

Well Name:	RESOLUTION FED 12-65-29-20-4NH														
16" CONDUCTOR DEPTH (TVD')	40'	Casing Program:							Cement Program:						
16" CONDUCTOR DEPTH (MD')	40'	Casing	Size	Wt (ppf)	Grade	Hole	Top	Bottom	Cement:	Ft	Sx	Density	Yield	GPS	Type
9 5/8" CASING DEPTH (TVD')	2,300'	Conductor	16."	36.94	ASTM A53 B	26."	0'	40'	Tail	40 '	±30 sx	26.3	4.5	6	Type I & II
9 5/8" CASING DEPTH (MD')	2,312'	Surface	9.625"	36.0	J55	13.5"	0'	2,312'	Tail	2,312'	±890 sx	14.2	1.49	7.48	Type I
KOP (MD')	8,143'	Production	5.50"	17.0	HCP110	7.875"	0'	18,735'	Lead	6,000 '	±668 sx	12.0	1.79	10.046	50/50 CI G/Poz
5.5" CEMENT TOP	0'								Tail	12,735 '	±1,557 sx	13.5	1.63	7.659	50/50 CI G/Poz
5.5" CASING DEPTH (MD')	18,735'	Mud Program:													
TD (MD')	18,745'	Interval	Type	Anticipated Density	PV	YP	pH	WL							
TD (TVD)	8,688'	Surface Hole	Fresh Water/WBM	8.4-8.6	1-10	1-10	8-9	NC							
Top of Production (MD)	9,043'	Vertical	OBM	8.8-9.2	<18	8-12	-	< 10							

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

RESOLUTION FED 12-65-29-20-4NH PAD

RESOLUTION FED 12-65-29-20-4NH

Wellbore #1

Plan: Plan #2

Standard Planning Report

06 April, 2018

Project: COLORADO NORTHERN ZONE - 83
Site: RESOLUTION FED 12-65-29-20-4NH PAD
Well: RESOLUTION FED 12-65-29-20-4NH
Wellbore: Wellbore #1
Design: Plan #2

US ROCKIES REGION PLANNING

CASING DETAILS

TVD	MD	Size
2300.00	2312.00	9-5/8
8688.00	9043.31	5-1/2

WELL DETAILS: RESOLUTION FED 12-65-29-20-4NH

Ground Level: 5954.00

WELL @ 5980.00usft (Original Well Elev)

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	
3	577.03	6.54	130.60	576.32	-12.13	14.16	2.00	130.60	-11.89	
4	4701.23	6.54	130.60	4673.68	-317.87	370.84	0.00	0.00	-311.54	
5	5028.26	0.00	0.00	5000.00	-330.00	385.00	2.00	180.00	-323.44	
6	8143.31	0.00	0.00	8115.04	-330.00	385.00	0.00	0.00	-323.44	
7	9043.31	90.00	0.97	8688.00	242.88	394.72	10.00	0.97	249.52	
8	18745.30	90.00	0.97	8688.00	9943.47	559.27	0.00	0.00	9951.51	RESOLUTION 12-65-29-20-4NH PBHL

