

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Hepp #32-7H
Company:	K. P. Kauffman Company, Inc.	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Project:	Wattenberg	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site:	S32-T4N-R67W (Hepp)	North Reference:	True
Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Project	Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S32-T4N-R67W (Hepp)			
Site Position:		Northing:	1,343,963.15 ft	Latitude:	40.276130
From:	Lat/Long	Easting:	3,161,177.85 ft	Longitude:	-104.922360
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.37 °

Well	Hepp #32-7H					
Well Position	+N/-S	0.0 ft	Northing:	1,343,828.34 ft	Latitude:	40.275760
	+E/-W	0.0 ft	Easting:	3,161,175.94 ft	Longitude:	-104.922370
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,019.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/18/2013	8.66	66.85	52,828

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	104.49

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,223.8	10.24	187.74	1,218.4	-90.4	-12.3	1.00	1.00	0.00	187.74	
6,772.1	10.24	187.74	6,678.4	-1,067.6	-145.2	0.00	0.00	0.00	0.00	
7,695.2	90.95	90.00	7,255.5	-1,172.6	437.0	10.00	8.74	-10.59	-97.45	
11,645.2	90.95	90.00	7,190.0	-1,172.6	4,386.4	0.00	0.00	0.00	0.00	Hepp #32-7H PBHL

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Site:	S32-T4N-R67W (Hepp)	North Reference:	True
Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	SEC 32 H
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	KOP @ 200'
300.0	1.00	187.74	300.0	-0.9	-0.1	0.1	1.00	1.00	
400.0	2.00	187.74	400.0	-3.5	-0.5	0.4	1.00	1.00	
500.0	3.00	187.74	499.9	-7.8	-1.1	0.9	1.00	1.00	
600.0	4.00	187.74	599.7	-13.8	-1.9	1.6	1.00	1.00	
700.0	5.00	187.74	699.4	-21.6	-2.9	2.6	1.00	1.00	
800.0	6.00	187.74	798.9	-31.1	-4.2	3.7	1.00	1.00	
900.0	7.00	187.74	898.3	-42.3	-5.8	5.0	1.00	1.00	
1,000.0	8.00	187.74	997.4	-55.3	-7.5	6.6	1.00	1.00	
1,100.0	9.00	187.74	1,096.3	-69.9	-9.5	8.3	1.00	1.00	
1,200.0	10.00	187.74	1,194.9	-86.3	-11.7	10.2	1.00	1.00	
1,223.8	10.24	187.74	1,218.4	-90.4	-12.3	10.7	1.00	1.00	EOB; Inc=10.24°
1,300.0	10.24	187.74	1,293.3	-103.8	-14.1	12.3	0.00	0.00	
1,400.0	10.24	187.74	1,391.8	-121.4	-16.5	14.4	0.00	0.00	
1,500.0	10.24	187.74	1,490.2	-139.0	-18.9	16.5	0.00	0.00	
1,600.0	10.24	187.74	1,588.6	-156.7	-21.3	18.6	0.00	0.00	
1,700.0	10.24	187.74	1,687.0	-174.3	-23.7	20.7	0.00	0.00	
1,800.0	10.24	187.74	1,785.4	-191.9	-26.1	22.8	0.00	0.00	
1,900.0	10.24	187.74	1,883.8	-209.5	-28.5	24.8	0.00	0.00	
2,000.0	10.24	187.74	1,982.2	-227.1	-30.9	26.9	0.00	0.00	
2,100.0	10.24	187.74	2,080.6	-244.7	-33.3	29.0	0.00	0.00	
2,200.0	10.24	187.74	2,179.0	-262.3	-35.7	31.1	0.00	0.00	
2,300.0	10.24	187.74	2,277.4	-279.9	-38.1	33.2	0.00	0.00	
2,400.0	10.24	187.74	2,375.8	-297.5	-40.5	35.3	0.00	0.00	
2,500.0	10.24	187.74	2,474.2	-315.2	-42.9	37.4	0.00	0.00	
2,600.0	10.24	187.74	2,572.6	-332.8	-45.3	39.5	0.00	0.00	
2,700.0	10.24	187.74	2,671.1	-350.4	-47.6	41.6	0.00	0.00	
2,800.0	10.24	187.74	2,769.5	-368.0	-50.0	43.6	0.00	0.00	
2,900.0	10.24	187.74	2,867.9	-385.6	-52.4	45.7	0.00	0.00	
3,000.0	10.24	187.74	2,966.3	-403.2	-54.8	47.8	0.00	0.00	
3,100.0	10.24	187.74	3,064.7	-420.8	-57.2	49.9	0.00	0.00	
3,200.0	10.24	187.74	3,163.1	-438.4	-59.6	52.0	0.00	0.00	
3,300.0	10.24	187.74	3,261.5	-456.0	-62.0	54.1	0.00	0.00	
3,400.0	10.24	187.74	3,359.9	-473.7	-64.4	56.2	0.00	0.00	
3,500.0	10.24	187.74	3,458.3	-491.3	-66.8	58.3	0.00	0.00	
3,600.0	10.24	187.74	3,556.7	-508.9	-69.2	60.4	0.00	0.00	
3,700.0	10.24	187.74	3,655.1	-526.5	-71.6	62.4	0.00	0.00	
3,800.0	10.24	187.74	3,753.5	-544.1	-74.0	64.5	0.00	0.00	
3,900.0	10.24	187.74	3,851.9	-561.7	-76.4	66.6	0.00	0.00	
4,000.0	10.24	187.74	3,950.4	-579.3	-78.8	68.7	0.00	0.00	
4,100.0	10.24	187.74	4,048.8	-596.9	-81.2	70.8	0.00	0.00	
4,200.0	10.24	187.74	4,147.2	-614.6	-83.6	72.9	0.00	0.00	
4,300.0	10.24	187.74	4,245.6	-632.2	-86.0	75.0	0.00	0.00	
4,400.0	10.24	187.74	4,344.0	-649.8	-88.4	77.1	0.00	0.00	
4,500.0	10.24	187.74	4,442.4	-667.4	-90.8	79.2	0.00	0.00	
4,600.0	10.24	187.74	4,540.8	-685.0	-93.2	81.2	0.00	0.00	
4,700.0	10.24	187.74	4,639.2	-702.6	-95.5	83.3	0.00	0.00	
4,800.0	10.24	187.74	4,737.6	-720.2	-97.9	85.4	0.00	0.00	
4,900.0	10.24	187.74	4,836.0	-737.8	-100.3	87.5	0.00	0.00	
5,000.0	10.24	187.74	4,934.4	-755.4	-102.7	89.6	0.00	0.00	

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Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,100.0	10.24	187.74	5,032.8	-773.1	-105.1	91.7	0.00	0.00	
5,200.0	10.24	187.74	5,131.3	-790.7	-107.5	93.8	0.00	0.00	
5,300.0	10.24	187.74	5,229.7	-808.3	-109.9	95.9	0.00	0.00	
5,400.0	10.24	187.74	5,328.1	-825.9	-112.3	98.0	0.00	0.00	
5,500.0	10.24	187.74	5,426.5	-843.5	-114.7	100.0	0.00	0.00	
5,600.0	10.24	187.74	5,524.9	-861.1	-117.1	102.1	0.00	0.00	
5,700.0	10.24	187.74	5,623.3	-878.7	-119.5	104.2	0.00	0.00	
5,800.0	10.24	187.74	5,721.7	-896.3	-121.9	106.3	0.00	0.00	
5,900.0	10.24	187.74	5,820.1	-914.0	-124.3	108.4	0.00	0.00	
6,000.0	10.24	187.74	5,918.5	-931.6	-126.7	110.5	0.00	0.00	
6,100.0	10.24	187.74	6,016.9	-949.2	-129.1	112.6	0.00	0.00	
6,200.0	10.24	187.74	6,115.3	-966.8	-131.5	114.7	0.00	0.00	
6,300.0	10.24	187.74	6,213.7	-984.4	-133.9	116.8	0.00	0.00	
6,400.0	10.24	187.74	6,312.1	-1,002.0	-136.3	118.8	0.00	0.00	
6,500.0	10.24	187.74	6,410.6	-1,019.6	-138.7	120.9	0.00	0.00	
6,600.0	10.24	187.74	6,509.0	-1,037.2	-141.1	123.0	0.00	0.00	
6,700.0	10.24	187.74	6,607.4	-1,054.8	-143.4	125.1	0.00	0.00	
6,772.1	10.24	187.74	6,678.4	-1,067.6	-145.2	126.6	0.00	0.00	Start build/turn @ 6772' MD
6,800.0	10.25	172.04	6,705.8	-1,072.5	-145.2	127.9	10.00	0.05	
6,900.0	15.25	131.22	6,803.5	-1,090.0	-134.0	143.0	10.00	5.00	
7,000.0	23.62	114.34	6,897.8	-1,107.0	-105.8	174.6	10.00	8.37	
7,100.0	32.88	106.25	6,985.8	-1,122.8	-61.4	221.6	10.00	9.26	
7,200.0	42.45	101.46	7,064.9	-1,137.2	-2.1	282.6	10.00	9.57	
7,300.0	52.15	98.17	7,132.6	-1,149.5	70.3	355.7	10.00	9.71	
7,400.0	61.93	95.65	7,187.0	-1,159.5	153.5	438.8	10.00	9.78	
7,500.0	71.74	93.56	7,226.2	-1,166.8	245.0	529.2	10.00	9.81	
7,600.0	81.58	91.69	7,249.3	-1,171.2	342.1	624.3	10.00	9.83	
7,695.2	90.95	90.00	7,255.5	-1,172.6	437.0	716.5	10.00	9.84	LP @ 7255' TVD; 90.95°
7,700.0	90.95	90.00	7,255.4	-1,172.6	441.7	721.1	0.00	0.00	
7,800.0	90.95	90.00	7,253.8	-1,172.6	541.7	817.9	0.00	0.00	
7,900.0	90.95	90.00	7,252.1	-1,172.6	641.7	914.8	0.00	0.00	
8,000.0	90.95	90.00	7,250.4	-1,172.6	741.7	1,011.6	0.00	0.00	
8,100.0	90.95	90.00	7,248.8	-1,172.6	841.7	1,108.4	0.00	0.00	
8,200.0	90.95	90.00	7,247.1	-1,172.6	941.7	1,205.2	0.00	0.00	
8,300.0	90.95	90.00	7,245.5	-1,172.6	1,041.7	1,302.0	0.00	0.00	
8,400.0	90.95	90.00	7,243.8	-1,172.6	1,141.6	1,398.8	0.00	0.00	
8,500.0	90.95	90.00	7,242.1	-1,172.6	1,241.6	1,495.6	0.00	0.00	
8,600.0	90.95	90.00	7,240.5	-1,172.6	1,341.6	1,592.4	0.00	0.00	
8,700.0	90.95	90.00	7,238.8	-1,172.6	1,441.6	1,689.2	0.00	0.00	
8,800.0	90.95	90.00	7,237.2	-1,172.6	1,541.6	1,786.0	0.00	0.00	
8,900.0	90.95	90.00	7,235.5	-1,172.6	1,641.6	1,882.8	0.00	0.00	
9,000.0	90.95	90.00	7,233.9	-1,172.6	1,741.6	1,979.6	0.00	0.00	
9,100.0	90.95	90.00	7,232.2	-1,172.6	1,841.5	2,076.4	0.00	0.00	
9,200.0	90.95	90.00	7,230.5	-1,172.6	1,941.5	2,173.2	0.00	0.00	
9,300.0	90.95	90.00	7,228.9	-1,172.6	2,041.5	2,270.0	0.00	0.00	
9,400.0	90.95	90.00	7,227.2	-1,172.6	2,141.5	2,366.8	0.00	0.00	
9,500.0	90.95	90.00	7,225.6	-1,172.6	2,241.5	2,463.6	0.00	0.00	
9,600.0	90.95	90.00	7,223.9	-1,172.6	2,341.5	2,560.4	0.00	0.00	
9,700.0	90.95	90.00	7,222.3	-1,172.6	2,441.5	2,657.2	0.00	0.00	
9,800.0	90.95	90.00	7,220.6	-1,172.6	2,541.5	2,754.0	0.00	0.00	
9,900.0	90.95	90.00	7,218.9	-1,172.6	2,641.4	2,850.8	0.00	0.00	
10,000.0	90.95	90.00	7,217.3	-1,172.6	2,741.4	2,947.6	0.00	0.00	

