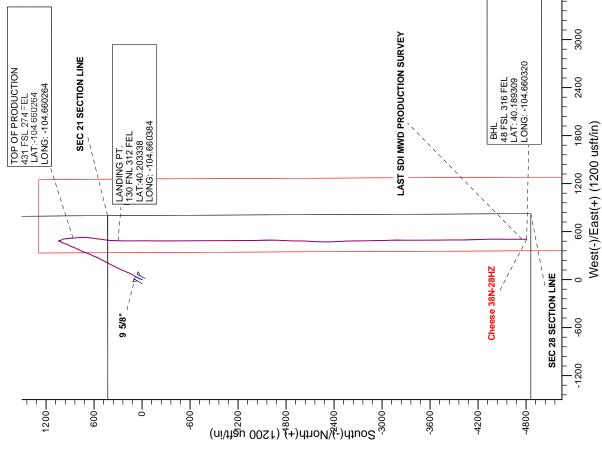


Project: WELD-NAD83-UTMFT13N Site: 3N-65W-28 Cheese 1-28HZ Pad Well: Cheese 38N-28HZ

Wellbore:

Vellbore: Plan A Design: Plan A

:8N-28HZ	ift (HP 307)	Latitude Longitude 40,202572 -104,662124	1200—	CASING DETAILS	TVD MD Name 600 1201.72 1208 00 95/8" 9.625
WELL DETAILS: Cheese 38N-28HZ	GL 4817 & KB 25 @ 4841.99usft (HP 307)	+N/-S +E/-W Northing Easting 0.00 0.00 14600657.13 1734789.13		PROJECT DETAILS: WELD-NAD83-UTMFT13N	Geodetic System: Universal Transverse Mercator (US Survey Feet) Datum: North American Datum 1983 Ellipsoid: GRS 1980 Zone: Zone 13N (108 W to 102 W) Location: SECTION 28 T3N R65W System Datum: Mean Sea Level

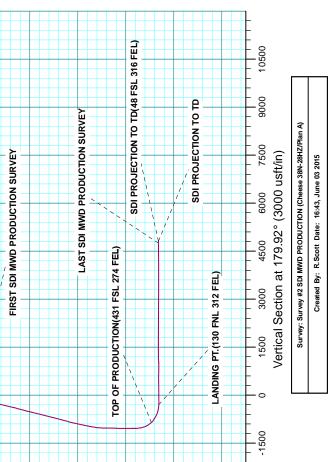


LAST CATHEDRAL MWD SURFACE SURVEY

9 5/8"

True Vertical Depth (3006 ustrin)

FIRST CATHEDRAL MWD SURFACE SURVEY



-3000

-0006





Company: US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-28 Cheese 1-28HZ Pad

Well: Cheese 38N-28HZ

Wellbore: Plan A
Design: Plan A

Geo Datum: Map Zone:

Site

Local Co-ordinate Reference:

 TVD Reference:
 GL 4817 & KB 25 @ 4841.99usft (HP 307)

 MD Reference:
 GL 4817 & KB 25 @ 4841.99usft (HP 307)

Well Cheese 38N-28HZ

North Reference: True

Survey Calculation Method: Minimum Curvature

Database: Denver Sales

Project WELD-NAD83-UTMFT13N

Map System: Universal Transverse Mercator (US Survey Feet)

North American Datum 1983 Zone 13N (108 W to 102 W) System Datum: Mean Sea Level

3N-65W-28 Cheese 1-28HZ Pad, SECTION 28 T3N R65W

Northing: 14,600,657.57 usft 40.202514 Site Position: Latitude: From: Lat/Long Easting: 1,734,684.02 usft Longitude: -104.662393 0.22 ° **Position Uncertainty:** 0.00 usft Slot Radius: 13.200 in **Grid Convergence:**

Well Cheese 38N-28HZ, 429' FSL 800' FEL **Well Position** +N/-S 0.00 usft Northing: 14,600,657.12 usft Latitude: 40.202512 +E/-W 0.00 usft Easting: 1,734,759.13 usft Longitude: -104.662124 0.00 usft 0.00 usft Ground Level: 4,816.99 usft **Position Uncertainty** Wellhead Elevation:

Wellbore	Plan A				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/9/2014	8.35	66.79	52,689

Plan A Design Audit Notes: ACTUAL Version: 1.0 Phase: Tie On Depth: 0.00 **Vertical Section:** Depth From (TVD) +N/-S +E/-W Direction (usft) (usft) (usft) (°) 0.00 0.00 0.00 179.92

