



**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.	Martin T Hart #1
County & State	Weld County, CO
SDI Job No.	410314K123174
Rig	KPK 3
Survey Date	30-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 7191.5 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

Martin T. Hart

Martin T Hart #1

OH

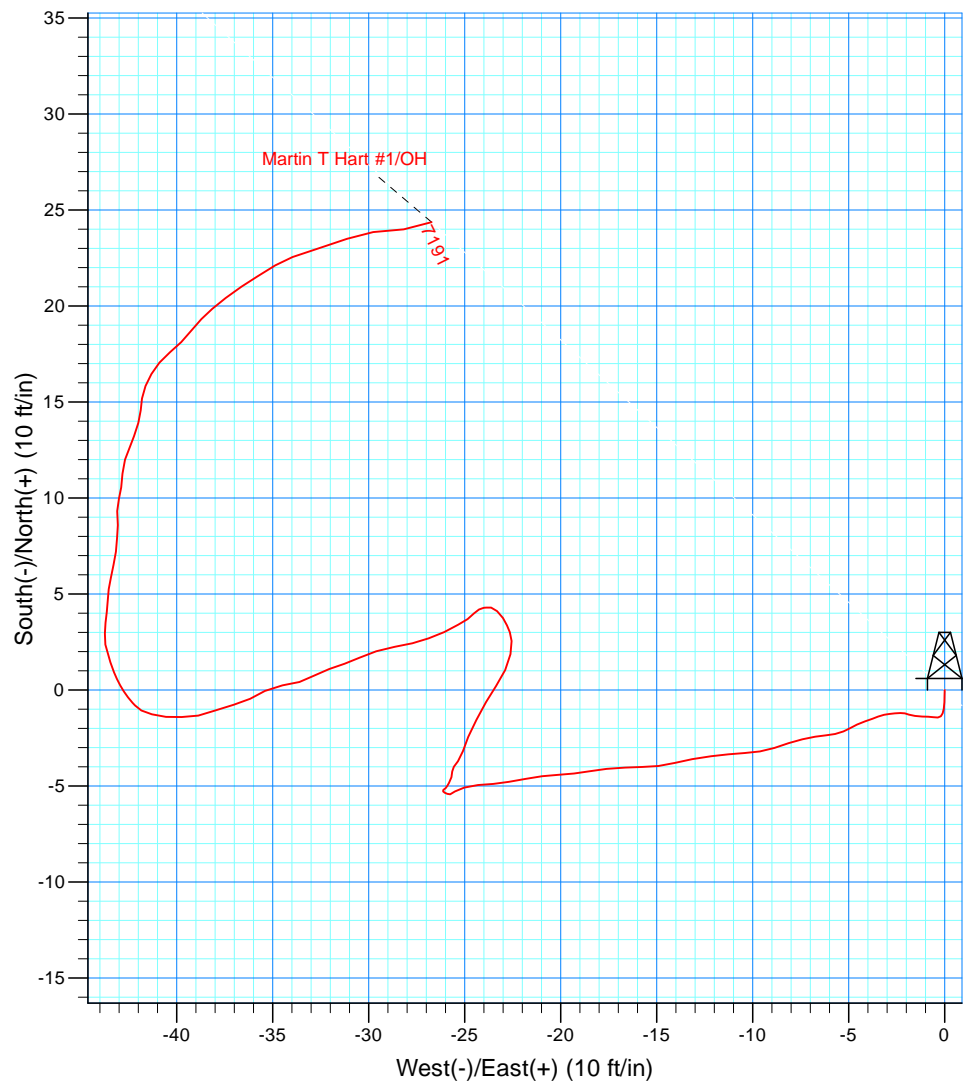
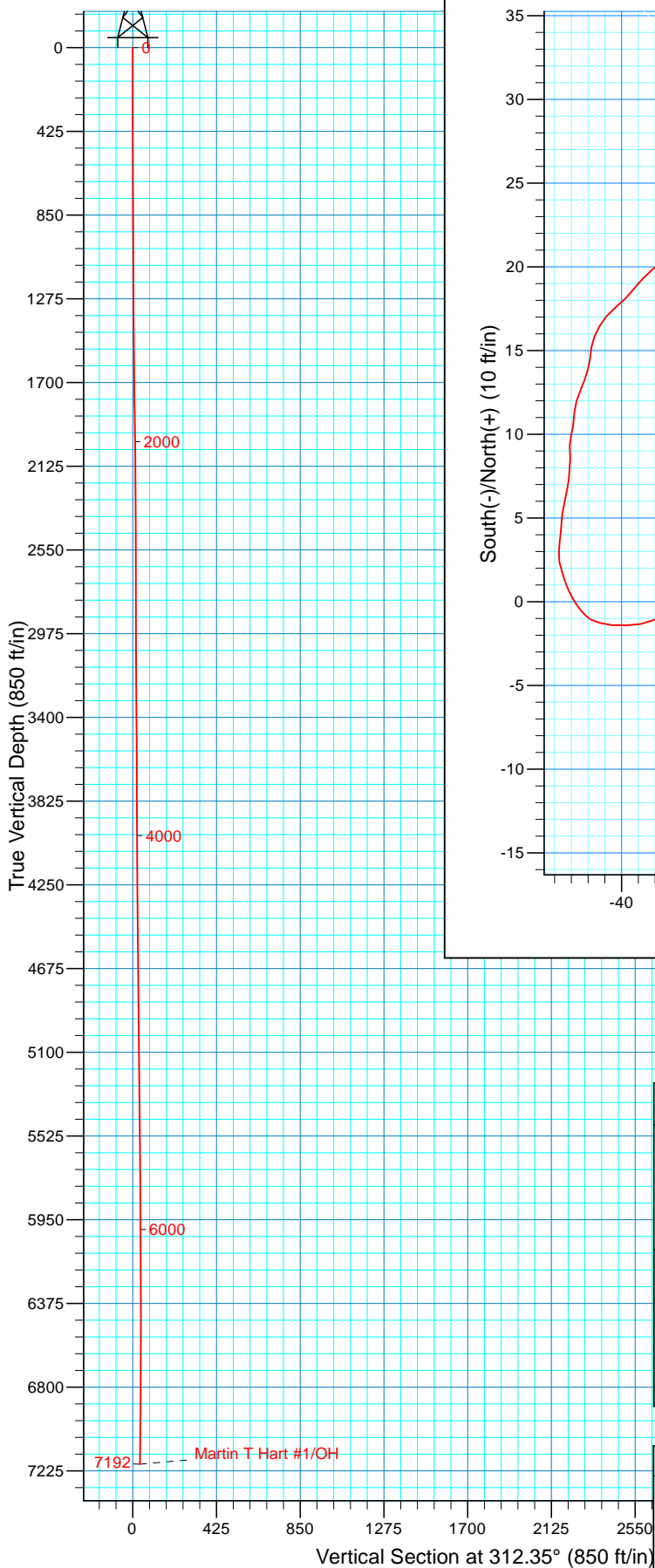
Design: OH

