

US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_PSC PAD (SEC 13 T3N R68W)
PSC 13C-13HZ**

PSC 13C-13HZ

Plan: PSC 13C-13HZ (wp01)

Standard Planning Report

10 March, 2011





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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 13C-13HZ

Wellbore: PSC 13C-13HZ

Section: SHL:

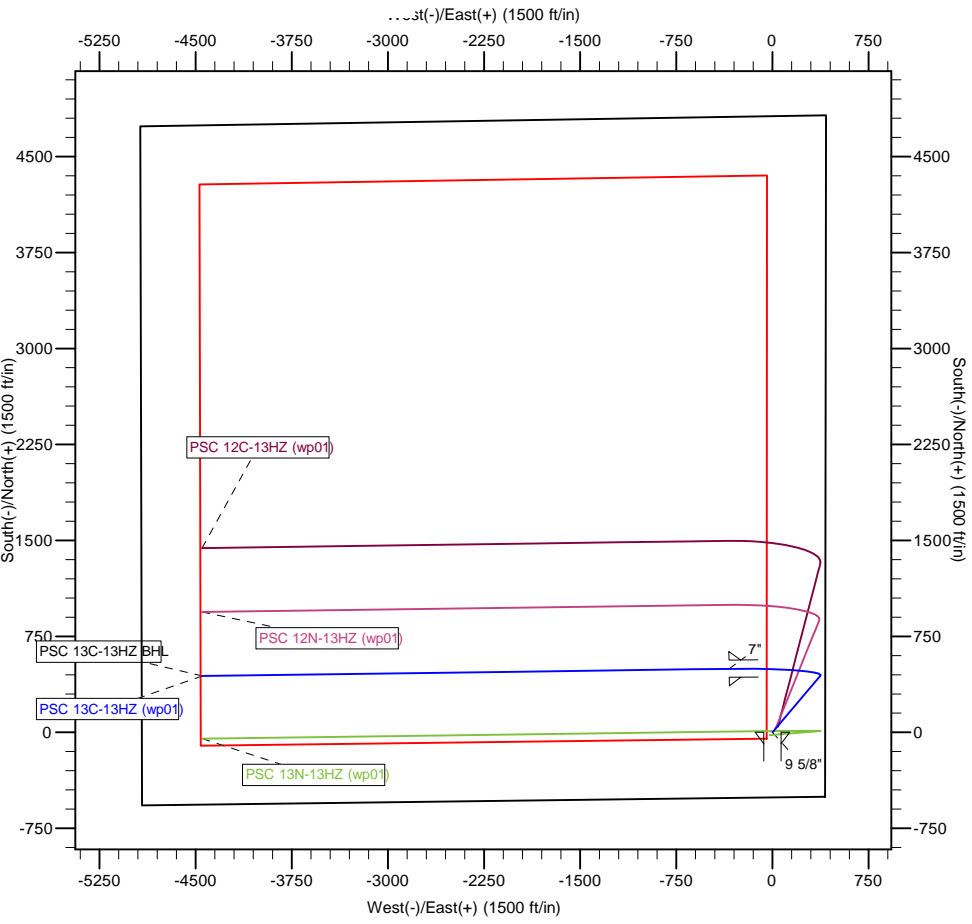
Design: PSC 13C-13HZ (wp01)

