

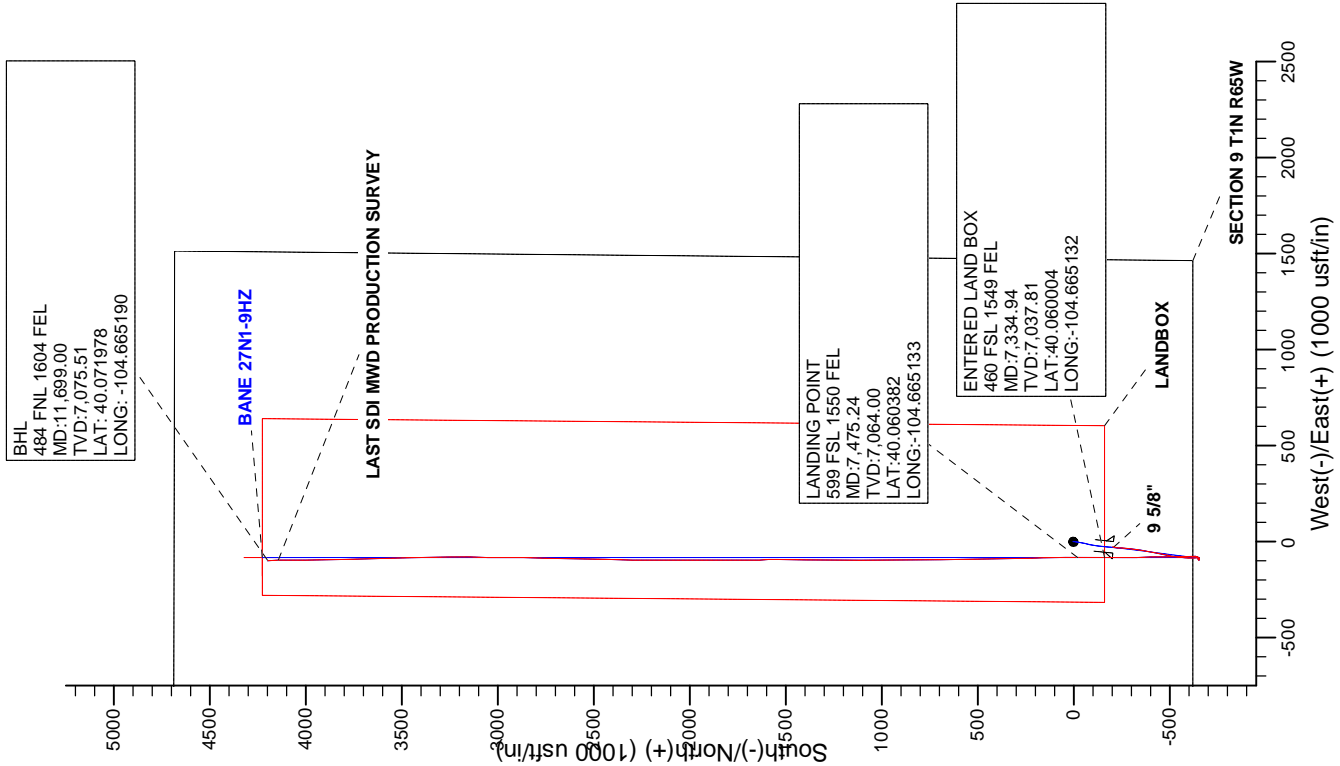
