

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_PSC PAD (SEC 13 T3N R68W)  
PSC 13N-13HZ**

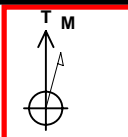
**PSC 13N-13HZ**

**Plan: PSC 13N-13HZ (wp01)**

## **Standard Planning Report**

**10 March, 2011**





Azimuths to True North  
Magnetic North: 8.98°  
  
Magnetic Field  
Strength: 53045.1snT  
Dip Angle: 66.88°  
Date: 3/10/2011  
Model: IGRF2010

Project: COLORADO NORTHERN ZONE - 83  
Site: WELD\_PSC PAD (SEC 13 T3N R68W)  
Well: PSC 13N-13HZ  
Wellbore: PSC 13N-13HZ  
Section:  
SHL:  
Design: PSC 13N-13HZ (wp01)  
Latitude: 40.220410  
Longitude: -104.943352  
GL: 4872.00  
KB: 17' RKB + 4872' GL @ 4889.00ft

#### WELL DETAILS: PSC 13N-13HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	4872.00 Latitude	40.220410 Longitude	Slot
0.00	0.00	1323625.37	3155441.90		-104.943352	

#### SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1050.00	0.00	0.00	1050.00	0.00	0.00	0.00	0.00	0.00	
1273.08	4.46	85.26	1272.85	0.72	8.65	2.00	85.26	-8.66	
6252.57	4.46	85.26	6237.26	32.75	394.68	0.00	0.00	-394.87	
7427.85	89.57	269.28	7009.00	28.00	-314.00	8.00	-175.97	313.82	
7433.98	89.54	269.22	7009.05	27.92	-320.13	1.00	-120.67	319.95	
11540.45	89.54	269.22	7042.00	-27.65	-4426.09	0.00	0.00	4426.17	PSC 13N-13HZ BHL

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

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PSC 13N-13HZ BHL	7042.00	-27.65	-4426.09	40.220333	-104.959202	Point

