

PETROLEUM DEVELOPMENT CORP Weld County CO

Well Name: **Stonebraker 28U-234**

Surface Location: Stonebraker 28U-HZ Pad Sec.28-T2N-R64W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

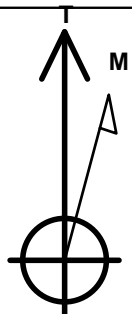
Ground Elevation: 4963.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1286547.56	3266333.99	40.116040	-104.547690	

RKB Ensign 32-15' WELL @ 4978.0ft (RKB Ensign 32-15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BHL 200'FNL, 500'FWL	6884.0	47.8	-4491.8	Point



Azimuths to True North
Magnetic North: 8.57°

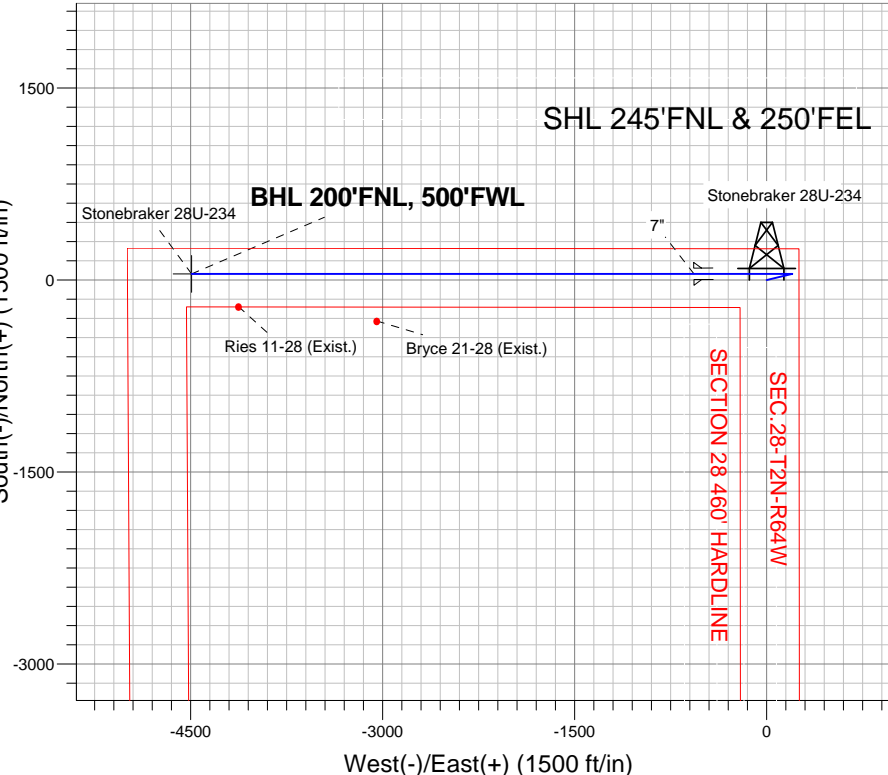
Magnetic Field
Strength: 52887.6srT
Dip Angle: 66.82°
Date: 7/23/2012
Model: IGRF2010

Stonebraker 28U-HZ Pad Sec.28-T2N-R64W
Stonebraker 28U-234
Plan #2 (7-23-12)
15:24, July 30 2012

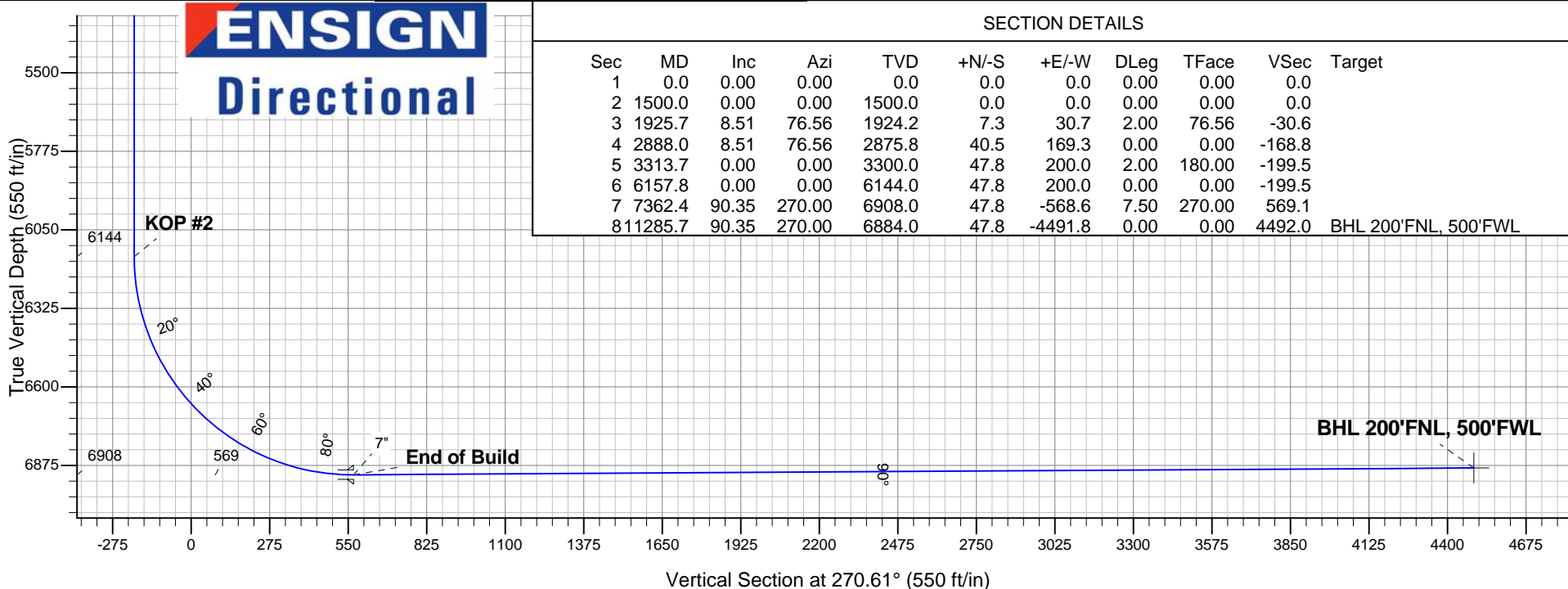
ANNOTATIONS

TVD	MD	Annotation
1500.0	1500.0	KOP #1
6144.1	6157.8	KOP #2
6908.0	7362.4	End of Build

South(-)/North(+) (1500 ft/in)



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	1500.0	0.00	0.00	1500.0	0.0	0.0	0.00	0.00	0.0	
3	1925.7	8.51	76.56	1924.2	7.3	30.7	2.00	76.56	-30.6	
4	2888.0	8.51	76.56	2875.8	40.5	169.3	0.00	0.00	-168.8	
5	3313.7	0.00	0.00	3300.0	47.8	200.0	2.00	180.00	-199.5	
6	6157.8	0.00	0.00	6144.0	47.8	200.0	0.00	0.00	-199.5	
7	7362.4	90.35	270.00	6908.0	47.8	-568.6	7.50	270.00	569.1	
8	11285.7	90.35	270.00	6884.0	47.8	-4491.8	0.00	0.00	4492.0	BHL 200'FNL, 500'FWL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T2N-R64W

Stonebraker 28U-HZ Pad Sec.28-T2N-R64W

Stonebraker 28U-234

Wellbore #1

Plan: Plan #2 (7-23-12)

Standard Planning Report

30 July, 2012

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

Project	SEC.28-T2N-R64W, 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						Stonebraker 28U-HZ Pad Sec.28-T2N-R64W											
Site Position:						Northing:			1,286,551.22 ft			Latitude:			40.116050		
From:			Lat/Long			Easting:			3,266,333.95 ft			Longitude:			-104.547690		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.62 °		

Well	Stonebraker 28U-234					
Well Position	+N/-S	-3.7 ft	Northing:	1,286,547.56 ft	Latitude:	40.116040
	+E/-W	0.0 ft	Easting:	3,266,333.99 ft	Longitude:	-104.547690
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,963.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/23/2012	8.57	66.82	52,888

Design	Plan #2 (7-23-12)			
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	270.61

