

US ROCKIES WATTENBERG PLANNING

**WELD-NAD83-UTMFT13N
1N-67W-10 JZM 13-10HZ Pad
JZM 4C-3HZ**

Plan A

Plan: Permit Rev-1

Standard Planning Report

19 August, 2015

Project: WELD-NAD83-UTMFT13N

Site: 1N-67W-10 JZM 13-10HZ Pad

Well: JZM 4C-3HZ

Wellbore: Plan A

Design: Permit Rev-1

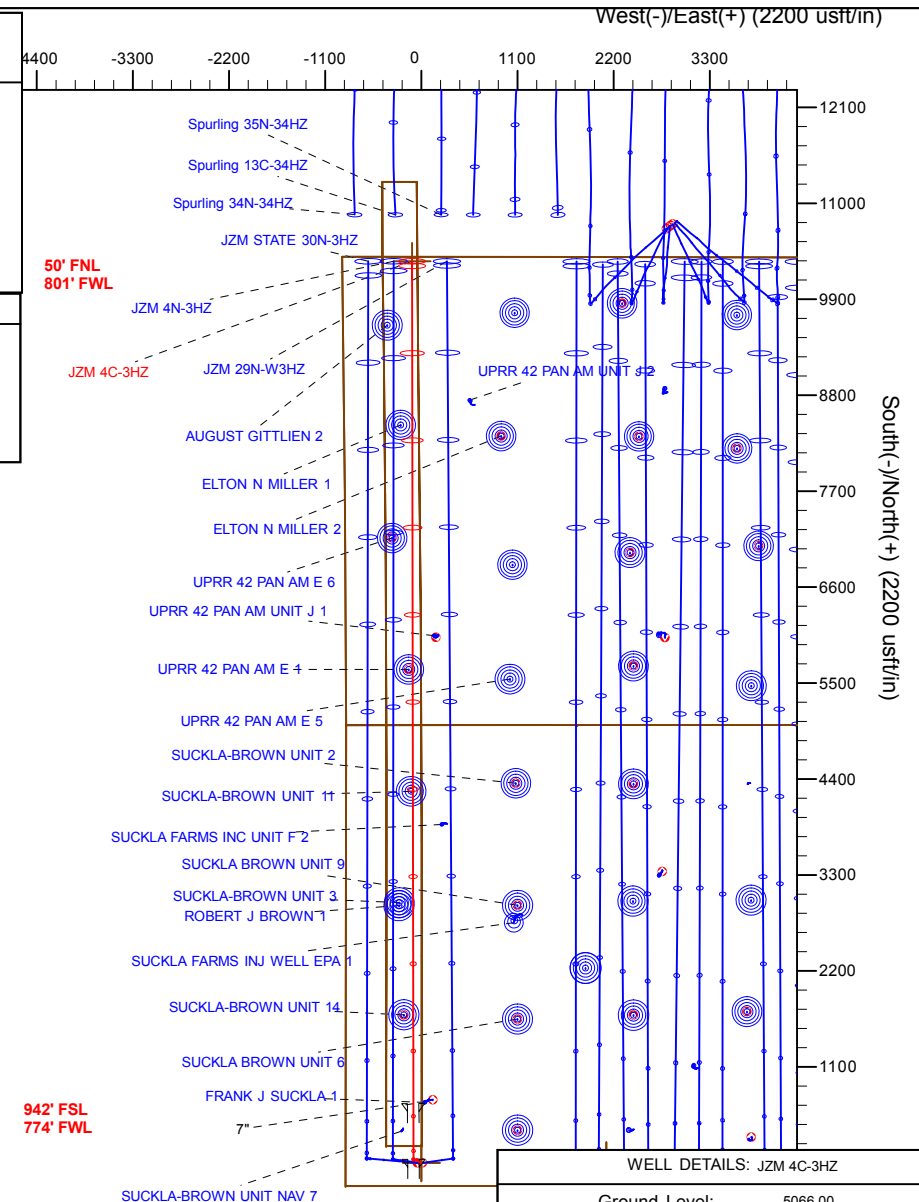
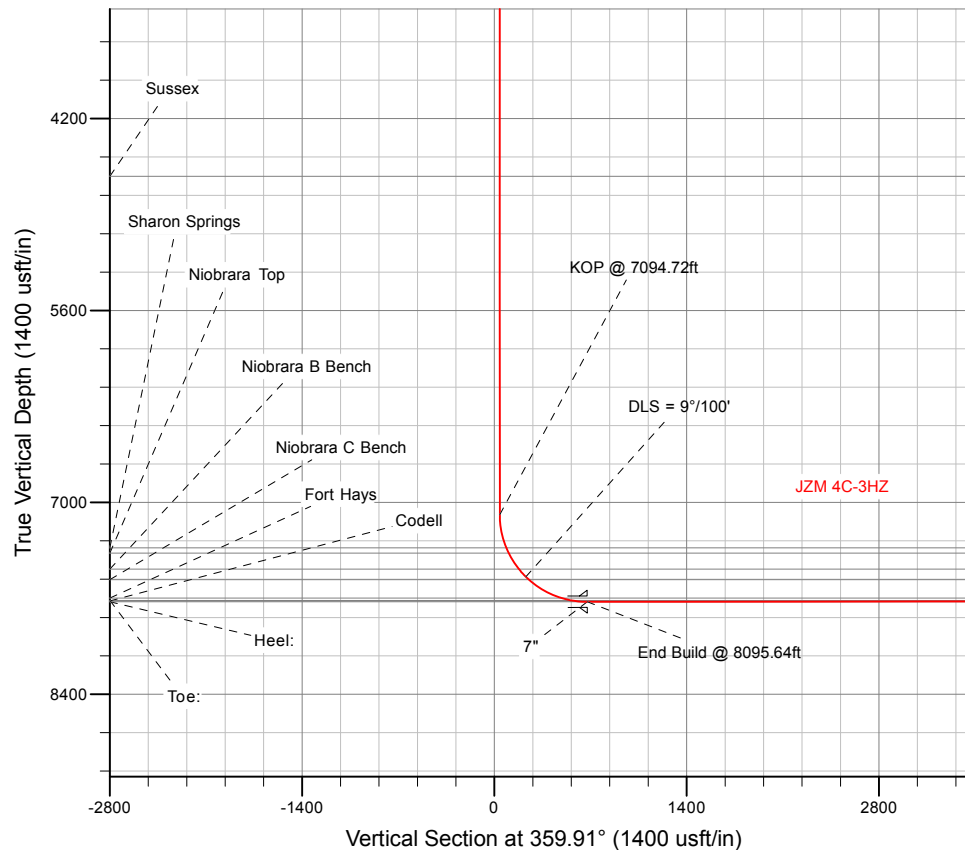
US ROCKIES WATTENBERG PLANNING