Survey Program	Da	te 6/3/2015		
From (usft)	To (usft) Surv	vey (Wellbore)	Tool Name	Description
20.00 1,279.00		rey #1 CATHEDRAL MWD SURFACE rey #2 SDI MWD PRODUCTION (Plan	_	Fixed:v2:standard declination Fixed:v2:standard declination

urvey									
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
103.00	0.20	184.70	103.00	-0.14	-0.01	0.14	0.24	0.24	0.00
FIRST CATH	HEDRAL MWD SU	JRFACE SURVE	Υ						
165.00	0.20	193.40	165.00	-0.36	-0.05	0.36	0.05	0.00	14.03
224.00	0.20	180.60	224.00	-0.56	-0.07	0.56	0.08	0.00	-21.69
282.00	0.30	192.40	282.00	-0.81	-0.10	0.81	0.19	0.17	20.34
343.00	0.30	17.30	343.00	-0.81	-0.09	0.81	0.98	0.00	-287.05
407.00	1.20	21.30	406.99	-0.03	0.20	0.03	1.41	1.41	6.25
471.00	1.90	25.00	470.97	1.56	0.89	-1.56	1.10	1.09	5.78





Company: US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-28 Cheese 1-28HZ Pad

Well: Cheese 38N-28HZ

Wellbore: Plan A
Design: Plan A

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Well Cheese 38N-28HZ

GL 4817 & KB 25 @ 4841.99usft (HP 307) GL 4817 & KB 25 @ 4841.99usft (HP 307)

True

Survey Calculation Method: Minimum Curvature

Database: Denver Sales

Survey										
N	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)
	535.00	2.70	21.50	534.92	3.92	1.89	-3.92	1.27	1.25	-5.47
	599.00	3.50	22.40	598.82	7.13	3.19	-7.13	1.25	1.25	1.41
	663.00	4.30	18.60	662.67	11.21	4.70	-11.20	1.31	1.25	-5.94
	727.00	5.10	18.90	726.46	16.18	6.39	-16.17	1.25	1.25	0.47
	790.00	5.70	22.80	789.18	21.71	8.51	-21.70	1.12	0.95	6.19
	854.00	6.70	24.80	852.80	28.03	11.31	-28.01	1.60	1.56	3.13
	918.00	8.00	27.00	916.27	35.39	14.89	-35.36	2.08	2.03	3.44
	980.00	9.30	25.00	977.57	43.77	18.97	-43.74	2.15	2.10	-3.23
	1,044.00	9.90	27.50	1,040.67	53.34	23.70	-53.30	1.14	0.94	3.91
	1,109.00	10.50	27.90	1,104.64	63.53	29.05	-63.49	0.93	0.92	0.62
	1,172.00	11.50	27.60	1,166.49	74.17	34.64	-74.12	1.59	1.59	-0.48
	1,195.00	12.00 EDRAL MWD SU	28.10	1,189.00	78.31	36.83	-78.26	2.22	2.17	2.17
	1.208.00	12.09	28.42	1,201.72	80.70	38.12	-80.64	0.86	0.70	2.43
	9 5/8"	12.09	20.42	1,201.72	30.70	30.12	-00.04	0.00	0.70	2.40
	1,279.00	12.59	30.06	1,271.08	93.93	45.53	-93.87	0.86	0.70	2.32
				1,2/1.00	ყა.ყა	45.53	-93.07	0.00	0.70	2.32
		WD PRODUCTION 14.27		1,362.51	112.76	56.59	-112.68	1.80	1.79	0.74
	1,373.00		30.76							
	1,468.00	15.03	25.77	1,454.42	133.91	67.93	-133.82	1.55	0.80	-5.25
	1,562.00	16.18	25.28	1,544.95	156.73	78.82	-156.62	1.23	1.22	-0.52
	1,657.00	15.51	22.83	1,636.34	180.41	89.40	-180.28	1.00	-0.71	-2.58
	1,751.00	14.65	22.27	1,727.11	202.99	98.79	-202.85	0.93	-0.91	-0.60
	1,846.00	15.98	23.93	1,818.73	226.06	108.64	-225.91	1.47	1.40	1.75
	1,940.00	15.70	22.34	1,909.16	249.65	118.73	-249.49	0.55	-0.30	-1.69
	2,034.00	15.40	21.91	1,999.72	273.00	128.22	-272.82	0.34	-0.32	-0.46
	2,128.00	15.86	27.37	2,090.25	295.99	138.78	-295.79	1.64	0.49	5.81
	2,223.00	15.63	27.84	2,181.69	318.83	150.73	-318.62	0.28	-0.24	0.49
	2,317.00	15.29	27.45	2,272.28	341.03	162.35	-340.80	0.38	-0.36	-0.41
	2,412.00	15.64	26.51	2,363.84	363.60	173.84	-363.36	0.45	0.37	-0.99
	2,506.00	14.58	27.66	2,454.59	385.42	184.99	-385.16	1.17	-1.13	1.22
	2,601.00	15.50	28.84	2,546.34	407.13	196.67	-406.86	1.02	0.97	1.24
	2,695.00	15.35	23.30	2,636.96	429.56	207.65	-429.27	1.58	-0.16	-5.89
	2,790.00	16.10	27.76	2,728.40	452.77	218.76	-452.46	1.50	0.79	4.69
	2,884.00	15.65	27.20	2,818.82	475.58	230.62	-475.26	0.51	-0.48	-0.60
	2,979.00	16.56	28.08	2,910.09	498.92	242.85	-498.58	0.99	0.96	0.93
	3,073.00	16.13	27.36	3,000.29	522.34	255.16	-521.98	0.51	-0.46	-0.77
	3,168.00	15.10	27.95	3,091.78	544.99	267.02	-544.61	1.10	-1.08	0.62
	3,262.00	14.93	24.52	3,182.58	566.82	277.79	-566.43	0.96	-0.18	-3.65
	3,357.00	14.65	24.86	3,274.43	588.85	287.92	-588.45	0.31	-0.29	0.36
	3,451.00	14.59	21.39	3,365.39	610.66	297.23	-610.25	0.93	-0.06	-3.69
	3,546.00	15.13	23.53	3,457.21	633.17	306.55	-632.74	0.81	0.57	2.25
	3,640.00	16.51	24.18	3,547.65	656.61	316.91	-656.16	1.48	1.47	0.69
	3,735.00	16.14	21.66	3,638.82	681.19	327.32	-680.74	0.84	-0.39	-2.65
	3,829.00	15.94	20.23	3,729.16	705.45	336.60	-704.98	0.47	-0.21	-1.52





