



# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83**

**WELD\_STONEBRAKER 7-12 PAD**

**P\_STONEBRAKER 8-12**

**P\_STONEBRAKER 8-12**

**Plan: PLAN #1 12-16-09 RHS**

## **Standard Planning Report**

**16 December, 2009**





Azimuths to True North  
Magnetic North: 9.10°  
Magnetic Field  
Strength: 53111.4snT  
Dip Angle: 66.81°  
Date: 12/16/2009  
Model: IGRF200510

#### WELL DETAILS: P\_STONEBRAKER 8-12

+N/-S	+E/-W	Northing	Ground Level:	5077.00	Longitude	Slot
0.00	0.00	1268164.69	Easting	3154024.62	40° 4' 5.484 N	104° 56' 58.775 W

#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4698.00	4836.48	SUSSEX
5188.00	5347.56	SHANNON
7468.00	7658.98	NIO A
7798.00	7988.98	CODELL
8243.00	8433.98	JSAND

#### SECTION DETAILS

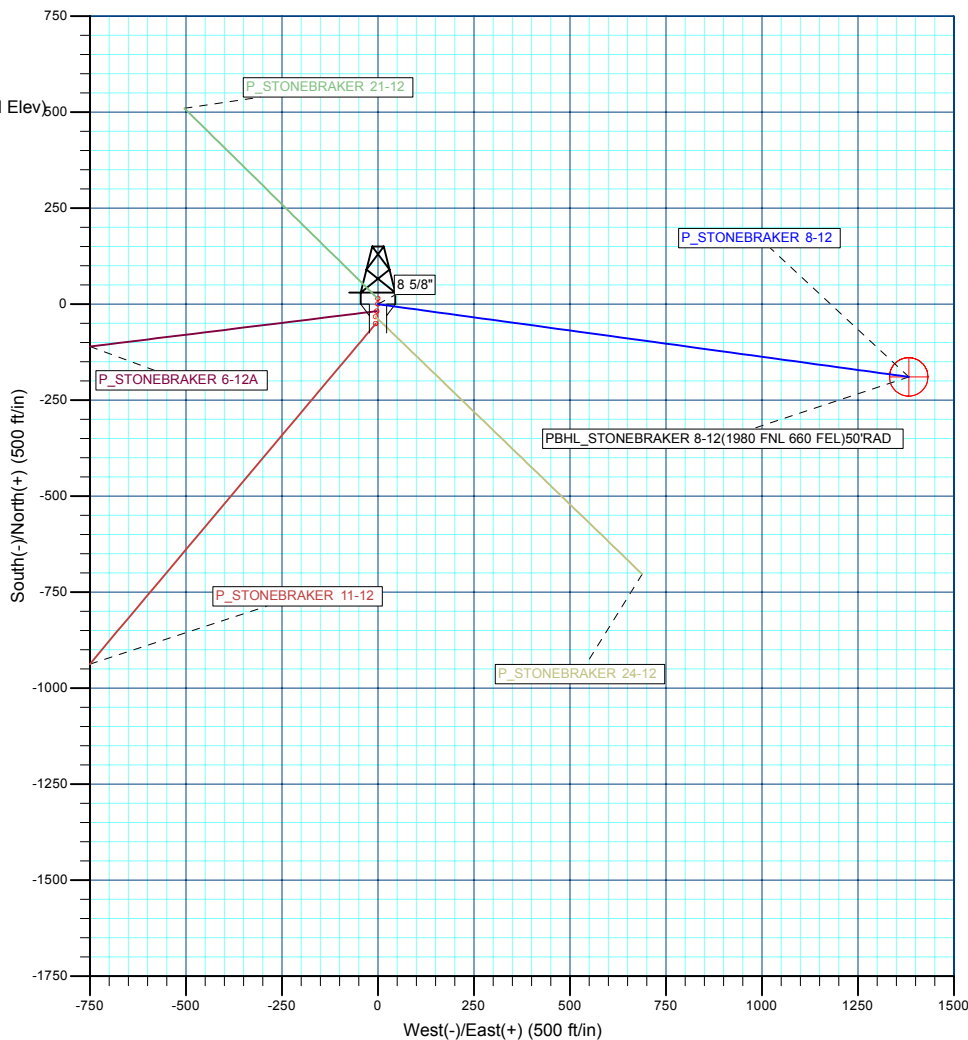
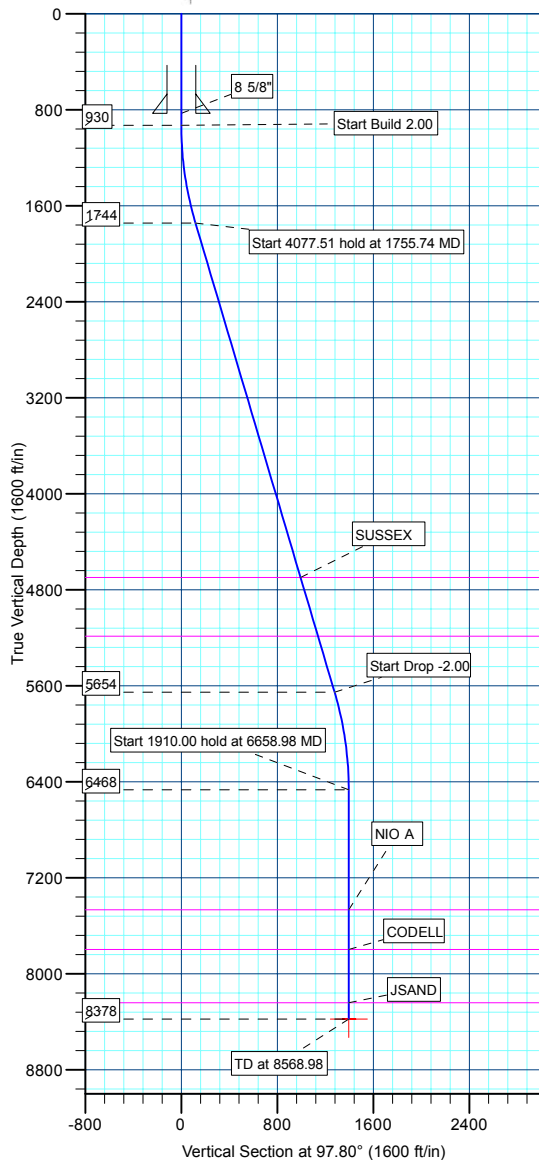
MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
930.00	0.00	0.00	930.00	0.00	0.00	0.00	0.00	0.00	
1755.74	16.51	97.80	1744.35	-16.04	117.09	2.00	97.80	118.18	
5833.25	16.51	97.80	5653.65	-173.32	1265.45	0.00	0.00	1277.27	
6658.98	0.00	0.00	6468.00	-189.36	1382.54	2.00	180.00	1395.45	
8568.98	0.00	0.00	8378.00	-189.36	1382.54	0.00	0.00	1395.45	PBHL_STONEBRAKER 8-12(1980 FNL 660 FEL)50°RAD

