Anadarko E&P Onshore LLC

Well Name: RESOLUTION FED 12-64-19-30CH
Surface Location: RESOLUTION FED 12-64-19-30CH PAD
North American Datum 1983
US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 5857.0
WELL @ 5883.0usft (Original Well Elev)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	1607802.93	3249297.64	40.998289	-104.596903

T M

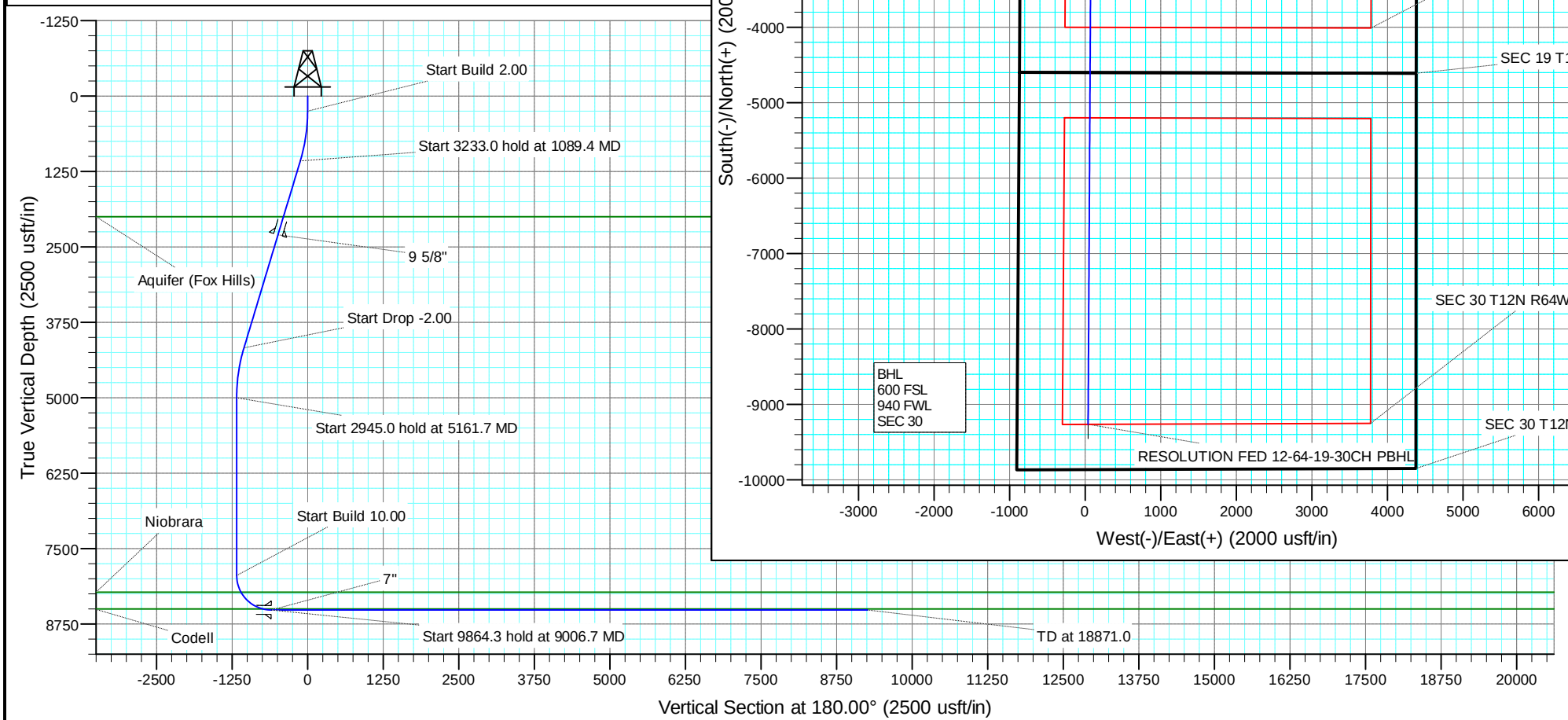
Azimuths to True North
Magnetic North: 8.98°
Magnetic Field
Strength: 53624.0snT
Dip Angle: 67.62°
Date: 12/31/2009
Model: IGRF200510