Latitude: 40.220469

Longitude: -104.943278

GL: 4872.00

KB: 17' RKB + 4872' GL) @ 4889.00ft



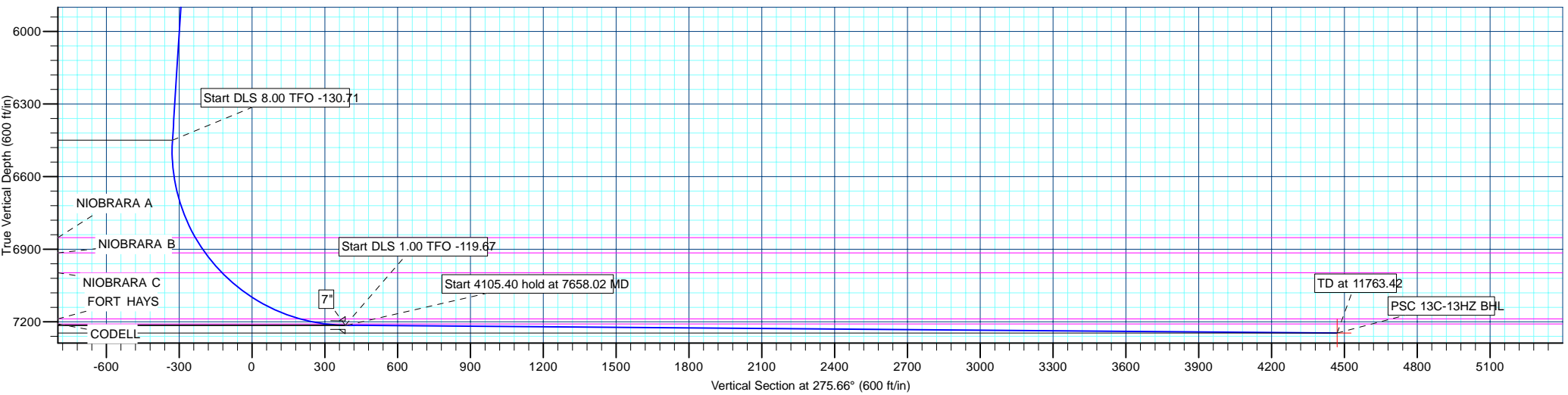
WELL DETAILS: PSC 13C-13HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4872.00 Latitude	40.220469 Longitude	Slot
0.00	0.00	1323646.99	3155462.43		-104.943278	

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	
1365.06	6.30	40.12	1364.43	13.24	11.15	2.00	40.12	-9.79	
6480.58	6.30	40.12	6449.04	442.60	372.92	0.00	0.00	-327.46	
7651.86	89.58	269.27	7214.00	497.00	-337.00	8.00	-130.71	384.37	
7658.02	89.55	269.22	7214.00	496.92	-343.17	1.00	-119.67	390.50	
11763.42	89.55	269.22	7246.00	440.83	-4448.06	0.00	0.00	4469.85	PSC 13C-13HZ BHL

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape Point
PSC 13C-13HZ BHL	7246.00	440.83	-4448.06	40.221678	-104.959207	

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
269.00	269.00	FOX HILLS
3998.00	4014.64	PARKMAN
4346.00	4364.76	SUSSEX
6852.00	6901.10	NIOBRARA A
6915.00	6976.11	NIOBRARA B
6997.00	7083.33	NIOBRARA C
7188.00	7463.09	FORT HAYS
7209.00	7572.08	CODELL

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7214.00	7651.86	7"	7



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

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 13C-13HZ					
Well Position	+N-S	-21.50 ft	Northing:	1,323,646.99 ft	Latitude:	40.220469
	+E-W	-20.94 ft	Easting:	3,155,462.43 ft	Longitude:	-104.943278
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,872.00 ft

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

Design	PSC 13C-13HZ (wp01)				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	275.66	

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
0.00	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	
1,365.06	6.30	40.12	1,364.43	13.24	11.15	2.00	2.00	0.00	40.12	
6,480.58	6.30	40.12	6,449.04	442.60	372.92	0.00	0.00	0.00	0.00	
7,651.86	89.58	269.27	7,214.00	497.00	-337.00	8.00	7.11	-11.17	-130.71	
7,658.03	89.55	269.22	7,214.05	496.92	-343.17	1.00	-0.49	-0.87	-119.67	
11,763.43	89.55	269.22	7,246.00	440.83	-4,448.06	0.00	0.00	0.00	0.00	PSC 13C-13HZ BH