#### CASING DETAILS

TVD	MD	Name	Size
830.00	830.00	8 5/8"	8.62



KB ELEV: WELL @ 5092.00ft (Original Well Elev)  
GRD ELEV: 5077.00



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

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	8378.00	-189.36	1382.54	1267983.91	3155408.31	40° 4' 3.612 N	104° 56' 40.992 W	Circle (Radius: 50.00)

Plan: PLAN #1 12-16-09 RHS (P\_STONEBRAKER 8-12/P\_STONEBRAKER 8-12)

Created By: Robert H. Scott

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_STONEBRAKER 8-12		
<b>Design:</b>	PLAN #1 12-16-09 RHS		

<b>Project</b>	COLORADO NOTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

<b>Site</b>	WELD_STONEBRAKER 7-12 PAD, SECTION 12 T1N R68W			
<b>Site Position:</b>		<b>Northing:</b>	1,268,113.68 ft	<b>Latitude:</b> 40° 4' 4.980 N
<b>From:</b>	Lat/Long	<b>Easting:</b>	3,154,019.29 ft	<b>Longitude:</b> 104° 56' 58.848 W
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	in	<b>Grid Convergence:</b> 0.36 °

<b>Well</b>	P_STONEBRAKER 8-12			
<b>Well Position</b>	<b>+N/-S</b>	50.97 ft	<b>Northing:</b>	1,268,164.69 ft
	<b>+E/-W</b>	5.64 ft	<b>Easting:</b>	3,154,024.62 ft
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	5,077.00 ft

<b>Wellbore</b>	P_STONEBRAKER 8-12				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF200510	12/16/2009	9.10	66.81	53,111

<b>Design</b>	PLAN #1 12-16-09 RHS			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	97.80