Company: US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-28 Cheese 1-28HZ Pad

Well: Cheese 38N-28HZ

Wellbore: Plan A
Design: Plan A

Local Co-ordinate Reference:

TVD Reference:
MD Reference:

Database:

North Reference: Survey Calculation Method: Well Cheese 38N-28HZ

GL 4817 & KB 25 @ 4841.99usft (HP 307) GL 4817 & KB 25 @ 4841.99usft (HP 307)

True

ulation Method: Minimum Curvature

Denver Sales

Measured Depth Inclination Azimuth Depth D	Survey									
4.018.00 16.65 26.55 3.309.98 766.36 357.29 .755.88 2.02 .0.98 6.04 4.112.00 16.52 26.35 4.000.07 780.39 380.24 .778.87 0.15 -0.14 -0.21 4.207.00 15.97 25.70 4.012.7 80.427 380.90 80.373 0.61 0.58 0.68 4.301.00 15.77 21.71 4.344.181.93 826.63 391.69 826.08 1.39 -1.39 0.14 4.386.00 15.77 21.71 4.344.81 871.80 410.19 871.22 2.26 2.21 2.33 4.580.00 13.71 19.71 4.344.81 871.80 410.19 871.22 2.26 2.219 -2.13 4.584.00 13.71 19.71 4.344.81 871.80 410.19 871.22 2.26 2.219 -2.13 4.594.00 14.47 27.19 4.454.80 882.31 418.88 891.72 1.40 -0.07 5.94 4.679.00 14.47 27.19 4.454.80 912.99 42.88 -991.29 1.00 0.87 2.00 4.773.00 14.94 22.32 4.583.93 934.65 438.86 -994.03 1.41 0.50 5.518 4.868.00 12.19 20.45 4.731.27 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 12.27 19.30 4.823.14 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 12.27 19.30 4.823.14 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 10.61 25.89 4.916.25 991.50 460.94 -990.86 2.22 1.175 6.94 5.151.00 9.10 27.44 5.008.86 10.05.89 468.14 -1.005.23 1.63 1.61 1.65 5.246.00 7.15 21.02 5.02.90 10.18.07 473.73 -1.017.41 2.26 2.26 2.20 -6.76 6.340.00 3.91 20.56 5.196.45 10.05.89 481.4 1.005.23 1.63 1.61 1.65 5.246.00 7.15 22 353.82 5.291.35 10.05.89 477.98 -1.025.87 3.45 -3.45 0.49 5.4355.00 1.22 353.82 5.291.35 10.05.89 477.98 -1.025.87 3.45 0.345 0.01 2.2 353.82 5.291.35 10.05.89 477.98 -1.029.91 3.02 -2.83 2.815 5.529.00 1.04 350.15 5.385.33 1.032.41 477.73 -1.031.74 0.21 0.019 -3.90 5.624.00 1.15 302.88 6.540.32 1.035.64 477.22 -1.034.98 1.21 0.013 66.98 5.634.00 1.39 15.82 5.660.22 1.034.19 477.85 -1.039.09 0.01 1.39 6.98 5.634.00 1.39 14.09 5.764.25 1.039.73 478.65 -1.039.09 0.01 1.39 6.98 5.636.00 0.44 145.28 6.142.20 1.041.99 485.22 -1.041.31 1.29 0.46 1.09.07 4.546 6.007.00 1.18 14.72 4.660.00 6.04 470.22 -1.034.98 1.21 0.013 66.98 6.656.00 0.54 145.28 6.142.20 1.041.99 485.22 -1.041.31 1.29 0.46 1.09.07 4.546 6.987.00 4.32 1.77 4.98 6.070.77 4.860.78 5.000 4.99 9.00.44 50.00 9.99 7.7 4.00 6.00 0.03 2.23 4.7 4.00 0.03 2.24 4.7 4.00 0.03 2.24 4.7 4.00 0.03 3.7 5.00	Depth			Depth			Section	Rate	Rate	Rate
