

PETROLEUM DEVELOPMENT CORP Weld County CO

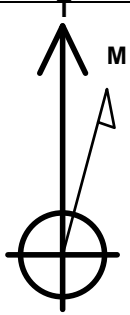
Well Name: Brown 2G-212

Surface Location: Brown Pad Sec.2-T6N-R63W
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone
Ground Elevation: 4710.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1433902.18	3302430.86	40.519370	-104.412170	
		RKB Ensign 32 - 15'				
		WELL @ 4725.0ft (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'FEL (5)	1.0	-1000.0	4485.8	1432957.32	3306928.43	40.516624	-104.396036	Polygon
HARDLINE SHL 460'FWL (5)	1.0	-1000.0	210.0	1432904.87	3302853.10	40.516625	-104.411415	Polygon
SECTIONLINE 250'W OF SHL (5)	1.0	-1000.0	-250.0	1432899.22	3302193.15	40.516625	-104.413069	Polygon
BHL 2080'FNL & 500'FEL	6520.0	-830.2	4445.8	1433126.57	3306886.40	40.517090	-104.396180	Point



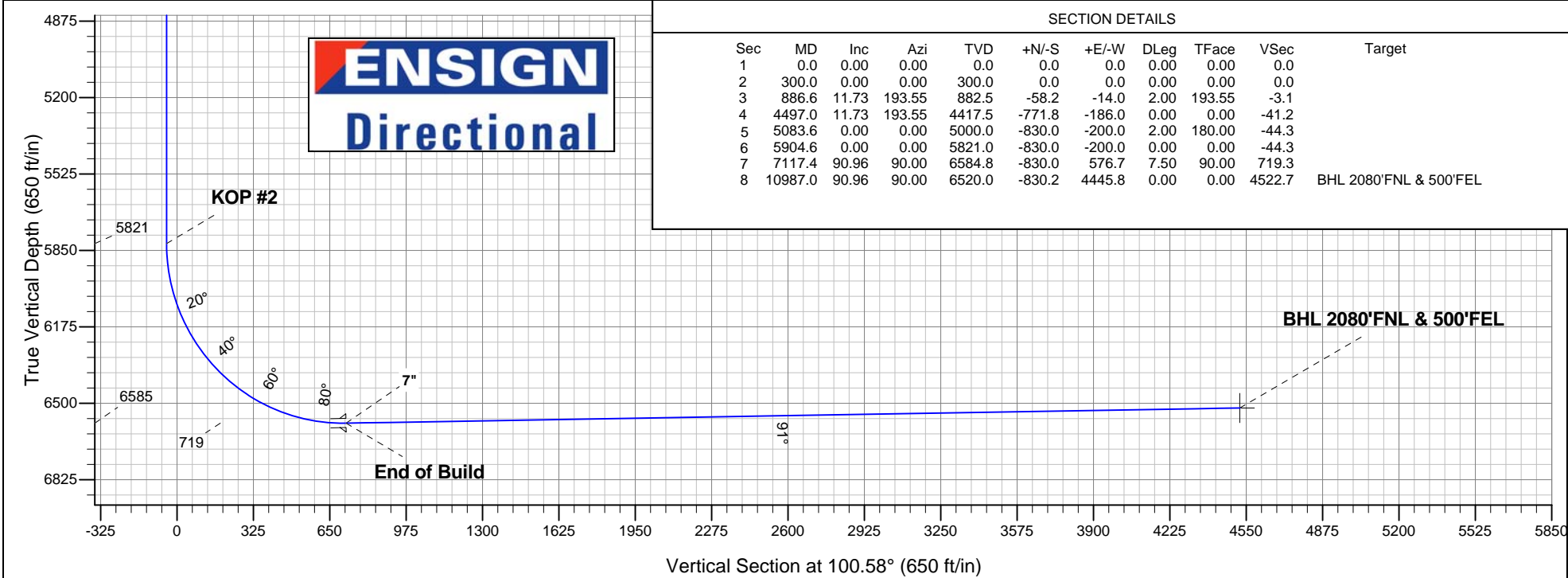
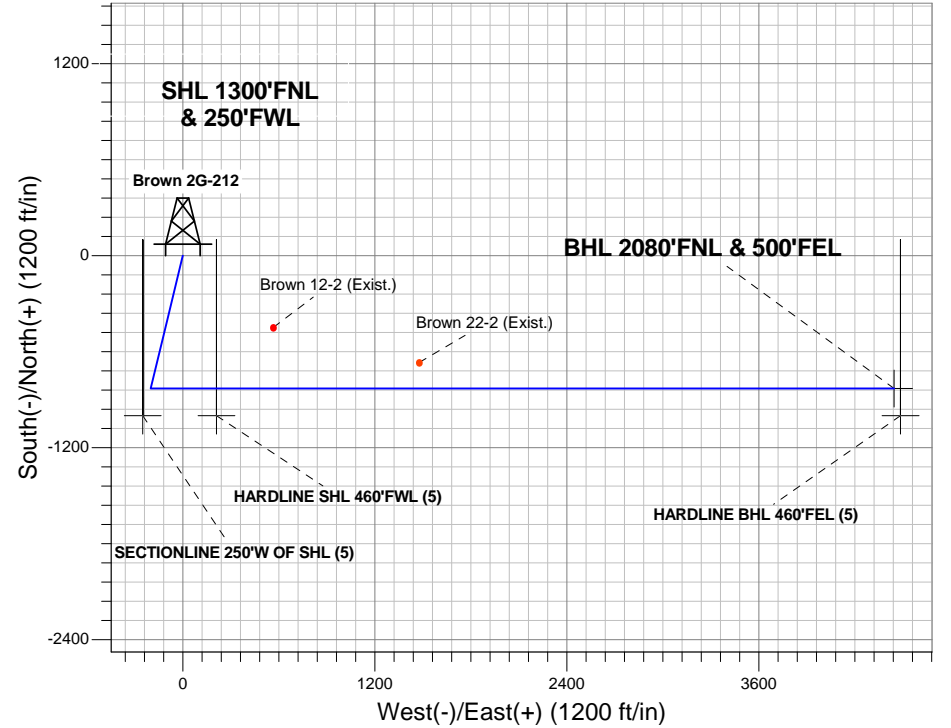
Azimuths to True North
Magnetic North: 8.55°

Magnetic Field
Strength: 53131.3snT
Dip Angle: 67.17°
Date: 5/29/2012
Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
300.0	300.0	KOP #1
5821.0	5904.6	KOP #2
6584.8	7117.4	End of Build

Brown Pad Sec.2-T6N-R63W
Brown 2G-212
Plan #1 (5-29-12)
13:33, May 31 2012





PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T6N-R63W

Brown Pad Sec.2-T6N-R63W

Brown 2G-212

Wellbore #1

Plan: Plan #1 (5-29-12)

Standard Planning Report

31 May, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

Project	SEC.2-T6N-R63W, 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	Brown Pad Sec.2-T6N-R63W		
Site Position:		Northing:	1,433,964.08 ft
From:	Lat/Long	Easting:	3,302,427.32 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.519540
		Longitude:	-104.412180
		Grid Convergence:	0.70 °

Well	Brown 2G-212		
Well Position	+N/-S	-61.9 ft	Northing:
	+E/-W	2.8 ft	Easting:
Position Uncertainty		0.0 ft	Wellhead Elevation:
			ft
			Latitude:
			40.519370
			Longitude:
			-104.412170
			Ground Level:
			4,710.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/29/2012	8.56	67.17	53,131

Design	Plan #1 (5-29-12)			
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	100.58

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	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
886.6	11.73	193.55	882.5	-58.2	-14.0	2.00	2.00	0.00	193.55	
4,497.0	11.73	193.55	4,417.5	-771.8	-186.0	0.00	0.00	0.00	0.00	
5,083.6	0.00	0.00	5,000.0	-830.0	-200.0	2.00	-2.00	0.00	180.00	
5,904.6	0.00	0.00	5,821.0	-830.0	-200.0	0.00	0.00	0.00	0.00	
7,117.4	90.96	90.00	6,584.8	-830.0	576.7	7.50	7.50	0.00	90.00	
10,987.0	90.96	90.00	6,520.0	-830.2	4,445.8	0.00	0.00	0.00	0.00	BHL 2080'FNL & 5C

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

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
HARDLINE SHL 460'FWL (5) - SECTIONLINE 250'W OF SHL (5) - HARDLINE BHL 460'FEL (5)									
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
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
320.0	0.40	193.55	320.0	-0.1	0.0	0.0	2.00	2.00	0.00
360.0	1.20	193.55	360.0	-0.6	-0.1	0.0	2.00	2.00	0.00
400.0	2.00	193.55	400.0	-1.7	-0.4	-0.1	2.00	2.00	0.00
440.0	2.80	193.55	439.9	-3.3	-0.8	-0.2	2.00	2.00	0.00
480.0	3.60	193.55	479.9	-5.5	-1.3	-0.3	2.00	2.00	0.00
520.0	4.40	193.55	519.8	-8.2	-2.0	-0.4	2.00	2.00	0.00
560.0	5.20	193.55	559.6	-11.5	-2.8	-0.6	2.00	2.00	0.00
600.0	6.00	193.55	599.5	-15.3	-3.7	-0.8	2.00	2.00	0.00
640.0	6.80	193.55	639.2	-19.6	-4.7	-1.0	2.00	2.00	0.00
680.0	7.60	193.55	678.9	-24.5	-5.9	-1.3	2.00	2.00	0.00
720.0	8.40	193.55	718.5	-29.9	-7.2	-1.6	2.00	2.00	0.00
760.0	9.20	193.55	758.0	-35.8	-8.6	-1.9	2.00	2.00	0.00
800.0	10.00	193.55	797.5	-42.3	-10.2	-2.3	2.00	2.00	0.00
840.0	10.80	193.55	836.8	-49.3	-11.9	-2.6	2.00	2.00	0.00
880.0	11.60	193.55	876.0	-56.9	-13.7	-3.0	2.00	2.00	0.00
886.6	11.73	193.55	882.5	-58.2	-14.0	-3.1	2.00	2.00	0.00
920.0	11.73	193.55	915.2	-64.8	-15.6	-3.5	0.00	0.00	0.00
960.0	11.73	193.55	954.4	-72.7	-17.5	-3.9	0.00	0.00	0.00
1,000.0	11.73	193.55	993.5	-80.6	-19.4	-4.3	0.00	0.00	0.00
1,040.0	11.73	193.55	1,032.7	-88.5	-21.3	-4.7	0.00	0.00	0.00
1,080.0	11.73	193.55	1,071.9	-96.4	-23.2	-5.1	0.00	0.00	0.00
1,120.0	11.73	193.55	1,111.0	-104.3	-25.1	-5.6	0.00	0.00	0.00
1,160.0	11.73	193.55	1,150.2	-112.2	-27.0	-6.0	0.00	0.00	0.00
1,200.0	11.73	193.55	1,189.4	-120.1	-28.9	-6.4	0.00	0.00	0.00
1,240.0	11.73	193.55	1,228.5	-128.0	-30.9	-6.8	0.00	0.00	0.00
1,280.0	11.73	193.55	1,267.7	-135.9	-32.8	-7.2	0.00	0.00	0.00
1,320.0	11.73	193.55	1,306.9	-143.8	-34.7	-7.7	0.00	0.00	0.00
1,360.0	11.73	193.55	1,346.0	-151.8	-36.6	-8.1	0.00	0.00	0.00
1,400.0	11.73	193.55	1,385.2	-159.7	-38.5	-8.5	0.00	0.00	0.00
1,440.0	11.73	193.55	1,424.4	-167.6	-40.4	-8.9	0.00	0.00	0.00
1,480.0	11.73	193.55	1,463.5	-175.5	-42.3	-9.4	0.00	0.00	0.00
1,520.0	11.73	193.55	1,502.7	-183.4	-44.2	-9.8	0.00	0.00	0.00
1,560.0	11.73	193.55	1,541.8	-191.3	-46.1	-10.2	0.00	0.00	0.00
1,600.0	11.73	193.55	1,581.0	-199.2	-48.0	-10.6	0.00	0.00	0.00
1,640.0	11.73	193.55	1,620.2	-207.1	-49.9	-11.0	0.00	0.00	0.00
1,680.0	11.73	193.55	1,659.3	-215.0	-51.8	-11.5	0.00	0.00	0.00
1,720.0	11.73	193.55	1,698.5	-222.9	-53.7	-11.9	0.00	0.00	0.00
1,760.0	11.73	193.55	1,737.7	-230.8	-55.6	-12.3	0.00	0.00	0.00
1,800.0	11.73	193.55	1,776.8	-238.7	-57.5	-12.7	0.00	0.00	0.00
1,840.0	11.73	193.55	1,816.0	-246.6	-59.4	-13.2	0.00	0.00	0.00
1,880.0	11.73	193.55	1,855.2	-254.5	-61.3	-13.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