Database:	edm5000p	Local Co-ordinate Reference:	Well PSC 13C-13HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4872' GL) @ 4889.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4872' GL) @ 4889.00ft
Site:	WELD_PSC PAD (SEC 13 T3N R68W)	North Reference:	True
Well:	PSC 13C-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PSC 13C-13HZ		
Design:	PSC 13C-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
Start Build 2.00									
1,100.00	1.00	40.12	1,100.00	0.33	0.28	-0.25	2.00	2.00	0.00
1,200.00	3.00	40.12	1,199.93	3.00	2.53	-2.22	2.00	2.00	0.00
1,300.00	5.00	40.12	1,299.68	8.34	7.02	-6.17	2.00	2.00	0.00
1,365.06	6.30	40.12	1,364.43	13.24	11.15	-9.79	2.00	2.00	0.00
Start 5115.52 hold at 1365.06 MD									
1,400.00	6.30	40.12	1,399.15	16.17	13.62	-11.96	0.00	0.00	0.00
1,500.00	6.30	40.12	1,498.55	24.56	20.69	-18.17	0.00	0.00	0.00
1,600.00	6.30	40.12	1,597.95	32.95	27.77	-24.38	0.00	0.00	0.00
1,700.00	6.30	40.12	1,697.34	41.35	34.84	-30.59	0.00	0.00	0.00
1,800.00	6.30	40.12	1,796.74	49.74	41.91	-36.80	0.00	0.00	0.00
1,900.00	6.30	40.12	1,896.13	58.13	48.98	-43.01	0.00	0.00	0.00
2,000.00	6.30	40.12	1,995.53	66.53	56.06	-49.22	0.00	0.00	0.00
2,100.00	6.30	40.12	2,094.93	74.92	63.13	-55.43	0.00	0.00	0.00
2,200.00	6.30	40.12	2,194.32	83.31	70.20	-61.64	0.00	0.00	0.00
2,300.00	6.30	40.12	2,293.72	91.71	77.27	-67.85	0.00	0.00	0.00
2,400.00	6.30	40.12	2,393.11	100.10	84.34	-74.06	0.00	0.00	0.00
2,500.00	6.30	40.12	2,492.51	108.49	91.42	-80.27	0.00	0.00	0.00
2,600.00	6.30	40.12	2,591.90	116.89	98.49	-86.48	0.00	0.00	0.00
2,700.00	6.30	40.12	2,691.30	125.28	105.56	-92.69	0.00	0.00	0.00
2,800.00	6.30	40.12	2,790.70	133.67	112.63	-98.90	0.00	0.00	0.00
2,900.00	6.30	40.12	2,890.09	142.07	119.70	-105.11	0.00	0.00	0.00
3,000.00	6.30	40.12	2,989.49	150.46	126.78	-111.32	0.00	0.00	0.00
3,100.00	6.30	40.12	3,088.88	158.85	133.85	-117.53	0.00	0.00	0.00
3,200.00	6.30	40.12	3,188.28	167.25	140.92	-123.74	0.00	0.00	0.00
3,300.00	6.30	40.12	3,287.68	175.64	147.99	-129.95	0.00	0.00	0.00
3,400.00	6.30	40.12	3,387.07	184.03	155.06	-136.16	0.00	0.00	0.00
3,500.00	6.30	40.12	3,486.47	192.43	162.14	-142.37	0.00	0.00	0.00
3,600.00	6.30	40.12	3,585.86	200.82	169.21	-148.58	0.00	0.00	0.00
3,700.00	6.30	40.12	3,685.26	209.21	176.28	-154.79	0.00	0.00	0.00
3,800.00	6.30	40.12	3,784.66	217.61	183.35	-161.00	0.00	0.00	0.00
3,900.00	6.30	40.12	3,884.05	226.00	190.42	-167.21	0.00	0.00	0.00
4,000.00	6.30	40.12	3,983.45	234.39	197.50	-173.42	0.00	0.00	0.00
4,014.64	6.30	40.12	3,998.00	235.62	198.53	-174.33	0.00	0.00	0.00
PARKMAN									
4,100.00	6.30	40.12	4,082.84	242.79	204.57	-179.63	0.00	0.00	0.00
4,200.00	6.30	40.12	4,182.24	251.18	211.64	-185.84	0.00	0.00	0.00
4,300.00	6.30	40.12	4,281.63	259.57	218.71	-192.05	0.00	0.00	0.00
4,364.76	6.30	40.12	4,346.00	265.01	223.29	-196.07	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4872' GL) @ 4889.00ft
Site:	WELD_PSC PAD (SEC 13 T3N R68W)	North Reference:	True
Well:	PSC 13C-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PSC 13C-13HZ		
Design:	PSC 13C-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)
SUSSEX									
4,400.00	6.30	40.12	4,381.03	267.97	225.78	-198.26	0.00	0.00	0.00