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	900.00	9.00	294.00	897.54	19.13	-42.96	1.50	294.00	19.20	
4	1000.00	9.00	294.00	996.30	25.49	-57.25	0.00	0.00	25.58	
5	1450.00	0.00	0.00	1444.46	39.84	-89.47	2.00	180.00	39.98	
6	7094.92	0.00	0.00	7089.38	39.84	-89.47	0.00	0.00	39.98	
7	8095.64	90.07	359.91	7726.00	677.18	-90.44	9.00	359.91	677.32	
8	17753.66	90.07	359.91	7715.00	10335.18	-105.17	0.00	0.00	10335.33	JZM 4C-3HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
JZM 4C-3HZ_SHL	0.00	0.00	0.00	40.059001	-104.883228	Point
JZM 4C-3HZ_BHL	7715.00	10335.18	-105.17	40.087383	-104.883604	Point



WELL DETAILS: JZM 4C-3HZ

Ground Level: 5066.00

RKB = 17' @ 5083.00usft (D Rig)

Plan: Permit Rev-1 (JZM 4C-3HZ/Plan A)

Created By: Clint Eshelman

Date: 8/19/2015

Reviewed: _____

Date: _____

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Project	WELD-NAD83-UTMFT13N		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Zone 13N (108 W to 102 W)		

Site		1N-67W-10 JZM 13-10HZ Pad			
Site Position:		Northing:	14,548,239.60 usft	Latitude:	40.059001
From:	Lat/Long	Easting:	1,673,045.56 usft	Longitude:	-104.883389
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.08 °

Well	JZM 4C-3HZ					
Well Position	+N/-S	0.00 usft	Northing:	14,548,239.66 usft	Latitude:	40.059001
	+E/-W	45.05 usft	Easting:	1,673,090.61 usft	Longitude:	-104.883228
Position Uncertainty		3.28 usft	Wellhead Elevation:	0.00 usft	Ground Level:	5,066.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/19/2015	8.34	66.61	52,498

