20	315.08	6,492.5	1,776.2	-2,771.0	3,287.2	0.00	0.00	0.00
9,000.0	90.20	315.08	6,492.4	1,804.6	-2,799.2	3,326.6	0.00	0.00	0.00
9,040.0	90.20	315.08	6,492.3	1,832.9	-2,827.4	3,366.1	0.00	0.00	0.00
9,080.0	90.20	315.08	6,492.1	1,861.2	-2,855.7	3,405.5	0.00	0.00	0.00
9,120.0	90.20	315.08	6,492.0	1,889.5	-2,883.9	3,445.0	0.00	0.00	0.00
9,160.0	90.20	315.08	6,491.8	1,917.9	-2,912.2	3,484.4	0.00	0.00	0.00
9,200.0	90.20	315.08	6,491.7	1,946.2	-2,940.4	3,523.9	0.00	0.00	0.00
9,240.0	90.20	315.08	6,491.6	1,974.5	-2,968.7	3,563.3	0.00	0.00	0.00
9,280.0	90.20	315.08	6,491.4	2,002.8	-2,996.9	3,602.8	0.00	0.00	0.00
9,320.0	90.20	315.08	6,491.3	2,031.2	-3,025.2	3,642.2	0.00	0.00	0.00
9,360.0	90.20	315.08	6,491.1	2,059.5	-3,053.4	3,681.7	0.00	0.00	0.00
9,400.0	90.20	315.08	6,491.0	2,087.8	-3,081.6	3,721.1	0.00	0.00	0.00
9,440.0	90.20	315.08	6,490.9	2,116.1	-3,109.9	3,760.6	0.00	0.00	0.00
9,480.0	90.20	315.08	6,490.7	2,144.5	-3,138.1	3,800.0	0.00	0.00	0.00
9,520.0	90.20	315.08	6,490.6	2,172.8	-3,166.4	3,839.5	0.00	0.00	0.00
9,560.0	90.20	315.08	6,490.4	2,201.1	-3,194.6	3,878.9	0.00	0.00	0.00
9,600.0	90.20	315.08	6,490.3	2,229.4	-3,222.9	3,918.4	0.00	0.00	0.00
9,640.0	90.20	315.08	6,490.2	2,257.7	-3,251.1	3,957.8	0.00	0.00	0.00
9,680.0	90.20	315.08	6,490.0	2,286.1	-3,279.4	3,997.3	0.00	0.00	0.00
9,720.0	90.20	315.08	6,489.9	2,314.4	-3,307.6	4,036.7	0.00	0.00	0.00
9,760.0	90.20	315.08	6,489.7	2,342.7	-3,335.9	4,076.2	0.00	0.00	0.00
9,800.0	90.20	315.08	6,489.6	2,371.0	-3,364.1	4,115.6	0.00	0.00	0.00
9,840.0	90.20	315.08	6,489.5	2,399.4	-3,392.3	4,155.1	0.00	0.00	0.00
9,880.0	90.20	315.08	6,489.3	2,427.7	-3,420.6	4,194.5	0.00	0.00	0.00
9,920.0	90.20	315.08	6,489.2	2,456.0	-3,448.8	4,234.0	0.00	0.00	0.00
9,960.0	90.20	315.08	6,489.0	2,484.3	-3,477.1	4,273.4	0.00	0.00	0.00
9,971.1	90.20	315.08	6,489.0	2,492.2	-3,484.9	4,284.3	0.00	0.00	0.00
BHL 2640'FNL & 500'FWL									

Database:	Landmark	Local Co-ordinate Reference:	Well State 36QT-208
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Project:	SEC.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site:	State Pad Sec.36-T6N-R63W	North Reference:	True
Well:	State 36QT-208	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (2-13-12)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
SECTION LINE 170'S	0.00	0.00	1.0	-170.0	-900.0	1,403,486.72	3,310,748.26	40.435603	-104.383633
- plan misses target center by 915.9ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,403,486.72	3,310,748.26		
Point 2			1.0	0.0	1,000.0	1,403,499.34	3,311,748.14		
BHL 2640'FNL & 500'	0.00	0.00	6,489.0	2,492.2	-3,484.9	1,406,115.93	3,308,130.08	40.442910	-104.392920
- plan hits target center									
- Point									
HARDLINE BHL 460'f	0.00	0.00	1.0	2,892.2	-3,524.9	1,406,515.41	3,308,085.02	40.444008	-104.393064
- plan misses target center by 4559.6ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,406,515.41	3,308,085.02		
Point 2			1.0	-800.0	0.0	1,405,715.50	3,308,095.12		
HARDLINE SHL 460'f	0.00	0.00	1.0	290.0	-900.0	1,403,946.66	3,310,742.45	40.436866	-104.383633
- plan misses target center by 945.6ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)									
- Polygon									
Point 1			1.0	0.0	0.0	1,403,946.66	3,310,742.45		
Point 2			1.0	0.0	1,000.0	1,403,959.29	3,311,742.33		

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(")	(")
7,048.6	6,499.2	7"		7	7-1/2

Plan Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S	+E/-W	
(ft)	(ft)	(ft)	(ft)	
1,000.0	1,000.0	0.0	0.0	KOP #1
5,846.0	5,735.3	-120.0	-880.0	KOP #2
7,048.6	6,499.2	422.8	-1,421.3	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.36-T6N-R63W

State Pad Sec.36-T6N-R63W

State 36QT-208

Wellbore #1

Plan #1 (2-13-12)

Anticollision Report

17 February, 2012



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (2-13-12)		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date 2/14/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	9,971.1	Plan #1 (2-13-12) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
State Pad Sec.36-T6N-R63W						
State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)	966.3	967.3	100.2	96.1	24.315	CC
State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)	1,000.0	1,000.0	100.2	95.9	23.468	ES
State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)	9,971.1	11,048.7	963.7	750.6	4.522	SF
Wells Ranch 12-36 (Exist.) - Wellbore #1 - Design #1	9,971.1	6,499.0	611.4	496.2	5.307	CC, ES, SF
Wells Ranch 13-36 (Exist.) - Wellbore #1 - Design #1	9,391.7	6,499.0	362.0	261.2	3.592	CC
Wells Ranch 13-36 (Exist.) - Wellbore #1 - Design #1	9,400.0	6,499.0	362.1	261.1	3.585	ES, SF
Wells Ranch 23-36 (Exist.) - Wellbore #1 - Design #1	8,577.0	6,499.0	570.0	489.0	7.044	CC
Wells Ranch 23-36 (Exist.) - Wellbore #1 - Design #1	8,600.0	6,499.0	570.4	488.9	7.001	ES
Wells Ranch 23-36 (Exist.) - Wellbore #1 - Design #1	8,700.0	6,499.0	583.1	499.1	6.948	SF
Wells Ranch 24-36 (Exist.) - Wellbore #1 - Design #1	7,312.7	6,499.0	415.4	364.1	8.102	CC, ES
Wells Ranch 24-36 (Exist.) - Wellbore #1 - Design #1	7,400.0	6,499.0	424.5	371.2	7.972	SF
Wells Ranch 34-36 (Exist.) - Wellbore #1 - Design #1	6,514.4	6,329.6	529.5	494.1	14.941	CC, ES
Wells Ranch 34-36 (Exist.) - Wellbore #1 - Design #1	6,700.0	6,430.2	551.9	514.0	14.564	SF
Wells Ranch 36B (Exist.) - Wellbore #1 - Design #1	8,455.2	6,499.0	372.6	294.8	4.789	CC, ES
Wells Ranch 36B (Exist.) - Wellbore #1 - Design #1	8,500.0	6,499.0	375.3	296.4	4.758	SF
Wells Ranch 36K (Exist.) - Wellbore #1 - Design #1	9,388.5	6,499.0	612.6	511.7	6.066	CC
Wells Ranch 36K (Exist.) - Wellbore #1 - Design #1	9,400.0	6,499.0	612.7	511.5	6.051	ES
Wells Ranch 36K (Exist.) - Wellbore #1 - Design #1	9,500.0	6,499.0	622.7	518.9	6.001	SF
Wells Ranch 36P (Exist.) - Wellbore #1 - Design #1	7,373.0	6,499.0	660.1	607.5	12.554	CC
Wells Ranch 36P (Exist.) - Wellbore #1 - Design #1	7,400.0	6,499.0	660.7	607.5	12.420	ES
Wells Ranch 36P (Exist.) - Wellbore #1 - Design #1	7,600.0	6,499.0	698.1	640.3	12.076	SF
Wells Ranch 36T (Exist.) - Wellbore #1 - Design #1	1,000.0	1,000.0	50.1	45.8	11.733	CC, ES
Wells Ranch 36T (Exist.) - Wellbore #1 - Design #1	1,100.0	1,100.0	51.8	47.1	11.021	SF

