



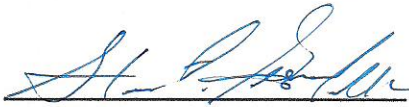
**Scientific
Drilling**

Survey Certification

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

Operator	KP Kauffman Co, Inc.
Well Name & No.	Margaret Twombly B-5
County & State	Weld County, CO
SDI Job No.	410314K127522
Rig	KPK 2
Survey Date	17-Mar-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 4675.43 feet is true and correct as determined from all available records.


Signature

9-Apr-2014
Date

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

KP Kauffman Co, Inc.

Weld County, CO

Margaret Twombly

Margaret Twombly B-5

OH

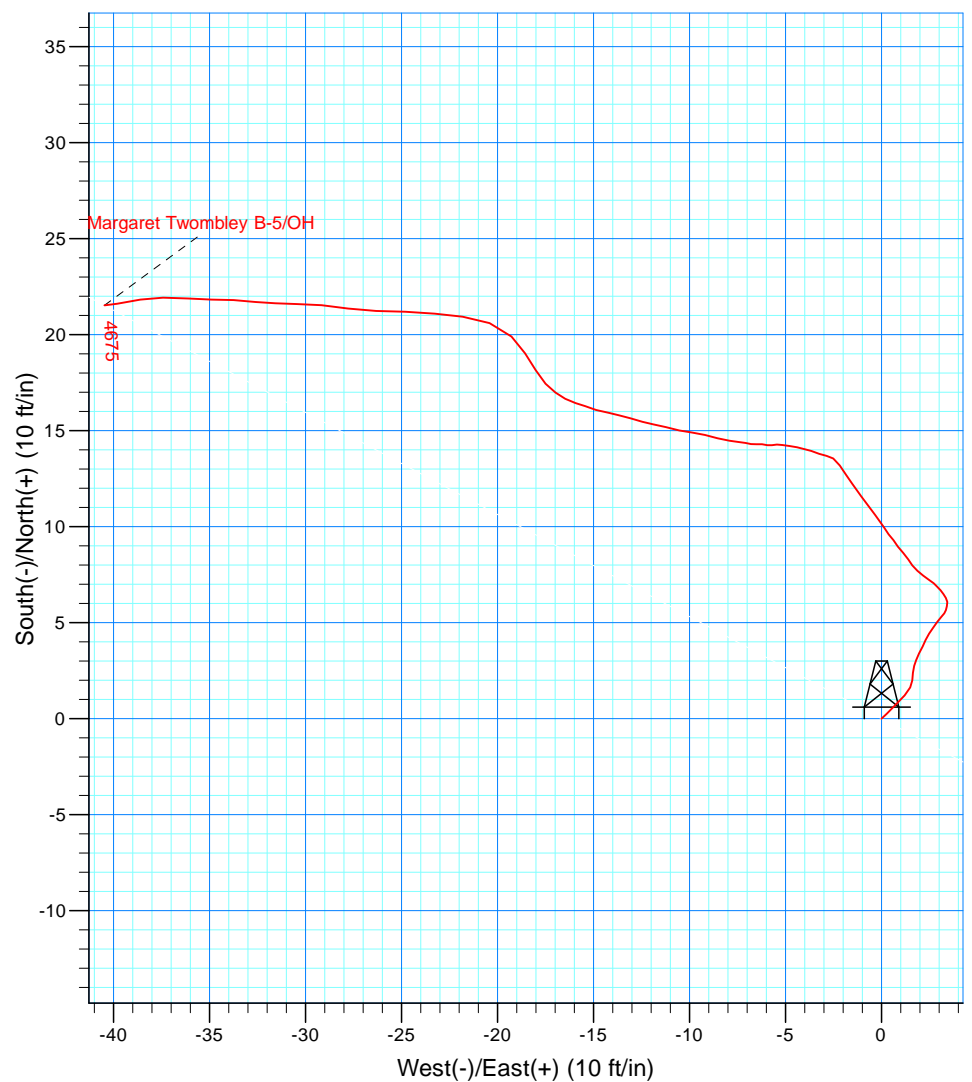
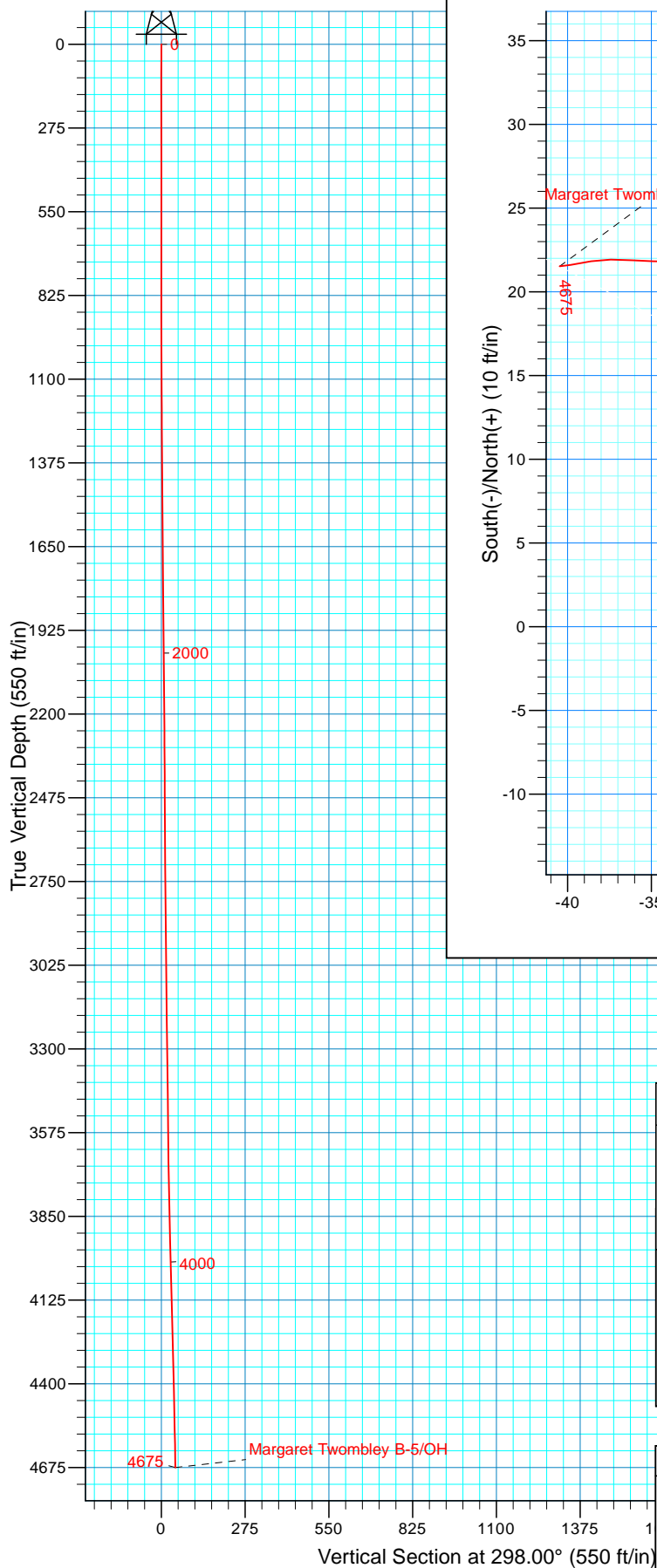
Design: OH