4.018.00 16.65 26.55 3.309.98 766.36 357.29 .755.88 2.02 .0.98 6.04 4.112.00 16.52 26.35 4.000.07 780.39 380.24 .778.87 0.15 -0.14 -0.21 4.207.00 15.97 25.70 4.012.7 80.427 380.90 80.373 0.61 0.58 0.68 4.301.00 15.77 21.71 4.344.181.93 826.63 391.69 826.08 1.39 -1.39 0.14 4.386.00 15.77 21.71 4.344.81 871.80 410.19 871.22 2.26 2.21 2.33 4.580.00 13.71 19.71 4.344.81 871.80 410.19 871.22 2.26 2.219 -2.13 4.584.00 13.71 19.71 4.344.81 871.80 410.19 871.22 2.26 2.219 -2.13 4.594.00 14.47 27.19 4.454.80 882.31 418.88 891.72 1.40 -0.07 5.94 4.679.00 14.47 27.19 4.454.80 912.99 42.88 -991.29 1.00 0.87 2.00 4.773.00 14.94 22.32 4.583.93 934.65 438.86 -994.03 1.41 0.50 5.518 4.868.00 12.19 20.45 4.731.27 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 12.27 19.30 4.823.14 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 12.27 19.30 4.823.14 955.38 447.01 -964.75 2.03 -2.89 1.197 4.962.00 10.61 25.89 4.916.25 991.50 460.94 -990.86 2.22 1.175 6.94 5.151.00 9.10 27.44 5.008.86 10.05.89 468.14 -1.005.23 1.63 1.61 1.65 5.246.00 7.15 21.02 5.02.90 10.18.07 473.73 -1.017.41 2.26 2.26 2.20 -6.76 6.340.00 3.91 20.56 5.196.45 10.05.89 481.4 1.005.23 1.63 1.61 1.65 5.246.00 7.15 22 353.82 5.291.35 10.05.89 477.98 -1.025.87 3.45 -3.45 0.49 5.4355.00 1.22 353.82 5.291.35 10.05.89 477.98 -1.025.87 3.45 0.345 0.01 2.2 353.82 5.291.35 10.05.89 477.98 -1.029.91 3.02 -2.83 2.815 5.529.00 1.04 350.15 5.385.33 1.032.41 477.73 -1.031.74 0.21 0.019 -3.90 5.624.00 1.15 302.88 6.540.32 1.035.64 477.22 -1.034.98 1.21 0.013 66.98 5.634.00 1.39 15.82 5.660.22 1.034.19 477.85 -1.039.09 0.01 1.39 6.98 5.634.00 1.39 14.09 5.764.25 1.039.73 478.65 -1.039.09 0.01 1.39 6.98 5.636.00 0.44 145.28 6.142.20 1.041.99 485.22 -1.041.31 1.29 0.46 1.09.07 4.546 6.007.00 1.18 14.72 4.660.00 6.04 470.22 -1.034.98 1.21 0.013 66.98 6.656.00 0.54 145.28 6.142.20 1.041.99 485.22 -1.041.31 1.29 0.46 1.09.07 4.546 6.987.00 4.32 1.77 4.98 6.070.77 4.860.78 5.000 4.99 9.00.44 50.00 9.99 7.7 4.00 6.00 0.03 2.23 4.7 4.00 0.03 2.24 4.7 4.00 0.03 2.24 4.7 4.00 0.03 3.7 5.00	2.024.0	0 17.55	20.97	2 020 12	724.07	246.00	720 F0	1 71	1.60	0.67
4_112_00										
4,207.00 16.97 25.70 4,091.27 804.27 380.90 80.07.3 0.61 0.68 0.68 4.301.00 14.66 25.83 4,161.93 826.63 391.69 826.08 1.39 0.14 4.301.00 14.66 25.83 4,161.93 826.63 391.69 826.08 1.39 0.14 4.301.00 14.66 25.83 4,161.93 826.63 391.69 826.08 1.39 0.14 4.301.00 14.46 27.11 4.47.27.27.11 4.47.27.11 4.47.27.27.11 4.47.27.11 4.47.27.27.11 4.47.27.27.11 4.47.27.27.11 4.47.27.27.27.27.27.27.27.27.27.27.27.27.27										
4,301.00 14.66 25.83 4,181.93 828.63 391.69 -826.08 1.39 -1.39 0.14 4.396.00 15.77 21.71 4,273.61 849.44 401.70 -848.88 1.63 1.17 4.34 4.490.00 13.71 19.71 4,364.51 871.80 410.19 -877.22 2.26 2.29 2.29 2.13 4.584.00 13.64 25.29 4,455.85 892.31 418.88 -891.72 1.40 -0.07 5.94 4.679.00 14.47 27.19 4,548.00 912.99 428.89 -912.39 1.00 0.87 2.00 4.773.00 14.94 22.32 4,638.93 9.34.65 438.86 -934.03 1.41 0.50 -5.18 4.868.00 12.19 20.45 4,731.27 955.38 447.01 -954.76 2.93 -2.89 1.97 4.962.00 12.27 19.30 4,823.14 974.10 453.78 973.47 0.27 0.09 1.122 5.057.00 10.61 25.89 4,916.25 991.50 460.94 -909.86 2.22 1.75 6.94 5.151.00 9.10 27.44 5.008.86 1.005.89 468.14 1.005.23 1.63 1.61 1.65 5.246.00 7.15 21.02 5.102.90 1.018.07 4.73.73 