Offset Design	State Pad Sec.36-T6N-R63W - State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)											Offset Site Error:	0.0 ft
Survey Program:	0-MWD											Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance		Minimum Separation		Warning					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.00	0.0	100.2	100.2	100.2	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.00	0.0	100.2	100.2	100.0	0.23	441.446	
200.0	200.0	201.0	201.0	0.3	0.3	90.00	0.0	100.2	100.2	99.5	0.68	148.127	
300.0	300.0	301.0	301.0	0.6	0.6	90.00	0.0	100.2	100.2	99.1	1.13	88.994	

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

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
400.0	400.0	401.0	401.0	0.8	0.8	90.00		0.0	100.2	100.2	98.6	1.58	63.604	
500.0	500.0	501.0	501.0	1.0	1.0	90.00		0.0	100.2	100.2	98.2	2.03	49.485	
600.0	600.0	601.0	601.0	1.2	1.2	90.00		0.0	100.2	100.2	97.7	2.47	40.496	
700.0	700.0	701.0	701.0	1.5	1.5	90.00		0.0	100.2	100.2	97.3	2.92	34.271	
800.0	800.0	801.0	801.0	1.7	1.7	90.00		0.0	100.2	100.2	96.8	3.37	29.704	
900.0	900.0	901.0	901.0	1.9	1.9	90.00		0.0	100.2	100.2	96.4	3.82	26.212	
966.3	966.3	967.3	967.3	2.1	2.1	90.00		0.0	100.2	100.2	96.1	4.12	24.315 CC	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00		0.0	100.2	100.2	95.9	4.27	23.468 ES	
1,100.0	1,100.0	1,097.6	1,097.6	2.3	2.3	-172.10		-0.4	101.8	103.6	98.9	4.68	22.127	
1,200.0	1,199.8	1,193.6	1,193.4	2.5	2.5	-171.77		-1.8	106.5	113.7	108.6	5.07	22.422	
1,300.0	1,299.5	1,288.3	1,287.8	2.8	2.7	-171.32		-3.9	114.2	130.4	124.9	5.46	23.857	
1,400.0	1,398.7	1,382.8	1,381.7	3.0	3.0	-170.85		-6.8	124.6	153.3	147.5	5.87	26.139	
1,500.0	1,497.5	1,479.1	1,477.3	3.3	3.2	-170.60		-10.0	135.9	180.3	174.0	6.26	28.789	
1,600.0	1,595.6	1,574.4	1,571.9	3.6	3.4	-170.54		-13.1	147.0	210.6	203.9	6.66	31.623	
1,700.0	1,693.1	1,668.6	1,665.4	4.0	3.7	-170.60		-16.1	158.0	244.1	237.0	7.05	34.601	
1,800.0	1,789.7	1,761.6	1,757.7	4.4	4.0	-170.76		-19.2	168.9	280.7	273.2	7.46	37.615	
1,900.0	1,886.1	1,854.4	1,849.8	4.8	4.2	-170.97		-22.2	179.7	318.1	310.2	7.91	40.212	
2,000.0	1,982.5	1,947.1	1,941.8	5.3	4.5	-171.15		-25.2	190.6	355.5	347.1	8.36	42.512	
2,100.0	2,078.9	2,039.9	2,033.9	5.8	4.8	-171.29		-28.2	201.4	392.9	384.0	8.82	44.530	
2,200.0	2,175.3	2,132.6	2,125.9	6.3	5.0	-171.40		-31.3	212.3	430.3	421.0	9.29	46.314	
2,300.0	2,271.7	2,225.3	2,218.0	6.9	5.3	-171.50		-34.3	223.1	467.7	457.9	9.76	47.901	
2,400.0	2,368.2	2,318.1	2,310.1	7.4	5.6	-171.58		-37.3	234.0	505.0	494.8	10.24	49.319	
2,500.0	2,464.6	2,410.8	2,402.1	7.9	5.9	-171.65		-40.3	244.8	542.4	531.7	10.72	50.592	
2,600.0	2,561.0	2,503.6	2,494.2	8.5	6.2	-171.71		-43.4	255.6	579.8	568.6	11.21	51.739	
2,700.0	2,657.4	2,596.3	2,586.2	9.0	6.4	-171.77		-46.4	266.5	617.2	605.6	11.70	52.777	
2,800.0	2,753.8	2,689.1	2,678.3	9.6	6.7	-171.81		-49.4	277.3	654.6	642.5	12.19	53.720	
2,900.0	2,850.2	2,781.8	2,770.3	10.1	7.0	-171.86		-52.5	288.2	692.0	679.4	12.68	54.579	
3,000.0	2,946.6	2,874.5	2,862.4	10.7	7.3	-171.90		-55.5	299.0	729.4	716.3	13.18	55.365	
3,100.0	3,043.0	2,967.3	2,954.4	11.2	7.6	-171.93		-58.5	309.8	766.9	753.2	13.67	56.087	
3,200.0	3,139.5	3,060.0	3,046.5	11.8	7.9	-171.96		-61.5	320.7	804.3	790.1	14.17	56.751	
3,300.0	3,235.9	3,152.8	3,138.6	12.4	8.2	-171.99		-64.6	331.5	841.7	827.0	14.67	57.363	
3,400.0	3,332.3	3,245.5	3,230.6	12.9	8.5	-172.02		-67.6	342.4	879.1	863.9	15.17	57.930	
3,500.0	3,428.7	3,338.2	3,322.7	13.5	8.8	-172.04		-70.6	353.2	916.5	900.8	15.68	58.456	
3,600.0	3,525.1	3,431.0	3,414.7	14.0	9.1	-172.06		-73.6	364.1	953.9	937.7	16.18	58.945	
3,700.0	3,621.5	3,523.7	3,506.8	14.6	9.3	-172.08		-76.7	374.9	991.3	974.6	16.69	59.401	
6,900.0	6,485.3	7,978.8	6,659.8	30.7	39.0	99.75		1,017.6	-630.0	995.6	929.7	65.83	15.123	
7,000.0	6,497.8	8,078.0	6,660.3	32.5	41.3	99.31		1,087.0	-700.9	992.4	922.0	70.43	14.091	
7,100.0	6,499.0	8,178.0	6,660.8	34.5	43.7	99.34		1,157.0	-772.3	991.2	916.2	74.96	13.224	
7,200.0	6,498.7	8,278.0	6,661.3	36.5	46.1	99.40		1,227.0	-843.7	990.2	910.8	79.45	12.463	
7,300.0	6,498.3	8,377.9	6,661.8	38.5	48.5	99.46		1,297.0	-915.0	989.3	905.3	84.01	11.775	
7,400.0	6,498.0	8,477.9	6,662.3	40.7	50.9	99.52		1,367.0	-986.4	988.3	899.7	88.62	11.152	
7,500.0	6,497.6	8,577.9	6,662.8	42.8	53.3	99.58		1,437.0	-1,057.8	987.3	894.0	93.28	10.585	
7,600.0	6,497.3	8,677.9	6,663.3	45.0	55.8	99.64		1,507.0	-1,129.2	986.4	888.4	97.97	10.068	
7,700.0	6,496.9	8,777.9	6,663.8	47.3	58.2	99.70		1,577.0	-1,200.6	985.4	882.7	102.69	9.596	
7,800.0	6,496.6	8,877.9	6,664.4	49.6	60.7	99.76		1,647.0	-1,272.0	984.4	877.0	107.43	9.163	
7,900.0	6,496.2	8,977.9	6,664.9	51.9	63.1	99.82		1,717.0	-1,343.4	983.5	871.3	112.20	8.765	
8,000.0	6,495.9	9,077.9	6,665.4	54.2	65.6	99.88		1,787.0	-1,414.8	982.5	865.5	116.99	8.398	
8,100.0	6,495.5	9,177.9	6,665.9	56.5	68.1	99.94		1,857.0	-1,486.2	981.5	859.7	121.79	8.059	
8,200.0	6,495.2	9,277.9	6,666.4	58.9	70.6	100.00		1,927.0	-1,557.6	980.6	854.0	126.61	7.745	
8,300.0	6,494.8	9,377.8	6,666.9	61.3	73.1	100.06		1,997.0	-1,629.0	979.6	848.2	131.45	7.453	
8,400.0	6,494.5	9,477.8	6,667.4	63.7	75.6	100.12		2,067.0	-1,700.4	978.7	842.4	136.29	7.181	