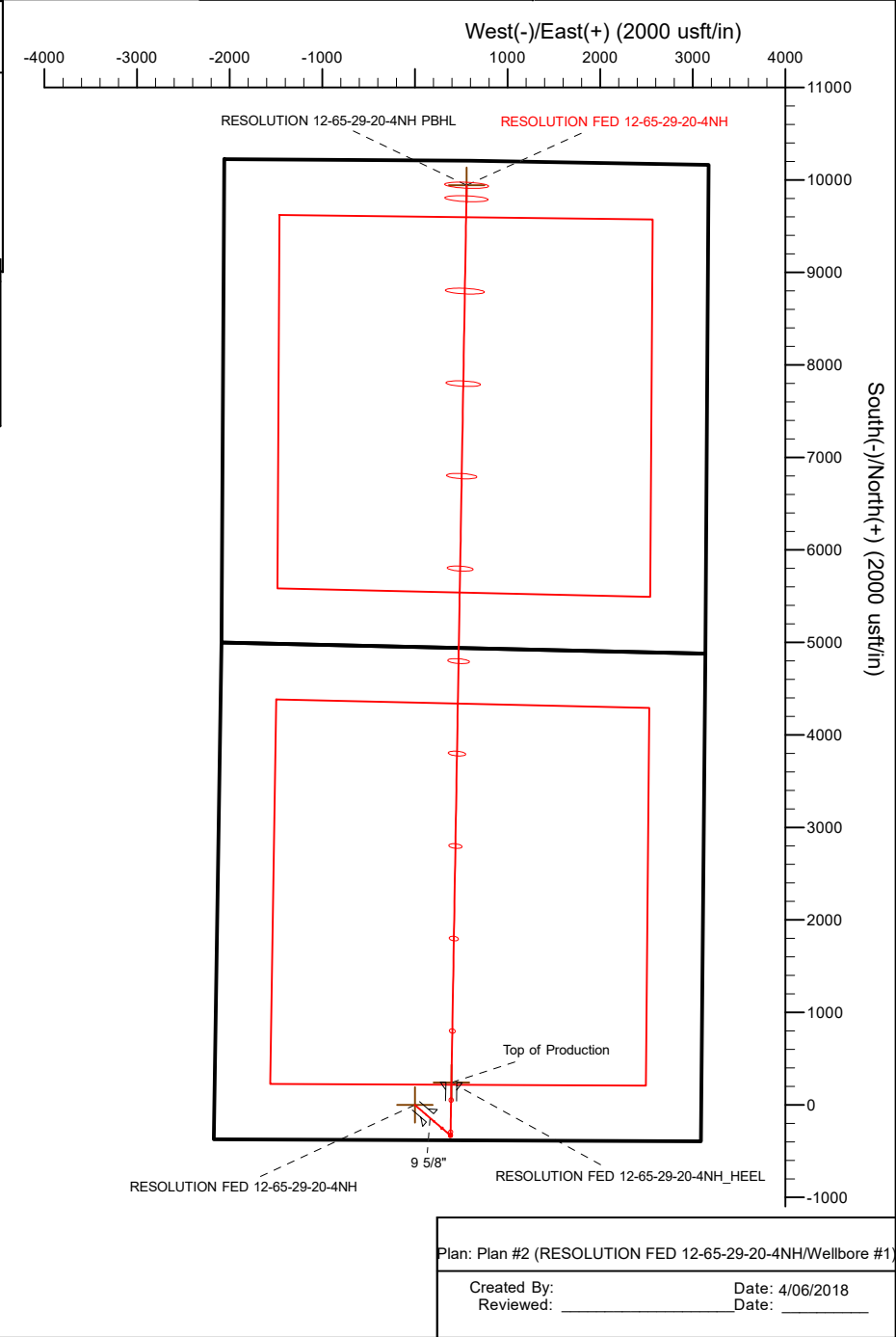
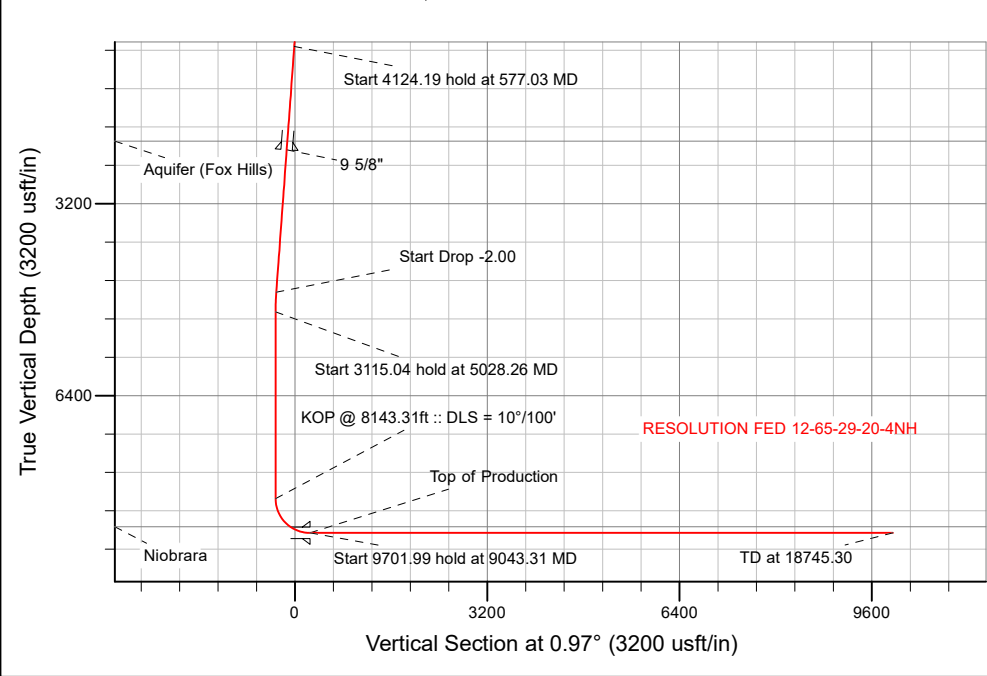
WELLBORE TARGET DETAILS (LAT/LONG)					
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
RESOLUTION 12-65-29-20-4NH_SHL	0.00	0.00	0.00	40.971886	-104.687450
RESOLUTION 12-65-29-20-4NH PBHL	8688.00	9943.47	559.27	40.999176	-104.685424

