



**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.	UPPR 50 Pan Am D-5
County & State	Weld County, CO
SDI Job No.	410314K125716
Rig	KPK 2
Survey Date	11-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 4837.11 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

UPRR

UPPR 50 Pan Am D-5

OH

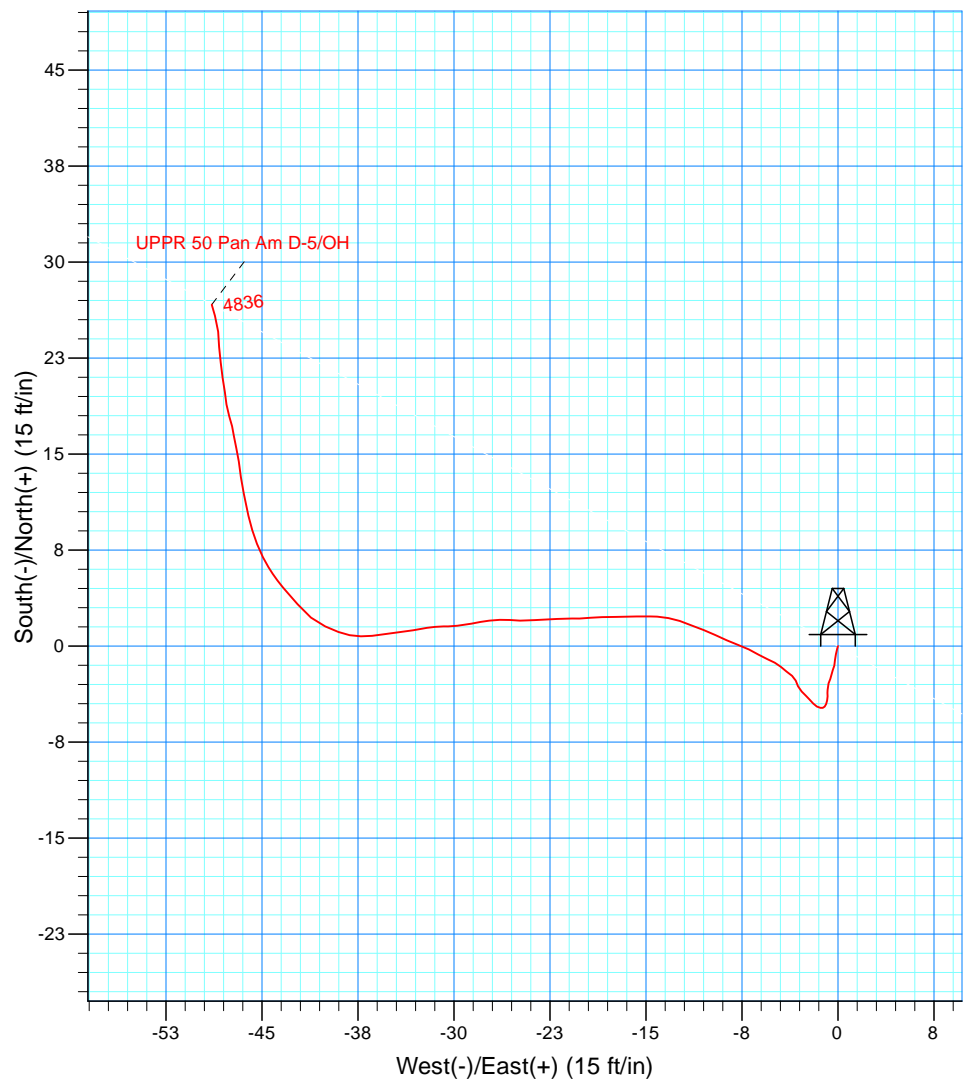
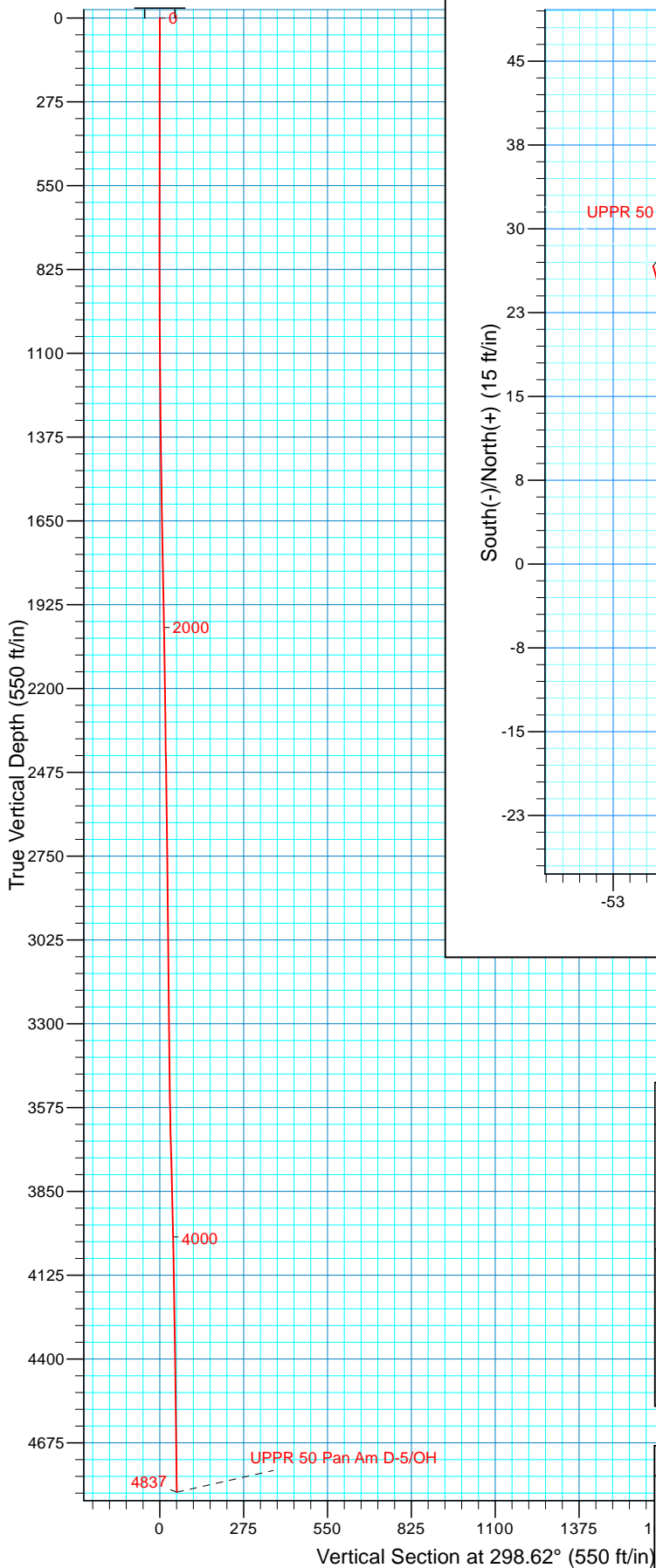
Design: OH