Design	Permit Rev-1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	359.91

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
900.00	9.00	294.00	897.54	19.13	-42.96	1.50	1.50	0.00	294.00	
1,000.00	9.00	294.00	996.30	25.49	-57.25	0.00	0.00	0.00	0.00	
1,450.00	0.00	0.00	1,444.46	39.84	-89.47	2.00	-2.00	0.00	180.00	
7,094.92	0.00	0.00	7,089.38	39.84	-89.47	0.00	0.00	0.00	0.00	
8,095.64	90.07	359.91	7,726.00	677.18	-90.44	9.00	9.00	-0.01	359.91	
17,753.66	90.07	359.91	7,715.00	10,335.18	-105.17	0.00	0.00	0.00	0.00	JZM 4C-3HZ_BHL

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Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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)
0.00	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
Begin Nudge @ 300.00ft									
400.00	1.50	294.00	399.99	0.53	-1.20	0.53	1.50	1.50	0.00
500.00	3.00	294.00	499.91	2.13	-4.78	2.14	1.50	1.50	0.00
600.00	4.50	294.00	599.69	4.79	-10.76	4.81	1.50	1.50	0.00
700.00	6.00	294.00	699.27	8.51	-19.12	8.54	1.50	1.50	0.00
800.00	7.50	294.00	798.57	13.29	-29.85	13.34	1.50	1.50	0.00
900.00	9.00	294.00	897.54	19.13	-42.96	19.20	1.50	1.50	0.00
End Nudge @ 900.00ft									
1,000.00	9.00	294.00	996.30	25.49	-57.25	25.58	0.00	0.00	0.00
Begin Drop @ 1000.00ft									
1,100.00	7.00	294.00	1,095.33	31.15	-69.97	31.26	2.00	-2.00	0.00
1,200.00	5.00	294.00	1,194.77	35.40	-79.51	35.53	2.00	-2.00	0.00
1,300.00	3.00	294.00	1,294.52	38.24	-85.89	38.37	2.00	-2.00	0.00
1,381.54	1.37	294.00	1,376.00	39.50	-88.73	39.64	2.00	-2.00	0.00
Fox Hills									
1,400.00	1.00	294.00	1,394.46	39.66	-89.07	39.80	2.00	-2.00	0.00
1,450.00	0.00	0.00	1,444.46	39.84	-89.47	39.98	2.00	-2.00	0.00
End Drop @ 1450.00ft									
1,500.00	0.00	0.00	1,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
1,600.00	0.00	0.00	1,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
1,700.00	0.00	0.00	1,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
1,800.00	0.00	0.00	1,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
1,805.54	0.00	0.00	1,800.00	39.84	-89.47	39.98	0.00	0.00	0.00
9 5/8"									
1,900.00	0.00	0.00	1,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,000.00	0.00	0.00	1,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,100.00	0.00	0.00	2,094.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,200.00	0.00	0.00	2,194.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,300.00	0.00	0.00	2,294.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,400.00	0.00	0.00	2,394.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,500.00	0.00	0.00	2,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,600.00	0.00	0.00	2,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,700.00	0.00	0.00	2,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,800.00	0.00	0.00	2,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
2,900.00	0.00	0.00	2,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,000.00	0.00	0.00	2,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,100.00	0.00	0.00	3,094.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,200.00	0.00	0.00	3,194.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,300.00	0.00	0.00	3,294.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,400.00	0.00	0.00	3,394.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,500.00	0.00	0.00	3,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,600.00	0.00	0.00	3,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,700.00	0.00	0.00	3,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,800.00	0.00	0.00	3,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
3,900.00	0.00	0.00	3,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,000.00	0.00	0.00	3,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,100.00	0.00	0.00	4,094.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,200.00	0.00	0.00	4,194.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,300.00	0.00	0.00	4,294.46	39.84	-89.47	39.98	0.00	0.00	0.00