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
930.00	0.00	0.00	930.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,755.74	16.51	97.80	1,744.35	-16.04	117.09	2.00	2.00	0.00	97.80	
5,833.25	16.51	97.80	5,653.65	-173.32	1,265.45	0.00	0.00	0.00	0.00	
6,658.98	0.00	0.00	6,468.00	-189.36	1,382.54	2.00	-2.00	0.00	180.00	
8,568.98	0.00	0.00	8,378.00	-189.36	1,382.54	0.00	0.00	0.00	0.00	PBHL_STONEBRA

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_STONEBRAKER 8-12		
<b>Design:</b>	PLAN #1 12-16-09 RHS		

**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)
<b>Start Build 2.00</b>									
930.00	0.00	0.00	930.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	1.40	97.80	999.99	-0.12	0.85	0.86	2.00	2.00	0.00
1,100.00	3.40	97.80	1,099.90	-0.68	5.00	5.04	2.00	2.00	0.00
1,200.00	5.40	97.80	1,199.60	-1.73	12.60	12.71	2.00	2.00	0.00
1,300.00	7.40	97.80	1,298.97	-3.24	23.64	23.86	2.00	2.00	0.00
1,400.00	9.40	97.80	1,397.89	-5.22	38.11	38.47	2.00	2.00	0.00
1,500.00	11.40	97.80	1,496.25	-7.67	56.00	56.52	2.00	2.00	0.00
1,600.00	13.40	97.80	1,593.91	-10.58	77.27	77.99	2.00	2.00	0.00
1,700.00	15.40	97.80	1,690.76	-13.96	101.91	102.86	2.00	2.00	0.00
<b>Start 4077.51 hold at 1755.74 MD</b>									
1,755.74	16.51	97.80	1,744.35	-16.04	117.09	118.18	2.00	2.00	0.00
1,800.00	16.51	97.80	1,786.79	-17.74	129.55	130.76	0.00	0.00	0.00
1,900.00	16.51	97.80	1,882.66	-21.60	157.72	159.19	0.00	0.00	0.00
2,000.00	16.51	97.80	1,978.54	-25.46	185.88	187.62	0.00	0.00	0.00
2,100.00	16.51	97.80	2,074.41	-29.32	214.05	216.04	0.00	0.00	0.00
2,200.00	16.51	97.80	2,170.29	-33.17	242.21	244.47	0.00	0.00	0.00
2,300.00	16.51	97.80	2,266.16	-37.03	270.37	272.90	0.00	0.00	0.00
2,400.00	16.51	97.80	2,362.04	-40.89	298.54	301.32	0.00	0.00	0.00
2,500.00	16.51	97.80	2,457.91	-44.75	326.70	329.75	0.00	0.00	0.00
2,600.00	16.51	97.80	2,553.78	-48.60	354.86	358.17	0.00	0.00	0.00
2,700.00	16.51	97.80	2,649.66	-52.46	383.03	386.60	0.00	0.00	0.00
2,800.00	16.51	97.80	2,745.53	-56.32	411.19	415.03	0.00	0.00	0.00
2,900.00	16.51	97.80	2,841.41	-60.18	439.35	443.45	0.00	0.00	0.00
3,000.00	16.51	97.80	2,937.28	-64.03	467.52	471.88	0.00	0.00	0.00
3,100.00	16.51	97.80	3,033.16	-67.89	495.68	500.31	0.00	0.00	0.00
3,200.00	16.51	97.80	3,129.03	-71.75	523.84	528.73	0.00	0.00	0.00
3,300.00	16.51	97.80	3,224.91	-75.61	552.01	557.16	0.00	0.00	0.00
3,400.00	16.51	97.80	3,320.78	-79.46	580.17	585.59	0.00	0.00	0.00
3,500.00	16.51	97.80	3,416.66	-83.32	608.33	614.01	0.00	0.00	0.00
3,600.00	16.51	97.80	3,512.53	-87.18	636.50	642.44	0.00	0.00	0.00
3,700.00	16.51	97.80	3,608.41	-91.04	664.66	670.86	0.00	0.00	0.00
3,800.00	16.51	97.80	3,704.28	-94.89	692.82	699.29	0.00	0.00	0.00
3,900.00	16.51	97.80	3,800.16	-98.75	720.99	727.72	0.00	0.00	0.00
4,000.00	16.51	97.80	3,896.03	-102.61	749.15	756.14	0.00	0.00	0.00
4,100.00	16.51	97.80	3,991.90	-106.46	777.31	784.57	0.00	0.00	0.00
4,200.00	16.51	97.80	4,087.78	-110.32	805.48	813.00	0.00	0.00	0.00
4,300.00	16.51	97.80	4,183.65	-114.18	833.64	841.42	0.00	0.00	0.00
4,400.00	16.51	97.80	4,279.53	-118.04	861.80	869.85	0.00	0.00	0.00
4,500.00	16.51	97.80	4,375.40	-121.89	889.97	898.27	0.00	0.00	0.00
4,600.00	16.51	97.80	4,471.28	-125.75	918.13	926.70	0.00	0.00	0.00
4,700.00	16.51	97.80	4,567.15	-129.61	946.29	955.13	0.00	0.00	0.00
4,800.00	16.51	97.80	4,663.03	-133.47	974.46	983.55	0.00	0.00	0.00
<b>SUSSEX</b>									
4,836.48	16.51	97.80	4,698.00	-134.87	984.73	993.92	0.00	0.00	0.00
4,900.00	16.51	97.80	4,758.90	-137.32	1,002.62	1,011.98	0.00	0.00	0.00
5,000.00	16.51	97.80	4,854.78	-141.18	1,030.78	1,040.41	0.00	0.00	0.00
5,100.00	16.51	97.80	4,950.65	-145.04	1,058.95	1,068.83	0.00	0.00	0.00
5,200.00	16.51	97.80	5,046.53	-148.90	1,087.11	1,097.26	0.00	0.00	0.00
5,300.00	16.51	97.80	5,142.40	-152.75	1,115.27	1,125.68	0.00	0.00	0.00
<b>SHANNON</b>									
5,347.56	16.51	97.80	5,188.00	-154.59	1,128.67	1,139.20	0.00	0.00	0.00
5,400.00	16.51	97.80	5,238.27	-156.61	1,143.44	1,154.11	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_STONEBRAKER 8-12		
<b>Design:</b>	PLAN #1 12-16-09 RHS		