4,500.00	6.30	40.12	4,480.43	276.36	232.86	-204.47	0.00	0.00	0.00
4,600.00	6.30	40.12	4,579.82	284.75	239.93	-210.68	0.00	0.00	0.00
4,700.00	6.30	40.12	4,679.22	293.15	247.00	-216.89	0.00	0.00	0.00
4,800.00	6.30	40.12	4,778.61	301.54	254.07	-223.10	0.00	0.00	0.00
4,900.00	6.30	40.12	4,878.01	309.93	261.15	-229.31	0.00	0.00	0.00
5,000.00	6.30	40.12	4,977.41	318.33	268.22	-235.52	0.00	0.00	0.00
5,100.00	6.30	40.12	5,076.80	326.72	275.29	-241.73	0.00	0.00	0.00
5,200.00	6.30	40.12	5,176.20	335.11	282.36	-247.94	0.00	0.00	0.00
5,300.00	6.30	40.12	5,275.59	343.51	289.43	-254.15	0.00	0.00	0.00
5,400.00	6.30	40.12	5,374.99	351.90	296.51	-260.35	0.00	0.00	0.00
5,500.00	6.30	40.12	5,474.38	360.29	303.58	-266.56	0.00	0.00	0.00
5,600.00	6.30	40.12	5,573.78	368.69	310.65	-272.77	0.00	0.00	0.00
5,700.00	6.30	40.12	5,673.18	377.08	317.72	-278.98	0.00	0.00	0.00
5,800.00	6.30	40.12	5,772.57	385.47	324.79	-285.19	0.00	0.00	0.00
5,900.00	6.30	40.12	5,871.97	393.87	331.87	-291.40	0.00	0.00	0.00
6,000.00	6.30	40.12	5,971.36	402.26	338.94	-297.61	0.00	0.00	0.00
6,100.00	6.30	40.12	6,070.76	410.65	346.01	-303.82	0.00	0.00	0.00
6,200.00	6.30	40.12	6,170.16	419.05	353.08	-310.03	0.00	0.00	0.00
6,300.00	6.30	40.12	6,269.55	427.44	360.15	-316.24	0.00	0.00	0.00
6,400.00	6.30	40.12	6,368.95	435.83	367.23	-322.45	0.00	0.00	0.00
6,480.58	6.30	40.12	6,449.04	442.60	372.92	-327.46	0.00	0.00	0.00
Start DLS 8.00 TFO -130.71									
6,500.00	5.42	27.54	6,468.36	444.22	374.04	-328.40	8.00	-4.55	-64.75
6,600.00	7.23	310.41	6,567.90	452.50	371.42	-324.99	8.00	1.81	-77.13
6,700.00	14.24	288.44	6,666.13	460.48	354.94	-307.79	8.00	7.01	-21.97
6,800.00	21.94	281.20	6,761.12	468.01	324.90	-277.16	8.00	7.69	-7.24
6,900.00	29.78	277.62	6,851.05	474.95	281.89	-233.67	8.00	7.85	-3.58
6,901.10	29.87	277.59	6,852.00	475.02	281.34	-233.12	8.00	7.89	-2.69
NIOBRARA A									
6,976.11	35.80	275.88	6,915.00	479.74	240.97	-192.48	8.00	7.90	-2.28
NIOBRARA B									
7,000.00	37.69	275.44	6,934.14	481.15	226.74	-178.19	8.00	7.92	-1.86
7,083.33	44.31	274.14	6,997.00	485.67	172.29	-123.56	8.00	7.94	-1.56
NIOBRARA C									
7,100.00	45.63	273.92	7,008.79	486.50	160.54	-111.78	8.00	7.94	-1.33
7,200.00	53.58	272.77	7,073.54	490.89	84.57	-35.75	8.00	7.95	-1.15
7,300.00	61.54	271.83	7,127.14	494.25	0.31	48.43	8.00	7.96	-0.94
7,400.00	69.51	271.02	7,168.54	496.49	-90.60	139.12	8.00	7.97	-0.81
7,463.09	74.54	270.56	7,188.00	497.31	-150.58	198.89	8.00	7.97	-0.74
FORT HAYS									
7,500.00	77.48	270.30	7,196.92	497.58	-186.39	234.56	8.00	7.97	-0.71
7,572.08	83.22	269.80	7,209.00	497.64	-257.43	305.25	8.00	7.97	-0.69
CODELL									
7,600.00	85.45	269.62	7,211.75	497.50	-285.21	332.88	8.00	7.97	-0.67
7,651.86	89.58	269.27	7,214.00	497.00	-337.00	384.38	8.00	7.97	-0.67
Start DLS 1.00 TFO -119.67 - 7"									
7,658.03	89.55	269.22	7,214.05	496.92	-343.17	390.50	1.00	-0.50	-0.87
Start 4105.40 hold at 7658.02 MD									
7,700.00	89.55	269.22	7,214.37	496.35	-385.14	432.21	0.00	0.00	0.00
7,800.00	89.55	269.22	7,215.15	494.98	-485.13	531.58	0.00	0.00	0.00
7,900.00	89.55	269.22	7,215.93	493.61	-585.11	630.94	0.00	0.00	0.00

