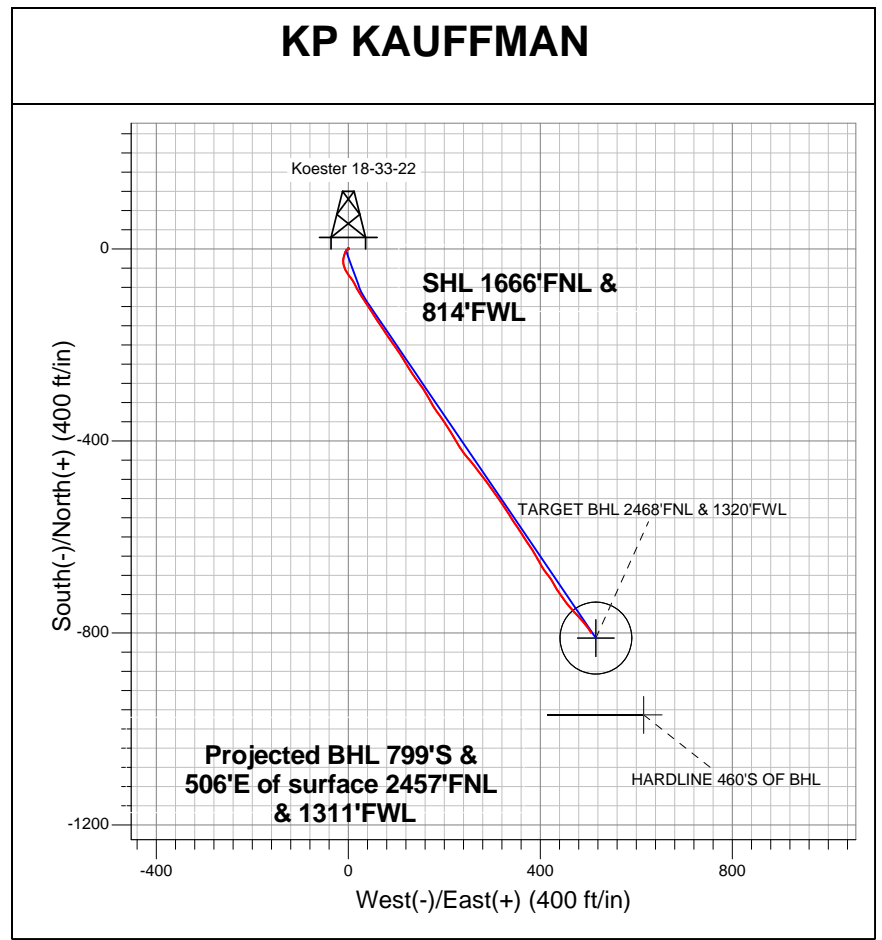
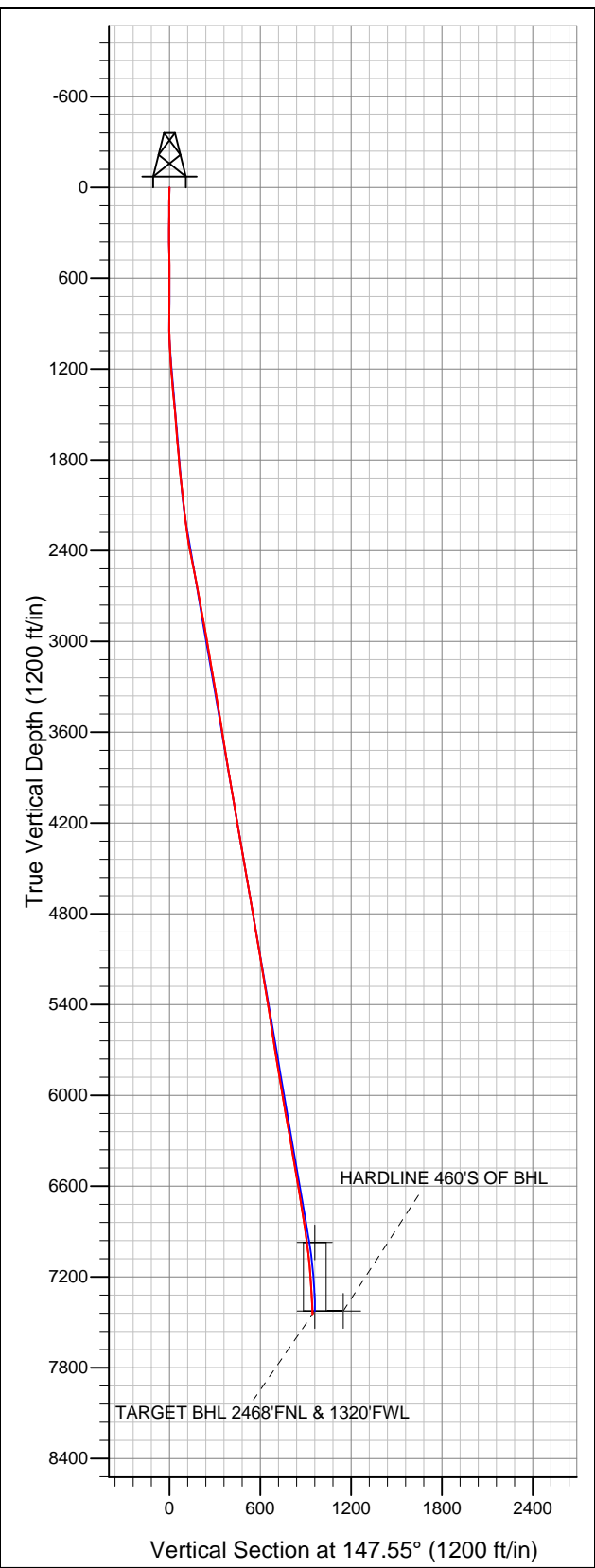




