




**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.	Ocoma 31-25
County & State	Weld County, CO
SDI Job No.	411013K73544
Rig	Halliburton11014931
Survey Date	25-Oct-2013

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 4417 feet is true and correct as determined from all available records.


Signature

4-Dec-2013

Date

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

KP Kauffman Co, Inc.

Weld County, CO

Ocoma

Ocoma 31-25

OH

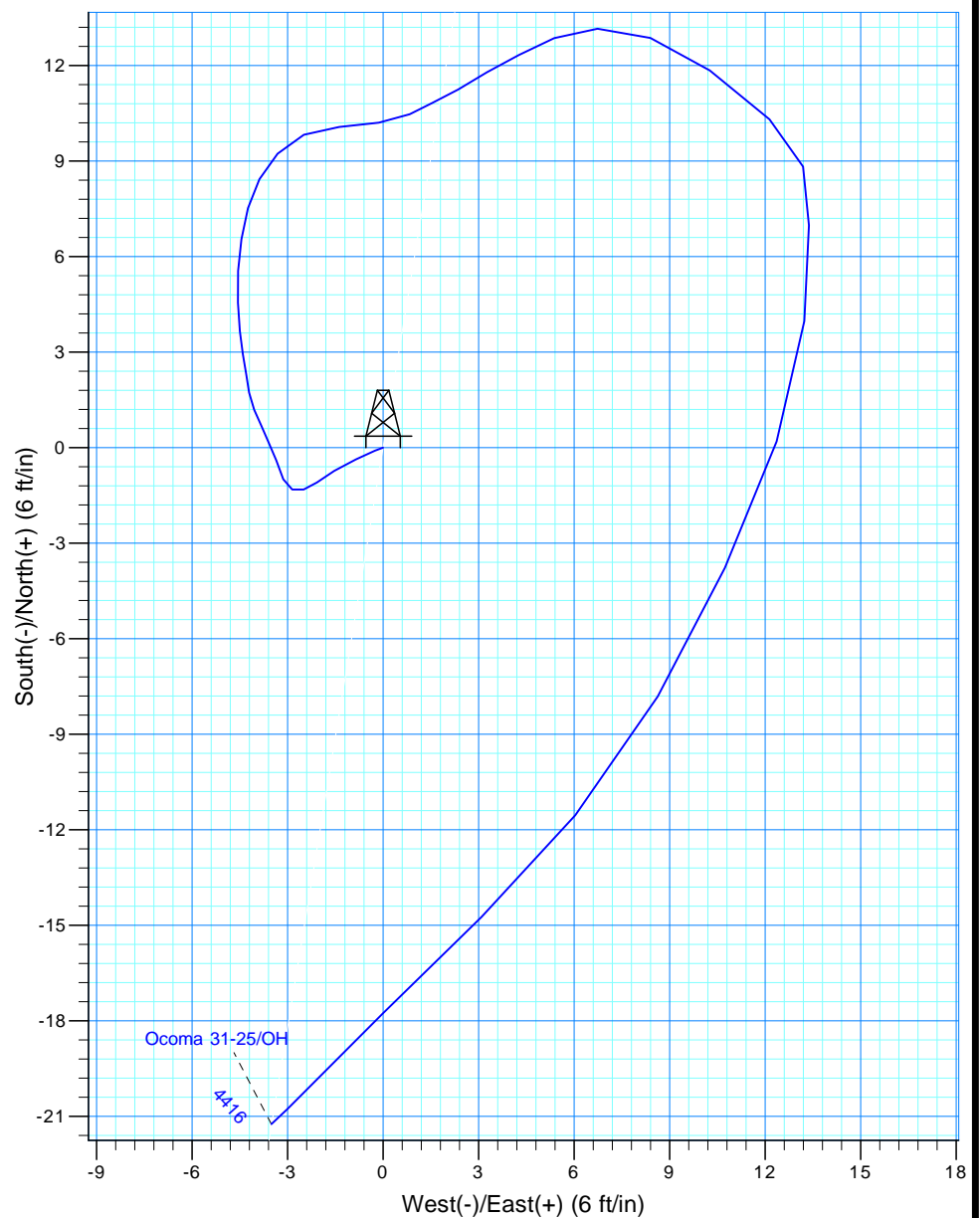
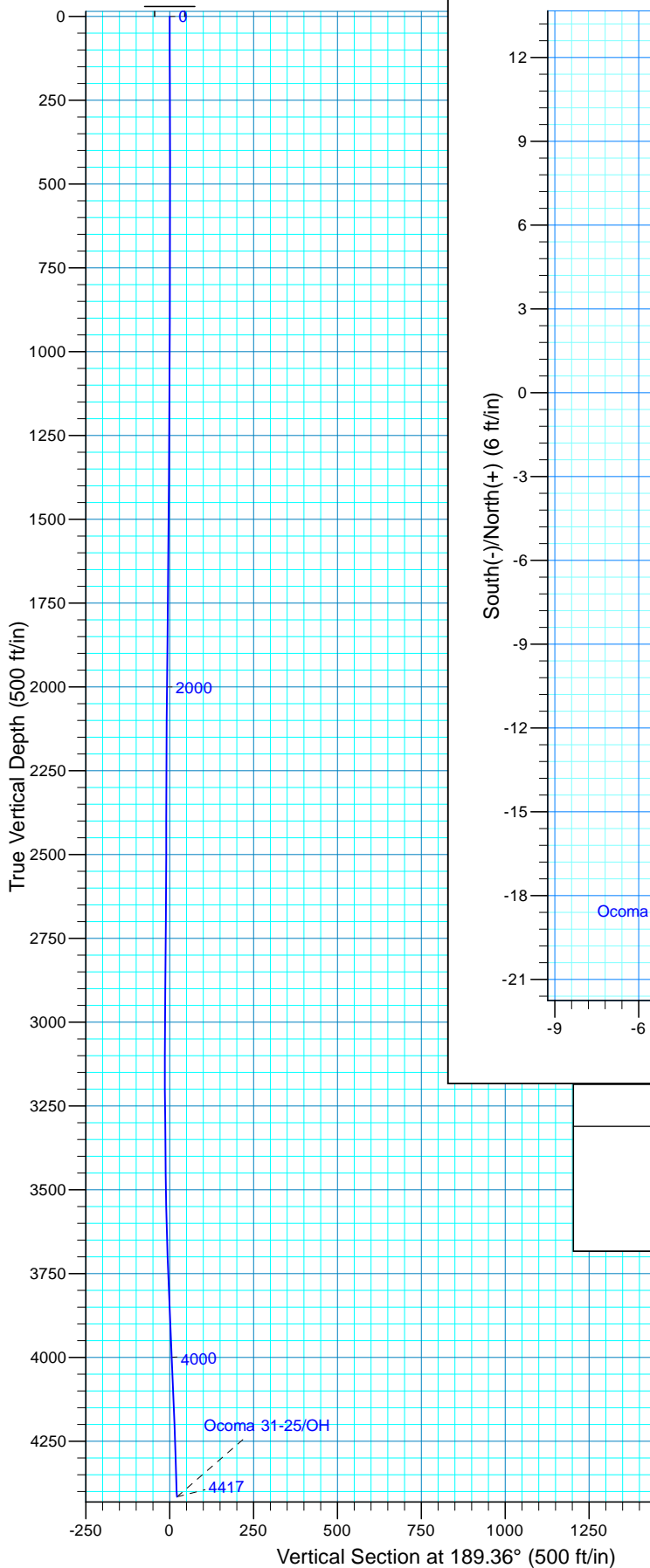
Design: OH