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Planning Report

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Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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)
4,400.00	0.00	0.00	4,394.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,500.00	0.00	0.00	4,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,600.00	0.00	0.00	4,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,627.54	0.00	0.00	4,622.00	39.84	-89.47	39.98	0.00	0.00	0.00
Sussex									
4,700.00	0.00	0.00	4,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,800.00	0.00	0.00	4,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
4,900.00	0.00	0.00	4,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,000.00	0.00	0.00	4,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,100.00	0.00	0.00	5,094.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,200.00	0.00	0.00	5,194.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,300.00	0.00	0.00	5,294.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,400.00	0.00	0.00	5,394.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,500.00	0.00	0.00	5,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,600.00	0.00	0.00	5,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,700.00	0.00	0.00	5,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,800.00	0.00	0.00	5,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
5,900.00	0.00	0.00	5,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,000.00	0.00	0.00	5,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,100.00	0.00	0.00	6,094.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,200.00	0.00	0.00	6,194.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,300.00	0.00	0.00	6,294.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,400.00	0.00	0.00	6,394.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,500.00	0.00	0.00	6,494.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,600.00	0.00	0.00	6,594.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,700.00	0.00	0.00	6,694.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,800.00	0.00	0.00	6,794.46	39.84	-89.47	39.98	0.00	0.00	0.00
6,900.00	0.00	0.00	6,894.46	39.84	-89.47	39.98	0.00	0.00	0.00
7,000.00	0.00	0.00	6,994.46	39.84	-89.47	39.98	0.00	0.00	0.00
7,094.72	0.00	0.00	7,089.18	39.84	-89.47	39.98	0.00	0.00	0.00
KOP @ 7094.72ft									
7,094.92	0.00	0.00	7,089.38	39.84	-89.47	39.98	0.00	0.00	0.00
7,100.00	0.46	359.91	7,094.46	39.86	-89.47	40.00	9.00	9.00	0.00
7,200.00	9.46	359.91	7,193.98	48.49	-89.49	48.63	9.00	9.00	0.00
7,300.00	18.46	359.91	7,290.93	72.58	-89.52	72.72	9.00	9.00	0.00
7,343.92	22.41	359.91	7,332.07	87.91	-89.55	88.05	9.00	9.00	0.00
Sharon Springs									
7,384.50	26.06	359.91	7,369.07	104.57	-89.57	104.71	9.00	9.00	0.00
Niobrara Top									
7,400.00	27.46	359.91	7,382.91	111.55	-89.58	111.69	9.00	9.00	0.00
7,500.00	36.46	359.91	7,467.67	164.42	-89.66	164.56	9.00	9.00	0.00
7,525.59	38.76	359.91	7,487.94	180.04	-89.69	180.18	9.00	9.00	0.00
Niobrara B Bench									
7,600.00	45.46	359.91	7,543.11	229.90	-89.76	230.04	9.00	9.00	0.00
DLS = 9°/100'									
7,630.69	48.22	359.91	7,564.10	252.29	-89.80	252.43	9.00	9.00	0.00
Niobrara C Bench									
7,700.00	54.46	359.91	7,607.38	306.38	-89.88	306.52	9.00	9.00	0.00
7,800.00	63.46	359.91	7,658.90	391.97	-90.01	392.11	9.00	9.00	0.00
7,900.00	72.46	359.91	7,696.39	484.57	-90.15	484.71	9.00	9.00	0.00
7,909.22	73.29	359.91	7,699.10	493.38	-90.16	493.52	9.00	9.00	0.00
Fort Hays									
8,000.00	81.46	359.91	7,718.93	581.89	-90.30	582.03	9.00	9.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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)
8,006.52	82.04	359.91	7,719.87	588.34	-90.31	588.48	9.00	9.00	0.00
