

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_COLFER PAD (Sec 34, Township 2N, Range 65W)

COLFER 13N-34HZ

COLFER 13N-34HZ

Plan: COLFER 13N-34HZ (wp01)

Standard Planning Report

07 June, 2011



Weatherford®



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Azimuths to True North

Magnetic North: 8.78°

Magnetic Field

Strength: 52987.3snT

Dip Angle: 66.83°

Date: 6/6/2011

Model: IGRF2010

Project: COLORADO NORTHERN ZONE - 83

Site: WELD_COLFER PAD (Sec 34, Township 2N, Range 65W)

Well: COLFER 13N-34HZ

Wellbore: COLFER 13N-34HZ

Section:

SHL:

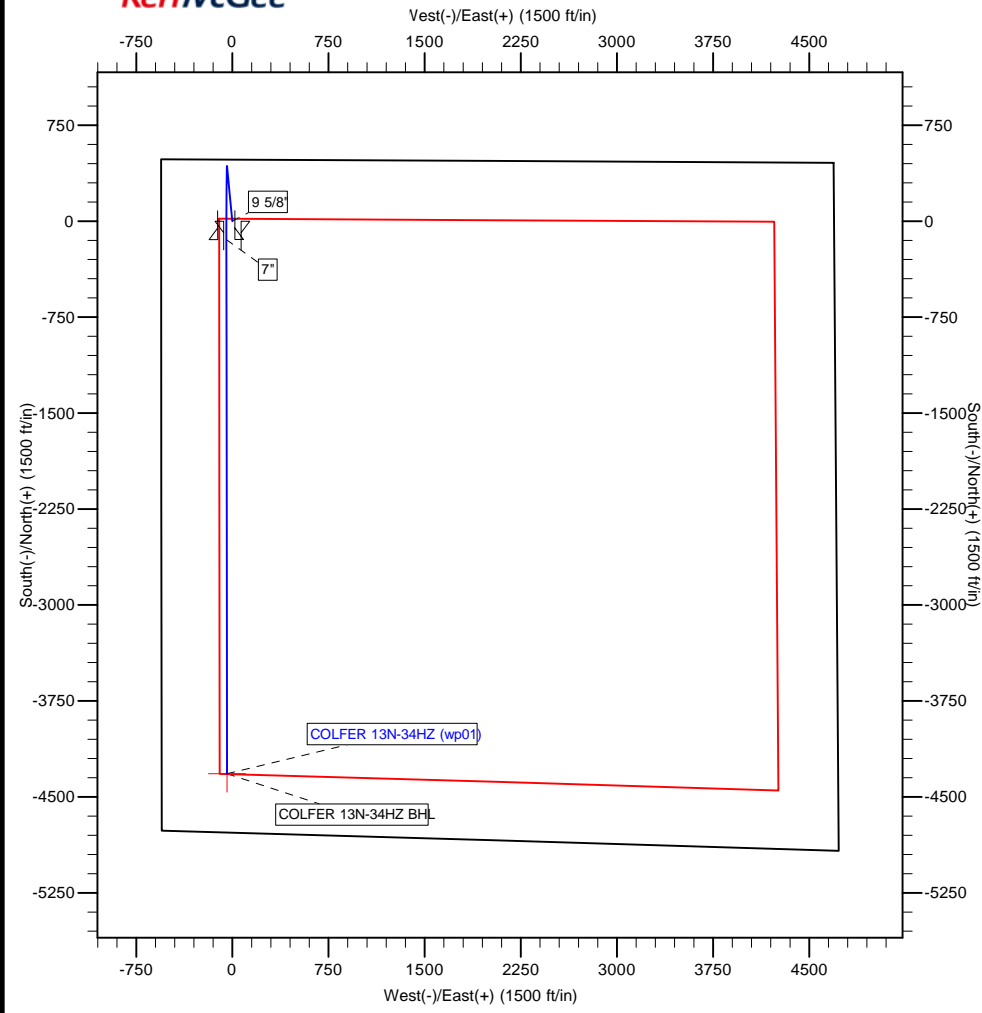
Design: COLFER 13N-34HZ (wp01)

