

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_BARCLAY 14-27 PAD

BARCLAY 29C-27HZ

BARCLAY 29C-27HZ

Plan: BARCLAY 29C-27HZ (wp01)

Standard Planning Report

26 July, 2011





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Azimuths to True North

Magnetic North: 8.83°

Magnetic Field

Strength: 53008.5nT

Dip Angle: 66.88°

Date: 7/25/2011

Model: IGRF2010

Project: COLORADO NORTHERN ZONE - 83

Site: WELD BARCLAY 14-27 PAD

Well: BARCLAY 29C-27HZ

Wellbore: BARCLAY 29C-27HZ

Section: SHL:

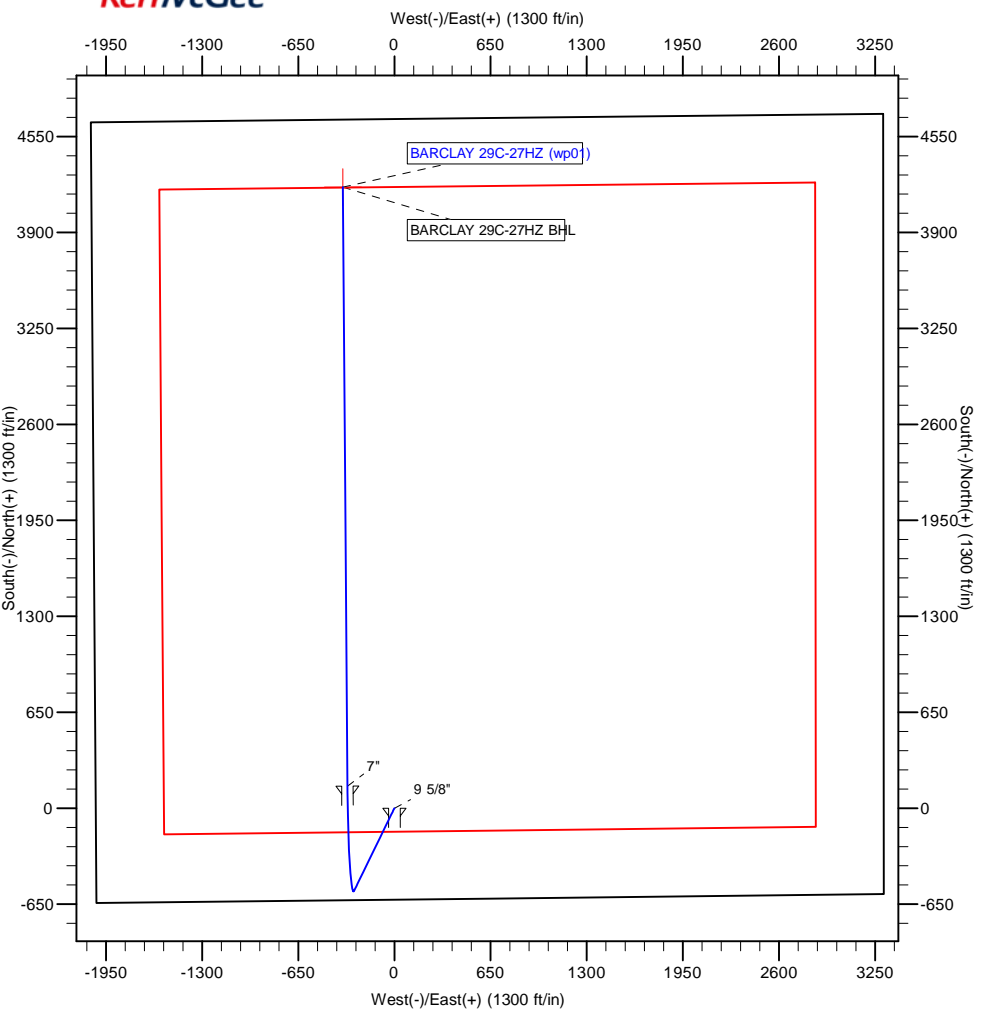
Design: BARCLAY 29C-27HZ (wp01)