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	
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,925.7	8.51	76.56	1,924.2	7.3	30.7	2.00	2.00	0.00	76.56	
2,888.0	8.51	76.56	2,875.8	40.5	169.3	0.00	0.00	0.00	0.00	
3,313.7	0.00	0.00	3,300.0	47.8	200.0	2.00	-2.00	0.00	180.00	
6,157.8	0.00	0.00	6,144.0	47.8	200.0	0.00	0.00	0.00	0.00	
7,362.4	90.35	270.00	6,908.0	47.8	-568.6	7.50	7.50	0.00	270.00	
11,285.7	90.35	270.00	6,884.0	47.8	-4,491.8	0.00	0.00	0.00	0.00	BHL 200'FNL, 500'

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Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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
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
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.00	0.00	1,240.0	0.0	0.0	0.0	0.00	0.00	0.00
1,280.0	0.00	0.00	1,280.0	0.0	0.0	0.0	0.00	0.00	0.00
1,320.0	0.00	0.00	1,320.0	0.0	0.0	0.0	0.00	0.00	0.00
1,360.0	0.00	0.00	1,360.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,440.0	0.00	0.00	1,440.0	0.0	0.0	0.0	0.00	0.00	0.00
1,480.0	0.00	0.00	1,480.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,520.0	0.40	76.56	1,520.0	0.0	0.1	-0.1	2.00	2.00	0.00
1,560.0	1.20	76.56	1,560.0	0.1	0.6	-0.6	2.00	2.00	0.00
1,600.0	2.00	76.56	1,600.0	0.4	1.7	-1.7	2.00	2.00	0.00
1,640.0	2.80	76.56	1,639.9	0.8	3.3	-3.3	2.00	2.00	0.00
1,680.0	3.60	76.56	1,679.9	1.3	5.5	-5.5	2.00	2.00	0.00
1,720.0	4.40	76.56	1,719.8	2.0	8.2	-8.2	2.00	2.00	0.00
1,760.0	5.20	76.56	1,759.6	2.7	11.5	-11.4	2.00	2.00	0.00
1,800.0	6.00	76.56	1,799.5	3.6	15.3	-15.2	2.00	2.00	0.00
1,840.0	6.80	76.56	1,839.2	4.7	19.6	-19.5	2.00	2.00	0.00
1,880.0	7.60	76.56	1,878.9	5.8	24.5	-24.4	2.00	2.00	0.00
1,920.0	8.40	76.56	1,918.5	7.1	29.9	-29.8	2.00	2.00	0.00
1,925.7	8.51	76.56	1,924.2	7.3	30.7	-30.6	2.00	2.00	0.00
1,960.0	8.51	76.56	1,958.1	8.5	35.6	-35.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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)
2,000.0	8.51	76.56	1,997.6	9.9	41.4	-41.3	0.00	0.00	0.00
2,040.0	8.51	76.56	2,037.2	11.3	47.2	-47.0	0.00	0.00	0.00
2,080.0	8.51	76.56	2,076.7	12.6	52.9	-52.8	0.00	0.00	0.00
2,120.0	8.51	76.56	2,116.3	14.0	58.7	-58.5	0.00	0.00	0.00
2,160.0	8.51	76.56	2,155.9	15.4	64.4	-64.3	0.00	0.00	0.00
2,200.0	8.51	76.56	2,195.4	16.8	70.2	-70.0	0.00	0.00	0.00
2,240.0	8.51	76.56	2,235.0	18.2	76.0	-75.8	0.00	0.00	0.00
2,280.0	8.51	76.56	2,274.5	19.5	81.7	-81.5	0.00	0.00	0.00
2,320.0	8.51	76.56	2,314.1	20.9	87.5	-87.3	0.00	0.00	0.00
2,360.0	8.51	76.56	2,353.6	22.3	93.3	-93.0	0.00	0.00	0.00
2,400.0	8.51	76.56	2,393.2	23.7	99.0	-98.8	0.00	0.00	0.00
2,440.0	8.51	76.56	2,432.8	25.0	104.8	-104.5	0.00	0.00	0.00
2,480.0	8.51	76.56	2,472.3	26.4	110.5	-110.2	0.00	0.00	0.00
2,520.0	8.51	76.56	2,511.9	27.8	116.3	-116.0	0.00	0.00	0.00
2,560.0	8.51	76.56	2,551.4	29.2	122.1	-121.7	0.00	0.00	0.00
2,600.0	8.51	76.56	2,591.0	30.5	127.8	-127.5	0.00	0.00	0.00
2,640.0	8.51	76.56	2,630.6	31.9	133.6	-133.2	0.00	0.00	0.00
2,680.0	8.51	76.56	2,670.1	33.3	139.3	-139.0	0.00	0.00	0.00
2,720.0	8.51	76.56	2,709.7	34.7	145.1	-144.7	0.00	0.00	0.00
2,760.0	8.51	76.56	2,749.2	36.1	150.9	-150.5	0.00	0.00	0.00
2,800.0	8.51	76.56	2,788.8	37.4	156.6	-156.2	0.00	0.00	0.00
2,840.0	8.51	76.56	2,828.4	38.8	162.4	-162.0	0.00	0.00	0.00
2,880.0	8.51	76.56	2,867.9	40.2	168.1	-167.7	0.00	0.00	0.00
2,888.0	8.51	76.56	2,875.8	40.5	169.3	-168.8	0.00	0.00	0.00
2,920.0	7.87	76.56	2,907.5	41.5	173.7	-173.3	2.00	-2.00	0.00
2,960.0	7.07	76.56	2,947.2	42.7	178.8	-178.3	2.00	-2.00	0.00
3,000.0	6.27	76.56	2,986.9	43.8	183.3	-182.8	2.00	-2.00	0.00
3,040.0	5.47	76.56	3,026.7	44.8	187.3	-186.8	2.00	-2.00	0.00
3,080.0	4.67	76.56	3,066.5	45.6	190.7	-190.2	2.00	-2.00	0.00
3,120.0	3.87	76.56	3,106.4	46.3	193.6	-193.1	2.00	-2.00	0.00
3,160.0	3.07	76.56	3,146.3	46.8	196.0	-195.5	2.00	-2.00	0.00
3,200.0	2.27	76.56	3,186.3	47.3	197.8	-197.3	2.00	-2.00	0.00
3,240.0	1.47	76.56	3,226.3	47.6	199.1	-198.6	2.00	-2.00	0.00
3,280.0	0.67	76.56	3,266.3	47.8	199.8	-199.3	2.00	-2.00	0.00
3,313.7	0.00	0.00	3,300.0	47.8	200.0	-199.5	2.00	-2.00	0.00
3,320.0	0.00	0.00	3,306.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,360.0	0.00	0.00	3,346.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,400.0	0.00	0.00	3,386.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,440.0	0.00	0.00	3,426.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,480.0	0.00	0.00	3,466.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,520.0	0.00	0.00	3,506.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,560.0	0.00	0.00	3,546.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,600.0	0.00	0.00	3,586.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,640.0	0.00	0.00	3,626.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,680.0	0.00	0.00	3,666.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,720.0	0.00	0.00	3,706.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,760.0	0.00	0.00	3,746.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,800.0	0.00	0.00	3,786.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,840.0	0.00	0.00	3,826.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,880.0	0.00	0.00	3,866.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,920.0	0.00	0.00	3,906.3	47.8	200.0	-199.5	0.00	0.00	0.00
3,960.0	0.00	0.00	3,946.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,000.0	0.00	0.00	3,986.3	47.8	200.0	-199.5	0.00	0.00	0.00