Standard Survey Report

04 December, 2013



Project: Weld County, CO
Site: Ocoma
Well: Ocoma 31-25
Wellbore: OH
Design: OH



WELL DETAILS: Ocoma 31-25

Ground Level:	4867.00		
Northing	Easting	Latitude	Longitude
1342674.66	3251024.55	40° 16' 13.966 N	104° 36' 1.408 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Ocoma 31-25, True North
Vertical (TVD) Reference: GL 4867' @ 4867.00ft (Halliburton 11014931)
Section (VS) Reference: Slot - (0.00N, 0.00E)
Measured Depth Reference: GL 4867' @ 4867.00ft (Halliburton 11014931)
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 (Ocoma 31-25/OH)

Created By: Steve Gottschalk 20:43, December 04 2013

Scientific Drilling International

Survey Report

Company:	KP Kauffman Co, Inc.	Local Co-ordinate Reference:	Well Ocoma 31-25
Project:	Weld County, CO	TVD Reference:	GL 4867" @ 4867.00ft (Halliburton 11014931)
Site:	Ocoma	MD Reference:	GL 4867" @ 4867.00ft (Halliburton 11014931)
Well:	Ocoma 31-25	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		Ocoma			
Site Position:		Northing:	1,342,674.67 usft	Latitude:	40° 16' 13.966 N
From:	Lat/Long	Easting:	3,251,024.55 usft	Longitude:	104° 36' 1.408 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.58 °

Well	Ocoma 31-25, -562' FEL, -1980' FNL, SEC31 T4N R64W					
Well Position	+N/-S	0.00 ft	Northing:	1,342,674.66 usft	Latitude:	40° 16' 13.966 N
	+E/-W	0.00 ft	Easting:	3,251,024.55 usft	Longitude:	104° 36' 1.408 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft	Ground Level:	4,867.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2013	10/25/2013	8.48	66.88	52,758

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	189.36	

Survey Program	Date	12/4/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	4,417.00	Survey #1 Surface 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
100.00	0.31	249.17	100.00	-0.10	-0.25	0.14	0.31	0.31	0.00
First SDI Gyro Survey									
200.00	0.45	242.49	200.00	-0.37	-0.85	0.51	0.15	0.14	-6.68
300.00	0.43	241.13	299.99	-0.74	-1.53	0.98	0.02	-0.02	-1.36
400.00	0.33	230.41	399.99	-1.10	-2.08	1.42	0.12	-0.10	-10.72
500.00	0.22	260.48	499.99	-1.32	-2.49	1.70	0.18	-0.11	30.07
600.00	0.20	280.22	599.99	-1.32	-2.85	1.76	0.07	-0.02	19.74
700.00	0.35	339.42	699.99	-1.00	-3.13	1.50	0.30	0.15	59.20
800.00	0.39	339.72	799.99	-0.40	-3.36	0.94	0.04	0.04	0.30
900.00	0.31	333.55	899.99	0.17	-3.60	0.42	0.09	-0.08	-6.17