Latitude: 40.100997

Longitude: -104.657266

GL: 4943.00

KB: 17' RKB + 4943' GL @ 4960.00ft



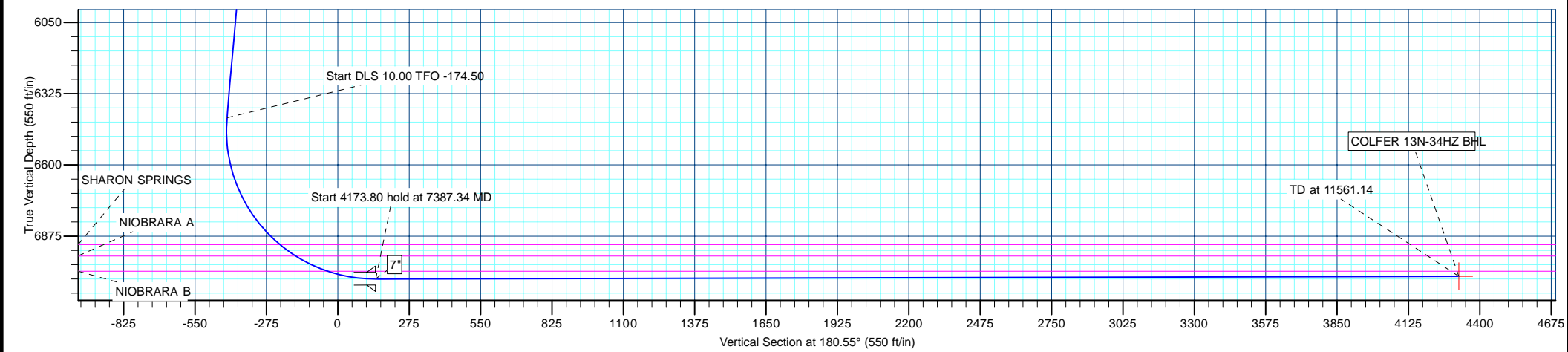
WELL DETAILS: COLFER 13N-34HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4943.00 Latitude	Longitude	Slot
0.00	0.00	1280757.79	3235741.76	40.100997	-104.657266	

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
COLFER 13N-34HZ BHL	7030.00	-4319.22	-41.13	40.089140	-104.657413	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	
1350.00	0.00	0.00	1350.00	0.00	0.00	0.00	0.00	0.00	
1598.08	4.96	354.45	1597.77	10.68	-1.04	2.00	354.45	-10.67	
6436.18	4.96	354.45	6417.74	427.17	-41.48	0.00	0.00	-426.75	
7386.90	90.13	179.94	7040.00	-145.00	-46.00	10.00	-174.50	145.43	
7387.34	90.14	179.93	7040.00	-145.44	-46.00	1.00	-25.97	145.88	
11561.14	90.14	179.93	7030.00	-4319.22	-41.13	0.00	0.00	4319.42	COLFER 13N-34HZ BHL

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
1079.00	1079.00	FOX HILLS
2900.00	2905.21	PARKMAN
4396.00	4406.83	SUSSEX
6907.00	6987.19	SHARON SPRINGS
6951.00	7061.92	NIOBRARA A
7010.00	7199.33	NIOBRARA B

CASING DETAILS			
TVD	MD	Name	Size
1200.00	1200.00	9 5/8"	9-5/8
7040.00	7386.90	7"	7



Database:	edm5000p	Local Co-ordinate Reference:	Well COLFER 13N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4943' GL @ 4960.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4943' GL @ 4960.00ft
Site:	WELD_COLFER PAD (Sec 34, Township 2N, Range 65W)	North Reference:	True
Well:	COLFER 13N-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	COLFER 13N-34HZ		
Design:	COLFER 13N-34HZ (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_COLFER PAD (Sec 34, Township 2N, Range 65W)							
Site Position: From:			Lat/Long			Northing:		1,280,758.26 ft		Latitude:		40.100997	
						Easting:		3,235,789.88 ft		Longitude:		-104.657094	
Position Uncertainty:			0.00 ft			Slot Radius:		0 "		Grid Convergence:		0.54	