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Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
10,100.0	90.95	90.00	7,215.6	-1,172.6	2,841.4	3,044.5	0.00	0.00	
10,200.0	90.95	90.00	7,214.0	-1,172.6	2,941.4	3,141.3	0.00	0.00	
10,300.0	90.95	90.00	7,212.3	-1,172.6	3,041.4	3,238.1	0.00	0.00	
10,400.0	90.95	90.00	7,210.6	-1,172.6	3,141.4	3,334.9	0.00	0.00	
10,500.0	90.95	90.00	7,209.0	-1,172.6	3,241.4	3,431.7	0.00	0.00	
10,600.0	90.95	90.00	7,207.3	-1,172.6	3,341.3	3,528.5	0.00	0.00	
10,700.0	90.95	90.00	7,205.7	-1,172.6	3,441.3	3,625.3	0.00	0.00	
10,800.0	90.95	90.00	7,204.0	-1,172.6	3,541.3	3,722.1	0.00	0.00	
10,900.0	90.95	90.00	7,202.4	-1,172.6	3,641.3	3,818.9	0.00	0.00	
11,000.0	90.95	90.00	7,200.7	-1,172.6	3,741.3	3,915.7	0.00	0.00	
11,100.0	90.95	90.00	7,199.0	-1,172.6	3,841.3	4,012.5	0.00	0.00	
11,200.0	90.95	90.00	7,197.4	-1,172.6	3,941.3	4,109.3	0.00	0.00	
11,300.0	90.95	90.00	7,195.7	-1,172.6	4,041.2	4,206.1	0.00	0.00	
11,400.0	90.95	90.00	7,194.1	-1,172.6	4,141.2	4,302.9	0.00	0.00	
11,500.0	90.95	90.00	7,192.4	-1,172.6	4,241.2	4,399.7	0.00	0.00	
11,600.0	90.95	90.00	7,190.7	-1,172.6	4,341.2	4,496.5	0.00	0.00	
11,645.2	90.95	90.00	7,190.0	-1,172.6	4,386.4	4,540.3	0.00	0.00	TD at 11645.2 - Hepp #32-7H PBHL

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Hepp #32-7H PBHL - plan hits target center - Point	0.00	0.00	7,190.0	-1,172.6	4,386.4	1,342,684.32	3,165,569.91	40.272540	-104.906650
SEC 32 H - plan misses target center by 7190.0ft at 0.0ft MD (0.0 TVD, 0.0 N, 0.0 E) - Polygon	0.00	0.00	-7,190.0	0.0	0.0	1,343,828.34	3,161,175.94	40.275760	-104.922370
Point 1			-7,190.0	500.0	-211.0	1,344,326.95	3,160,961.69		
Point 2			-7,190.0	-1,000.0	-211.0	1,342,826.99	3,160,971.46		

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200'
1,223.8	1,218.4	-90.4	-12.3	EOB; Inc=10.24°
6,772.1	6,678.4	-1,067.6	-145.2	Start build/turn @ 6772' MD
7,695.2	7,255.5	-1,172.6	437.0	LP @ 7255' TVD; 90.95°
11,645.2	7,190.0	-1,172.6	4,386.4	TD at 11645.2

K. P. Kauffman Company, Inc.

Wattenberg

S32-T4N-R67W (Hepp)

Hepp #32-7H

HZ

Plan #1

Anticollision Report

19 July, 2013

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,344.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program	Date	7/19/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,795.2	Plan #1 (HZ)	Geolink MWD	Geolink MWD

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S32-T4N-R67W (Hepp)						
Hepp #32-1H - HZ - Plan #1	200.0	198.0	134.8	134.2	206.527	CC, ES
Hepp #32-1H - HZ - Plan #1	6,400.0	6,270.0	1,337.7	1,315.1	59.050	SF
Hepp #32-2H - HZ - Plan #1	200.0	198.0	113.0	112.3	173.058	CC, ES
Hepp #32-2H - HZ - Plan #1	11,795.2	11,705.0	1,231.4	1,002.2	5.373	SF
Hepp #32-3H - HZ - Plan #1	200.0	199.0	91.1	90.5	139.213	CC, ES
Hepp #32-3H - HZ - Plan #1	11,795.2	11,713.6	921.7	692.5	4.021	SF
Hepp #32-4H - HZ - Plan #1	200.0	199.0	65.6	65.0	100.277	CC, ES
Hepp #32-4H - HZ - Plan #1	11,795.2	11,734.3	612.1	382.8	2.670	SF
Hepp #32-5H - HZ - Plan #1	200.0	199.0	43.7	43.1	66.791	CC, ES
Hepp #32-5H - HZ - Plan #1	11,795.2	11,850.8	497.7	283.9	2.328	SF
Hepp #32-6H - HZ - Plan #1	200.0	200.0	21.9	21.2	33.307	CC, ES
Hepp #32-6H - HZ - Plan #1	11,795.2	11,761.9	313.3	83.9	1.366	Level 3, SF