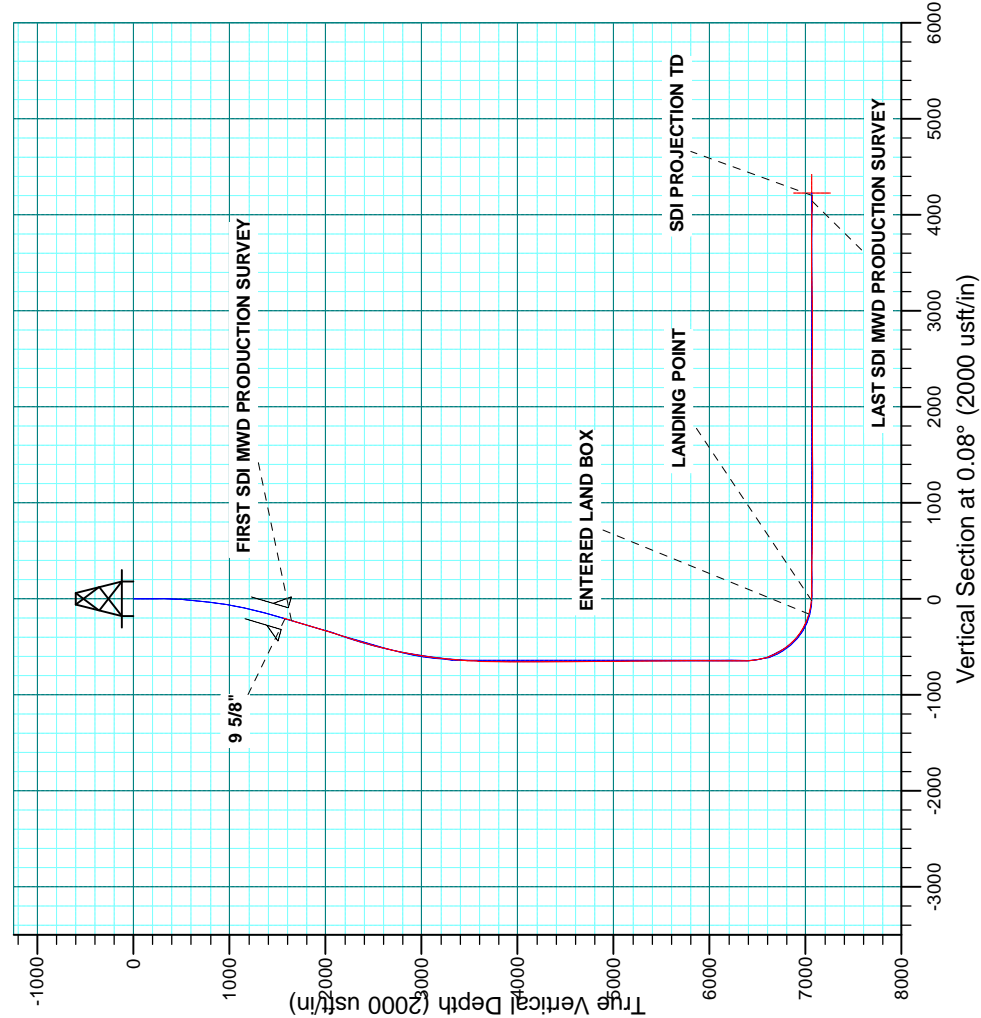