**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)
5,500.00	16.51	97.80	5,334.15	-160.47	1,171.60	1,182.54	0.00	0.00	0.00
5,600.00	16.51	97.80	5,430.02	-164.33	1,199.76	1,210.96	0.00	0.00	0.00
5,700.00	16.51	97.80	5,525.90	-168.18	1,227.93	1,239.39	0.00	0.00	0.00
5,800.00	16.51	97.80	5,621.77	-172.04	1,256.09	1,267.82	0.00	0.00	0.00
<b>Start Drop -2.00</b>									
5,833.25	16.51	97.80	5,653.65	-173.32	1,265.45	1,277.27	0.00	0.00	0.00
5,900.00	15.18	97.80	5,717.86	-175.80	1,283.51	1,295.49	2.00	-2.00	0.00
6,000.00	13.18	97.80	5,814.81	-179.12	1,307.78	1,319.99	2.00	-2.00	0.00
6,100.00	11.18	97.80	5,912.56	-181.98	1,328.68	1,341.09	2.00	-2.00	0.00
6,200.00	9.18	97.80	6,010.98	-184.38	1,346.19	1,358.76	2.00	-2.00	0.00
6,300.00	7.18	97.80	6,109.95	-186.31	1,360.29	1,372.99	2.00	-2.00	0.00
6,400.00	5.18	97.80	6,209.37	-187.77	1,370.95	1,383.75	2.00	-2.00	0.00
6,500.00	3.18	97.80	6,309.10	-188.76	1,378.17	1,391.04	2.00	-2.00	0.00
6,600.00	1.18	97.80	6,409.02	-189.28	1,381.94	1,394.84	2.00	-2.00	0.00
<b>Start 1910.00 hold at 6658.98 MD</b>									
6,658.98	0.00	0.00	6,468.00	-189.36	1,382.54	1,395.45	2.00	-2.00	-165.80
6,700.00	0.00	0.00	6,509.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
6,800.00	0.00	0.00	6,609.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
6,900.00	0.00	0.00	6,709.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,000.00	0.00	0.00	6,809.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,100.00	0.00	0.00	6,909.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,200.00	0.00	0.00	7,009.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,300.00	0.00	0.00	7,109.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,400.00	0.00	0.00	7,209.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,500.00	0.00	0.00	7,309.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,600.00	0.00	0.00	7,409.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
<b>NIO A</b>									
7,658.98	0.00	0.00	7,468.00	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,700.00	0.00	0.00	7,509.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,800.00	0.00	0.00	7,609.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
7,900.00	0.00	0.00	7,709.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
<b>CODELL</b>									
7,988.98	0.00	0.00	7,798.00	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,000.00	0.00	0.00	7,809.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,100.00	0.00	0.00	7,909.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,200.00	0.00	0.00	8,009.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,300.00	0.00	0.00	8,109.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,400.00	0.00	0.00	8,209.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
<b>JSAND</b>									
8,433.98	0.00	0.00	8,243.00	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
8,500.00	0.00	0.00	8,309.02	-189.36	1,382.54	1,395.45	0.00	0.00	0.00
<b>PBHL_STONEBRAKER 8-12(1980 FNL 660 FEL)50'RAD</b>									
8,568.98	0.00	0.00	8,378.00	-189.36	1,382.54	1,395.45	0.00	0.00	0.00