Standard Survey Report

09 April, 2014



Project: Weld County, CO
Site: Martin T. Hart
Well: Martin T Hart #1
Wellbore: OH
Design: OH



WELL DETAILS: Martin T Hart #1

Ground Level:	5002.00
Latitude	Longitude
1282551.21	3173634.96
40° 6' 26.377 N	104° 52' 45.239 W

Co-ordinate (N/E) Reference: well Martin T Hart #1, True North
Vertical (TVD) Reference: GL5002' @ 5002.00ft (Ground Level)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL5002' @ 5002.00ft (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 (Martin T Hart #1/OH)

Created By: Steve Gottschalk
9:06, April 09 2014

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Martin T Hart #1
Project:	Weld County, CO	TVD Reference:	GL5002' @ 5002.00ft (Ground Level)
Site:	Martin T. Hart	MD Reference:	GL5002' @ 5002.00ft (Ground Level)
Well:	Martin T Hart #1	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		Martin T. Hart			
Site Position:		Northing:	1,282,551.21 usft	Latitude:	40° 6' 26.377 N
From:	Lat/Long	Easting:	3,173,634.96 usft	Longitude:	104° 52' 45.239 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.40 °

Well	Martin T Hart #1, 1980' FSL, 1980' FWL, SEC27 T2N R67W					
Well Position	+N/-S	0.00 ft	Northing:	1,282,551.20 usft	Latitude:	40° 6' 26.377 N
	+E/-W	0.00 ft	Easting:	3,173,634.96 usft	Longitude:	104° 52' 45.239 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,002.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	3/30/2014	8.57	66.69	52,588