FORMATION TOP DETAILS		
TVDPATH	MDPATH	FORMATION
2155.00	2166.05	Aquifer (Fox Hills)
8584.00	8692.64	Niobrara

SHL
380' FSL
2165' FWL
SESW
Section 29

HEEL
624' FSL
2556' FEL
SESW
Section 29

TOE
266' FNL
2618' FWL
NENW
Section 20



Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RESOLUTION FED 12-65-29-20-4NH
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5980.00usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5980.00usft (Original Well Elev)
Site:	RESOLUTION FED 12-65-29-20-4NH PAD	North Reference:	True
Well:	RESOLUTION FED 12-65-29-20-4NH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

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 12-65-29-20-4NH PAD			
Site Position:		Northing:	1,597,941.36 usft	Latitude: 40.971887
From:	Lat/Long	Easting:	3,224,361.44 usft	Longitude: -104.687558
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.52 °

Well		RESOLUTION FED 12-65-29-20-4NH				
Well Position	+N/-S	-0.37 usft	Northing:	1,597,941.26 usft	Latitude:	40.971886
	+E/-W	29.83 usft	Easting:	3,224,391.26 usft	Longitude:	-104.687450
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,954.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/31/2009	9.03	67.58	53,600.16742601

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	0.97

Plan Survey Tool Program	Date	4/6/2018		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	18,745.30	Plan #2 (Wellbore #1)	APC_ISCWSA REV 2 MWD
				Fixed:v2:standard declination

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	
577.03	6.54	130.60	576.32	-12.13	14.16	2.00	2.00	0.00	130.60	
4,701.23	6.54	130.60	4,673.68	-317.87	370.84	0.00	0.00	0.00	0.00	
5,028.26	0.00	0.00	5,000.00	-330.00	385.00	2.00	-2.00	0.00	180.00	
8,143.31	0.00	0.00	8,115.04	-330.00	385.00	0.00	0.00	0.00	0.00	
9,043.31	90.00	0.97	8,688.00	242.88	394.72	10.00	10.00	0.00	0.97	
18,745.30	90.00	0.97	8,688.00	9,943.47	559.27	0.00	0.00	0.00	0.00	RESOLUTION 12-65-

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5980.00usft (Original Well Elev)
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Well:	RESOLUTION FED 12-65-29-20-4NH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