<b>Database:</b>	EDM 2003.21 Single User Db	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>North Reference:</b>	True
<b>Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	P_STONEBRAKER 8-12		
<b>Design:</b>	PLAN #1 12-16-09 RHS		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
PBHL_STONEBRAKE	0.00	0.00	8,378.00	-189.36	1,382.54	1,267,983.91	3,155,408.31	40° 4' 3.612 N	104° 56' 40.992 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points					
	Measured Depth	Vertical Depth		Casing Diameter	Hole Diameter
	(ft)	(ft)	Name	(in)	(in)
	830.00	830.00	8 5/8"	8.62	11.00

Formations						
	Measured Depth	Vertical Depth			Dip	Dip Direction
	(ft)	(ft)	Name	Lithology	(°)	(°)
	4,836.48	4,698.00	SUSSEX			
	5,347.56	5,188.00	SHANNON			
	7,658.98	7,468.00	NIO A			
	7,988.98	7,798.00	CODELL			
	8,433.98	8,243.00	JSAND			

Plan Annotations					
	Measured Depth	Vertical Depth	Local Coordinates		
	(ft)	(ft)	+N/-S	+E/-W	Comment
	(ft)	(ft)	(ft)	(ft)	
	930.00	930.00	0.00	0.00	Start Build 2.00
	1,755.74	1,744.35	-16.04	117.09	Start 4077.51 hold at 1755.74 MD
	5,833.25	5,653.65	-173.32	1,265.45	Start Drop -2.00
	6,658.98	6,468.00	-189.36	1,382.54	Start 1910.00 hold at 6658.98 MD
	8,568.98	8,378.00	-189.36	1,382.54	TD at 8568.98



# **US ROCKIES REGION PLANNING**

**COLORADO NOTHERN ZONE - 83  
WELD\_STONEBRAKER 7-12 PAD  
P\_STONEBRAKER 8-12**

**P\_STONEBRAKER 8-12  
PLAN #1 12-16-09 RHS**

## **Anticollision Report**

**16 December, 2009**



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PLAN #1 12-16-09 RHS		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	□□□□ É□□□□o to ft	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b>	12/16/2009		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
		PLAN #1 12-16-09 RHS (P_STONEBRAK	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
WELD_STONEBRAKER 7-12 PAD						
P_STONEBRAKER 11-12 - P_STONEBRAKER 11-12 -						CC, ES
P_STONEBRAKER 11-12 - P_STONEBRAKER 11-12 -						SF
P_STONEBRAKER 21-12 - P_STONEBRAKER 21-12 -						CC, ES
P_STONEBRAKER 21-12 - P_STONEBRAKER 21-12 -						SF
P_STONEBRAKER 24-12 - P_STONEBRAKER 24-12 -						CC, ES
P_STONEBRAKER 24-12 - P_STONEBRAKER 24-12 -						SF
P_STONEBRAKER 6-12A - P_STONEBRAKER 6-12A -						CC, ES
P_STONEBRAKER 6-12A - P_STONEBRAKER 6-12A -						SF

<b>Offset Design</b>												<b>Offset Site Error:</b>	0.000 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	ft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>		<b>Distance</b>									
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
											0.19		
											0.64		
											1.09		
											1.54		
											1.99		
											2.44		
											2.89		
											3.34		
											3.79		
											3.92	CC, ES	
											4.21		
											4.58	SF	
											4.98		
											5.39		
											5.81		
											6.24		
											6.70		
											7.18		
											7.46		

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



[illegible]

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 11-12 - P_STONEBRAKER 11-12 - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											45.63			
											45.87			
											46.12			
											46.36			
											46.61			
											46.87			
											47.12			
											47.38			
											47.64			
											47.91			
											48.18			
											48.45			
											48.72			
											48.99			
											49.27			
											49.55			
											49.84			
											50.12			
											50.32			