#### FORMATION TOP DETAILS

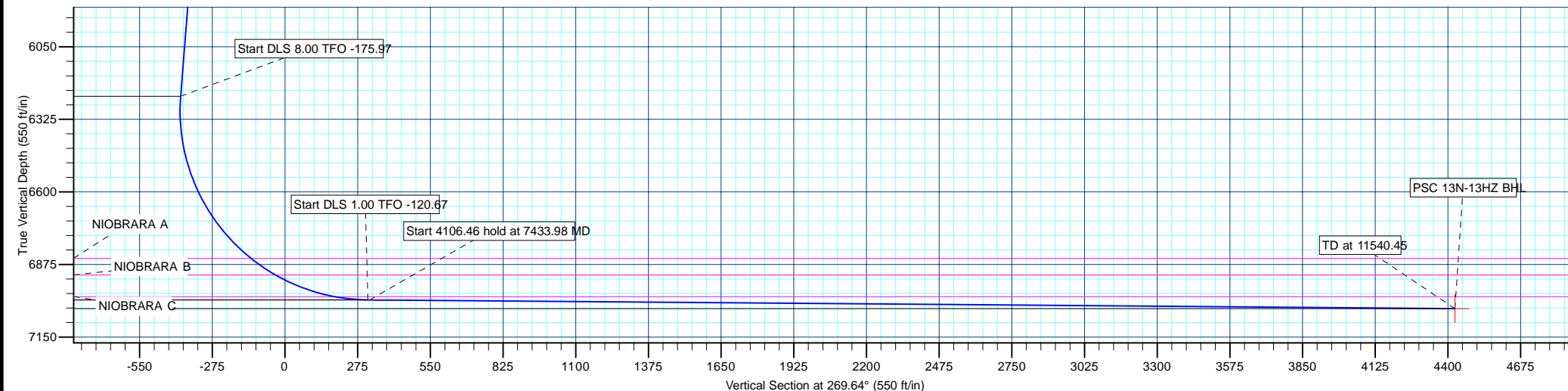
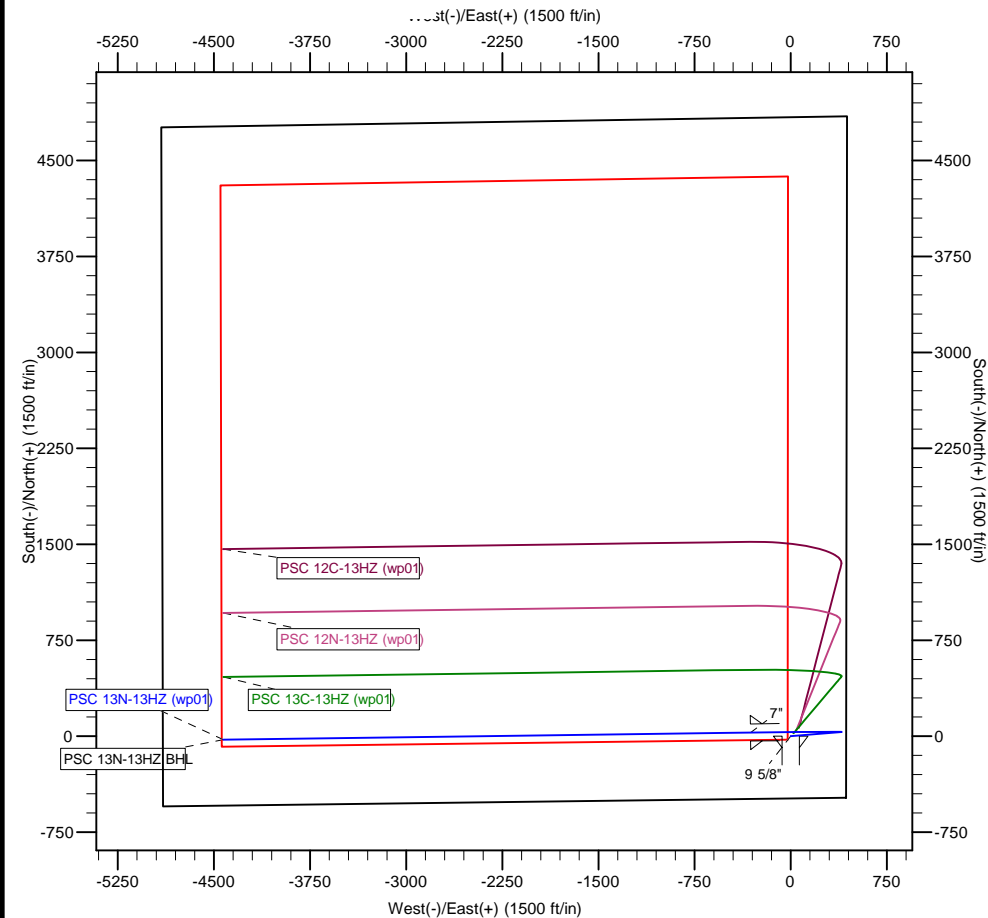
TVDPath	MDPath	Formation
269.00	269.00	FOX HILLS
3998.00	4006.51	PARKMAN
4346.00	4355.57	SUSSEX
6852.00	6949.83	NIOBRARA A
6915.00	7062.08	NIOBRARA B
6997.00	7301.80	NIOBRARA C

#### CASING DETAILS

TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7009.00	7427.85	7"	7



**Weatherford®**



<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>North Reference:</b>	True
<b>Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PSC 13N-13HZ		
<b>Design:</b>	PSC 13N-13HZ (wp01)		

<b>Project</b>	COLORADO NORTHERN ZONE - 83		
<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		

Site		WELD_PSC PAD (SEC 13 T3N R68W)			
Site Position:		Northing:	1,323,668.63 ft	Latitude:	40.220528
From:	Lat/Long	Easting:	3,155,483.24 ft	Longitude:	-104.943203
Position Uncertainty:	0.00 ft	Slot Radius:	0 "	Grid Convergence:	0.36