Well Name: Koester 18-33-22

Surface Location: Koester 18-33-5 Pad Sec.33-T4N-R67W
 North American Datum 1983 US State Plane 1983Colorado Northern Zone
 Ground Elevation: 4922.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1342537.88	3166833.07	40.272122	-104.902104	
Original Well Elev		WELL @ 4934.0ft (Original Well Elev)				



LEGEND

- Wellbore #1
- Koester 18-33-22, Wellbore #1, Plan #2 (6-19-12) V0
- Survey #1

Final Survey Plot

Projected Final Survey -
 7526'MD & 7451'TVD @ 946'VS
 2.60 deg Inc 145.90 deg AZ

Project: SEC.33-T4N-R67W
 Site: Koester 18-33-5 Pad Sec.33-T4N-R67W
 Well: Koester 18-33-22
 Plan: Wellbore #1



KP KAUFFMAN

SEC.33-T4N-R67W

Koester 18-33-5 Pad Sec.33-T4N-R67W

Koester 18-33-22

Wellbore #1

Survey: Survey #1

Standard Survey Report

19 July, 2012

Company:	KP KAUFFMAN	Local Co-ordinate Reference:	Well Koester 18-33-22
Project:	SEC.33-T4N-R67W	TVD Reference:	WELL @ 4934.0ft (Original Well Elev)
Site:	Koester 18-33-5 Pad Sec.33-T4N-R67W	MD Reference:	WELL @ 4934.0ft (Original Well Elev)
Well:	Koester 18-33-22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.33-T4N-R67W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Koester 18-33-5 Pad Sec.33-T4N-R67W				
Site Position:		Northing:	1,342,538.11 ft	Latitude:	40.272123
From:	Lat/Long	Easting:	3,166,811.30 ft	Longitude:	-104.902182
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.39 °

Well	Koester 18-33-22					
Well Position	+N/-S	0.0 ft	Northing:	1,342,537.88 ft	Latitude:	40.272122
	+E/-W	0.0 ft	Easting:	3,166,833.07 ft	Longitude:	-104.902104
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,922.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/19/2012	8.79	66.89	52,942

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	147.55	

Survey Program	Date	7/19/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
97.0	7,526.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
97.0	0.80	320.60	97.0	0.5	-0.4	-0.7	0.82	0.82	0.00	
184.0	0.40	7.90	184.0	1.3	-0.8	-1.5	0.70	-0.46	54.37	
274.0	0.10	36.40	274.0	1.7	-0.7	-1.8	0.35	-0.33	31.67	
365.0	0.40	78.80	365.0	1.8	-0.3	-1.7	0.37	0.33	46.59	
457.0	0.70	126.70	457.0	1.5	0.4	-1.0	0.57	0.33	52.07	
548.0	0.40	145.90	548.0	0.9	1.1	-0.2	0.38	-0.33	21.10	
639.0	0.90	248.00	639.0	0.4	0.6	0.0	1.16	0.55	112.20	
700.0	1.10	237.10	700.0	-0.1	-0.4	-0.1	0.45	0.33	-17.87	
739.0	1.20	243.80	739.0	-0.5	-1.0	-0.1	0.43	0.26	17.18	
832.0	1.00	258.40	831.9	-1.1	-2.7	-0.5	0.37	-0.22	15.70	
926.0	1.10	242.60	925.9	-1.7	-4.3	-0.9	0.32	0.11	-16.81	
1,020.0	4.40	194.40	1,019.8	-5.6	-6.0	1.5	4.00	3.51	-51.28	