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Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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	0.00	0.00	4,026.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,080.0	0.00	0.00	4,066.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,120.0	0.00	0.00	4,106.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,160.0	0.00	0.00	4,146.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,200.0	0.00	0.00	4,186.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,240.0	0.00	0.00	4,226.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,280.0	0.00	0.00	4,266.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,320.0	0.00	0.00	4,306.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,360.0	0.00	0.00	4,346.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,400.0	0.00	0.00	4,386.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,440.0	0.00	0.00	4,426.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,480.0	0.00	0.00	4,466.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,520.0	0.00	0.00	4,506.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,560.0	0.00	0.00	4,546.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,600.0	0.00	0.00	4,586.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,640.0	0.00	0.00	4,626.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,680.0	0.00	0.00	4,666.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,720.0	0.00	0.00	4,706.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,760.0	0.00	0.00	4,746.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,800.0	0.00	0.00	4,786.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,840.0	0.00	0.00	4,826.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,880.0	0.00	0.00	4,866.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,920.0	0.00	0.00	4,906.3	47.8	200.0	-199.5	0.00	0.00	0.00
4,960.0	0.00	0.00	4,946.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,000.0	0.00	0.00	4,986.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,040.0	0.00	0.00	5,026.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,080.0	0.00	0.00	5,066.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,120.0	0.00	0.00	5,106.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,160.0	0.00	0.00	5,146.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,200.0	0.00	0.00	5,186.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,240.0	0.00	0.00	5,226.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,280.0	0.00	0.00	5,266.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,320.0	0.00	0.00	5,306.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,360.0	0.00	0.00	5,346.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,400.0	0.00	0.00	5,386.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,440.0	0.00	0.00	5,426.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,480.0	0.00	0.00	5,466.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,520.0	0.00	0.00	5,506.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,560.0	0.00	0.00	5,546.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,600.0	0.00	0.00	5,586.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,640.0	0.00	0.00	5,626.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,680.0	0.00	0.00	5,666.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,720.0	0.00	0.00	5,706.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,760.0	0.00	0.00	5,746.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,800.0	0.00	0.00	5,786.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,840.0	0.00	0.00	5,826.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,880.0	0.00	0.00	5,866.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,920.0	0.00	0.00	5,906.3	47.8	200.0	-199.5	0.00	0.00	0.00
5,960.0	0.00	0.00	5,946.3	47.8	200.0	-199.5	0.00	0.00	0.00
6,000.0	0.00	0.00	5,986.3	47.8	200.0	-199.5	0.00	0.00	0.00
6,040.0	0.00	0.00	6,026.3	47.8	200.0	-199.5	0.00	0.00	0.00
6,080.0	0.00	0.00	6,066.3	47.8	200.0	-199.5	0.00	0.00	0.00
6,120.0	0.00	0.00	6,106.3	47.8	200.0	-199.5	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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)
6,157.8	0.00	0.00	6,144.1	47.8	200.0	-199.5	0.00	0.00	0.00
KOP #2									
6,160.0	0.17	270.00	6,146.3	47.8	200.0	-199.5	7.59	7.59	0.00
6,200.0	3.17	270.00	6,186.2	47.8	198.8	-198.3	7.50	7.50	0.00
6,240.0	6.17	270.00	6,226.1	47.8	195.6	-195.1	7.50	7.50	0.00
6,280.0	9.17	270.00	6,265.7	47.8	190.2	-189.7	7.50	7.50	0.00
6,320.0	12.17	270.00	6,305.0	47.8	182.8	-182.3	7.50	7.50	0.00
6,360.0	15.17	270.00	6,343.9	47.8	173.4	-172.9	7.50	7.50	0.00
6,400.0	18.17	270.00	6,382.2	47.8	161.9	-161.4	7.50	7.50	0.00
6,440.0	21.17	270.00	6,419.9	47.8	148.5	-147.9	7.50	7.50	0.00
6,480.0	24.17	270.00	6,456.8	47.8	133.0	-132.5	7.50	7.50	0.00
6,520.0	27.17	270.00	6,492.8	47.8	115.7	-115.2	7.50	7.50	0.00
6,560.0	30.17	270.00	6,527.9	47.8	96.5	-96.0	7.50	7.50	0.00
6,600.0	33.17	270.00	6,562.0	47.8	75.5	-75.0	7.50	7.50	0.00
6,640.0	36.17	270.00	6,594.9	47.8	52.8	-52.3	7.50	7.50	0.00
6,680.0	39.17	270.00	6,626.5	47.8	28.3	-27.8	7.50	7.50	0.00
6,720.0	42.17	270.00	6,656.9	47.8	2.3	-1.8	7.50	7.50	0.00
6,760.0	45.17	270.00	6,685.8	47.8	-25.3	25.8	7.50	7.50	0.00
6,800.0	48.17	270.00	6,713.2	47.8	-54.4	54.9	7.50	7.50	0.00
6,840.0	51.17	270.00	6,739.1	47.8	-84.9	85.4	7.50	7.50	0.00
6,880.0	54.17	270.00	6,763.4	47.8	-116.7	117.2	7.50	7.50	0.00
6,920.0	57.17	270.00	6,785.9	47.8	-149.7	150.2	7.50	7.50	0.00
6,960.0	60.17	270.00	6,806.7	47.8	-183.9	184.4	7.50	7.50	0.00
7,000.0	63.17	270.00	6,825.7	47.8	-219.1	219.6	7.50	7.50	0.00
7,040.0	66.17	270.00	6,842.8	47.8	-255.3	255.7	7.50	7.50	0.00
7,080.0	69.17	270.00	6,858.0	47.8	-292.3	292.7	7.50	7.50	0.00
7,120.0	72.17	270.00	6,871.3	47.8	-330.0	330.5	7.50	7.50	0.00
7,160.0	75.17	270.00	6,882.5	47.8	-368.4	368.9	7.50	7.50	0.00
7,200.0	78.17	270.00	6,891.7	47.8	-407.3	407.8	7.50	7.50	0.00
7,240.0	81.17	270.00	6,898.9	47.8	-446.6	447.1	7.50	7.50	0.00
7,280.0	84.17	270.00	6,904.0	47.8	-486.3	486.8	7.50	7.50	0.00
7,320.0	87.17	270.00	6,907.0	47.8	-526.2	526.7	7.50	7.50	0.00
7,360.0	90.17	270.00	6,908.0	47.8	-566.2	566.6	7.50	7.50	0.00
7,362.4	90.35	270.00	6,908.0	47.8	-568.6	569.0	7.50	7.50	0.00
End of Build - 7"									
7,400.0	90.35	270.00	6,907.7	47.8	-606.2	606.6	0.01	0.01	0.00
7,440.0	90.35	270.00	6,907.5	47.8	-646.2	646.6	0.00	0.00	0.00
7,480.0	90.35	270.00	6,907.2	47.8	-686.2	686.6	0.00	0.00	0.00
7,520.0	90.35	270.00	6,907.0	47.8	-726.2	726.6	0.00	0.00	0.00
7,560.0	90.35	270.00	6,906.8	47.8	-766.2	766.6	0.00	0.00	0.00
7,600.0	90.35	270.00	6,906.5	47.8	-806.2	806.6	0.00	0.00	0.00
7,640.0	90.35	270.00	6,906.3	47.8	-846.2	846.6	0.00	0.00	0.00
7,680.0	90.35	270.00	6,906.0	47.8	-886.2	886.6	0.00	0.00	0.00
7,720.0	90.35	270.00	6,905.8	47.8	-926.2	926.6	0.00	0.00	0.00
7,760.0	90.35	270.00	6,905.5	47.8	-966.2	966.6	0.00	0.00	0.00
7,800.0	90.35	270.00	6,905.3	47.8	-1,006.2	1,006.6	0.00	0.00	0.00
7,840.0	90.35	270.00	6,905.0	47.8	-1,046.2	1,046.6	0.00	0.00	0.00
7,880.0	90.35	270.00	6,904.8	47.8	-1,086.2	1,086.6	0.00	0.00	0.00
7,920.0	90.35	270.00	6,904.6	47.8	-1,126.2	1,126.6	0.00	0.00	0.00
7,960.0	90.35	270.00	6,904.3	47.8	-1,166.2	1,166.6	0.00	0.00	0.00
8,000.0	90.35	270.00	6,904.1	47.8	-1,206.2	1,206.6	0.00	0.00	0.00
8,040.0	90.35	270.00	6,903.8	47.8	-1,246.2	1,246.6	0.00	0.00	0.00
8,080.0	90.35	270.00	6,903.6	47.8	-1,286.2	1,286.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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)
8,120.0	90.35	270.00	6,903.3	47.8	-1,326.2	1,326.6	0.00	0.00	0.00
8,160.0	90.35	270.00	6,903.1	47.8	-1,366.2	1,366.6	0.00	0.00	0.00
8,200.0	90.35	270.00	6,902.8	47.8	-1,406.2	1,406.6	0.00	0.00	0.00
8,240.0	90.35	270.00	6,902.6	47.8	-1,446.2	1,446.6	0.00	0.00	0.00
8,280.0	90.35	270.00	6,902.4	47.8	-1,486.2	1,486.6	0.00	0.00	0.00
8,320.0	90.35	270.00	6,902.1	47.8	-1,526.2	1,526.6	0.00	0.00	0.00
8,360.0	90.35	270.00	6,901.9	47.8	-1,566.2	1,566.6	0.00	0.00	0.00
8,400.0	90.35	270.00	6,901.6	47.8	-1,606.2	1,606.6	0.00	0.00	0.00
8,440.0	90.35	270.00	6,901.4	47.8	-1,646.2	1,646.6	0.00	0.00	0.00
8,480.0	90.35	270.00	6,901.1	47.8	-1,686.1	1,686.6	0.00	0.00	0.00
8,520.0	90.35	270.00	6,900.9	47.8	-1,726.1	1,726.6	0.00	0.00	0.00
8,560.0	90.35	270.00	6,900.7	47.8	-1,766.1	1,766.6	0.00	0.00	0.00
8,600.0	90.35	270.00	6,900.4	47.8	-1,806.1	1,806.6	0.00	0.00	0.00
8,640.0	90.35	270.00	6,900.2	47.8	-1,846.1	1,846.6	0.00	0.00	0.00
8,680.0	90.35	270.00	6,899.9	47.8	-1,886.1	1,886.5	0.00	0.00	0.00
8,720.0	90.35	270.00	6,899.7	47.8	-1,926.1	1,926.5	0.00	0.00	0.00
8,760.0	90.35	270.00	6,899.4	47.8	-1,966.1	1,966.5	0.00	0.00	0.00
8,800.0	90.35	270.00	6,899.2	47.8	-2,006.1	2,006.5	0.00	0.00	0.00
8,840.0	90.35	270.00	6,898.9	47.8	-2,046.1	2,046.5	0.00	0.00	0.00
8,880.0	90.35	270.00	6,898.7	47.8	-2,086.1	2,086.5	0.00	0.00	0.00
8,920.0	90.35	270.00	6,898.5	47.8	-2,126.1	2,126.5	0.00	0.00	0.00
8,960.0	90.35	270.00	6,898.2	47.8	-2,166.1	2,166.5	0.00	0.00	0.00
9,000.0	90.35	270.00	6,898.0	47.8	-2,206.1	2,206.5	0.00	0.00	0.00
9,040.0	90.35	270.00	6,897.7	47.8	-2,246.1	2,246.5	0.00	0.00	0.00
9,080.0	90.35	270.00	6,897.5	47.8	-2,286.1	2,286.5	0.00	0.00	0.00
9,120.0	90.35	270.00	6,897.2	47.8	-2,326.1	2,326.5	0.00	0.00	0.00
9,160.0	90.35	270.00	6,897.0	47.8	-2,366.1	2,366.5	0.00	0.00	0.00
9,200.0	90.35	270.00	6,896.7	47.8	-2,406.1	2,406.5	0.00	0.00	0.00
9,240.0	90.35	270.00	6,896.5	47.8	-2,446.1	2,446.5	0.00	0.00	0.00
9,280.0	90.35	270.00	6,896.3	47.8	-2,486.1	2,486.5	0.00	0.00	0.00
9,320.0	90.35	270.00	6,896.0	47.8	-2,526.1	2,526.5	0.00	0.00	0.00
9,360.0	90.35	270.00	6,895.8	47.8	-2,566.1	2,566.5	0.00	0.00	0.00
9,400.0	90.35	270.00	6,895.5	47.8	-2,606.1	2,606.5	0.00	0.00	0.00
9,440.0	90.35	270.00	6,895.3	47.8	-2,646.1	2,646.5	0.00	0.00	0.00
9,480.0	90.35	270.00	6,895.0	47.8	-2,686.1	2,686.5	0.00	0.00	0.00
9,520.0	90.35	270.00	6,894.8	47.8	-2,726.1	2,726.5	0.00	0.00	0.00
9,560.0	90.35	270.00	6,894.5	47.8	-2,766.1	2,766.5	0.00	0.00	0.00
9,600.0	90.35	270.00	6,894.3	47.8	-2,806.1	2,806.5	0.00	0.00	0.00
9,640.0	90.35	270.00	6,894.1	47.8	-2,846.1	2,846.5	0.00	0.00	0.00
9,680.0	90.35	270.00	6,893.8	47.8	-2,886.1	2,886.5	0.00	0.00	0.00
9,720.0	90.35	270.00	6,893.6	47.8	-2,926.1	2,926.5	0.00	0.00	0.00
9,760.0	90.35	270.00	6,893.3	47.8	-2,966.1	2,966.5	0.00	0.00	0.00
9,800.0	90.35	270.00	6,893.1	47.8	-3,006.1	3,006.5	0.00	0.00	0.00
9,840.0	90.35	270.00	6,892.8	47.8	-3,046.1	3,046.5	0.00	0.00	0.00
9,880.0	90.35	270.00	6,892.6	47.8	-3,086.1	3,086.5	0.00	0.00	0.00
9,920.0	90.35	270.00	6,892.3	47.8	-3,126.1	3,126.5	0.00	0.00	0.00
9,960.0	90.35	270.00	6,892.1	47.8	-3,166.1	3,166.5	0.00	0.00	0.00
10,000.0	90.35	270.00	6,891.9	47.8	-3,206.1	3,206.4	0.00	0.00	0.00
10,040.0	90.35	270.00	6,891.6	47.8	-3,246.1	3,246.4	0.00	0.00	0.00
10,080.0	90.35	270.00	6,891.4	47.8	-3,286.1	3,286.4	0.00	0.00	0.00
10,120.0	90.35	270.00	6,891.1	47.8	-3,326.1	3,326.4	0.00	0.00	0.00
10,160.0	90.35	270.00	6,890.9	47.8	-3,366.1	3,366.4	0.00	0.00	0.00
10,200.0	90.35	270.00	6,890.6	47.8	-3,406.1	3,406.4	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