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 State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - State 36TY-408 - Wellbore #1 - Plan #1 (2-14-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (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		
8,500.0	6,494.1	9,577.8	6,667.9	66.1	78.1	100.18	2,137.1	-1,771.8	977.7	836.6	141.14	6.927		
8,600.0	6,493.8	9,677.8	6,668.4	68.5	80.6	100.24	2,207.1	-1,843.2	976.7	830.7	146.00	6.690		
8,700.0	6,493.4	9,777.8	6,668.9	70.9	83.1	100.30	2,277.1	-1,914.6	975.8	824.9	150.87	6.468		
8,800.0	6,493.1	9,877.8	6,669.4	73.3	85.6	100.36	2,347.1	-1,986.0	974.8	819.1	155.75	6.259		
8,900.0	6,492.7	9,977.8	6,669.9	75.8	88.1	100.43	2,417.1	-2,057.4	973.9	813.3	160.63	6.063		
9,000.0	6,492.4	10,077.8	6,670.4	78.2	90.6	100.49	2,487.1	-2,128.8	972.9	807.4	165.51	5.878		
9,100.0	6,492.0	10,177.8	6,670.9	80.7	93.1	100.55	2,557.1	-2,200.2	972.0	801.6	170.40	5.704		
9,200.0	6,491.7	10,277.8	6,671.4	83.1	95.6	100.61	2,627.1	-2,271.6	971.0	795.7	175.30	5.539		
9,300.0	6,491.3	10,377.7	6,671.9	85.6	98.2	100.67	2,697.1	-2,343.0	970.1	789.9	180.19	5.384		
9,400.0	6,491.0	10,477.7	6,672.5	88.1	100.7	100.73	2,767.1	-2,414.4	969.1	784.0	185.09	5.236		
9,500.0	6,490.6	10,577.7	6,673.0	90.5	103.2	100.80	2,837.1	-2,485.8	968.2	778.2	189.99	5.096		
9,600.0	6,490.3	10,677.7	6,673.5	93.0	105.7	100.86	2,907.1	-2,557.2	967.2	772.3	194.90	4.963		
9,700.0	6,489.9	10,777.7	6,674.0	95.5	108.3	100.92	2,977.1	-2,628.6	966.3	766.5	199.80	4.836		
9,800.0	6,489.6	10,877.7	6,674.5	98.0	110.8	100.98	3,047.1	-2,700.0	965.3	760.6	204.71	4.716		
9,900.0	6,489.2	10,977.7	6,675.0	100.5	113.3	101.05	3,117.1	-2,771.4	964.4	754.8	209.61	4.601		
9,971.1	6,489.0	11,048.7	6,675.3	102.2	115.1	101.09	3,166.8	-2,822.1	963.7	750.6	213.10	4.522 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design												State Pad Sec.36-T6N-R63W - Wells Ranch 12-36 (Exist.) - Wellbore #1 - Design #1		Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor					
9,400.0	6,491.0	6,499.0	6,499.0	88.1	14.5	83.32	3,049.5	-3,242.6	977.5	876.5	101.01	9.677					
9,500.0	6,490.6	6,499.0	6,499.0	90.5	14.5	83.32	3,049.5	-3,242.6	898.1	794.6	103.50	8.678					
9,600.0	6,490.3	6,499.0	6,499.0	93.0	14.5	83.32	3,049.5	-3,242.6	823.2	717.2	105.98	7.767					
9,700.0	6,489.9	6,499.0	6,499.0	95.5	14.5	83.32	3,049.5	-3,242.6	754.1	645.6	108.46	6.952					
9,800.0	6,489.6	6,499.0	6,499.0	98.0	14.5	83.32	3,049.5	-3,242.6	692.6	581.6	110.95	6.242					
9,900.0	6,489.2	6,499.0	6,499.0	100.5	14.5	83.32	3,049.5	-3,242.6	640.8	527.4	113.44	5.649					
9,971.1	6,489.0	6,499.0	6,499.0	102.2	14.5	83.32	3,049.5	-3,242.6	611.4	496.2	115.21	5.307 CC, ES, SF					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
State Pad Sec.36-T6N-R63W - Wells Ranch 13-36 (Exist.) - Wellbore #1 - Design #1													
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
8,500.0	6,494.1	6,499.0	6,499.0	66.1	14.5	-81.42	1,829.1	-3,329.1	962.4	883.5	78.93	12.193	
8,600.0	6,493.8	6,499.0	6,499.0	68.5	14.5	-81.42	1,829.1	-3,329.1	870.5	789.2	81.36	10.700	
8,700.0	6,493.4	6,499.0	6,499.0	70.9	14.5	-81.42	1,829.1	-3,329.1	780.7	696.9	83.79	9.317	
8,800.0	6,493.1	6,499.0	6,499.0	73.3	14.5	-81.42	1,829.1	-3,329.1	693.6	607.4	86.24	8.044	
8,900.0	6,492.7	6,499.0	6,499.0	75.8	14.5	-81.42	1,829.1	-3,329.1	610.6	521.9	88.68	6.885	
9,000.0	6,492.4	6,499.0	6,499.0	78.2	14.5	-81.42	1,829.1	-3,329.1	533.3	442.2	91.14	5.852	
9,100.0	6,492.0	6,499.0	6,499.0	80.7	14.5	-81.42	1,829.1	-3,329.1	464.9	371.3	93.59	4.967	
9,200.0	6,491.7	6,499.0	6,499.0	83.1	14.5	-81.42	1,829.1	-3,329.1	409.6	313.5	96.05	4.264	
9,300.0	6,491.3	6,499.0	6,499.0	85.6	14.5	-81.42	1,829.1	-3,329.1	373.4	274.9	98.51	3.790	
9,391.7	6,491.0	6,499.0	6,499.0	87.9	14.5	-81.42	1,829.1	-3,329.1	362.0	261.2	100.78	3.592 CC	
9,400.0	6,491.0	6,499.0	6,499.0	88.1	14.5	-81.42	1,829.1	-3,329.1	362.1	261.1	100.98	3.585 ES, SF	
9,500.0	6,490.6	6,499.0	6,499.0	90.5	14.5	-81.42	1,829.1	-3,329.1	377.8	274.4	103.45	3.652	
9,600.0	6,490.3	6,499.0	6,499.0	93.0	14.5	-81.42	1,829.1	-3,329.1	417.6	311.7	105.92	3.943	
9,700.0	6,489.9	6,499.0	6,499.0	95.5	14.5	-81.42	1,829.1	-3,329.1	475.5	367.1	108.40	4.386	
9,800.0	6,489.6	6,499.0	6,499.0	98.0	14.5	-81.42	1,829.1	-3,329.1	545.6	434.8	110.87	4.921	
9,900.0	6,489.2	6,499.0	6,499.0	100.5	14.5	-81.42	1,829.1	-3,329.1	624.0	510.6	113.35	5.505	
9,971.1	6,489.0	6,499.0	6,499.0	102.2	14.5	-81.42	1,829.1	-3,329.1	683.1	568.0	115.11	5.934	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design												State Pad Sec.36-T6N-R63W - Wells Ranch 23-36 (Exist.) - Wellbore #1 - Design #1		Offset Site Error:		0.0 ft
Survey Program: 0-MWD														Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
7,800.0	6,496.6	6,499.0	6,499.0	49.6	14.5	84.37	1,905.5	-2,098.8	963.7	901.5	62.16	15.503				
7,900.0	6,496.2	6,499.0	6,499.0	51.9	14.5	84.37	1,905.5	-2,098.8	885.0	820.5	64.53	13.715				
8,000.0	6,495.9	6,499.0	6,499.0	54.2	14.5	84.37	1,905.5	-2,098.8	811.1	744.1	66.92	12.120				
8,100.0	6,495.5	6,499.0	6,499.0	56.5	14.5	84.37	1,905.5	-2,098.8	743.2	673.9	69.32	10.722				
8,200.0	6,495.2	6,499.0	6,499.0	58.9	14.5	84.37	1,905.5	-2,098.8	683.4	611.6	71.73	9.527				
8,300.0	6,494.8	6,499.0	6,499.0	61.3	14.5	84.37	1,905.5	-2,098.8	633.7	559.6	74.15	8.546				
8,400.0	6,494.5	6,499.0	6,499.0	63.7	14.5	84.37	1,905.5	-2,098.8	596.8	520.2	76.59	7.793				
8,500.0	6,494.1	6,499.0	6,499.0	66.1	14.5	84.37	1,905.5	-2,098.8	575.1	496.1	79.02	7.278				
8,577.0	6,493.9	6,499.0	6,499.0	67.9	14.5	84.37	1,905.5	-2,098.8	570.0	489.0	80.91	7.044 CC				
8,600.0	6,493.8	6,499.0	6,499.0	68.5	14.5	84.37	1,905.5	-2,098.8	570.4	488.9	81.47	7.001 ES				
8,700.0	6,493.4	6,499.0	6,499.0	70.9	14.5	84.37	1,905.5	-2,098.8	583.1	499.1	83.92	6.948 SF				
8,800.0	6,493.1	6,499.0	6,499.0	73.3	14.5	84.37	1,905.5	-2,098.8	612.0	525.6	86.38	7.085				
8,900.0	6,492.7	6,499.0	6,499.0	75.8	14.5	84.37	1,905.5	-2,098.8	655.1	566.2	88.84	7.373				
9,000.0	6,492.4	6,499.0	6,499.0	78.2	14.5	84.37	1,905.5	-2,098.8	709.7	618.4	91.31	7.773				
9,100.0	6,492.0	6,499.0	6,499.0	80.7	14.5	84.37	1,905.5	-2,098.8	773.5	679.7	93.78	8.248				
9,200.0	6,491.7	6,499.0	6,499.0	83.1	14.5	84.37	1,905.5	-2,098.8	844.3	748.1	96.26	8.772				
9,300.0	6,491.3	6,499.0	6,499.0	85.6	14.5	84.37	1,905.5	-2,098.8	920.6	821.9	98.74	9.324				