Well	COLFER 13N-34HZ					
Well Position	+N-S	-0.01 ft	Northing:	1,280,757.79 ft	Latitude:	40.100997
	+E-W	-48.11 ft	Easting:	3,235,741.76 ft	Longitude:	-104.657266
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,943.00 ft

Wellbore	COLFER 13N-34HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/6/2011	8.78	66.83	52,987

Design	COLFER 13N-34HZ (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	180.55

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	
1,350.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,598.08	4.96	354.45	1,597.77	10.68	-1.04	2.00	2.00	0.00	354.45	
6,436.18	4.96	354.45	6,417.74	427.17	-41.48	0.00	0.00	0.00	0.00	
7,386.90	90.13	179.94	7,040.00	-145.00	-46.00	10.00	8.96	-18.36	-174.50	
7,387.34	90.14	179.93	7,040.00	-145.44	-46.00	1.00	0.90	-0.44	-25.97	
11,561.14	90.14	179.93	7,030.00	-4,319.22	-41.13	0.00	0.00	0.00	0.00	COLFER 13N-34HZ

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Site:	WELD_COLFER PAD (Sec 34, Township 2N, Range 65W)	North Reference:	True
Well:	COLFER 13N-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	COLFER 13N-34HZ		
Design:	COLFER 13N-34HZ (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
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
1,079.00	0.00	0.00	1,079.00	0.00	0.00	0.00	0.00	0.00	0.00
FOX HILLS									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,350.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	1.00	354.45	1,400.00	0.43	-0.04	-0.43	2.00	2.00	0.00
1,500.00	3.00	354.45	1,499.93	3.91	-0.38	-3.90	2.00	2.00	0.00
1,598.08	4.96	354.45	1,597.77	10.68	-1.04	-10.67	2.00	2.00	0.00
Start 4838.09 hold at 1598.08 MD									
1,600.00	4.96	354.45	1,599.68	10.85	-1.05	-10.84	0.00	0.00	0.00
1,700.00	4.96	354.45	1,699.31	19.46	-1.89	-19.44	0.00	0.00	0.00
1,800.00	4.96	354.45	1,798.93	28.07	-2.73	-28.04	0.00	0.00	0.00
1,900.00	4.96	354.45	1,898.56	36.68	-3.56	-36.64	0.00	0.00	0.00
2,000.00	4.96	354.45	1,998.18	45.28	-4.40	-45.24	0.00	0.00	0.00
2,100.00	4.96	354.45	2,097.81	53.89	-5.23	-53.84	0.00	0.00	0.00
2,200.00	4.96	354.45	2,197.43	62.50	-6.07	-62.44	0.00	0.00	0.00
2,300.00	4.96	354.45	2,297.06	71.11	-6.90	-71.04	0.00	0.00	0.00
2,400.00	4.96	354.45	2,396.69	79.72	-7.74	-79.64	0.00	0.00	0.00
2,500.00	4.96	354.45	2,496.31	88.33	-8.58	-88.24	0.00	0.00	0.00
2,600.00	4.96	354.45	2,595.94	96.93	-9.41	-96.84	0.00	0.00	0.00
2,700.00	4.96	354.45	2,695.56	105.54	-10.25	-105.44	0.00	0.00	0.00
2,800.00	4.96	354.45	2,795.19	114.15	-11.08	-114.04	0.00	0.00	0.00
2,900.00	4.96	354.45	2,894.81	122.76	-11.92	-122.64	0.00	0.00	0.00
2,905.21	4.96	354.45	2,900.00	123.21	-11.96	-123.09	0.00	0.00	0.00
PARKMAN									
3,000.00	4.96	354.45	2,994.44	131.37	-12.76	-131.24	0.00	0.00	0.00
3,100.00	4.96	354.45	3,094.06	139.98	-13.59	-139.84	0.00	0.00	0.00
3,200.00	4.96	354.45	3,193.69	148.58	-14.43	-148.44	0.00	0.00	0.00
3,300.00	4.96	354.45	3,293.31	157.19	-15.26	-157.04	0.00	0.00	0.00
3,400.00	4.96	354.45	3,392.94	165.80	-16.10	-165.64	0.00	0.00	0.00
3,500.00	4.96	354.45	3,492.56	174.41	-16.93	-174.24	0.00	0.00	0.00
3,600.00	4.96	354.45	3,592.19	183.02	-17.77	-182.84	0.00	0.00	0.00
3,700.00	4.96	354.45	3,691.81	191.63	-18.61	-191.44	0.00	0.00	0.00
3,800.00	4.96	354.45	3,791.44	200.24	-19.44	-200.04	0.00	0.00	0.00
3,900.00	4.96	354.45	3,891.06	208.84	-20.28	-208.64	0.00	0.00	0.00
4,000.00	4.96	354.45	3,990.69	217.45	-21.11	-217.24	0.00	0.00	0.00
4,100.00	4.96	354.45	4,090.31	226.06	-21.95	-225.84	0.00	0.00	0.00
4,200.00	4.96	354.45	4,189.94	234.67	-22.79	-234.44	0.00	0.00	0.00
4,300.00	4.96	354.45	4,289.57	243.28	-23.62	-243.04	0.00	0.00	0.00