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.0
1089.4	16.79	4.72	1077.4	121.7	10.0	2.00	4.72	-121.7
4322.3	16.79	4.72	4172.6	1052.2	86.9	0.00	0.00	-1052.2
5161.7	0.00	0.00	5000.0	1173.9	96.9	2.00	180.00	-1173.9
8106.7	0.00	0.00	7945.0	1173.9	96.9	0.00	0.00	-1173.9
9006.7	90.00	180.32	8518.0	601.0	93.7	10.00	180.32	-601.0
18871.0	90.00	180.32	8518.0	-9263.2	38.1	0.00	0.00	9263.2

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1998.0	2050.9	Aquifer (Fox Hills)
8223.0	8396.9	Niobrara
8508.0	8899.5	Codell



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83
RESOLUTION FED 12-64-19-30CH PAD
RESOLUTION FED 12-64-19-30CH

Wellbore #1

Plan: PLAN #1

Standard Planning Report

16 April, 2015

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

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	RESOLUTION FED 12-64-19-30CH PAD				
Site Position:		**Northing:**	1,607,801.53 usft	**Latitude:**	40.998286
From:	Lat/Long	**Easting:**	3,249,267.57 usft	**Longitude:**	-104.597012
Position Uncertainty:	0.0 usft	**Slot Radius:**	13.200 in	**Grid Convergence:**	0.58 °

Well	RESOLUTION FED 12-64-19-30CH					
Well Position	**+N/-S**	1.1 usft	**Northing:**	1,607,802.93 usft	**Latitude:**	40.998289
	+E/-W	30.1 usft	**Easting:**	3,249,297.64 usft	**Longitude:**	-104.596903
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	5,857.0 usft

Wellbore	Wellbore #1			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	12/31/2009	8.98	67.62	53,624

Design	PLAN #1			
Audit Notes:				
Version:	**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	180.00

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
250.0	0.00	0.00	250.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,089.4	16.79	4.72	1,077.4	121.7	10.0	2.00	2.00	0.00	4.72	
4,322.3	16.79	4.72	4,172.6	1,052.2	86.9	0.00	0.00	0.00	0.00	
5,161.7	0.00	0.00	5,000.0	1,173.9	96.9	2.00	-2.00	0.00	180.00	
8,106.7	0.00	0.00	7,945.0	1,173.9	96.9	0.00	0.00	0.00	0.00	
9,006.7	90.00	180.32	8,518.0	601.0	93.7	10.00	10.00	0.00	180.32	
18,871.0	90.00	180.32	8,518.0	-9,263.2	38.1	0.00	0.00	0.00	0.00	RESOLUTION FED 1