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	312.35	

Survey Program	Date	4/9/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
50.80	7,191.50	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
50.80	0.51	181.03	50.80	-0.23	0.00	-0.15	1.00	1.00	0.00
First SDI Gyro Survey									
100.01	0.44	181.64	100.01	-0.63	-0.01	-0.42	0.14	-0.14	1.24
151.34	0.33	190.91	151.34	-0.98	-0.05	-0.62	0.25	-0.21	18.06
200.72	0.26	197.69	200.72	-1.22	-0.11	-0.74	0.16	-0.14	13.73
250.38	0.16	231.53	250.38	-1.37	-0.20	-0.78	0.31	-0.20	68.14
300.47	0.23	263.36	300.47	-1.43	-0.35	-0.70	0.25	0.14	63.55
350.59	0.32	277.38	350.58	-1.42	-0.59	-0.52	0.22	0.18	27.97
400.01	0.32	274.20	400.00	-1.39	-0.86	-0.30	0.04	0.00	-6.43
450.30	0.38	272.81	450.29	-1.38	-1.17	-0.06	0.12	0.12	-2.76

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Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Martin T Hart #1
Project:	Weld County, CO	TVD Reference:	GL5002' @ 5002.00ft (Ground Level)
Site:	Martin T. Hart	MD Reference:	GL5002' @ 5002.00ft (Ground Level)
Well:	Martin T Hart #1	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)
500.24	0.48	275.86	500.23	-1.35	-1.54	0.23	0.21	0.20	6.11
550.27	0.28	293.95	550.26	-1.27	-1.86	0.52	0.46	-0.40	36.16
600.67	0.23	275.74	600.66	-1.21	-2.08	0.72	0.19	-0.10	-36.13
650.64	0.30	271.40	650.63	-1.20	-2.31	0.90	0.15	0.14	-8.69
700.69	0.37	263.77	700.68	-1.22	-2.60	1.10	0.17	0.14	-15.24
751.22	0.29	262.42	751.21	-1.25	-2.89	1.29	0.16	-0.16	-2.67
800.14	0.33	261.12	800.13	-1.29	-3.15	1.46	0.08	0.08	-2.66
850.16	0.42	248.70	850.15	-1.38	-3.46	1.63	0.24	0.18	-24.83
900.46	0.33	248.15	900.44	-1.50	-3.77	1.78	0.18	-0.18	-1.09
951.14	0.58	251.98	951.12	-1.63	-4.15	1.97	0.50	0.49	7.56
1,000.16	0.46	243.66	1,000.14	-1.80	-4.56	2.16	0.29	-0.24	-16.97
1,050.44	0.44	240.91	1,050.42	-1.98	-4.91	2.30	0.06	-0.04	-5.47
1,100.87	0.49	246.18	1,100.85	-2.16	-5.28	2.45	0.13	0.10	10.45
1,151.59	0.52	259.83	1,151.57	-2.29	-5.70	2.67	0.24	0.06	26.91
1,200.73	0.58	264.06	1,200.70	-2.35	-6.17	2.97	0.15	0.12	8.61
1,251.13	0.75	261.27	1,251.10	-2.43	-6.75	3.35	0.34	0.34	-5.54
1,300.32	0.82	255.98	1,300.29	-2.56	-7.41	3.75	0.20	0.14	-10.75
1,350.82	0.88	252.55	1,350.78	-2.77	-8.13	4.14	0.16	0.12	-6.79
1,401.18	0.89	249.59	1,401.13	-3.02	-8.87	4.52	0.09	0.02	-5.88
1,450.92	0.92	263.87	1,450.87	-3.20	-9.62	4.96	0.46	0.06	28.71
1,500.93	0.92	265.17	1,500.87	-3.27	-10.42	5.50	0.04	0.00	2.60
1,551.36	1.01	264.38	1,551.29	-3.35	-11.27	6.07	0.18	0.18	-1.57
1,600.02	1.11	263.29	1,599.95	-3.45	-12.16	6.67	0.21	0.21	-2.24
1,650.15	1.14	259.47	1,650.07	-3.60	-13.14	7.29	0.16	0.06	-7.62
1,700.17	1.03	255.84	1,700.08	-3.80	-14.06	7.83	0.26	-0.22	-7.26
1,750.55	0.92	263.60	1,750.45	-3.95	-14.90	8.35	0.34	-0.22	15.40
1,800.59	1.01	269.29	1,800.48	-4.00	-15.74	8.94	0.26	0.18	11.37
1,850.77	1.06	266.36	1,850.65	-4.04	-16.65	9.58	0.15	0.10	-5.84
1,901.32	1.11	264.76	1,901.20	-4.11	-17.60	10.24	0.12	0.10	-3.17
1,950.13	1.00	260.26	1,950.00	-4.23	-18.49	10.82	0.28	-0.23	-9.22
2,000.27	0.87	263.08	2,000.13	-4.35	-19.30	11.34	0.27	-0.26	5.62
2,050.55	0.97	267.29	2,050.40	-4.41	-20.11	11.89	0.24	0.20	8.37
2,100.82	1.02	262.51	2,100.67	-4.49	-20.98	12.47	0.19	0.10	-9.51
2,150.24	1.02	259.89	2,150.08	-4.63	-21.84	13.03	0.09	0.00	-5.30
2,200.54	0.95	259.85	2,200.37	-4.78	-22.70	13.55	0.14	-0.14	-0.08
2,250.97	0.92	265.00	2,250.79	-4.89	-23.51	14.08	0.18	-0.06	10.21
2,300.79	0.91	265.99	2,300.61	-4.95	-24.30	14.63	0.04	-0.02	1.99
2,351.05	0.77	253.15	2,350.86	-5.08	-25.02	15.07	0.47	-0.28	-25.55
2,400.23	0.47	237.09	2,400.04	-5.28	-25.51	15.29	0.70	-0.61	-32.66
2,451.33	0.18	246.73	2,451.14	-5.43	-25.76	15.38	0.58	-0.57	18.86
2,500.13	0.20	301.86	2,499.94	-5.41	-25.90	15.50	0.36	0.04	112.97
2,550.36	0.15	289.39	2,550.17	-5.35	-26.04	15.64	0.12	-0.10	-24.83
2,600.70	0.11	329.97	2,600.51	-5.28	-26.13	15.75	0.19	-0.08	80.61