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Well:	PSC 13C-13HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	PSC 13C-13HZ		
Design:	PSC 13C-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)	
8,000.00	89.55	269.22	7,216.71	492.25	-685.10	730.31	0.00	0.00	0.00	
8,100.00	89.55	269.22	7,217.49	490.88	-785.09	829.67	0.00	0.00	0.00	
8,200.00	89.55	269.22	7,218.26	489.51	-885.08	929.04	0.00	0.00	0.00	
8,300.00	89.55	269.22	7,219.04	488.15	-985.06	1,028.40	0.00	0.00	0.00	
8,400.00	89.55	269.22	7,219.82	486.78	-1,085.05	1,127.77	0.00	0.00	0.00	
8,500.00	89.55	269.22	7,220.60	485.41	-1,185.04	1,227.14	0.00	0.00	0.00	
8,600.00	89.55	269.22	7,221.38	484.05	-1,285.03	1,326.50	0.00	0.00	0.00	
8,700.00	89.55	269.22	7,222.16	482.68	-1,385.01	1,425.87	0.00	0.00	0.00	
8,800.00	89.55	269.22	7,222.93	481.32	-1,485.00	1,525.23	0.00	0.00	0.00	
8,900.00	89.55	269.22	7,223.71	479.95	-1,584.99	1,624.60	0.00	0.00	0.00	
9,000.00	89.55	269.22	7,224.49	478.58	-1,684.98	1,723.96	0.00	0.00	0.00	
9,100.00	89.55	269.22	7,225.27	477.22	-1,784.97	1,823.33	0.00	0.00	0.00	
9,200.00	89.55	269.22	7,226.05	475.85	-1,884.95	1,922.69	0.00	0.00	0.00	
9,300.00	89.55	269.22	7,226.83	474.48	-1,984.94	2,022.06	0.00	0.00	0.00	
9,400.00	89.55	269.22	7,227.60	473.12	-2,084.93	2,121.42	0.00	0.00	0.00	
9,500.00	89.55	269.22	7,228.38	471.75	-2,184.92	2,220.79	0.00	0.00	0.00	
9,600.00	89.55	269.22	7,229.16	470.39	-2,284.90	2,320.15	0.00	0.00	0.00	
9,700.00	89.55	269.22	7,229.94	469.02	-2,384.89	2,419.52	0.00	0.00	0.00	
9,800.00	89.55	269.22	7,230.72	467.65	-2,484.88	2,518.89	0.00	0.00	0.00	
9,900.00	89.55	269.22	7,231.50	466.29	-2,584.87	2,618.25	0.00	0.00	0.00	
10,000.00	89.55	269.22	7,232.27	464.92	-2,684.85	2,717.62	0.00	0.00	0.00	
10,100.00	89.55	269.22	7,233.05	463.55	-2,784.84	2,816.98	0.00	0.00	0.00	
10,200.00	89.55	269.22	7,233.83	462.19	-2,884.83	2,916.35	0.00	0.00	0.00	
10,300.00	89.55	269.22	7,234.61	460.82	-2,984.82	3,015.71	0.00	0.00	0.00	
10,400.00	89.55	269.22	7,235.39	459.46	-3,084.80	3,115.08	0.00	0.00	0.00	
10,500.00	89.55	269.22	7,236.17	458.09	-3,184.79	3,214.44	0.00	0.00	0.00	
10,600.00	89.55	269.22	7,236.94	456.72	-3,284.78	3,313.81	0.00	0.00	0.00	
10,700.00	89.55	269.22	7,237.72	455.36	-3,384.77	3,413.17	0.00	0.00	0.00	
10,800.00	89.55	269.22	7,238.50	453.99	-3,484.76	3,512.54	0.00	0.00	0.00	
10,900.00	89.55	269.22	7,239.28	452.62	-3,584.74	3,611.91	0.00	0.00	0.00	
11,000.00	89.55	269.22	7,240.06	451.26	-3,684.73	3,711.27	0.00	0.00	0.00	
11,100.00	89.55	269.22	7,240.84	449.89	-3,784.72	3,810.64	0.00	0.00	0.00	
11,200.00	89.55	269.22	7,241.61	448.53	-3,884.71	3,910.00	0.00	0.00	0.00	
11,300.00	89.55	269.22	7,242.39	447.16	-3,984.69	4,009.37	0.00	0.00	0.00	
11,400.00	89.55	269.22	7,243.17	445.79	-4,084.68	4,108.73	0.00	0.00	0.00	
11,500.00	89.55	269.22	7,243.95	444.43	-4,184.67	4,208.10	0.00	0.00	0.00	
11,600.00	89.55	269.22	7,244.73	443.06	-4,284.66	4,307.46	0.00	0.00	0.00	
11,700.00	89.55	269.22	7,245.51	441.69	-4,384.64	4,406.83	0.00	0.00	0.00	
11,763.43	89.55	269.22	7,246.00	440.83	-4,448.06	4,469.85	0.00	0.00	0.00	
TD at 11763.42 - PSC 13C-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 13C-13HZ BHL	0.00	0.00	7,246.00	440.83	-4,448.06	1,324,059.89	3,151,011.69	40.221678	-104.959207	
- plan hits target center										
- Point										