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 24-36 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,300.0	6,163.0	6,190.0	6,190.0	23.0	13.8	-29.08	317.0	-1,901.3	990.5	963.4	27.10	36.554		
6,400.0	6,242.0	6,269.0	6,269.0	23.9	14.0	-33.46	317.0	-1,901.3	935.2	908.8	26.45	35.359		
6,500.0	6,312.3	6,339.3	6,339.3	24.9	14.1	-39.50	317.0	-1,901.3	872.1	845.4	26.79	32.559		
6,600.0	6,372.7	6,399.7	6,399.7	26.0	14.3	-47.56	317.0	-1,901.3	803.0	774.1	28.90	27.789		
6,700.0	6,422.2	6,449.2	6,449.2	27.4	14.4	-57.62	317.0	-1,901.3	730.0	697.2	32.88	22.206		
6,800.0	6,459.9	6,486.9	6,486.9	29.0	14.5	-68.79	317.0	-1,901.3	656.0	618.3	37.65	17.425		
6,900.0	6,485.3	6,499.0	6,499.0	30.7	14.5	-77.59	317.0	-1,901.3	584.4	543.0	41.46	14.095		
7,000.0	6,497.8	6,499.0	6,499.0	32.5	14.5	-83.86	317.0	-1,901.3	519.8	475.5	44.33	11.726		
7,100.0	6,499.0	6,499.0	6,499.0	34.5	14.5	-86.37	317.0	-1,901.3	466.7	420.1	46.60	10.015		
7,200.0	6,498.7	6,499.0	6,499.0	36.5	14.5	-86.37	317.0	-1,901.3	430.4	381.6	48.77	8.825		
7,300.0	6,498.3	6,499.0	6,499.0	38.5	14.5	-86.37	317.0	-1,901.3	415.6	364.6	50.99	8.151		
7,312.7	6,498.3	6,499.0	6,499.0	38.8	14.5	-86.37	317.0	-1,901.3	415.4	364.1	51.27	8.102 CC, ES		
7,400.0	6,498.0	6,499.0	6,499.0	40.7	14.5	-86.37	317.0	-1,901.3	424.5	371.2	53.24	7.972 SF		
7,500.0	6,497.6	6,499.0	6,499.0	42.8	14.5	-86.37	317.0	-1,901.3	455.7	400.1	55.53	8.205		
7,600.0	6,497.3	6,499.0	6,499.0	45.0	14.5	-86.37	317.0	-1,901.3	505.1	447.2	57.85	8.731		
7,700.0	6,496.9	6,499.0	6,499.0	47.3	14.5	-86.37	317.0	-1,901.3	567.9	507.7	60.19	9.436		
7,800.0	6,496.6	6,499.0	6,499.0	49.6	14.5	-86.37	317.0	-1,901.3	640.3	577.8	62.55	10.237		
7,900.0	6,496.2	6,499.0	6,499.0	51.9	14.5	-86.37	317.0	-1,901.3	719.3	654.4	64.93	11.079		
8,000.0	6,495.9	6,499.0	6,499.0	54.2	14.5	-86.37	317.0	-1,901.3	803.1	735.7	67.32	11.928		
8,100.0	6,495.5	6,499.0	6,499.0	56.5	14.5	-86.37	317.0	-1,901.3	890.2	820.4	69.73	12.766		
8,200.0	6,495.2	6,499.0	6,499.0	58.9	14.5	-86.37	317.0	-1,901.3	979.7	907.6	72.15	13.579		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 34-36 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	8.0	8.0	0.0	0.0	-57.33	448.1	-698.7	830.1	830.0	0.01	N/A		
100.0	100.0	108.0	108.0	0.1	0.1	-57.33	448.1	-698.7	830.1	829.8	0.24	3,419.432		
200.0	200.0	208.0	208.0	0.3	0.4	-57.33	448.1	-698.7	830.1	829.4	0.69	1,199.022		
300.0	300.0	308.0	308.0	0.6	0.6	-57.33	448.1	-698.7	830.1	828.9	1.14	726.966		
400.0	400.0	408.0	408.0	0.8	0.8	-57.33	448.1	-698.7	830.1	828.5	1.59	521.608		
500.0	500.0	508.0	508.0	1.0	1.0	-57.33	448.1	-698.7	830.1	828.0	2.04	406.717		
600.0	600.0	608.0	608.0	1.2	1.3	-57.33	448.1	-698.7	830.1	827.6	2.49	333.302		
700.0	700.0	708.0	708.0	1.5	1.5	-57.33	448.1	-698.7	830.1	827.1	2.94	282.338		
800.0	800.0	808.0	808.0	1.7	1.7	-57.33	448.1	-698.7	830.1	826.7	3.39	244.893		
900.0	900.0	908.0	908.0	1.9	1.9	-57.33	448.1	-698.7	830.1	826.2	3.84	216.217		
1,000.0	1,000.0	1,008.0	1,008.0	2.1	2.2	-57.33	448.1	-698.7	830.1	825.8	4.29	193.553		
1,100.0	1,100.0	1,108.0	1,108.0	2.3	2.4	40.53	448.1	-698.7	828.7	824.0	4.72	175.507		
1,200.0	1,199.8	1,207.8	1,207.8	2.5	2.6	40.82	448.1	-698.7	824.8	819.6	5.14	160.361		
1,300.0	1,299.5	1,307.5	1,307.5	2.8	2.8	41.31	448.1	-698.7	818.2	812.6	5.57	146.869		
1,400.0	1,398.7	1,406.7	1,406.7	3.0	3.0	42.00	448.1	-698.7	809.0	803.0	6.01	134.649		
1,500.0	1,497.5	1,505.5	1,505.5	3.3	3.3	42.91	448.1	-698.7	797.4	791.0	6.46	123.402		
1,600.0	1,595.6	1,603.6	1,603.6	3.6	3.5	44.04	448.1	-698.7	783.5	776.5	6.94	112.903		
1,700.0	1,693.1	1,701.1	1,701.1	4.0	3.7	45.43	448.1	-698.7	767.3	759.8	7.45	102.992		
1,800.0	1,789.7	1,797.7	1,797.7	4.4	3.9	46.99	448.1	-698.7	749.2	741.2	8.01	93.527		
1,900.0	1,886.1	1,894.1	1,894.1	4.8	4.1	48.48	448.1	-698.7	731.0	722.3	8.62	84.803		
2,000.0	1,982.5	1,990.5	1,990.5	5.3	4.4	50.05	448.1	-698.7	713.3	704.0	9.26	77.037		
2,100.0	2,078.9	2,086.9	2,086.9	5.8	4.6	51.68	448.1	-698.7	696.1	686.2	9.93	70.136		
2,200.0	2,175.3	2,183.3	2,183.3	6.3	4.8	53.40	448.1	-698.7	679.6	669.0	10.62	64.007		
2,300.0	2,271.7	2,279.7	2,279.7	6.9	5.0	55.20	448.1	-698.7	663.8	652.4	11.33	58.564		
2,400.0	2,368.2	2,376.2	2,376.2	7.4	5.2	57.07	448.1	-698.7	648.6	636.5	12.07	53.727		
2,500.0	2,464.6	2,472.6	2,472.6	7.9	5.4	59.03	448.1	-698.7	634.2	621.3	12.83	49.427		
2,600.0	2,561.0	2,569.0	2,569.0	8.5	5.7	61.08	448.1	-698.7	620.6	607.0	13.61	45.602		
2,700.0	2,657.4	2,665.4	2,665.4	9.0	5.9	63.21	448.1	-698.7	607.8	593.4	14.40	42.200		
2,800.0	2,753.8	2,761.8	2,761.8	9.6	6.1	65.42	448.1	-698.7	595.9	580.7	15.21	39.176		
2,900.0	2,850.2	2,858.2	2,858.2	10.1	6.3	67.71	448.1	-698.7	585.1	569.0	16.03	36.488		
3,000.0	2,946.6	2,954.6	2,954.6	10.7	6.5	70.08	448.1	-698.7	575.2	558.3	16.87	34.104		
3,100.0	3,043.0	3,051.0	3,051.0	11.2	6.7	72.52	448.1	-698.7	566.4	548.7	17.70	31.993		
3,200.0	3,139.5	3,147.5	3,147.5	11.8	7.0	75.03	448.1	-698.7	558.7	540.2	18.54	30.128		
3,300.0	3,235.9	3,243.9	3,243.9	12.4	7.2	77.60	448.1	-698.7	552.2	532.8	19.38	28.487		
3,400.0	3,332.3	3,340.3	3,340.3	12.9	7.4	80.23	448.1	-698.7	546.9	526.7	20.22	27.049		
3,500.0	3,428.7	3,436.7	3,436.7	13.5	7.6	82.89	448.1	-698.7	542.9	521.9	21.05	25.795		
3,600.0	3,525.1	3,533.1	3,533.1	14.0	7.8	85.59	448.1	-698.7	540.1	518.3	21.86	24.708		
3,700.0	3,621.5	3,629.5	3,629.5	14.6	8.0	88.30	448.1	-698.7	538.7	516.0	22.66	23.775		
3,762.3	3,681.6	3,689.6	3,689.6	15.0	8.2	90.00	448.1	-698.7	538.4	515.3	23.14	23.264		
3,800.0	3,717.9	3,725.9	3,725.9	15.2	8.3	91.03	448.1	-698.7	538.5	515.1	23.43	22.980		
3,900.0	3,814.3	3,822.3	3,822.3	15.7	8.5	93.74	448.1	-698.7	539.7	515.5	24.19	22.312		
4,000.0	3,910.8	3,918.8	3,918.8	16.3	8.7	96.45	448.1	-698.7	542.1	517.2	24.91	21.759		
4,100.0	4,007.2	4,015.2	4,015.2	16.9	8.9	99.12	448.1	-698.7	545.8	520.2	25.61	21.311		
4,200.0	4,103.6	4,111.6	4,111.6	17.4	9.1	101.75	448.1	-698.7	550.8	524.5	26.28	20.956		
4,300.0	4,200.0	4,208.0	4,208.0	18.0	9.3	104.34	448.1	-698.7	557.0	530.1	26.92	20.688		
4,400.0	4,296.6	4,304.6	4,304.6	18.5	9.6	106.89	448.1	-698.7	564.2	536.7	27.49	20.521		
4,500.0	4,393.9	4,401.9	4,401.9	18.9	9.8	109.17	448.1	-698.7	571.5	543.5	27.93	20.458		
4,600.0	4,492.0	4,500.0	4,500.0	19.3	10.0	111.09	448.1	-698.7	578.3	549.9	28.34	20.403		
4,700.0	4,590.7	4,598.7	4,598.7	19.5	10.2	112.65	448.1	-698.7	584.3	555.6	28.73	20.340		
4,800.0	4,689.9	4,697.9	4,697.9	19.8	10.4	113.86	448.1	-698.7	589.3	560.2	29.09	20.256		
4,900.0	4,789.5	4,797.5	4,797.5	20.0	10.7	114.73	448.1	-698.7	593.1	563.6	29.44	20.142		