Codell									
8,095.64	90.06	359.91	7,726.00	677.18	-90.44	677.32	9.00	9.00	0.00
End Build @ 8095.64ft - Heel: - 7"									
8,100.00	90.07	359.91	7,725.99	681.54	-90.45	681.68	0.01	0.01	0.00
8,200.00	90.07	359.91	7,725.88	781.53	-90.60	781.68	0.00	0.00	0.00
8,300.00	90.07	359.91	7,725.76	881.53	-90.76	881.68	0.00	0.00	0.00
8,400.00	90.07	359.91	7,725.65	981.53	-90.91	981.68	0.00	0.00	0.00
8,500.00	90.07	359.91	7,725.54	1,081.53	-91.06	1,081.68	0.00	0.00	0.00
8,600.00	90.07	359.91	7,725.42	1,181.53	-91.21	1,181.68	0.00	0.00	0.00
8,700.00	90.07	359.91	7,725.31	1,281.53	-91.37	1,281.68	0.00	0.00	0.00
8,800.00	90.07	359.91	7,725.19	1,381.53	-91.52	1,381.68	0.00	0.00	0.00
8,900.00	90.07	359.91	7,725.08	1,481.53	-91.67	1,481.68	0.00	0.00	0.00
9,000.00	90.07	359.91	7,724.97	1,581.53	-91.82	1,581.68	0.00	0.00	0.00
9,100.00	90.07	359.91	7,724.85	1,681.53	-91.98	1,681.68	0.00	0.00	0.00
9,200.00	90.07	359.91	7,724.74	1,781.53	-92.13	1,781.68	0.00	0.00	0.00
9,300.00	90.07	359.91	7,724.62	1,881.53	-92.28	1,881.68	0.00	0.00	0.00
9,400.00	90.07	359.91	7,724.51	1,981.53	-92.43	1,981.68	0.00	0.00	0.00
9,500.00	90.07	359.91	7,724.40	2,081.53	-92.59	2,081.68	0.00	0.00	0.00
9,600.00	90.07	359.91	7,724.28	2,181.53	-92.74	2,181.68	0.00	0.00	0.00
9,700.00	90.07	359.91	7,724.17	2,281.53	-92.89	2,281.68	0.00	0.00	0.00
9,800.00	90.07	359.91	7,724.06	2,381.53	-93.04	2,381.68	0.00	0.00	0.00
9,900.00	90.07	359.91	7,723.94	2,481.53	-93.20	2,481.68	0.00	0.00	0.00
10,000.00	90.07	359.91	7,723.83	2,581.53	-93.35	2,581.68	0.00	0.00	0.00
10,100.00	90.07	359.91	7,723.71	2,681.53	-93.50	2,681.68	0.00	0.00	0.00
10,200.00	90.07	359.91	7,723.60	2,781.53	-93.65	2,781.68	0.00	0.00	0.00
10,300.00	90.07	359.91	7,723.49	2,881.53	-93.81	2,881.68	0.00	0.00	0.00
10,400.00	90.07	359.91	7,723.37	2,981.53	-93.96	2,981.67	0.00	0.00	0.00
10,500.00	90.07	359.91	7,723.26	3,081.53	-94.11	3,081.67	0.00	0.00	0.00
10,600.00	90.07	359.91	7,723.14	3,181.53	-94.26	3,181.67	0.00	0.00	0.00
10,700.00	90.07	359.91	7,723.03	3,281.53	-94.42	3,281.67	0.00	0.00	0.00
10,800.00	90.07	359.91	7,722.92	3,381.53	-94.57	3,381.67	0.00	0.00	0.00
10,900.00	90.07	359.91	7,722.80	3,481.53	-94.72	3,481.67	0.00	0.00	0.00
11,000.00	90.07	359.91	7,722.69	3,581.53	-94.87	3,581.67	0.00	0.00	0.00
11,100.00	90.07	359.91	7,722.58	3,681.53	-95.02	3,681.67	0.00	0.00	0.00
11,200.00	90.07	359.91	7,722.46	3,781.53	-95.18	3,781.67	0.00	0.00	0.00
11,300.00	90.07	359.91	7,722.35	3,881.53	-95.33	3,881.67	0.00	0.00	0.00
11,400.00	90.07	359.91	7,722.23	3,981.53	-95.48	3,981.67	0.00	0.00	0.00
11,500.00	90.07	359.91	7,722.12	4,081.53	-95.63	4,081.67	0.00	0.00	0.00
11,600.00	90.07	359.91	7,722.01	4,181.53	-95.79	4,181.67	0.00	0.00	0.00
11,700.00	90.07	359.91	7,721.89	4,281.53	-95.94	4,281.67	0.00	0.00	0.00
11,800.00	90.07	359.91	7,721.78	4,381.53	-96.09	4,381.67	0.00	0.00	0.00
11,900.00	90.07	359.91	7,721.66	4,481.53	-96.24	4,481.67	0.00	0.00	0.00
12,000.00	90.07	359.91	7,721.55	4,581.53	-96.40	4,581.67	0.00	0.00	0.00
12,100.00	90.07	359.91	7,721.44	4,681.53	-96.55	4,681.67	0.00	0.00	0.00
12,200.00	90.07	359.91	7,721.32	4,781.53	-96.70	4,781.67	0.00	0.00	0.00
12,300.00	90.07	359.91	7,721.21	4,881.53	-96.85	4,881.67	0.00	0.00	0.00
12,400.00	90.07	359.91	7,721.10	4,981.53	-97.01	4,981.67	0.00	0.00	0.00
12,500.00	90.07	359.91	7,720.98	5,081.53	-97.16	5,081.67	0.00	0.00	0.00
12,600.00	90.07	359.91	7,720.87	5,181.53	-97.31	5,181.67	0.00	0.00	0.00
12,700.00	90.07	359.91	7,720.75	5,281.53	-97.46	5,281.67	0.00	0.00	0.00
12,800.00	90.07	359.91	7,720.64	5,381.53	-97.62	5,381.67	0.00	0.00	0.00
12,900.00	90.07	359.91	7,720.53	5,481.53	-97.77	5,481.67	0.00	0.00	0.00
13,000.00	90.07	359.91	7,720.41	5,581.53	-97.92	5,581.67	0.00	0.00	0.00