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)
10,240.0	90.35	270.00	6,890.4	47.8	-3,446.1	3,446.4	0.00	0.00	0.00
10,280.0	90.35	270.00	6,890.1	47.8	-3,486.1	3,486.4	0.00	0.00	0.00
10,320.0	90.35	270.00	6,889.9	47.8	-3,526.1	3,526.4	0.00	0.00	0.00
10,360.0	90.35	270.00	6,889.7	47.8	-3,566.1	3,566.4	0.00	0.00	0.00
10,400.0	90.35	270.00	6,889.4	47.8	-3,606.1	3,606.4	0.00	0.00	0.00
10,440.0	90.35	270.00	6,889.2	47.8	-3,646.1	3,646.4	0.00	0.00	0.00
10,480.0	90.35	270.00	6,888.9	47.8	-3,686.1	3,686.4	0.00	0.00	0.00
10,520.0	90.35	270.00	6,888.7	47.8	-3,726.1	3,726.4	0.00	0.00	0.00
10,560.0	90.35	270.00	6,888.4	47.8	-3,766.1	3,766.4	0.00	0.00	0.00
10,600.0	90.35	270.00	6,888.2	47.8	-3,806.1	3,806.4	0.00	0.00	0.00
10,640.0	90.35	270.00	6,887.9	47.8	-3,846.1	3,846.4	0.00	0.00	0.00
10,680.0	90.35	270.00	6,887.7	47.8	-3,886.1	3,886.4	0.00	0.00	0.00
10,720.0	90.35	270.00	6,887.5	47.8	-3,926.1	3,926.4	0.00	0.00	0.00
10,760.0	90.35	270.00	6,887.2	47.8	-3,966.1	3,966.4	0.00	0.00	0.00
10,800.0	90.35	270.00	6,887.0	47.8	-4,006.1	4,006.4	0.00	0.00	0.00
10,840.0	90.35	270.00	6,886.7	47.8	-4,046.1	4,046.4	0.00	0.00	0.00
10,880.0	90.35	270.00	6,886.5	47.8	-4,086.1	4,086.4	0.00	0.00	0.00
10,920.0	90.35	270.00	6,886.2	47.8	-4,126.1	4,126.4	0.00	0.00	0.00
10,960.0	90.35	270.00	6,886.0	47.8	-4,166.1	4,166.4	0.00	0.00	0.00
11,000.0	90.35	270.00	6,885.7	47.8	-4,206.1	4,206.4	0.00	0.00	0.00
11,040.0	90.35	270.00	6,885.5	47.8	-4,246.1	4,246.4	0.00	0.00	0.00
11,080.0	90.35	270.00	6,885.3	47.8	-4,286.1	4,286.4	0.00	0.00	0.00
11,120.0	90.35	270.00	6,885.0	47.8	-4,326.1	4,326.4	0.00	0.00	0.00
11,160.0	90.35	270.00	6,884.8	47.8	-4,366.1	4,366.4	0.00	0.00	0.00
11,200.0	90.35	270.00	6,884.5	47.8	-4,406.1	4,406.4	0.00	0.00	0.00
11,240.0	90.35	270.00	6,884.3	47.8	-4,446.1	4,446.4	0.00	0.00	0.00
11,280.0	90.35	270.00	6,884.0	47.8	-4,486.1	4,486.4	0.00	0.00	0.00
11,285.7	90.35	270.00	6,884.0	47.8	-4,491.8	4,492.0	0.00	0.00	0.00
BHL 200'FNL, 500'FWL									

