



**Scientific
Drilling**

Survey Certification

7327 West Barton Road
Casper, WY 82604
(307)-472-6621 Fax (307) 472-5439

Operator	KP Kauffman Co, Inc.
Well Name & No.	Rocky Mountain Fuel C-no.5
County & State	Weld County, CO
SDI Job No.	410214K114819
Rig	KPK 2
Survey Date	20-Feb-2014

I, Steven F. Gottschalk, having personal knowledge of all the facts, hereby certify that the attached directional survey run from a measured depth of 0 feet to a measured depth of 4799.99 feet is true and correct as determined from all available records.

Signature

5-Mar-2014

Date

Steven F. Gottschalk
Rockies Region Well Planner
Scientific Drilling - Rocky Mountain District

KP Kauffman Co, Inc.

Weld County, CO

Rocky Mountain Fuel

Rocky Mountain Fuel C-no.5

OH

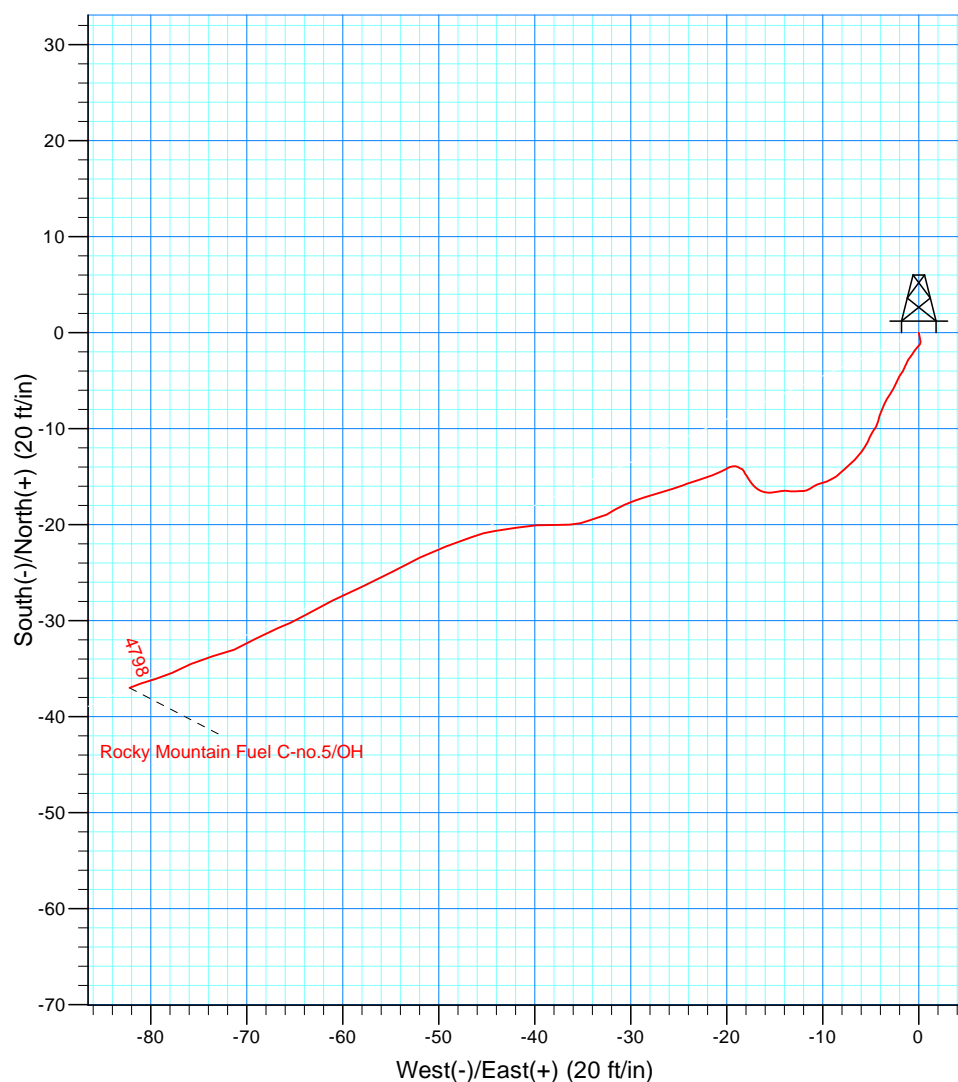
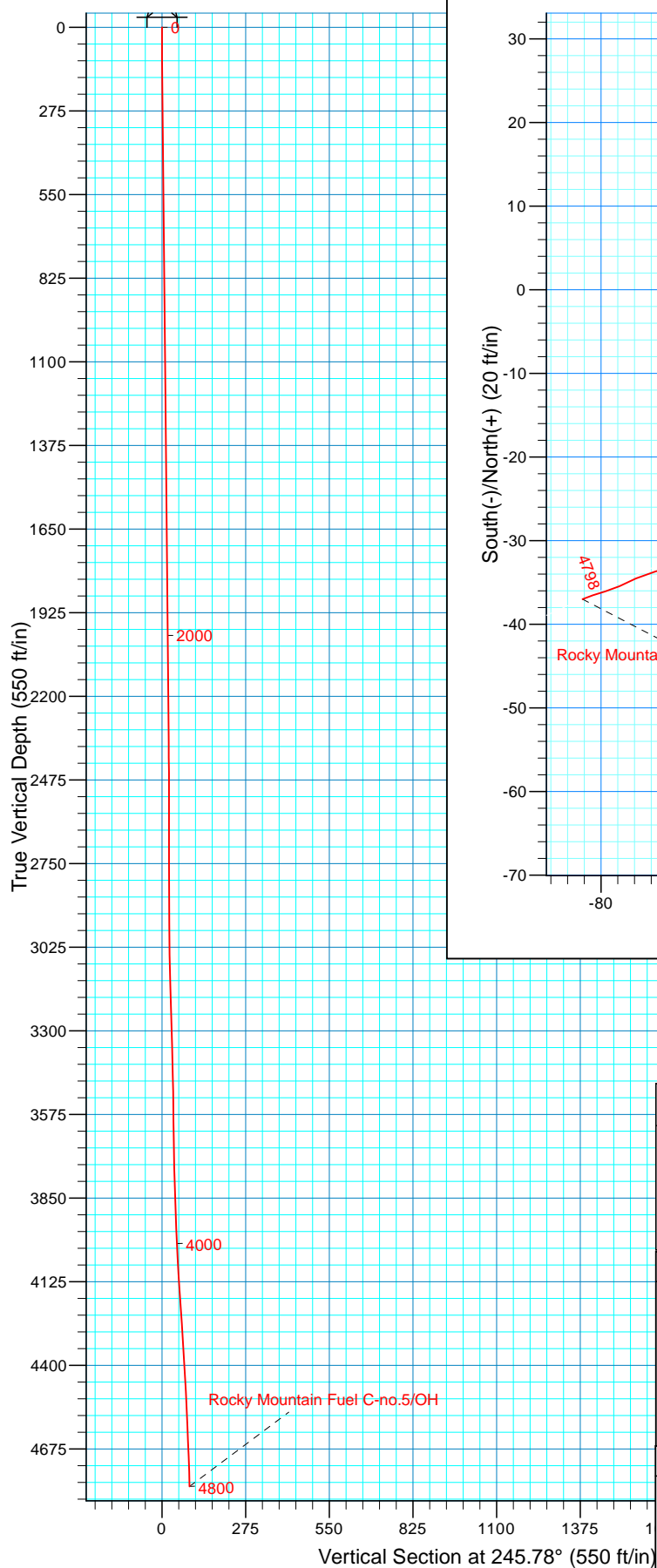
Design: OH