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 21-12 - P_STONEBRAKER 21-12 - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											0.19			
											0.64			
											1.09			
											1.54			
											1.99			
											2.44			
											2.89			
											3.34			
											3.79			
											3.92	CC, ES		
											4.22	SF		
											4.64			
											5.04			
											5.45			
											5.85			
											6.26			
											6.66			
											7.07			
											7.30			
											7.51			
											7.98			
											8.47			
											8.96			
											9.45			
											9.96			
											10.46			
											10.97			
											11.48			
											11.99			
											12.51			
											13.03			
											13.55			
											14.07			
											14.59			
											15.12			
											15.64			
											16.17			
											16.69			
											17.22			
											17.75			
											18.28			
											18.81			
											19.34			
											19.87			
											20.40			
											20.93			
											21.46			
											21.99			
											22.53			
											23.06			
											23.59			

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 21-12 - P_STONEBRAKER 21-12 - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											24.13			
											24.66			
											25.19			
											25.73			
											26.26			
											26.80			
											27.33			
											27.86			
											28.40			
											28.58			
											29.03			
											29.66			
											30.25			
											30.80			
											31.31			
											31.78			
											32.21			
											32.81			
											33.15			
											33.33			
											33.67			
											34.03			
											34.39			
											34.75			
											35.11			
											35.48			
											35.84			
											36.21			
											36.58			
											36.95			
											37.33			
											37.70			
											38.08			
											38.46			
											38.83			
											39.22			
											39.60			
											39.98			
											40.25			

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 24-12 - P_STONEBRAKER 24-12 - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											0.19			
											0.64			
											1.09			
											1.54			
											1.99			
											2.44			
											2.89			
											3.34			
											3.79			
											3.92	CC, ES		
											4.21			
											4.59	SF		
											5.00			
											5.45			
											5.96			
											6.53			
											7.19			
											7.91			
											8.35			
											8.70			
											9.51			
											10.33			
											11.16			
											12.00			
											12.84			
											13.68			
											14.53			
											15.38			
											16.23			
											17.08			
											17.94			
											18.79			
											19.65			
											20.50			
											21.36			
											22.22			
											23.07			
											23.93			
											24.79			
											25.65			
											26.50			
											27.36			
											28.22			
											29.08			
											29.94			
											30.79			
											31.65			
											32.51			
											33.37			
											34.22			
											35.08			

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

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 24-12 - P_STONEBRAKER 24-12 - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											35.94			
											36.79			
											37.65			
											38.51			
											39.36			
											40.22			
												41.09		
												41.96		
												42.82		
												43.11		
												43.67		
												44.47		
												45.26		
												45.92		
												46.44		
												46.88		
												47.22		
												47.47		
												47.58		
												47.63		
												47.68		
												47.92		
												48.15		
												48.39		
												48.64		
												48.88		
												49.13		
												49.39		
												49.64		
												49.90		
												50.16		
												50.42		
												50.69		
												50.96		
												51.23		
												51.50		
												51.78		
												52.06		
												52.34		
												52.53		

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 6-12A - P_STONEBRAKER 6-12A - PLAN #1												Offset Well Error:	ft
Survey Program: 0-MWD													
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)		
											0.19		
											0.64		
											1.09		
											1.54		
											1.99		
											2.44		
											2.89		
											3.34		
											3.79		
											3.92	CC, ES	
											4.22	SF	
											4.61		
											5.00		
											5.39		
											5.77		
											6.15		
											6.52		
											6.89		
											7.09		
											7.29		
											7.74		
											8.20		
											8.66		
											9.14		
											9.62		
											10.10		
											10.59		
											11.09		
											11.58		
											12.08		
											12.59		
											13.09		
											13.60		
											14.11		
											14.62		
											15.13		
											15.64		
											16.15		
											16.67		
											17.19		
											17.70		
											18.22		
											18.74		
											19.26		
											19.78		
											20.30		
											20.82		
											21.34		
											21.86		
											22.38		
											22.91		