Targets

Target Name

- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N-S (ft)	+E-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- Shape									
BHL 200'FNL, 500'FWL	0.00	0.00	6,884.0	47.8	-4,491.8	1,286,547.10	3,261,842.13	40.116170	-104.563750
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,362.4	6,908.0	7"	7	8-3/4

Database:	Landmark	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Project:	SEC.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	North Reference:	True
Well:	Stonebraker 28U-234	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-23-12)		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,500.0	1,500.0	0.0	0.0	KOP #1
6,157.8	6,144.1	47.8	200.0	KOP #2
7,362.4	6,908.0	47.8	-568.6	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.28-T2N-R64W

Stonebraker 28U-HZ Pad Sec.28-T2N-R64W

Stonebraker 28U-234

Wellbore #1

Plan #2 (7-23-12)

Anticollision Report

30 July, 2012



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (7-23-12)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	Stations
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	7/30/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,285.7	Plan #2 (7-23-12) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth	Offset Measured Depth	Distance Between Centres	Distance Between Ellipses	Separation Factor	Warning
Offset Well - Wellbore - Design	(ft)	(ft)	(ft)	(ft)		
Stonebraker 28U-HZ Pad Sec.28-T2N-R64W						
Bryce 21-28 (Exist.) - Wellbore #1 - Design #1	9,839.7	6,857.8	368.2	265.0	3.568	CC, ES
Bryce 21-28 (Exist.) - Wellbore #1 - Design #1	9,900.0	6,857.5	373.1	268.2	3.558	SF
Ries 11-28 (Exist.) - Wellbore #1 - Design #1	10,919.3	6,859.2	255.1	122.0	1.916	CC, ES, SF
Stonebraker 28V-414 - Wellbore #1 - Plan #1 (7-23-12)	1,500.0	1,500.0	28.0	21.5	4.291	CC, ES
Stonebraker 28V-414 - Wellbore #1 - Plan #1 (7-23-12)	11,285.7	11,496.8	573.3	340.8	2.466	SF

Offset Design		Stonebraker 28U-HZ Pad Sec.28-T2N-R64W - Bryce 21-28 (Exist.) - Wellbore #1 - Design #1										Offset Site Error:		0.0 ft	
Survey Program: 0-MWVD												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)				
9,000.0	6,898.0	6,863.0	6,863.0	64.9	15.3	-90.80	-320.4	-3,045.8	916.9	836.7	80.17	11.437			
9,100.0	6,897.4	6,862.4	6,862.4	67.6	15.3	-90.70	-320.4	-3,045.8	826.3	743.4	82.89	9.968			
9,200.0	6,896.7	6,861.7	6,861.7	70.3	15.3	-90.61	-320.4	-3,045.8	738.1	652.5	85.62	8.621			
9,300.0	6,896.1	6,861.1	6,861.1	73.0	15.3	-90.51	-320.4	-3,045.8	653.3	565.0	88.36	7.394			
9,400.0	6,895.5	6,860.5	6,860.5	75.8	15.3	-90.42	-320.4	-3,045.8	573.5	482.4	91.10	6.296			
9,500.0	6,894.9	6,859.9	6,859.9	78.5	15.3	-90.32	-320.4	-3,045.8	501.0	407.1	93.84	5.338			
9,600.0	6,894.3	6,859.3	6,859.3	81.3	15.3	-90.23	-320.4	-3,045.8	439.3	342.7	96.59	4.548			
9,700.0	6,893.7	6,858.7	6,858.7	84.0	15.3	-90.13	-320.4	-3,045.8	393.8	294.5	99.34	3.964			
9,800.0	6,893.1	6,858.1	6,858.1	86.8	15.3	-90.04	-320.4	-3,045.8	370.3	268.2	102.10	3.627			
9,839.7	6,892.8	6,857.8	6,857.8	87.9	15.3	-90.00	-320.4	-3,045.8	368.2	265.0	103.19	3.568	CC, ES		
9,900.0	6,892.5	6,857.5	6,857.5	89.6	15.3	-89.94	-320.4	-3,045.8	373.1	268.2	104.85	3.558	SF		
10,000.0	6,891.9	6,856.9	6,856.9	92.3	15.3	-89.85	-320.4	-3,045.8	401.5	293.9	107.62	3.731			
10,100.0	6,891.2	6,856.2	6,856.2	95.1	15.3	-89.75	-320.4	-3,045.8	450.9	340.5	110.38	4.085			
10,200.0	6,890.6	6,855.6	6,855.6	97.9	15.3	-89.66	-320.4	-3,045.8	515.1	402.0	113.14	4.553			
10,300.0	6,890.0	6,855.0	6,855.0	100.6	15.3	-89.56	-320.4	-3,045.8	589.4	473.5	115.91	5.085			
10,400.0	6,889.4	6,854.4	6,854.4	103.4	15.3	-89.47	-320.4	-3,045.8	670.4	551.7	118.68	5.649			
10,500.0	6,888.8	6,853.8	6,853.8	106.2	15.3	-89.37	-320.4	-3,045.8	756.0	634.5	121.45	6.225			
10,600.0	6,888.2	6,853.2	6,853.2	108.9	15.3	-89.28	-320.4	-3,045.8	844.7	720.5	124.22	6.800			
10,700.0	6,887.6	6,852.6	6,852.6	111.7	15.3	-89.18	-320.4	-3,045.8	935.7	808.7	126.99	7.369			