Standard Survey Report

05 March, 2014



Project: Weld County, CO
Site: Rocky Mountain Fuel
Well: Rocky Mountain Fuel C-no.5
Wellbore: OH
Design: OH



WELL DETAILS: Rocky Mountain Fuel C-no.5

Ground Level:	5001.00		
Northing	Easting	Latitude	Longitude
1269142.97	3167284.34	40° 4' 14.303 N	104° 54' 8.135 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Rocky Mountain Fuel C-no.5, True North
Vertical (TVD) Reference: GL 5001' @ 5001.00ft (Ground Level)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL 5001' @ 5001.00ft (Ground Level)
Calculation Method: Minimum Curvature
Local North: True
Location:

PROJECT DETAILS: Weld County, CO

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone

Design: OH (Rocky Mountain Fuel C-no.5/OH)

Created By: Steve Gottschalk
14:09, March 05 2014

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Rocky Mountain Fuel C-no.5
Project:	Weld County, CO	TVD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Site:	Rocky Mountain Fuel	MD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Well:	Rocky Mountain Fuel C-no.5	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Rocky Mountain Fuel				
Site Position:		Northing:	1,269,142.98 usft	Latitude:	40° 4' 14.303 N
From:	Lat/Long	Easting:	3,167,284.34 usft	Longitude:	104° 54' 8.135 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.39 °

Well	Rocky Mountain Fuel C-no.5, 660' FNL, 660' FEL, SEC8 T1N R67W					
Well Position	+N/-S	0.00 ft	Northing:	1,269,142.97 usft	Latitude:	40° 4' 14.303 N
	+E/-W	0.00 ft	Easting:	3,167,284.34 usft	Longitude:	104° 54' 8.135 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,001.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	2/20/2014	8.59	66.66	52,579

Design	OH				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	245.78	

Survey Program	Date	3/5/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
50.92	4,799.99	Survey #1 Surfaace Gyros (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
50.92	0.98	166.90	50.92	-0.42	0.10	0.08	1.92	1.92	0.00
First SDI Gyro Survey									
100.79	0.33	180.05	100.78	-0.98	0.20	0.23	1.33	-1.30	26.37
150.85	0.33	213.29	150.84	-1.25	0.12	0.41	0.38	0.00	66.40
200.78	0.47	230.48	200.77	-1.50	-0.12	0.72	0.37	0.28	34.43
250.57	0.60	209.85	250.56	-1.85	-0.41	1.13	0.46	0.26	-41.43
300.39	0.71	217.73	300.38	-2.32	-0.73	1.62	0.28	0.22	15.82
350.96	0.75	213.62	350.94	-2.85	-1.10	2.17	0.13	0.08	-8.13
400.44	0.72	195.18	400.42	-3.42	-1.36	2.64	0.48	-0.06	-37.27
451.08	0.76	218.60	451.05	-3.99	-1.66	3.15	0.60	0.08	46.25