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 State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 34-36 (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.0	4,889.3	4,897.3	4,897.3	20.2	10.9	115.26	448.1	-698.7	595.4	565.6	29.78	19.993		
5,100.0	4,989.3	4,997.3	4,997.3	20.3	11.1	115.46	448.1	-698.7	596.3	566.2	30.11	19.805		
5,200.0	5,089.3	5,097.3	5,097.3	20.4	11.3	17.70	448.1	-698.7	596.3	571.6	24.78	24.067		
5,300.0	5,189.3	5,197.3	5,197.3	20.5	11.6	17.70	448.1	-698.7	596.3	571.2	25.17	23.692		
5,400.0	5,289.3	5,297.3	5,297.3	20.6	11.8	17.70	448.1	-698.7	596.3	570.8	25.56	23.327		
5,500.0	5,389.3	5,397.3	5,397.3	20.7	12.0	17.70	448.1	-698.7	596.3	570.4	25.96	22.972		
5,600.0	5,489.3	5,497.3	5,497.3	20.9	12.2	17.70	448.1	-698.7	596.3	570.0	26.36	22.626		
5,700.0	5,589.3	5,597.3	5,597.3	21.0	12.5	17.70	448.1	-698.7	596.3	569.6	26.76	22.289		
5,800.0	5,689.3	5,697.3	5,697.3	21.1	12.7	17.70	448.1	-698.7	596.3	569.2	27.16	21.960		
5,900.0	5,789.2	5,797.2	5,797.2	21.3	12.9	62.84	448.1	-698.7	595.5	562.6	32.89	18.105		
6,000.0	5,888.2	5,896.2	5,896.2	21.5	13.1	64.41	448.1	-698.7	589.4	556.3	33.10	17.807		
6,100.0	5,984.6	5,992.6	5,992.6	21.9	13.4	67.47	448.1	-698.7	578.3	545.0	33.25	17.391		
6,200.0	6,076.8	6,084.8	6,084.8	22.4	13.6	71.88	448.1	-698.7	563.8	530.4	33.46	16.851		
6,300.0	6,163.0	6,171.0	6,171.0	23.0	13.8	77.37	448.1	-698.7	548.6	514.7	33.83	16.215		
6,400.0	6,242.0	6,250.0	6,250.0	23.9	13.9	83.39	448.1	-698.7	535.8	501.4	34.44	15.561		
6,500.0	6,312.3	6,320.3	6,320.3	24.9	14.1	89.22	448.1	-698.7	529.6	494.4	35.30	15.006		
6,514.4	6,321.6	6,329.6	6,329.6	25.0	14.1	90.00	448.1	-698.7	529.5	494.1	35.44	14.941 CC, ES		
6,600.0	6,372.7	6,380.7	6,380.7	26.0	14.2	94.08	448.1	-698.7	534.0	497.5	36.43	14.659		
6,700.0	6,422.2	6,430.2	6,430.2	27.4	14.3	97.32	448.1	-698.7	551.9	514.0	37.89	14.564 SF		
6,800.0	6,459.9	6,467.9	6,467.9	29.0	14.4	98.43	448.1	-698.7	584.7	544.9	39.77	14.701		
6,900.0	6,485.3	6,493.3	6,493.3	30.7	14.5	97.05	448.1	-698.7	631.8	589.7	42.06	15.021		
7,000.0	6,497.8	6,499.0	6,499.0	32.5	14.5	92.15	448.1	-698.7	690.9	646.4	44.47	15.535		
7,100.0	6,499.0	6,499.0	6,499.0	34.5	14.5	88.93	448.1	-698.7	759.0	712.4	46.56	16.303		
7,200.0	6,498.7	6,499.0	6,499.0	36.5	14.5	88.93	448.1	-698.7	833.6	784.8	48.73	17.107		
7,300.0	6,498.3	6,499.0	6,499.0	38.5	14.5	88.93	448.1	-698.7	913.0	862.0	50.95	17.920		
7,400.0	6,498.0	6,499.0	6,499.0	40.7	14.5	88.93	448.1	-698.7	996.1	942.9	53.21	18.722		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 36B (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,600.0	6,497.3	6,499.0	6,499.0	45.0	14.5	-81.16	1,158.7	-2,675.0	932.8	875.3	57.48	16.229		
7,700.0	6,496.9	6,499.0	6,499.0	47.3	14.5	-81.16	1,158.7	-2,675.0	842.1	782.3	59.80	14.083		
7,800.0	6,496.6	6,499.0	6,499.0	49.6	14.5	-81.16	1,158.7	-2,675.0	753.7	691.6	62.14	12.130		
7,900.0	6,496.2	6,499.0	6,499.0	51.9	14.5	-81.16	1,158.7	-2,675.0	668.6	604.1	64.49	10.367		
8,000.0	6,495.9	6,499.0	6,499.0	54.2	14.5	-81.16	1,158.7	-2,675.0	588.2	521.4	66.86	8.797		
8,100.0	6,495.5	6,499.0	6,499.0	56.5	14.5	-81.16	1,158.7	-2,675.0	514.8	445.5	69.25	7.434		
8,200.0	6,495.2	6,499.0	6,499.0	58.9	14.5	-81.16	1,158.7	-2,675.0	451.6	380.0	71.64	6.303		
8,300.0	6,494.8	6,499.0	6,499.0	61.3	14.5	-81.16	1,158.7	-2,675.0	403.6	329.6	74.05	5.451		
8,400.0	6,494.5	6,499.0	6,499.0	63.7	14.5	-81.16	1,158.7	-2,675.0	376.7	300.2	76.46	4.926		
8,455.2	6,494.3	6,499.0	6,499.0	65.0	14.5	-81.16	1,158.7	-2,675.0	372.6	294.8	77.80	4.789 CC, ES		
8,500.0	6,494.1	6,499.0	6,499.0	66.1	14.5	-81.16	1,158.7	-2,675.0	375.3	296.4	78.88	4.758 SF		
8,600.0	6,493.8	6,499.0	6,499.0	68.5	14.5	-81.16	1,158.7	-2,675.0	399.8	318.5	81.31	4.916		
8,700.0	6,493.4	6,499.0	6,499.0	70.9	14.5	-81.16	1,158.7	-2,675.0	445.9	362.1	83.75	5.324		
8,800.0	6,493.1	6,499.0	6,499.0	73.3	14.5	-81.16	1,158.7	-2,675.0	507.7	421.5	86.19	5.890		
8,900.0	6,492.7	6,499.0	6,499.0	75.8	14.5	-81.16	1,158.7	-2,675.0	580.3	491.6	88.63	6.547		