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-1H - HZ - Plan #1														Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD														Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor			
0.0	0.0	0.0	0.0	0.0	0.0	1.19	134.8	2.8	134.8						
100.0	100.0	98.0	98.0	0.2	0.2	1.19	134.8	2.8	134.8	134.5	0.30	443.304			
200.0	200.0	198.0	198.0	0.3	0.3	1.19	134.8	2.8	134.8	134.2	0.65	206.527 CC, ES			
300.0	300.0	296.3	296.3	0.5	0.5	173.26	135.4	2.3	136.3	135.3	1.00	136.424			
400.0	400.0	394.4	394.3	0.7	0.7	172.71	137.3	0.7	140.8	139.5	1.35	104.581			
500.0	499.9	493.0	492.9	0.9	0.9	171.90	140.4	-1.9	148.3	146.6	1.70	87.408			
600.0	599.7	592.5	592.3	1.1	1.0	171.19	143.8	-4.7	157.7	155.7	2.05	76.991			
700.0	699.4	691.9	691.6	1.3	1.2	170.65	147.1	-7.5	168.9	166.5	2.40	70.358			
800.0	798.9	791.0	790.6	1.5	1.4	170.27	150.4	-10.3	181.7	179.0	2.75	66.054			
900.0	898.3	890.0	889.5	1.8	1.6	170.02	153.8	-13.0	196.3	193.2	3.10	63.284			
1,000.0	997.4	988.6	988.0	2.0	1.8	169.88	157.1	-15.8	212.6	209.2	3.45	61.579			
1,100.0	1,096.3	1,087.0	1,086.3	2.3	2.0	169.83	160.4	-18.5	230.6	226.8	3.80	60.644			
1,200.0	1,194.9	1,185.0	1,184.3	2.7	2.2	169.85	163.7	-21.3	250.3	246.1	4.15	60.286			
1,300.0	1,293.3	1,282.8	1,282.0	3.0	2.3	169.94	167.0	-24.0	271.1	266.6	4.50	60.187			
1,400.0	1,391.8	1,380.6	1,379.7	3.3	2.5	170.02	170.3	-26.8	292.0	287.2	4.86	60.089			
1,500.0	1,490.2	1,478.4	1,477.3	3.7	2.7	170.10	173.5	-29.5	313.0	307.7	5.22	60.002			
1,600.0	1,588.6	1,576.2	1,575.0	4.0	2.9	170.16	176.8	-32.3	333.9	328.3	5.57	59.926			
1,700.0	1,687.0	1,674.0	1,672.7	4.4	3.1	170.22	180.1	-35.0	354.8	348.8	5.93	59.859			
1,800.0	1,785.4	1,771.8	1,770.4	4.7	3.3	170.27	183.4	-37.7	375.7	369.4	6.28	59.799			
1,900.0	1,883.8	1,869.6	1,868.1	5.1	3.5	170.31	186.7	-40.5	396.6	390.0	6.64	59.744			
2,000.0	1,982.2	1,967.4	1,965.8	5.4	3.6	170.35	190.0	-43.2	417.5	410.5	6.99	59.695			
2,100.0	2,080.6	2,065.1	2,063.5	5.8	3.8	170.39	193.3	-46.0	438.4	431.1	7.35	59.651			
2,200.0	2,179.0	2,162.9	2,161.2	6.1	4.0	170.42	196.6	-48.7	459.3	451.6	7.71	59.610			
2,300.0	2,277.4	2,260.7	2,258.9	6.5	4.2	170.45	199.8	-51.4	480.2	472.2	8.06	59.573			
2,400.0	2,375.8	2,358.5	2,356.6	6.8	4.4	170.48	203.1	-54.2	501.2	492.7	8.42	59.539			
2,500.0	2,474.2	2,456.3	2,454.3	7.2	4.6	170.51	206.4	-56.9	522.1	513.3	8.77	59.508			
2,600.0	2,572.6	2,554.1	2,552.0	7.5	4.8	170.53	209.7	-59.7	543.0	533.9	9.13	59.479			
2,700.0	2,671.1	2,651.9	2,649.7	7.9	5.0	170.55	213.0	-62.4	563.9	554.4	9.48	59.453			
2,800.0	2,769.5	2,749.7	2,747.4	8.2	5.1	170.57	216.3	-65.1	584.8	575.0	9.84	59.428			
2,900.0	2,867.9	2,847.5	2,845.1	8.6	5.3	170.59	219.6	-67.9	605.7	595.5	10.20	59.404			
3,000.0	2,966.3	2,945.2	2,942.8	8.9	5.5	170.61	222.9	-70.6	626.6	616.1	10.55	59.383			
3,100.0	3,064.7	3,043.0	3,040.5	9.3	5.7	170.62	226.1	-73.4	647.6	636.6	10.91	59.363			
3,200.0	3,163.1	3,140.8	3,138.2	9.6	5.9	170.64	229.4	-76.1	668.5	657.2	11.26	59.344			
3,300.0	3,261.5	3,238.6	3,235.9	10.0	6.1	170.65	232.7	-78.8	689.4	677.8	11.62	59.326			
3,400.0	3,359.9	3,336.4	3,333.5	10.4	6.3	170.67	236.0	-81.6	710.3	698.3	11.98	59.309			
3,500.0	3,458.3	3,434.2	3,431.2	10.7	6.4	170.68	239.3	-84.3	731.2	718.9	12.33	59.293			
3,600.0	3,556.7	3,532.0	3,528.9	11.1	6.6	170.69	242.6	-87.1	752.1	739.4	12.69	59.278			
3,700.0	3,655.1	3,629.8	3,626.6	11.4	6.8	170.70	245.9	-89.8	773.0	760.0	13.04	59.264			
3,800.0	3,753.5	3,727.5	3,724.3	11.8	7.0	170.72	249.2	-92.5	793.9	780.6	13.40	59.251			
3,900.0	3,851.9	3,825.3	3,822.0	12.1	7.2	170.73	252.4	-95.3	814.9	801.1	13.76	59.238			
4,000.0	3,950.4	3,923.1	3,919.7	12.5	7.4	170.74	255.7	-98.0	835.8	821.7	14.11	59.226			
4,100.0	4,048.8	4,020.9	4,017.4	12.8	7.6	170.74	259.0	-100.8	856.7	842.2	14.47	59.214			
4,200.0	4,147.2	4,118.7	4,115.1	13.2	7.7	170.75	262.3	-103.5	877.6	862.8	14.82	59.203			
4,300.0	4,245.6	4,216.5	4,212.8	13.5	7.9	170.76	265.6	-106.2	898.5	883.3	15.18	59.193			
4,400.0	4,344.0	4,314.3	4,310.5	13.9	8.1	170.77	268.9	-109.0	919.4	903.9	15.54	59.183			
4,500.0	4,442.4	4,412.1	4,408.2	14.3	8.3	170.78	272.2	-111.7	940.3	924.5	15.89	59.174			
4,600.0	4,540.8	4,509.9	4,505.9	14.6	8.5	170.79	275.5	-114.5	961.3	945.0	16.25	59.165			
4,700.0	4,639.2	4,607.6	4,603.6	15.0	8.7	170.79	278.7	-117.2	982.2	965.6	16.60	59.156			
4,800.0	4,737.6	4,705.4	4,701.3	15.3	8.9	170.80	282.0	-119.9	1,003.1	986.1	16.96	59.147			
4,900.0	4,836.0	4,803.2	4,799.0	15.7	9.0	170.81	285.3	-122.7	1,024.0	1,006.7	17.32	59.139			
5,000.0	4,934.4	4,901.0	4,896.7	16.0	9.2	170.81	288.6	-125.4	1,044.9	1,027.2	17.67	59.132			
5,100.0	5,032.8	4,998.8	4,994.4	16.4	9.4	170.82	291.9	-128.2	1,065.8	1,047.8	18.03	59.124			

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-1H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Total	Separation		
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Uncertainty	Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	Axis			
5,200.0	5,131.3	5,096.6	5,092.1	16.7	9.6	170.82	295.2	-130.9	1,086.7	1,068.4	18.38	59.117		
5,300.0	5,229.7	5,194.4	5,189.8	17.1	9.8	170.83	298.5	-133.6	1,107.7	1,088.9	18.74	59.111		
5,400.0	5,328.1	5,292.2	5,287.4	17.5	10.0	170.83	301.8	-136.4	1,128.6	1,109.5	19.09	59.104		
5,500.0	5,426.5	5,390.0	5,385.1	17.8	10.2	170.84	305.0	-139.1	1,149.5	1,130.0	19.45	59.098		
5,600.0	5,524.9	5,487.7	5,482.8	18.2	10.4	170.84	308.3	-141.9	1,170.4	1,150.6	19.81	59.092		
5,700.0	5,623.3	5,585.5	5,580.5	18.5	10.5	170.85	311.6	-144.6	1,191.3	1,171.2	20.16	59.086		
5,800.0	5,721.7	5,683.3	5,678.2	18.9	10.7	170.85	314.9	-147.3	1,212.2	1,191.7	20.52	59.080		
5,900.0	5,820.1	5,781.1	5,775.9	19.2	10.9	170.86	318.2	-150.1	1,233.1	1,212.3	20.87	59.074		
6,000.0	5,918.5	5,878.9	5,873.6	19.6	11.1	170.86	321.5	-152.8	1,254.1	1,232.8	21.23	59.069		
6,100.0	6,016.9	5,976.7	5,971.3	19.9	11.3	170.87	324.8	-155.6	1,275.0	1,253.4	21.59	59.064		
6,200.0	6,115.3	6,074.5	6,069.0	20.3	11.5	170.87	328.1	-158.3	1,295.9	1,273.9	21.94	59.059		
6,300.0	6,213.7	6,172.3	6,166.7	20.7	11.7	170.88	331.3	-161.0	1,316.8	1,294.5	22.30	59.054		
6,400.0	6,312.1	6,270.0	6,264.4	21.0	11.8	170.88	334.6	-163.8	1,337.7	1,315.1	22.65	59.050	SF	