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
250.0	0.00	0.00	250.0	0.0	0.0	0.0	0.00	0.00	0.00
Start Build 2.00									
300.0	1.00	4.72	300.0	0.4	0.0	-0.4	2.00	2.00	0.00
400.0	3.00	4.72	399.9	3.9	0.3	-3.9	2.00	2.00	0.00
500.0	5.00	4.72	499.7	10.9	0.9	-10.9	2.00	2.00	0.00
600.0	7.00	4.72	599.1	21.3	1.8	-21.3	2.00	2.00	0.00
700.0	9.00	4.72	698.2	35.2	2.9	-35.2	2.00	2.00	0.00
800.0	11.00	4.72	796.6	52.5	4.3	-52.5	2.00	2.00	0.00
900.0	13.00	4.72	894.4	73.2	6.0	-73.2	2.00	2.00	0.00
1,000.0	15.00	4.72	991.5	97.3	8.0	-97.3	2.00	2.00	0.00
1,089.4	16.79	4.72	1,077.4	121.7	10.0	-121.7	2.00	2.00	0.00
Start 3233.0 hold at 1089.4 MD									
1,100.0	16.79	4.72	1,087.6	124.7	10.3	-124.7	0.00	0.00	0.00
1,200.0	16.79	4.72	1,183.3	153.5	12.7	-153.5	0.00	0.00	0.00
1,300.0	16.79	4.72	1,279.1	182.3	15.0	-182.3	0.00	0.00	0.00
1,400.0	16.79	4.72	1,374.8	211.1	17.4	-211.1	0.00	0.00	0.00
1,500.0	16.79	4.72	1,470.5	239.9	19.8	-239.9	0.00	0.00	0.00
1,600.0	16.79	4.72	1,566.3	268.7	22.2	-268.7	0.00	0.00	0.00
1,700.0	16.79	4.72	1,662.0	297.4	24.6	-297.4	0.00	0.00	0.00
1,800.0	16.79	4.72	1,757.8	326.2	26.9	-326.2	0.00	0.00	0.00
1,900.0	16.79	4.72	1,853.5	355.0	29.3	-355.0	0.00	0.00	0.00
2,000.0	16.79	4.72	1,949.2	383.8	31.7	-383.8	0.00	0.00	0.00
2,050.9	16.79	4.72	1,998.0	398.4	32.9	-398.4	0.00	0.00	0.00
Aquifer (Fox Hills)									
2,100.0	16.79	4.72	2,045.0	412.6	34.1	-412.6	0.00	0.00	0.00
2,200.0	16.79	4.72	2,140.7	441.4	36.4	-441.4	0.00	0.00	0.00
2,300.0	16.79	4.72	2,236.5	470.1	38.8	-470.1	0.00	0.00	0.00
2,366.4	16.79	4.72	2,300.0	489.2	40.4	-489.2	0.00	0.00	0.00
9 5/8"									
2,400.0	16.79	4.72	2,332.2	498.9	41.2	-498.9	0.00	0.00	0.00
2,500.0	16.79	4.72	2,427.9	527.7	43.6	-527.7	0.00	0.00	0.00
2,600.0	16.79	4.72	2,523.7	556.5	45.9	-556.5	0.00	0.00	0.00
2,700.0	16.79	4.72	2,619.4	585.3	48.3	-585.3	0.00	0.00	0.00
2,800.0	16.79	4.72	2,715.1	614.1	50.7	-614.1	0.00	0.00	0.00
2,900.0	16.79	4.72	2,810.9	642.8	53.1	-642.8	0.00	0.00	0.00
3,000.0	16.79	4.72	2,906.6	671.6	55.4	-671.6	0.00	0.00	0.00
3,100.0	16.79	4.72	3,002.4	700.4	57.8	-700.4	0.00	0.00	0.00
3,200.0	16.79	4.72	3,098.1	729.2	60.2	-729.2	0.00	0.00	0.00
3,300.0	16.79	4.72	3,193.8	758.0	62.6	-758.0	0.00	0.00	0.00
3,400.0	16.79	4.72	3,289.6	786.8	64.9	-786.8	0.00	0.00	0.00
3,500.0	16.79	4.72	3,385.3	815.5	67.3	-815.5	0.00	0.00	0.00
3,600.0	16.79	4.72	3,481.0	844.3	69.7	-844.3	0.00	0.00	0.00
3,700.0	16.79	4.72	3,576.8	873.1	72.1	-873.1	0.00	0.00	0.00
3,800.0	16.79	4.72	3,672.5	901.9	74.5	-901.9	0.00	0.00	0.00
3,900.0	16.79	4.72	3,768.3	930.7	76.8	-930.7	0.00	0.00	0.00
4,000.0	16.79	4.72	3,864.0	959.5	79.2	-959.5	0.00	0.00	0.00
4,100.0	16.79	4.72	3,959.7	988.2	81.6	-988.2	0.00	0.00	0.00
4,200.0	16.79	4.72	4,055.5	1,017.0	84.0	-1,017.0	0.00	0.00	0.00
4,300.0	16.79	4.72	4,151.2	1,045.8	86.3	-1,045.8	0.00	0.00	0.00
4,322.3	16.79	4.72	4,172.6	1,052.2	86.9	-1,052.2	0.00	0.00	0.00
Start Drop -2.00									