Project: WELD-NAD83-UTMT13N
Site: 1N-65W-09 Bane Pad
Well: BANE 27N1-9HZ
Wellbore: Plan A
Design: Plan A



WELL DETAILS: BANE 27N1-9HZ					
GL 4964 & KB 25 @ 4989.00usft (HP 307)					
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14548919.86	1734194.98	40.060443	-104.664843

PROJECT DETAILS: WELD-NAD83-UTMT13N
Geodetic System: Universal Transverse Mercator (US Survey Feet)
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Location: Zone 13N (08 W to 102 W)
System Datum: Mean Sea Level



Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well BANE 27N1-9HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Site:	1N-65W-09 Bane Pad	MD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Well:	BANE 27N1-9HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Plan A	Database:	Denver Sales

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-65W-09 Bane Pad			
Site Position:		Northing:	14,548,919.51 usft	Latitude:	40.060443
From:	Lat/Long	Easting:	1,734,104.05 usft	Longitude:	-104.665168
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.22 °

Well	BANE 27N1-9HZ, 620' FSL 1470' FEL					
Well Position	+N/-S	0.00 usft	Northing:	14,548,919.85 usft	Latitude:	40.060443
	+E/-W	0.00 usft	Easting:	1,734,194.98 usft	Longitude:	-104.664843
Position Uncertainty		2.68 usft	Wellhead Elevation:	usft	Ground Level:	4,964.00 usft

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/16/2014	8.33	66.68	52,611

Design	Plan A				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	0.08	

Survey Program	Date	7/28/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
20.00	1,583.00	Survey #1 CATHEDRAL MWD (Plan A)	APC_ISCWSA REV 2 MWD	Fixed:v2:standard declination	
1,668.00	11,699.00	Survey #2 SDI MWD PRODUCTION (Plan A)	APC_ISCWSA REV 2 MWD+	Fixed:v2:crustal field declination	

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	
20.00	0.00	0.00	20.00	0.00	0.00	0.00	0.00	0.00	0.00	
109.00	0.40	0.40	109.00	0.31	0.00	0.31	0.45	0.45	0.00	
168.00	0.20	8.40	168.00	0.62	0.02	0.62	0.35	-0.34	13.56	
226.00	0.60	20.30	226.00	1.00	0.14	1.00	0.70	0.69	20.52	
283.00	0.40	99.70	283.00	1.25	0.44	1.25	1.15	-0.35	139.30	
345.00	1.60	165.90	344.99	0.37	0.86	0.38	2.39	1.94	106.77	
409.00	3.20	182.70	408.93	-2.28	1.00	-2.28	2.70	2.50	26.25	
473.00	3.40	187.90	472.82	-5.94	0.65	-5.94	0.56	0.31	8.13	
536.00	3.70	186.20	535.70	-9.81	0.17	-9.81	0.50	0.48	-2.70	

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well BANE 27N1-9HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Site:	1N-65W-09 Bane Pad	MD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Well:	BANE 27N1-9HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Plan A	Database:	Denver Sales