1.1017.41 2.26 2.05 -5.76 5.340.00 3.91 20.56 6.196.45 1.026.54 476.95 1.026.87 3.45 -2.28 2.81 5 5.529.00 1.04 380.15 5.385.33 1.032.41 477.73 1.103.74 0.21 0.19 3.90 5.624.00 1.15 332.88 5.490.32 1.033.89 477.88 1.1029.91 3.02 -2.83 2.81 5 5.529.00 1.04 380.15 5.385.33 1.032.41 477.14 1.033.44 0.36 0.12 1.81 8 5.719.00 1.03 36.51 5.575.30 1.035.64 477.22 -1.033.96 1.21 0.13 1.96 5.813.00 1.39 1.58.2 5.689.28 1.034.14 477.14 1.033.44 0.36 0.12 1.81 8 5.719.00 1.03 36.51 5.575.30 1.035.64 477.22 -1.033.96 1.21 0.13 6.99 6.820.00 0.94 14.62.8 6.142.20 1.041.99 483.22 1.041.07 0.43 0.22 1.19 64 6.860.00 0.04 1.49 1.09 5.764.25 1.039.73 478.65 1.039.80 1.10 0.11 1.1 1.22 6.002.00 0.88 120.71 5.858.24 1.040.54 479.56 1.039.80 0.40 0.02 2.23 9.86 6.191.00 0.98 41.66 6.047.21 1.041.75 482.43 1.041.07 0.43 0.22 1.1964 6.286.00 0.04 1.452.8 6.142.20 1.041.99 483.22 1.041.07 0.43 0.22 1.1964 6.286.00 0.07 7.79 55 6.331.19 1.041.67 483.85 1.039.89 1.13 0.33 6.37 6.37 6.600.00 0.77 7.985 6.236.20 1.041.57 484.86 1.104.00 9.39 7.70 5.80 9.10 9.39 6.664.00 1.97 1.724.9 6.624.53 1.030.08 486.75 1.030.89 0.11 0.11 1.29 0.46 1.900.70 0.98 1.165 6.262.00 0.04 4.28 17.76 6.967.00 4.98 9.176.00 6.807.74 80.774 80.755.75 5.979.73 7.05 6.02 10.93 6.655.00 0.077 7.985 6.236.10 1.041.57 484.86 1.104.00 9.397.75 1.200 1.										
## 4.396.00										
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6,097.00 1.19 60.12 5,953.23 1,040.66 481.05 -1,039.99 1.13 0.33 -63.78 6,191.00 0.98 41.66 6,047.21 1,041.75 482.43 -1,041.07 0.43 -0.22 -19.64 6,286.00 0.54 145.28 6,142.20 1,041.99 483.22 -1,041.31 1.29 -0.46 109.07 6,380.00 0.47 102.55 6,236.20 1,041.54 483.85 -1,040.86 0.40 -0.07 -45.46 6,475.00 0.77 79.85 6,331.19 1,041.57 484.86 -1,040.89 0.40 0.32 -23.89 6,569.00 11.85 172.49 6,424.53 1,032.08 486.75 -1,031.40 12.67 11.79 98.55 6,664.00 16.97 153.03 6,516.56 1,010.02 494.32 -1,009.33 7.35 5.39 -20.48 6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,325.00 70.99 187.53 6,991.28 77.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -886.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -399.97 7.69 6.82 -3.57	5,908.0	0 1.49	14.09	5,764.25	1,039.73	478.65	-1,039.06	0.11	0.11	-1.82
6,191.00 0.98 41.66 6,047.21 1,041.75 482.43 -1,041.07 0.43 -0.22 -19.64 6,286.00 0.54 145.28 6,142.20 1,041.99 483.22 -1,041.31 1.29 -0.46 109.07 6,380.00 0.47 102.55 6,236.20 1,041.54 483.85 -1,040.86 0.40 -0.07 -45.46 6,475.00 0.77 79.85 6,331.19 1,041.57 484.86 -1,040.89 0.40 0.32 -23.89 6,569.00 11.85 172.49 6,424.53 1,032.08 486.75 -1,031.40 12.67 11.79 98.55 6,664.00 16.97 153.03 6,516.56 1,010.02 494.32 -1,009.33 7.35 5.39 -20.48 6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57	6,002.0	0 0.88	120.71	5,858.24	1,040.54	479.56	-1,039.87	2.06	-0.65	113.43