Latitude: 40.190544

Longitude: -104.765636

GL: 4959.00

KB: 17' RKB + 4959' GL @ 4976.00ft



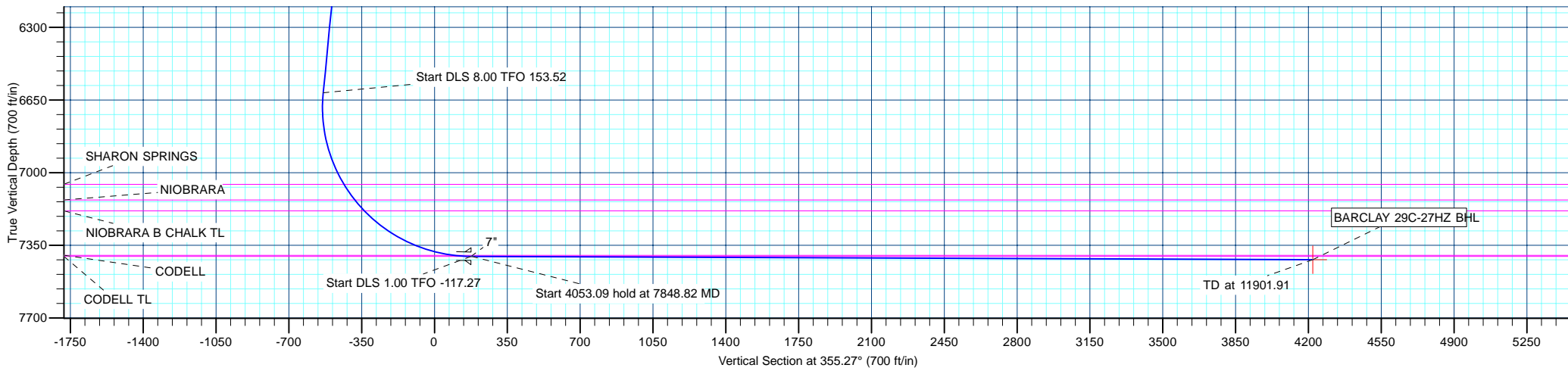
WELL DETAILS: BARCLAY 29C-27HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4959.00 Latitude	40.190544 Longitude	Slot
0.00	0.00	1313107.30	3205157.54		-104.765636	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
BARCLAY 29C-27HZ BHL	7419.00	4206.40	-348.04	40.202091	-104.766882	Point

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	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
1325.55	6.51	205.94	1324.85	-16.62	-8.08	2.00	205.94	-15.89	
6650.08	6.51	205.94	6615.03	-559.57	-272.19	0.00	0.00	-535.22	
7845.36	89.79	359.59	7403.00	150.00	-317.00	8.00	153.52	175.63	
7848.82	89.77	359.56	7403.01	153.46	-317.03	1.00	-117.27	179.08	
11901.91	89.77	359.56	7419.00	4206.40	-348.04	0.00	0.00	4220.77	BARCLAY 29C-27HZ BHL

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3228.00	3241.06	PARKMAN
4406.00	4426.70	SUSSEX
5048.00	5072.87	SHANNON
7056.00	7110.35	SHARON SPRINGS
7131.00	7201.69	NIOBRARA
7184.00	7272.15	NIOBRARA B CHALK TL
7398.00	7763.21	CODELL
7403.00	7845.36	CODELL TL

CASING DETAILS			
TVD	MD	Name	Size
850.00	850.00	9 5/8"	9-5/8
7403.00	7845.36	7"	7



Database:	edm5000p	Local Co-ordinate Reference:	Well BARCLAY 29C-27HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4959' GL @ 4976.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4959' GL @ 4976.00ft
Site:	WELD_BARCLAY 14-27 PAD	North Reference:	True
Well:	BARCLAY 29C-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	BARCLAY 29C-27HZ		
Design:	BARCLAY 29C-27HZ (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_BARCLAY 14-27 PAD							
Site Position: From: Position Uncertainty:			Lat/Long 0.00 ft			Northing:		1,313,107.45 ft		Latitude:		40.190544	
						Easting:		3,205,173.46 ft		Longitude:		-104.765579	
						Slot Radius:		0 "		Grid Convergence:		0.47 °	

Well	BARCLAY 29C-27HZ					
Well Position	+N-S	-0.02 ft	Northing:	1,313,107.29 ft	Latitude:	40.190544
	+E-W	-15.92 ft	Easting:	3,205,157.54 ft	Longitude:	-104.765636
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,959.00 ft

Wellbore	BARCLAY 29C-27HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/25/2011	8.83	66.88	53,009

Design	BARCLAY 29C-27HZ (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	355.27