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-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)
13,100.00	90.07	359.91	7,720.30	5,681.53	-98.07	5,681.67	0.00	0.00	0.00
13,200.00	90.07	359.91	7,720.18	5,781.53	-98.23	5,781.67	0.00	0.00	0.00
13,300.00	90.07	359.91	7,720.07	5,881.53	-98.38	5,881.67	0.00	0.00	0.00
13,400.00	90.07	359.91	7,719.96	5,981.53	-98.53	5,981.67	0.00	0.00	0.00
13,500.00	90.07	359.91	7,719.84	6,081.53	-98.68	6,081.67	0.00	0.00	0.00
13,600.00	90.07	359.91	7,719.73	6,181.53	-98.84	6,181.67	0.00	0.00	0.00
13,700.00	90.07	359.91	7,719.62	6,281.53	-98.99	6,281.67	0.00	0.00	0.00
13,800.00	90.07	359.91	7,719.50	6,381.52	-99.14	6,381.67	0.00	0.00	0.00
13,900.00	90.07	359.91	7,719.39	6,481.52	-99.29	6,481.67	0.00	0.00	0.00
14,000.00	90.07	359.91	7,719.27	6,581.52	-99.45	6,581.67	0.00	0.00	0.00
14,100.00	90.07	359.91	7,719.16	6,681.52	-99.60	6,681.67	0.00	0.00	0.00
14,200.00	90.07	359.91	7,719.05	6,781.52	-99.75	6,781.67	0.00	0.00	0.00
14,300.00	90.07	359.91	7,718.93	6,881.52	-99.90	6,881.67	0.00	0.00	0.00
14,400.00	90.07	359.91	7,718.82	6,981.52	-100.06	6,981.67	0.00	0.00	0.00
14,500.00	90.07	359.91	7,718.70	7,081.52	-100.21	7,081.67	0.00	0.00	0.00
14,600.00	90.07	359.91	7,718.59	7,181.52	-100.36	7,181.67	0.00	0.00	0.00
14,700.00	90.07	359.91	7,718.48	7,281.52	-100.51	7,281.67	0.00	0.00	0.00
14,800.00	90.07	359.91	7,718.36	7,381.52	-100.67	7,381.67	0.00	0.00	0.00
14,900.00	90.07	359.91	7,718.25	7,481.52	-100.82	7,481.67	0.00	0.00	0.00
15,000.00	90.07	359.91	7,718.14	7,581.52	-100.97	7,581.67	0.00	0.00	0.00
15,100.00	90.07	359.91	7,718.02	7,681.52	-101.12	7,681.67	0.00	0.00	0.00
15,200.00	90.07	359.91	7,717.91	7,781.52	-101.28	7,781.67	0.00	0.00	0.00
15,300.00	90.07	359.91	7,717.79	7,881.52	-101.43	7,881.67	0.00	0.00	0.00
15,400.00	90.07	359.91	7,717.68	7,981.52	-101.58	7,981.67	0.00	0.00	0.00
15,500.00	90.07	359.91	7,717.57	8,081.52	-101.73	8,081.67	0.00	0.00	0.00
15,600.00	90.07	359.91	7,717.45	8,181.52	-101.88	8,181.67	0.00	0.00	0.00
15,700.00	90.07	359.91	7,717.34	8,281.52	-102.04	8,281.67	0.00	0.00	0.00
15,800.00	90.07	359.91	7,717.22	8,381.52	-102.19	8,381.67	0.00	0.00	0.00
15,900.00	90.07	359.91	7,717.11	8,481.52	-102.34	8,481.67	0.00	0.00	0.00
16,000.00	90.07	359.91	7,717.00	8,581.52	-102.49	8,581.67	0.00	0.00	0.00
16,100.00	90.07	359.91	7,716.88	8,681.52	-102.65	8,681.67	0.00	0.00	0.00
16,200.00	90.07	359.91	7,716.77	8,781.52	-102.80	8,781.67	0.00	0.00	0.00
16,300.00	90.07	359.91	7,716.66	8,881.52	-102.95	8,881.67	0.00	0.00	0.00
16,400.00	90.07	359.91	7,716.54	8,981.52	-103.10	8,981.67	0.00	0.00	0.00
16,500.00	90.07	359.91	7,716.43	9,081.52	-103.26	9,081.67	0.00	0.00	0.00
16,600.00	90.07	359.91	7,716.31	9,181.52	-103.41	9,181.67	0.00	0.00	0.00
16,700.00	90.07	359.91	7,716.20	9,281.52	-103.56	9,281.67	0.00	0.00	0.00
16,800.00	90.07	359.91	7,716.09	9,381.52	-103.71	9,381.67	0.00	0.00	0.00
16,900.00	90.07	359.91	7,715.97	9,481.52	-103.87	9,481.67	0.00	0.00	0.00
17,000.00	90.07	359.91	7,715.86	9,581.52	-104.02	9,581.67	0.00	0.00	0.00
17,100.00	90.07	359.91	7,715.74	9,681.52	-104.17	9,681.67	0.00	0.00	0.00
17,200.00	90.07	359.91	7,715.63	9,781.52	-104.32	9,781.67	0.00	0.00	0.00
17,300.00	90.07	359.91	7,715.52	9,881.52	-104.48	9,881.67	0.00	0.00	0.00
17,400.00	90.07	359.91	7,715.40	9,981.52	-104.63	9,981.67	0.00	0.00	0.00
17,500.00	90.07	359.91	7,715.29	10,081.52	-104.78	10,081.67	0.00	0.00	0.00
17,600.00	90.07	359.91	7,715.18	10,181.52	-104.93	10,181.67	0.00	0.00	0.00
17,700.00	90.07	359.91	7,715.06	10,281.52	-105.09	10,281.67	0.00	0.00	0.00
17,753.65	90.07	359.91	7,715.00	10,335.17	-105.17	10,335.32	0.00	0.00	0.00
Toe:									
17,753.66	90.07	359.91	7,715.00	10,335.18	-105.17	10,335.33	0.01	0.00	0.00
TD Well @ 17753.66ft									