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Site:	Ocoma	MD Reference:	GL 4867" @ 4867.00ft (Halliburton 11014931)
Well:	Ocoma 31-25	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)
1,000.00	0.32	338.30	999.98	0.67	-3.82	-0.04	0.03	0.01	4.75
1,100.00	0.33	334.70	1,099.98	1.19	-4.05	-0.51	0.02	0.01	-3.60
1,200.00	0.32	351.73	1,199.98	1.72	-4.21	-1.02	0.10	-0.01	17.03
1,300.00	0.35	350.22	1,299.98	2.30	-4.30	-1.57	0.03	0.03	-1.51
1,400.00	0.37	351.99	1,399.98	2.92	-4.40	-2.17	0.02	0.02	1.77
1,500.00	0.48	352.99	1,499.97	3.66	-4.50	-2.88	0.11	0.11	1.00
1,600.00	0.55	358.53	1,599.97	4.55	-4.56	-3.75	0.09	0.07	5.54
1,700.00	0.59	2.48	1,699.97	5.55	-4.55	-4.73	0.06	0.04	3.95
1,800.00	0.56	8.94	1,799.96	6.55	-4.45	-5.73	0.07	-0.03	6.46
1,900.00	0.58	14.46	1,899.96	7.52	-4.25	-6.73	0.06	0.02	5.52
2,000.00	0.55	29.69	1,999.95	8.42	-3.88	-7.68	0.15	-0.03	15.23
2,100.00	0.58	40.70	2,099.95	9.23	-3.32	-8.56	0.11	0.03	11.01
2,200.00	0.62	67.46	2,199.94	9.82	-2.49	-9.28	0.28	0.04	26.76
2,300.00	0.70	85.90	2,299.93	10.07	-1.38	-9.71	0.23	0.08	18.44
2,400.00	0.73	81.57	2,399.93	10.20	-0.14	-10.05	0.06	0.03	-4.33
2,500.00	0.44	63.80	2,499.92	10.47	0.84	-10.46	0.34	-0.29	-17.77
2,600.00	0.46	63.89	2,599.92	10.81	1.54	-10.92	0.02	0.02	0.09
2,700.00	0.59	60.91	2,699.91	11.24	2.35	-11.47	0.13	0.13	-2.98
2,800.00	0.63	57.52	2,799.91	11.79	3.27	-12.16	0.05	0.04	-3.39
2,900.00	0.68	65.40	2,899.90	12.33	4.27	-12.86	0.10	0.05	7.88
3,000.00	0.73	63.76	2,999.89	12.86	5.38	-13.56	0.05	0.05	-1.64
3,100.00	0.90	89.32	3,099.88	13.15	6.74	-14.07	0.40	0.17	25.56
3,200.00	1.06	108.75	3,199.87	12.86	8.40	-14.05	0.37	0.16	19.43
3,300.00	1.40	126.10	3,299.85	11.84	10.26	-13.35	0.50	0.34	17.35
3,400.00	1.38	132.64	3,399.82	10.31	12.13	-12.14	0.16	-0.02	6.54
3,500.00	0.79	165.81	3,499.80	8.82	13.19	-10.85	0.84	-0.59	33.17
3,600.00	1.35	179.00	3,599.78	6.98	13.38	-9.06	0.61	0.56	13.19
3,700.00	2.11	185.26	3,699.74	3.97	13.23	-6.07	0.78	0.76	6.26
3,800.00	2.37	199.71	3,799.66	0.19	12.36	-2.20	0.62	0.26	14.45
3,900.00	2.55	204.77	3,899.57	-3.78	10.73	1.98	0.28	0.18	5.06
4,000.00	2.68	210.24	3,999.46	-7.82	8.63	6.31	0.28	0.13	5.47
4,100.00	2.54	219.48	4,099.36	-11.55	6.04	10.41	0.44	-0.14	9.24
4,200.00	2.45	226.01	4,199.27	-14.74	3.09	14.04	0.30	-0.09	6.53
4,300.00	2.53	225.31	4,299.17	-17.78	-0.01	17.55	0.09	0.08	-0.70
4,400.00	2.31	224.61	4,399.08	-20.77	-3.00	20.98	0.22	-0.22	-0.70
4,417.00	2.40	228.32	4,416.07	-21.25	-3.51	21.54	1.04	0.53	21.82
Last SDI Gyro Survey									

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Well:	Ocoma 31-25	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)		
100.00	100.00	-0.10	-0.25	First SDI Gyro Survey	
4,417.00	4,416.07	-21.25	-3.51	Last SDI Gyro Survey	

Checked By: _____	Approved By: _____	Date: _____
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