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Offset Design Stonebraker 28U-HZ Pad Sec.28-T2N-R64W - Ries 11-28 (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)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	6,891.9	6,864.9	6,864.9	92.3	15.3	-91.26	-207.3	-4,125.4	954.1	846.4	107.62	8.865	
10,100.0	6,891.2	6,864.2	6,864.2	95.1	15.3	-91.12	-207.3	-4,125.4	858.1	747.7	110.38	7.774	
10,200.0	6,890.6	6,863.6	6,863.6	97.9	15.3	-90.99	-207.3	-4,125.4	763.2	650.1	113.15	6.745	
10,300.0	6,890.0	6,863.0	6,863.0	100.6	15.3	-90.85	-207.3	-4,125.4	669.8	553.9	115.93	5.778	
10,400.0	6,889.4	6,862.4	6,862.4	103.4	15.3	-90.71	-207.3	-4,125.4	578.6	459.9	118.70	4.875	
10,500.0	6,888.8	6,861.8	6,861.8	106.2	15.3	-90.58	-207.3	-4,125.4	490.8	369.3	121.47	4.041	
10,600.0	6,888.2	6,861.2	6,861.2	108.9	15.3	-90.44	-207.3	-4,125.4	408.7	284.5	124.25	3.289	
10,700.0	6,887.6	6,860.6	6,860.6	111.7	15.3	-90.30	-207.3	-4,125.4	336.4	209.4	127.02	2.648	
10,800.0	6,887.0	6,860.0	6,860.0	114.5	15.3	-90.16	-207.3	-4,125.4	281.6	151.8	129.80	2.170	
10,900.0	6,886.4	6,859.4	6,859.4	117.3	15.3	-90.03	-207.3	-4,125.4	255.8	123.2	132.58	1.930	
10,919.3	6,886.2	6,859.2	6,859.2	117.8	15.3	-90.00	-207.3	-4,125.4	255.1	122.0	133.11	1.916	CC, ES, SF
11,000.0	6,885.7	6,858.7	6,858.7	120.1	15.3	-89.89	-207.3	-4,125.4	267.5	132.2	135.35	1.977	
11,100.0	6,885.1	6,858.1	6,858.1	122.8	15.3	-89.75	-207.3	-4,125.4	312.6	174.4	138.13	2.263	
11,200.0	6,884.5	6,857.5	6,857.5	125.6	15.3	-89.61	-207.3	-4,125.4	379.3	238.3	140.91	2.691	
11,285.7	6,884.0	6,857.0	6,857.0	128.0	15.3	-89.50	-207.3	-4,125.4	446.4	303.1	143.29	3.115	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Offset Design Stonebraker 28U-HZ Pad Sec.28-T2N-R64W - Stonebraker 28V-414 - Wellbore #1 - Plan #1 (7-23-12)													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)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.98	-89.98	0.0	-28.0	28.0				
100.0	100.0	100.0	100.0	0.1	0.1	-89.98	-89.98	0.0	-28.0	28.0	27.7	0.22	124.436	
200.0	200.0	200.0	200.0	0.3	0.3	-89.98	-89.98	0.0	-28.0	28.0	27.3	0.67	41.479	
300.0	300.0	300.0	300.0	0.6	0.6	-89.98	-89.98	0.0	-28.0	28.0	26.8	1.12	24.887	
400.0	400.0	400.0	400.0	0.8	0.8	-89.98	-89.98	0.0	-28.0	28.0	26.4	1.57	17.777	
500.0	500.0	500.0	500.0	1.0	1.0	-89.98	-89.98	0.0	-28.0	28.0	25.9	2.02	13.826	
600.0	600.0	600.0	600.0	1.2	1.2	-89.98	-89.98	0.0	-28.0	28.0	25.5	2.47	11.312	
700.0	700.0	700.0	700.0	1.5	1.5	-89.98	-89.98	0.0	-28.0	28.0	25.0	2.92	9.572	
800.0	800.0	800.0	800.0	1.7	1.7	-89.98	-89.98	0.0	-28.0	28.0	24.6	3.37	8.296	
900.0	900.0	900.0	900.0	1.9	1.9	-89.98	-89.98	0.0	-28.0	28.0	24.1	3.82	7.320	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.98	-89.98	0.0	-28.0	28.0	23.7	4.27	6.549	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	-89.98	-89.98	0.0	-28.0	28.0	23.2	4.72	5.926	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	-89.98	-89.98	0.0	-28.0	28.0	22.8	5.17	5.410	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	-89.98	-89.98	0.0	-28.0	28.0	22.3	5.62	4.977	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	-89.98	-89.98	0.0	-28.0	28.0	21.9	6.07	4.609	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	-89.98	-89.98	0.0	-28.0	28.0	21.5	6.52	4.291 CC, ES	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	-167.32	-167.32	0.0	-28.0	29.7	22.7	6.95	4.266	
1,700.0	1,699.8	1,699.8	1,699.8	3.7	3.7	-169.19	-169.19	0.0	-28.0	34.8	27.4	7.37	4.718	
1,800.0	1,799.5	1,799.5	1,799.5	3.9	3.9	-171.32	-171.32	0.0	-28.0	43.4	35.6	7.79	5.571	
1,900.0	1,898.7	1,898.7	1,898.7	4.1	4.2	-173.19	-173.19	0.0	-28.0	55.5	47.3	8.20	6.768	
1,925.7	1,924.2	1,924.2	1,924.2	4.2	4.2	-173.61	-173.61	0.0	-28.0	59.1	50.8	8.30	7.126	
2,000.0	1,997.6	1,997.6	1,997.6	4.4	4.4	-174.61	-174.61	0.0	-28.0	70.1	61.5	8.62	8.129	
2,100.0	2,096.5	2,097.3	2,097.3	4.7	4.6	-176.64	-176.64	-1.5	-27.2	84.4	75.3	9.03	9.340	
2,200.0	2,195.4	2,197.0	2,196.9	4.9	4.8	-179.94	-179.94	-6.1	-25.0	97.9	88.5	9.42	10.390	
2,300.0	2,294.3	2,296.5	2,296.0	5.2	4.9	-175.60	-175.60	-13.8	-21.2	111.2	101.3	9.83	11.308	
2,400.0	2,393.2	2,395.5	2,394.2	5.5	5.1	-170.64	-170.64	-24.5	-16.0	124.7	114.4	10.26	12.146	
2,500.0	2,492.1	2,493.7	2,491.3	5.8	5.3	-165.29	-165.29	-38.1	-9.3	139.0	128.2	10.73	12.949	
2,600.0	2,591.0	2,591.1	2,586.9	6.1	5.6	-159.75	-159.75	-54.6	-1.2	154.6	143.4	11.24	13.754	
2,700.0	2,689.9	2,688.6	2,682.3	6.5	5.8	-154.73	-154.73	-72.4	7.5	171.8	160.0	11.80	14.567	
2,800.0	2,788.8	2,786.1	2,777.8	6.8	6.1	-150.63	-150.63	-90.3	16.3	190.1	177.7	12.37	15.368	
2,888.0	2,875.8	2,871.8	2,861.7	7.1	6.4	-147.63	-147.63	-106.0	24.0	206.8	193.9	12.89	16.047	
2,900.0	2,887.7	2,883.5	2,873.2	7.1	6.4	-147.28	-147.28	-108.1	25.0	209.1	196.1	12.96	16.136	
3,000.0	2,986.9	2,981.2	2,968.8	7.3	6.8	-144.35	-144.35	-126.0	33.8	227.0	213.5	13.52	16.786	
3,100.0	3,086.5	3,079.1	3,064.7	7.6	7.1	-141.37	-141.37	-143.9	42.5	242.8	228.7	14.08	17.243	
3,200.0	3,186.3	3,177.1	3,160.6	7.8	7.4	-138.27	-138.27	-161.9	51.3	256.6	242.0	14.62	17.553	
3,300.0	3,286.3	3,275.1	3,256.5	8.0	7.8	-134.98	-134.98	-179.8	60.1	268.8	253.7	15.14	17.758	
3,313.7	3,300.0	3,288.5	3,269.7	8.0	7.8	-148.93	-148.93	-182.3	61.3	270.4	255.6	14.73	18.356	
3,400.0	3,386.3	3,373.0	3,352.3	8.1	8.2	-151.91	-151.91	-197.8	68.9	280.4	265.3	15.13	18.537	
3,500.0	3,486.3	3,470.9	3,448.2	8.3	8.5	-155.10	-155.10	-215.7	77.7	293.0	277.3	15.63	18.744	
3,600.0	3,586.3	3,568.8	3,544.0	8.5	8.9	-158.03	-158.03	-233.6	86.5	306.4	290.2	16.16	18.961	
3,700.0	3,686.3	3,666.6	3,639.9	8.7	9.3	-160.72	-160.72	-251.6	95.3	320.5	303.8	16.71	19.184	
3,800.0	3,786.3	3,764.5	3,735.7	8.9	9.7	-163.17	-163.17	-269.5	104.1	335.3	318.0	17.28	19.408	
3,900.0	3,886.3	3,862.4	3,831.5	9.1	10.1	-165.42	-165.42	-287.4	112.8	350.7	332.8	17.86	19.632	
4,000.0	3,986.3	3,960.3	3,927.4	9.3	10.5	-167.49	-167.49	-305.3	121.6	366.5	348.0	18.46	19.853	
4,100.0	4,086.3	4,058.2	4,023.2	9.5	10.9	-169.38	-169.38	-323.3	130.4	382.8	363.7	19.07	20.072	
4,200.0	4,186.3	4,156.1	4,119.1	9.7	11.3	-171.11	-171.11	-341.2	139.2	399.4	379.7	19.69	20.286	
4,300.0	4,286.3	4,254.0	4,214.9	9.9	11.7	-172.71	-172.71	-359.1	148.0	416.4	396.1	20.32	20.496	
4,400.0	4,386.3	4,351.9	4,310.7	10.2	12.1	-174.19	-174.19	-377.1	156.8	433.7	412.7	20.95	20.701	
4,500.0	4,486.3	4,449.8	4,406.6	10.4	12.5	-175.55	-175.55	-395.0	165.5	451.2	429.6	21.59	20.901	
4,600.0	4,586.3	4,547.7	4,502.4	10.6	12.9	-176.81	-176.81	-412.9	174.3	469.0	446.8	22.23	21.095	
4,700.0	4,686.3	4,660.5	4,613.2	10.8	13.3	-178.05	-178.05	-432.1	183.7	485.7	462.8	22.86	21.243	