Well	PSC 13N-13HZ					
Well Position	+N-S	-42.99 ft	Northing:	1,323,625.37 ft	Latitude:	40.220410
	+E-W	-41.61 ft	Easting:	3,155,441.90 ft	Longitude:	-104.943352
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,872.00 ft

<b>Wellbore</b>	PSC 13N-13HZ				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/10/2011	8.98	66.88	53,045

<b>Design</b>	PSC 13N-13HZ (wp01)			
<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	269.64

<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	
1,050.00	0.00	0.00	1,050.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,273.08	4.46	85.26	1,272.85	0.72	8.65	2.00	2.00	0.00	85.26	
6,252.57	4.46	85.26	6,237.26	32.75	394.68	0.00	0.00	0.00	0.00	
7,427.85	89.57	269.28	7,009.00	28.00	-314.00	8.00	7.24	-14.97	-175.97	
7,433.98	89.54	269.22	7,009.05	27.92	-320.13	1.00	-0.51	-0.86	-120.67	
11,540.45	89.54	269.22	7,042.00	-27.65	-4,426.09	0.00	0.00	0.00	0.00	PSC 13N-13HZ BH

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>North Reference:</b>	True
<b>Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PSC 13N-13HZ		
<b>Design:</b>	PSC 13N-13HZ (wp01)		

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
269.00	0.00	0.00	269.00	0.00	0.00	0.00	0.00	0.00	0.00
FOX HILLS									
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,050.00	0.00	0.00	1,050.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	1.00	85.26	1,100.00	0.04	0.43	-0.44	2.00	2.00	0.00
1,200.00	3.00	85.26	1,199.93	0.32	3.91	-3.91	2.00	2.00	0.00
1,273.08	4.46	85.26	1,272.85	0.72	8.65	-8.66	2.00	2.00	0.00
1,300.00	4.46	85.26	1,299.69	0.89	10.74	-10.74	0.00	0.00	0.00
1,400.00	4.46	85.26	1,399.39	1.53	18.49	-18.50	0.00	0.00	0.00
1,500.00	4.46	85.26	1,499.09	2.18	26.24	-26.26	0.00	0.00	0.00
1,600.00	4.46	85.26	1,598.78	2.82	34.00	-34.01	0.00	0.00	0.00
1,700.00	4.46	85.26	1,698.48	3.46	41.75	-41.77	0.00	0.00	0.00
1,800.00	4.46	85.26	1,798.18	4.11	49.50	-49.52	0.00	0.00	0.00
1,900.00	4.46	85.26	1,897.87	4.75	57.25	-57.28	0.00	0.00	0.00
2,000.00	4.46	85.26	1,997.57	5.39	65.00	-65.04	0.00	0.00	0.00
2,100.00	4.46	85.26	2,097.27	6.04	72.76	-72.79	0.00	0.00	0.00
2,200.00	4.46	85.26	2,196.97	6.68	80.51	-80.55	0.00	0.00	0.00
2,300.00	4.46	85.26	2,296.66	7.32	88.26	-88.31	0.00	0.00	0.00
2,400.00	4.46	85.26	2,396.36	7.97	96.01	-96.06	0.00	0.00	0.00
2,500.00	4.46	85.26	2,496.06	8.61	103.77	-103.82	0.00	0.00	0.00
2,600.00	4.46	85.26	2,595.75	9.25	111.52	-111.57	0.00	0.00	0.00
2,700.00	4.46	85.26	2,695.45	9.90	119.27	-119.33	0.00	0.00	0.00
2,800.00	4.46	85.26	2,795.15	10.54	127.02	-127.09	0.00	0.00	0.00
2,900.00	4.46	85.26	2,894.84	11.18	134.78	-134.84	0.00	0.00	0.00
3,000.00	4.46	85.26	2,994.54	11.83	142.53	-142.60	0.00	0.00	0.00
3,100.00	4.46	85.26	3,094.24	12.47	150.28	-150.36	0.00	0.00	0.00
3,200.00	4.46	85.26	3,193.94	13.11	158.03	-158.11	0.00	0.00	0.00
3,300.00	4.46	85.26	3,293.63	13.76	165.78	-165.87	0.00	0.00	0.00
3,400.00	4.46	85.26	3,393.33	14.40	173.54	-173.62	0.00	0.00	0.00
3,500.00	4.46	85.26	3,493.03	15.04	181.29	-181.38	0.00	0.00	0.00
3,600.00	4.46	85.26	3,592.72	15.69	189.04	-189.14	0.00	0.00	0.00
3,700.00	4.46	85.26	3,692.42	16.33	196.79	-196.89	0.00	0.00	0.00
3,800.00	4.46	85.26	3,792.12	16.97	204.55	-204.65	0.00	0.00	0.00
3,900.00	4.46	85.26	3,891.81	17.61	212.30	-212.40	0.00	0.00	0.00
4,000.00	4.46	85.26	3,991.51	18.26	220.05	-220.16	0.00	0.00	0.00
4,006.51	4.46	85.26	3,998.00	18.30	220.56	-220.67	0.00	0.00	0.00
PARKMAN									
4,100.00	4.46	85.26	4,091.21	18.90	227.80	-227.92	0.00	0.00	0.00
4,200.00	4.46	85.26	4,190.91	19.54	235.56	-235.67	0.00	0.00	0.00
4,300.00	4.46	85.26	4,290.60	20.19	243.31	-243.43	0.00	0.00	0.00
4,355.57	4.46	85.26	4,346.00	20.55	247.62	-247.74	0.00	0.00	0.00
SUSSEX									
4,400.00	4.46	85.26	4,390.30	20.83	251.06	-251.19	0.00	0.00	0.00