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,400.0	15.23	4.72	4,247.3	1,073.6	88.6	-1,073.6	2.00	-2.00	0.00
4,500.0	13.23	4.72	4,344.2	1,098.1	90.7	-1,098.1	2.00	-2.00	0.00
4,600.0	11.23	4.72	4,441.9	1,119.2	92.4	-1,119.2	2.00	-2.00	0.00
4,700.0	9.23	4.72	4,540.3	1,136.9	93.9	-1,136.9	2.00	-2.00	0.00
4,800.0	7.23	4.72	4,639.3	1,151.2	95.0	-1,151.2	2.00	-2.00	0.00
4,900.0	5.23	4.72	4,738.7	1,162.0	95.9	-1,162.0	2.00	-2.00	0.00
5,000.0	3.23	4.72	4,838.4	1,169.4	96.5	-1,169.4	2.00	-2.00	0.00
5,100.0	1.23	4.72	4,938.3	1,173.3	96.9	-1,173.3	2.00	-2.00	0.00
5,161.7	0.00	0.00	5,000.0	1,173.9	96.9	-1,173.9	2.00	-2.00	-7.65
Start 2945.0 hold at 5161.7 MD									
5,200.0	0.00	0.00	5,038.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,300.0	0.00	0.00	5,138.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,400.0	0.00	0.00	5,238.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,500.0	0.00	0.00	5,338.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,600.0	0.00	0.00	5,438.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,700.0	0.00	0.00	5,538.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,800.0	0.00	0.00	5,638.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
5,900.0	0.00	0.00	5,738.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,000.0	0.00	0.00	5,838.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,100.0	0.00	0.00	5,938.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,200.0	0.00	0.00	6,038.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,300.0	0.00	0.00	6,138.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,400.0	0.00	0.00	6,238.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,500.0	0.00	0.00	6,338.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,600.0	0.00	0.00	6,438.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,700.0	0.00	0.00	6,538.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,800.0	0.00	0.00	6,638.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
6,900.0	0.00	0.00	6,738.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,000.0	0.00	0.00	6,838.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,100.0	0.00	0.00	6,938.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,200.0	0.00	0.00	7,038.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,300.0	0.00	0.00	7,138.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,400.0	0.00	0.00	7,238.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,500.0	0.00	0.00	7,338.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,600.0	0.00	0.00	7,438.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,700.0	0.00	0.00	7,538.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,800.0	0.00	0.00	7,638.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
7,900.0	0.00	0.00	7,738.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
8,000.0	0.00	0.00	7,838.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
8,100.0	0.00	0.00	7,938.3	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
8,106.7	0.00	0.00	7,945.0	1,173.9	96.9	-1,173.9	0.00	0.00	0.00
Start Build 10.00									
8,200.0	9.33	180.32	8,037.9	1,166.3	96.9	-1,166.3	10.00	10.00	0.00
8,300.0	19.33	180.32	8,134.7	1,141.6	96.7	-1,141.6	10.00	10.00	0.00
8,396.9	29.02	180.32	8,223.0	1,102.0	96.5	-1,102.0	10.00	10.00	0.00
Niobrara									
8,400.0	29.33	180.32	8,225.7	1,100.5	96.5	-1,100.5	10.00	10.00	0.00
8,500.0	39.33	180.32	8,308.1	1,044.2	96.2	-1,044.2	10.00	10.00	0.00
8,600.0	49.33	180.32	8,379.6	974.4	95.8	-974.4	10.00	10.00	0.00
8,700.0	59.33	180.32	8,437.8	893.3	95.3	-893.3	10.00	10.00	0.00
8,800.0	69.33	180.32	8,481.1	803.2	94.8	-803.2	10.00	10.00	0.00
8,899.5	79.28	180.32	8,508.0	707.5	94.3	-707.5	10.00	10.00	0.00
Codell									