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 Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Offset Design Stonebraker 28U-HZ Pad Sec.28-T2N-R64W - Stonebraker 28V-414 - Wellbore #1 - Plan #1 (7-23-12)													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
4,800.0	4,786.3	4,777.2	4,728.6	11.0	13.7	-179.01	-447.8	191.4	499.0	475.6	23.44	21.286		
4,900.0	4,886.3	4,895.2	4,845.8	11.2	14.0	-179.67	-459.3	197.1	508.8	484.8	23.98	21.217		
5,000.0	4,986.3	5,014.0	4,964.4	11.4	14.2	179.93	-466.6	200.6	514.9	490.4	24.46	21.046		
5,100.0	5,086.3	5,133.3	5,083.6	11.6	14.4	179.78	-469.4	202.0	517.3	492.4	24.90	20.771		
5,200.0	5,186.3	5,236.0	5,186.3	11.8	14.6	179.78	-469.5	202.0	517.3	492.0	25.29	20.457		
5,300.0	5,286.3	5,336.0	5,286.3	12.0	14.8	179.78	-469.5	202.0	517.3	491.6	25.67	20.154		
5,400.0	5,386.3	5,436.0	5,386.3	12.3	14.9	179.78	-469.5	202.0	517.3	491.2	26.05	19.859		
5,500.0	5,486.3	5,536.0	5,486.3	12.5	15.1	179.78	-469.5	202.0	517.3	490.9	26.43	19.571		
5,600.0	5,586.3	5,636.0	5,586.3	12.7	15.2	179.78	-469.5	202.0	517.3	490.5	26.82	19.290		
5,700.0	5,686.3	5,736.0	5,686.3	12.9	15.4	179.78	-469.5	202.0	517.3	490.1	27.20	19.016		
5,800.0	5,786.3	5,836.0	5,786.3	13.1	15.6	179.78	-469.5	202.0	517.3	489.7	27.59	18.748		
5,900.0	5,886.3	5,936.0	5,886.3	13.3	15.7	179.78	-469.5	202.0	517.3	489.3	27.98	18.487		
6,000.0	5,986.3	6,036.0	5,986.3	13.5	15.9	179.78	-469.5	202.0	517.3	488.9	28.37	18.232		
6,100.0	6,086.3	6,136.0	6,086.3	13.8	16.1	179.78	-469.5	202.0	517.3	488.5	28.77	17.983		
6,157.8	6,144.0	6,193.8	6,144.0	13.9	16.1	179.78	-469.5	202.0	517.3	488.3	28.99	17.842		
6,200.0	6,186.2	6,236.0	6,186.2	14.0	16.2	-90.35	-469.5	202.0	517.3	489.4	27.93	18.521		
6,250.0	6,236.0	6,285.8	6,236.0	14.0	16.3	-90.83	-469.5	202.0	517.3	489.3	28.09	18.417		
6,300.0	6,285.4	6,335.2	6,285.4	14.1	16.4	-91.66	-469.5	202.0	517.5	489.3	28.23	18.334		
6,350.0	6,334.2	6,384.5	6,334.8	14.2	16.5	-92.79	-469.5	201.9	517.9	489.6	28.34	18.276		
6,400.0	6,382.2	6,435.3	6,385.5	14.2	16.5	-94.02	-469.5	199.2	518.6	490.2	28.43	18.241		
6,450.0	6,429.2	6,486.9	6,436.7	14.3	16.6	-95.24	-469.5	193.0	519.6	491.1	28.51	18.222		
6,500.0	6,474.9	6,539.3	6,488.2	14.4	16.7	-96.45	-469.5	183.1	520.8	492.2	28.59	18.216		
6,550.0	6,519.3	6,592.7	6,539.8	14.4	16.7	-97.63	-469.5	169.5	522.1	493.5	28.67	18.215		
6,600.0	6,562.0	6,646.9	6,591.1	14.5	16.7	-98.79	-469.5	152.0	523.7	495.0	28.76	18.213		
6,650.0	6,602.9	6,702.1	6,641.9	14.6	16.7	-99.91	-469.5	130.5	525.5	496.6	28.87	18.200		
6,700.0	6,641.9	6,758.2	6,691.9	14.8	16.8	-100.99	-469.5	105.0	527.3	498.3	29.03	18.164		
6,750.0	6,678.7	6,815.3	6,740.6	15.0	16.8	-102.02	-469.5	75.3	529.3	500.1	29.25	18.094		
6,800.0	6,713.2	6,873.3	6,787.7	15.3	16.8	-103.01	-469.5	41.5	531.4	501.8	29.56	17.977		
6,850.0	6,745.3	6,932.2	6,832.9	15.6	16.8	-103.93	-469.5	3.6	533.4	503.4	29.97	17.800		
6,900.0	6,774.9	6,992.1	6,875.5	16.0	16.8	-104.79	-469.5	-38.3	535.4	504.9	30.51	17.553		
6,950.0	6,801.7	7,052.8	6,915.4	16.5	16.9	-105.58	-469.5	-84.2	537.4	506.2	31.20	17.226		
7,000.0	6,825.7	7,114.4	6,951.9	17.0	16.9	-106.29	-469.5	-133.7	539.3	507.2	32.07	16.815		
7,050.0	6,846.8	7,176.7	6,984.7	17.7	17.0	-106.91	-469.5	-186.7	541.0	507.8	33.13	16.330		
7,100.0	6,864.9	7,239.7	7,013.3	18.4	17.5	-107.46	-469.5	-242.8	542.5	508.1	34.38	15.780		
7,150.0	6,879.9	7,303.4	7,037.5	19.2	18.4	-107.90	-469.5	-301.6	543.8	507.9	35.83	15.178		
7,200.0	6,891.7	7,367.4	7,056.8	20.1	19.4	-108.26	-469.5	-362.7	544.8	507.3	37.47	14.538		
7,250.0	6,900.4	7,431.9	7,070.9	21.0	20.5	-108.51	-469.5	-425.6	545.6	506.3	39.29	13.885		
7,300.0	6,905.8	7,494.9	7,079.6	21.9	21.6	-108.66	-469.5	-488.0	546.0	504.8	41.23	13.244		
7,350.0	6,907.9	7,544.8	7,084.8	22.9	22.6	-108.90	-469.5	-537.6	547.0	504.0	43.01	12.718		
7,362.4	6,908.0	7,557.2	7,086.1	23.2	22.9	-108.99	-469.5	-549.9	547.4	504.0	43.45	12.599		
7,400.0	6,907.7	7,600.5	7,090.0	24.0	23.8	-109.41	-469.5	-593.0	548.6	503.7	44.92	12.212		
7,500.0	6,907.1	7,711.8	7,093.4	26.1	26.2	-109.80	-469.5	-704.3	549.8	500.7	49.13	11.190		
7,600.0	6,906.5	7,811.8	7,094.4	28.4	28.4	-109.96	-469.5	-804.3	550.3	497.0	53.37	10.312		
7,700.0	6,905.9	7,911.8	7,095.3	30.8	30.8	-110.11	-469.5	-904.3	550.9	493.1	57.77	9.536		
7,800.0	6,905.3	8,011.8	7,096.3	33.2	33.2	-110.27	-469.5	-1,004.3	551.4	489.2	62.29	8.852		
7,900.0	6,904.7	8,111.8	7,097.3	35.7	35.7	-110.43	-469.5	-1,104.2	552.0	485.1	66.91	8.249		
8,000.0	6,904.1	8,211.8	7,098.3	38.3	38.2	-110.58	-469.5	-1,204.2	552.6	481.0	71.61	7.716		
8,100.0	6,903.5	8,311.8	7,099.3	40.8	40.7	-110.74	-469.5	-1,304.2	553.1	476.8	76.36	7.243		
8,200.0	6,902.8	8,411.8	7,100.3	43.4	43.3	-110.89	-469.5	-1,404.2	553.7	472.5	81.17	6.822		
8,300.0	6,902.2	8,511.7	7,101.3	46.1	45.9	-111.05	-469.5	-1,504.2	554.3	468.3	86.00	6.445		
8,400.0	6,901.6	8,611.7	7,102.3	48.7	48.6	-111.20	-469.5	-1,604.2	554.9	464.0	90.87	6.106		