Company:	KP KAUFFMAN	Local Co-ordinate Reference:	Well Koester 18-33-22
Project:	SEC.33-T4N-R67W	TVD Reference:	WELL @ 4934.0ft (Original Well Elev)
Site:	Koester 18-33-5 Pad Sec.33-T4N-R67W	MD Reference:	WELL @ 4934.0ft (Original Well Elev)
Well:	Koester 18-33-22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)	
1,113.0	4.80	204.60	1,112.5	-12.6	-8.5	6.0	0.98	0.43	10.97	
1,207.0	6.20	186.10	1,206.1	-21.2	-10.7	12.1	2.39	1.49	-19.68	
1,301.0	5.10	172.60	1,299.6	-30.4	-10.7	19.9	1.83	-1.17	-14.36	
1,395.0	5.90	157.30	1,393.2	-39.0	-8.3	28.4	1.77	0.85	-16.28	
1,488.0	5.10	147.00	1,485.8	-46.9	-4.2	37.3	1.36	-0.86	-11.08	
1,582.0	4.40	148.00	1,579.5	-53.4	0.0	45.1	0.75	-0.74	1.06	
1,676.0	4.40	140.30	1,673.2	-59.3	4.2	52.3	0.63	0.00	-8.19	
1,769.0	4.80	148.40	1,765.9	-65.3	8.5	59.7	0.82	0.43	8.71	
1,863.0	5.30	154.00	1,859.5	-72.6	12.5	67.9	0.75	0.53	5.96	
1,957.0	6.80	151.50	1,953.0	-81.4	17.0	77.8	1.62	1.60	-2.66	
2,050.0	6.60	146.30	2,045.4	-90.6	22.6	88.6	0.69	-0.22	-5.59	
2,144.0	6.30	149.20	2,138.8	-99.6	28.3	99.2	0.47	-0.32	3.09	
2,238.0	7.00	147.70	2,232.1	-108.8	34.0	110.1	0.77	0.74	-1.60	
2,331.0	8.70	144.10	2,324.3	-119.3	41.1	122.8	1.90	1.83	-3.87	
2,425.0	11.00	149.40	2,416.9	-132.8	49.9	138.8	2.63	2.45	5.64	
2,519.0	11.70	146.60	2,509.0	-148.5	59.7	157.3	0.95	0.74	-2.98	
2,613.0	11.50	146.60	2,601.1	-164.3	70.1	176.2	0.21	-0.21	0.00	
2,706.0	10.10	145.70	2,692.5	-178.7	79.8	193.6	1.52	-1.51	-0.97	
2,800.0	10.70	144.30	2,784.9	-192.6	89.5	210.6	0.69	0.64	-1.49	
2,894.0	9.90	145.50	2,877.4	-206.4	99.2	227.4	0.88	-0.85	1.28	
2,987.0	9.90	146.40	2,969.0	-219.6	108.1	243.4	0.17	0.00	0.97	
3,081.0	9.90	149.10	3,061.6	-233.3	116.8	259.5	0.49	0.00	2.87	
3,175.0	9.60	149.40	3,154.3	-247.0	124.9	275.4	0.32	-0.32	0.32	
3,268.0	9.10	146.30	3,246.0	-259.8	132.9	290.5	0.76	-0.54	-3.33	
3,362.0	9.60	142.40	3,338.8	-272.2	141.8	305.8	0.86	0.53	-4.15	
3,456.0	9.90	144.80	3,431.4	-285.0	151.3	321.6	0.54	0.32	2.55	
3,549.0	9.10	148.50	3,523.1	-297.8	159.7	337.0	1.08	-0.86	3.98	
3,643.0	8.70	152.10	3,616.0	-310.4	166.9	351.5	0.73	-0.43	3.83	
3,737.0	9.50	150.00	3,708.8	-323.4	174.1	366.3	0.92	0.85	-2.23	
3,831.0	10.20	144.10	3,801.4	-336.9	182.9	382.4	1.31	0.74	-6.28	
3,924.0	9.50	144.70	3,893.1	-349.8	192.2	398.3	0.76	-0.75	0.65	
4,018.0	9.00	145.90	3,985.8	-362.2	200.8	413.4	0.57	-0.53	1.28	
4,112.0	8.90	147.30	4,078.7	-374.4	208.8	428.0	0.25	-0.11	1.49	
4,205.0	9.90	152.20	4,170.5	-387.5	216.4	443.2	1.38	1.08	5.27	
4,299.0	9.60	150.10	4,263.1	-401.5	224.1	459.1	0.49	-0.32	-2.23	
4,393.0	10.40	142.90	4,355.7	-415.1	233.1	475.3	1.58	0.85	-7.66	
4,486.0	9.10	141.90	4,447.3	-427.5	242.7	491.0	1.41	-1.40	-1.08	
4,580.0	10.10	141.30	4,540.0	-439.8	252.5	506.6	1.07	1.06	-0.64	
4,674.0	9.60	140.50	4,632.6	-452.3	262.6	522.6	0.55	-0.53	-0.85	
4,767.0	10.60	143.60	4,724.2	-465.2	272.6	538.8	1.22	1.08	3.33	
4,861.0	10.40	142.90	4,816.6	-478.9	282.9	555.9	0.25	-0.21	-0.74	
4,955.0	9.20	142.70	4,909.2	-491.6	292.6	571.8	1.28	-1.28	-0.21	
5,048.0	8.70	146.80	5,001.1	-503.4	300.9	586.3	0.87	-0.54	4.41	
5,142.0	9.30	143.40	5,093.9	-515.5	309.3	601.0	0.85	0.64	-3.62	
5,236.0	9.00	145.20	5,186.7	-527.6	318.1	615.9	0.44	-0.32	1.91	
5,330.0	9.90	148.90	5,279.5	-540.6	326.4	631.3	1.15	0.96	3.94	
5,423.0	9.10	147.30	5,371.2	-553.6	334.5	646.7	0.91	-0.86	-1.72	
5,517.0	9.20	148.00	5,464.0	-566.2	342.5	661.6	0.16	0.11	0.74	
5,611.0	8.80	143.10	5,556.8	-578.4	350.8	676.3	0.92	-0.43	-5.21	
5,704.0	9.10	148.90	5,648.7	-590.3	358.9	690.7	1.02	0.32	6.24	
5,798.0	8.70	147.70	5,741.6	-602.7	366.5	705.3	0.47	-0.43	-1.28	
5,892.0	8.60	144.30	5,834.5	-614.4	374.4	719.4	0.55	-0.11	-3.62	
5,985.0	9.20	147.70	5,926.4	-626.4	382.5	733.8	0.86	0.65	3.66	
6,079.0	10.20	150.30	6,019.0	-640.0	390.6	749.6	1.16	1.06	2.77	