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	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,325.55	6.51	205.94	1,324.85	-16.62	-8.08	2.00	2.00	0.00	205.94	
6,650.08	6.51	205.94	6,615.03	-559.57	-272.19	0.00	0.00	0.00	0.00	
7,845.36	89.79	359.59	7,403.00	150.00	-317.00	8.00	6.97	12.85	153.52	
7,848.82	89.77	359.56	7,403.01	153.46	-317.03	1.00	-0.46	-0.89	-117.27	
11,901.91	89.77	359.56	7,419.00	4,206.40	-348.04	0.00	0.00	0.00	0.00	BARCLAY 29C-27H

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4959' GL @ 4976.00ft
Site:	WELD_BARCLAY 14-27 PAD	North Reference:	True
Well:	BARCLAY 29C-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	BARCLAY 29C-27HZ		
Design:	BARCLAY 29C-27HZ (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
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
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,100.00	2.00	205.94	1,099.98	-1.57	-0.76	-1.50	2.00	2.00	0.00
1,200.00	4.00	205.94	1,199.84	-6.28	-3.05	-6.00	2.00	2.00	0.00
1,300.00	6.00	205.94	1,299.45	-14.11	-6.86	-13.50	2.00	2.00	0.00
1,325.55	6.51	205.94	1,324.85	-16.62	-8.08	-15.89	2.00	2.00	0.00
Start 5324.52 hold at 1325.55 MD									
1,400.00	6.51	205.94	1,398.82	-24.21	-11.78	-23.15	0.00	0.00	0.00
1,500.00	6.51	205.94	1,498.17	-34.41	-16.74	-32.91	0.00	0.00	0.00
1,600.00	6.51	205.94	1,597.53	-44.60	-21.70	-42.66	0.00	0.00	0.00
1,700.00	6.51	205.94	1,696.88	-54.80	-26.66	-52.41	0.00	0.00	0.00
1,800.00	6.51	205.94	1,796.24	-65.00	-31.62	-62.17	0.00	0.00	0.00
1,900.00	6.51	205.94	1,895.59	-75.19	-36.58	-71.92	0.00	0.00	0.00
2,000.00	6.51	205.94	1,994.95	-85.39	-41.54	-81.67	0.00	0.00	0.00
2,100.00	6.51	205.94	2,094.30	-95.59	-46.50	-91.43	0.00	0.00	0.00
2,200.00	6.51	205.94	2,193.66	-105.79	-51.46	-101.18	0.00	0.00	0.00
2,300.00	6.51	205.94	2,293.01	-115.98	-56.42	-110.94	0.00	0.00	0.00
2,400.00	6.51	205.94	2,392.37	-126.18	-61.38	-120.69	0.00	0.00	0.00
2,500.00	6.51	205.94	2,491.72	-136.38	-66.34	-130.44	0.00	0.00	0.00
2,600.00	6.51	205.94	2,591.08	-146.57	-71.30	-140.20	0.00	0.00	0.00
2,700.00	6.51	205.94	2,690.43	-156.77	-76.26	-149.95	0.00	0.00	0.00
2,800.00	6.51	205.94	2,789.79	-166.97	-81.22	-159.70	0.00	0.00	0.00
2,900.00	6.51	205.94	2,889.14	-177.17	-86.18	-169.46	0.00	0.00	0.00
3,000.00	6.51	205.94	2,988.50	-187.36	-91.14	-179.21	0.00	0.00	0.00
3,100.00	6.51	205.94	3,087.85	-197.56	-96.10	-188.96	0.00	0.00	0.00
3,200.00	6.51	205.94	3,187.21	-207.76	-101.06	-198.72	0.00	0.00	0.00
3,241.06	6.51	205.94	3,228.00	-211.94	-103.09	-202.72	0.00	0.00	0.00
PARKMAN									
3,300.00	6.51	205.94	3,286.56	-217.95	-106.02	-208.47	0.00	0.00	0.00
3,400.00	6.51	205.94	3,385.92	-228.15	-110.98	-218.22	0.00	0.00	0.00
3,500.00	6.51	205.94	3,485.27	-238.35	-115.94	-227.98	0.00	0.00	0.00
3,600.00	6.51	205.94	3,584.63	-248.55	-120.90	-237.73	0.00	0.00	0.00
3,700.00	6.51	205.94	3,683.98	-258.74	-125.86	-247.48	0.00	0.00	0.00
3,800.00	6.51	205.94	3,783.34	-268.94	-130.82	-257.24	0.00	0.00	0.00
3,900.00	6.51	205.94	3,882.69	-279.14	-135.78	-266.99	0.00	0.00	0.00
4,000.00	6.51	205.94	3,982.05	-289.33	-140.74	-276.74	0.00	0.00	0.00
4,100.00	6.51	205.94	4,081.40	-299.53	-145.70	-286.50	0.00	0.00	0.00
4,200.00	6.51	205.94	4,180.76	-309.73	-150.66	-296.25	0.00	0.00	0.00
4,300.00	6.51	205.94	4,280.11	-319.93	-155.62	-306.00	0.00	0.00	0.00
4,400.00	6.51	205.94	4,379.47	-330.12	-160.58	-315.76	0.00	0.00	0.00
4,426.70	6.51	205.94	4,406.00	-332.85	-161.90	-318.36	0.00	0.00	0.00
SUSSEX									