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Survey Report

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Project:	Weld County, CO	TVD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Site:	Rocky Mountain Fuel	MD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Well:	Rocky Mountain Fuel C-no.5	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
500.82	0.84	208.73	500.79	-4.56	-2.04	3.73	0.32	0.16	-19.84
550.30	0.77	201.33	550.26	-5.19	-2.33	4.26	0.25	-0.14	-14.96
601.00	0.79	210.59	600.96	-5.81	-2.63	4.79	0.25	0.04	18.26
650.24	0.76	211.31	650.20	-6.38	-2.98	5.33	0.06	-0.06	1.46
700.12	0.73	213.12	700.07	-6.93	-3.32	5.87	0.08	-0.06	3.63
750.49	0.70	202.20	750.44	-7.48	-3.61	6.37	0.28	-0.06	-21.68
800.47	0.73	200.64	800.41	-8.07	-3.84	6.81	0.07	0.06	-3.12
850.77	0.69	200.80	850.71	-8.65	-4.06	7.25	0.08	-0.08	0.32
900.61	0.73	190.18	900.55	-9.24	-4.22	7.64	0.28	0.08	-21.31
950.26	0.69	214.58	950.19	-9.80	-4.45	8.08	0.61	-0.08	49.14
1,000.96	0.71	212.47	1,000.89	-10.31	-4.79	8.60	0.06	0.04	-4.16
1,051.02	0.72	203.70	1,050.94	-10.86	-5.08	9.09	0.22	0.02	-17.52
1,100.36	0.68	204.03	1,100.28	-11.42	-5.33	9.54	0.08	-0.08	0.67
1,151.45	0.71	216.69	1,151.37	-11.95	-5.64	10.05	0.31	0.06	24.78
1,200.10	0.76	214.13	1,200.01	-12.46	-6.00	10.58	0.12	0.10	-5.26
1,250.94	0.57	223.50	1,250.85	-12.92	-6.37	11.10	0.43	-0.37	18.43
1,300.59	0.70	222.23	1,300.50	-13.32	-6.74	11.61	0.26	0.26	-2.56
1,350.33	0.77	230.36	1,350.23	-13.76	-7.20	12.21	0.25	0.14	16.34
1,400.20	0.75	229.57	1,400.10	-14.19	-7.71	12.85	0.05	-0.04	-1.58
1,451.35	0.68	225.98	1,451.24	-14.61	-8.18	13.46	0.16	-0.14	-7.02
1,501.01	0.65	233.16	1,500.90	-14.99	-8.62	14.01	0.18	-0.06	14.46
1,550.69	0.63	243.14	1,550.58	-15.28	-9.09	14.55	0.23	-0.04	20.09
1,600.93	0.61	248.17	1,600.81	-15.50	-9.58	15.10	0.12	-0.04	10.01
1,650.59	0.65	256.43	1,650.47	-15.67	-10.10	15.64	0.20	0.08	16.63
1,700.37	0.57	246.75	1,700.25	-15.83	-10.60	16.16	0.26	-0.16	-19.45
1,750.63	0.41	234.12	1,750.51	-16.04	-10.98	16.59	0.38	-0.32	-25.13
1,800.81	0.48	238.06	1,800.69	-16.25	-11.30	16.97	0.15	0.14	7.85
1,851.03	0.44	252.49	1,850.90	-16.42	-11.66	17.37	0.24	-0.08	28.73
1,900.67	0.36	267.74	1,900.54	-16.49	-12.00	17.71	0.27	-0.16	30.72
1,950.97	0.48	268.65	1,950.84	-16.50	-12.37	18.05	0.24	0.24	1.81
2,000.08	0.59	264.36	1,999.95	-16.53	-12.83	18.48	0.24	0.22	-8.74
2,050.36	0.62	276.11	2,050.23	-16.52	-13.36	18.96	0.25	0.06	23.37
2,101.13	0.60	272.85	2,100.99	-16.48	-13.89	19.43	0.08	-0.04	-6.42
2,150.27	0.57	259.44	2,150.13	-16.51	-14.39	19.90	0.28	-0.06	-27.29
2,200.66	0.56	261.35	2,200.52	-16.60	-14.88	20.38	0.04	-0.02	3.79
2,251.02	0.60	263.42	2,250.88	-16.66	-15.39	20.87	0.09	0.08	4.11
2,300.11	0.69	282.18	2,299.96	-16.63	-15.93	21.35	0.46	0.18	38.22
2,350.78	0.67	286.69	2,350.63	-16.48	-16.51	21.82	0.11	-0.04	8.90
2,400.78	0.72	319.53	2,400.63	-16.16	-17.00	22.13	0.79	0.10	65.68
2,450.82	0.80	319.15	2,450.66	-15.65	-17.43	22.32	0.16	0.16	-0.76
2,500.77	0.51	330.30	2,500.61	-15.20	-17.77	22.44	0.63	-0.58	22.32
2,550.01	0.20	330.13	2,549.85	-14.93	-17.92	22.47	0.63	-0.63	-0.35
2,600.85	0.39	322.08	2,600.69	-14.72	-18.07	22.52	0.38	0.37	-15.83