Anticollision Report

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Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-2H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance		Total		Separation		Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Uncertainty Axis			
0.0	0.0	0.0	0.0	0.0	0.0	1.42	112.9	2.8	113.0					
100.0	100.0	98.0	98.0	0.2	0.2	1.42	112.9	2.8	113.0	112.7	0.30	371.462		
200.0	200.0	198.0	198.0	0.3	0.3	1.42	112.9	2.8	113.0	112.3	0.65	173.058 CC, ES		
300.0	300.0	298.0	298.0	0.5	0.5	173.72	112.9	2.8	113.8	112.8	1.00	113.634		
400.0	400.0	398.0	398.0	0.7	0.7	173.86	112.9	2.8	116.4	115.1	1.35	86.218		
500.0	499.9	497.9	497.9	0.9	0.8	174.07	112.9	2.8	120.8	119.1	1.70	71.093		
600.0	599.7	597.7	597.7	1.1	1.0	174.35	112.9	2.8	126.8	124.8	2.05	61.980		
700.0	699.4	697.4	697.4	1.3	1.2	174.67	112.9	2.8	134.7	132.3	2.39	56.258		
800.0	798.9	797.7	797.7	1.5	1.4	174.71	112.7	2.0	143.9	141.2	2.74	52.505		
900.0	898.3	897.7	897.7	1.8	1.5	174.19	112.0	-0.4	154.4	151.3	3.09	49.972		
1,000.0	997.4	997.0	996.9	2.0	1.7	173.64	111.2	-3.4	166.5	163.0	3.44	48.419		
1,100.0	1,096.3	1,096.0	1,095.9	2.3	1.9	173.22	110.3	-6.3	180.3	176.5	3.79	47.608		
1,200.0	1,194.9	1,194.8	1,194.6	2.7	2.1	172.92	109.5	-9.1	195.8	191.7	4.13	47.352		
1,300.0	1,293.3	1,293.4	1,293.2	3.0	2.3	172.72	108.7	-12.0	212.5	208.0	4.49	47.356		
1,400.0	1,391.8	1,392.0	1,391.7	3.3	2.4	172.55	107.9	-14.9	229.3	224.5	4.84	47.348		
1,500.0	1,490.2	1,490.6	1,490.3	3.7	2.6	172.41	107.0	-17.8	246.1	240.9	5.20	47.336		
1,600.0	1,588.6	1,589.1	1,588.8	4.0	2.8	172.28	106.2	-20.7	262.9	257.3	5.56	47.322		
1,700.0	1,687.0	1,687.7	1,687.3	4.4	3.0	172.17	105.4	-23.6	279.7	273.8	5.91	47.306		
1,800.0	1,785.4	1,786.3	1,785.9	4.7	3.1	172.07	104.6	-26.5	296.5	290.2	6.27	47.290		
1,900.0	1,883.8	1,884.9	1,884.4	5.1	3.3	171.98	103.7	-29.3	313.2	306.6	6.63	47.273		
2,000.0	1,982.2	1,983.5	1,982.9	5.4	3.5	171.91	102.9	-32.2	330.0	323.0	6.98	47.256		
2,100.0	2,080.6	2,082.0	2,081.5	5.8	3.7	171.84	102.1	-35.1	346.8	339.5	7.34	47.240		
2,200.0	2,179.0	2,180.6	2,180.0	6.1	3.9	171.77	101.3	-38.0	363.6	355.9	7.70	47.224		
2,300.0	2,277.4	2,279.2	2,278.5	6.5	4.0	171.71	100.4	-40.9	380.4	372.3	8.06	47.208		
2,400.0	2,375.8	2,377.8	2,377.1	6.8	4.2	171.66	99.6	-43.8	397.2	388.8	8.42	47.193		
2,500.0	2,474.2	2,476.4	2,475.6	7.2	4.4	171.61	98.8	-46.7	414.0	405.2	8.77	47.178		
2,600.0	2,572.6	2,574.9	2,574.1	7.5	4.6	171.56	98.0	-49.6	430.8	421.6	9.13	47.164		
2,700.0	2,671.1	2,673.5	2,672.7	7.9	4.8	171.52	97.1	-52.4	447.6	438.1	9.49	47.151		
2,800.0	2,769.5	2,772.1	2,771.2	8.2	4.9	171.48	96.3	-55.3	464.4	454.5	9.85	47.138		
2,900.0	2,867.9	2,870.7	2,869.7	8.6	5.1	171.45	95.5	-58.2	481.1	470.9	10.21	47.125		
3,000.0	2,966.3	2,969.3	2,968.3	8.9	5.3	171.41	94.7	-61.1	497.9	487.4	10.57	47.113		
3,100.0	3,064.7	3,067.8	3,066.8	9.3	5.5	171.38	93.8	-64.0	514.7	503.8	10.93	47.101		
3,200.0	3,163.1	3,166.4	3,165.3	9.6	5.7	171.35	93.0	-66.9	531.5	520.2	11.29	47.090		
3,300.0	3,261.5	3,265.0	3,263.9	10.0	5.8	171.32	92.2	-69.8	548.3	536.7	11.65	47.080		
3,400.0	3,359.9	3,363.6	3,362.4	10.4	6.0	171.30	91.4	-72.6	565.1	553.1	12.01	47.070		
3,500.0	3,458.3	3,462.2	3,460.9	10.7	6.2	171.27	90.5	-75.5	581.9	569.5	12.37	47.060		
3,600.0	3,556.7	3,560.7	3,559.5	11.1	6.4	171.25	89.7	-78.4	598.7	586.0	12.72	47.050		
3,700.0	3,655.1	3,659.3	3,658.0	11.4	6.6	171.23	88.9	-81.3	615.5	602.4	13.08	47.041		
3,800.0	3,753.5	3,757.9	3,756.5	11.8	6.7	171.21	88.1	-84.2	632.3	618.8	13.44	47.033		
3,900.0	3,851.9	3,856.5	3,855.1	12.1	6.9	171.19	87.2	-87.1	649.1	635.3	13.80	47.024		
4,000.0	3,950.4	3,955.1	3,953.6	12.5	7.1	171.17	86.4	-90.0	665.9	651.7	14.16	47.016		
4,100.0	4,048.8	4,053.6	4,052.1	12.8	7.3	171.15	85.6	-92.8	682.7	668.1	14.52	47.008		
4,200.0	4,147.2	4,152.2	4,150.7	13.2	7.4	171.13	84.8	-95.7	699.4	684.6	14.88	47.001		
4,300.0	4,245.6	4,250.8	4,249.2	13.5	7.6	171.12	83.9	-98.6	716.2	701.0	15.24	46.994		
4,400.0	4,344.0	4,349.4	4,347.7	13.9	7.8	171.10	83.1	-101.5	733.0	717.4	15.60	46.987		
4,500.0	4,442.4	4,448.0	4,446.3	14.3	8.0	171.09	82.3	-104.4	749.8	733.9	15.96	46.980		
4,600.0	4,540.8	4,546.5	4,544.8	14.6	8.2	171.07	81.5	-107.3	766.6	750.3	16.32	46.974		
4,700.0	4,639.2	4,645.1	4,643.3	15.0	8.3	171.06	80.6	-110.2	783.4	766.7	16.68	46.967		
4,800.0	4,737.6	4,743.7	4,741.9	15.3	8.5	171.05	79.8	-113.1	800.2	783.2	17.04	46.961		
4,900.0	4,836.0	4,842.3	4,840.4	15.7	8.7	171.03	79.0	-115.9	817.0	799.6	17.40	46.955		
5,000.0	4,934.4	4,940.9	4,938.9	16.0	8.9	171.02	78.2	-118.8	833.8	816.0	17.76	46.950		
5,100.0	5,032.8	5,039.4	5,037.5	16.4	9.1	171.01	77.3	-121.7	850.6	832.5	18.12	46.944		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-2H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,200.0	5,131.3	5,138.0	5,136.0	16.7	9.2	171.00	76.5	-124.6	867.4	848.9	18.48	46.939		
5,300.0	5,229.7	5,236.6	5,234.5	17.1	9.4	170.99	75.7	-127.5	884.2	865.3	18.84	46.934		
5,400.0	5,328.1	5,335.2	5,333.1	17.5	9.6	170.98	74.9	-130.4	901.0	881.8	19.20	46.929		
5,500.0	5,426.5	5,433.8	5,431.6	17.8	9.8	170.97	74.0	-133.3	917.8	898.2	19.56	46.924		
5,600.0	5,524.9	5,532.3	5,530.1	18.2	10.0	170.96	73.2	-136.1	934.6	914.6	19.92	46.919		
5,700.0	5,623.3	5,630.9	5,628.7	18.5	10.1	170.95	72.4	-139.0	951.3	931.1	20.28	46.915		
5,800.0	5,721.7	5,729.5	5,727.2	18.9	10.3	170.94	71.6	-141.9	968.1	947.5	20.64	46.910		
5,900.0	5,820.1	5,828.1	5,825.7	19.2	10.5	170.93	70.7	-144.8	984.9	963.9	21.00	46.906		
6,000.0	5,918.5	5,926.7	5,924.3	19.6	10.7	170.92	69.9	-147.7	1,001.7	980.4	21.36	46.902		
6,100.0	6,016.9	6,025.2	6,022.8	19.9	10.9	170.92	69.1	-150.6	1,018.5	996.8	21.72	46.898		