6,286.00 0.54 145.28 6,142.20 1,041.99 483.22 -1,041.31 1.29 -0.46 109.07 6,380.00 0.47 102.55 6,236.20 1,041.54 483.85 -1,040.86 0.40 -0.07 -45.46 6,475.00 0.77 79.85 6,331.19 1,041.57 484.86 -1,040.89 0.40 0.32 -23.89 6,569.00 11.85 172.49 6,424.53 1,032.08 486.75 -1,031.40 12.67 11.79 98.55 6,664.00 16.97 153.03 6,516.56 1,010.02 494.32 -1,009.33 7.35 5.39 -20.48 6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,335.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -399.97 7.69 6.82 -3.57	6,097.0	0 1.19	60.12	5,953.23	1,040.66	481.05	-1,039.99	1.13	0.33	-63.78
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6,475.00 0.77 79.85 6,331.19 1,041.57 484.86 -1,040.89 0.40 0.32 -23.89 6,569.00 11.85 172.49 6,424.53 1,032.08 486.75 -1,031.40 12.67 11.79 98.55 6,664.00 16.97 153.03 6,516.56 1,010.02 494.32 -1,009.33 7.35 5.39 -20.48 6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -399.97 7.69 6.82 -3.57										
6,664.00 16.97 153.03 6,516.56 1,010.02 494.32 -1,009.33 7.35 5.39 -20.48 6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60	6,475.0	0 0.77	79.85	6,331.19	1,041.57	484.86	-1,040.89	0.40	0.32	-23.89
6,758.00 22.63 163.30 6,604.99 980.44 505.75 -979.73 7.05 6.02 10.93 6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60	6,569.0	0 11.85	172.49	6,424.53	1,032.08	486.75	-1,031.40	12.67	11.79	98.55
6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60	6,664.0	0 16.97	153.03	6,516.56	1,010.02	494.32	-1,009.33	7.35	5.39	-20.48
6,853.00 28.47 172.43 6,690.70 940.44 514.00 -939.72 7.40 6.15 9.61 6,947.00 40.28 177.76 6,768.16 887.67 518.15 -886.94 12.95 12.56 5.67 6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60	6.758 0	0 22.63	163.30	6.604.99	980.44	505.75	-979.73	7.05	6.02	10.93
6,947.00				,						
6,987.00 44.32 176.96 6,797.74 860.78 519.40 -860.06 10.20 10.11 -2.00 TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57	,									
TOP OF PRODUCTION(431 FSL 274 FEL) 7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57										
7,042.00 49.89 176.03 6,835.16 820.58 521.88 -819.85 10.20 10.12 -1.69 7,136.00 56.75 178.23 6,891.28 745.34 525.58 -744.60 7.53 7.30 2.34 7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57	TOP OF P	RODUCTION(431 I	FSL 274 FEL)							
7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57		-		6,835.16	820.58	521.88	-819.85	10.20	10.12	-1.69
7,231.00 62.92 186.10 6,939.05 663.40 522.31 -662.67 9.66 6.49 8.28 7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57	7.136.0	0 56.75	178.23	6,891.28	745.34	525.58	-744.60	7.53	7.30	2.34
7,325.00 70.99 187.53 6,975.82 577.59 512.02 -576.88 8.70 8.59 1.52 7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57										
7,420.00 77.13 187.17 7,001.90 487.04 500.35 -486.34 6.47 6.46 -0.38 7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57										
7,514.00 82.01 184.73 7,018.91 395.13 490.78 -394.44 5.78 5.19 -2.60 7,609.00 88.49 181.34 7,026.78 300.65 485.79 -299.97 7.69 6.82 -3.57	,									
	7,609.0	0 88.49	181.34	7,026.78	300.65	485.79	-299.97	7.69	6.82	-3.57
LANDING PT.(130 FNL 312 FEL)				,:						