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)
1,920.0	11.73	193.55	1,894.3	-262.4	-63.2	-14.0	0.00	0.00	0.00
1,960.0	11.73	193.55	1,933.5	-270.4	-65.1	-14.4	0.00	0.00	0.00
2,000.0	11.73	193.55	1,972.7	-278.3	-67.1	-14.8	0.00	0.00	0.00
2,040.0	11.73	193.55	2,011.8	-286.2	-69.0	-15.3	0.00	0.00	0.00
2,080.0	11.73	193.55	2,051.0	-294.1	-70.9	-15.7	0.00	0.00	0.00
2,120.0	11.73	193.55	2,090.1	-302.0	-72.8	-16.1	0.00	0.00	0.00
2,160.0	11.73	193.55	2,129.3	-309.9	-74.7	-16.5	0.00	0.00	0.00
2,200.0	11.73	193.55	2,168.5	-317.8	-76.6	-16.9	0.00	0.00	0.00
2,240.0	11.73	193.55	2,207.6	-325.7	-78.5	-17.4	0.00	0.00	0.00
2,280.0	11.73	193.55	2,246.8	-333.6	-80.4	-17.8	0.00	0.00	0.00
2,320.0	11.73	193.55	2,286.0	-341.5	-82.3	-18.2	0.00	0.00	0.00
2,360.0	11.73	193.55	2,325.1	-349.4	-84.2	-18.6	0.00	0.00	0.00
2,400.0	11.73	193.55	2,364.3	-357.3	-86.1	-19.1	0.00	0.00	0.00
2,440.0	11.73	193.55	2,403.5	-365.2	-88.0	-19.5	0.00	0.00	0.00
2,480.0	11.73	193.55	2,442.6	-373.1	-89.9	-19.9	0.00	0.00	0.00
2,520.0	11.73	193.55	2,481.8	-381.0	-91.8	-20.3	0.00	0.00	0.00
2,560.0	11.73	193.55	2,521.0	-388.9	-93.7	-20.7	0.00	0.00	0.00
2,600.0	11.73	193.55	2,560.1	-396.9	-95.6	-21.2	0.00	0.00	0.00
2,640.0	11.73	193.55	2,599.3	-404.8	-97.5	-21.6	0.00	0.00	0.00
2,680.0	11.73	193.55	2,638.4	-412.7	-99.4	-22.0	0.00	0.00	0.00
2,720.0	11.73	193.55	2,677.6	-420.6	-101.3	-22.4	0.00	0.00	0.00
2,760.0	11.73	193.55	2,716.8	-428.5	-103.2	-22.8	0.00	0.00	0.00
2,800.0	11.73	193.55	2,755.9	-436.4	-105.2	-23.3	0.00	0.00	0.00
2,840.0	11.73	193.55	2,795.1	-444.3	-107.1	-23.7	0.00	0.00	0.00
2,880.0	11.73	193.55	2,834.3	-452.2	-109.0	-24.1	0.00	0.00	0.00
2,920.0	11.73	193.55	2,873.4	-460.1	-110.9	-24.5	0.00	0.00	0.00
2,960.0	11.73	193.55	2,912.6	-468.0	-112.8	-25.0	0.00	0.00	0.00
3,000.0	11.73	193.55	2,951.8	-475.9	-114.7	-25.4	0.00	0.00	0.00
3,040.0	11.73	193.55	2,990.9	-483.8	-116.6	-25.8	0.00	0.00	0.00
3,080.0	11.73	193.55	3,030.1	-491.7	-118.5	-26.2	0.00	0.00	0.00
3,120.0	11.73	193.55	3,069.3	-499.6	-120.4	-26.6	0.00	0.00	0.00
3,160.0	11.73	193.55	3,108.4	-507.5	-122.3	-27.1	0.00	0.00	0.00
3,200.0	11.73	193.55	3,147.6	-515.5	-124.2	-27.5	0.00	0.00	0.00
3,240.0	11.73	193.55	3,186.8	-523.4	-126.1	-27.9	0.00	0.00	0.00
3,280.0	11.73	193.55	3,225.9	-531.3	-128.0	-28.3	0.00	0.00	0.00
3,320.0	11.73	193.55	3,265.1	-539.2	-129.9	-28.8	0.00	0.00	0.00
3,360.0	11.73	193.55	3,304.2	-547.1	-131.8	-29.2	0.00	0.00	0.00
3,400.0	11.73	193.55	3,343.4	-555.0	-133.7	-29.6	0.00	0.00	0.00
3,440.0	11.73	193.55	3,382.6	-562.9	-135.6	-30.0	0.00	0.00	0.00
3,480.0	11.73	193.55	3,421.7	-570.8	-137.5	-30.4	0.00	0.00	0.00
3,520.0	11.73	193.55	3,460.9	-578.7	-139.4	-30.9	0.00	0.00	0.00
3,560.0	11.73	193.55	3,500.1	-586.6	-141.4	-31.3	0.00	0.00	0.00
3,600.0	11.73	193.55	3,539.2	-594.5	-143.3	-31.7	0.00	0.00	0.00
3,640.0	11.73	193.55	3,578.4	-602.4	-145.2	-32.1	0.00	0.00	0.00
3,680.0	11.73	193.55	3,617.6	-610.3	-147.1	-32.5	0.00	0.00	0.00
3,720.0	11.73	193.55	3,656.7	-618.2	-149.0	-33.0	0.00	0.00	0.00
3,760.0	11.73	193.55	3,695.9	-626.1	-150.9	-33.4	0.00	0.00	0.00
3,800.0	11.73	193.55	3,735.1	-634.0	-152.8	-33.8	0.00	0.00	0.00
3,840.0	11.73	193.55	3,774.2	-642.0	-154.7	-34.2	0.00	0.00	0.00
3,880.0	11.73	193.55	3,813.4	-649.9	-156.6	-34.7	0.00	0.00	0.00
3,920.0	11.73	193.55	3,852.5	-657.8	-158.5	-35.1	0.00	0.00	0.00
3,960.0	11.73	193.55	3,891.7	-665.7	-160.4	-35.5	0.00	0.00	0.00
4,000.0	11.73	193.55	3,930.9	-673.6	-162.3	-35.9	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

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)
4,040.0	11.73	193.55	3,970.0	-681.5	-164.2	-36.3	0.00	0.00	0.00
4,080.0	11.73	193.55	4,009.2	-689.4	-166.1	-36.8	0.00	0.00	0.00
4,120.0	11.73	193.55	4,048.4	-697.3	-168.0	-37.2	0.00	0.00	0.00
4,160.0	11.73	193.55	4,087.5	-705.2	-169.9	-37.6	0.00	0.00	0.00
4,200.0	11.73	193.55	4,126.7	-713.1	-171.8	-38.0	0.00	0.00	0.00
4,240.0	11.73	193.55	4,165.9	-721.0	-173.7	-38.4	0.00	0.00	0.00
4,280.0	11.73	193.55	4,205.0	-728.9	-175.6	-38.9	0.00	0.00	0.00
4,320.0	11.73	193.55	4,244.2	-736.8	-177.6	-39.3	0.00	0.00	0.00
4,360.0	11.73	193.55	4,283.4	-744.7	-179.5	-39.7	0.00	0.00	0.00
4,400.0	11.73	193.55	4,322.5	-752.6	-181.4	-40.1	0.00	0.00	0.00
4,440.0	11.73	193.55	4,361.7	-760.6	-183.3	-40.6	0.00	0.00	0.00
4,480.0	11.73	193.55	4,400.9	-768.5	-185.2	-41.0	0.00	0.00	0.00
4,497.0	11.73	193.55	4,417.5	-771.8	-186.0	-41.2	0.00	0.00	0.00
4,520.0	11.27	193.55	4,440.0	-776.3	-187.1	-41.4	2.00	-2.00	0.00
4,560.0	10.47	193.55	4,479.3	-783.6	-188.8	-41.8	2.00	-2.00	0.00
4,600.0	9.67	193.55	4,518.7	-790.4	-190.5	-42.1	2.00	-2.00	0.00
4,640.0	8.87	193.55	4,558.2	-796.7	-192.0	-42.5	2.00	-2.00	0.00
4,680.0	8.07	193.55	4,597.7	-802.4	-193.4	-42.8	2.00	-2.00	0.00
4,720.0	7.27	193.55	4,637.4	-807.6	-194.6	-43.1	2.00	-2.00	0.00
4,760.0	6.47	193.55	4,677.1	-812.3	-195.7	-43.3	2.00	-2.00	0.00
4,800.0	5.67	193.55	4,716.9	-816.4	-196.7	-43.5	2.00	-2.00	0.00
4,840.0	4.87	193.55	4,756.7	-819.9	-197.6	-43.7	2.00	-2.00	0.00
4,880.0	4.07	193.55	4,796.6	-823.0	-198.3	-43.9	2.00	-2.00	0.00
4,920.0	3.27	193.55	4,836.5	-825.5	-198.9	-44.0	2.00	-2.00	0.00
4,960.0	2.47	193.55	4,876.4	-827.4	-199.4	-44.1	2.00	-2.00	0.00
5,000.0	1.67	193.55	4,916.4	-828.8	-199.7	-44.2	2.00	-2.00	0.00
5,040.0	0.87	193.55	4,956.4	-829.7	-199.9	-44.2	2.00	-2.00	0.00
5,080.0	0.07	193.55	4,996.4	-830.0	-200.0	-44.3	2.00	-2.00	0.00
5,083.6	0.00	0.00	5,000.0	-830.0	-200.0	-44.3	2.00	-2.00	0.00
5,120.0	0.00	0.00	5,036.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,160.0	0.00	0.00	5,076.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,200.0	0.00	0.00	5,116.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,240.0	0.00	0.00	5,156.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,280.0	0.00	0.00	5,196.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,320.0	0.00	0.00	5,236.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,360.0	0.00	0.00	5,276.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,400.0	0.00	0.00	5,316.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,440.0	0.00	0.00	5,356.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,480.0	0.00	0.00	5,396.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,520.0	0.00	0.00	5,436.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,560.0	0.00	0.00	5,476.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,600.0	0.00	0.00	5,516.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,640.0	0.00	0.00	5,556.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,680.0	0.00	0.00	5,596.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,720.0	0.00	0.00	5,636.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,760.0	0.00	0.00	5,676.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,800.0	0.00	0.00	5,716.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,840.0	0.00	0.00	5,756.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,880.0	0.00	0.00	5,796.4	-830.0	-200.0	-44.3	0.00	0.00	0.00
5,904.6	0.00	0.00	5,821.0	-830.0	-200.0	-44.3	0.00	0.00	0.00
KOP #2									
5,920.0	1.16	90.00	5,836.4	-830.0	-199.8	-44.1	7.51	7.51	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