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)
0.00	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
250.00	0.00	0.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
300.00	1.00	130.60	300.00	-0.28	0.33	-0.28	2.00	2.00	0.00
400.00	3.00	130.60	399.93	-2.56	2.98	-2.50	2.00	2.00	0.00
500.00	5.00	130.60	499.68	-7.09	8.28	-6.95	2.00	2.00	0.00
577.03	6.54	130.60	576.32	-12.13	14.16	-11.89	2.00	2.00	0.00
Start 4124.19 hold at 577.03 MD									
600.00	6.54	130.60	599.14	-13.84	16.14	-13.56	0.00	0.00	0.00
700.00	6.54	130.60	698.49	-21.25	24.79	-20.83	0.00	0.00	0.00
800.00	6.54	130.60	797.84	-28.66	33.44	-28.09	0.00	0.00	0.00
900.00	6.54	130.60	897.19	-36.08	42.09	-35.36	0.00	0.00	0.00
1,000.00	6.54	130.60	996.54	-43.49	50.74	-42.62	0.00	0.00	0.00
1,100.00	6.54	130.60	1,095.89	-50.90	59.39	-49.89	0.00	0.00	0.00
1,200.00	6.54	130.60	1,195.24	-58.32	68.04	-57.16	0.00	0.00	0.00
1,300.00	6.54	130.60	1,294.58	-65.73	76.68	-64.42	0.00	0.00	0.00
1,400.00	6.54	130.60	1,393.93	-73.14	85.33	-71.69	0.00	0.00	0.00
1,500.00	6.54	130.60	1,493.28	-80.56	93.98	-78.95	0.00	0.00	0.00
1,600.00	6.54	130.60	1,592.63	-87.97	102.63	-86.22	0.00	0.00	0.00
1,700.00	6.54	130.60	1,691.98	-95.38	111.28	-93.48	0.00	0.00	0.00
1,800.00	6.54	130.60	1,791.33	-102.79	119.93	-100.75	0.00	0.00	0.00
1,900.00	6.54	130.60	1,890.68	-110.21	128.58	-108.02	0.00	0.00	0.00
2,000.00	6.54	130.60	1,990.03	-117.62	137.22	-115.28	0.00	0.00	0.00
2,100.00	6.54	130.60	2,089.38	-125.03	145.87	-122.55	0.00	0.00	0.00
2,166.05	6.54	130.60	2,155.00	-129.93	151.59	-127.35	0.00	0.00	0.00
Aquifer (Fox Hills)									
2,200.00	6.54	130.60	2,188.73	-132.45	154.52	-129.81	0.00	0.00	0.00
2,300.00	6.54	130.60	2,288.08	-139.86	163.17	-137.08	0.00	0.00	0.00
2,312.00	6.54	130.60	2,300.00	-140.75	164.21	-137.95	0.00	0.00	0.00
9 5/8"									
2,400.00	6.54	130.60	2,387.42	-147.27	171.82	-144.34	0.00	0.00	0.00
2,500.00	6.54	130.60	2,486.77	-154.69	180.47	-151.61	0.00	0.00	0.00
2,600.00	6.54	130.60	2,586.12	-162.10	189.12	-158.87	0.00	0.00	0.00
2,700.00	6.54	130.60	2,685.47	-169.51	197.76	-166.14	0.00	0.00	0.00
2,800.00	6.54	130.60	2,784.82	-176.93	206.41	-173.41	0.00	0.00	0.00
2,900.00	6.54	130.60	2,884.17	-184.34	215.06	-180.67	0.00	0.00	0.00
3,000.00	6.54	130.60	2,983.52	-191.75	223.71	-187.94	0.00	0.00	0.00
3,100.00	6.54	130.60	3,082.87	-199.16	232.36	-195.20	0.00	0.00	0.00
3,200.00	6.54	130.60	3,182.22	-206.58	241.01	-202.47	0.00	0.00	0.00
3,300.00	6.54	130.60	3,281.57	-213.99	249.66	-209.73	0.00	0.00	0.00
3,400.00	6.54	130.60	3,380.92	-221.40	258.30	-217.00	0.00	0.00	0.00
3,500.00	6.54	130.60	3,480.27	-228.82	266.95	-224.26	0.00	0.00	0.00
3,600.00	6.54	130.60	3,579.61	-236.23	275.60	-231.53	0.00	0.00	0.00
3,700.00	6.54	130.60	3,678.96	-243.64	284.25	-238.80	0.00	0.00	0.00
3,800.00	6.54	130.60	3,778.31	-251.06	292.90	-246.06	0.00	0.00	0.00
3,900.00	6.54	130.60	3,877.66	-258.47	301.55	-253.33	0.00	0.00	0.00
4,000.00	6.54	130.60	3,977.01	-265.88	310.20	-260.59	0.00	0.00	0.00
4,100.00	6.54	130.60	4,076.36	-273.30	318.84	-267.86	0.00	0.00	0.00
4,200.00	6.54	130.60	4,175.71	-280.71	327.49	-275.12	0.00	0.00	0.00
4,300.00	6.54	130.60	4,275.06	-288.12	336.14	-282.39	0.00	0.00	0.00
4,400.00	6.54	130.60	4,374.41	-295.53	344.79	-289.66	0.00	0.00	0.00

Corporate Planning Report

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5980.00usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5980.00usft (Original Well Elev)
Site:	RESOLUTION FED 12-65-29-20-4NH PAD	North Reference:	True
Well:	RESOLUTION FED 12-65-29-20-4NH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