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4959' GL @ 4976.00ft
Site:	WELD_BARCLAY 14-27 PAD	North Reference:	True
Well:	BARCLAY 29C-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	BARCLAY 29C-27HZ		
Design:	BARCLAY 29C-27HZ (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	6.51	205.94	4,478.82	-340.32	-165.54	-325.51	0.00	0.00	0.00
4,600.00	6.51	205.94	4,578.18	-350.52	-170.50	-335.26	0.00	0.00	0.00
4,700.00	6.51	205.94	4,677.53	-360.71	-175.46	-345.02	0.00	0.00	0.00
4,800.00	6.51	205.94	4,776.89	-370.91	-180.42	-354.77	0.00	0.00	0.00
4,900.00	6.51	205.94	4,876.24	-381.11	-185.38	-364.52	0.00	0.00	0.00
5,000.00	6.51	205.94	4,975.60	-391.31	-190.34	-374.28	0.00	0.00	0.00
5,072.87	6.51	205.94	5,048.00	-398.74	-193.95	-381.38	0.00	0.00	0.00
SHANNON									
5,100.00	6.51	205.94	5,074.95	-401.50	-195.30	-384.03	0.00	0.00	0.00
5,200.00	6.51	205.94	5,174.31	-411.70	-200.26	-393.78	0.00	0.00	0.00
5,300.00	6.51	205.94	5,273.66	-421.90	-205.22	-403.54	0.00	0.00	0.00
5,400.00	6.51	205.94	5,373.02	-432.09	-210.18	-413.29	0.00	0.00	0.00
5,500.00	6.51	205.94	5,472.37	-442.29	-215.14	-423.04	0.00	0.00	0.00
5,600.00	6.51	205.94	5,571.73	-452.49	-220.10	-432.80	0.00	0.00	0.00
5,700.00	6.51	205.94	5,671.08	-462.69	-225.06	-442.55	0.00	0.00	0.00
5,800.00	6.51	205.94	5,770.44	-472.88	-230.02	-452.30	0.00	0.00	0.00
5,900.00	6.51	205.94	5,869.79	-483.08	-234.98	-462.06	0.00	0.00	0.00
6,000.00	6.51	205.94	5,969.15	-493.28	-239.94	-471.81	0.00	0.00	0.00
6,100.00	6.51	205.94	6,068.50	-503.47	-244.90	-481.57	0.00	0.00	0.00
6,200.00	6.51	205.94	6,167.86	-513.67	-249.86	-491.32	0.00	0.00	0.00
6,300.00	6.51	205.94	6,267.21	-523.87	-254.82	-501.07	0.00	0.00	0.00
6,400.00	6.51	205.94	6,366.57	-534.07	-259.78	-510.83	0.00	0.00	0.00
6,500.00	6.51	205.94	6,465.92	-544.26	-264.74	-520.58	0.00	0.00	0.00
6,600.00	6.51	205.94	6,565.28	-554.46	-269.70	-530.33	0.00	0.00	0.00
6,650.08	6.51	205.94	6,615.03	-559.57	-272.19	-535.22	0.00	0.00	0.00
Start DLS 8.00 TFO 153.52									
6,700.00	3.43	237.19	6,664.77	-562.92	-274.68	-538.36	8.00	-6.17	62.60
6,800.00	6.81	334.50	6,764.49	-559.19	-279.76	-534.22	8.00	3.37	97.31
6,900.00	14.45	348.27	6,862.72	-541.60	-284.85	-516.26	8.00	7.64	13.77
7,000.00	22.34	352.53	6,957.54	-510.49	-289.87	-484.85	8.00	7.89	4.26
7,100.00	30.29	354.63	7,047.10	-466.47	-294.71	-440.58	8.00	7.95	2.10
7,110.35	31.11	354.79	7,056.00	-461.21	-295.19	-435.30	8.00	7.96	1.55
SHARON SPRINGS									
7,200.00	38.25	355.92	7,129.68	-410.39	-299.28	-384.31	8.00	7.97	1.26
7,201.69	38.39	355.94	7,131.00	-409.35	-299.35	-383.27	8.00	7.97	1.05
NIOBRARA									
7,272.15	44.01	356.60	7,184.00	-363.05	-302.36	-336.88	8.00	7.98	0.94
NIOBRARA B CHALK TL									
7,300.00	46.23	356.82	7,203.65	-343.35	-303.49	-317.16	8.00	7.98	0.81
7,400.00	54.21	357.51	7,267.58	-266.65	-307.26	-240.41	8.00	7.98	0.69
7,500.00	62.20	358.07	7,320.22	-181.79	-310.51	-155.56	8.00	7.99	0.56
7,600.00	70.19	358.56	7,360.55	-90.41	-313.18	-64.28	8.00	7.99	0.48
7,700.00	78.18	359.00	7,387.79	5.70	-315.23	31.68	8.00	7.99	0.44
7,763.21	83.23	359.26	7,398.00	68.06	-316.18	93.90	8.00	7.99	0.42
CODELL									
7,800.00	86.17	359.41	7,401.40	104.68	-316.60	130.43	8.00	7.99	0.41
7,845.36	89.79	359.59	7,403.00	150.00	-317.00	175.63	8.00	7.99	0.41
Start DLS 1.00 TFO -117.27 - CODELL TL - 7"									
7,848.82	89.77	359.56	7,403.01	153.46	-317.03	179.08	1.00	-0.46	-0.89
Start 4053.09 hold at 7848.82 MD									
7,900.00	89.77	359.56	7,403.22	204.64	-317.42	230.12	0.00	0.00	0.00
8,000.00	89.77	359.56	7,403.61	304.64	-318.18	329.84	0.00	0.00	0.00