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)
5,960.0	4.16	90.00	5,876.4	-830.0	-198.0	-42.3	7.50	7.50	0.00
6,000.0	7.16	90.00	5,916.2	-830.0	-194.0	-38.4	7.50	7.50	0.00
6,040.0	10.16	90.00	5,955.7	-830.0	-188.0	-32.5	7.50	7.50	0.00
6,080.0	13.16	90.00	5,994.9	-830.0	-179.9	-24.6	7.50	7.50	0.00
6,120.0	16.16	90.00	6,033.6	-830.0	-169.8	-14.6	7.50	7.50	0.00
6,160.0	19.16	90.00	6,071.7	-830.0	-157.7	-2.7	7.50	7.50	0.00
6,200.0	22.16	90.00	6,109.1	-830.0	-143.6	11.2	7.50	7.50	0.00
6,240.0	25.16	90.00	6,145.7	-830.0	-127.5	27.0	7.50	7.50	0.00
6,280.0	28.16	90.00	6,181.5	-830.0	-109.6	44.6	7.50	7.50	0.00
6,320.0	31.16	90.00	6,216.2	-830.0	-89.8	64.1	7.50	7.50	0.00
6,360.0	34.16	90.00	6,249.9	-830.0	-68.2	85.3	7.50	7.50	0.00
6,400.0	37.16	90.00	6,282.4	-830.0	-44.9	108.2	7.50	7.50	0.00
6,440.0	40.16	90.00	6,313.6	-830.0	-19.9	132.7	7.50	7.50	0.00
6,480.0	43.16	90.00	6,343.5	-830.0	6.6	158.9	7.50	7.50	0.00
6,520.0	46.16	90.00	6,372.0	-830.0	34.8	186.5	7.50	7.50	0.00
6,560.0	49.16	90.00	6,398.9	-830.0	64.3	215.6	7.50	7.50	0.00
6,600.0	52.16	90.00	6,424.3	-830.0	95.3	246.0	7.50	7.50	0.00
6,640.0	55.16	90.00	6,448.0	-830.0	127.5	277.6	7.50	7.50	0.00
6,680.0	58.16	90.00	6,470.0	-830.0	160.9	310.5	7.50	7.50	0.00
6,720.0	61.16	90.00	6,490.2	-830.0	195.4	344.4	7.50	7.50	0.00
6,760.0	64.16	90.00	6,508.5	-830.0	230.9	379.3	7.50	7.50	0.00
6,800.0	67.16	90.00	6,525.0	-830.0	267.4	415.2	7.50	7.50	0.00
6,840.0	70.16	90.00	6,539.6	-830.0	304.6	451.8	7.50	7.50	0.00
6,880.0	73.16	90.00	6,552.2	-830.0	342.6	489.1	7.50	7.50	0.00
6,920.0	76.16	90.00	6,562.7	-830.0	381.1	527.0	7.50	7.50	0.00
6,960.0	79.16	90.00	6,571.3	-830.0	420.2	565.4	7.50	7.50	0.00
7,000.0	82.16	90.00	6,577.8	-830.0	459.7	604.2	7.50	7.50	0.00
7,040.0	85.16	90.00	6,582.2	-830.0	499.4	643.3	7.50	7.50	0.00
7,080.0	88.16	90.00	6,584.5	-830.0	539.4	682.5	7.50	7.50	0.00
7,117.4	90.96	90.00	6,584.8	-830.0	576.8	719.3	7.50	7.50	0.00
End of Build - 7"									
7,120.0	90.96	90.00	6,584.8	-830.0	579.4	721.9	0.00	0.00	0.00
7,160.0	90.96	90.00	6,584.1	-830.0	619.3	761.2	0.00	0.00	0.00
7,200.0	90.96	90.00	6,583.4	-830.0	659.3	800.5	0.00	0.00	0.00
7,240.0	90.96	90.00	6,582.8	-830.0	699.3	839.8	0.00	0.00	0.00
7,280.0	90.96	90.00	6,582.1	-830.0	739.3	879.1	0.00	0.00	0.00
7,320.0	90.96	90.00	6,581.4	-830.1	779.3	918.4	0.00	0.00	0.00
7,360.0	90.96	90.00	6,580.8	-830.1	819.3	957.8	0.00	0.00	0.00
7,400.0	90.96	90.00	6,580.1	-830.1	859.3	997.1	0.00	0.00	0.00
7,440.0	90.96	90.00	6,579.4	-830.1	899.3	1,036.4	0.00	0.00	0.00
7,480.0	90.96	90.00	6,578.8	-830.1	939.3	1,075.7	0.00	0.00	0.00
7,520.0	90.96	90.00	6,578.1	-830.1	979.3	1,115.0	0.00	0.00	0.00
7,560.0	90.96	90.00	6,577.4	-830.1	1,019.3	1,154.3	0.00	0.00	0.00
7,600.0	90.96	90.00	6,576.7	-830.1	1,059.3	1,193.6	0.00	0.00	0.00
7,640.0	90.96	90.00	6,576.1	-830.1	1,099.3	1,233.0	0.00	0.00	0.00
7,680.0	90.96	90.00	6,575.4	-830.1	1,139.3	1,272.3	0.00	0.00	0.00
7,720.0	90.96	90.00	6,574.7	-830.1	1,179.3	1,311.6	0.00	0.00	0.00
7,760.0	90.96	90.00	6,574.1	-830.1	1,219.3	1,350.9	0.00	0.00	0.00
7,800.0	90.96	90.00	6,573.4	-830.1	1,259.3	1,390.2	0.00	0.00	0.00
7,840.0	90.96	90.00	6,572.7	-830.1	1,299.3	1,429.5	0.00	0.00	0.00
7,880.0	90.96	90.00	6,572.1	-830.1	1,339.2	1,468.9	0.00	0.00	0.00
7,920.0	90.96	90.00	6,571.4	-830.1	1,379.2	1,508.2	0.00	0.00	0.00
7,960.0	90.96	90.00	6,570.7	-830.1	1,419.2	1,547.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

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)
8,000.0	90.96	90.00	6,570.0	-830.1	1,459.2	1,586.8	0.00	0.00	0.00
8,040.0	90.96	90.00	6,569.4	-830.1	1,499.2	1,626.1	0.00	0.00	0.00
8,080.0	90.96	90.00	6,568.7	-830.1	1,539.2	1,665.4	0.00	0.00	0.00
8,120.0	90.96	90.00	6,568.0	-830.1	1,579.2	1,704.7	0.00	0.00	0.00
8,160.0	90.96	90.00	6,567.4	-830.1	1,619.2	1,744.1	0.00	0.00	0.00
8,200.0	90.96	90.00	6,566.7	-830.1	1,659.2	1,783.4	0.00	0.00	0.00
8,240.0	90.96	90.00	6,566.0	-830.1	1,699.2	1,822.7	0.00	0.00	0.00
8,280.0	90.96	90.00	6,565.4	-830.1	1,739.2	1,862.0	0.00	0.00	0.00
8,320.0	90.96	90.00	6,564.7	-830.1	1,779.2	1,901.3	0.00	0.00	0.00
8,360.0	90.96	90.00	6,564.0	-830.1	1,819.2	1,940.6	0.00	0.00	0.00
8,400.0	90.96	90.00	6,563.3	-830.1	1,859.2	1,980.0	0.00	0.00	0.00
8,440.0	90.96	90.00	6,562.7	-830.1	1,899.2	2,019.3	0.00	0.00	0.00
8,480.0	90.96	90.00	6,562.0	-830.1	1,939.2	2,058.6	0.00	0.00	0.00
8,520.0	90.96	90.00	6,561.3	-830.1	1,979.2	2,097.9	0.00	0.00	0.00
8,560.0	90.96	90.00	6,560.7	-830.1	2,019.2	2,137.2	0.00	0.00	0.00
8,600.0	90.96	90.00	6,560.0	-830.1	2,059.1	2,176.5	0.00	0.00	0.00
8,640.0	90.96	90.00	6,559.3	-830.1	2,099.1	2,215.8	0.00	0.00	0.00
8,680.0	90.96	90.00	6,558.7	-830.1	2,139.1	2,255.2	0.00	0.00	0.00
8,720.0	90.96	90.00	6,558.0	-830.1	2,179.1	2,294.5	0.00	0.00	0.00
8,760.0	90.96	90.00	6,557.3	-830.1	2,219.1	2,333.8	0.00	0.00	0.00
8,800.0	90.96	90.00	6,556.6	-830.1	2,259.1	2,373.1	0.00	0.00	0.00
8,840.0	90.96	90.00	6,556.0	-830.1	2,299.1	2,412.4	0.00	0.00	0.00
8,880.0	90.96	90.00	6,555.3	-830.1	2,339.1	2,451.7	0.00	0.00	0.00
8,920.0	90.96	90.00	6,554.6	-830.1	2,379.1	2,491.0	0.00	0.00	0.00
8,960.0	90.96	90.00	6,554.0	-830.1	2,419.1	2,530.4	0.00	0.00	0.00
9,000.0	90.96	90.00	6,553.3	-830.1	2,459.1	2,569.7	0.00	0.00	0.00
9,040.0	90.96	90.00	6,552.6	-830.1	2,499.1	2,609.0	0.00	0.00	0.00
9,080.0	90.96	90.00	6,552.0	-830.1	2,539.1	2,648.3	0.00	0.00	0.00
9,120.0	90.96	90.00	6,551.3	-830.1	2,579.1	2,687.6	0.00	0.00	0.00
9,160.0	90.96	90.00	6,550.6	-830.1	2,619.1	2,726.9	0.00	0.00	0.00
9,200.0	90.96	90.00	6,549.9	-830.1	2,659.1	2,766.3	0.00	0.00	0.00
9,240.0	90.96	90.00	6,549.3	-830.1	2,699.1	2,805.6	0.00	0.00	0.00
9,280.0	90.96	90.00	6,548.6	-830.2	2,739.1	2,844.9	0.00	0.00	0.00
9,320.0	90.96	90.00	6,547.9	-830.2	2,779.0	2,884.2	0.00	0.00	0.00
9,360.0	90.96	90.00	6,547.3	-830.2	2,819.0	2,923.5	0.00	0.00	0.00
9,400.0	90.96	90.00	6,546.6	-830.2	2,859.0	2,962.8	0.00	0.00	0.00
9,440.0	90.96	90.00	6,545.9	-830.2	2,899.0	3,002.1	0.00	0.00	0.00
9,480.0	90.96	90.00	6,545.2	-830.2	2,939.0	3,041.5	0.00	0.00	0.00
9,520.0	90.96	90.00	6,544.6	-830.2	2,979.0	3,080.8	0.00	0.00	0.00
9,560.0	90.96	90.00	6,543.9	-830.2	3,019.0	3,120.1	0.00	0.00	0.00
9,600.0	90.96	90.00	6,543.2	-830.2	3,059.0	3,159.4	0.00	0.00	0.00
9,640.0	90.96	90.00	6,542.6	-830.2	3,099.0	3,198.7	0.00	0.00	0.00
9,680.0	90.96	90.00	6,541.9	-830.2	3,139.0	3,238.0	0.00	0.00	0.00
9,720.0	90.96	90.00	6,541.2	-830.2	3,179.0	3,277.4	0.00	0.00	0.00
9,760.0	90.96	90.00	6,540.6	-830.2	3,219.0	3,316.7	0.00	0.00	0.00
9,800.0	90.96	90.00	6,539.9	-830.2	3,259.0	3,356.0	0.00	0.00	0.00
9,840.0	90.96	90.00	6,539.2	-830.2	3,299.0	3,395.3	0.00	0.00	0.00
9,880.0	90.96	90.00	6,538.5	-830.2	3,339.0	3,434.6	0.00	0.00	0.00
9,920.0	90.96	90.00	6,537.9	-830.2	3,379.0	3,473.9	0.00	0.00	0.00
9,960.0	90.96	90.00	6,537.2	-830.2	3,419.0	3,513.2	0.00	0.00	0.00
10,000.0	90.96	90.00	6,536.5	-830.2	3,458.9	3,552.6	0.00	0.00	0.00
10,040.0	90.96	90.00	6,535.9	-830.2	3,498.9	3,591.9	0.00	0.00	0.00
10,080.0	90.96	90.00	6,535.2	-830.2	3,538.9	3,631.2	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,120.0	90.96	90.00	6,534.5	-830.2	3,578.9	3,670.5	0.00	0.00	0.00
10,160.0	90.96	90.00	6,533.9	-830.2	3,618.9	3,709.8	0.00	0.00	0.00
10,200.0	90.96	90.00	6,533.2	-830.2	3,658.9	3,749.1	0.00	0.00	0.00
10,240.0	90.96	90.00	6,532.5	-830.2	3,698.9	3,788.5	0.00	0.00	0.00
10,280.0	90.96	90.00	6,531.8	-830.2	3,738.9	3,827.8	0.00	0.00	0.00
10,320.0	90.96	90.00	6,531.2	-830.2	3,778.9	3,867.1	0.00	0.00	0.00
10,360.0	90.96	90.00	6,530.5	-830.2	3,818.9	3,906.4	0.00	0.00	0.00
10,400.0	90.96	90.00	6,529.8	-830.2	3,858.9	3,945.7	0.00	0.00	0.00
10,440.0	90.96	90.00	6,529.2	-830.2	3,898.9	3,985.0	0.00	0.00	0.00
10,480.0	90.96	90.00	6,528.5	-830.2	3,938.9	4,024.3	0.00	0.00	0.00
10,520.0	90.96	90.00	6,527.8	-830.2	3,978.9	4,063.7	0.00	0.00	0.00
10,560.0	90.96	90.00	6,527.2	-830.2	4,018.9	4,103.0	0.00	0.00	0.00
10,600.0	90.96	90.00	6,526.5	-830.2	4,058.9	4,142.3	0.00	0.00	0.00
10,640.0	90.96	90.00	6,525.8	-830.2	4,098.9	4,181.6	0.00	0.00	0.00
10,680.0	90.96	90.00	6,525.1	-830.2	4,138.9	4,220.9	0.00	0.00	0.00
10,720.0	90.96	90.00	6,524.5	-830.2	4,178.8	4,260.2	0.00	0.00	0.00
10,760.0	90.96	90.00	6,523.8	-830.2	4,218.8	4,299.6	0.00	0.00	0.00
10,800.0	90.96	90.00	6,523.1	-830.2	4,258.8	4,338.9	0.00	0.00	0.00
10,840.0	90.96	90.00	6,522.5	-830.2	4,298.8	4,378.2	0.00	0.00	0.00
10,880.0	90.96	90.00	6,521.8	-830.2	4,338.8	4,417.5	0.00	0.00	0.00
10,920.0	90.96	90.00	6,521.1	-830.2	4,378.8	4,456.8	0.00	0.00	0.00
10,960.0	90.96	90.00	6,520.5	-830.2	4,418.8	4,496.1	0.00	0.00	0.00
10,987.0	90.96	90.00	6,520.0	-830.2	4,445.8	4,522.7	0.00	0.00	0.00
BHL 2080'FNL & 500'FEL									