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Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Martin T Hart #1
Project:	Weld County, CO	TVD Reference:	GL5002' @ 5002.00ft (Ground Level)
Site:	Martin T. Hart	MD Reference:	GL5002' @ 5002.00ft (Ground Level)
Well:	Martin T Hart #1	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)	
2,651.36	0.10	52.09	2,651.17	-5.21	-26.12	15.79	0.27	-0.02		162.10
2,700.39	0.28	51.04	2,700.20	-5.11	-25.99	15.76	0.37	0.37		-2.14
2,727.99	0.42	26.30	2,727.80	-4.98	-25.89	15.78	0.74	0.51		-89.64
2,751.27	0.39	31.01	2,751.08	-4.83	-25.81	15.82	0.19	-0.13		20.23
2,800.53	0.37	15.39	2,800.34	-4.54	-25.68	15.93	0.21	-0.04		-31.71
2,850.87	0.31	359.29	2,850.68	-4.24	-25.64	16.09	0.22	-0.12		-31.98
2,900.17	0.31	37.18	2,899.97	-4.00	-25.56	16.20	0.41	0.00		76.86
2,950.68	0.53	35.61	2,950.48	-3.71	-25.34	16.23	0.44	0.44		-3.11
3,001.30	0.81	20.16	3,001.10	-3.18	-25.09	16.40	0.65	0.55		-30.52
3,050.67	1.02	20.50	3,050.46	-2.44	-24.81	16.69	0.43	0.43		0.69
3,100.54	1.23	30.31	3,100.32	-1.56	-24.39	16.97	0.57	0.42		19.67
3,150.89	1.17	25.71	3,150.66	-0.63	-23.89	17.23	0.23	-0.12		-9.14
3,201.00	1.12	38.25	3,200.76	0.21	-23.36	17.41	0.51	-0.10		25.02
3,250.99	1.10	21.55	3,250.74	1.04	-22.89	17.62	0.65	-0.04		-33.41
3,300.18	0.93	13.34	3,299.93	1.87	-22.62	17.98	0.45	-0.35		-16.69
3,350.29	0.65	354.43	3,350.03	2.55	-22.55	18.39	0.76	-0.56		-37.74
3,400.41	0.43	341.13	3,400.15	3.01	-22.64	18.76	0.50	-0.44		-26.54
3,450.47	0.47	333.17	3,450.21	3.37	-22.80	19.12	0.15	0.08		-15.90
3,501.01	0.51	327.51	3,500.75	3.75	-23.01	19.53	0.12	0.08		-11.20
3,551.25	0.59	313.12	3,550.98	4.11	-23.32	20.00	0.32	0.16		-28.64
3,600.09	0.28	272.51	3,599.82	4.29	-23.62	20.35	0.86	-0.63		-83.15
3,650.14	0.27	269.30	3,649.87	4.29	-23.86	20.53	0.04	-0.02		-6.41
3,700.64	0.02	207.23	3,700.37	4.28	-23.99	20.61	0.52	-0.50		-122.91
3,750.73	0.12	259.71	3,750.46	4.27	-24.04	20.64	0.22	0.20		104.77
3,802.09	0.38	248.55	3,801.82	4.19	-24.25	20.75	0.51	0.51		-21.73
3,851.19	0.46	219.54	3,850.92	3.98	-24.53	20.81	0.46	0.16		-59.08
3,901.35	0.53	234.93	3,901.08	3.69	-24.85	20.85	0.30	0.14		30.68
3,950.15	0.81	240.96	3,949.87	3.40	-25.33	21.01	0.59	0.57		12.36
4,001.02	1.03	244.53	4,000.74	3.03	-26.06	21.30	0.45	0.43		7.02
4,050.36	1.03	250.54	4,050.07	2.69	-26.88	21.68	0.22	0.00		12.18
4,101.03	0.96	256.42	4,100.73	2.44	-27.72	22.13	0.24	-0.14		11.60
4,150.76	1.18	260.76	4,150.45	2.26	-28.63	22.68	0.47	0.44		8.73
4,200.07	1.15	251.63	4,199.75	2.02	-29.60	23.24	0.38	-0.06		-18.52
4,250.74	0.98	245.86	4,250.41	1.68	-30.48	23.66	0.40	-0.34		-11.39
4,300.61	0.93	250.98	4,300.28	1.37	-31.25	24.02	0.20	-0.10		10.27
4,350.05	1.04	250.59	4,349.71	1.09	-32.05	24.43	0.22	0.22		-0.79
4,400.72	0.95	241.81	4,400.37	0.74	-32.86	24.78	0.35	-0.18		-17.33
4,450.56	0.92	252.02	4,450.21	0.42	-33.60	25.12	0.34	-0.06		20.49
4,500.36	1.17	263.35	4,500.00	0.24	-34.49	25.65	0.65	0.50		22.75
4,550.17	1.08	240.42	4,549.80	-0.05	-35.40	26.13	0.92	-0.18		-46.03
4,600.40	0.92	244.26	4,600.02	-0.46	-36.18	26.43	0.35	-0.32		7.64
4,650.32	1.17	254.43	4,649.93	-0.77	-37.03	26.85	0.62	0.50		20.37
4,700.02	1.14	250.33	4,699.62	-1.07	-37.98	27.35	0.18	-0.06		-8.25