9,000.0	6,492.4	6,499.0	6,499.0	78.2	14.5	-81.16	1,158.7	-2,675.0	660.1	569.0	91.09	7.247		
9,100.0	6,492.0	6,499.0	6,499.0	80.7	14.5	-81.16	1,158.7	-2,675.0	744.8	651.2	93.54	7.962		
9,200.0	6,491.7	6,499.0	6,499.0	83.1	14.5	-81.16	1,158.7	-2,675.0	832.8	736.8	96.00	8.676		
9,300.0	6,491.3	6,499.0	6,499.0	85.6	14.5	-81.16	1,158.7	-2,675.0	923.4	824.9	98.46	9.378		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 36K (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
8,600.0	6,493.8	6,499.0	6,499.0	68.5	14.5	84.66	2,510.3	-2,641.5	998.6	917.0	81.51	12.250		
8,700.0	6,493.4	6,499.0	6,499.0	70.9	14.5	84.66	2,510.3	-2,641.5	921.6	837.7	83.97	10.976		
8,800.0	6,493.1	6,499.0	6,499.0	73.3	14.5	84.66	2,510.3	-2,641.5	849.5	763.1	86.43	9.830		
8,900.0	6,492.7	6,499.0	6,499.0	75.8	14.5	84.66	2,510.3	-2,641.5	783.6	694.7	88.89	8.815		
9,000.0	6,492.4	6,499.0	6,499.0	78.2	14.5	84.66	2,510.3	-2,641.5	725.5	634.1	91.36	7.941		
9,100.0	6,492.0	6,499.0	6,499.0	80.7	14.5	84.66	2,510.3	-2,641.5	677.2	583.4	93.83	7.217		
9,200.0	6,491.7	6,499.0	6,499.0	83.1	14.5	84.66	2,510.3	-2,641.5	641.0	544.7	96.31	6.656		
9,300.0	6,491.3	6,499.0	6,499.0	85.6	14.5	84.66	2,510.3	-2,641.5	619.0	520.2	98.79	6.266		
9,388.5	6,491.0	6,499.0	6,499.0	87.8	14.5	84.66	2,510.3	-2,641.5	612.6	511.7	100.99	6.066 CC		
9,400.0	6,491.0	6,499.0	6,499.0	88.1	14.5	84.66	2,510.3	-2,641.5	612.7	511.5	101.27	6.051 ES		
9,500.0	6,490.6	6,499.0	6,499.0	90.5	14.5	84.66	2,510.3	-2,641.5	622.7	518.9	103.76	6.001 SF		
9,600.0	6,490.3	6,499.0	6,499.0	93.0	14.5	84.66	2,510.3	-2,641.5	648.1	541.9	106.25	6.100		
9,700.0	6,489.9	6,499.0	6,499.0	95.5	14.5	84.66	2,510.3	-2,641.5	687.3	578.5	108.74	6.320		
9,800.0	6,489.6	6,499.0	6,499.0	98.0	14.5	84.66	2,510.3	-2,641.5	738.0	626.8	111.23	6.635		
9,900.0	6,489.2	6,499.0	6,499.0	100.5	14.5	84.66	2,510.3	-2,641.5	798.1	684.3	113.73	7.017		
9,971.1	6,489.0	6,499.0	6,499.0	102.2	14.5	84.66	2,510.3	-2,641.5	845.4	729.9	115.50	7.319		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 36P (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,600.0	6,372.7	6,389.7	6,389.7	26.0	14.2	58.00	1,118.5	-1,183.0	997.5	962.0	35.56	28.050		
6,700.0	6,422.2	6,439.2	6,439.2	27.4	14.4	66.33	1,118.5	-1,183.0	934.2	896.7	37.50	24.914		
6,800.0	6,459.9	6,476.9	6,476.9	29.0	14.4	74.75	1,118.5	-1,183.0	871.2	831.4	39.82	21.880		
6,900.0	6,485.3	6,499.0	6,499.0	30.7	14.5	81.99	1,118.5	-1,183.0	811.4	769.2	42.16	19.246		
7,000.0	6,497.8	6,499.0	6,499.0	32.5	14.5	86.69	1,118.5	-1,183.0	758.2	713.8	44.37	17.089		
7,100.0	6,499.0	6,499.0	6,499.0	34.5	14.5	88.61	1,118.5	-1,183.0	714.4	667.8	46.54	15.348		
7,200.0	6,498.7	6,499.0	6,499.0	36.5	14.5	88.61	1,118.5	-1,183.0	682.4	633.7	48.71	14.009		
7,300.0	6,498.3	6,499.0	6,499.0	38.5	14.5	88.61	1,118.5	-1,183.0	664.2	613.2	50.93	13.040		
7,373.0	6,498.1	6,499.0	6,499.0	40.1	14.5	88.61	1,118.5	-1,183.0	660.1	607.5	52.58	12.554 CC		
7,400.0	6,498.0	6,499.0	6,499.0	40.7	14.5	88.61	1,118.5	-1,183.0	660.7	607.5	53.19	12.420 ES		
7,500.0	6,497.6	6,499.0	6,499.0	42.8	14.5	88.61	1,118.5	-1,183.0	672.2	616.7	55.49	12.115		
7,600.0	6,497.3	6,499.0	6,499.0	45.0	14.5	88.61	1,118.5	-1,183.0	698.1	640.3	57.81	12.076 SF		
7,700.0	6,496.9	6,499.0	6,499.0	47.3	14.5	88.61	1,118.5	-1,183.0	736.7	676.5	60.15	12.247		
7,800.0	6,496.6	6,499.0	6,499.0	49.6	14.5	88.61	1,118.5	-1,183.0	786.2	723.7	62.52	12.575		
7,900.0	6,496.2	6,499.0	6,499.0	51.9	14.5	88.61	1,118.5	-1,183.0	844.7	779.8	64.90	13.015		
8,000.0	6,495.9	6,499.0	6,499.0	54.2	14.5	88.61	1,118.5	-1,183.0	910.4	843.1	67.30	13.528		
8,100.0	6,495.5	6,499.0	6,499.0	56.5	14.5	88.61	1,118.5	-1,183.0	982.0	912.3	69.71	14.087		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design State Pad Sec.36-T6N-R63W - Wells Ranch 36T (Exist.) - Wellbore #1 - Design #1													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.00	0.0	50.1	50.1					
100.0	100.0	100.0	100.0	0.1	0.1	90.00	0.0	50.1	50.1	49.9	0.22	222.930		
200.0	200.0	200.0	200.0	0.3	0.3	90.00	0.0	50.1	50.1	49.4	0.67	74.310		