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)
4,500.00	6.54	130.60	4,473.76	-302.95	353.44	-296.92	0.00	0.00	0.00
4,600.00	6.54	130.60	4,573.11	-310.36	362.09	-304.19	0.00	0.00	0.00
4,700.00	6.54	130.60	4,672.45	-317.77	370.74	-311.45	0.00	0.00	0.00
4,701.23	6.54	130.60	4,673.68	-317.87	370.84	-311.54	0.00	0.00	0.00
Start Drop -2.00									
4,800.00	4.57	130.60	4,771.98	-324.08	378.10	-317.64	2.00	-2.00	0.00
4,900.00	2.57	130.60	4,871.78	-328.13	382.82	-321.60	2.00	-2.00	0.00
5,000.00	0.57	130.60	4,971.74	-329.91	384.89	-323.35	2.00	-2.00	0.00
5,028.26	0.00	0.00	5,000.00	-330.00	385.00	-323.44	2.00	-2.00	0.00
Start 3115.04 hold at 5028.26 MD									
5,100.00	0.00	0.00	5,071.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,200.00	0.00	0.00	5,171.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,300.00	0.00	0.00	5,271.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,400.00	0.00	0.00	5,371.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,500.00	0.00	0.00	5,471.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,600.00	0.00	0.00	5,571.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,700.00	0.00	0.00	5,671.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,800.00	0.00	0.00	5,771.74	-330.00	385.00	-323.44	0.00	0.00	0.00
5,900.00	0.00	0.00	5,871.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,000.00	0.00	0.00	5,971.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,100.00	0.00	0.00	6,071.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,200.00	0.00	0.00	6,171.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,300.00	0.00	0.00	6,271.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,400.00	0.00	0.00	6,371.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,500.00	0.00	0.00	6,471.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,600.00	0.00	0.00	6,571.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,700.00	0.00	0.00	6,671.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,800.00	0.00	0.00	6,771.74	-330.00	385.00	-323.44	0.00	0.00	0.00
6,900.00	0.00	0.00	6,871.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,000.00	0.00	0.00	6,971.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,100.00	0.00	0.00	7,071.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,200.00	0.00	0.00	7,171.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,300.00	0.00	0.00	7,271.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,400.00	0.00	0.00	7,371.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,500.00	0.00	0.00	7,471.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,600.00	0.00	0.00	7,571.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,700.00	0.00	0.00	7,671.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,800.00	0.00	0.00	7,771.74	-330.00	385.00	-323.44	0.00	0.00	0.00
7,900.00	0.00	0.00	7,871.74	-330.00	385.00	-323.44	0.00	0.00	0.00
8,000.00	0.00	0.00	7,971.74	-330.00	385.00	-323.44	0.00	0.00	0.00
8,100.00	0.00	0.00	8,071.74	-330.00	385.00	-323.44	0.00	0.00	0.00
8,143.31	0.00	0.00	8,115.04	-330.00	385.00	-323.44	0.00	0.00	0.00
KOP @ 8143.31ft :: DLS = 10°/100'									
8,200.00	5.67	0.97	8,171.64	-327.20	385.05	-320.63	10.00	10.00	0.00
8,300.00	15.67	0.97	8,269.79	-308.71	385.36	-302.14	10.00	10.00	0.00
8,400.00	25.67	0.97	8,363.24	-273.46	385.96	-266.89	10.00	10.00	0.00
8,500.00	35.67	0.97	8,449.14	-222.53	386.82	-215.95	10.00	10.00	0.00
8,600.00	45.67	0.97	8,524.89	-157.45	387.93	-150.86	10.00	10.00	0.00
8,692.64	54.93	0.97	8,584.00	-86.26	389.13	-79.66	10.00	10.00	0.00
Niobrara									
8,700.00	55.67	0.97	8,588.19	-80.21	389.24	-73.61	10.00	10.00	0.00
8,800.00	65.67	0.97	8,637.11	6.85	390.71	13.46	10.00	10.00	0.00
8,900.00	75.67	0.97	8,670.17	101.08	392.31	107.71	10.00	10.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5980.00usft (Original Well Elev)
Site:	RESOLUTION FED 12-65-29-20-4NH PAD	North Reference:	True
Well:	RESOLUTION FED 12-65-29-20-4NH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