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Well:	COLFER 13N-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	COLFER 13N-34HZ		
Design:	COLFER 13N-34HZ (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)
4,400.00	4.96	354.45	4,389.19	251.89	-24.46	-251.64	0.00	0.00	0.00
4,406.84	4.96	354.45	4,396.00	252.47	-24.51	-252.23	0.00	0.00	0.00
SUSSEX									
4,500.00	4.96	354.45	4,488.82	260.49	-25.29	-260.24	0.00	0.00	0.00
4,600.00	4.96	354.45	4,588.44	269.10	-26.13	-268.84	0.00	0.00	0.00
4,700.00	4.96	354.45	4,688.07	277.71	-26.96	-277.44	0.00	0.00	0.00
4,800.00	4.96	354.45	4,787.69	286.32	-27.80	-286.04	0.00	0.00	0.00
4,900.00	4.96	354.45	4,887.32	294.93	-28.64	-294.64	0.00	0.00	0.00
5,000.00	4.96	354.45	4,986.94	303.54	-29.47	-303.24	0.00	0.00	0.00
5,100.00	4.96	354.45	5,086.57	312.14	-30.31	-311.84	0.00	0.00	0.00
5,200.00	4.96	354.45	5,186.19	320.75	-31.14	-320.44	0.00	0.00	0.00
5,300.00	4.96	354.45	5,285.82	329.36	-31.98	-329.04	0.00	0.00	0.00
5,400.00	4.96	354.45	5,385.44	337.97	-32.82	-337.64	0.00	0.00	0.00
5,500.00	4.96	354.45	5,485.07	346.58	-33.65	-346.24	0.00	0.00	0.00
5,600.00	4.96	354.45	5,584.69	355.19	-34.49	-354.84	0.00	0.00	0.00
5,700.00	4.96	354.45	5,684.32	363.80	-35.32	-363.44	0.00	0.00	0.00
5,800.00	4.96	354.45	5,783.94	372.40	-36.16	-372.04	0.00	0.00	0.00
5,900.00	4.96	354.45	5,883.57	381.01	-36.99	-380.64	0.00	0.00	0.00
6,000.00	4.96	354.45	5,983.20	389.62	-37.83	-389.24	0.00	0.00	0.00
6,100.00	4.96	354.45	6,082.82	398.23	-38.67	-397.84	0.00	0.00	0.00
6,200.00	4.96	354.45	6,182.45	406.84	-39.50	-406.44	0.00	0.00	0.00
6,300.00	4.96	354.45	6,282.07	415.45	-40.34	-415.04	0.00	0.00	0.00
6,400.00	4.96	354.45	6,381.70	424.05	-41.17	-423.64	0.00	0.00	0.00
6,436.18	4.96	354.45	6,417.74	427.17	-41.48	-426.75	0.00	0.00	0.00
Start DLS 10.00 TFO -174.50									
6,500.00	1.52	198.15	6,481.50	429.11	-42.01	-428.69	10.00	-5.39	-244.89
6,600.00	11.45	182.28	6,580.73	417.90	-42.82	-417.48	10.00	9.93	-15.87
6,700.00	21.45	181.15	6,676.52	389.63	-43.58	-389.20	10.00	10.00	-1.14
6,800.00	31.45	180.71	6,765.94	345.16	-44.27	-344.72	10.00	10.00	-0.43
6,900.00	41.45	180.47	6,846.28	285.83	-44.87	-285.39	10.00	10.00	-0.24
6,987.19	50.16	180.33	6,907.00	223.38	-45.31	-222.94	10.00	10.00	-0.16
SHARON SPRINGS									
7,000.00	51.45	180.31	6,915.10	213.45	-45.36	-213.01	10.00	10.00	-0.14
7,061.92	57.64	180.24	6,951.00	163.04	-45.60	-162.60	10.00	10.00	-0.13
NIOBRARA A									
7,100.00	61.44	180.19	6,970.30	130.22	-45.73	-129.78	10.00	10.00	-0.11
7,199.33	71.38	180.10	7,010.00	39.31	-45.96	-38.87	10.00	10.00	-0.10
NIOBRARA B									
7,200.00	71.44	180.10	7,010.21	38.67	-45.96	-38.23	10.00	10.00	-0.09
7,300.00	81.44	180.01	7,033.62	-58.42	-46.04	58.86	10.00	10.00	-0.09
7,386.90	90.13	179.94	7,040.00	-145.00	-46.00	145.43	10.00	10.00	-0.08
7"									
7,387.34	90.14	179.93	7,040.00	-145.44	-46.00	145.88	1.00	0.90	-0.44
Start 4173.80 hold at 7387.34 MD									
7,400.00	90.14	179.93	7,039.97	-158.10	-45.98	158.53	0.00	0.00	0.00
7,500.00	90.14	179.93	7,039.73	-258.10	-45.87	258.53	0.00	0.00	0.00
7,600.00	90.14	179.93	7,039.49	-358.10	-45.75	358.52	0.00	0.00	0.00
7,700.00	90.14	179.93	7,039.25	-458.10	-45.63	458.51	0.00	0.00	0.00
7,800.00	90.14	179.93	7,039.01	-558.10	-45.52	558.51	0.00	0.00	0.00
7,900.00	90.14	179.93	7,038.77	-658.10	-45.40	658.50	0.00	0.00	0.00
8,000.00	90.14	179.93	7,038.53	-758.10	-45.28	758.50	0.00	0.00	0.00
8,100.00	90.14	179.93	7,038.29	-858.10	-45.17	858.49	0.00	0.00	0.00