Company:	KP KAUFFMAN	Local Co-ordinate Reference:	Well Koester 18-33-22
Project:	SEC.33-T4N-R67W	TVD Reference:	WELL @ 4934.0ft (Original Well Elev)
Site:	Koester 18-33-5 Pad Sec.33-T4N-R67W	MD Reference:	WELL @ 4934.0ft (Original Well Elev)
Well:	Koester 18-33-22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

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)
6,173.0	10.70	150.80	6,111.5	-654.8	399.0	766.6	0.54	0.53	0.53
6,266.0	10.30	144.70	6,202.9	-669.1	408.0	783.6	1.27	-0.43	-6.56
6,360.0	9.80	141.70	6,295.5	-682.3	417.8	799.9	0.77	-0.53	-3.19
6,454.0	9.30	153.10	6,388.2	-695.3	426.2	815.4	2.08	-0.53	12.13
6,548.0	9.40	147.00	6,481.0	-708.5	433.8	830.7	1.06	0.11	-6.49
6,641.0	9.70	145.00	6,572.7	-721.3	442.5	846.1	0.48	0.32	-2.15
6,735.0	9.60	143.80	6,665.3	-734.1	451.6	861.8	0.24	-0.11	-1.28
6,829.0	9.40	140.50	6,758.0	-746.4	461.1	877.3	0.62	-0.21	-3.51
6,922.0	8.70	133.20	6,849.9	-757.0	471.1	891.6	1.44	-0.75	-7.85
7,016.0	8.10	140.80	6,942.9	-767.0	480.5	905.1	1.34	-0.64	8.09
7,051.1	7.58	140.40	6,977.6	-770.7	483.5	909.8	1.50	-1.49	-1.13
TARGET CIRCLE 2468'FNL & 1320'FWL									
7,110.0	6.70	139.60	7,036.1	-776.4	488.2	917.1	1.50	-1.49	-1.36
7,203.0	5.00	140.80	7,128.6	-783.6	494.3	926.5	1.83	-1.83	1.29
7,297.0	4.00	143.10	7,222.3	-789.4	498.8	933.8	1.08	-1.06	2.45
7,391.0	3.10	144.80	7,316.1	-794.1	502.3	939.6	0.96	-0.96	1.81
7,464.0	2.60	145.90	7,389.0	-797.1	504.3	943.3	0.69	-0.68	1.51
7,499.7	2.60	145.90	7,424.7	-798.4	505.3	944.9	0.00	0.00	0.00
TARGET BHL 2468'FNL & 1320'FWL									
7,508.2	2.60	145.90	7,433.2	-798.8	505.5	945.3	0.00	0.00	0.00
HARDLINE 460'S OF BHL									
7,526.0	2.60	145.90	7,451.0	-799.4	505.9	946.1	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____