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)
9,000.00	85.67	0.97	8,686.36	199.62	393.98	206.26	10.00	10.00	0.00
9,043.31	90.00	0.97	8,688.00	242.88	394.72	249.53	10.00	10.00	0.00
Start 9701.99 hold at 9043.31 MD - Top of Production									
9,100.00	90.00	0.97	8,688.00	299.56	395.68	306.22	0.00	0.00	0.00
9,200.00	90.00	0.97	8,688.00	399.55	397.38	406.22	0.00	0.00	0.00
9,300.00	90.00	0.97	8,688.00	499.53	399.07	506.22	0.00	0.00	0.00
9,400.00	90.00	0.97	8,688.00	599.52	400.77	606.22	0.00	0.00	0.00
9,500.00	90.00	0.97	8,688.00	699.50	402.46	706.22	0.00	0.00	0.00
9,600.00	90.00	0.97	8,688.00	799.49	404.16	806.22	0.00	0.00	0.00
9,700.00	90.00	0.97	8,688.00	899.48	405.86	906.22	0.00	0.00	0.00
9,800.00	90.00	0.97	8,688.00	999.46	407.55	1,006.22	0.00	0.00	0.00
9,900.00	90.00	0.97	8,688.00	1,099.45	409.25	1,106.22	0.00	0.00	0.00
10,000.00	90.00	0.97	8,688.00	1,199.43	410.94	1,206.22	0.00	0.00	0.00
10,100.00	90.00	0.97	8,688.00	1,299.42	412.64	1,306.22	0.00	0.00	0.00
10,200.00	90.00	0.97	8,688.00	1,399.40	414.34	1,406.22	0.00	0.00	0.00
10,300.00	90.00	0.97	8,688.00	1,499.39	416.03	1,506.22	0.00	0.00	0.00
10,400.00	90.00	0.97	8,688.00	1,599.37	417.73	1,606.22	0.00	0.00	0.00
10,500.00	90.00	0.97	8,688.00	1,699.36	419.43	1,706.22	0.00	0.00	0.00
10,600.00	90.00	0.97	8,688.00	1,799.35	421.12	1,806.22	0.00	0.00	0.00
10,700.00	90.00	0.97	8,688.00	1,899.33	422.82	1,906.22	0.00	0.00	0.00
10,800.00	90.00	0.97	8,688.00	1,999.32	424.51	2,006.22	0.00	0.00	0.00
10,900.00	90.00	0.97	8,688.00	2,099.30	426.21	2,106.22	0.00	0.00	0.00
11,000.00	90.00	0.97	8,688.00	2,199.29	427.91	2,206.22	0.00	0.00	0.00
11,100.00	90.00	0.97	8,688.00	2,299.27	429.60	2,306.22	0.00	0.00	0.00
11,200.00	90.00	0.97	8,688.00	2,399.26	431.30	2,406.22	0.00	0.00	0.00
11,300.00	90.00	0.97	8,688.00	2,499.25	432.99	2,506.22	0.00	0.00	0.00
11,400.00	90.00	0.97	8,688.00	2,599.23	434.69	2,606.22	0.00	0.00	0.00
11,500.00	90.00	0.97	8,688.00	2,699.22	436.39	2,706.22	0.00	0.00	0.00
11,600.00	90.00	0.97	8,688.00	2,799.20	438.08	2,806.22	0.00	0.00	0.00
11,700.00	90.00	0.97	8,688.00	2,899.19	439.78	2,906.22	0.00	0.00	0.00
11,800.00	90.00	0.97	8,688.00	2,999.17	441.47	3,006.22	0.00	0.00	0.00
11,900.00	90.00	0.97	8,688.00	3,099.16	443.17	3,106.22	0.00	0.00	0.00
12,000.00	90.00	0.97	8,688.00	3,199.14	444.87	3,206.22	0.00	0.00	0.00
12,100.00	90.00	0.97	8,688.00	3,299.13	446.56	3,306.22	0.00	0.00	0.00
12,200.00	90.00	0.97	8,688.00	3,399.12	448.26	3,406.22	0.00	0.00	0.00
12,300.00	90.00	0.97	8,688.00	3,499.10	449.96	3,506.22	0.00	0.00	0.00
12,400.00	90.00	0.97	8,688.00	3,599.09	451.65	3,606.22	0.00	0.00	0.00
12,500.00	90.00	0.97	8,688.00	3,699.07	453.35	3,706.22	0.00	0.00	0.00
12,600.00	90.00	0.97	8,688.00	3,799.06	455.04	3,806.22	0.00	0.00	0.00
12,700.00	90.00	0.97	8,688.00	3,899.04	456.74	3,906.22	0.00	0.00	0.00
12,800.00	90.00	0.97	8,688.00	3,999.03	458.44	4,006.22	0.00	0.00	0.00
12,900.00	90.00	0.97	8,688.00	4,099.02	460.13	4,106.22	0.00	0.00	0.00
13,000.00	90.00	0.97	8,688.00	4,199.00	461.83	4,206.22	0.00	0.00	0.00
13,100.00	90.00	0.97	8,688.00	4,298.99	463.52	4,306.22	0.00	0.00	0.00
13,200.00	90.00	0.97	8,688.00	4,398.97	465.22	4,406.22	0.00	0.00	0.00
13,300.00	90.00	0.97	8,688.00	4,498.96	466.92	4,506.22	0.00	0.00	0.00
13,400.00	90.00	0.97	8,688.00	4,598.94	468.61	4,606.22	0.00	0.00	0.00
13,500.00	90.00	0.97	8,688.00	4,698.93	470.31	4,706.22	0.00	0.00	0.00
13,600.00	90.00	0.97	8,688.00	4,798.91	472.00	4,806.22	0.00	0.00	0.00
13,700.00	90.00	0.97	8,688.00	4,898.90	473.70	4,906.22	0.00	0.00	0.00
13,800.00	90.00	0.97	8,688.00	4,998.89	475.40	5,006.22	0.00	0.00	0.00
13,900.00	90.00	0.97	8,688.00	5,098.87	477.09	5,106.22	0.00	0.00	0.00
14,000.00	90.00	0.97	8,688.00	5,198.86	478.79	5,206.22	0.00	0.00	0.00