6,200.0	6,115.3	6,123.8	6,121.4	20.3	11.0	170.91	68.3	-153.5	1,035.3	1,013.2	22.08	46.894		
6,300.0	6,213.7	6,222.4	6,219.9	20.7	11.2	170.90	67.4	-156.3	1,052.1	1,029.7	22.44	46.890		
6,400.0	6,312.1	6,321.0	6,318.4	21.0	11.4	170.89	66.6	-159.2	1,068.9	1,046.1	22.80	46.886		
6,500.0	6,410.6	6,419.6	6,417.0	21.4	11.6	170.89	65.8	-162.1	1,085.7	1,062.5	23.16	46.883		
6,600.0	6,509.0	6,518.1	6,515.5	21.7	11.8	170.88	65.0	-165.0	1,102.5	1,079.0	23.52	46.879		
6,700.0	6,607.4	6,616.7	6,614.0	22.1	11.9	170.87	64.1	-167.9	1,119.3	1,095.4	23.88	46.876		
6,800.0	6,705.8	6,717.4	6,714.6	22.4	12.1	-173.13	63.3	-168.8	1,136.1	1,111.9	24.17	46.998		
6,900.0	6,803.5	6,819.9	6,815.9	22.7	12.2	-131.33	62.4	-154.0	1,152.7	1,128.4	24.27	47.498		
7,000.0	6,897.8	6,921.9	6,912.5	23.0	12.3	-113.55	61.6	-121.6	1,168.8	1,144.4	24.39	47.920		
7,100.0	6,985.8	7,023.5	7,001.5	23.3	12.3	-104.69	60.9	-72.8	1,183.9	1,159.2	24.67	47.996		
7,200.0	7,064.9	7,124.6	7,080.2	23.6	12.5	-99.33	60.2	-9.5	1,197.5	1,172.3	25.24	47.454		
7,300.0	7,132.6	7,225.4	7,146.2	23.9	12.9	-95.73	59.6	66.4	1,209.3	1,183.0	26.24	46.079		
7,400.0	7,187.0	7,325.7	7,197.8	24.3	13.7	-93.23	59.2	152.3	1,218.8	1,191.0	27.80	43.841		
7,500.0	7,226.2	7,425.6	7,233.6	24.8	14.8	-91.52	58.9	245.4	1,225.7	1,195.8	29.94	40.934		
7,600.0	7,249.3	7,524.9	7,252.5	25.5	16.2	-90.48	58.7	342.8	1,229.9	1,197.3	32.61	37.713		
7,700.0	7,255.4	7,624.0	7,255.2	26.3	17.9	-90.08	58.7	441.8	1,231.3	1,195.6	35.69	34.497		
7,800.0	7,253.8	7,724.0	7,253.5	27.2	19.8	-90.08	58.7	541.8	1,231.3	1,191.9	39.38	31.265		
7,900.0	7,252.1	7,824.0	7,251.9	28.4	21.8	-90.08	58.7	641.7	1,231.3	1,188.0	43.33	28.420		
8,000.0	7,250.4	7,924.0	7,250.2	29.7	23.8	-90.08	58.7	741.7	1,231.3	1,183.8	47.46	25.946		
8,100.0	7,248.8	8,024.0	7,248.5	31.2	26.0	-90.08	58.7	841.7	1,231.3	1,179.6	51.73	23.802		
8,200.0	7,247.1	8,124.0	7,246.9	32.9	28.2	-90.08	58.7	941.7	1,231.3	1,175.2	56.12	21.941		
8,300.0	7,245.5	8,224.0	7,245.2	34.7	30.4	-90.08	58.7	1,041.7	1,231.3	1,170.7	60.59	20.322		
8,400.0	7,243.8	8,324.0	7,243.6	36.6	32.7	-90.08	58.7	1,141.7	1,231.3	1,166.2	65.13	18.905		
8,500.0	7,242.1	8,424.0	7,241.9	38.6	35.0	-90.08	58.7	1,241.7	1,231.3	1,161.6	69.73	17.658		
8,600.0	7,240.5	8,524.0	7,240.3	40.6	37.3	-90.08	58.7	1,341.6	1,231.3	1,156.9	74.37	16.556		
8,700.0	7,238.8	8,624.0	7,238.6	42.7	39.6	-90.08	58.7	1,441.6	1,231.3	1,152.2	79.05	15.576		
8,800.0	7,237.2	8,724.0	7,236.9	44.9	42.0	-90.08	58.7	1,541.6	1,231.3	1,147.5	83.76	14.700		
8,900.0	7,235.5	8,824.0	7,235.3	47.0	44.4	-90.08	58.7	1,641.6	1,231.3	1,142.8	88.50	13.914		
9,000.0	7,233.9	8,924.0	7,233.6	49.2	46.7	-90.08	58.7	1,741.6	1,231.3	1,138.0	93.25	13.204		
9,100.0	7,232.2	9,024.0	7,232.0	51.5	49.1	-90.08	58.7	1,841.6	1,231.3	1,133.3	98.03	12.560		
9,200.0	7,230.5	9,124.0	7,230.3	53.8	51.5	-90.08	58.7	1,941.6	1,231.3	1,128.5	102.82	11.975		
9,300.0	7,228.9	9,224.0	7,228.6	56.0	53.9	-90.08	58.7	2,041.5	1,231.3	1,123.7	107.63	11.440		
9,400.0	7,227.2	9,324.0	7,227.0	58.3	56.3	-90.08	58.7	2,141.5	1,231.3	1,118.8	112.45	10.950		
9,500.0	7,225.6	9,424.0	7,225.3	60.7	58.8	-90.08	58.7	2,241.5	1,231.3	1,114.0	117.28	10.499		
9,600.0	7,223.9	9,524.0	7,223.7	63.0	61.2	-90.08	58.7	2,341.5	1,231.3	1,109.2	122.12	10.083		
9,700.0	7,222.3	9,624.0	7,222.0	65.3	63.6	-90.08	58.7	2,441.5	1,231.3	1,104.3	126.97	9.698		
9,800.0	7,220.6	9,724.0	7,220.4	67.7	66.0	-90.08	58.7	2,541.5	1,231.3	1,099.5	131.82	9.341		
9,900.0	7,218.9	9,824.0	7,218.7	70.0	68.5	-90.08	58.7	2,641.5	1,231.3	1,094.6	136.68	9.008		
10,000.0	7,217.3	9,924.0	7,217.0	72.4	70.9	-90.08	58.7	2,741.5	1,231.3	1,089.7	141.55	8.698		
10,100.0	7,215.6	10,024.0	7,215.4	74.8	73.3	-90.08	58.7	2,841.4	1,231.3	1,084.9	146.43	8.409		
10,200.0	7,214.0	10,124.0	7,213.7	77.2	75.8	-90.08	58.7	2,941.4	1,231.3	1,080.0	151.30	8.138		
10,300.0	7,212.3	10,224.0	7,212.1	79.6	78.2	-90.08	58.7	3,041.4	1,231.3	1,075.1	156.19	7.883		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-2H - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: 0-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,400.0	7,210.6	10,324.0	7,210.4	81.9	80.7	-90.08	58.7	3,141.4	1,231.3	1,070.2	161.07	7.644		
10,500.0	7,209.0	10,424.0	7,208.8	84.3	83.1	-90.08	58.7	3,241.4	1,231.3	1,065.3	165.96	7.419		
10,600.0	7,207.3	10,524.0	7,207.1	86.7	85.5	-90.08	58.7	3,341.4	1,231.3	1,060.4	170.86	7.207		
10,700.0	7,205.7	10,624.0	7,205.4	89.2	88.0	-90.08	58.7	3,441.4	1,231.3	1,055.5	175.75	7.006		
10,800.0	7,204.0	10,724.0	7,203.8	91.6	90.4	-90.08	58.7	3,541.3	1,231.3	1,050.6	180.65	6.816		
10,900.0	7,202.4	10,824.0	7,202.1	94.0	92.9	-90.08	58.7	3,641.3	1,231.3	1,045.7	185.55	6.636		
11,000.0	7,200.7	10,924.0	7,200.5	96.4	95.3	-90.08	58.7	3,741.3	1,231.3	1,040.8	190.46	6.465		
11,100.0	7,199.0	11,024.0	7,198.8	98.8	97.8	-90.08	58.7	3,841.3	1,231.3	1,035.9	195.36	6.303		
11,200.0	7,197.4	11,124.0	7,197.1	101.2	100.3	-90.08	58.7	3,941.3	1,231.3	1,031.0	200.27	6.148		
11,300.0	7,195.7	11,224.0	7,195.5	103.7	102.7	-90.08	58.7	4,041.3	1,231.3	1,026.1	205.18	6.001		
11,400.0	7,194.1	11,324.0	7,193.8	106.1	105.2	-90.08	58.7	4,141.3	1,231.3	1,021.2	210.10	5.861		
11,500.0	7,192.4	11,424.0	7,192.2	108.5	107.6	-90.08	58.7	4,241.2	1,231.3	1,016.3	215.01	5.727		
11,600.0	7,190.7	11,524.0	7,190.5	111.0	110.1	-90.08	58.7	4,341.2	1,231.3	1,011.4	219.92	5.599		
11,700.0	7,189.1	11,624.0	7,188.9	113.4	112.5	-90.08	58.7	4,441.2	1,231.3	1,006.5	224.84	5.476		
11,752.4	7,188.2	11,676.4	7,188.0	114.7	113.8	-90.08	58.7	4,493.6	1,231.3	1,003.9	227.42	5.414		
11,795.2	7,187.5	11,705.0	7,187.5	115.7	114.5	-90.08	58.7	4,522.2	1,231.4	1,002.2	229.17	5.373 SF		