8,100.00	89.77	359.56	7,404.00	404.63	-318.95	429.56	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4959' GL @ 4976.00ft
Site:	WELD_BARCLAY 14-27 PAD	North Reference:	True
Well:	BARCLAY 29C-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	BARCLAY 29C-27HZ		
Design:	BARCLAY 29C-27HZ (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)	
8,200.00	89.77	359.56	7,404.40	504.63	-319.71	529.27	0.00	0.00	0.00	
8,300.00	89.77	359.56	7,404.79	604.63	-320.48	628.99	0.00	0.00	0.00	
8,400.00	89.77	359.56	7,405.19	704.62	-321.24	728.71	0.00	0.00	0.00	
8,500.00	89.77	359.56	7,405.58	804.62	-322.01	828.43	0.00	0.00	0.00	
8,600.00	89.77	359.56	7,405.98	904.62	-322.77	928.15	0.00	0.00	0.00	
8,700.00	89.77	359.56	7,406.37	1,004.61	-323.54	1,027.87	0.00	0.00	0.00	
8,800.00	89.77	359.56	7,406.77	1,104.61	-324.30	1,127.59	0.00	0.00	0.00	
8,900.00	89.77	359.56	7,407.16	1,204.60	-325.07	1,227.31	0.00	0.00	0.00	
9,000.00	89.77	359.56	7,407.55	1,304.60	-325.83	1,327.03	0.00	0.00	0.00	
9,100.00	89.77	359.56	7,407.95	1,404.60	-326.60	1,426.74	0.00	0.00	0.00	
9,200.00	89.77	359.56	7,408.34	1,504.59	-327.36	1,526.46	0.00	0.00	0.00	
9,300.00	89.77	359.56	7,408.74	1,604.59	-328.13	1,626.18	0.00	0.00	0.00	
9,400.00	89.77	359.56	7,409.13	1,704.59	-328.89	1,725.90	0.00	0.00	0.00	
9,500.00	89.77	359.56	7,409.53	1,804.58	-329.66	1,825.62	0.00	0.00	0.00	
9,600.00	89.77	359.56	7,409.92	1,904.58	-330.42	1,925.34	0.00	0.00	0.00	
9,700.00	89.77	359.56	7,410.32	2,004.57	-331.19	2,025.06	0.00	0.00	0.00	
9,800.00	89.77	359.56	7,410.71	2,104.57	-331.95	2,124.78	0.00	0.00	0.00	
9,900.00	89.77	359.56	7,411.10	2,204.57	-332.72	2,224.50	0.00	0.00	0.00	
10,000.00	89.77	359.56	7,411.50	2,304.56	-333.48	2,324.21	0.00	0.00	0.00	
10,100.00	89.77	359.56	7,411.89	2,404.56	-334.25	2,423.93	0.00	0.00	0.00	
10,200.00	89.77	359.56	7,412.29	2,504.56	-335.02	2,523.65	0.00	0.00	0.00	
10,300.00	89.77	359.56	7,412.68	2,604.55	-335.78	2,623.37	0.00	0.00	0.00	
10,400.00	89.77	359.56	7,413.08	2,704.55	-336.55	2,723.09	0.00	0.00	0.00	
10,500.00	89.77	359.56	7,413.47	2,804.55	-337.31	2,822.81	0.00	0.00	0.00	
10,600.00	89.77	359.56	7,413.86	2,904.54	-338.08	2,922.53	0.00	0.00	0.00	
10,700.00	89.77	359.56	7,414.26	3,004.54	-338.84	3,022.25	0.00	0.00	0.00	
10,800.00	89.77	359.56	7,414.65	3,104.53	-339.61	3,121.97	0.00	0.00	0.00	
10,900.00	89.77	359.56	7,415.05	3,204.53	-340.37	3,221.68	0.00	0.00	0.00	
11,000.00	89.77	359.56	7,415.44	3,304.53	-341.14	3,321.40	0.00	0.00	0.00	
11,100.00	89.77	359.56	7,415.84	3,404.52	-341.90	3,421.12	0.00	0.00	0.00	
11,200.00	89.77	359.56	7,416.23	3,504.52	-342.67	3,520.84	0.00	0.00	0.00	
11,300.00	89.77	359.56	7,416.63	3,604.52	-343.43	3,620.56	0.00	0.00	0.00	
11,400.00	89.77	359.56	7,417.02	3,704.51	-344.20	3,720.28	0.00	0.00	0.00	
11,500.00	89.77	359.56	7,417.41	3,804.51	-344.96	3,820.00	0.00	0.00	0.00	
11,600.00	89.77	359.56	7,417.81	3,904.50	-345.73	3,919.72	0.00	0.00	0.00	
11,700.00	89.77	359.56	7,418.20	4,004.50	-346.49	4,019.43	0.00	0.00	0.00	
11,800.00	89.77	359.56	7,418.60	4,104.50	-347.26	4,119.15	0.00	0.00	0.00	
11,900.00	89.77	359.56	7,418.99	4,204.49	-348.02	4,218.87	0.00	0.00	0.00	
11,901.91	89.77	359.56	7,419.00	4,206.40	-348.04	4,220.77	0.00	0.00	0.00	
TD at 11901.91 - BARCLAY 29C-27HZ BHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude	
BARCLAY 29C-27HZ	0.00	0.00	7,419.00	4,206.40	-348.04	1,317,310.67	3,204,774.68	40.202091	-104.766882	
- hit/miss target										
- Shape										
- plan hits target center										
- Point										