Targets

Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
HARDLINE SHL 460'f	- plan misses target center by 1021.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	-1,000.0	210.0	1,432,904.87	3,302,653.10	40.516625	-104.411415
- Polygon										
Point 1				1.0	0.0	0.0	1,432,904.87	3,302,653.10		
Point 2				1.0	1,100.0	0.0	1,434,004.75	3,302,639.61		
SECTIONLINE 250'W	- plan misses target center by 1030.8ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	-1,000.0	-250.0	1,432,899.22	3,302,193.15	40.516625	-104.413069
- Polygon										
Point 1				1.0	0.0	0.0	1,432,899.22	3,302,193.15		
Point 2				1.0	1,100.0	0.0	1,433,999.10	3,302,179.66		
BHL 2080'FNL & 500'	- plan hits target center	0.00	0.00	6,520.0	-830.2	4,445.8	1,433,126.57	3,306,886.40	40.517090	-104.396180
- Point										
HARDLINE BHL 460'f	- plan misses target center by 4595.9ft at 1.0ft MD (1.0 TVD, 0.0 N, 0.0 E)	0.00	0.00	1.0	-1,000.0	4,485.8	1,432,957.32	3,306,928.43	40.516624	-104.396036
- Polygon										
Point 1				1.0	0.0	0.0	1,432,957.32	3,306,928.43		
Point 2				1.0	1,100.0	0.0	1,434,057.20	3,306,914.94		

Database:	Landmark	Local Co-ordinate Reference:	Well Brown 2G-212
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Project:	SEC.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site:	Brown Pad Sec.2-T6N-R63W	North Reference:	True
Well:	Brown 2G-212	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (5-29-12)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,117.4	6,584.8	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
300.0	300.0	0.0	0.0	KOP #1
5,904.6	5,821.0	-830.0	-200.0	KOP #2
7,117.4	6,584.8	-830.0	576.8	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.2-T6N-R63W

Brown Pad Sec.2-T6N-R63W

Brown 2G-212

Wellbore #1

Plan #1 (5-29-12)

Anticollision Report

31 May, 2012



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #1 (5-29-12)		
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 5/31/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	10,987.0	Plan #1 (5-29-12) (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						
Brown Pad Sec.2-T6N-R63W						
Brown 12-2 (Exist.) - Wellbore #1 - Design #1	7,107.8	6,580.0	382.0	344.6	10.235	CC, ES
Brown 12-2 (Exist.) - Wellbore #1 - Design #1	7,200.0	6,580.0	392.9	353.6	10.004	SF
Brown 22-2 (Exist.) - Wellbore #1 - Design #1	8,020.2	6,580.0	164.6	105.6	2.788	CC, ES, SF
Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)	300.0	300.0	58.3	57.2	51.868	CC, ES
Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)	10,987.7	10,923.7	772.5	518.6	3.042	SF
Brown 2F-432 - Wellbore #1 - Plan #1 (5-29-12)	300.0	300.0	29.1	28.0	25.934	CC, ES
Brown 2F-432 - Wellbore #1 - Plan #1 (5-29-12)	10,987.7	11,079.8	523.8	284.0	2.185	SF

Offset Design												Offset Site Error:		0.0 ft
Survey Program: 0-MWD												Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	0.0	0.0	0.0	0.0	128.31	-448.1	567.2	722.8					
100.0	100.0	100.0	100.0	0.1	0.1	128.31	-448.1	567.2	722.8	722.6	0.22	3,215.987		
200.0	200.0	200.0	200.0	0.3	0.3	128.31	-448.1	567.2	722.8	722.2	0.67	1,071.996		
300.0	300.0	300.0	300.0	0.6	0.6	128.31	-448.1	567.2	722.8	721.7	1.12	643.197		
400.0	400.0	400.0	400.0	0.8	0.8	-65.38	-448.1	567.2	722.1	720.6	1.55	466.245		
500.0	499.8	499.8	499.8	1.0	1.0	-65.79	-448.1	567.2	719.9	718.0	1.97	365.228		
600.0	599.5	599.5	599.5	1.2	1.2	-66.49	-448.1	567.2	716.4	714.0	2.42	295.606		
700.0	698.7	698.7	698.7	1.5	1.5	-67.48	-448.1	567.2	711.6	708.7	2.91	244.416		
800.0	797.5	797.5	797.5	1.8	1.7	-68.75	-448.1	567.2	705.7	702.3	3.44	204.984		
900.0	895.6	895.6	895.6	2.2	1.9	-70.29	-448.1	567.2	698.9	694.9	4.02	173.667		
1,000.0	993.5	993.5	993.5	2.6	2.1	-71.84	-448.1	567.2	692.2	687.6	4.64	149.159		
1,100.0	1,091.5	1,091.5	1,091.5	3.0	2.3	-73.42	-448.1	567.2	686.0	680.8	5.27	130.072		
1,200.0	1,189.4	1,189.4	1,189.4	3.4	2.6	-75.03	-448.1	567.2	680.4	674.5	5.92	114.934		
1,300.0	1,287.3	1,287.3	1,287.3	3.8	2.8	-76.67	-448.1	567.2	675.3	668.8	6.57	102.719		
1,400.0	1,385.2	1,385.2	1,385.2	4.3	3.0	-78.32	-448.1	567.2	670.8	663.6	7.24	92.711		
1,500.0	1,483.1	1,483.1	1,483.1	4.7	3.2	-80.00	-448.1	567.2	666.9	659.0	7.90	84.402		
1,600.0	1,581.0	1,581.0	1,581.0	5.2	3.4	-81.69	-448.1	567.2	663.6	655.1	8.57	77.425		
1,700.0	1,678.9	1,678.9	1,678.9	5.6	3.7	-83.40	-448.1	567.2	660.9	651.7	9.24	71.509		
1,800.0	1,776.8	1,776.8	1,776.8	6.0	3.9	-85.12	-448.1	567.2	658.9	649.0	9.92	66.451		
1,900.0	1,874.7	1,874.7	1,874.7	6.5	4.1	-86.85	-448.1	567.2	657.4	646.8	10.59	62.097		