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-3H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	1.75	91.1	2.8	91.1					
100.0	100.0	99.0	99.0	0.2	0.2	1.75	91.1	2.8	91.1	90.8	0.31	298.109		
200.0	200.0	199.0	199.0	0.3	0.3	1.75	91.1	2.8	91.1	90.5	0.65	139.213 CC, ES		
300.0	300.0	299.0	299.0	0.5	0.5	174.07	91.1	2.8	92.0	91.0	1.00	91.664		
400.0	400.0	399.0	399.0	0.7	0.7	174.23	91.1	2.8	94.6	93.2	1.35	69.951		
500.0	499.9	498.9	498.9	0.9	0.8	174.48	91.1	2.8	98.9	97.2	1.70	58.176		
600.0	599.7	598.7	598.7	1.1	1.0	174.79	91.1	2.8	105.0	103.0	2.05	51.267		
700.0	699.4	700.1	700.1	1.3	1.2	174.96	90.3	2.4	112.0	109.6	2.40	46.718		
800.0	798.9	801.7	801.7	1.5	1.4	174.80	88.0	1.1	119.2	116.5	2.75	43.374		
900.0	898.3	903.4	903.3	1.8	1.6	174.38	84.0	-1.1	126.6	123.5	3.10	40.819		
1,000.0	997.4	1,003.9	1,003.6	2.0	1.8	173.80	78.9	-3.9	134.4	130.9	3.45	38.922		
1,100.0	1,096.3	1,103.4	1,102.9	2.3	1.9	173.34	73.6	-6.7	143.8	140.0	3.80	37.810		
1,200.0	1,194.9	1,202.8	1,202.1	2.7	2.1	173.01	68.4	-9.6	154.9	150.7	4.15	37.302		
1,300.0	1,293.3	1,302.0	1,301.2	3.0	2.3	172.79	63.2	-12.4	167.2	162.7	4.51	37.105		
1,400.0	1,391.8	1,401.3	1,400.2	3.3	2.5	172.61	58.0	-15.3	179.6	174.8	4.86	36.931		
1,500.0	1,490.2	1,500.5	1,499.3	3.7	2.7	172.45	52.8	-18.1	192.1	186.8	5.22	36.776		
1,600.0	1,588.6	1,599.7	1,598.3	4.0	2.9	172.30	47.5	-21.0	204.5	198.9	5.58	36.638		
1,700.0	1,687.0	1,698.9	1,697.4	4.4	3.1	172.18	42.3	-23.8	216.9	210.9	5.94	36.513		
1,800.0	1,785.4	1,798.2	1,796.4	4.7	3.3	172.07	37.1	-26.6	229.3	223.0	6.30	36.401		
1,900.0	1,883.8	1,897.4	1,895.5	5.1	3.5	171.97	31.9	-29.5	241.7	235.0	6.66	36.299		
2,000.0	1,982.2	1,996.6	1,994.5	5.4	3.7	171.88	26.7	-32.3	254.1	247.1	7.02	36.206		
2,100.0	2,080.6	2,095.8	2,093.6	5.8	3.9	171.79	21.4	-35.2	266.5	259.2	7.38	36.121		
2,200.0	2,179.0	2,195.1	2,192.6	6.1	4.1	171.72	16.2	-38.0	278.9	271.2	7.74	36.042		
2,300.0	2,277.4	2,294.3	2,291.7	6.5	4.3	171.65	11.0	-40.9	291.4	283.3	8.10	35.970		
2,400.0	2,375.8	2,393.5	2,390.7	6.8	4.5	171.59	5.8	-43.7	303.8	295.3	8.46	35.903		
2,500.0	2,474.2	2,492.8	2,489.8	7.2	4.7	171.53	0.6	-46.6	316.2	307.4	8.82	35.841		
2,600.0	2,572.6	2,592.0	2,588.8	7.5	4.9	171.48	-4.6	-49.4	328.6	319.4	9.18	35.783		
2,700.0	2,671.1	2,691.2	2,687.9	7.9	5.1	171.43	-9.9	-52.3	341.0	331.5	9.54	35.730		
2,800.0	2,769.5	2,790.4	2,786.9	8.2	5.3	171.38	-15.1	-55.1	353.4	343.5	9.91	35.679		
2,900.0	2,867.9	2,889.7	2,886.0	8.6	5.5	171.34	-20.3	-57.9	365.9	355.6	10.27	35.632		
3,000.0	2,966.3	2,988.9	2,985.0	8.9	5.7	171.30	-25.5	-60.8	378.3	367.6	10.63	35.588		
3,100.0	3,064.7	3,088.1	3,084.1	9.3	5.9	171.26	-30.7	-63.6	390.7	379.7	10.99	35.546		
3,200.0	3,163.1	3,187.3	3,183.1	9.6	6.1	171.22	-35.9	-66.5	403.1	391.8	11.35	35.507		
3,300.0	3,261.5	3,286.6	3,282.1	10.0	6.3	171.19	-41.2	-69.3	415.5	403.8	11.71	35.470		
3,400.0	3,359.9	3,385.8	3,381.2	10.4	6.5	171.16	-46.4	-72.2	427.9	415.9	12.08	35.435		
3,500.0	3,458.3	3,485.0	3,480.2	10.7	6.7	171.13	-51.6	-75.0	440.4	427.9	12.44	35.401		
3,600.0	3,556.7	3,584.2	3,579.3	11.1	6.9	171.10	-56.8	-77.9	452.8	440.0	12.80	35.370		
3,700.0	3,655.1	3,683.5	3,678.3	11.4	7.1	171.07	-62.0	-80.7	465.2	452.0	13.16	35.340		
3,800.0	3,753.5	3,782.7	3,777.4	11.8	7.3	171.05	-67.2	-83.6	477.6	464.1	13.53	35.312		
3,900.0	3,851.9	3,881.9	3,876.4	12.1	7.5	171.03	-72.5	-86.4	490.0	476.1	13.89	35.285		
4,000.0	3,950.4	3,981.1	3,975.5	12.5	7.7	171.00	-77.7	-89.2	502.4	488.2	14.25	35.259		
4,100.0	4,048.8	4,080.4	4,074.5	12.8	7.9	170.98	-82.9	-92.1	514.9	500.3	14.61	35.234		
4,200.0	4,147.2	4,179.6	4,173.6	13.2	8.1	170.96	-88.1	-94.9	527.3	512.3	14.98	35.211		
4,300.0	4,245.6	4,278.8	4,272.6	13.5	8.3	170.94	-93.3	-97.8	539.7	524.4	15.34	35.188		
4,400.0	4,344.0	4,378.0	4,371.7	13.9	8.5	170.92	-98.5	-100.6	552.1	536.4	15.70	35.167		
4,500.0	4,442.4	4,477.3	4,470.7	14.3	8.7	170.91	-103.8	-103.5	564.5	548.5	16.06	35.146		
4,600.0	4,540.8	4,576.5	4,569.8	14.6	8.9	170.89	-109.0	-106.3	577.0	560.5	16.43	35.126		
4,700.0	4,639.2	4,675.7	4,668.8	15.0	9.1	170.87	-114.2	-109.2	589.4	572.6	16.79	35.107		
4,800.0	4,737.6	4,774.9	4,767.9	15.3	9.3	170.86	-119.4	-112.0	601.8	584.6	17.15	35.089		
4,900.0	4,836.0	4,874.2	4,866.9	15.7	9.5	170.84	-124.6	-114.8	614.2	596.7	17.51	35.072		
5,000.0	4,934.4	4,973.4	4,966.0	16.0	9.7	170.83	-129.8	-117.7	626.6	608.8	17.88	35.055		
5,100.0	5,032.8	5,072.6	5,065.0	16.4	9.9	170.81	-135.1	-120.5	639.1	620.8	18.24	35.039		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-3H - HZ - Plan #1													Offset Site Error: 0.0 ft	
Survey Program: O-Geolink MWD													Offset Well Error: 0.0 ft	
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,200.0	5,131.3	5,171.8	5,164.1	16.7	10.1	170.80	-140.3	-123.4	651.5	632.9	18.60	35.023		
5,300.0	5,229.7	5,271.1	5,263.1	17.1	10.3	170.79	-145.5	-126.2	663.9	644.9	18.96	35.008		
5,400.0	5,328.1	5,370.3	5,362.1	17.5	10.5	170.77	-150.7	-129.1	676.3	657.0	19.33	34.994		
5,500.0	5,426.5	5,469.5	5,461.2	17.8	10.7	170.76	-155.9	-131.9	688.7	669.0	19.69	34.980		
5,600.0	5,524.9	5,568.7	5,560.2	18.2	10.9	170.75	-161.1	-134.8	701.1	681.1	20.05	34.966		
5,700.0	5,623.3	5,668.0	5,659.3	18.5	11.1	170.74	-166.4	-137.6	713.6	693.1	20.41	34.953		
5,800.0	5,721.7	5,767.2	5,758.3	18.9	11.3	170.73	-171.6	-140.5	726.0	705.2	20.78	34.940		
5,900.0	5,820.1	5,866.4	5,857.4	19.2	11.5	170.72	-176.8	-143.3	738.4	717.3	21.14	34.928		
6,000.0	5,918.5	5,965.7	5,956.4	19.6	11.7	170.71	-182.0	-146.1	750.8	729.3	21.50	34.916		
6,100.0	6,016.9	6,064.9	6,055.5	19.9	11.9	170.70	-187.2	-149.0	763.2	741.4	21.87	34.905		