Database:	edm5000p	Local Co-ordinate Reference:	Well BARCLAY 29C-27HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4959' GL @ 4976.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4959' GL @ 4976.00ft
Site:	WELD_BARCLAY 14-27 PAD	North Reference:	True
Well:	BARCLAY 29C-27HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	BARCLAY 29C-27HZ		
Design:	BARCLAY 29C-27HZ (wp01)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
850.00	850.00	9 5/8"	9-5/8	12-1/4	
7,845.36	7,403.00	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,241.06	3,228.00	PARKMAN		0.00	
4,426.70	4,406.00	SUSSEX		0.00	
5,072.87	5,048.00	SHANNON		0.00	
7,110.35	7,056.00	SHARON SPRINGS		0.00	
7,201.69	7,131.00	NIOBRARA		0.00	
7,272.15	7,184.00	NIOBRARA B CHALK TL		0.00	
7,763.21	7,398.00	CODELL		0.00	
7,845.36	7,403.00	CODELL TL		0.00	

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.00	1,000.00	0.00	0.00	Start Build 2.00
1,325.55	1,324.85	-16.62	-8.08	Start 5324.52 hold at 1325.55 MD
6,650.08	6,615.03	-559.57	-272.19	Start DLS 8.00 TFO 153.52
7,845.36	7,403.00	150.00	-317.00	Start DLS 1.00 TFO -117.27
7,848.82	7,403.01	153.46	-317.03	Start 4053.09 hold at 7848.82 MD
11,901.91	7,419.00	4,206.40	-348.04	TD at 11901.91