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Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Martin T Hart #1
Project:	Weld County, CO	TVD Reference:	GL5002' @ 5002.00ft (Ground Level)
Site:	Martin T. Hart	MD Reference:	GL5002' @ 5002.00ft (Ground Level)
Well:	Martin T Hart #1	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)
4,750.70	0.97	258.40	4,750.29	-1.33	-38.88	27.84	0.44	-0.34	15.92
4,800.28	1.03	270.78	4,799.87	-1.40	-39.73	28.42	0.45	0.12	24.97
4,850.01	0.86	269.43	4,849.59	-1.40	-40.55	29.03	0.34	-0.34	-2.71
4,899.49	0.88	290.56	4,899.06	-1.27	-41.28	29.65	0.65	0.04	42.70
4,950.52	0.44	289.28	4,950.09	-1.07	-41.83	30.20	0.86	-0.86	-2.51
5,000.93	0.56	323.32	5,000.50	-0.81	-42.16	30.62	0.62	0.24	67.53
5,050.27	0.86	317.10	5,049.83	-0.34	-42.56	31.22	0.63	0.61	-12.61
5,100.35	0.79	337.38	5,099.91	0.25	-42.95	31.91	0.60	-0.14	40.50
5,150.31	0.58	329.65	5,149.87	0.79	-43.21	32.46	0.46	-0.42	-15.47
5,200.32	0.59	348.15	5,199.87	1.26	-43.39	32.91	0.38	0.02	36.99
5,250.24	0.75	339.96	5,249.79	1.82	-43.55	33.41	0.37	0.32	-16.41
5,300.28	0.58	347.86	5,299.83	2.37	-43.72	33.91	0.39	-0.34	15.79
5,350.97	0.74	7.45	5,350.51	2.95	-43.73	34.30	0.54	0.32	38.65
5,400.46	0.55	355.01	5,400.00	3.50	-43.71	34.66	0.47	-0.38	-25.14
5,451.21	0.78	15.96	5,450.75	4.07	-43.64	34.99	0.65	0.45	41.28
5,500.75	0.65	350.61	5,500.28	4.68	-43.59	35.36	0.68	-0.26	-51.17
5,551.11	0.70	20.00	5,550.64	5.25	-43.53	35.71	0.69	0.10	58.36
5,600.11	0.80	0.63	5,599.64	5.87	-43.42	36.05	0.55	0.20	-39.53
5,650.92	0.73	24.73	5,650.44	6.52	-43.29	36.38	0.64	-0.14	47.43
5,701.14	0.89	357.80	5,700.66	7.20	-43.17	36.75	0.81	0.32	-53.62
5,750.82	0.76	13.08	5,750.33	7.91	-43.11	37.18	0.51	-0.26	30.76
5,800.61	0.81	354.28	5,800.12	8.58	-43.07	37.61	0.52	0.10	-37.76
5,850.70	0.89	0.49	5,850.20	9.32	-43.10	38.13	0.24	0.16	12.40
5,900.02	0.66	17.78	5,899.52	9.97	-43.01	38.50	0.66	-0.47	35.06
5,950.30	0.70	6.18	5,949.79	10.55	-42.89	38.80	0.28	0.08	-23.07
6,000.49	0.94	4.16	5,999.98	11.27	-42.82	39.24	0.48	0.48	-4.02
6,050.35	0.80	18.94	6,049.83	12.01	-42.68	39.63	0.53	-0.28	29.64
6,100.23	0.69	22.95	6,099.71	12.61	-42.45	39.87	0.24	-0.22	8.04
6,150.13	0.80	18.31	6,149.60	13.22	-42.23	40.11	0.25	0.22	-9.30
6,200.46	0.86	18.00	6,199.93	13.91	-42.00	40.41	0.12	0.12	-0.62
6,250.32	0.69	0.62	6,249.78	14.57	-41.88	40.76	0.58	-0.34	-34.86
6,300.37	0.74	12.67	6,299.83	15.18	-41.81	41.13	0.32	0.10	24.08
6,350.79	0.79	18.70	6,350.25	15.83	-41.62	41.43	0.19	0.10	11.96
6,400.78	0.83	32.51	6,400.23	16.46	-41.32	41.63	0.40	0.08	27.63
6,450.84	0.83	38.47	6,450.29	17.05	-40.90	41.71	0.17	0.00	11.91
6,500.94	0.94	51.98	6,500.38	17.59	-40.35	41.67	0.47	0.22	26.97
6,550.83	0.89	42.83	6,550.26	18.13	-39.76	41.60	0.31	-0.10	-18.34
6,601.21	0.92	39.37	6,600.64	18.73	-39.24	41.61	0.12	0.06	-6.87
6,650.44	0.93	42.86	6,649.86	19.32	-38.72	41.63	0.12	0.02	7.09
6,700.07	0.87	51.97	6,699.48	19.85	-38.15	41.56	0.31	-0.12	18.36
6,750.57	1.19	50.08	6,749.98	20.42	-37.44	41.43	0.64	0.63	-3.74
6,801.49	1.08	58.96	6,800.89	21.01	-36.63	41.22	0.41	-0.22	17.44
6,850.68	1.18	56.69	6,850.07	21.53	-35.80	40.96	0.22	0.20	-4.61
6,901.40	1.34	58.55	6,900.77	22.12	-34.86	40.67	0.33	0.32	3.67

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Martin T Hart #1
Project:	Weld County, CO	TVD Reference:	GL5002' @ 5002.00ft (Ground Level)
Site:	Martin T. Hart	MD Reference:	GL5002' @ 5002.00ft (Ground Level)
Well:	Martin T Hart #1	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)
6,950.50	0.99	72.09	6,949.86	22.55	-33.97	40.30	0.90	-0.71	27.58
7,000.90	2.21	71.62	7,000.24	22.99	-32.63	39.61	2.42	2.42	-0.93
7,050.01	1.49	71.17	7,049.33	23.50	-31.13	38.84	1.47	-1.47	-0.92
7,100.13	1.75	79.08	7,099.43	23.85	-29.76	38.06	0.68	0.52	15.78
7,150.50	1.88	90.62	7,149.77	23.99	-28.18	36.99	0.77	0.26	22.91
7,191.50	2.44	63.72	7,190.74	24.37	-26.72	36.17	2.79	1.37	-65.61
Last SDI Gyro Survey									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
50.80	50.80	-0.23	0.00	First SDI Gyro Survey	
7,191.50	7,190.74	24.37	-26.72	Last SDI Gyro Survey	

Checked By: _____ Approved By: _____ Date: _____