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
JZM 4C-3HZ_Hardline E	0.00	0.00	0.00	0.00	0.00	14,548,239.66	1,673,090.61	40.059001	-104.883228
- plan hits target center									
- Polygon									
Point 1			0.00	11,243.82	-52.38	14,559,483.40	1,673,023.49		
Point 2			0.00	9,025.67	-35.31	14,557,265.27	1,673,043.46		
Point 3			0.00	6,342.24	-6.72	14,554,581.88	1,673,075.57		
Point 4			0.00	3,694.90	5.53	14,551,934.56	1,673,091.30		
Point 5			0.00	2,374.06	5.30	14,550,613.72	1,673,092.80		
Point 6			0.00	1,053.14	4.93	14,549,292.80	1,673,094.16		
Point 7			0.00	192.22	4.71	14,548,431.88	1,673,095.07		
Point 8			0.00	191.82	-401.89	14,548,430.95	1,672,688.47		
Point 9			0.00	1,052.75	-401.03	14,549,291.88	1,672,688.20		
Point 10			0.00	2,373.68	-399.69	14,550,612.81	1,672,687.81		
Point 11			0.00	3,694.56	-398.05	14,551,933.69	1,672,687.72		
Point 12			0.00	5,015.46	-396.41	14,553,254.59	1,672,687.63		
Point 13			0.00	6,338.74	-404.68	14,554,577.86	1,672,677.62		
Point 14			0.00	7,662.03	-412.99	14,555,901.14	1,672,667.57		
Point 15			0.00	9,022.56	-428.27	14,557,261.65	1,672,650.51		
Point 16			0.00	10,383.09	-443.57	14,558,622.16	1,672,633.42		
Point 17			0.00	11,244.05	-445.96	14,559,483.11	1,672,629.91		
Point 18			0.00	11,243.82	-52.38	14,559,483.40	1,673,023.49		
JZM 4C-3HZ_SHL	0.00	0.00	0.00	0.00	0.00	14,548,239.66	1,673,090.61	40.059001	-104.883228
- plan hits target center									
- Point									
1N-R67W-Sec. 10_Secti	0.00	0.00	3.00	24.85	2,117.32	14,548,267.29	1,675,207.90	40.059069	-104.875661
- plan misses target center by 2117.47usft at 3.00usft MD (3.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			3.00	4,992.86	-2,976.12	14,553,256.24	1,672,225.23		
Point 2			3.00	4,994.59	-331.69	14,553,261.44	1,674,869.66		
Point 3			3.00	4,996.25	2,313.07	14,553,266.57	1,677,514.42		
Point 4			3.00	2,354.63	2,320.05	14,550,624.96	1,677,524.86		
Point 5			3.00	-287.06	2,326.97	14,547,983.28	1,677,535.25		
Point 6			3.00	-288.46	-327.65	14,547,978.40	1,674,880.63		
Point 7			3.00	-290.97	-2,982.55	14,547,972.40	1,672,225.73		
1N-R67W-Sec. 3_Sectio	0.00	0.00	3.00	24.85	2,117.32	14,548,267.29	1,675,207.90	40.059069	-104.875661
- plan misses target center by 2117.47usft at 3.00usft MD (3.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1			3.00	10,361.30	-3,022.88	14,558,624.61	1,672,171.43		
Point 2			3.00	10,358.07	-398.53	14,558,624.82	1,674,795.78		
Point 3			3.00	10,354.85	2,234.71	14,558,625.06	1,677,429.03		
Point 4			3.00	7,634.95	2,286.94	14,555,905.23	1,677,484.82		
Point 5			3.00	4,996.25	2,313.07	14,553,266.57	1,677,514.42		
Point 6			3.00	4,994.59	-331.69	14,553,261.44	1,674,869.66		
Point 7			3.00	4,992.86	-2,976.12	14,553,256.24	1,672,225.23		
Point 8			3.00	7,632.17	-2,992.40	14,555,895.52	1,672,205.49		
JZM 4C-3HZ_BHL	0.00	0.00	7,715.00	10,335.18	-105.17	14,558,574.69	1,672,971.89	40.087383	-104.883604
- plan hits target center									
- Point									