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)
599.00	5.10	189.90	598.51	-14.59	-0.53	-14.59	2.27	2.22	5.87
663.00	5.60	188.70	662.24	-20.48	-1.49	-20.48	0.80	0.78	-1.88
726.00	6.30	187.90	724.90	-26.94	-2.43	-26.95	1.12	1.11	-1.27
789.00	7.20	190.20	787.46	-34.25	-3.60	-34.26	1.49	1.43	3.65
853.00	7.60	188.40	850.93	-42.39	-4.93	-42.39	0.72	0.63	-2.81
915.00	7.90	191.40	912.36	-50.62	-6.37	-50.63	0.81	0.48	4.84
979.00	9.30	192.60	975.64	-59.98	-8.37	-59.99	2.21	2.19	1.88
1,043.00	10.80	192.60	1,038.65	-70.88	-10.81	-70.89	2.34	2.34	0.00
1,107.00	11.60	190.70	1,101.44	-83.05	-13.31	-83.07	1.38	1.25	-2.97
1,171.00	12.30	190.80	1,164.05	-96.07	-15.78	-96.09	1.09	1.09	0.16
1,235.00	13.10	187.60	1,226.48	-109.96	-18.02	-109.98	1.66	1.25	-5.00
1,299.00	14.40	185.40	1,288.65	-125.07	-19.72	-125.10	2.19	2.03	-3.44
1,362.00	14.70	185.50	1,349.63	-140.83	-21.23	-140.86	0.48	0.48	0.16
1,426.00	16.10	185.20	1,411.33	-157.75	-22.81	-157.78	2.19	2.19	-0.47
1,489.00	16.60	184.80	1,471.78	-175.41	-24.36	-175.45	0.81	0.79	-0.63
1,553.00	16.60	185.60	1,533.11	-193.62	-26.01	-193.66	0.36	0.00	1.25
1,583.00	16.60	185.50	1,561.86	-202.15	-26.84	-202.19	0.10	0.00	-0.33
1,598.00	16.58	185.50	1,576.24	-206.42	-27.25	-206.45	0.15	-0.15	-0.02
9 5/8"									
1,668.00	16.47	185.48	1,643.35	-226.23	-29.16	-226.27	0.15	-0.15	-0.02
FIRST SDI MWD PRODUCTION SURVEY									
1,763.00	16.19	185.70	1,734.51	-252.82	-31.76	-252.86	0.30	-0.29	0.23
1,857.00	17.07	185.95	1,824.58	-279.58	-34.49	-279.63	0.94	0.94	0.27
1,952.00	16.86	183.21	1,915.45	-307.20	-36.71	-307.25	0.87	-0.22	-2.88
2,046.00	16.47	189.48	2,005.51	-333.96	-39.66	-334.01	1.96	-0.41	6.67
2,140.00	18.32	192.22	2,095.21	-361.54	-44.99	-361.61	2.15	1.97	2.91
2,235.00	18.10	189.81	2,185.45	-390.68	-50.66	-390.75	0.83	-0.23	-2.54
2,329.00	17.88	190.80	2,274.85	-419.24	-55.85	-419.32	0.40	-0.23	1.05
2,424.00	17.16	190.12	2,365.45	-447.36	-61.05	-447.45	0.79	-0.76	-0.72
2,518.00	16.41	192.18	2,455.44	-473.99	-66.29	-474.09	1.02	-0.80	2.19
2,613.00	15.60	192.88	2,546.76	-499.56	-71.97	-499.66	0.88	-0.85	0.74
2,708.00	13.29	186.56	2,638.76	-522.87	-76.06	-522.97	2.94	-2.43	-6.65
2,803.00	11.85	186.01	2,731.48	-543.42	-78.33	-543.53	1.52	-1.52	-0.58
2,897.00	10.49	186.09	2,823.69	-561.53	-80.25	-561.64	1.45	-1.45	0.09
2,992.00	9.56	187.55	2,917.24	-577.95	-82.20	-578.06	1.01	-0.98	1.54
3,086.00	8.61	188.31	3,010.06	-592.65	-84.24	-592.76	1.02	-1.01	0.81
3,181.00	7.79	177.39	3,104.10	-606.12	-84.98	-606.23	1.85	-0.86	-11.49
3,275.00	7.42	175.41	3,197.27	-618.53	-84.20	-618.65	0.48	-0.39	-2.11
3,369.00	5.46	179.26	3,290.67	-629.05	-83.66	-629.17	2.13	-2.09	4.10
3,464.00	5.05	171.29	3,385.27	-637.70	-82.97	-637.82	0.88	-0.43	-8.39
3,558.00	3.23	180.61	3,479.02	-644.44	-82.37	-644.56	2.06	-1.94	9.91
3,653.00	2.81	178.08	3,573.89	-649.45	-82.32	-649.56	0.46	-0.44	-2.66
3,747.00	0.67	169.55	3,667.84	-652.29	-82.14	-652.40	2.29	-2.28	-9.07

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well BANE 27N1-9HZ
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Site:	1N-65W-09 Bane Pad	MD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Well:	BANE 27N1-9HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Plan A	Database:	Denver Sales