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>North Reference:</b>	True
<b>Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PSC 13N-13HZ		
<b>Design:</b>	PSC 13N-13HZ (wp01)		

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)
4,500.00	4.46	85.26	4,490.00	21.47	258.81	-258.94	0.00	0.00	0.00
4,600.00	4.46	85.26	4,589.69	22.12	266.57	-266.70	0.00	0.00	0.00
4,700.00	4.46	85.26	4,689.39	22.76	274.32	-274.45	0.00	0.00	0.00
4,800.00	4.46	85.26	4,789.09	23.40	282.07	-282.21	0.00	0.00	0.00
4,900.00	4.46	85.26	4,888.78	24.05	289.82	-289.97	0.00	0.00	0.00
5,000.00	4.46	85.26	4,988.48	24.69	297.57	-297.72	0.00	0.00	0.00
5,100.00	4.46	85.26	5,088.18	25.33	305.33	-305.48	0.00	0.00	0.00
5,200.00	4.46	85.26	5,187.88	25.98	313.08	-313.24	0.00	0.00	0.00
5,300.00	4.46	85.26	5,287.57	26.62	320.83	-320.99	0.00	0.00	0.00
5,400.00	4.46	85.26	5,387.27	27.26	328.58	-328.75	0.00	0.00	0.00
5,500.00	4.46	85.26	5,486.97	27.91	336.34	-336.50	0.00	0.00	0.00
5,600.00	4.46	85.26	5,586.66	28.55	344.09	-344.26	0.00	0.00	0.00
5,700.00	4.46	85.26	5,686.36	29.19	351.84	-352.02	0.00	0.00	0.00
5,800.00	4.46	85.26	5,786.06	29.84	359.59	-359.77	0.00	0.00	0.00
5,900.00	4.46	85.26	5,885.75	30.48	367.35	-367.53	0.00	0.00	0.00
6,000.00	4.46	85.26	5,985.45	31.12	375.10	-375.28	0.00	0.00	0.00
6,100.00	4.46	85.26	6,085.15	31.77	382.85	-383.04	0.00	0.00	0.00
6,200.00	4.46	85.26	6,184.85	32.41	390.60	-390.80	0.00	0.00	0.00
6,252.57	4.46	85.26	6,237.26	32.75	394.68	-394.87	0.00	0.00	0.00
6,300.00	0.73	63.76	6,284.63	33.03	396.79	-396.99	8.00	-7.87	-45.32
6,400.00	7.35	271.70	6,384.38	33.50	390.95	-391.15	8.00	6.62	-152.06
6,500.00	15.35	270.42	6,482.34	33.79	371.29	-371.50	8.00	8.00	-1.29
6,600.00	23.35	270.00	6,576.62	33.89	338.19	-338.40	8.00	8.00	-0.42
6,700.00	31.35	269.79	6,665.37	33.79	292.30	-292.50	8.00	8.00	-0.21
6,800.00	39.34	269.66	6,746.87	33.51	234.49	-234.70	8.00	8.00	-0.13