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 12-2 (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	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
2,000.0	1,972.7	1,972.7	1,972.7	6.9	4.3	-88.59		-448.1	567.2	656.6	645.3	11.26	58.325	
2,081.4	2,052.3	2,052.3	2,052.3	7.3	4.5	-90.00		-448.1	567.2	656.4	644.6	11.80	55.619	
2,100.0	2,070.6	2,070.6	2,070.6	7.4	4.5	-90.32		-448.1	567.2	656.4	644.5	11.93	55.041	
2,200.0	2,168.5	2,168.5	2,168.5	7.8	4.8	-92.06		-448.1	567.2	656.8	644.2	12.59	52.170	
2,300.0	2,266.4	2,266.4	2,266.4	8.3	5.0	-93.79		-448.1	567.2	657.9	644.6	13.25	49.650	
2,400.0	2,364.3	2,364.3	2,364.3	8.7	5.2	-95.52		-448.1	567.2	659.6	645.7	13.91	47.432	
2,500.0	2,462.2	2,462.2	2,462.2	9.2	5.4	-97.24		-448.1	567.2	661.9	647.3	14.55	45.474	
2,600.0	2,560.1	2,560.1	2,560.1	9.6	5.6	-98.94		-448.1	567.2	664.8	649.6	15.20	43.743	
2,700.0	2,658.0	2,658.0	2,658.0	10.1	5.9	-100.63		-448.1	567.2	668.3	652.5	15.83	42.210	
2,800.0	2,755.9	2,755.9	2,755.9	10.5	6.1	-102.30		-448.1	567.2	672.4	656.0	16.46	40.850	
2,900.0	2,853.9	2,853.9	2,853.9	11.0	6.3	-103.94		-448.1	567.2	677.2	660.1	17.08	39.643	
3,000.0	2,951.8	2,951.8	2,951.8	11.4	6.5	-105.57		-448.1	567.2	682.4	664.7	17.69	38.571	
3,100.0	3,049.7	3,049.7	3,049.7	11.9	6.7	-107.17		-448.1	567.2	688.3	670.0	18.30	37.618	
3,200.0	3,147.6	3,147.6	3,147.6	12.3	7.0	-108.74		-448.1	567.2	694.7	675.8	18.89	36.773	
3,300.0	3,245.5	3,245.5	3,245.5	12.8	7.2	-110.28		-448.1	567.2	701.6	682.1	19.48	36.022	
3,400.0	3,343.4	3,343.4	3,343.4	13.2	7.4	-111.80		-448.1	567.2	709.0	689.0	20.05	35.356	
3,500.0	3,441.3	3,441.3	3,441.3	13.7	7.6	-113.28		-448.1	567.2	717.0	696.3	20.62	34.766	
3,600.0	3,539.2	3,539.2	3,539.2	14.1	7.8	-114.73		-448.1	567.2	725.4	704.2	21.18	34.245	
3,700.0	3,637.1	3,637.1	3,637.1	14.6	8.1	-116.15		-448.1	567.2	734.3	712.5	21.73	33.784	
3,800.0	3,735.1	3,735.1	3,735.1	15.0	8.3	-117.53		-448.1	567.2	743.6	721.3	22.28	33.379	
3,900.0	3,833.0	3,833.0	3,833.0	15.5	8.5	-118.88		-448.1	567.2	753.4	730.6	22.81	33.023	
4,000.0	3,930.9	3,930.9	3,930.9	15.9	8.7	-120.19		-448.1	567.2	763.5	740.2	23.34	32.711	
4,100.0	4,028.8	4,028.8	4,028.8	16.4	8.9	-121.48		-448.1	567.2	774.1	750.3	23.86	32.440	
4,200.0	4,126.7	4,126.7	4,126.7	16.8	9.2	-122.72		-448.1	567.2	785.1	760.7	24.38	32.205	
4,300.0	4,224.6	4,224.6	4,224.6	17.3	9.4	-123.94		-448.1	567.2	796.4	771.6	24.89	32.002	
4,400.0	4,322.5	4,322.5	4,322.5	17.7	9.6	-125.12		-448.1	567.2	808.1	782.7	25.39	31.829	
4,500.0	4,420.4	4,420.4	4,420.4	18.2	9.8	-126.27		-448.1	567.2	820.2	794.3	25.88	31.685	
4,600.0	4,518.7	4,518.7	4,518.7	18.5	10.0	-127.46		-448.1	567.2	831.4	805.1	26.26	31.661	
4,700.0	4,617.6	4,617.6	4,617.6	18.7	10.3	-128.42		-448.1	567.2	840.7	814.1	26.63	31.576	
4,800.0	4,716.9	4,716.9	4,716.9	18.9	10.5	-129.15		-448.1	567.2	848.0	821.1	26.98	31.430	
4,900.0	4,816.5	4,816.5	4,816.5	19.1	10.7	-129.65		-448.1	567.2	853.2	825.9	27.33	31.223	
5,000.0	4,916.4	4,916.4	4,916.4	19.3	10.9	-129.94		-448.1	567.2	856.2	828.5	27.66	30.956	
5,100.0	5,016.4	5,016.4	5,016.4	19.4	11.2	63.54		-448.1	567.2	857.0	830.2	26.78	32.002	
5,200.0	5,116.4	5,116.4	5,116.4	19.5	11.4	63.54		-448.1	567.2	857.0	829.9	27.13	31.591	
5,300.0	5,216.4	5,216.4	5,216.4	19.6	11.6	63.54		-448.1	567.2	857.0	829.5	27.48	31.187	
5,400.0	5,316.4	5,316.4	5,316.4	19.7	11.8	63.54		-448.1	567.2	857.0	829.2	27.83	30.791	
5,500.0	5,416.4	5,416.4	5,416.4	19.8	12.1	63.54		-448.1	567.2	857.0	828.8	28.19	30.403	
5,600.0	5,516.4	5,516.4	5,516.4	19.9	12.3	63.54		-448.1	567.2	857.0	828.4	28.55	30.022	
5,700.0	5,616.4	5,616.4	5,616.4	20.0	12.5	63.54		-448.1	567.2	857.0	828.1	28.90	29.648	
5,800.0	5,716.4	5,716.4	5,716.4	20.1	12.7	63.54		-448.1	567.2	857.0	827.7	29.27	29.282	
5,900.0	5,816.4	5,816.4	5,816.4	20.2	13.0	63.54		-448.1	567.2	857.0	827.4	29.63	28.923	
6,000.0	5,916.2	5,916.2	5,916.2	20.3	13.2	-26.82		-448.1	567.2	851.7	820.9	30.81	27.643	
6,100.0	6,014.3	6,014.3	6,014.3	20.4	13.4	-28.00		-448.1	567.2	834.8	804.4	30.43	27.436	
6,200.0	6,109.1	6,109.1	6,109.1	20.5	13.6	-30.12		-448.1	567.2	806.9	777.2	29.66	27.204	
6,300.0	6,199.0	6,199.0	6,199.0	20.5	13.8	-33.38		-448.1	567.2	768.7	740.1	28.63	26.848	
6,400.0	6,282.4	6,282.4	6,282.4	20.5	14.0	-38.06		-448.1	567.2	721.5	693.9	27.58	26.161	
6,500.0	6,357.9	6,357.9	6,357.9	20.6	14.2	-44.49		-448.1	567.2	666.9	640.0	26.90	24.787	
6,600.0	6,424.3	6,424.3	6,424.3	20.7	14.3	-52.84		-448.1	567.2	607.1	580.0	27.12	22.387	
6,700.0	6,480.3	6,480.3	6,480.3	20.8	14.5	-62.76		-448.1	567.2	545.3	516.8	28.50	19.134	
6,800.0	6,525.0	6,525.0	6,525.0	21.1	14.6	-73.05		-448.1	567.2	485.6	454.9	30.67	15.829	
6,900.0	6,557.7	6,557.7	6,557.7	21.8	14.6	-81.90		-448.1	567.2	433.7	400.7	32.98	13.151	

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 12-2 (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)	Semi Major Axis 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
7,000.0	6,577.8	6,577.8	6,577.8	22.8	14.7	-87.80	-448.1	567.2	396.8	361.7	35.12	11.298	
7,100.0	6,584.9	6,580.0	6,580.0	24.4	14.7	-89.25	-448.1	567.2	382.0	344.9	37.15	10.283	
7,107.8	6,585.0	6,580.0	6,580.0	24.5	14.7	-89.25	-448.1	567.2	382.0	344.6	37.32	10.235 CC, ES	
7,200.0	6,583.4	6,580.0	6,580.0	26.2	14.7	-89.25	-448.1	567.2	392.9	353.6	39.28	10.004 SF	
7,300.0	6,581.8	6,580.0	6,580.0	28.3	14.7	-89.25	-448.1	567.2	427.6	386.0	41.53	10.296	
7,400.0	6,580.1	6,580.0	6,580.0	30.5	14.7	-89.25	-448.1	567.2	480.9	437.0	43.87	10.960	
7,500.0	6,578.4	6,578.4	6,578.4	32.8	14.7	-89.01	-448.1	567.2	547.4	501.1	46.28	11.828	
7,600.0	6,576.7	6,576.7	6,576.7	35.2	14.7	-88.76	-448.1	567.2	622.9	574.2	48.74	12.780	
7,700.0	6,575.1	6,575.1	6,575.1	37.6	14.7	-88.51	-448.1	567.2	704.6	653.3	51.25	13.747	
7,800.0	6,573.4	6,573.4	6,573.4	40.1	14.7	-88.26	-448.1	567.2	790.5	736.7	53.80	14.692	
7,900.0	6,571.7	6,571.7	6,571.7	42.7	14.7	-88.01	-448.1	567.2	879.3	823.0	56.38	15.597	
8,000.0	6,570.0	6,570.0	6,570.0	45.2	14.7	-87.76	-448.1	567.2	970.4	911.4	58.98	16.452	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 22-2 (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	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,100.0	6,584.9	6,580.0	6,580.0	24.4	14.7	-76.10	-666.7	1,479.2	934.9	899.1	35.74	26.155		
7,200.0	6,583.4	6,580.0	6,580.0	26.2	14.7	-83.12	-666.7	1,479.2	836.6	797.8	38.79	21.568		
7,300.0	6,581.8	6,580.0	6,580.0	28.3	14.7	-83.12	-666.7	1,479.2	738.8	697.8	41.03	18.008		
7,400.0	6,580.1	6,580.0	6,580.0	30.5	14.7	-83.12	-666.7	1,479.2	641.7	598.4	43.36	14.799		
7,500.0	6,578.4	6,580.0	6,580.0	32.8	14.7	-83.12	-666.7	1,479.2	545.7	499.9	45.77	11.922		
7,600.0	6,576.7	6,580.0	6,580.0	35.2	14.7	-83.12	-666.7	1,479.2	451.3	403.1	48.24	9.356		
7,700.0	6,575.1	6,580.0	6,580.0	37.6	14.7	-83.12	-666.7	1,479.2	360.1	309.3	50.76	7.094		
7,800.0	6,573.4	6,580.0	6,580.0	40.1	14.7	-83.12	-666.7	1,479.2	275.0	221.7	53.31	5.158		
7,900.0	6,571.7	6,580.0	6,580.0	42.7	14.7	-83.12	-666.7	1,479.2	203.9	148.0	55.89	3.647		
8,000.0	6,570.0	6,580.0	6,580.0	45.2	14.7	-83.12	-666.7	1,479.2	165.9	107.3	58.50	2.835		
8,020.2	6,569.7	6,580.0	6,580.0	45.8	14.7	-83.12	-666.7	1,479.2	164.6	105.6	59.04	2.788 CC, ES, SF		
8,100.0	6,568.4	6,580.0	6,580.0	47.8	14.7	-83.12	-666.7	1,479.2	182.9	121.8	61.13	2.992		
8,200.0	6,566.7	6,580.0	6,580.0	50.5	14.7	-83.12	-666.7	1,479.2	243.7	180.0	63.78	3.821		
8,300.0	6,565.0	6,580.0	6,580.0	53.1	14.7	-83.12	-666.7	1,479.2	324.6	258.1	66.44	4.885		
8,400.0	6,563.3	6,580.0	6,580.0	55.8	14.7	-83.12	-666.7	1,479.2	413.9	344.8	69.12	5.988		
8,500.0	6,561.7	6,580.0	6,580.0	58.4	14.7	-83.12	-666.7	1,479.2	507.2	435.4	71.81	7.063		
8,600.0	6,560.0	6,580.0	6,580.0	61.1	14.7	-83.12	-666.7	1,479.2	602.7	528.2	74.50	8.089		
8,700.0	6,558.3	6,580.0	6,580.0	63.8	14.7	-83.12	-666.7	1,479.2	699.4	622.2	77.21	9.059		
8,800.0	6,556.6	6,580.0	6,580.0	66.5	14.7	-83.12	-666.7	1,479.2	796.9	717.0	79.92	9.972		
8,900.0	6,555.0	6,580.0	6,580.0	69.2	14.7	-83.12	-666.7	1,479.2	895.0	812.4	82.64	10.831		
9,000.0	6,553.3	6,580.0	6,580.0	72.0	14.7	-83.12	-666.7	1,479.2	993.5	908.1	85.36	11.638		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)												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 (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.00	58.3	0.0	58.3				
100.0	100.0	100.0	100.0	0.1	0.1	0.00	58.3	0.0	58.3	58.1	0.22	259.341	
200.0	200.0	200.0	200.0	0.3	0.3	0.00	58.3	0.0	58.3	57.6	0.67	86.447	
300.0	300.0	300.0	300.0	0.6	0.6	0.00	58.3	0.0	58.3	57.2	1.12	51.868 CC, ES	
400.0	400.0	400.0	400.0	0.8	0.8	166.83	58.3	0.0	60.0	58.4	1.55	38.626	
500.0	499.8	499.8	499.8	1.0	1.0	167.86	58.3	0.0	65.1	63.1	1.98	32.926	
600.0	599.5	599.5	599.5	1.2	1.2	169.26	58.3	0.0	73.6	71.2	2.41	30.504	
700.0	698.7	698.7	698.7	1.5	1.5	170.74	58.3	0.0	85.6	82.8	2.86	29.959	
800.0	797.5	797.5	797.5	1.8	1.7	172.12	58.3	0.0	101.1	97.8	3.31	30.567	
900.0	895.6	895.6	895.6	2.2	1.9	173.33	58.3	0.0	120.0	116.3	3.76	31.914	
1,000.0	993.5	993.5	993.5	2.6	2.1	174.29	58.3	0.0	140.2	136.0	4.22	33.251	
1,100.0	1,091.5	1,091.5	1,091.5	3.0	2.3	175.02	58.3	0.0	160.5	155.8	4.68	34.294	
1,200.0	1,189.4	1,189.4	1,189.4	3.4	2.6	175.58	58.3	0.0	180.8	175.6	5.15	35.126	
1,300.0	1,287.3	1,287.3	1,287.3	3.8	2.8	176.02	58.3	0.0	201.0	195.4	5.61	35.804	
1,400.0	1,385.2	1,385.2	1,385.2	4.3	3.0	176.39	58.3	0.0	221.3	215.2	6.09	36.366	
1,500.0	1,483.1	1,483.1	1,483.1	4.7	3.2	176.69	58.3	0.0	241.6	235.1	6.56	36.838	
1,600.0	1,581.0	1,581.0	1,581.0	5.2	3.4	176.95	58.3	0.0	261.9	254.9	7.03	37.240	
1,700.0	1,678.9	1,678.9	1,678.9	5.6	3.7	177.17	58.3	0.0	282.2	274.7	7.51	37.586	
1,800.0	1,776.8	1,776.8	1,776.8	6.0	3.9	177.36	58.3	0.0	302.5	294.6	7.99	37.887	
1,900.0	1,874.7	1,874.7	1,874.7	6.5	4.1	177.52	58.3	0.0	322.8	314.4	8.46	38.151	
2,000.0	1,972.7	1,972.7	1,972.7	6.9	4.3	177.67	58.3	0.0	343.2	334.2	8.94	38.384	
2,100.0	2,070.6	2,070.6	2,070.6	7.4	4.5	177.80	58.3	0.0	363.5	354.1	9.42	38.591	
2,200.0	2,168.5	2,168.5	2,168.5	7.8	4.8	177.92	58.3	0.0	383.8	373.9	9.90	38.777	
2,300.0	2,266.4	2,266.4	2,266.4	8.3	5.0	178.02	58.3	0.0	404.1	393.7	10.38	38.944	
2,400.0	2,364.3	2,364.3	2,364.3	8.7	5.2	178.12	58.3	0.0	424.4	413.6	10.86	39.095	
2,500.0	2,462.2	2,462.2	2,462.2	9.2	5.4	178.20	58.3	0.0	444.8	433.4	11.34	39.232	
2,600.0	2,560.1	2,560.1	2,560.1	9.6	5.6	178.28	58.3	0.0	465.1	453.3	11.82	39.357	
2,700.0	2,658.0	2,658.0	2,658.0	10.1	5.9	178.35	58.3	0.0	485.4	473.1	12.30	39.472	
2,800.0	2,755.9	2,755.9	2,755.9	10.5	6.1	178.42	58.3	0.0	505.7	493.0	12.78	39.577	
2,900.0	2,853.9	2,856.0	2,856.0	11.0	6.3	178.42	58.3	-0.5	525.9	512.7	13.26	39.673	
3,000.0	2,951.8	2,957.9	2,957.9	11.4	6.5	178.09	58.3	-4.4	545.5	531.8	13.73	39.734	
3,100.0	3,049.7	3,059.8	3,059.5	11.9	6.7	177.41	58.3	-11.8	564.4	550.2	14.20	39.735	
3,200.0	3,147.6	3,159.2	3,158.4	12.3	6.9	176.50	58.3	-21.9	582.9	568.2	14.69	39.685	
3,300.0	3,245.5	3,257.1	3,255.7	12.8	7.1	175.64	58.3	-32.1	601.4	586.3	15.18	39.625	
3,400.0	3,343.4	3,355.0	3,353.0	13.2	7.4	174.83	58.3	-42.4	620.1	604.4	15.68	39.556	
3,500.0	3,441.3	3,452.9	3,450.4	13.7	7.6	174.07	58.3	-52.6	638.9	622.7	16.18	39.480	
3,600.0	3,539.2	3,550.7	3,547.7	14.1	7.8	173.35	58.3	-62.9	657.8	641.1	16.70	39.397	
3,700.0	3,637.1	3,648.6	3,645.0	14.6	8.1	172.67	58.3	-73.1	676.8	659.6	17.22	39.311	
3,800.0	3,735.1	3,746.5	3,742.4	15.0	8.3	172.03	58.3	-83.4	695.8	678.1	17.74	39.222	
3,900.0	3,833.0	3,844.3	3,839.7	15.5	8.5	171.42	58.3	-93.6	715.0	696.7	18.27	39.130	
4,000.0	3,930.9	3,942.2	3,937.0	15.9	8.8	170.84	58.3	-103.9	734.2	715.4	18.81	39.037	
4,100.0	4,028.8	4,040.1	4,034.4	16.4	9.0	170.30	58.3	-114.1	753.5	734.2	19.35	38.944	
4,200.0	4,126.7	4,138.0	4,131.7	16.8	9.3	169.77	58.3	-124.4	772.9	753.0	19.89	38.851	
4,300.0	4,224.6	4,235.8	4,229.0	17.3	9.5	169.28	58.3	-134.7	792.3	771.9	20.44	38.758	
4,400.0	4,322.5	4,333.7	4,326.4	17.7	9.8	168.81	58.3	-144.9	811.8	790.8	20.99	38.665	
4,500.0	4,420.4	4,431.6	4,423.7	18.2	10.1	168.36	58.3	-155.2	831.3	809.7	21.55	38.572	
4,600.0	4,518.7	4,529.7	4,521.3	18.5	10.3	167.98	58.3	-165.4	849.1	827.0	22.11	38.409	
4,700.0	4,616.6	4,628.4	4,619.5	18.7	10.6	167.56	58.3	-175.8	863.6	840.9	22.64	38.148	
4,800.0	4,716.9	4,727.4	4,717.9	18.9	10.8	167.09	58.3	-186.1	874.7	851.6	23.14	37.809	
4,900.0	4,816.5	4,826.6	4,816.8	19.1	11.1	166.72	58.3	-194.1	882.6	859.0	23.56	37.460	
5,000.0	4,916.4	4,926.4	4,916.4	19.3	11.3	166.51	58.3	-198.8	887.1	863.2	23.91	37.102	