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)	
3,842.00	0.94	244.50	3,762.84	-653.17	-82.75	-653.29	1.06	0.28	78.89	
3,936.00	1.12	238.35	3,856.82	-653.99	-84.22	-654.10	0.22	0.19	-6.54	
4,031.00	0.90	245.65	3,951.81	-654.78	-85.69	-654.90	0.27	-0.23	7.68	
4,125.00	0.78	268.91	4,045.80	-655.10	-87.01	-655.22	0.38	-0.13	24.74	
4,220.00	1.10	268.75	4,140.78	-655.13	-88.56	-655.25	0.34	0.34	-0.17	
4,314.00	0.42	332.44	4,234.78	-654.84	-89.63	-654.97	1.05	-0.72	67.76	
4,409.00	1.00	339.99	4,329.77	-653.76	-90.07	-653.88	0.62	0.61	7.95	
4,503.00	1.26	311.00	4,423.75	-652.31	-91.13	-652.43	0.66	0.28	-30.84	
4,598.00	1.64	288.52	4,518.72	-651.19	-93.21	-651.32	0.71	0.40	-23.66	
4,692.00	1.02	222.19	4,612.70	-651.38	-95.05	-651.51	1.64	-0.66	-70.56	
4,787.00	0.67	128.48	4,707.69	-652.35	-95.18	-652.49	1.32	-0.37	-98.64	
4,881.00	0.75	122.93	4,801.69	-653.03	-94.23	-653.16	0.11	0.09	-5.90	
4,976.00	0.55	115.12	4,896.68	-653.56	-93.30	-653.69	0.23	-0.21	-8.22	
5,070.00	1.01	29.52	4,990.67	-653.03	-92.48	-653.16	1.18	0.49	-91.06	
5,165.00	1.81	17.80	5,085.64	-650.88	-91.61	-651.00	0.89	0.84	-12.34	
5,259.00	1.24	22.55	5,179.61	-648.52	-90.77	-648.65	0.62	-0.61	5.05	
5,354.00	0.87	61.72	5,274.60	-647.23	-89.74	-647.36	0.83	-0.39	41.23	
5,448.00	0.89	80.10	5,368.58	-646.77	-88.39	-646.89	0.30	0.02	19.55	
5,542.00	0.58	87.05	5,462.58	-646.62	-87.20	-646.74	0.34	-0.33	7.39	
5,637.00	0.63	94.21	5,557.57	-646.63	-86.19	-646.75	0.10	0.05	7.54	
5,731.00	0.34	85.83	5,651.57	-646.65	-85.40	-646.77	0.32	-0.31	-8.91	
5,826.00	0.34	150.46	5,746.57	-646.87	-84.98	-646.99	0.38	0.00	68.03	
5,920.00	0.48	86.93	5,840.56	-647.10	-84.45	-647.21	0.48	0.15	-67.59	
6,015.00	0.73	111.90	5,935.56	-647.30	-83.49	-647.42	0.38	0.26	26.28	
6,110.00	1.09	100.54	6,030.55	-647.69	-82.04	-647.81	0.42	0.38	-11.96	
6,204.00	1.04	101.99	6,124.53	-648.03	-80.33	-648.14	0.06	-0.05	1.54	
6,299.00	1.50	35.66	6,219.51	-647.20	-78.76	-647.31	1.52	0.48	-69.82	
6,393.00	0.96	19.49	6,313.49	-645.46	-77.78	-645.57	0.68	-0.57	-17.20	
6,487.00	0.78	0.00	6,407.48	-644.08	-77.52	-644.18	0.37	-0.19	-20.73	
6,582.00	10.60	3.91	6,501.90	-634.69	-76.92	-634.80	10.34	10.34	4.12	
6,676.00	20.01	359.84	6,592.46	-609.93	-76.37	-610.03	10.07	10.01	-4.33	
6,771.00	24.26	356.52	6,680.44	-574.17	-77.60	-574.28	4.66	4.47	-3.49	
6,865.00	32.89	0.07	6,762.92	-529.29	-78.75	-529.40	9.35	9.18	3.78	
6,960.00	41.34	359.88	6,838.61	-472.01	-78.78	-472.12	8.90	8.89	-0.20	
7,054.00	50.00	358.76	6,904.23	-404.85	-79.63	-404.96	9.25	9.21	-1.19	
7,149.00	57.20	358.93	6,960.57	-328.45	-81.16	-328.56	7.58	7.58	0.18	
7,243.00	65.29	0.61	7,005.76	-246.11	-81.45	-246.22	8.75	8.61	1.79	
7,334.94	73.86	0.28	7,037.81	-160.03	-80.78	-160.15	9.33	9.33	-0.36	
ENTERED LAND BOX										
7,338.00	74.15	0.27	7,038.65	-157.09	-80.77	-157.20	9.33	9.33	-0.34	
7,432.00	81.22	359.64	7,058.69	-65.31	-80.85	-65.43	7.55	7.52	-0.67	
7,475.24	84.67	359.74	7,064.00	-22.41	-81.08	-22.52	7.97	7.97	0.23	
LANDING POINT										
7,527.00	88.79	359.86	7,066.95	29.26	-81.26	29.14	7.97	7.97	0.23	