6,900.00	47.34	269.56	6,819.54	33.04	165.91	-166.12	8.00	8.00	-0.09
6,949.83	51.33	269.53	6,852.00	32.74	128.13	-128.33	8.00	8.00	-0.08
<b>NIOBRARA A</b>									
7,000.00	55.34	269.49	6,881.95	32.39	87.89	-88.09	8.00	8.00	-0.07
7,062.08	60.31	269.45	6,915.00	31.91	35.36	-35.55	8.00	8.00	-0.06
<b>NIOBRARA B</b>									
7,100.00	63.34	269.43	6,932.90	31.58	1.94	-2.13	8.00	8.00	-0.06
7,200.00	71.34	269.38	6,971.39	30.63	-90.27	90.07	8.00	8.00	-0.05
7,300.00	79.34	269.33	6,996.67	29.54	-186.93	186.74	8.00	8.00	-0.05
7,301.80	79.49	269.33	6,997.00	29.52	-188.70	188.51	8.00	8.00	-0.05
<b>NIOBRARA C</b>									
7,400.00	87.34	269.29	7,008.25	28.35	-286.17	285.98	8.00	8.00	-0.04
7,427.85	89.57	269.28	7,009.00	28.00	-314.00	313.82	8.00	8.00	-0.04
<b>7"</b>									
7,433.98	89.54	269.22	7,009.05	27.92	-320.13	319.95	1.00	-0.51	-0.86
7,500.00	89.54	269.22	7,009.58	27.03	-386.14	385.97	0.00	0.00	0.00
7,600.00	89.54	269.22	7,010.38	25.67	-486.13	485.96	0.00	0.00	0.00
7,700.00	89.54	269.22	7,011.18	24.32	-586.12	585.95	0.00	0.00	0.00
7,800.00	89.54	269.22	7,011.98	22.97	-686.11	685.95	0.00	0.00	0.00
7,900.00	89.54	269.22	7,012.79	21.61	-786.09	785.94	0.00	0.00	0.00
8,000.00	89.54	269.22	7,013.59	20.26	-886.08	885.94	0.00	0.00	0.00
8,100.00	89.54	269.22	7,014.39	18.91	-986.07	985.93	0.00	0.00	0.00
8,200.00	89.54	269.22	7,015.19	17.55	-1,086.06	1,085.93	0.00	0.00	0.00
8,300.00	89.54	269.22	7,016.00	16.20	-1,186.04	1,185.92	0.00	0.00	0.00
8,400.00	89.54	269.22	7,016.80	14.85	-1,286.03	1,285.91	0.00	0.00	0.00
8,500.00	89.54	269.22	7,017.60	13.50	-1,386.02	1,385.91	0.00	0.00	0.00
8,600.00	89.54	269.22	7,018.40	12.14	-1,486.01	1,485.90	0.00	0.00	0.00
8,700.00	89.54	269.22	7,019.21	10.79	-1,585.99	1,585.90	0.00	0.00	0.00

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>North Reference:</b>	True
<b>Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PSC 13N-13HZ		
<b>Design:</b>	PSC 13N-13HZ (wp01)		