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)												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	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
5,100.0	5,016.4	5,026.4	5,016.4	19.4	11.4	0.00	58.3	-200.0	888.3	858.4	29.89	29.716	
5,200.0	5,116.4	5,126.4	5,116.4	19.5	11.6	0.00	58.3	-200.0	888.3	858.1	30.20	29.417	
5,300.0	5,216.4	5,226.4	5,216.4	19.6	11.9	0.00	58.3	-200.0	888.3	857.8	30.52	29.110	
5,400.0	5,316.4	5,326.4	5,316.4	19.7	12.1	0.00	58.3	-200.0	888.3	857.5	30.84	28.807	
5,500.0	5,416.4	5,426.4	5,416.4	19.8	12.3	0.00	58.3	-200.0	888.3	857.1	31.16	28.508	
5,600.0	5,516.4	5,526.4	5,516.4	19.9	12.5	0.00	58.3	-200.0	888.3	856.8	31.48	28.214	
5,700.0	5,616.4	5,626.4	5,616.4	20.0	12.7	0.00	58.3	-200.0	888.3	856.5	31.81	27.923	
5,800.0	5,716.4	5,726.4	5,716.4	20.1	12.9	0.00	58.3	-200.0	888.3	856.1	32.14	27.637	
5,900.0	5,816.4	5,826.4	5,816.4	20.2	13.1	0.00	58.3	-200.0	888.3	855.8	32.47	27.354	
6,000.0	5,916.2	5,929.3	5,919.0	20.3	13.3	-89.96	58.1	-193.1	888.1	860.6	27.49	32.312	
6,100.0	6,014.3	6,032.1	6,019.6	20.4	13.4	-89.92	57.6	-172.5	887.6	859.9	27.71	32.038	
6,200.0	6,109.1	6,134.7	6,116.4	20.5	13.5	-89.88	56.8	-138.6	886.8	858.9	27.88	31.805	
6,300.0	6,199.0	6,237.0	6,207.6	20.5	13.7	-89.85	55.6	-92.2	885.7	857.6	28.10	31.518	
6,400.0	6,282.4	6,339.1	6,291.5	20.5	13.9	-89.81	54.2	-34.3	884.3	855.8	28.49	31.041	
6,500.0	6,357.9	6,440.8	6,366.7	20.6	14.4	-89.78	52.5	34.1	882.6	853.4	29.20	30.228	
6,600.0	6,424.3	6,542.2	6,432.0	20.7	15.1	-89.75	50.5	111.5	880.7	850.3	30.40	28.974	
6,700.0	6,480.3	6,643.2	6,486.2	20.8	16.1	-89.72	48.4	196.6	878.6	846.4	32.21	27.276	
6,800.0	6,525.0	6,743.9	6,528.7	21.1	17.4	-89.70	46.1	287.8	876.4	841.7	34.70	25.259	
6,900.0	6,557.7	6,844.1	6,558.7	21.8	19.1	-89.69	43.7	383.3	874.0	836.2	37.82	23.114	
7,000.0	6,577.8	6,944.0	6,575.8	22.8	20.9	-89.68	41.3	481.6	871.6	830.2	41.46	21.023	
7,100.0	6,584.9	7,043.5	6,580.1	24.4	23.0	-89.67	38.8	581.0	869.1	823.7	45.48	19.111	
7,200.0	6,583.4	7,143.5	6,578.8	26.2	25.2	-89.72	36.3	680.9	866.7	816.9	49.80	17.401	
7,300.0	6,581.8	7,243.5	6,577.5	28.3	27.5	-89.74	33.8	780.8	864.2	809.8	54.35	15.899	
7,400.0	6,580.1	7,343.4	6,576.2	30.5	29.9	-89.77	31.3	880.7	861.7	802.6	59.09	14.582	
7,500.0	6,578.4	7,443.4	6,574.9	32.8	32.3	-89.79	28.9	980.7	859.2	795.2	63.97	13.431	
7,600.0	6,576.7	7,543.4	6,573.7	35.2	34.8	-89.82	26.4	1,080.6	856.7	787.7	68.96	12.423	
7,700.0	6,575.1	7,643.3	6,572.4	37.6	37.4	-89.84	23.9	1,180.5	854.2	780.2	74.05	11.536	
7,800.0	6,573.4	7,743.3	6,571.1	40.1	40.0	-89.87	21.4	1,280.5	851.7	772.5	79.20	10.754	
7,900.0	6,571.7	7,843.3	6,569.8	42.7	42.6	-89.89	18.9	1,380.4	849.2	764.8	84.42	10.060	
8,000.0	6,570.0	7,943.2	6,568.5	45.2	45.3	-89.92	16.4	1,480.3	846.7	757.1	89.68	9.442	
8,100.0	6,568.4	8,043.2	6,567.2	47.8	47.9	-89.94	13.9	1,580.2	844.3	749.3	94.99	8.888	
8,200.0	6,566.7	8,143.2	6,565.9	50.5	50.6	-89.97	11.4	1,680.2	841.8	741.4	100.33	8.390	
8,300.0	6,565.0	8,243.2	6,564.6	53.1	53.3	-90.00	8.9	1,780.1	839.3	733.6	105.70	7.940	
8,400.0	6,563.3	8,343.1	6,563.3	55.8	56.0	-90.02	6.4	1,880.0	836.8	725.7	111.09	7.532	
8,500.0	6,561.7	8,443.1	6,562.0	58.4	58.7	-90.05	3.9	1,980.0	834.3	717.8	116.51	7.161	
8,600.0	6,560.0	8,543.1	6,560.7	61.1	61.4	-90.08	1.5	2,079.9	831.8	709.9	121.94	6.821	
8,700.0	6,558.3	8,643.0	6,559.5	63.8	64.2	-90.10	-1.0	2,179.8	829.3	701.9	127.40	6.510	
8,800.0	6,556.6	8,743.0	6,558.2	66.5	66.9	-90.13	-3.5	2,279.7	826.9	694.0	132.86	6.223	
8,900.0	6,555.0	8,843.0	6,556.9	69.2	69.6	-90.16	-6.0	2,379.7	824.4	686.0	138.34	5.959	
9,000.0	6,553.3	8,942.9	6,555.6	72.0	72.4	-90.18	-8.5	2,479.6	821.9	678.1	143.83	5.714	
9,100.0	6,551.6	9,042.9	6,554.3	74.7	75.1	-90.21	-11.0	2,579.5	819.4	670.1	149.33	5.487	
9,200.0	6,549.9	9,142.9	6,553.0	77.4	77.9	-90.24	-13.5	2,679.5	816.9	662.1	154.83	5.276	
9,300.0	6,548.3	9,242.8	6,551.7	80.2	80.7	-90.27	-16.0	2,779.4	814.4	654.1	160.35	5.079	
9,400.0	6,546.6	9,342.8	6,550.4	82.9	83.4	-90.29	-18.5	2,879.3	811.9	646.1	165.87	4.895	
9,500.0	6,544.9	9,442.8	6,549.1	85.7	86.2	-90.32	-21.0	2,979.2	809.5	638.1	171.40	4.723	
9,600.0	6,543.2	9,542.7	6,547.8	88.4	89.0	-90.35	-23.5	3,079.2	807.0	630.0	176.93	4.561	
9,700.0	6,541.6	9,642.7	6,546.5	91.2	91.7	-90.38	-26.0	3,179.1	804.5	622.0	182.47	4.409	
9,800.0	6,539.9	9,742.7	6,545.3	93.9	94.5	-90.41	-28.4	3,279.0	802.0	614.0	188.02	4.266	
9,900.0	6,538.2	9,842.6	6,544.0	96.7	97.3	-90.44	-30.9	3,379.0	799.5	605.9	193.57	4.130	
10,000.0	6,536.5	9,942.6	6,542.7	99.4	100.1	-90.46	-33.4	3,478.9	797.0	597.9	199.12	4.003	
10,100.0	6,534.9	10,042.6	6,541.4	102.2	102.8	-90.49	-35.9	3,578.8	794.5	589.9	204.68	3.882	