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,900.0	79.33	180.32	8,508.1	707.1	94.3	-707.1	10.00	10.00	0.00
9,000.0	89.33	180.32	8,518.0	607.7	93.7	-607.7	10.00	10.00	0.00
9,006.7	90.00	180.32	8,518.0	601.0	93.7	-601.0	10.00	10.00	0.00
Start 9864.3 hold at 9006.7 MD - 7"									
9,100.0	90.00	180.32	8,518.0	507.7	93.2	-507.7	0.00	0.00	0.00
9,200.0	90.00	180.32	8,518.0	407.7	92.6	-407.7	0.00	0.00	0.00
9,300.0	90.00	180.32	8,518.0	307.7	92.0	-307.7	0.00	0.00	0.00
9,400.0	90.00	180.32	8,518.0	207.7	91.5	-207.7	0.00	0.00	0.00
9,500.0	90.00	180.32	8,518.0	107.7	90.9	-107.7	0.00	0.00	0.00
9,600.0	90.00	180.32	8,518.0	7.7	90.3	-7.7	0.00	0.00	0.00
9,700.0	90.00	180.32	8,518.0	-92.3	89.8	92.3	0.00	0.00	0.00
9,800.0	90.00	180.32	8,518.0	-192.3	89.2	192.3	0.00	0.00	0.00
9,900.0	90.00	180.32	8,518.0	-292.3	88.6	292.3	0.00	0.00	0.00
10,000.0	90.00	180.32	8,518.0	-392.3	88.1	392.3	0.00	0.00	0.00
10,100.0	90.00	180.32	8,518.0	-492.3	87.5	492.3	0.00	0.00	0.00
10,200.0	90.00	180.32	8,518.0	-592.3	87.0	592.3	0.00	0.00	0.00
10,300.0	90.00	180.32	8,518.0	-692.3	86.4	692.3	0.00	0.00	0.00
10,400.0	90.00	180.32	8,518.0	-792.3	85.8	792.3	0.00	0.00	0.00
10,500.0	90.00	180.32	8,518.0	-892.3	85.3	892.3	0.00	0.00	0.00
10,600.0	90.00	180.32	8,518.0	-992.3	84.7	992.3	0.00	0.00	0.00
10,700.0	90.00	180.32	8,518.0	-1,092.3	84.1	1,092.3	0.00	0.00	0.00
10,800.0	90.00	180.32	8,518.0	-1,192.3	83.6	1,192.3	0.00	0.00	0.00
10,900.0	90.00	180.32	8,518.0	-1,292.3	83.0	1,292.3	0.00	0.00	0.00
11,000.0	90.00	180.32	8,518.0	-1,392.3	82.5	1,392.3	0.00	0.00	0.00
11,100.0	90.00	180.32	8,518.0	-1,492.3	81.9	1,492.3	0.00	0.00	0.00
11,200.0	90.00	180.32	8,518.0	-1,592.3	81.3	1,592.3	0.00	0.00	0.00
11,300.0	90.00	180.32	8,518.0	-1,692.3	80.8	1,692.3	0.00	0.00	0.00
11,400.0	90.00	180.32	8,518.0	-1,792.3	80.2	1,792.3	0.00	0.00	0.00
11,500.0	90.00	180.32	8,518.0	-1,892.3	79.6	1,892.3	0.00	0.00	0.00
11,600.0	90.00	180.32	8,518.0	-1,992.3	79.1	1,992.3	0.00	0.00	0.00
11,700.0	90.00	180.32	8,518.0	-2,092.3	78.5	2,092.3	0.00	0.00	0.00
11,800.0	90.00	180.32	8,518.0	-2,192.3	77.9	2,192.3	0.00	0.00	0.00
11,900.0	90.00	180.32	8,518.0	-2,292.3	77.4	2,292.3	0.00	0.00	0.00
12,000.0	90.00	180.32	8,518.0	-2,392.3	76.8	2,392.3	0.00	0.00	0.00
12,100.0	90.00	180.32	8,518.0	-2,492.3	76.3	2,492.3	0.00	0.00	0.00
12,200.0	90.00	180.32	8,518.0	-2,592.3	75.7	2,592.3	0.00	0.00	0.00
12,300.0	90.00	180.32	8,518.0	-2,692.2	75.1	2,692.2	0.00	0.00	0.00
12,400.0	90.00	180.32	8,518.0	-2,792.2	74.6	2,792.2	0.00	0.00	0.00
12,500.0	90.00	180.32	8,518.0	-2,892.2	74.0	2,892.2	0.00	0.00	0.00
12,600.0	90.00	180.32	8,518.0	-2,992.2	73.4	2,992.2	0.00	0.00	0.00
12,700.0	90.00	180.32	8,518.0	-3,092.2	72.9	3,092.2	0.00	0.00	0.00
12,800.0	90.00	180.32	8,518.0	-3,192.2	72.3	3,192.2	0.00	0.00	0.00
12,900.0	90.00	180.32	8,518.0	-3,292.2	71.7	3,292.2	0.00	0.00	0.00
13,000.0	90.00	180.32	8,518.0	-3,392.2	71.2	3,392.2	0.00	0.00	0.00
13,100.0	90.00	180.32	8,518.0	-3,492.2	70.6	3,492.2	0.00	0.00	0.00
13,200.0	90.00	180.32	8,518.0	-3,592.2	70.1	3,592.2	0.00	0.00	0.00
13,300.0	90.00	180.32	8,518.0	-3,692.2	69.5	3,692.2	0.00	0.00	0.00
13,400.0	90.00	180.32	8,518.0	-3,792.2	68.9	3,792.2	0.00	0.00	0.00
13,500.0	90.00	180.32	8,518.0	-3,892.2	68.4	3,892.2	0.00	0.00	0.00
13,600.0	90.00	180.32	8,518.0	-3,992.2	67.8	3,992.2	0.00	0.00	0.00
13,700.0	90.00	180.32	8,518.0	-4,092.2	67.2	4,092.2	0.00	0.00	0.00
13,800.0	90.00	180.32	8,518.0	-4,192.2	66.7	4,192.2	0.00	0.00	0.00
13,900.0	90.00	180.32	8,518.0	-4,292.2	66.1	4,292.2	0.00	0.00	0.00