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Site:	1N-65W-09 Bane Pad	MD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Well:	BANE 27N1-9HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Plan A	Database:	Denver Sales

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)
7,621.00	89.90	359.29	7,068.03	123.25	-81.96	123.13	1.33	1.18	-0.61
7,716.00	91.04	358.17	7,067.25	218.22	-84.06	218.10	1.68	1.20	-1.18
7,810.00	90.60	359.29	7,065.90	312.18	-86.15	312.06	1.28	-0.47	1.19
7,905.00	88.66	359.11	7,066.52	407.17	-87.47	407.04	2.05	-2.04	-0.19
7,999.00	89.40	358.38	7,068.11	501.13	-89.53	501.00	1.11	0.79	-0.78
8,094.00	88.56	359.84	7,069.80	596.10	-91.01	595.97	1.77	-0.88	1.54
8,188.00	89.23	358.79	7,071.61	690.07	-92.13	689.94	1.32	0.71	-1.12
8,283.00	89.93	0.58	7,072.31	785.06	-92.65	784.93	2.02	0.74	1.88
8,377.00	90.13	0.01	7,072.26	879.06	-92.17	878.93	0.64	0.21	-0.61
8,472.00	90.07	359.42	7,072.09	974.06	-92.64	973.93	0.62	-0.06	-0.62
8,566.00	89.77	358.12	7,072.23	1,068.04	-94.66	1,067.90	1.42	-0.32	-1.38
8,661.00	89.43	0.56	7,072.89	1,163.02	-95.75	1,162.89	2.59	-0.36	2.57
8,756.00	91.11	0.49	7,072.44	1,258.01	-94.88	1,257.88	1.77	1.77	-0.07
8,850.00	89.53	1.11	7,071.92	1,352.00	-93.57	1,351.87	1.81	-1.68	0.66
8,945.00	89.80	0.47	7,072.47	1,446.99	-92.26	1,446.86	0.73	0.28	-0.67
9,039.00	90.13	0.25	7,072.53	1,540.98	-91.67	1,540.86	0.42	0.35	-0.23
9,134.00	90.47	358.55	7,072.03	1,635.97	-92.66	1,635.84	1.82	0.36	-1.79
9,228.00	89.90	0.26	7,071.73	1,729.97	-93.64	1,729.83	1.92	-0.61	1.82
9,323.00	90.50	358.92	7,071.40	1,824.96	-94.32	1,824.83	1.55	0.63	-1.41
9,418.00	90.60	0.40	7,070.48	1,919.95	-94.88	1,919.82	1.56	0.11	1.56
9,512.00	90.40	359.03	7,069.66	2,013.94	-95.35	2,013.81	1.47	-0.21	-1.46
9,607.00	90.54	1.55	7,068.88	2,108.93	-94.87	2,108.80	2.66	0.15	2.65
9,701.00	90.67	0.30	7,067.89	2,202.91	-93.35	2,202.78	1.34	0.14	-1.33
9,796.00	88.83	1.23	7,068.31	2,297.90	-92.09	2,297.77	2.17	-1.94	0.98
9,891.00	89.93	0.78	7,069.33	2,392.88	-90.42	2,392.75	1.25	1.16	-0.47
9,985.00	89.90	359.82	7,069.47	2,486.87	-89.93	2,486.75	1.02	-0.03	-1.02
10,079.00	89.26	2.02	7,070.16	2,580.85	-88.42	2,580.73	2.44	-0.68	2.34
10,174.00	89.30	0.78	7,071.36	2,675.81	-86.10	2,675.69	1.31	0.04	-1.31
10,268.00	90.20	2.34	7,071.77	2,769.78	-83.54	2,769.66	1.92	0.96	1.66
10,363.00	90.30	0.93	7,071.35	2,864.73	-80.83	2,864.62	1.49	0.11	-1.48
10,457.00	89.53	359.93	7,071.49	2,958.73	-80.12	2,958.61	1.34	-0.82	-1.06
10,552.00	90.20	359.90	7,071.72	3,053.73	-80.26	3,053.61	0.71	0.71	-0.03
10,646.00	91.58	0.73	7,070.26	3,147.71	-79.75	3,147.60	1.71	1.47	0.88
10,741.00	91.98	0.31	7,067.30	3,242.66	-78.88	3,242.55	0.61	0.42	-0.44
10,835.00	90.00	358.80	7,065.68	3,336.64	-79.62	3,336.52	2.65	-2.11	-1.61
10,930.00	89.63	357.90	7,065.99	3,431.60	-82.35	3,431.48	1.02	-0.39	-0.95
11,024.00	89.83	359.57	7,066.43	3,525.57	-84.43	3,525.45	1.79	0.21	1.78
11,119.00	89.77	357.95	7,066.76	3,620.54	-86.48	3,620.42	1.71	-0.06	-1.71
11,214.00	89.73	359.39	7,067.18	3,715.51	-88.69	3,715.39	1.52	-0.04	1.52
11,308.00	89.77	358.26	7,067.59	3,809.49	-90.61	3,809.36	1.20	0.04	-1.20
11,403.00	89.20	0.08	7,068.44	3,904.47	-91.99	3,904.34	2.01	-0.60	1.92
11,497.00	89.23	359.78	7,069.73	3,998.46	-92.10	3,998.33	0.32	0.03	-0.32
11,592.00	88.32	358.81	7,071.76	4,093.43	-93.27	4,093.30	1.40	-0.96	-1.02