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)
8,800.00	89.54	269.22	7,020.01	9.44	-1,685.98	1,685.89	0.00	0.00	0.00
8,900.00	89.54	269.22	7,020.81	8.08	-1,785.97	1,785.88	0.00	0.00	0.00
9,000.00	89.54	269.22	7,021.61	6.73	-1,885.96	1,885.88	0.00	0.00	0.00
9,100.00	89.54	269.22	7,022.42	5.38	-1,985.94	1,985.87	0.00	0.00	0.00
9,200.00	89.54	269.22	7,023.22	4.02	-2,085.93	2,085.87	0.00	0.00	0.00
9,300.00	89.54	269.22	7,024.02	2.67	-2,185.92	2,185.86	0.00	0.00	0.00
9,400.00	89.54	269.22	7,024.82	1.32	-2,285.91	2,285.85	0.00	0.00	0.00
9,500.00	89.54	269.22	7,025.63	-0.04	-2,385.90	2,385.85	0.00	0.00	0.00
9,600.00	89.54	269.22	7,026.43	-1.39	-2,485.88	2,485.84	0.00	0.00	0.00
9,700.00	89.54	269.22	7,027.23	-2.74	-2,585.87	2,585.84	0.00	0.00	0.00
9,800.00	89.54	269.22	7,028.03	-4.10	-2,685.86	2,685.83	0.00	0.00	0.00
9,900.00	89.54	269.22	7,028.84	-5.45	-2,785.85	2,785.83	0.00	0.00	0.00
10,000.00	89.54	269.22	7,029.64	-6.80	-2,885.83	2,885.82	0.00	0.00	0.00
10,100.00	89.54	269.22	7,030.44	-8.15	-2,985.82	2,985.81	0.00	0.00	0.00
10,200.00	89.54	269.22	7,031.24	-9.51	-3,085.81	3,085.81	0.00	0.00	0.00
10,300.00	89.54	269.22	7,032.05	-10.86	-3,185.80	3,185.80	0.00	0.00	0.00
10,400.00	89.54	269.22	7,032.85	-12.21	-3,285.78	3,285.80	0.00	0.00	0.00
10,500.00	89.54	269.22	7,033.65	-13.57	-3,385.77	3,385.79	0.00	0.00	0.00
10,600.00	89.54	269.22	7,034.45	-14.92	-3,485.76	3,485.78	0.00	0.00	0.00
10,700.00	89.54	269.22	7,035.26	-16.27	-3,585.75	3,585.78	0.00	0.00	0.00
10,800.00	89.54	269.22	7,036.06	-17.63	-3,685.73	3,685.77	0.00	0.00	0.00
10,900.00	89.54	269.22	7,036.86	-18.98	-3,785.72	3,785.77	0.00	0.00	0.00
11,000.00	89.54	269.22	7,037.66	-20.33	-3,885.71	3,885.76	0.00	0.00	0.00
11,100.00	89.54	269.22	7,038.47	-21.69	-3,985.70	3,985.76	0.00	0.00	0.00
11,200.00	89.54	269.22	7,039.27	-23.04	-4,085.69	4,085.75	0.00	0.00	0.00
11,300.00	89.54	269.22	7,040.07	-24.39	-4,185.67	4,185.74	0.00	0.00	0.00
11,400.00	89.54	269.22	7,040.87	-25.75	-4,285.66	4,285.74	0.00	0.00	0.00
11,500.00	89.54	269.22	7,041.68	-27.10	-4,385.65	4,385.73	0.00	0.00	0.00
11,540.45	89.54	269.22	7,042.00	-27.65	-4,426.09	4,426.17	0.00	0.00	0.00
PSC 13N-13HZ BHL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PSC 13N-13HZ BHL	0.00	0.00	7,042.00	-27.65	-4,426.09	1,323,569.94	3,151,016.07	40.220333	-104.959202
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
900.00	900.00	9 5/8"	9-5/8	12-1/4	
7,427.85	7,009.00	7"	7	8-3/4	

<b>Database:</b>	edm5000p	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Company:</b>	US ROCKIES REGION PLANNING	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>North Reference:</b>	True
<b>Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	PSC 13N-13HZ		
<b>Design:</b>	PSC 13N-13HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
269.00	269.00	FOX HILLS		0.00		
4,006.51	3,998.00	PARKMAN		0.00		
4,355.57	4,346.00	SUSSEX		0.00		
6,949.83	6,852.00	NIOBRARA A		0.00		
7,062.08	6,915.00	NIOBRARA B		0.00		
7,301.80	6,997.00	NIOBRARA C		0.00		