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-202 - Wellbore #1 - Plan #2 (5-29-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												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
10,200.0	6,533.2	10,142.5	6,540.1	105.0	105.6	-90.52	-38.4	3,678.8	792.1	581.8	210.24	3.768	
10,300.0	6,531.5	10,242.5	6,538.8	107.8	108.4	-90.55	-40.9	3,778.7	789.6	573.8	215.80	3.659	
10,400.0	6,529.8	10,342.5	6,537.5	110.5	111.2	-90.58	-43.4	3,878.6	787.1	565.7	221.36	3.556	
10,500.0	6,528.2	10,442.5	6,536.2	113.3	114.0	-90.61	-45.9	3,978.5	784.6	557.7	226.93	3.457	
10,600.0	6,526.5	10,542.4	6,534.9	116.1	116.8	-90.64	-48.4	4,078.5	782.1	549.6	232.50	3.364	
10,700.0	6,524.8	10,642.4	6,533.6	118.9	119.6	-90.67	-50.9	4,178.4	779.7	541.6	238.08	3.275	
10,800.0	6,523.1	10,742.4	6,532.3	121.6	122.4	-90.70	-53.4	4,278.3	777.2	533.5	243.65	3.190	
10,900.0	6,521.5	10,842.3	6,531.1	124.4	125.2	-90.73	-55.9	4,378.3	774.7	525.5	249.23	3.108	
10,987.7	6,520.0	10,923.7	6,530.0	126.8	127.4	-90.76	-57.9	4,459.6	772.5	518.6	253.94	3.042 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-432 - Wellbore #1 - Plan #1 (5-29-12)													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	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)			
0.0	0.0	0.0	0.0	0.0	0.0	0.00	29.1	0.0	29.1					
100.0	100.0	100.0	100.0	0.1	0.1	0.00	29.1	0.0	29.1	28.9	0.22	129.671		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	29.1	0.0	29.1	28.5	0.67	43.224		
300.0	300.0	300.0	300.0	0.6	0.6	0.00	29.1	0.0	29.1	28.0	1.12	25.934 CC, ES		
400.0	400.0	400.0	400.0	0.8	0.8	167.20	29.1	0.0	30.8	29.3	1.55	19.860		
500.0	499.8	499.8	499.8	1.0	1.0	169.03	29.1	0.0	36.0	34.0	1.98	18.192		
600.0	599.5	599.5	599.5	1.2	1.2	171.14	29.1	0.0	44.6	42.1	2.41	18.457		
700.0	698.7	698.7	698.7	1.5	1.5	173.01	29.1	0.0	56.6	53.8	2.86	19.814		
800.0	797.5	799.8	799.8	1.8	1.7	174.02	27.6	-0.8	70.6	67.3	3.28	21.526		
900.0	895.6	901.4	901.2	2.2	1.8	174.08	22.9	-3.4	84.7	81.0	3.69	22.979		
1,000.0	993.5	1,003.6	1,003.1	2.6	2.1	173.45	15.0	-7.7	96.8	92.7	4.12	23.498		
1,100.0	1,091.5	1,106.6	1,105.2	3.0	2.3	172.21	3.8	-13.8	105.6	101.0	4.58	23.059		
1,200.0	1,189.4	1,206.5	1,204.1	3.4	2.6	170.79	-8.8	-20.6	112.6	107.6	5.06	22.241		
1,300.0	1,287.3	1,306.3	1,302.8	3.8	2.9	169.54	-21.3	-27.4	119.7	114.2	5.57	21.508		
1,400.0	1,385.2	1,406.0	1,401.5	4.3	3.2	168.43	-33.9	-34.3	126.9	120.8	6.08	20.856		
1,500.0	1,483.1	1,505.7	1,500.2	4.7	3.5	167.44	-46.5	-41.1	134.0	127.4	6.61	20.276		
1,600.0	1,581.0	1,605.4	1,598.9	5.2	3.8	166.54	-59.1	-48.0	141.2	134.1	7.15	19.759		
1,700.0	1,678.9	1,705.1	1,697.6	5.6	4.1	165.74	-71.7	-54.8	148.5	140.8	7.69	19.297		
1,800.0	1,776.8	1,804.8	1,796.2	6.0	4.5	165.01	-84.3	-61.6	155.7	147.5	8.25	18.881		
1,900.0	1,874.7	1,904.6	1,894.9	6.5	4.8	164.34	-96.8	-68.5	163.0	154.2	8.81	18.506		
2,000.0	1,972.7	2,004.3	1,993.6	6.9	5.1	163.74	-109.4	-75.3	170.3	161.0	9.38	18.167		
2,100.0	2,070.6	2,104.0	2,092.3	7.4	5.5	163.18	-122.0	-82.1	177.7	167.7	9.95	17.859		
2,200.0	2,168.5	2,203.7	2,191.0	7.8	5.8	162.66	-134.6	-89.0	185.0	174.5	10.52	17.579		
2,300.0	2,266.4	2,303.4	2,289.7	8.3	6.2	162.19	-147.2	-95.8	192.4	181.3	11.10	17.323		
2,400.0	2,364.3	2,403.1	2,388.3	8.7	6.5	161.75	-159.7	-102.7	199.7	188.0	11.69	17.088		
2,500.0	2,462.2	2,502.9	2,487.0	9.2	6.9	161.34	-172.3	-109.5	207.1	194.8	12.27	16.873		
2,600.0	2,560.1	2,602.6	2,585.7	9.6	7.2	160.96	-184.9	-116.3	214.5	201.6	12.86	16.674		
2,700.0	2,658.0	2,702.3	2,684.4	10.1	7.5	160.61	-197.5	-123.2	221.9	208.4	13.46	16.490		
2,800.0	2,755.9	2,802.0	2,783.1	10.5	7.9	160.27	-210.1	-130.0	229.3	215.2	14.05	16.319		
2,900.0	2,853.9	2,901.7	2,881.8	11.0	8.3	159.96	-222.6	-136.8	236.7	222.1	14.65	16.161		
3,000.0	2,951.8	3,001.4	2,980.4	11.4	8.6	159.67	-235.2	-143.7	244.1	228.9	15.25	16.013		
3,100.0	3,049.7	3,101.2	3,079.1	11.9	9.0	159.40	-247.8	-150.5	251.5	235.7	15.84	15.875		
3,200.0	3,147.6	3,200.9	3,177.8	12.3	9.3	159.14	-260.4	-157.4	259.0	242.5	16.45	15.747		
3,300.0	3,245.5	3,300.6	3,276.5	12.8	9.7	158.89	-273.0	-164.2	266.4	249.4	17.05	15.626		
3,400.0	3,343.4	3,400.3	3,375.2	13.2	10.0	158.66	-285.6	-171.0	273.8	256.2	17.65	15.512		
3,500.0	3,441.3	3,500.0	3,473.9	13.7	10.4	158.44	-298.1	-177.9	281.3	263.0	18.26	15.406		
3,600.0	3,539.2	3,599.7	3,572.5	14.1	10.7	158.23	-310.7	-184.7	288.7	269.9	18.87	15.305		
3,700.0	3,637.1	3,693.1	3,665.0	14.6	11.0	158.17	-321.6	-190.6	297.1	277.7	19.41	15.306		
3,800.0	3,735.1	3,784.7	3,756.2	15.0	11.2	158.43	-329.7	-195.0	308.0	288.1	19.87	15.502		
3,900.0	3,833.0	3,875.6	3,846.9	15.5	11.4	158.99	-335.3	-198.0	321.4	301.2	20.27	15.857		
4,000.0	3,930.9	3,965.8	3,937.0	15.9	11.5	159.78	-338.2	-199.7	337.5	316.8	20.63	16.361		
4,100.0	4,028.8	4,057.6	4,028.8	16.4	11.7	160.77	-338.9	-200.0	356.0	335.1	20.96	16.988		
4,200.0	4,126.7	4,155.5	4,126.7	16.8	11.8	161.79	-338.9	-200.0	375.3	354.0	21.29	17.631		
4,300.0	4,224.6	4,253.4	4,224.6	17.3	12.0	162.71	-338.9	-200.0	394.7	373.1	21.63	18.250		
4,400.0	4,322.5	4,351.3	4,322.5	17.7	12.1	163.55	-338.9	-200.0	414.2	392.2	21.98	18.844		
4,500.0	4,420.4	4,449.2	4,420.4	18.2	12.2	164.31	-338.9	-200.0	433.8	411.4	22.35	19.412		
4,600.0	4,518.7	4,547.5	4,518.7	18.5	12.4	165.04	-338.9	-200.0	451.7	429.0	22.68	19.910		
4,700.0	4,617.6	4,646.3	4,617.6	18.7	12.5	165.59	-338.9	-200.0	466.3	443.2	23.02	20.258		
4,800.0	4,716.9	4,745.7	4,716.9	18.9	12.7	165.99	-338.9	-200.0	477.5	454.2	23.33	20.465		
4,900.0	4,816.5	4,845.3	4,816.5	19.1	12.8	166.26	-338.9	-200.0	485.4	461.8	23.63	20.539		
5,000.0	4,916.4	4,945.2	4,916.4	19.3	13.0	166.41	-338.9	-200.0	490.0	466.0	23.92	20.487		