Standard Survey Report

09 April, 2014



Project: Weld County, CO
Site: UPRR
Well: UPRR 50 Pan Am D-5
Wellbore: OH
Design: OH



WELL DETAILS: UPRR 50 Pan Am D-5

Ground Level:	5035.00		
Northing	Easting	Latitude	Longitude
1252115.82	3163364.30	40° 1' 26.292 N	104° 55' 0.000 W

CO-ordinate (N/E) Reference: Well UPRR 50 Pan Am D-5, True North
Vertical (TVD) Reference: GL 5035' @ 5035.00ft (Ground Level)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL 5035' @ 5035.00ft (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 (UPPR 50 Pan Am D-5/OH)

Created By: Steve Gottschalk

14:18, April 09 2014

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well UPPR 50 Pan Am D-5
Project:	Weld County, CO	TVD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Site:	UPRR	MD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Well:	UPPR 50 Pan Am D-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		UPRR						
Site Position: From:	Lat/Long	Northing:	1,252,115.82	usft	Latitude:	40° 1' 26.292 N		
		Easting:	3,163,364.30	usft	Longitude:	104° 55' 0.000 W		
		Position Uncertainty:	0.00	ft	Slot Radius:	13.200	in	Grid Convergence:

Well	UPPR 50 Pan Am D-5, 640'FNL, 1980' FWL, SEC3 T1N R66W					
Well Position	+N/-S	0.00 ft	Northing:	1,252,115.81 usft	Latitude:	40° 1' 26.292 N
	+E/-W	0.00 ft	Easting:	3,163,364.30 usft	Longitude:	104° 55' 0.000 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	5,035.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	3/11/2014	8.59	66.62	52,546

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	298.62	

Survey Program	Date	4/9/2014			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
49.59	4,837.11	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
49.59	0.46	193.99	49.59	-0.19	-0.05	-0.05	0.93	0.93	0.00
First SDI Gyro Survey									
99.81	0.57	195.46	99.81	-0.63	-0.16	-0.16	0.22	0.22	2.93
148.82	0.52	180.62	148.82	-1.09	-0.23	-0.32	0.30	-0.10	-30.28
199.21	0.46	193.45	199.20	-1.51	-0.28	-0.48	0.25	-0.12	25.46
249.73	0.42	204.59	249.72	-1.88	-0.40	-0.54	0.19	-0.08	22.05
298.58	0.31	187.53	298.57	-2.17	-0.50	-0.60	0.31	-0.23	-34.92
349.76	0.29	193.18	349.75	-2.44	-0.54	-0.69	0.07	-0.04	11.04
399.67	0.29	207.45	399.66	-2.67	-0.63	-0.72	0.14	0.00	28.59
449.04	0.32	199.72	449.03	-2.91	-0.74	-0.75	0.10	0.06	-15.66

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Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well UPPR 50 Pan Am D-5
Project:	Weld County, CO	TVD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Site:	UPRR	MD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Well:	UPPR 50 Pan Am D-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)
499.22	0.28	173.51	499.21	-3.16	-0.77	-0.84	0.28	-0.08	-52.23