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,000.0	90.00	180.32	8,518.0	-4,392.2	65.6	4,392.2	0.00	0.00	0.00
14,100.0	90.00	180.32	8,518.0	-4,492.2	65.0	4,492.2	0.00	0.00	0.00
14,200.0	90.00	180.32	8,518.0	-4,592.2	64.4	4,592.2	0.00	0.00	0.00
14,300.0	90.00	180.32	8,518.0	-4,692.2	63.9	4,692.2	0.00	0.00	0.00
14,400.0	90.00	180.32	8,518.0	-4,792.2	63.3	4,792.2	0.00	0.00	0.00
14,500.0	90.00	180.32	8,518.0	-4,892.2	62.7	4,892.2	0.00	0.00	0.00
14,600.0	90.00	180.32	8,518.0	-4,992.2	62.2	4,992.2	0.00	0.00	0.00
14,700.0	90.00	180.32	8,518.0	-5,092.2	61.6	5,092.2	0.00	0.00	0.00
14,800.0	90.00	180.32	8,518.0	-5,192.2	61.0	5,192.2	0.00	0.00	0.00
14,900.0	90.00	180.32	8,518.0	-5,292.2	60.5	5,292.2	0.00	0.00	0.00
15,000.0	90.00	180.32	8,518.0	-5,392.2	59.9	5,392.2	0.00	0.00	0.00
15,100.0	90.00	180.32	8,518.0	-5,492.2	59.4	5,492.2	0.00	0.00	0.00
15,200.0	90.00	180.32	8,518.0	-5,592.2	58.8	5,592.2	0.00	0.00	0.00
15,300.0	90.00	180.32	8,518.0	-5,692.2	58.2	5,692.2	0.00	0.00	0.00
15,400.0	90.00	180.32	8,518.0	-5,792.2	57.7	5,792.2	0.00	0.00	0.00
15,500.0	90.00	180.32	8,518.0	-5,892.2	57.1	5,892.2	0.00	0.00	0.00
15,600.0	90.00	180.32	8,518.0	-5,992.2	56.5	5,992.2	0.00	0.00	0.00
15,700.0	90.00	180.32	8,518.0	-6,092.2	56.0	6,092.2	0.00	0.00	0.00
15,800.0	90.00	180.32	8,518.0	-6,192.2	55.4	6,192.2	0.00	0.00	0.00
15,900.0	90.00	180.32	8,518.0	-6,292.2	54.8	6,292.2	0.00	0.00	0.00
16,000.0	90.00	180.32	8,518.0	-6,392.2	54.3	6,392.2	0.00	0.00	0.00
16,100.0	90.00	180.32	8,518.0	-6,492.2	53.7	6,492.2	0.00	0.00	0.00
16,200.0	90.00	180.32	8,518.0	-6,592.2	53.2	6,592.2	0.00	0.00	0.00
16,300.0	90.00	180.32	8,518.0	-6,692.2	52.6	6,692.2	0.00	0.00	0.00
16,400.0	90.00	180.32	8,518.0	-6,792.2	52.0	6,792.2	0.00	0.00	0.00
16,500.0	90.00	180.32	8,518.0	-6,892.2	51.5	6,892.2	0.00	0.00	0.00
16,600.0	90.00	180.32	8,518.0	-6,992.2	50.9	6,992.2	0.00	0.00	0.00
16,700.0	90.00	180.32	8,518.0	-7,092.2	50.3	7,092.2	0.00	0.00	0.00
16,800.0	90.00	180.32	8,518.0	-7,192.2	49.8	7,192.2	0.00	0.00	0.00
16,900.0	90.00	180.32	8,518.0	-7,292.2	49.2	7,292.2	0.00	0.00	0.00
17,000.0	90.00	180.32	8,518.0	-7,392.2	48.7	7,392.2	0.00	0.00	0.00
17,100.0	90.00	180.32	8,518.0	-7,492.2	48.1	7,492.2	0.00	0.00	0.00
17,200.0	90.00	180.32	8,518.0	-7,592.2	47.5	7,592.2	0.00	0.00	0.00
17,300.0	90.00	180.32	8,518.0	-7,692.2	47.0	7,692.2	0.00	0.00	0.00
17,400.0	90.00	180.32	8,518.0	-7,792.2	46.4	7,792.2	0.00	0.00	0.00
17,500.0	90.00	180.32	8,518.0	-7,892.2	45.8	7,892.2	0.00	0.00	0.00
17,600.0	90.00	180.32	8,518.0	-7,992.2	45.3	7,992.2	0.00	0.00	0.00
17,700.0	90.00	180.32	8,518.0	-8,092.2	44.7	8,092.2	0.00	0.00	0.00
17,800.0	90.00	180.32	8,518.0	-8,192.2	44.1	8,192.2	0.00	0.00	0.00
17,900.0	90.00	180.32	8,518.0	-8,292.2	43.6	8,292.2	0.00	0.00	0.00
18,000.0	90.00	180.32	8,518.0	-8,392.2	43.0	8,392.2	0.00	0.00	0.00
18,100.0	90.00	180.32	8,518.0	-8,492.2	42.5	8,492.2	0.00	0.00	0.00
18,200.0	90.00	180.32	8,518.0	-8,592.2	41.9	8,592.2	0.00	0.00	0.00
18,300.0	90.00	180.32	8,518.0	-8,692.2	41.3	8,692.2	0.00	0.00	0.00
18,400.0	90.00	180.32	8,518.0	-8,792.2	40.8	8,792.2	0.00	0.00	0.00
18,500.0	90.00	180.32	8,518.0	-8,892.2	40.2	8,892.2	0.00	0.00	0.00
18,600.0	90.00	180.32	8,518.0	-8,992.1	39.6	8,992.1	0.00	0.00	0.00
18,700.0	90.00	180.32	8,518.0	-9,092.1	39.1	9,092.1	0.00	0.00	0.00
18,800.0	90.00	180.32	8,518.0	-9,192.1	38.5	9,192.1	0.00	0.00	0.00
18,871.0	90.00	180.32	8,518.0	-9,263.2	38.1	9,263.2	0.00	0.00	0.00
TD at 18871.0									