Planning Report

Database: Company: Project: Site: Well: Wellbore: Design:	PLANNING US ROCKIES REGION PLANNING COLORADO NORTHERN ZONE - 83 RESOLUTION FED 12-65-29-20-4NH PAD RESOLUTION FED 12-65-29-20-4NH Wellbore #1 Plan #2	Local Co-ordinate Reference: TVD Reference: MD Reference: North Reference: Survey Calculation Method:	Well RESOLUTION FED 12-65-29-20-4NH WELL @ 5980.00usft (Original Well Elev) WELL @ 5980.00usft (Original Well Elev) True Minimum Curvature
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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)	
14,100.00	90.00	0.97	8,688.00	5,298.84	480.49	5,306.22	0.00	0.00	0.00	
14,200.00	90.00	0.97	8,688.00	5,398.83	482.18	5,406.22	0.00	0.00	0.00	
14,300.00	90.00	0.97	8,688.00	5,498.81	483.88	5,506.22	0.00	0.00	0.00	
14,400.00	90.00	0.97	8,688.00	5,598.80	485.57	5,606.22	0.00	0.00	0.00	
14,500.00	90.00	0.97	8,688.00	5,698.79	487.27	5,706.22	0.00	0.00	0.00	
14,600.00	90.00	0.97	8,688.00	5,798.77	488.97	5,806.22	0.00	0.00	0.00	
14,700.00	90.00	0.97	8,688.00	5,898.76	490.66	5,906.22	0.00	0.00	0.00	
14,800.00	90.00	0.97	8,688.00	5,998.74	492.36	6,006.22	0.00	0.00	0.00	
14,900.00	90.00	0.97	8,688.00	6,098.73	494.05	6,106.22	0.00	0.00	0.00	
15,000.00	90.00	0.97	8,688.00	6,198.71	495.75	6,206.22	0.00	0.00	0.00	
15,100.00	90.00	0.97	8,688.00	6,298.70	497.45	6,306.22	0.00	0.00	0.00	
15,200.00	90.00	0.97	8,688.00	6,398.68	499.14	6,406.22	0.00	0.00	0.00	
15,300.00	90.00	0.97	8,688.00	6,498.67	500.84	6,506.22	0.00	0.00	0.00	
15,400.00	90.00	0.97	8,688.00	6,598.66	502.53	6,606.22	0.00	0.00	0.00	
15,500.00	90.00	0.97	8,688.00	6,698.64	504.23	6,706.22	0.00	0.00	0.00	
15,600.00	90.00	0.97	8,688.00	6,798.63	505.93	6,806.22	0.00	0.00	0.00	
15,700.00	90.00	0.97	8,688.00	6,898.61	507.62	6,906.22	0.00	0.00	0.00	
15,800.00	90.00	0.97	8,688.00	6,998.60	509.32	7,006.22	0.00	0.00	0.00	
15,900.00	90.00	0.97	8,688.00	7,098.58	511.02	7,106.22	0.00	0.00	0.00	
16,000.00	90.00	0.97	8,688.00	7,198.57	512.71	7,206.22	0.00	0.00	0.00	
16,100.00	90.00	0.97	8,688.00	7,298.55	514.41	7,306.22	0.00	0.00	0.00	
16,200.00	90.00	0.97	8,688.00	7,398.54	516.10	7,406.22	0.00	0.00	0.00	
16,300.00	90.00	0.97	8,688.00	7,498.53	517.80	7,506.22	0.00	0.00	0.00	
16,400.00	90.00	0.97	8,688.00	7,598.51	519.50	7,606.22	0.00	0.00	0.00	
16,500.00	90.00	0.97	8,688.00	7,698.50	521.19	7,706.22	0.00	0.00	0.00	
16,600.00	90.00	0.97	8,688.00	7,798.48	522.89	7,806.22	0.00	0.00	0.00	
16,700.00	90.00	0.97	8,688.00	7,898.47	524.58	7,906.22	0.00	0.00	0.00	
16,800.00	90.00	0.97	8,688.00	7,998.45	526.28	8,006.22	0.00	0.00	0.00	
16,900.00	90.00	0.97	8,688.00	8,098.44	527.98	8,106.22	0.00	0.00	0.00	
17,000.00	90.00	0.97	8,688.00	8,198.43	529.67	8,206.22	0.00	0.00	0.00	
17,100.00	90.00	0.97	8,688.00	8,298.41	531.37	8,306.22	0.00	0.00	0.00	
17,200.00	90.00	0.97	8,688.00	8,398.40	533.06	8,406.22	0.00	0.00	0.00	
17,300.00	90.00	0.97	8,688.00	8,498.38	534.76	8,506.22	0.00	0.00	0.00	
17,400.00	90.00	0.97	8,688.00	8,598.37	536.46	8,606.22	0.00	0.00	0.00	
17,500.00	90.00	0.97	8,688.00	8,698.35	538.15	8,706.22	0.00	0.00	0.00	
17,600.00	90.00	0.97	8,688.00	8,798.34	539.85	8,806.22	0.00	0.00	0.00	
17,700.00	90.00	0.97	8,688.00	8,898.32	541.55	8,906.22	0.00	0.00	0.00	
17,800.00	90.00	0.97	8,688.00	8,998.31	543.24	9,006.22	0.00	0.00	0.00	
17,900.00	90.00	0.97	8,688.00	9,098.30	544.94	9,106.22	0.00	0.00	0.00	
18,000.00	90.00	0.97	8,688.00	9,198.28	546.63	9,206.22	0.00	0.00	0.00	
18,100.00	90.00	0.97	8,688.00	9,298.27	548.33	9,306.22	0.00	0.00	0.00	
18,200.00	90.00	0.97	8,688.00	9,398.25	550.03	9,406.22	0.00	0.00	0.00	
18,300.00	90.00	0.97	8,688.00	9,498.24	551.72	9,506.22	0.00	0.00	0.00	
18,400.00	90.00	0.97	8,688.00	9,598.22	553.42	9,606.22	0.00	0.00	0.00	
18,500.00	90.00	0.97	8,688.00	9,698.21	555.11	9,706.22	0.00	0.00	0.00	
18,600.00	90.00	0.97	8,688.00	9,798.20	556.81	9,806.22	0.00	0.00	0.00	
18,700.00	90.00	0.97	8,688.00	9,898.18	558.51	9,906.22	0.00	0.00	0.00	
18,745.30	90.00	0.97	8,688.00	9,943.47	559.27	9,951.52	0.00	0.00	0.00	
TD at 18745.30										