Standard Survey Report

09 April, 2014



Project: Weld County, CO
Site: Margaret Twombley
Well: Margaret Twombley B-5
Wellbore: OH
Design: OH



WELL DETAILS: Margaret Twombly B-5

	Ground Level:	4914.00	
Northing	Easting	Latitude	Longitude
1298465.67	3198686.01	40° 9' 1.789 N	104° 47' 21.192 W

Co-ordinate (N/E) Reference: well Margaret Twombly B-5, True North
Vertical (TVD) Reference: GL 4914' @ 4914.00ft (Ground Level)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL 4914' @ 4914.00ft (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 (Margaret Twombly B-5/OH)

Created By: Steve Gottschalk
10:32, April 09 2014

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Margaret Twombley B-5
Project:	Weld County, CO	TVD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Site:	Margaret Twombley	MD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Well:	Margaret Twombley B-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	Margaret Twombley				
Site Position:		Northing:	1,298,465.68 usft	Latitude:	40° 9' 1.789 N
From:	Lat/Long	Easting:	3,198,686.01 usft	Longitude:	104° 47' 21.192 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.46 °

Well	Margaret Twombley B-5, 1980' FSL, 1980' FNL, SEC9 T2N R66W					
Well Position	+N/-S	0.00 ft	Northing:	1,298,465.67 usft	Latitude:	40° 9' 1.789 N
	+E/-W	0.00 ft	Easting:	3,198,686.01 usft	Longitude:	104° 47' 21.192 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,914.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	3/17/2014	8.53	66.74	52,626

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		298.00

Survey Program	Date	4/9/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
51.14	4,675.43	Survey #1 Surface Gyro (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	
51.14	0.84	45.70	51.14	0.26	0.27	-0.11	1.64	1.64	0.00	
First SDI Gyro Survey										
99.20	0.78	45.12	99.19	0.74	0.75	-0.32	0.13	-0.12	-1.21	
148.92	0.72	41.58	148.91	1.21	1.20	-0.49	0.15	-0.12	-7.12	
199.01	0.45	26.33	199.00	1.62	1.50	-0.56	0.62	-0.54	-30.45	
248.64	0.45	6.21	248.62	1.99	1.60	-0.48	0.32	0.00	-40.54	
298.89	0.45	3.11	298.87	2.38	1.64	-0.32	0.05	0.00	-6.17	
349.99	0.40	20.18	349.97	2.75	1.71	-0.22	0.27	-0.10	33.41	
398.79	0.33	16.04	398.77	3.05	1.81	-0.16	0.15	-0.14	-8.48	
449.73	0.52	26.40	449.71	3.40	1.95	-0.13	0.40	0.37	20.34	