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-432 - Wellbore #1 - Plan #1 (5-29-12)													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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,016.4	5,045.2	5,016.4	19.4	13.1	0.00	0.00	-338.9	-200.0	491.1	459.4	31.74	15.476	
5,200.0	5,116.4	5,145.2	5,116.4	19.5	13.3	0.00	0.00	-338.9	-200.0	491.1	459.1	32.00	15.349	
5,300.0	5,216.4	5,245.2	5,216.4	19.6	13.5	0.00	0.00	-338.9	-200.0	491.1	458.9	32.27	15.221	
5,400.0	5,316.4	5,345.2	5,316.4	19.7	13.6	0.00	0.00	-338.9	-200.0	491.1	458.6	32.54	15.094	
5,500.0	5,416.4	5,445.2	5,416.4	19.8	13.8	0.00	0.00	-338.9	-200.0	491.1	458.3	32.81	14.967	
5,600.0	5,516.4	5,545.2	5,516.4	19.9	14.0	0.00	0.00	-338.9	-200.0	491.1	458.1	33.09	14.841	
5,700.0	5,616.4	5,645.2	5,616.4	20.0	14.1	0.00	0.00	-338.9	-200.0	491.1	457.8	33.38	14.715	
5,800.0	5,716.4	5,745.2	5,716.4	20.1	14.3	0.00	0.00	-338.9	-200.0	491.1	457.5	33.66	14.590	
5,900.0	5,816.4	5,845.2	5,816.4	20.2	14.5	0.00	0.00	-338.9	-200.0	491.1	457.2	33.95	14.466	
5,930.4	5,846.8	5,875.6	5,846.8	20.3	14.5	-90.07	-90.07	-338.9	-200.0	491.1	464.0	27.13	18.103	
6,000.0	5,916.2	5,945.0	5,916.2	20.3	14.7	-90.69	-90.69	-338.9	-200.0	491.2	463.8	27.43	17.908	
6,100.0	6,014.3	6,044.7	6,015.8	20.4	14.8	-92.66	-92.66	-338.9	-198.3	491.7	463.8	27.90	17.622	
6,200.0	6,109.1	6,147.3	6,117.4	20.5	14.9	-94.80	-94.80	-338.9	-184.7	492.9	464.7	28.29	17.426	
6,300.0	6,199.0	6,252.6	6,218.9	20.5	15.0	-96.87	-96.87	-338.8	-156.6	494.8	466.3	28.57	17.321	
6,400.0	6,282.4	6,360.9	6,318.1	20.5	15.1	-98.83	-98.83	-338.8	-113.6	497.2	468.4	28.81	17.260	
6,500.0	6,357.9	6,472.0	6,412.6	20.6	15.1	-100.65	-100.65	-338.8	-55.3	500.0	470.8	29.15	17.154	
6,600.0	6,424.3	6,586.0	6,499.7	20.7	15.2	-102.28	-102.28	-338.8	18.1	502.9	473.1	29.80	16.878	
6,700.0	6,480.3	6,702.7	6,576.5	20.8	15.3	-103.68	-103.68	-338.8	105.8	505.7	474.7	31.01	16.310	
6,800.0	6,525.0	6,821.7	6,640.2	21.1	16.2	-104.81	-104.81	-338.8	206.2	508.3	475.2	33.02	15.391	
6,900.0	6,557.7	6,942.7	6,688.2	21.8	17.9	-105.65	-105.65	-338.8	317.2	510.3	474.3	35.92	14.204	
7,000.0	6,577.8	7,065.1	6,718.3	22.8	20.0	-106.17	-106.17	-338.7	435.7	511.6	471.9	39.68	12.891	
7,100.0	6,584.9	7,174.1	6,731.2	24.4	22.2	-106.59	-106.59	-338.7	543.9	512.9	469.1	43.81	11.707	
7,200.0	6,583.4	7,277.5	6,741.7	26.2	24.4	-107.83	-107.83	-338.7	646.7	516.3	468.5	47.81	10.799	
7,300.0	6,581.8	7,392.1	6,745.0	28.3	27.0	-108.38	-108.38	-338.7	761.3	517.8	465.5	52.32	9.896	
7,400.0	6,580.1	7,492.1	6,743.8	30.5	29.3	-108.43	-108.43	-338.7	861.3	517.9	461.1	56.78	9.121	
7,500.0	6,578.4	7,592.1	6,742.6	32.8	31.8	-108.48	-108.48	-338.7	961.3	518.1	456.7	61.38	8.441	
7,600.0	6,576.7	7,692.1	6,741.4	35.2	34.3	-108.52	-108.52	-338.7	1,061.3	518.2	452.2	66.08	7.842	
7,700.0	6,575.1	7,792.1	6,740.2	37.6	36.8	-108.57	-108.57	-338.7	1,161.2	518.4	447.5	70.88	7.314	
7,800.0	6,573.4	7,892.1	6,738.9	40.1	39.4	-108.62	-108.62	-338.7	1,261.2	518.6	442.8	75.74	6.847	
7,900.0	6,571.7	7,992.1	6,737.7	42.7	42.0	-108.67	-108.67	-338.6	1,361.2	518.7	438.1	80.66	6.431	
8,000.0	6,570.0	8,092.1	6,736.5	45.2	44.6	-108.71	-108.71	-338.6	1,461.2	518.9	433.3	85.62	6.060	
8,100.0	6,568.4	8,192.1	6,735.3	47.8	47.3	-108.76	-108.76	-338.6	1,561.2	519.0	428.4	90.62	5.728	
8,200.0	6,566.7	8,292.1	6,734.1	50.5	49.9	-108.81	-108.81	-338.6	1,661.2	519.2	423.5	95.65	5.428	
8,300.0	6,565.0	8,392.1	6,732.8	53.1	52.6	-108.85	-108.85	-338.6	1,761.2	519.4	418.6	100.71	5.157	
8,400.0	6,563.3	8,492.1	6,731.6	55.8	55.3	-108.90	-108.90	-338.6	1,861.2	519.5	413.7	105.79	4.911	
8,500.0	6,561.7	8,592.1	6,730.4	58.4	58.0	-108.95	-108.95	-338.6	1,961.2	519.7	408.8	110.89	4.686	
8,600.0	6,560.0	8,692.1	6,729.2	61.1	60.7	-109.00	-109.00	-338.6	2,061.2	519.8	403.8	116.01	4.481	
8,700.0	6,558.3	8,792.1	6,728.0	63.8	63.4	-109.04	-109.04	-338.6	2,161.2	520.0	398.9	121.14	4.292	
8,800.0	6,556.6	8,892.1	6,726.7	66.5	66.2	-109.09	-109.09	-338.6	2,261.2	520.2	393.9	126.28	4.119	
8,900.0	6,555.0	8,992.1	6,725.5	69.2	68.9	-109.14	-109.14	-338.6	2,361.1	520.3	388.9	131.43	3.959	
9,000.0	6,553.3	9,092.1	6,724.3	72.0	71.6	-109.18	-109.18	-338.6	2,461.1	520.5	383.9	136.59	3.811	
9,100.0	6,551.6	9,192.1	6,723.1	74.7	74.4	-109.23	-109.23	-338.6	2,561.1	520.6	378.9	141.76	3.673	
9,200.0	6,549.9	9,292.1	6,721.9	77.4	77.1	-109.28	-109.28	-338.5	2,661.1	520.8	373.9	146.93	3.545	
9,300.0	6,548.3	9,392.1	6,720.6	80.2	79.9	-109.32	-109.32	-338.5	2,761.1	521.0	368.9	152.10	3.425	
9,400.0	6,546.6	9,492.1	6,719.4	82.9	82.6	-109.37	-109.37	-338.5	2,861.1	521.1	363.8	157.29	3.313	
9,500.0	6,544.9	9,592.1	6,718.2	85.7	85.4	-109.42	-109.42	-338.5	2,961.1	521.3	358.8	162.47	3.209	
9,600.0	6,543.2	9,692.1	6,717.0	88.4	88.2	-109.46	-109.46	-338.5	3,061.1	521.5	353.8	167.66	3.110	
9,700.0	6,541.6	9,792.1	6,715.8	91.2	90.9	-109.51	-109.51	-338.5	3,161.1	521.6	348.8	172.85	3.018	
9,800.0	6,539.9	9,892.1	6,714.6	93.9	93.7	-109.56	-109.56	-338.5	3,261.1	521.8	343.7	178.04	2.931	
9,900.0	6,538.2	9,992.1	6,713.3	96.7	96.5	-109.60	-109.60	-338.5	3,361.1	521.9	338.7	183.23	2.849	
10,000.0	6,536.5	10,092.1	6,712.1	99.4	99.3	-109.65	-109.65	-338.5	3,461.1	522.1	333.7	188.43	2.771	

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 Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Offset Design Brown Pad Sec.2-T6N-R63W - Brown 2F-432 - Wellbore #1 - Plan #1 (5-29-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													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	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
10,100.0	6,534.9	10,192.1	6,710.9	102.2	102.0	-109.70	-338.5	3,561.0	522.3	328.7	193.62	2.697		
10,200.0	6,533.2	10,292.1	6,709.7	105.0	104.8	-109.74	-338.5	3,661.0	522.4	323.6	198.82	2.628		
10,300.0	6,531.5	10,392.1	6,708.5	107.8	107.6	-109.79	-338.5	3,761.0	522.6	318.6	204.02	2.562		
10,400.0	6,529.8	10,492.1	6,707.2	110.5	110.4	-109.84	-338.5	3,861.0	522.8	313.6	209.21	2.499		
10,500.0	6,528.2	10,592.1	6,706.0	113.3	113.2	-109.88	-338.4	3,961.0	522.9	308.5	214.41	2.439		
10,600.0	6,526.5	10,692.1	6,704.8	116.1	115.9	-109.93	-338.4	4,061.0	523.1	303.5	219.60	2.382		
10,700.0	6,524.8	10,792.1	6,703.6	118.9	118.7	-109.98	-338.4	4,161.0	523.3	298.5	224.80	2.328		
10,800.0	6,523.1	10,892.1	6,702.4	121.6	121.5	-110.02	-338.4	4,261.0	523.5	293.5	229.99	2.276		
10,900.0	6,521.5	10,992.1	6,701.1	124.4	124.3	-110.07	-338.4	4,361.0	523.6	288.4	235.19	2.226		
10,987.7	6,520.0	11,079.8	6,700.1	126.8	126.7	-110.11	-338.4	4,448.7	523.8	284.0	239.74	2.185 SF		

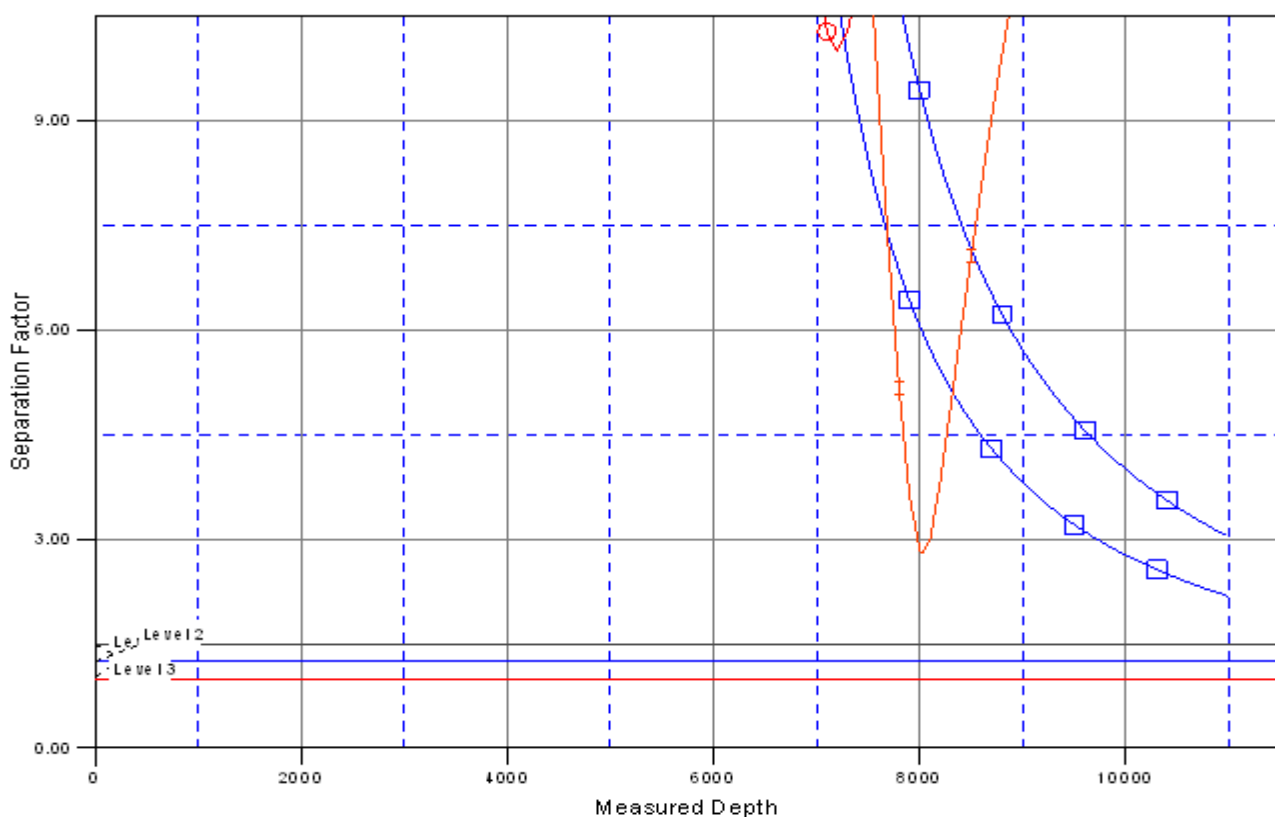
Reference Depths are relative to WELL @ 4725.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Brown 2G-212
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.70°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Brown 2G-212
Project:	SEC.2-T6N-R63W	TVD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Reference Site:	Brown Pad Sec.2-T6N-R63W	MD Reference:	WELL @ 4725.0ft (RKB Ensign 32 - 15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Brown 2G-212	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 (5-29-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4725.0ft (RKB Ensign 32 - 1 Coordinates are relative to: Brown 2G-212
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: 0.70°

Separation Factor Plot



LEGEND

- Blue square marker: Brown 2F-202, Wellbore #1, Plan #2 (5-29-12)
- Orange circle marker: Brown 12-2 (Exist.), Wellbore #1, Design #1 V0
- Blue square marker: Brown 2F-432, Wellbore #1, Plan #1 (5-29-12)
- Orange circle marker: Brown 22-2 (Exist.), Wellbore #1, Design #1 V0