Company:	US ROCKIES WATTENBERG PLANNING	Local Co-ordinate Reference:	Well BANE 27N1-9HZ
Project:	WELD-NAD83-UTMFT13N	TVD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Site:	1N-65W-09 Bane Pad	MD Reference:	GL 4964 & KB 25 @ 4989.00usft (HP 307)
Well:	BANE 27N1-9HZ	North Reference:	True
Wellbore:	Plan A	Survey Calculation Method:	Minimum Curvature
Design:	Plan A	Database:	Denver Sales

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)
11,642.00	87.89	357.83	7,073.41	4,143.38	-94.74	4,143.25	2.14	-0.86	-1.96
LAST SDI MWD PRODUCTION SURVEY									
11,699.00	87.89	357.83	7,075.51	4,200.30	-96.90	4,200.17	0.00	0.00	0.00
SDI PROJECTION TD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_BANE 27N1-9HZ	0.00	0.00	7,064.00	4,225.94	-82.53	14,553,145.45	1,734,096.54	40.072048	-104.665138
- actual wellpath misses target center by 31.56usft at 11699.00usft MD (7075.51 TVD, 4200.30 N, -96.90 E)									
- Point									

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,598.00	1,576.24	9 5/8"	9.625	13.500	

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,668.00	1,643.35	-226.23	-29.16	FIRST SDI MWD PRODUCTION SURVEY	
7,334.94	7,037.81	-160.03	-80.78	ENTERED LAND BOX	
7,475.24	7,064.00	-22.41	-81.08	LANDING POINT	
11,642.00	7,073.41	4,143.38	-94.74	LAST SDI MWD PRODUCTION SURVEY	
11,699.00	7,075.51	4,200.30	-96.90	SDI PROJECTION TD	

Checked By: _____ Approved By: _____ Date: _____