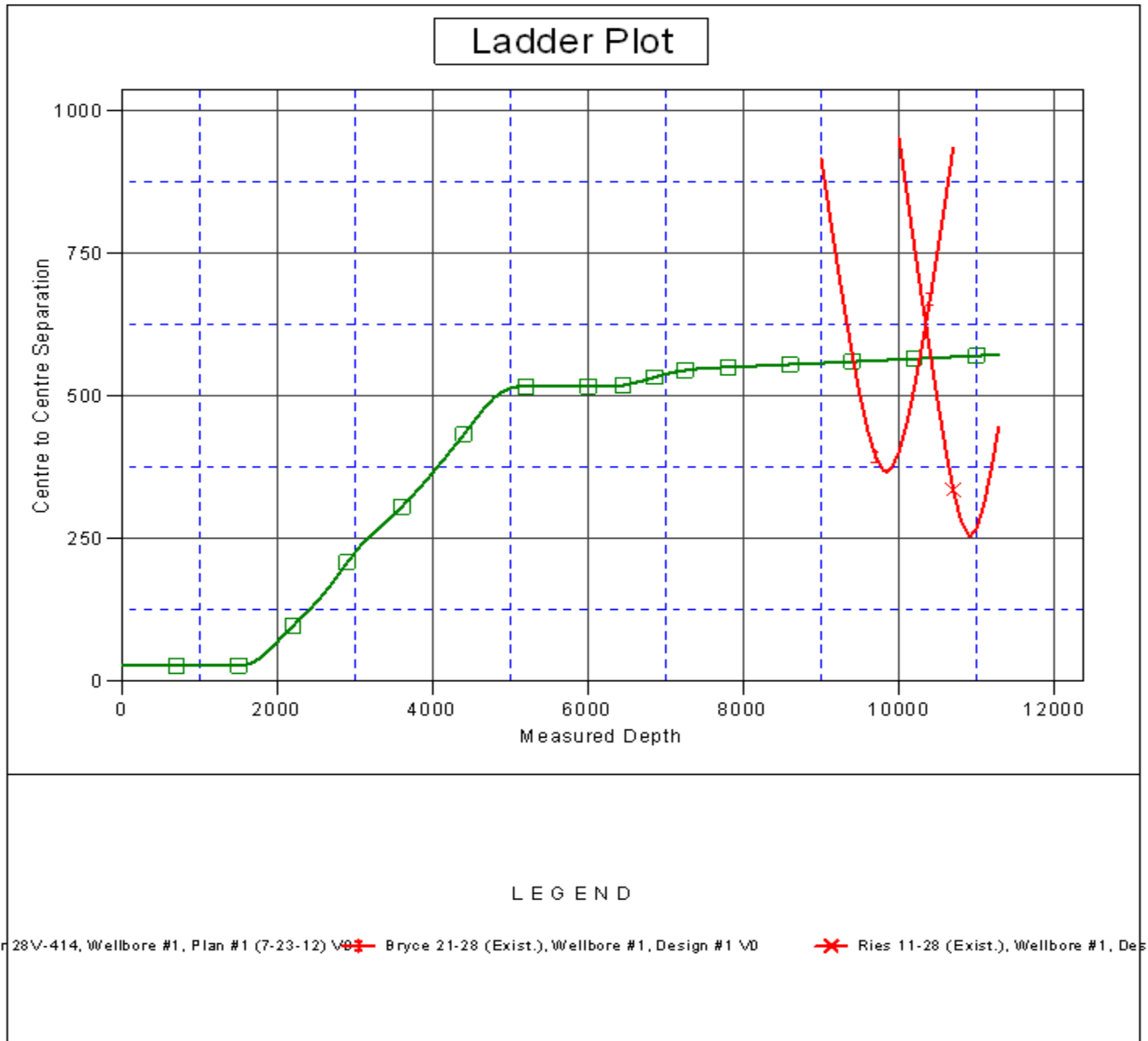
CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Offset Design Stonebraker 28U-HZ Pad Sec.28-T2N-R64W - Stonebraker 28V-414 - Wellbore #1 - Plan #1 (7-23-12)													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)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
8,500.0	6,901.0	8,711.7	7,103.3	51.4	51.2	-111.36	-469.5	-1,704.1	555.4	459.7	95.76	5.800		
8,600.0	6,900.4	8,811.7	7,104.3	54.0	53.9	-111.51	-469.5	-1,804.1	556.0	455.4	100.67	5.523		
8,700.0	6,899.8	8,911.7	7,105.3	56.7	56.6	-111.66	-469.5	-1,904.1	556.6	451.0	105.59	5.271		
8,800.0	6,899.2	9,011.7	7,106.3	59.4	59.2	-111.82	-469.5	-2,004.1	557.2	446.7	110.53	5.041		
8,900.0	6,898.6	9,111.7	7,107.3	62.1	61.9	-111.97	-469.5	-2,104.1	557.8	442.3	115.47	4.831		
9,000.0	6,898.0	9,211.7	7,108.3	64.9	64.7	-112.12	-469.5	-2,204.0	558.4	438.0	120.41	4.638		
9,100.0	6,897.4	9,311.6	7,109.3	67.6	67.4	-112.28	-469.5	-2,304.0	559.0	433.7	125.36	4.459		
9,200.0	6,896.7	9,411.6	7,110.3	70.3	70.1	-112.43	-469.5	-2,404.0	559.6	429.3	130.31	4.295		
9,300.0	6,896.1	9,511.6	7,111.3	73.0	72.8	-112.58	-469.5	-2,504.0	560.2	425.0	135.26	4.142		
9,400.0	6,895.5	9,611.6	7,112.3	75.8	75.6	-112.73	-469.5	-2,604.0	560.9	420.7	140.21	4.000		
9,500.0	6,894.9	9,711.6	7,113.2	78.5	78.3	-112.88	-469.5	-2,704.0	561.5	416.3	145.16	3.868		
9,600.0	6,894.3	9,811.6	7,114.2	81.3	81.0	-113.03	-469.5	-2,803.9	562.1	412.0	150.10	3.745		
9,700.0	6,893.7	9,911.6	7,115.2	84.0	83.8	-113.18	-469.5	-2,903.9	562.7	407.7	155.04	3.630		
9,800.0	6,893.1	10,011.6	7,116.2	86.8	86.5	-113.33	-469.5	-3,003.9	563.4	403.4	159.98	3.522		
9,900.0	6,892.5	10,111.5	7,117.2	89.6	89.3	-113.48	-469.5	-3,103.9	564.0	399.1	164.91	3.420		
10,000.0	6,891.9	10,211.5	7,118.2	92.3	92.1	-113.63	-469.5	-3,203.9	564.7	394.8	169.83	3.325		
10,100.0	6,891.2	10,311.5	7,119.2	95.1	94.8	-113.78	-469.5	-3,303.8	565.3	390.6	174.75	3.235		
10,200.0	6,890.6	10,411.5	7,120.2	97.9	97.6	-113.93	-469.5	-3,403.8	566.0	386.3	179.66	3.150		
10,300.0	6,890.0	10,511.5	7,121.2	100.6	100.3	-114.08	-469.5	-3,503.8	566.6	382.0	184.56	3.070		
10,400.0	6,889.4	10,611.5	7,122.2	103.4	103.1	-114.23	-469.5	-3,603.8	567.3	377.8	189.46	2.994		
10,500.0	6,888.8	10,711.5	7,123.2	106.2	105.9	-114.37	-469.5	-3,703.8	567.9	373.6	194.35	2.922		
10,600.0	6,888.2	10,811.4	7,124.2	108.9	108.7	-114.52	-469.5	-3,803.8	568.6	369.4	199.23	2.854		
10,700.0	6,887.6	10,911.4	7,125.2	111.7	111.4	-114.67	-469.5	-3,903.7	569.3	365.2	204.10	2.789		
10,800.0	6,887.0	11,011.4	7,126.2	114.5	114.2	-114.81	-469.5	-4,003.7	569.9	361.0	208.96	2.728		
10,900.0	6,886.4	11,111.4	7,127.2	117.3	117.0	-114.96	-469.5	-4,103.7	570.6	356.8	213.81	2.669		
11,000.0	6,885.7	11,211.4	7,128.2	120.1	119.8	-115.11	-469.5	-4,203.7	571.3	352.6	218.65	2.613		
11,100.0	6,885.1	11,311.4	7,129.2	122.8	122.5	-115.25	-469.5	-4,303.7	572.0	348.5	223.48	2.559		
11,200.0	6,884.5	11,411.4	7,130.2	125.6	125.3	-115.40	-469.5	-4,403.7	572.7	344.4	228.31	2.508		
11,285.7	6,884.0	11,496.8	7,131.0	128.0	127.7	-115.52	-469.5	-4,489.1	573.3	340.8	232.43	2.466 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4978.0ft (RKB Ensign 32-15) Coordinates are relative to: Stonebraker 28U-234
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: 0.62°



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Stonebraker 28U-234
Project:	SEC.28-T2N-R64W	TVD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Reference Site:	Stonebraker 28U-HZ Pad Sec.28-T2N-R64W	MD Reference:	WELL @ 4978.0ft (RKB Ensign 32-15')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Stonebraker 28U-234	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 #2 (7-23-12)	Offset TVD Reference:	Offset Datum

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