549.10	0.31	199.88	549.09	-3.41	-0.80	-0.93	0.28	0.06	52.87
599.79	0.26	163.03	599.78	-3.65	-0.81	-1.03	0.37	-0.10	-72.70
649.11	0.37	185.53	649.10	-3.92	-0.80	-1.18	0.33	0.22	45.62
699.66	0.38	189.97	699.65	-4.24	-0.84	-1.29	0.06	0.02	8.78
748.73	0.27	203.93	748.71	-4.51	-0.92	-1.36	0.27	-0.22	28.45
798.76	0.27	213.77	798.74	-4.72	-1.03	-1.36	0.09	0.00	19.67
849.25	0.18	268.50	849.23	-4.82	-1.18	-1.28	0.44	-0.18	108.40
899.25	0.26	275.36	899.23	-4.81	-1.37	-1.10	0.17	0.16	13.72
949.57	0.40	294.68	949.55	-4.72	-1.64	-0.82	0.35	0.28	38.39
998.86	0.52	321.87	998.84	-4.48	-1.93	-0.45	0.50	0.24	55.16
1,049.65	0.47	314.35	1,049.63	-4.15	-2.23	-0.03	0.16	-0.10	-14.81
1,099.19	0.48	317.36	1,099.17	-3.86	-2.51	0.36	0.05	0.02	6.08
1,149.45	0.57	313.40	1,149.43	-3.53	-2.84	0.80	0.19	0.18	-7.88
1,200.05	0.56	338.37	1,200.02	-3.13	-3.11	1.23	0.48	-0.02	49.35
1,249.75	0.53	337.44	1,249.72	-2.69	-3.29	1.60	0.06	-0.06	-1.87
1,298.73	0.60	307.84	1,298.70	-2.32	-3.58	2.03	0.61	0.14	-60.43
1,348.73	0.66	308.53	1,348.70	-1.98	-4.01	2.57	0.12	0.12	1.38
1,399.72	0.67	309.89	1,399.68	-1.61	-4.47	3.15	0.04	0.02	2.67
1,449.00	0.64	299.37	1,448.96	-1.29	-4.93	3.71	0.25	-0.06	-21.35
1,499.62	0.86	293.91	1,499.57	-0.99	-5.52	4.37	0.46	0.43	-10.79
1,548.82	0.95	298.90	1,548.77	-0.65	-6.22	5.15	0.24	0.18	10.14
1,599.37	0.95	296.98	1,599.31	-0.26	-6.96	5.98	0.06	0.00	-3.80
1,649.88	1.10	289.37	1,649.81	0.10	-7.79	6.88	0.40	0.30	-15.07
1,698.95	1.16	294.76	1,698.87	0.46	-8.68	7.84	0.25	0.12	10.98
1,749.37	1.09	295.87	1,749.28	0.88	-9.58	8.83	0.15	-0.14	2.20
1,799.86	1.14	289.77	1,799.76	1.26	-10.48	9.81	0.25	0.10	-12.08
1,849.08	1.18	291.49	1,848.97	1.61	-11.41	10.79	0.11	0.08	3.49
1,899.99	1.07	289.60	1,899.87	1.96	-12.35	11.78	0.23	-0.22	-3.71
1,949.92	1.04	279.76	1,949.80	2.20	-13.24	12.67	0.37	-0.06	-19.71
1,999.77	1.01	274.85	1,999.64	2.31	-14.12	13.50	0.19	-0.06	-9.85
2,048.64	0.92	267.83	2,048.50	2.33	-14.94	14.23	0.30	-0.18	-14.36
2,098.81	1.06	269.64	2,098.66	2.32	-15.81	14.99	0.29	0.28	3.61
2,148.99	0.97	269.86	2,148.84	2.31	-16.70	15.76	0.18	-0.18	0.44
2,199.12	1.01	267.47	2,198.96	2.29	-17.56	16.51	0.11	0.08	-4.77
2,249.31	0.95	270.80	2,249.14	2.28	-18.42	17.26	0.16	-0.12	6.63
2,298.51	1.16	262.73	2,298.33	2.22	-19.32	18.02	0.52	0.43	-16.40
2,349.15	0.82	270.98	2,348.96	2.16	-20.19	18.76	0.73	-0.67	16.29
2,399.80	0.95	268.82	2,399.61	2.16	-20.97	19.45	0.26	0.26	-4.26
2,448.95	0.94	265.06	2,448.75	2.12	-21.78	20.14	0.13	-0.02	-7.65
2,499.05	0.79	273.55	2,498.85	2.10	-22.54	20.79	0.39	-0.30	16.95
2,549.89	0.84	263.27	2,549.68	2.08	-23.26	21.41	0.30	0.10	-20.22
2,599.06	0.99	266.53	2,598.85	2.01	-24.04	22.07	0.32	0.31	6.63