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8,200.00	90.14	179.93	7,038.05	-958.10	-45.05	958.48	0.00	0.00	0.00
8,300.00	90.14	179.93	7,037.81	-1,058.10	-44.93	1,058.48	0.00	0.00	0.00
8,400.00	90.14	179.93	7,037.57	-1,158.10	-44.82	1,158.47	0.00	0.00	0.00
8,500.00	90.14	179.93	7,037.33	-1,258.10	-44.70	1,258.47	0.00	0.00	0.00
8,600.00	90.14	179.93	7,037.09	-1,358.10	-44.58	1,358.46	0.00	0.00	0.00
8,700.00	90.14	179.93	7,036.85	-1,458.10	-44.47	1,458.45	0.00	0.00	0.00
8,800.00	90.14	179.93	7,036.61	-1,558.10	-44.35	1,558.45	0.00	0.00	0.00
8,900.00	90.14	179.93	7,036.38	-1,658.10	-44.23	1,658.44	0.00	0.00	0.00
9,000.00	90.14	179.93	7,036.14	-1,758.10	-44.12	1,758.44	0.00	0.00	0.00
9,100.00	90.14	179.93	7,035.90	-1,858.10	-44.00	1,858.43	0.00	0.00	0.00
9,200.00	90.14	179.93	7,035.66	-1,958.10	-43.88	1,958.42	0.00	0.00	0.00
9,300.00	90.14	179.93	7,035.42	-2,058.09	-43.77	2,058.42	0.00	0.00	0.00
9,400.00	90.14	179.93	7,035.18	-2,158.09	-43.65	2,158.41	0.00	0.00	0.00
9,500.00	90.14	179.93	7,034.94	-2,258.09	-43.53	2,258.41	0.00	0.00	0.00
9,600.00	90.14	179.93	7,034.70	-2,358.09	-43.42	2,358.40	0.00	0.00	0.00
9,700.00	90.14	179.93	7,034.46	-2,458.09	-43.30	2,458.39	0.00	0.00	0.00
9,800.00	90.14	179.93	7,034.22	-2,558.09	-43.18	2,558.39	0.00	0.00	0.00
9,900.00	90.14	179.93	7,033.98	-2,658.09	-43.07	2,658.38	0.00	0.00	0.00
10,000.00	90.14	179.93	7,033.74	-2,758.09	-42.95	2,758.38	0.00	0.00	0.00
10,100.00	90.14	179.93	7,033.50	-2,858.09	-42.83	2,858.37	0.00	0.00	0.00
10,200.00	90.14	179.93	7,033.26	-2,958.09	-42.72	2,958.36	0.00	0.00	0.00
10,300.00	90.14	179.93	7,033.02	-3,058.09	-42.60	3,058.36	0.00	0.00	0.00
10,400.00	90.14	179.93	7,032.78	-3,158.09	-42.48	3,158.35	0.00	0.00	0.00
10,500.00	90.14	179.93	7,032.54	-3,258.09	-42.37	3,258.35	0.00	0.00	0.00
10,600.00	90.14	179.93	7,032.30	-3,358.09	-42.25	3,358.34	0.00	0.00	0.00
10,700.00	90.14	179.93	7,032.06	-3,458.09	-42.13	3,458.33	0.00	0.00	0.00
10,800.00	90.14	179.93	7,031.82	-3,558.09	-42.02	3,558.33	0.00	0.00	0.00
10,900.00	90.14	179.93	7,031.58	-3,658.09	-41.90	3,658.32	0.00	0.00	0.00
11,000.00	90.14	179.93	7,031.34	-3,758.09	-41.78	3,758.32	0.00	0.00	0.00
11,100.00	90.14	179.93	7,031.10	-3,858.09	-41.67	3,858.31	0.00	0.00	0.00
11,200.00	90.14	179.93	7,030.87	-3,958.09	-41.55	3,958.30	0.00	0.00	0.00
11,300.00	90.14	179.93	7,030.63	-4,058.09	-41.43	4,058.30	0.00	0.00	0.00
11,400.00	90.14	179.93	7,030.39	-4,158.09	-41.32	4,158.29	0.00	0.00	0.00
11,500.00	90.14	179.93	7,030.15	-4,258.09	-41.20	4,258.29	0.00	0.00	0.00
11,561.14	90.14	179.93	7,030.00	-4,319.22	-41.13	4,319.42	0.00	0.00	0.00
TD at 11561.14 - COLFER 13N-34HZ 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									
COLFER 13N-34HZ E	0.00	0.00	7,030.00	-4,319.22	-41.13	1,276,438.37	3,235,741.68	40.089140	-104.657413
- plan hits target center									
- Point									