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Margaret Twombly B-5
Project:	Weld County, CO	TVD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Site:	Margaret Twombly	MD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Well:	Margaret Twombly B-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)
499.36	0.43	28.96	499.34	3.76	2.14	-0.12	0.19	-0.18	5.16
548.58	0.44	21.41	548.56	4.10	2.30	-0.10	0.12	0.02	-15.34
599.35	0.41	35.86	599.33	4.43	2.47	-0.11	0.22	-0.06	28.46
649.16	0.47	34.11	649.13	4.74	2.69	-0.15	0.12	0.12	-3.51
698.93	0.33	34.12	698.90	5.03	2.89	-0.19	0.28	-0.28	0.02
749.73	0.39	44.12	749.70	5.27	3.09	-0.25	0.17	0.12	19.69
799.18	0.24	31.46	799.15	5.48	3.26	-0.31	0.33	-0.30	-25.60
849.11	0.21	20.48	849.08	5.66	3.35	-0.30	0.10	-0.06	-21.99
899.89	0.26	12.15	899.86	5.86	3.41	-0.26	0.12	0.10	-16.40
948.20	0.25	356.15	948.17	6.07	3.42	-0.17	0.15	-0.02	-33.12
999.06	0.27	330.27	999.03	6.28	3.35	-0.01	0.23	0.04	-50.88
1,048.94	0.28	322.99	1,048.91	6.48	3.22	0.20	0.07	0.02	-14.60
1,098.75	0.30	322.42	1,098.72	6.68	3.07	0.43	0.04	0.04	-1.14
1,149.48	0.29	314.31	1,149.45	6.88	2.90	0.67	0.08	-0.02	-15.99
1,199.73	0.29	313.71	1,199.70	7.06	2.71	0.92	0.01	0.00	-1.19
1,249.58	0.45	302.33	1,249.55	7.25	2.46	1.23	0.35	0.32	-22.83
1,298.95	0.39	307.77	1,298.91	7.45	2.16	1.59	0.15	-0.12	11.02
1,349.66	0.49	312.55	1,349.62	7.71	1.87	1.97	0.21	0.20	9.43
1,399.40	0.39	323.27	1,399.36	7.99	1.61	2.33	0.26	-0.20	21.55
1,449.21	0.48	325.85	1,449.17	8.29	1.39	2.67	0.18	0.18	5.18
1,498.75	0.48	318.79	1,498.71	8.62	1.14	3.05	0.12	0.00	-14.25
1,548.71	0.53	322.78	1,548.67	8.96	0.86	3.45	0.12	0.10	7.99
1,598.80	0.43	324.77	1,598.75	9.30	0.61	3.83	0.20	-0.20	3.97
1,648.77	0.46	318.24	1,648.72	9.60	0.37	4.18	0.12	0.06	-13.07
1,699.29	0.46	330.99	1,699.24	9.93	0.13	4.54	0.20	0.00	25.24
1,748.90	0.61	323.96	1,748.85	10.32	-0.12	4.95	0.33	0.30	-14.17
1,799.49	0.70	322.11	1,799.44	10.78	-0.47	5.47	0.18	0.18	-3.66
1,848.68	0.63	325.42	1,848.62	11.24	-0.80	5.99	0.16	-0.14	6.73
1,899.85	0.77	322.01	1,899.79	11.74	-1.18	6.55	0.29	0.27	-6.66
1,949.94	0.64	327.06	1,949.87	12.24	-1.53	7.10	0.29	-0.26	10.08
2,000.00	0.63	325.13	1,999.93	12.70	-1.84	7.59	0.05	-0.02	-3.86
2,048.72	0.73	325.61	2,048.65	13.18	-2.17	8.11	0.21	0.21	0.99
2,099.37	0.44	302.20	2,099.30	13.55	-2.52	8.59	0.73	-0.57	-46.22
2,149.08	0.42	278.57	2,149.00	13.68	-2.86	8.95	0.36	-0.04	-47.54
2,198.59	0.53	293.67	2,198.51	13.80	-3.25	9.35	0.33	0.22	30.50
2,249.97	0.43	284.62	2,249.89	13.94	-3.65	9.77	0.24	-0.19	-17.61
2,298.98	0.42	284.72	2,298.90	14.03	-4.01	10.13	0.02	-0.02	0.20
2,349.84	0.49	282.65	2,349.76	14.13	-4.40	10.52	0.14	0.14	-4.07
2,398.57	0.46	278.01	2,398.49	14.20	-4.80	10.90	0.10	-0.06	-9.52
2,449.62	0.37	278.41	2,449.53	14.26	-5.16	11.25	0.18	-0.18	0.78
2,498.93	0.29	269.43	2,498.84	14.28	-5.44	11.51	0.19	-0.16	-18.21
2,549.93	0.30	255.86	2,549.84	14.24	-5.70	11.72	0.14	0.02	-26.61
2,599.64	0.29	283.71	2,599.55	14.24	-5.95	11.94	0.29	-0.02	56.02