Corporate Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well RESOLUTION FED 12-65-29-20-4NH
Company:	US ROCKIES REGION PLANNING	TVD Reference:	WELL @ 5980.00usft (Original Well Elev)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	WELL @ 5980.00usft (Original Well Elev)
Site:	RESOLUTION FED 12-65-29-20-4NH PAD	North Reference:	True
Well:	RESOLUTION FED 12-65-29-20-4NH	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
2,312.00	2,300.00	9 5/8"	9-5/8	13-1/2	
9,043.31	8,688.00	Top of Production	5-1/2	7-7/8	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,166.05	2,155.00	Aquifer (Fox Hills)	Aquifer (Water)		
8,692.64	8,584.00	Niobrara	Oil/Gas		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
250.00	250.00	0.00	0.00	Start Build 2.00
577.03	576.32	-12.13	14.16	Start 4124.19 hold at 577.03 MD
4,701.23	4,673.68	-317.87	370.84	Start Drop -2.00
5,028.26	5,000.00	-330.00	385.00	Start 3115.04 hold at 5028.26 MD
8,143.31	8,115.04	-330.00	385.00	KOP @ 8143.31ft :: DLS = 10°/100'
9,043.31	8,688.00	242.88	394.72	Start 9701.99 hold at 9043.31 MD
18,745.30	8,688.00	9,943.47	559.27	TD at 18745.30