6,200.0	6,115.3	6,164.1	6,154.5	20.3	12.2	170.69	-192.4	-151.8	775.7	753.4	22.23	34.894		
6,300.0	6,213.7	6,263.3	6,253.6	20.7	12.4	170.68	-197.7	-154.7	788.1	765.5	22.59	34.883		
6,400.0	6,312.1	6,362.6	6,352.6	21.0	12.6	170.67	-202.9	-157.5	800.5	777.5	22.96	34.872		
6,500.0	6,410.6	6,461.8	6,451.7	21.4	12.8	170.66	-208.1	-160.4	812.9	789.6	23.32	34.862		
6,600.0	6,509.0	6,561.0	6,550.7	21.7	13.0	170.65	-213.3	-163.2	825.3	801.7	23.68	34.852		
6,700.0	6,607.4	6,660.2	6,649.8	22.1	13.2	170.65	-218.5	-166.1	837.8	813.7	24.04	34.843		
6,800.0	6,705.8	6,762.5	6,751.7	22.4	13.3	-173.18	-223.9	-162.7	850.0	825.7	24.29	34.997		
6,900.0	6,803.5	6,863.7	6,850.5	22.7	13.4	-131.36	-229.1	-141.9	862.2	837.9	24.33	35.436		
7,000.0	6,897.8	6,963.3	6,942.6	23.0	13.5	-113.56	-234.0	-104.7	874.1	849.7	24.44	35.769		
7,100.0	6,985.8	7,061.4	7,025.8	23.3	13.6	-104.70	-238.4	-53.1	885.4	860.6	24.75	35.777		
7,200.0	7,064.9	7,158.2	7,098.0	23.6	13.8	-99.34	-242.3	11.1	895.6	870.2	25.38	35.282		
7,300.0	7,132.6	7,253.8	7,157.8	23.9	14.1	-95.74	-245.5	85.5	904.5	878.0	26.47	34.177		
7,400.0	7,187.0	7,348.5	7,204.0	24.3	14.7	-93.23	-248.0	168.0	911.8	883.7	28.06	32.495		
7,500.0	7,226.2	7,442.2	7,235.8	24.8	15.7	-91.52	-249.8	256.0	917.2	887.0	30.17	30.395		
7,600.0	7,249.3	7,535.3	7,252.7	25.5	16.9	-90.47	-250.8	347.4	920.5	887.8	32.73	28.121		
7,700.0	7,255.4	7,629.7	7,255.2	26.3	18.5	-90.05	-251.0	441.8	921.6	886.0	35.67	25.837		
7,800.0	7,253.8	7,729.7	7,253.6	27.2	20.3	-90.05	-251.0	541.7	921.6	882.3	39.36	23.415		
7,900.0	7,252.1	7,829.7	7,251.9	28.4	22.2	-90.05	-251.0	641.7	921.6	878.3	43.30	21.284		
8,000.0	7,250.4	7,929.7	7,250.2	29.7	24.2	-90.05	-251.0	741.7	921.6	874.2	47.43	19.431		
8,100.0	7,248.8	8,029.7	7,248.6	31.2	26.3	-90.05	-251.0	841.7	921.6	869.9	51.71	17.825		
8,200.0	7,247.1	8,129.7	7,246.9	32.9	28.5	-90.05	-251.0	941.7	921.6	865.6	56.09	16.431		
8,300.0	7,245.5	8,229.7	7,245.3	34.7	30.7	-90.05	-251.0	1,041.7	921.6	861.1	60.56	15.218		
8,400.0	7,243.8	8,329.7	7,243.6	36.6	32.9	-90.05	-251.0	1,141.7	921.6	856.5	65.10	14.157		
8,500.0	7,242.1	8,429.7	7,242.0	38.6	35.2	-90.05	-251.0	1,241.6	921.6	851.9	69.70	13.223		
8,600.0	7,240.5	8,529.7	7,240.3	40.6	37.5	-90.05	-251.0	1,341.6	921.6	847.3	74.34	12.398		
8,700.0	7,238.8	8,629.7	7,238.6	42.7	39.9	-90.05	-251.0	1,441.6	921.6	842.6	79.02	11.663		
8,800.0	7,237.2	8,729.7	7,237.0	44.9	42.2	-90.05	-251.0	1,541.6	921.6	837.9	83.73	11.007		
8,900.0	7,235.5	8,829.7	7,235.3	47.0	44.6	-90.05	-251.0	1,641.6	921.6	833.2	88.47	10.418		
9,000.0	7,233.9	8,929.7	7,233.7	49.2	46.9	-90.05	-251.0	1,741.6	921.6	828.4	93.22	9.886		
9,100.0	7,232.2	9,029.7	7,232.0	51.5	49.3	-90.05	-251.0	1,841.6	921.6	823.6	98.00	9.405		
9,200.0	7,230.5	9,129.7	7,230.4	53.8	51.7	-90.05	-251.0	1,941.5	921.6	818.9	102.79	8.966		
9,300.0	7,228.9	9,229.7	7,228.7	56.0	54.1	-90.05	-251.0	2,041.5	921.6	814.0	107.60	8.566		
9,400.0	7,227.2	9,329.7	7,227.0	58.3	56.5	-90.05	-251.0	2,141.5	921.6	809.2	112.42	8.198		
9,500.0	7,225.6	9,429.7	7,225.4	60.7	58.9	-90.05	-251.0	2,241.5	921.6	804.4	117.25	7.861		
9,600.0	7,223.9	9,529.7	7,223.7	63.0	61.3	-90.05	-251.0	2,341.5	921.6	799.6	122.09	7.549		
9,700.0	7,222.3	9,629.7	7,222.1	65.3	63.7	-90.05	-251.0	2,441.5	921.6	794.7	126.94	7.261		
9,800.0	7,220.6	9,729.7	7,220.4	67.7	66.1	-90.05	-251.0	2,541.5	921.6	789.9	131.79	6.993		
9,900.0	7,218.9	9,829.7	7,218.7	70.0	68.6	-90.05	-251.0	2,641.5	921.6	785.0	136.65	6.744		
10,000.0	7,217.3	9,929.7	7,217.1	72.4	71.0	-90.05	-251.0	2,741.4	921.6	780.1	141.52	6.512		
10,100.0	7,215.6	10,029.7	7,215.4	74.8	73.4	-90.05	-251.0	2,841.4	921.6	775.3	146.39	6.296		
10,200.0	7,214.0	10,129.7	7,213.8	77.2	75.9	-90.05	-251.0	2,941.4	921.6	770.4	151.27	6.093		
10,300.0	7,212.3	10,229.7	7,212.1	79.6	78.3	-90.05	-251.0	3,041.4	921.6	765.5	156.15	5.902		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design												S32-T4N-R67W (Hepp) - Hepp #32-3H - HZ - Plan #1		Offset Site Error:		0.0 ft
Survey Program:												0-Geolink MWD		Offset Well Error:		0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor				
10,400.0	7,210.6	10,329.7	7,210.5	81.9	80.7	-90.05	-251.0	3,141.4	921.6	760.6	161.04	5.723				
10,500.0	7,209.0	10,429.7	7,208.8	84.3	83.2	-90.05	-251.0	3,241.4	921.6	755.7	165.93	5.554				
10,600.0	7,207.3	10,529.7	7,207.1	86.7	85.6	-90.05	-251.0	3,341.4	921.6	750.8	170.82	5.395				
10,700.0	7,205.7	10,629.7	7,205.5	89.2	88.1	-90.05	-251.0	3,441.3	921.6	745.9	175.72	5.245				
10,800.0	7,204.0	10,729.7	7,203.8	91.6	90.5	-90.05	-251.0	3,541.3	921.6	741.0	180.62	5.103				
10,900.0	7,202.4	10,829.7	7,202.2	94.0	93.0	-90.05	-251.0	3,641.3	921.6	736.1	185.52	4.968				
11,000.0	7,200.7	10,929.7	7,200.5	96.4	95.4	-90.05	-251.0	3,741.3	921.6	731.2	190.43	4.840				
11,100.0	7,199.0	11,029.7	7,198.9	98.8	97.9	-90.05	-251.0	3,841.3	921.6	726.3	195.33	4.718				
11,200.0	7,197.4	11,129.7	7,197.2	101.2	100.3	-90.05	-251.0	3,941.3	921.6	721.4	200.24	4.603				
11,300.0	7,195.7	11,229.7	7,195.5	103.7	102.8	-90.05	-251.0	4,041.3	921.6	716.5	205.15	4.493				
11,400.0	7,194.1	11,329.7	7,193.9	106.1	105.2	-90.05	-251.0	4,141.2	921.6	711.6	210.06	4.387				
11,500.0	7,192.4	11,429.7	7,192.2	108.5	107.7	-90.05	-251.0	4,241.2	921.6	706.7	214.98	4.287				
11,600.0	7,190.7	11,529.7	7,190.6	111.0	110.1	-90.05	-251.0	4,341.2	921.6	701.8	219.89	4.191				
11,700.0	7,189.1	11,629.7	7,188.9	113.4	112.6	-90.05	-251.0	4,441.2	921.6	696.8	224.81	4.100				
11,753.6	7,188.2	11,683.4	7,188.0	114.7	113.9	-90.05	-251.0	4,494.8	921.6	694.2	227.45	4.052				
11,795.2	7,187.5	11,713.6	7,187.5	115.7	114.7	-90.05	-251.0	4,525.1	921.7	692.5	229.21	4.021 SF				