Anadarko

Planning Report

Database:	PLANNING	Local Co-ordinate Reference:	Well JZM 4C-3HZ
Company:	US ROCKIES WATTENBERG PLANNING	TVD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Project:	WELD-NAD83-UTMFT13N	MD Reference:	RKB = 17' @ 5083.00usft (D Rig)
Site:	1N-67W-10 JZM 13-10HZ Pad	North Reference:	True
Well:	JZM 4C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Plan A		
Design:	Permit Rev-1		

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,805.54	1,800.00	9 5/8"	9-5/8	13-1/2	
8,095.64	7,726.00	7"	7	8-3/4	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,381.54	1,376.00	Fox Hills		0.00		
4,627.54	4,622.00	Sussex		0.00		
7,343.92	7,332.07	Sharon Springs		0.00		
7,384.50	7,369.07	Niobrara Top		0.00		
7,525.59	7,487.94	Niobrara B Bench		0.00		
7,630.69	7,564.10	Niobrara C Bench		0.00		
7,909.22	7,699.10	Fort Hays		0.00		
17,753.65	7,715.00	Toe:		0.00		
8,006.52	7,719.87	Codell		0.00		
8,095.64	7,726.00	Heel:		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.00	300.00	0.00	0.00	Begin Nudge @ 300.00ft	
900.00	897.54	19.13	-42.96	End Nudge @ 900.00ft	
1,000.00	996.30	25.49	-57.25	Begin Drop @ 1000.00ft	
1,450.00	1,444.46	39.84	-89.47	End Drop @ 1450.00ft	
7,094.72	7,089.18	39.84	-89.47	KOP @ 7094.72ft	
7,600.00	7,543.11	229.90	-89.76	DLS = 9°/100'	
8,095.64	7,726.00	677.18	-90.44	End Build @ 8095.64ft	
17,753.66	7,715.00	10,335.18	-105.17	TD Well @ 17753.66ft	