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Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well UPPR 50 Pan Am D-5
Project:	Weld County, CO	TVD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Site:	UPRR	MD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Well:	UPPR 50 Pan Am D-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)
2,649.43	0.83	271.88	2,649.21	2.00	-24.84	22.76	0.36	-0.32	10.62
2,699.75	0.95	274.74	2,699.52	2.04	-25.62	23.47	0.25	0.24	5.68
2,748.66	0.95	268.17	2,748.43	2.06	-26.43	24.19	0.22	0.00	-13.43
2,798.84	0.89	262.55	2,798.60	2.00	-27.23	24.86	0.22	-0.12	-11.20
2,849.18	0.69	260.62	2,848.93	1.90	-27.92	25.42	0.40	-0.40	-3.83
2,899.00	0.58	256.74	2,898.75	1.79	-28.46	25.84	0.24	-0.22	-7.79
2,949.25	0.69	266.11	2,949.00	1.71	-29.01	26.28	0.30	0.22	18.65
2,999.44	0.70	254.69	2,999.18	1.61	-29.61	26.76	0.28	0.02	-22.75
3,049.67	0.67	275.88	3,049.41	1.56	-30.19	27.25	0.50	-0.06	42.19
3,099.01	0.76	262.72	3,098.75	1.55	-30.80	27.78	0.38	0.18	-26.67
3,149.55	0.73	268.64	3,149.28	1.50	-31.46	28.33	0.16	-0.06	11.71
3,199.76	0.75	259.87	3,199.49	1.43	-32.10	28.87	0.23	0.04	-17.47
3,248.91	0.69	263.01	3,248.64	1.34	-32.71	29.36	0.15	-0.12	6.39
3,299.29	0.78	256.79	3,299.01	1.23	-33.35	29.86	0.24	0.18	-12.35
3,349.98	0.81	265.46	3,349.70	1.12	-34.04	30.42	0.24	0.06	17.10
3,398.86	0.89	261.77	3,398.57	1.04	-34.76	31.01	0.20	0.16	-7.55
3,448.73	0.94	261.91	3,448.43	0.93	-35.55	31.65	0.10	0.10	0.28
3,498.84	1.01	264.10	3,498.54	0.82	-36.40	32.34	0.16	0.14	4.37
3,549.09	1.00	269.87	3,548.78	0.78	-37.27	33.09	0.20	-0.02	11.48
3,599.61	0.99	281.96	3,599.29	0.86	-38.14	33.90	0.42	-0.02	23.93
3,649.46	1.13	289.76	3,649.13	1.12	-39.03	34.79	0.40	0.28	15.65
3,699.69	1.42	294.29	3,699.35	1.54	-40.06	35.90	0.61	0.58	9.02
3,748.53	1.68	309.29	3,748.17	2.25	-41.17	37.21	0.98	0.53	30.71
3,799.44	1.68	320.21	3,799.06	3.29	-42.22	38.64	0.63	0.00	21.45
3,849.80	1.57	317.75	3,849.40	4.37	-43.16	39.98	0.26	-0.22	-4.88
3,898.80	1.61	325.51	3,898.38	5.43	-44.00	41.22	0.45	0.08	15.84
3,948.72	1.64	331.93	3,948.28	6.64	-44.73	42.45	0.37	0.06	12.86
3,999.76	1.59	337.47	3,999.30	7.94	-45.35	43.61	0.32	-0.10	10.85
4,048.85	1.57	342.89	4,048.37	9.21	-45.80	44.62	0.31	-0.04	11.04
4,099.05	1.60	349.55	4,098.55	10.56	-46.13	45.56	0.37	0.06	13.27
4,149.29	1.54	348.19	4,148.78	11.91	-46.40	46.44	0.14	-0.12	-2.71
4,199.07	1.50	350.80	4,198.54	13.21	-46.64	47.27	0.16	-0.08	5.24
4,249.73	1.30	353.35	4,249.18	14.43	-46.81	48.01	0.41	-0.39	5.03
4,298.99	1.08	346.86	4,298.43	15.44	-46.98	48.64	0.52	-0.45	-13.17
4,349.45	1.07	349.13	4,348.88	16.37	-47.18	49.26	0.09	-0.02	4.50
4,398.72	0.87	350.17	4,398.15	17.19	-47.33	49.78	0.41	-0.41	2.11
4,449.56	1.00	339.46	4,448.98	17.98	-47.55	50.36	0.43	0.26	-21.07
4,499.88	1.14	353.42	4,499.29	18.89	-47.76	50.98	0.59	0.28	27.74
4,548.90	1.13	351.35	4,548.30	19.85	-47.89	51.55	0.09	-0.02	-4.22
4,599.79	1.36	350.27	4,599.18	20.94	-48.07	52.23	0.45	0.45	-2.12
4,649.32	1.47	355.00	4,648.69	22.16	-48.22	52.95	0.32	0.22	9.55
4,699.11	1.34	353.70	4,698.47	23.37	-48.34	53.63	0.27	-0.26	-2.61
4,749.50	1.42	359.87	4,748.84	24.58	-48.41	54.27	0.33	0.16	12.24

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well UPPR 50 Pan Am D-5
Project:	Weld County, CO	TVD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Site:	UPRR	MD Reference:	GL 5035' @ 5035.00ft (Ground Level)
Well:	UPPR 50 Pan Am D-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)
4,798.99	1.53	337.61	4,798.32	25.81	-48.66	55.08	1.17	0.22	-44.98
4,837.11	1.28	352.06	4,836.43	26.70	-48.92	55.73	1.13	-0.66	37.91
Last SDI Gyro Survey									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
49.59	49.59	-0.19	-0.05	First SDI Gyro Survey	
4,837.11	4,836.43	26.70	-48.92	Last SDI Gyro Survey	

Checked By: _____ Approved By: _____ Date: _____