Database:	PLANNING	**Local Co-ordinate Reference:**	Well RESOLUTION FED 12-64-19-30CH
Company:	US ROCKIES REGION PLANNING	**TVD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	**MD Reference:**	WELL @ 5883.0usft (Original Well Elev)
Site:	RESOLUTION FED 12-64-19-30CH PAD	**North Reference:**	True
Well:	RESOLUTION FED 12-64-19-30CH	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	PLAN #1		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
RESOLUTION FED 12- - plan hits target center - Point	0.00	0.00	8,518.0	-9,263.2	38.1	1,598,540.61	3,249,430.09	40.972866	-104.596765

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)
2,366.4	2,300.0	9 5/8"	9.625	12.250
9,006.7	8,518.0	7"	7.000	7.500

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,050.9	1,998.0	Aquifer (Fox Hills)			
8,396.9	8,223.0	Niobrara			
8,899.5	8,508.0	Codell			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
250.0	250.0	0.0	0.0	Start Build 2.00
1,089.4	1,077.4	121.7	10.0	Start 3233.0 hold at 1089.4 MD
4,322.3	4,172.6	1,052.2	86.9	Start Drop -2.00
5,161.7	5,000.0	1,173.9	96.9	Start 2945.0 hold at 5161.7 MD
8,106.7	7,945.0	1,173.9	96.9	Start Build 10.00
9,006.7	8,518.0	601.0	93.7	Start 9864.3 hold at 9006.7 MD
18,871.0	8,518.0	-9,263.2	38.1	TD at 18871.0