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

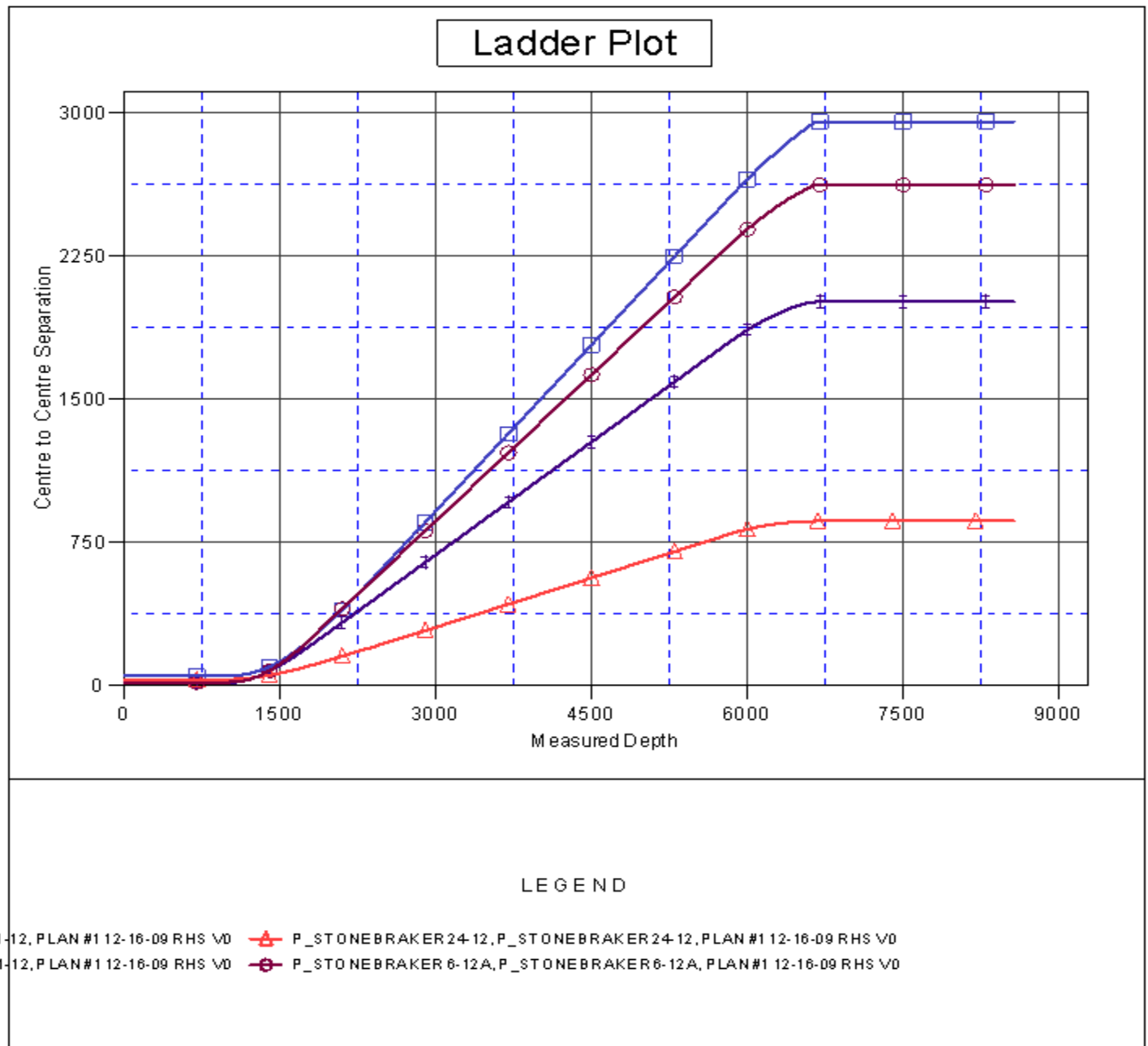
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	oft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	ft
WELD_STONEBRAKER 7-12 PAD - P_STONEBRAKER 6-12A - P_STONEBRAKER 6-12A - PLAN #1													Offset Well Error:	ft
Survey Program: 0-MWD														
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)			
											23.43			
											23.95			
											24.48			
											25.00			
											25.53			
											26.05			
											26.57			
											27.10			
											27.63			
											27.80			
											28.28			
											28.95			
											29.59			
											30.19			
											30.76			
											31.28			
											31.77			
											32.21			
											33.31			
											33.87			
											34.20			
											34.53			
											34.86			
											35.20			
											35.54			
											35.88			
											36.23			
											36.58			
											36.93			
											37.28			
											37.63			
											37.99			
											38.34			
											38.70			
											39.06			
											39.43			
											39.79			
											40.16			
											40.41			