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

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
7,651.86	7,214.00	7"		7	8-3/4

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
269.00	269.00	FOX HILLS		0.00	
4,014.64	3,998.00	PARKMAN		0.00	
4,364.76	4,346.00	SUSSEX		0.00	
6,901.10	6,852.00	NIOBRARA A		0.00	
6,976.11	6,915.00	NIOBRARA B		0.00	
7,083.33	6,997.00	NIOBRARA C		0.00	
7,463.09	7,188.00	FORT HAYS		0.00	
7,572.08	7,209.00	CODELL		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,050.00	1,050.00	0.00	0.00	Start Build 2.00
1,365.06	1,364.43	13.24	11.15	Start 5115.52 hold at 1365.06 MD
6,480.58	6,449.04	442.60	372.92	Start DLS 8.00 TFO -130.71
7,651.86	7,214.00	497.00	-337.00	Start DLS 1.00 TFO -119.67
7,658.03	7,214.05	496.92	-343.17	Start 4105.40 hold at 7658.02 MD
11,763.43	7,246.00	440.83	-4,448.06	TD at 11763.42

US ROCKIES REGION PLANNING

**COLORADO NORTHERN ZONE - 83
WELD_PSC PAD (SEC 13 T3N R68W)
PSC 13C-13HZ**

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

Anticollision Summary Report

10 March, 2011



APC
Anticollision Summary Report



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

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

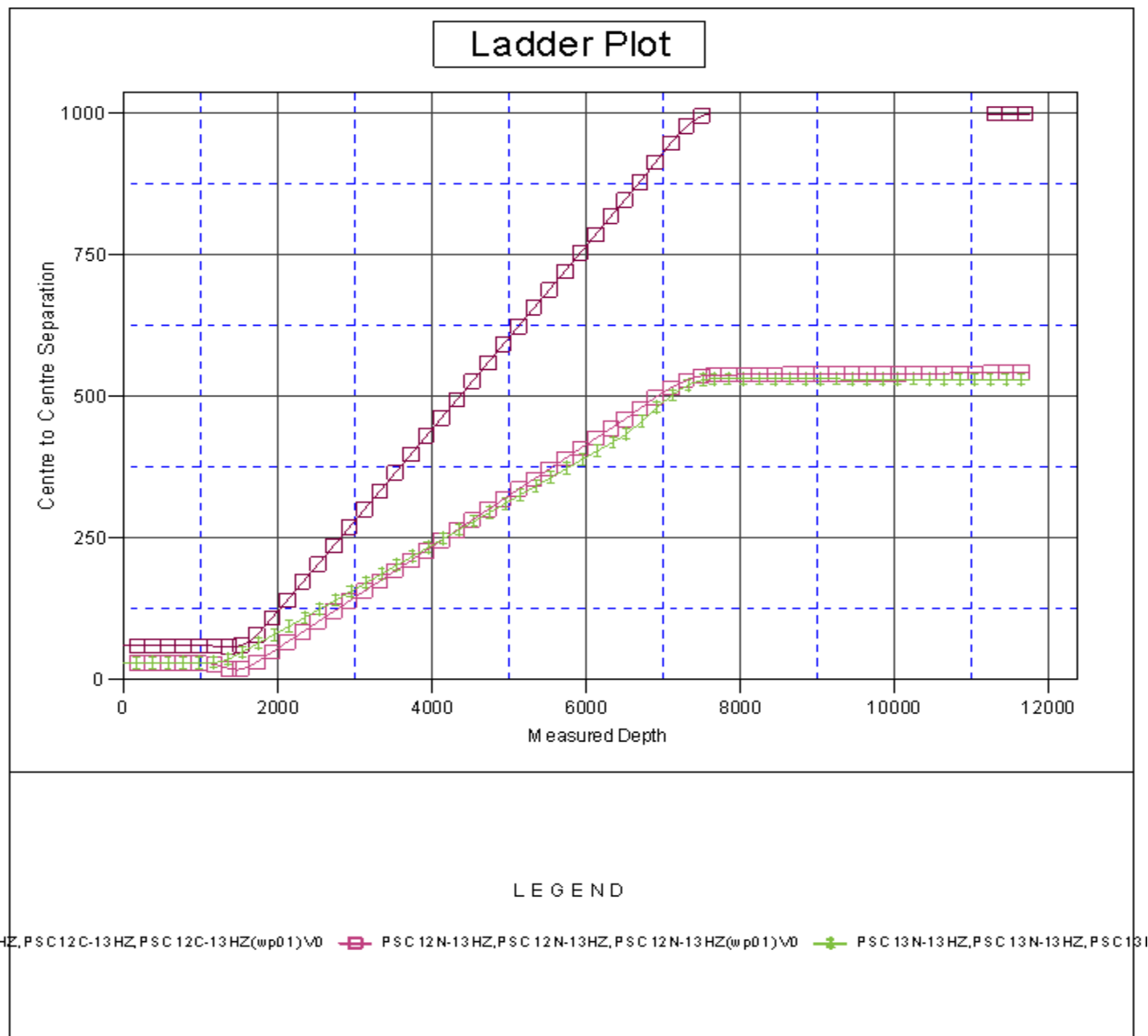
Survey Tool Program	Date 3/10/2011				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	11,763.43	PSC 13C-13HZ (wp01) (PSC 13C-13HZ)	MWD	MWD - Standard	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