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Margaret Twombly B-5
Project:	Weld County, CO	TVD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Site:	Margaret Twombly	MD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Well:	Margaret Twombly B-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)
2,649.21	0.37	277.43	2,649.12	14.29	-6.23	12.21	0.18	0.16	-12.67
2,698.71	0.30	261.00	2,698.62	14.29	-6.52	12.46	0.24	-0.14	-33.19
2,749.46	0.33	281.63	2,749.37	14.30	-6.79	12.71	0.23	0.06	40.65
2,799.54	0.37	281.50	2,799.45	14.36	-7.09	13.00	0.08	0.08	-0.26
2,848.78	0.46	274.68	2,848.69	14.41	-7.44	13.34	0.21	0.18	-13.85
2,899.60	0.63	279.75	2,899.51	14.47	-7.92	13.79	0.35	0.33	9.98
2,949.35	0.81	284.53	2,949.25	14.61	-8.53	14.39	0.38	0.36	9.61
2,999.23	0.76	283.89	2,999.13	14.78	-9.20	15.06	0.10	-0.10	-1.28
3,049.59	0.79	277.96	3,049.48	14.90	-9.86	15.71	0.17	0.06	-11.78
3,099.61	0.78	281.22	3,099.50	15.02	-10.54	16.36	0.09	-0.02	6.52
3,149.98	0.86	284.41	3,149.86	15.18	-11.24	17.05	0.18	0.16	6.33
3,199.92	0.65	280.18	3,199.80	15.32	-11.88	17.69	0.43	-0.42	-8.47
3,248.90	0.70	287.64	3,248.77	15.46	-12.44	18.24	0.21	0.10	15.23
3,299.26	0.81	283.50	3,299.13	15.64	-13.08	18.89	0.24	0.22	-8.22
3,349.01	0.63	287.71	3,348.88	15.80	-13.68	19.50	0.38	-0.36	8.46
3,399.15	0.68	277.86	3,399.01	15.93	-14.24	20.05	0.25	0.10	-19.64
3,449.35	0.79	288.20	3,449.21	16.08	-14.87	20.67	0.34	0.22	20.60
3,499.08	0.60	289.98	3,498.94	16.27	-15.44	21.27	0.38	-0.38	3.58
3,548.99	0.60	285.26	3,548.84	16.43	-15.93	21.78	0.10	0.00	-9.46
3,599.24	0.75	299.71	3,599.09	16.66	-16.47	22.37	0.45	0.30	28.76
3,648.92	0.65	303.44	3,648.77	16.98	-16.99	22.97	0.22	-0.20	7.51
3,699.99	0.90	318.96	3,699.83	17.44	-17.50	23.64	0.63	0.49	30.39
3,748.40	1.16	328.28	3,748.23	18.15	-18.00	24.41	0.64	0.54	19.25
3,799.64	1.18	326.14	3,799.46	19.03	-18.57	25.33	0.09	0.04	-4.18
3,848.76	1.46	316.62	3,848.57	19.90	-19.28	26.37	0.72	0.57	-19.38
3,899.56	1.64	288.46	3,899.35	20.60	-20.41	27.70	1.52	0.35	-55.43
3,949.45	1.69	277.97	3,949.22	20.93	-21.82	29.09	0.62	0.10	-21.03
3,999.05	1.68	274.99	3,998.80	21.09	-23.27	30.45	0.18	-0.02	-6.01
4,049.75	1.79	272.72	4,049.48	21.20	-24.80	31.85	0.26	0.22	-4.48
4,099.60	1.73	269.80	4,099.30	21.23	-26.33	33.22	0.22	-0.12	-5.86
4,149.07	1.68	280.98	4,148.75	21.37	-27.79	34.57	0.68	-0.10	22.60
4,199.67	1.48	272.67	4,199.33	21.54	-29.17	35.87	0.60	-0.40	-16.42
4,249.98	1.42	272.37	4,249.63	21.59	-30.44	37.02	0.12	-0.12	-0.60
4,299.72	1.19	272.00	4,299.35	21.64	-31.57	38.04	0.46	-0.46	-0.74
4,349.03	1.21	275.29	4,348.65	21.70	-32.60	38.98	0.15	0.04	6.67
4,399.46	1.39	274.55	4,399.07	21.80	-33.74	40.03	0.36	0.36	-1.47
4,449.14	1.27	267.68	4,448.74	21.83	-34.89	41.06	0.40	-0.24	-13.83
4,499.60	1.56	276.52	4,499.18	21.88	-36.14	42.18	0.72	0.57	17.52
4,549.44	1.43	267.16	4,549.00	21.93	-37.43	43.34	0.55	-0.26	-18.78
4,599.20	1.26	262.66	4,598.75	21.83	-38.59	44.32	0.40	-0.34	-9.04
4,648.94	1.60	258.20	4,648.47	21.61	-39.82	45.30	0.72	0.68	-8.97
4,675.43	1.29	266.68	4,674.96	21.52	-40.48	45.84	1.42	-1.17	32.01
Last SDI Gyro Survey									

Scientific Drilling International
Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Margaret Twombley B-5
Project:	Weld County, CO	TVD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Site:	Margaret Twombley	MD Reference:	GL 4914' @ 4914.00ft (Ground Level)
Well:	Margaret Twombley B-5	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Casper District

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
51.14	51.14	0.26	0.27	First SDI Gyro Survey
4,675.43	4,674.96	21.52	-40.48	Last SDI Gyro Survey

Checked By: _____	Approved By: _____	Date: _____
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