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

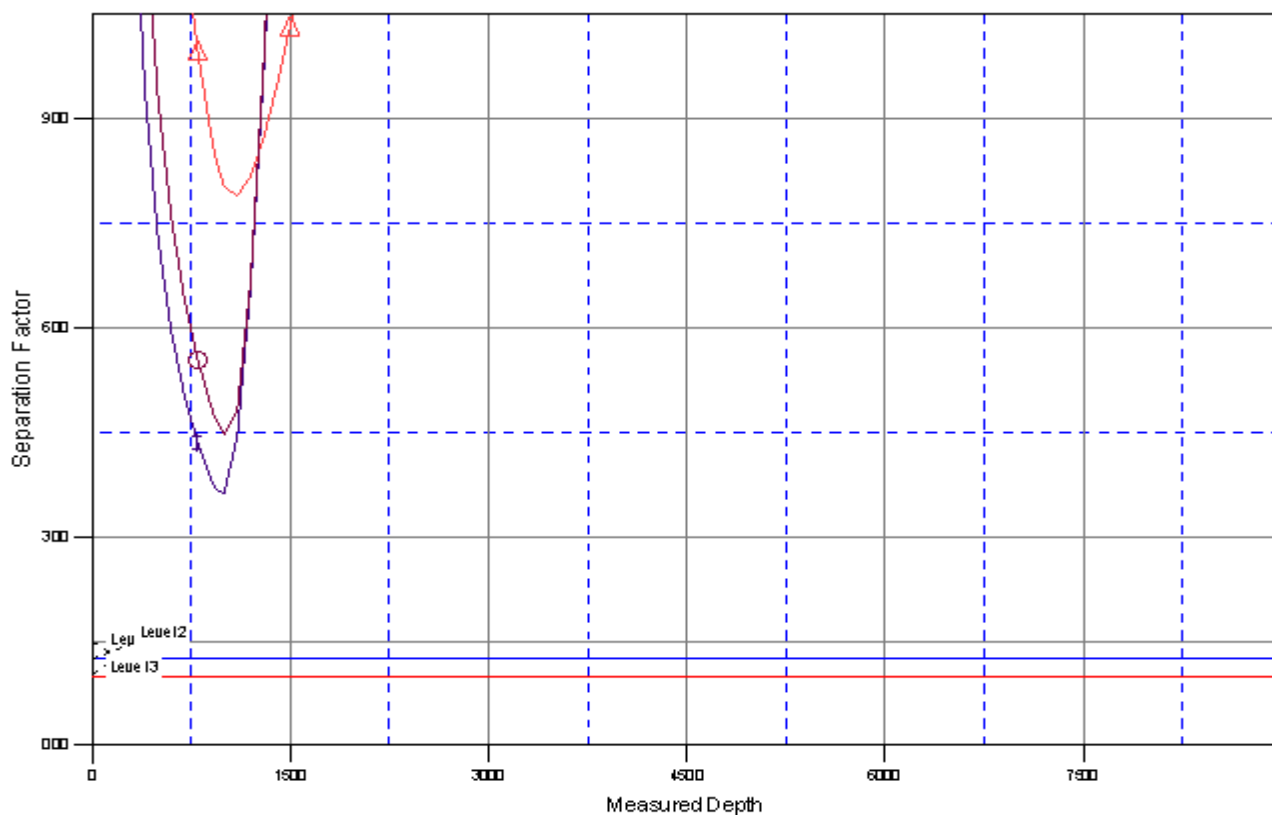
Reference Depths are relative to WELL @ 5092.00ft (Original Well Elev) Coordinates are relative to: P\_STONEBRAKER 8-12  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is ° Grid Convergence at Surface is: °



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well P_STONEBRAKER 8-12
<b>Project:</b>	COLORADO NOTHERN ZONE - 83	<b>TVD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Reference Site:</b>	WELD_STONEBRAKER 7-12 PAD	<b>MD Reference:</b>	WELL @ 5092.00ft (Original Well Elev)
<b>Site Error:</b>	0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	P_STONEBRAKER 8-12	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	P_STONEBRAKER 8-12	<b>Database:</b>	EDM 2003.21 Single User Db
<b>Reference Design:</b>	PLAN #1 12-16-09 RHS	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 5092.00ft (Original Well Elev) Coordinates are relative to: P\_STONEBRAKER 8-12  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is ° Grid Convergence at Surface is: °

## Separation Factor Plot



### LEGEND

11-12, PLAN #1 12-16-09 RHS V/D ▲ P\_STONEBRAKER 24-12, P\_STONEBRAKER 24-12, PLAN #1 12-16-09 RHS V/D  
21-12, PLAN #1 12-16-09 RHS V/D ● P\_STONEBRAKER 6-12A, P\_STONEBRAKER 6-12A, PLAN #1 12-16-09 RHS V/D