# **US ROCKIES REGION PLANNING**

**COLORADO NORTHERN ZONE - 83  
WELD\_PSC PAD (SEC 13 T3N R68W)  
PSC 13N-13HZ**

**PSC 13N-13HZ  
PSC 13N-13HZ (wp01)**

## **Anticollision Summary Report**

**10 March, 2011**





# APC

## Anticollision Summary Report



<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Reference Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	PSC 13N-13HZ	<b>Database:</b>	edm5000p
<b>Reference Design:</b>	PSC 13N-13HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	PSC 13N-13HZ (wp01)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	MD + Stations Interval 25.00ft	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 1,000.00 ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 3/10/2011				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
0.00	11,540.45	PSC 13N-13HZ (wp01) (PSC 13N-13HZ)	MWD	MWD - Standard	

<b>Summary</b>						
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						
WELD_PSC PAD (SEC 13 T3N R68W)						
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	1,050.00	1,050.00	90.10	85.64	20.214	CC
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	1,150.00	1,147.30	90.29	85.40	18.499	ES
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	1,400.00	1,389.19	96.82	90.87	16.259	SF
PSC 12N-13HZ - PSC 12N-13HZ - PSC 12N-13HZ (wp0	1,300.56	1,297.51	55.93	50.41	10.121	CC, ES
PSC 12N-13HZ - PSC 12N-13HZ - PSC 12N-13HZ (wp0	11,540.45	11,618.89	990.16	753.58	4.185	SF
PSC 13C-13HZ - PSC 13C-13HZ - PSC 13C-13HZ (wp0	1,050.00	1,050.00	29.82	25.36	6.689	CC
PSC 13C-13HZ - PSC 13C-13HZ - PSC 13C-13HZ (wp0	1,100.00	1,099.48	29.92	25.25	6.404	ES
PSC 13C-13HZ - PSC 13C-13HZ - PSC 13C-13HZ (wp0	11,540.45	11,763.43	530.74	311.58	2.422	SF

<b>Company:</b>	US ROCKIES REGION PLANNING	<b>Local Co-ordinate Reference:</b>	Well PSC 13N-13HZ
<b>Project:</b>	COLORADO NORTHERN ZONE - 83	<b>TVD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Reference Site:</b>	WELD_PSC PAD (SEC 13 T3N R68W)	<b>MD Reference:</b>	17' RKB + 4872' GL @ 4889.00ft
<b>Site Error:</b>	0.00 ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	PSC 13N-13HZ	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	PSC 13N-13HZ	<b>Database:</b>	edm5000p
<b>Reference Design:</b>	PSC 13N-13HZ (wp01)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to 17' RKB + 4872' GL @ 4889.00ft

Offset Depths are relative to Offset Datum

Central Meridian is -105.500000

Coordinates are relative to: PSC 13N-13HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.36°