WELD_PSC PAD (SEC 13 T3N R68W)						
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	1,393.06	1,386.67	58.11	52.16	9.778	CC
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	1,400.00	1,393.47	58.11	52.14	9.729	ES
PSC 12C-13HZ - PSC 12C-13HZ - PSC 12C-13HZ (wp0	11,763.43	11,918.48	999.97	762.51	4.211	SF
PSC 12N-13HZ - PSC 12N-13HZ - PSC 12N-13HZ (wp0	1,465.90	1,463.31	18.21	11.93	2.900	CC
PSC 12N-13HZ - PSC 12N-13HZ - PSC 12N-13HZ (wp0	1,475.00	1,472.35	18.23	11.91	2.884	ES
PSC 12N-13HZ - PSC 12N-13HZ - PSC 12N-13HZ (wp0	11,763.43	11,618.89	542.85	321.29	2.450	SF
PSC 13N-13HZ - PSC 13N-13HZ - PSC 13N-13HZ (wp0	1,050.00	1,050.00	29.82	25.36	6.689	CC
PSC 13N-13HZ - PSC 13N-13HZ - PSC 13N-13HZ (wp0	1,100.00	1,100.39	29.92	25.25	6.402	ES
PSC 13N-13HZ - PSC 13N-13HZ - PSC 13N-13HZ (wp0	11,763.43	11,536.76	530.73	311.65	2.423	SF

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well PSC 13C-13HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	17' RKB + 4872' GL) @ 4889.00ft
Reference Site:	WELD_PSC PAD (SEC 13 T3N R68W)	MD Reference:	17' RKB + 4872' GL) @ 4889.00ft
Site Error:	0.00 ft	North Reference:	True
Reference Well:	PSC 13C-13HZ	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	2.00 sigma
Reference Wellbore	PSC 13C-13HZ	Database:	edm5000p
Reference Design:	PSC 13C-13HZ (wp01)	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 13C-13HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.36°