300.0	300.0	300.0	300.0	0.6	0.6	90.00	0.0	50.1	50.1	49.0	1.12	44.586		
400.0	400.0	400.0	400.0	0.8	0.8	90.00	0.0	50.1	50.1	48.5	1.57	31.847		
500.0	500.0	500.0	500.0	1.0	1.0	90.00	0.0	50.1	50.1	48.1	2.02	24.770		
600.0	600.0	600.0	600.0	1.2	1.2	90.00	0.0	50.1	50.1	47.6	2.47	20.266		
700.0	700.0	700.0	700.0	1.5	1.5	90.00	0.0	50.1	50.1	47.2	2.92	17.148		
800.0	800.0	800.0	800.0	1.7	1.7	90.00	0.0	50.1	50.1	46.7	3.37	14.862		
900.0	900.0	900.0	900.0	1.9	1.9	90.00	0.0	50.1	50.1	46.3	3.82	13.114		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.00	0.0	50.1	50.1	45.8	4.27	11.733 CC, ES		
1,100.0	1,100.0	1,100.0	1,100.0	2.3	2.4	-172.49	0.0	50.1	51.8	47.1	4.70	11.021 SF		
1,200.0	1,199.8	1,199.8	1,199.8	2.5	2.6	-173.17	0.0	50.1	57.0	51.9	5.12	11.137		
1,300.0	1,299.5	1,299.5	1,299.5	2.8	2.8	-174.05	0.0	50.1	65.7	60.2	5.54	11.862		
1,400.0	1,398.7	1,398.7	1,398.7	3.0	3.0	-174.96	0.0	50.1	77.8	71.9	5.95	13.072		
1,500.0	1,497.5	1,497.5	1,497.5	3.3	3.3	-175.78	0.0	50.1	93.4	87.0	6.37	14.674		
1,600.0	1,595.6	1,595.6	1,595.6	3.6	3.5	-176.47	0.0	50.1	112.5	105.7	6.78	16.595		
1,700.0	1,693.1	1,693.1	1,693.1	4.0	3.7	-177.04	0.0	50.1	134.9	127.7	7.18	18.782		
1,800.0	1,789.7	1,789.7	1,789.7	4.4	3.9	-177.49	0.0	50.1	160.6	153.0	7.60	21.129		
1,900.0	1,886.1	1,886.1	1,886.1	4.8	4.1	-177.85	0.0	50.1	187.1	179.1	8.06	23.230		
2,000.0	1,982.5	1,982.5	1,982.5	5.3	4.3	-178.12	0.0	50.1	213.7	205.2	8.52	25.090		
2,100.0	2,078.9	2,078.9	2,078.9	5.8	4.6	-178.32	0.0	50.1	240.2	231.2	8.98	26.744		
2,200.0	2,175.3	2,175.3	2,175.3	6.3	4.8	-178.49	0.0	50.1	266.7	257.3	9.45	28.222		
2,300.0	2,271.7	2,271.7	2,271.7	6.9	5.0	-178.63	0.0	50.1	293.3	283.4	9.92	29.550		
2,400.0	2,368.2	2,368.2	2,368.2	7.4	5.2	-178.74	0.0	50.1	319.8	309.4	10.40	30.747		
2,500.0	2,464.6	2,464.6	2,464.6	7.9	5.4	-178.84	0.0	50.1	346.4	335.5	10.88	31.832		
2,600.0	2,561.0	2,561.0	2,561.0	8.5	5.6	-178.92	0.0	50.1	372.9	361.5	11.36	32.819		
2,700.0	2,657.4	2,657.4	2,657.4	9.0	5.9	-178.99	0.0	50.1	399.4	387.6	11.85	33.720		
2,800.0	2,753.8	2,753.8	2,753.8	9.6	6.1	-179.06	0.0	50.1	426.0	413.7	12.33	34.545		
2,900.0	2,850.2	2,850.2	2,850.2	10.1	6.3	-179.11	0.0	50.1	452.5	439.7	12.82	35.303		
3,000.0	2,946.6	2,946.6	2,946.6	10.7	6.5	-179.16	0.0	50.1	479.1	465.8	13.31	36.002		
3,100.0	3,043.0	3,043.0	3,043.0	11.2	6.7	-179.20	0.0	50.1	505.6	491.8	13.80	36.649		
3,200.0	3,139.5	3,139.5	3,139.5	11.8	6.9	-179.24	0.0	50.1	532.2	517.9	14.29	37.248		
3,300.0	3,235.9	3,235.9	3,235.9	12.4	7.2	-179.28	0.0	50.1	558.7	543.9	14.78	37.805		
3,400.0	3,332.3	3,332.3	3,332.3	12.9	7.4	-179.31	0.0	50.1	585.2	570.0	15.27	38.324		
3,500.0	3,428.7	3,428.7	3,428.7	13.5	7.6	-179.34	0.0	50.1	611.8	596.0	15.76	38.808		
3,600.0	3,525.1	3,525.1	3,525.1	14.0	7.8	-179.37	0.0	50.1	638.3	622.1	16.26	39.261		
3,700.0	3,621.5	3,621.5	3,621.5	14.6	8.0	-179.39	0.0	50.1	664.9	648.1	16.75	39.686		
3,800.0	3,717.9	3,717.9	3,717.9	15.2	8.2	-179.42	0.0	50.1	691.4	674.2	17.25	40.085		
3,900.0	3,814.3	3,814.3	3,814.3	15.7	8.5	-179.44	0.0	50.1	718.0	700.2	17.74	40.461		
4,000.0	3,910.8	3,910.8	3,910.8	16.3	8.7	-179.46	0.0	50.1	744.5	726.3	18.24	40.815		
4,100.0	4,007.2	4,007.2	4,007.2	16.9	8.9	-179.48	0.0	50.1	771.1	752.3	18.74	41.149		
4,200.0	4,103.6	4,103.6	4,103.6	17.4	9.1	-179.50	0.0	50.1	797.6	778.4	19.24	41.464		
4,300.0	4,200.0	4,200.0	4,200.0	18.0	9.3	-179.51	0.0	50.1	824.2	804.4	19.73	41.763		
4,400.0	4,296.6	4,296.6	4,296.6	18.5	9.5	-179.53	0.0	50.1	850.1	829.8	20.27	41.936		
4,500.0	4,393.9	4,393.9	4,393.9	18.9	9.8	-179.55	0.0	50.1	873.0	852.2	20.80	41.977		
4,600.0	4,492.0	4,492.0	4,492.0	19.3	10.0	-179.56	0.0	50.1	892.4	871.1	21.29	41.911		
4,700.0	4,590.7	4,590.7	4,590.7	19.5	10.2	-179.57	0.0	50.1	908.4	886.7	21.76	41.749		
4,800.0	4,689.9	4,689.9	4,689.9	19.8	10.4	-179.58	0.0	50.1	921.0	898.8	22.19	41.497		
4,900.0	4,789.5	4,789.5	4,789.5	20.0	10.7	-179.58	0.0	50.1	930.1	907.5	22.60	41.162		
5,000.0	4,889.3	4,889.3	4,889.3	20.2	10.9	-179.59	0.0	50.1	935.7	912.7	22.96	40.748		