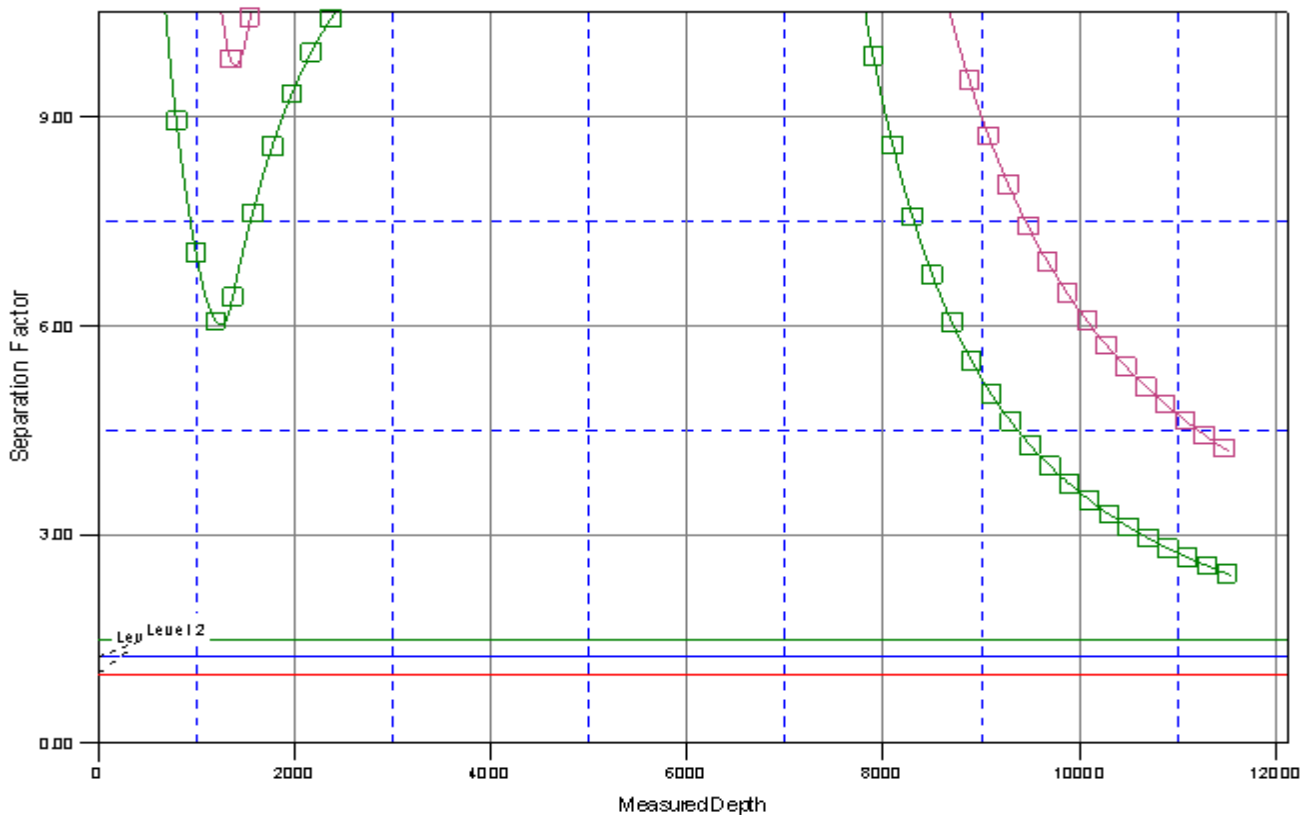
**Company:** US ROCKIES REGION PLANNING  
**Project:** COLORADO NORTHERN ZONE - 83  
**Reference Site:** WELD\_PSC PAD (SEC 13 T3N R68W)  
**Site Error:** 0.00 ft  
**Reference Well:** PSC 13N-13HZ  
**Well Error:** 0.00 ft  
**Reference Wellbore:** PSC 13N-13HZ  
**Reference Design:** PSC 13N-13HZ (wp01)

**Local Co-ordinate Reference:** Well PSC 13N-13HZ  
**TVD Reference:** 17' RKB + 4872' GL @ 4889.00ft  
**MD Reference:** 17' RKB + 4872' GL @ 4889.00ft  
**North Reference:** True  
**Survey Calculation Method:** Minimum Curvature  
**Output errors are at** 2.00 sigma  
**Database:** edm5000p  
**Offset TVD Reference:** Offset Datum

Reference Depths are relative to 17' RKB + 4872' GL @ 4889.00ft  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000

Coordinates are relative to: PSC 13N-13HZ  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.36°

## Separation Factor Plot



## LEGEND

Level 2: PSC 12C-13HZ, PSC 12C-13HZ(wp01) \V0 Level 1: PSC 12N-13HZ, PSC 12N-13HZ, PSC 12N-13HZ(wp01) \V0 PSC 13C-13HZ, PSC 13C-13HZ, PSC 13C-13HZ(wp01) \V0