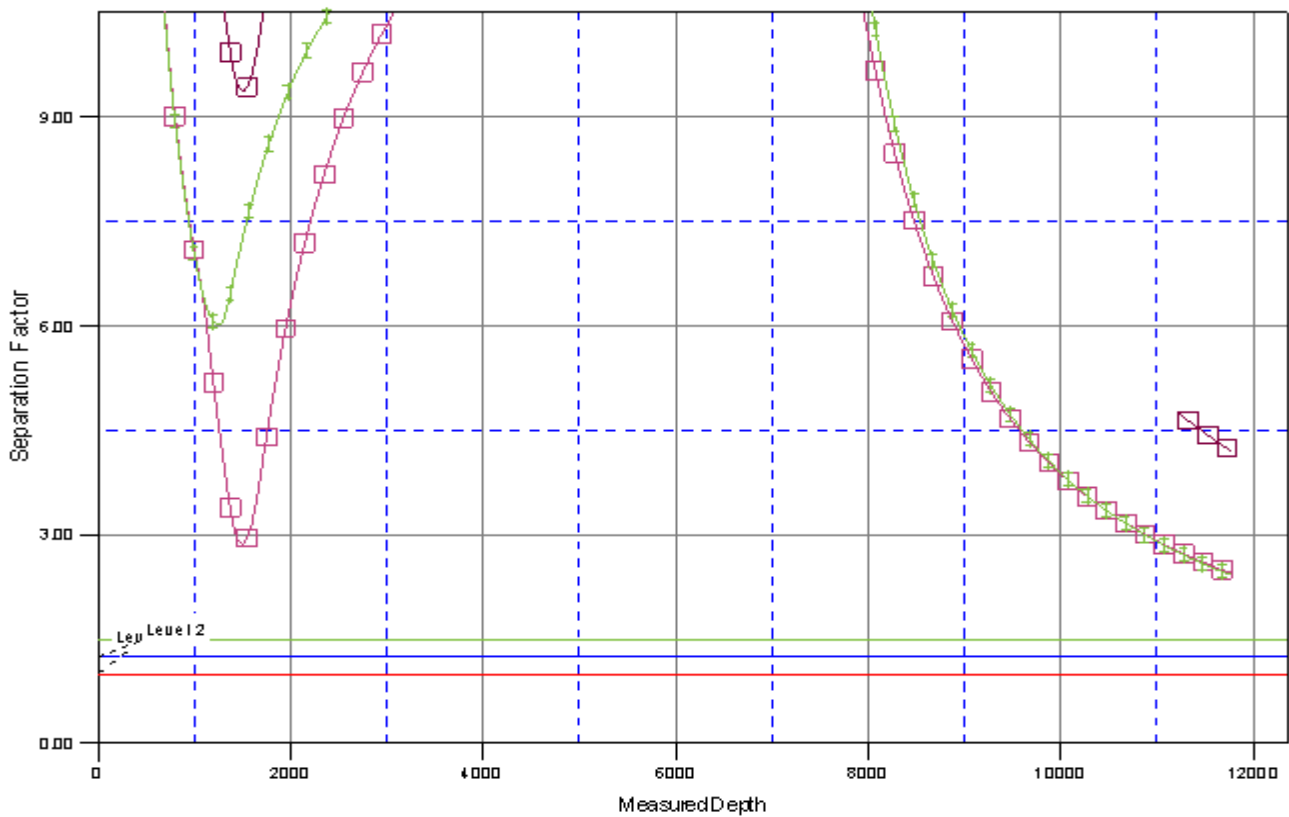
Company: US ROCKIES REGION PLANNING
Project: COLORADO NORTHERN ZONE - 83
Reference Site: WELD_PSC PAD (SEC 13 T3N R68W)
Site Error: 0.00 ft
Reference Well: PSC 13C-13HZ
Well Error: 0.00 ft
Reference Wellbore: PSC 13C-13HZ
Reference Design: PSC 13C-13HZ (wp01)

Local Co-ordinate Reference: Well PSC 13C-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 13C-13HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.36°

Separation Factor Plot



LEGEND

PSC 12C-13HZ, PSC 12C-13HZ(wp01)\VD PSC 12N-13HZ, PSC 12N-13HZ, PSC 12N-13HZ(wp01)\VD PSC 13N-13HZ, PSC 13N-13HZ, PSC 13N-13HZ(wp01)\VD