Database:	edm5000p	Local Co-ordinate Reference:	Well COLFER 13N-34HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17' RKB + 4943' GL @ 4960.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17' RKB + 4943' GL @ 4960.00ft
Site:	WELD_COLFER PAD (Sec 34, Township 2N, Range 65W)	North Reference:	True
Well:	COLFER 13N-34HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	COLFER 13N-34HZ		
Design:	COLFER 13N-34HZ (wp01)		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,200.00	1,200.00	9 5/8"	9-5/8	12-1/4
7,386.90	7,040.00	7"	7	8-3/4

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,079.00	1,079.00	FOX HILLS		0.00	
2,905.21	2,900.00	PARKMAN		0.00	
4,406.84	4,396.00	SUSSEX		0.00	
6,987.19	6,907.00	SHARON SPRINGS		0.00	
7,061.92	6,951.00	NIOBRARA A		0.00	
7,199.33	7,010.00	NIOBRARA B		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,350.00	1,350.00	0.00	0.00	Start Build 2.00
1,598.08	1,597.77	10.68	-1.04	Start 4838.09 hold at 1598.08 MD
6,436.18	6,417.74	427.17	-41.48	Start DLS 10.00 TFO -174.50
7,387.34	7,040.00	-145.44	-46.00	Start 4173.80 hold at 7387.34 MD
11,561.14	7,030.00	-4,319.22	-41.13	TD at 11561.14