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Survey Report

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Project:	Weld County, CO	TVD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Site:	Rocky Mountain Fuel	MD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Well:	Rocky Mountain Fuel C-no.5	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,650.60	0.40	342.55	2,650.44	-14.42	-18.23	22.54	0.28	0.02	41.15
2,700.32	0.29	285.42	2,700.15	-14.22	-18.40	22.61	0.69	-0.22	-114.90
2,750.82	0.24	305.74	2,750.65	-14.12	-18.61	22.76	0.21	-0.10	40.24
2,800.38	0.34	297.62	2,800.21	-14.00	-18.82	22.91	0.22	0.20	-16.38
2,850.07	0.26	276.43	2,849.90	-13.91	-19.07	23.10	0.27	-0.16	-42.64
2,900.66	0.44	263.72	2,900.49	-13.92	-19.37	23.38	0.39	0.36	-25.12
2,950.72	0.41	246.09	2,950.55	-14.02	-19.73	23.74	0.27	-0.06	-35.22
3,000.08	0.63	238.03	2,999.91	-14.23	-20.12	24.19	0.47	0.45	-16.33
3,051.00	0.80	246.83	3,050.82	-14.52	-20.68	24.82	0.40	0.33	17.28
3,100.43	1.28	247.18	3,100.25	-14.87	-21.51	25.72	0.97	0.97	0.71
3,150.11	1.56	253.25	3,149.91	-15.28	-22.67	26.94	0.64	0.56	12.22
3,200.66	1.86	252.24	3,200.44	-15.73	-24.11	28.44	0.60	0.59	-2.00
3,250.77	1.77	250.49	3,250.52	-16.24	-25.61	30.02	0.21	-0.18	-3.49
3,301.07	1.77	251.52	3,300.80	-16.74	-27.08	31.57	0.06	0.00	2.05
3,350.41	1.58	254.89	3,350.12	-17.16	-28.46	33.00	0.43	-0.39	6.83
3,401.20	1.40	251.32	3,400.89	-17.54	-29.72	34.30	0.40	-0.35	-7.03
3,450.24	1.10	240.39	3,449.92	-17.97	-30.70	35.37	0.78	-0.61	-22.29
3,500.18	0.87	246.99	3,499.85	-18.35	-31.47	36.23	0.51	-0.46	13.22
3,550.51	0.63	231.21	3,550.18	-18.67	-32.03	36.88	0.62	-0.48	-31.35
3,600.09	0.71	246.72	3,599.75	-18.97	-32.53	37.45	0.40	0.16	31.28
3,651.17	1.11	255.84	3,650.83	-19.21	-33.30	38.25	0.83	0.78	17.85
3,700.88	1.17	246.88	3,700.53	-19.53	-34.23	39.23	0.38	0.12	-18.02
3,751.02	1.23	256.97	3,750.66	-19.85	-35.23	40.27	0.44	0.12	20.12
3,801.60	1.33	267.38	3,801.22	-20.00	-36.34	41.35	0.50	0.20	20.58
3,850.76	2.13	269.53	3,850.36	-20.03	-37.83	42.72	1.63	1.63	4.37
3,900.50	2.48	268.53	3,900.06	-20.07	-39.83	44.55	0.71	0.70	-2.01
3,950.87	2.51	257.69	3,950.38	-20.33	-41.99	46.64	0.94	0.06	-21.52
4,000.32	2.61	264.51	3,999.78	-20.67	-44.17	48.76	0.65	0.20	13.79
4,050.32	3.24	247.72	4,049.72	-21.31	-46.61	51.25	2.11	1.26	-33.58
4,100.53	3.14	251.88	4,099.85	-22.28	-49.23	54.04	0.50	-0.20	8.29
4,150.60	3.56	243.41	4,149.84	-23.40	-51.93	56.96	1.29	0.84	-16.92
4,200.56	3.91	241.93	4,199.69	-24.90	-54.82	60.21	0.73	0.70	-2.96
4,250.43	4.04	245.35	4,249.44	-26.43	-57.91	63.66	0.54	0.26	6.86
4,300.85	3.88	244.26	4,299.74	-27.91	-61.06	67.14	0.35	-0.32	-2.16
4,350.22	3.98	240.19	4,348.99	-29.49	-64.06	70.52	0.60	0.20	-8.24
4,401.03	2.76	250.57	4,399.72	-30.77	-66.74	73.49	2.68	-2.40	20.43
4,450.03	3.19	239.22	4,448.65	-31.86	-69.02	76.02	1.48	0.88	-23.16
4,501.00	2.62	248.24	4,499.56	-33.02	-71.32	78.59	1.43	-1.12	17.70
4,550.60	2.71	257.79	4,549.10	-33.69	-73.52	80.87	0.91	0.18	19.25
4,600.87	2.87	243.41	4,599.31	-34.50	-75.81	83.29	1.42	0.32	-28.61
4,650.82	2.15	246.24	4,649.21	-35.44	-77.79	85.48	1.46	-1.44	5.67
4,700.41	2.02	253.63	4,698.77	-36.06	-79.48	87.27	0.60	-0.26	14.90
4,751.08	1.53	251.14	4,749.42	-36.53	-80.97	88.83	0.98	-0.97	-4.91

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Survey Report

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Project:	Weld County, CO	TVD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Site:	Rocky Mountain Fuel	MD Reference:	GL 5001' @ 5001.00ft (Ground Level)
Well:	Rocky Mountain Fuel C-no.5	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,799.99	1.57	249.13	4,798.31	-36.98	-82.22	90.15	0.14	0.08	-4.11	
Last SDI Gyro Survey										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
50.92	50.92	-0.42	0.10	First SDI Gyro Survey	
4,799.99	4,798.31	-36.98	-82.22	Last SDI Gyro Survey	

Checked By: _____ Approved By: _____ Date: _____