Company: US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-28 Cheese 1-28HZ Pad

Well: Cheese 38N-28HZ

Wellbore: Plan A
Design: Plan A

Local Co-ordinate Reference:

TVD Reference: MD Reference: North Reference: Well Cheese 38N-28HZ

GL 4817 & KB 25 @ 4841.99usft (HP 307) GL 4817 & KB 25 @ 4841.99usft (HP 307)

True

Survey Calculation Method: Minimum Curvature

Database: Denver Sales

Burvey									
Measur 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)
7,70			7,028.10	206.67	484.37	-206.00	1.81	1.50	-1.01
7,798	3.00 91.14	179.43	7,027.24	111.68	484.52	-111.00	1.65	1.31	-1.01
7,893	3.00 91.44	180.65	7,025.10	16.70	484.45	-16.03	1.32	0.32	1.28
7,98	7.00 89.40	180.11	7,024.41	-77.29	483.83	77.96	2.24	-2.17	-0.57
8,08	1.00 89.80	180.49	7,025.06	-171.28	483.34	171.96	0.59	0.43	0.40
8,170	3.00 90.30	179.19	7,024.98	-266.28	483.60	266.95	1.47	0.53	-1.37
8,270	0.00 89.36	180.47	7,025.26	-360.27	483.88	360.95	1.69	-1.00	1.36
8,36	5.00 90.47	179.96	7,025.40	-455.27	483.52	455.95	1.29	1.17	-0.54
8,459	9.00 91.01	179.10	7,024.19	-549.26	484.29	549.94	1.08	0.57	-0.91
8,554	4.00 89.23	179.54	7,023.99	-644.25	485.42	644.93	1.93	-1.87	0.46
8,648			7,024.84	-738.24	485.59	738.92	0.93	0.53	0.77
8,74		180.23	7,024.39	-833.24	485.18	833.92	1.14	1.14	-0.03
8,83			7,024.14	-927.24	485.32	927.91	1.55	-1.39	-0.67
8,932		180.00	7,024.08	-1,022.24	485.65	1,022.91	1.20	1.13	0.42
9,020	3.00 91.48	179.76	7,022.40	-1,116.22	485.85	1,116.90	1.00	0.97	-0.26
9,12			7,021.67	-1,211.21	486.83	1,211.88	2.31	-2.19	-0.75
9,21			7,021.07	-1,305.18	488.77	1,305.86	0.80	0.64	-0.49
9,310			7,022.10	-1,400.17	490.23	1,400.85	1.12	0.04	1.12
9,40			7,022.06	-1,400.17 -1,495.15	490.23	1,495.84	1.52	0.11	-1.45
0.40	9.00 90.20	179.70	7,020.94	1 500 12	402.62	1 500 00	1.56	-0.36	1.52
9,499				-1,589.13	493.62	1,589.82			
9,594			7,020.86	-1,684.11	492.12	1,684.80	2.56	-0.32	2.54
9,688			7,020.23	-1,778.02	488.12	1,778.70	1.24	1.03	0.69
9,78			7,019.87	-1,872.94	484.27	1,873.62	1.66	-1.38	-0.92
9,87	7.00 89.97	181.79	7,020.26	-1,966.89	481.25	1,967.56	0.45	0.44	-0.11
9,97	2.00 90.74	182.61	7,019.67	-2,061.82	477.60	2,062.48	1.18	0.81	0.86
10,066	3.00 89.19	181.77	7,019.73	-2,155.75	474.01	2,156.41	1.88	-1.65	-0.89
10,160	0.00 90.74	180.51	7,019.78	-2,249.72	472.14	2,250.38	2.12	1.65	-1.34
10,25	5.00 90.07	178.47	7,019.11	-2,344.71	472.99	2,345.37	2.26	-0.71	-2.15
10,350	0.00 90.97	178.12	7,018.25	-2,439.67	475.81	2,440.33	1.02	0.95	-0.37
10,444	4.00 89.16	178.06	7,018.14	-2,533.61	478.95	2,534.28	1.93	-1.93	-0.06
10,539	9.00 89.43	179.01	7,019.31	-2,628.57	481.38	2,629.24	1.04	0.28	1.00
10,633	3.00 90.54	179.50	7,019.34	-2,722.56	482.60	2,723.23	1.29	1.18	0.52
10,72	7.00 89.36	178.67	7,019.42	-2,816.55	484.10	2,817.22	1.53	-1.26	-0.88
10,822			7,020.62	-2,911.51	486.42	2,912.19	0.23	-0.18	-0.15
10,916	6.00 89.77	178.45	7,021.47	-3,005.47	488.90	3,006.15	0.62	0.62	-0.09
11,01			7,021.80	-3,100.42	492.03	3,101.10	0.72	0.06	-0.72
11,10			7,023.13	-3,194.39	493.80	3,195.07	2.80	-1.36	2.45
11,200			7,024.81	-3,289.37	493.15	3,290.05	1.15	0.93	0.68
11,29			7,025.42	-3,383.36	492.47	3,384.05	0.78	0.43	-0.65
11,389	9.00 90.03	180.57	7,025.53	-3,478.36	491.90	3,479.04	0.53	0.21	0.48
11,483			7,024.65	-3,572.35	491.16	3,573.03	1.10	1.07	-0.24
11,578			7,022.71	-3,667.32	491.95	3,668.01	1.75	0.28	-1.73
11,672			7,022.76	-3,761.30	493.67	3,761.99	2.91	-2.86	0.53
	7.00 89.43		7,024.38	-3,856.28	494.54	3,856.97	1.04	0.85	0.59