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 State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Offset Design												State Pad Sec.36-T6N-R63W - Wells Ranch 36T (Exist.) - Wellbore #1 - Design #1		Offset Site Error:		0.0 ft	
Survey Program: 0-MWD														Offset Well Error:		0.0 ft	
Reference		Offset		Semi Major Axis			Distance							Warning			
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Minimum Separation	Separation Factor						
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)						
5,100.0	4,989.3	4,989.3	4,989.3	20.3	11.1	-179.59	0.0	50.1	937.8	914.5	23.30	40.257					
5,200.0	5,089.3	5,089.3	5,089.3	20.4	11.3	82.65	0.0	50.1	937.8	909.5	28.32	33.111					
5,300.0	5,189.3	5,189.3	5,189.3	20.5	11.6	82.65	0.0	50.1	937.8	909.1	28.68	32.697					
5,400.0	5,289.3	5,289.3	5,289.3	20.6	11.8	82.65	0.0	50.1	937.8	908.8	29.04	32.292					
5,500.0	5,389.3	5,389.3	5,389.3	20.7	12.0	82.65	0.0	50.1	937.8	908.4	29.40	31.894					
5,600.0	5,489.3	5,489.3	5,489.3	20.9	12.2	82.65	0.0	50.1	937.8	908.0	29.77	31.504					
5,700.0	5,589.3	5,589.3	5,589.3	21.0	12.5	82.65	0.0	50.1	937.8	907.7	30.13	31.122					
5,800.0	5,689.3	5,689.3	5,689.3	21.1	12.7	82.65	0.0	50.1	937.8	907.3	30.50	30.747					
5,822.0	5,711.3	5,711.3	5,711.3	21.2	12.7	127.57	0.0	50.1	937.9	911.7	26.24	35.741					
5,900.0	5,789.2	5,789.2	5,789.2	21.3	12.9	127.59	0.0	50.1	939.0	912.4	26.62	35.275					
6,000.0	5,888.2	5,888.2	5,888.2	21.5	13.1	127.74	0.0	50.1	947.3	920.3	27.08	34.984					
6,100.0	5,984.6	5,984.6	5,984.6	21.9	13.3	127.97	0.0	50.1	963.9	936.5	27.43	35.141					
6,200.0	6,076.8	6,076.8	6,076.8	22.4	13.5	128.13	0.0	50.1	989.0	961.3	27.71	35.691					

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4729.0ft (RKB Ensign 32 -15') Coordinates are relative to: State 36QT-208
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.72°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well State 36QT-208
Project:	SEC.36-T6N-R63W	TVD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Reference Site:	State Pad Sec.36-T6N-R63W	MD Reference:	WELL @ 4729.0ft (RKB Ensign 32 -15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	State 36QT-208	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 (2-13-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4729.0ft (RKB Ensign 32 -15') Coordinates are relative to: State 36QT-208

Offset Depths are relative to Offset Datum

Coordinate System is US State Plane 1983, Colorado Northern Zone

Central Meridian is -105.500000 °

Grid Convergence at Surface is: 0.72°