Company: US ROCKIES WATTENBERG PLANNING

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-28 Cheese 1-28HZ Pad

Well: Cheese 38N-28HZ

Wellbore: Plan A

Design: Plan A

Local Co-ordinate Reference:

TVD Reference:
MD Reference:
North Reference:

Well Cheese 38N-28HZ GL 4817 & KB 25 @ 4841

GL 4817 & KB 25 @ 4841.99usft (HP 307) GL 4817 & KB 25 @ 4841.99usft (HP 307)

True

Survey Calculation Method: Minimum Curvature

Database: Denver Sales

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)
11,861.00	89.90	179.12	7,024.93	-3,950.27	495.45	3,950.96	0.84	0.50	-0.68
11,956.00	91.17	178.52	7,024.04	-4,045.25	497.41	4,045.94	1.48	1.34	-0.63
12,050.00	89.63	178.55	7,024.04	-4,139.21	499.81	4,139.91	1.64	-1.64	0.03
12,145.00	90.71	178.20	7,023.10	-4,234.17	502.51	4,234.87	1.20	1.14	-0.37
12,239.00	90.54	179.71	7,022.08	-4,328.15	504.22	4,328.85	1.62	-0.18	1.61
12,334.00	91.07	179.52	7,020.74	-4,423.14	504.86	4,423.84	0.59	0.56	-0.20
12,428.00	89.66	180.56	7,020.14	-4,517.13	504.79	4,517.83	1.86	-1.50	1.11
12,523.00	90.54	180.67	7,019.98	-4,612.12	503.78	4,612.82	0.93	0.93	0.12
12,617.00	91.68	179.81	7,018.16	-4,706.10	503.38	4,706.80	1.52	1.21	-0.91
12,659.00	91.98	179.70	7,016.82	-4,748.08	503.56	4,748.78	0.76	0.71	-0.26
LAST SDI M	WD PRODUCTIO	N SURVEY							
12,719.00	91.98	179.70	7,014.74	-4,808.04	503.87	4,808.74	0.00	0.00	0.00

Casing Points							
	Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter	
	(usft)	(usft)		Name	(in)	(in)	
	1,208.00	1,201.72	9 5/8"		9.625	13.500	

Design Annotations					
De	sured pth sft)	Vertical Depth (usft)	Local Coo +N/-S (usft)	rdinates +E/-W (usft)	Comment
	103.00	103.00	-0.14	-0.01	FIRST CATHEDRAL MWD SURFACE SURVEY
1,	,195.00	1,189.00	78.31	36.83	LAST CATHEDRAL MWD SURFACE SURVEY
1,	279.00	1,271.08	93.93	45.53	FIRST SDI MWD PRODUCTION SURVEY
6,	,987.00	6,797.74	860.78	519.40	TOP OF PRODUCTION(431 FSL 274 FEL)
7,	,609.00	7,026.78	300.65	485.79	LANDING PT.(130 FNL 312 FEL)
12,	659.00	7,016.82	-4,748.08	503.56	LAST SDI MWD PRODUCTION SURVEY
12,	719.00	7,014.74	-4,808.04	503.87	SDI PROJECTION TO TD(48 FSL 316 FEL)

Checked By:	Approved By	: Date:	
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