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-4H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Total Uncertainty Axis	Separation Factor	Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	2.44	65.6	2.8	65.6					
100.0	100.0	99.0	99.0	0.2	0.2	2.44	65.6	2.8	65.6	65.3	0.31	214.732		
200.0	200.0	199.0	199.0	0.3	0.3	2.44	65.6	2.8	65.6	65.0	0.65	100.277 CC, ES		
300.0	300.0	299.0	299.0	0.5	0.5	174.76	65.6	2.8	66.5	65.5	1.00	66.270		
400.0	400.0	399.0	399.0	0.7	0.7	174.96	65.6	2.8	69.1	67.8	1.35	51.108		
500.0	499.9	498.9	498.9	0.9	0.8	175.25	65.6	2.8	73.5	71.8	1.70	43.197		
600.0	599.7	600.0	600.0	1.1	1.0	175.47	64.7	2.5	78.7	76.6	2.05	38.381		
700.0	699.4	701.3	701.2	1.3	1.2	175.49	62.2	1.8	84.0	81.6	2.40	34.977		
800.0	798.9	802.6	802.5	1.5	1.4	175.33	57.9	0.5	89.3	86.5	2.75	32.444		
900.0	898.3	904.1	903.7	1.8	1.6	175.02	51.9	-1.2	94.6	91.5	3.10	30.483		
1,000.0	997.4	1,005.6	1,004.9	2.0	1.8	174.59	44.2	-3.5	99.9	96.4	3.45	28.918		
1,100.0	1,096.3	1,106.6	1,105.5	2.3	2.0	174.08	34.9	-6.2	105.3	101.5	3.81	27.666		
1,200.0	1,194.9	1,206.4	1,204.8	2.7	2.2	173.66	25.3	-9.0	112.1	107.9	4.16	26.958		
1,300.0	1,293.3	1,306.1	1,304.0	3.0	2.5	173.37	15.7	-11.8	120.1	115.6	4.51	26.605		
1,400.0	1,391.8	1,405.8	1,403.1	3.3	2.7	173.11	6.1	-14.6	128.1	123.3	4.87	26.302		
1,500.0	1,490.2	1,505.4	1,502.3	3.7	2.9	172.89	-3.5	-17.4	136.2	131.0	5.23	26.037		
1,600.0	1,588.6	1,605.1	1,601.5	4.0	3.2	172.69	-13.1	-20.2	144.2	138.7	5.59	25.802		
1,700.0	1,687.0	1,704.8	1,700.7	4.4	3.4	172.51	-22.7	-23.0	152.3	146.4	5.95	25.594		
1,800.0	1,785.4	1,804.5	1,799.8	4.7	3.6	172.35	-32.3	-25.9	160.4	154.1	6.31	25.407		
1,900.0	1,883.8	1,904.1	1,899.0	5.1	3.9	172.21	-41.8	-28.7	168.4	161.8	6.67	25.239		
2,000.0	1,982.2	2,003.8	1,998.2	5.4	4.1	172.08	-51.4	-31.5	176.5	169.5	7.04	25.087		
2,100.0	2,080.6	2,103.5	2,097.3	5.8	4.4	171.96	-61.0	-34.3	184.6	177.2	7.40	24.948		
2,200.0	2,179.0	2,203.2	2,196.5	6.1	4.6	171.85	-70.6	-37.1	192.6	184.9	7.76	24.822		
2,300.0	2,277.4	2,302.8	2,295.7	6.5	4.8	171.74	-80.2	-39.9	200.7	192.6	8.12	24.705		
2,400.0	2,375.8	2,402.5	2,394.9	6.8	5.1	171.65	-89.8	-42.7	208.7	200.3	8.49	24.598		
2,500.0	2,474.2	2,502.2	2,494.0	7.2	5.3	171.56	-99.4	-45.5	216.8	208.0	8.85	24.499		
2,600.0	2,572.6	2,601.8	2,593.2	7.5	5.6	171.48	-108.9	-48.3	224.9	215.7	9.21	24.407		
2,700.0	2,671.1	2,701.5	2,692.4	7.9	5.8	171.41	-118.5	-51.1	232.9	223.4	9.58	24.322		
2,800.0	2,769.5	2,801.2	2,791.5	8.2	6.1	171.34	-128.1	-53.9	241.0	231.1	9.94	24.243		
2,900.0	2,867.9	2,900.9	2,890.7	8.6	6.3	171.27	-137.7	-56.7	249.1	238.8	10.31	24.168		
3,000.0	2,966.3	3,000.5	2,989.9	8.9	6.5	171.21	-147.3	-59.5	257.1	246.5	10.67	24.099		
3,100.0	3,064.7	3,100.2	3,089.1	9.3	6.8	171.16	-156.9	-62.3	265.2	254.2	11.04	24.033		
3,200.0	3,163.1	3,199.9	3,188.2	9.6	7.0	171.10	-166.5	-65.2	273.3	261.9	11.40	23.972		
3,300.0	3,261.5	3,299.6	3,287.4	10.0	7.3	171.05	-176.1	-68.0	281.3	269.6	11.76	23.914		
3,400.0	3,359.9	3,399.2	3,386.6	10.4	7.5	171.00	-185.6	-70.8	289.4	277.3	12.13	23.860		
3,500.0	3,458.3	3,498.9	3,485.7	10.7	7.8	170.96	-195.2	-73.6	297.5	285.0	12.50	23.808		
3,600.0	3,556.7	3,598.6	3,584.9	11.1	8.0	170.91	-204.8	-76.4	305.6	292.7	12.86	23.759		
3,700.0	3,655.1	3,698.3	3,684.1	11.4	8.3	170.87	-214.4	-79.2	313.6	300.4	13.23	23.713		
3,800.0	3,753.5	3,797.9	3,783.3	11.8	8.5	170.84	-224.0	-82.0	321.7	308.1	13.59	23.669		
3,900.0	3,851.9	3,897.6	3,882.4	12.1	8.7	170.80	-233.6	-84.8	329.8	315.8	13.96	23.627		
4,000.0	3,950.4	3,997.3	3,981.6	12.5	9.0	170.76	-243.2	-87.6	337.8	323.5	14.32	23.588		
4,100.0	4,048.8	4,097.0	4,080.8	12.8	9.2	170.73	-252.7	-90.4	345.9	331.2	14.69	23.550		
4,200.0	4,147.2	4,196.6	4,179.9	13.2	9.5	170.70	-262.3	-93.2	354.0	338.9	15.05	23.514		
4,300.0	4,245.6	4,296.3	4,279.1	13.5	9.7	170.67	-271.9	-96.0	362.0	346.6	15.42	23.479		
4,400.0	4,344.0	4,396.0	4,378.3	13.9	10.0	170.64	-281.5	-98.8	370.1	354.3	15.79	23.446		
4,500.0	4,442.4	4,495.6	4,477.5	14.3	10.2	170.61	-291.1	-101.6	378.2	362.0	16.15	23.415		
4,600.0	4,540.8	4,595.3	4,576.6	14.6	10.5	170.58	-300.7	-104.5	386.3	369.7	16.52	23.384		
4,700.0	4,639.2	4,695.0	4,675.8	15.0	10.7	170.56	-310.3	-107.3	394.3	377.4	16.88	23.355		
4,800.0	4,737.6	4,794.7	4,775.0	15.3	11.0	170.53	-319.9	-110.1	402.4	385.1	17.25	23.327		
4,900.0	4,836.0	4,894.3	4,874.2	15.7	11.2	170.51	-329.4	-112.9	410.5	392.8	17.62	23.301		
5,000.0	4,934.4	4,994.0	4,973.3	16.0	11.4	170.49	-339.0	-115.7	418.5	400.5	17.98	23.275		
5,100.0	5,032.8	5,093.7	5,072.5	16.4	11.7	170.46	-348.6	-118.5	426.6	408.3	18.35	23.250		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-4H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,200.0	5,131.3	5,193.4	5,171.7	16.7	11.9	170.44	-358.2	-121.3	434.7	416.0	18.71	23.227		
5,300.0	5,229.7	5,293.0	5,270.8	17.1	12.2	170.42	-367.8	-124.1	442.7	423.7	19.08	23.204		
5,400.0	5,328.1	5,392.7	5,370.0	17.5	12.4	170.40	-377.4	-126.9	450.8	431.4	19.45	23.182		
5,500.0	5,426.5	5,492.4	5,469.2	17.8	12.7	170.38	-387.0	-129.7	458.9	439.1	19.81	23.160		
5,600.0	5,524.9	5,592.1	5,568.4	18.2	12.9	170.37	-396.5	-132.5	467.0	446.8	20.18	23.140		
5,700.0	5,623.3	5,691.7	5,667.5	18.5	13.2	170.35	-406.1	-135.3	475.0	454.5	20.55	23.120		
5,800.0	5,721.7	5,791.4	5,766.7	18.9	13.4	170.33	-415.7	-138.1	483.1	462.2	20.91	23.101		
5,900.0	5,820.1	5,891.1	5,865.9	19.2	13.7	170.32	-425.3	-141.0	491.2	469.9	21.28	23.082		
6,000.0	5,918.5	5,990.8	5,965.0	19.6	13.9	170.30	-434.9	-143.8	499.2	477.6	21.65	23.064		
6,100.0	6,016.9	6,090.4	6,064.2	19.9	14.2	170.28	-444.5	-146.6	507.3	485.3	22.01	23.047		
6,200.0	6,115.3	6,190.1	6,163.4	20.3	14.4	170.27	-454.1	-149.4	515.4	493.0	22.38	23.030		
6,300.0	6,213.7	6,289.8	6,262.6	20.7	14.6	170.25	-463.6	-152.2	523.5	500.7	22.75	23.014		
6,400.0	6,312.1	6,389.4	6,361.7	21.0	14.9	170.24	-473.2	-155.0	531.5	508.4	23.11	22.998		
6,500.0	6,410.6	6,489.1	6,460.9	21.4	15.1	170.23	-482.8	-157.8	539.6	516.1	23.48	22.982		
6,600.0	6,509.0	6,588.8	6,560.1	21.7	15.4	170.21	-492.4	-160.6	547.7	523.8	23.85	22.967		
6,700.0	6,607.4	6,688.5	6,659.2	22.1	15.6	170.20	-502.0	-163.4	555.7	531.5	24.21	22.953		
6,800.0	6,705.8	6,790.9	6,761.0	22.4	15.8	-173.45	-511.8	-158.9	563.6	539.2	24.41	23.089		
6,900.0	6,803.5	6,891.6	6,858.7	22.7	16.0	-131.62	-521.3	-136.9	571.4	547.0	24.41	23.410		
7,000.0	6,897.8	6,990.5	6,949.4	23.0	16.1	-113.81	-530.2	-98.9	579.2	554.7	24.50	23.644		
7,100.0	6,985.8	7,087.7	7,031.0	23.3	16.3	-104.93	-538.1	-46.9	586.7	561.9	24.82	23.638		
7,200.0	7,064.9	7,183.3	7,101.5	23.6	16.5	-99.55	-545.1	17.2	593.6	568.1	25.49	23.286		
7,300.0	7,132.6	7,277.7	7,159.8	23.9	16.8	-95.93	-550.8	90.9	599.7	573.1	26.62	22.530		
7,400.0	7,187.0	7,370.8	7,204.8	24.3	17.3	-93.40	-555.3	172.3	604.8	576.6	28.23	21.422		
7,500.0	7,226.2	7,463.1	7,235.9	24.8	18.0	-91.65	-558.4	259.0	608.6	578.3	30.32	20.073		
7,600.0	7,249.3	7,554.5	7,252.6	25.5	18.9	-90.55	-560.2	348.8	611.1	578.3	32.81	18.624		
7,700.0	7,255.4	7,647.6	7,255.3	26.3	20.1	-90.08	-560.6	441.8	612.0	576.3	35.66	17.161		
7,800.0	7,253.8	7,747.6	7,253.6	27.2	21.7	-90.08	-560.6	541.7	612.0	572.6	39.36	15.550		
7,900.0	7,252.1	7,847.6	7,252.0	28.4	23.4	-90.08	-560.6	641.7	612.0	568.7	43.29	14.136		
8,000.0	7,250.4	7,947.6	7,250.3	29.7	25.3	-90.08	-560.6	741.7	612.0	564.6	47.42	12.905		
8,100.0	7,248.8	8,047.6	7,248.6	31.2	27.3	-90.08	-560.6	841.7	612.0	560.3	51.69	11.839		
8,200.0	7,247.1	8,147.6	7,247.0	32.9	29.4	-90.08	-560.6	941.7	612.0	555.9	56.08	10.914		
8,300.0	7,245.5	8,247.6	7,245.3	34.7	31.5	-90.08	-560.6	1,041.7	612.0	551.5	60.55	10.108		
8,400.0	7,243.8	8,347.6	7,243.7	36.6	33.7	-90.08	-560.6	1,141.7	612.0	546.9	65.09	9.403		
8,500.0	7,242.1	8,447.6	7,242.0	38.6	35.9	-90.08	-560.6	1,241.6	612.0	542.3	69.68	8.783		
8,600.0	7,240.5	8,547.6	7,240.3	40.6	38.2	-90.08	-560.6	1,341.6	612.0	537.7	74.32	8.234		
8,700.0	7,238.8	8,647.6	7,238.7	42.7	40.5	-90.08	-560.6	1,441.6	612.0	533.0	79.00	7.747		
8,800.0	7,237.2	8,747.6	7,237.0	44.9	42.8	-90.08	-560.6	1,541.6	612.0	528.3	83.71	7.311		
8,900.0	7,235.5	8,847.6	7,235.4	47.0	45.1	-90.08	-560.6	1,641.6	612.0	523.6	88.45	6.919		
9,000.0	7,233.9	8,947.6	7,233.7	49.2	47.4	-90.08	-560.6	1,741.6	612.0	518.8	93.20	6.566		
9,100.0	7,232.2	9,047.6	7,232.1	51.5	49.8	-90.08	-560.6	1,841.6	612.0	514.0	97.98	6.246		
9,200.0	7,230.5	9,147.6	7,230.4	53.8	52.1	-90.08	-560.6	1,941.5	612.0	509.2	102.77	5.955		
9,300.0	7,228.9	9,247.6	7,228.7	56.0	54.5	-90.08	-560.6	2,041.5	612.0	504.4	107.58	5.689		
9,400.0	7,227.2	9,347.6	7,227.1	58.3	56.9	-90.08	-560.6	2,141.5	612.0	499.6	112.40	5.445		
9,500.0	7,225.6	9,447.6	7,225.4	60.7	59.3	-90.08	-560.6	2,241.5	612.0	494.8	117.23	5.221		
9,600.0	7,223.9	9,547.6	7,223.8	63.0	61.7	-90.08	-560.6	2,341.5	612.0	489.9	122.07	5.014		
9,700.0	7,222.3	9,647.6	7,222.1	65.3	64.1	-90.08	-560.6	2,441.5	612.0	485.1	126.92	4.822		
9,800.0	7,220.6	9,747.6	7,220.5	67.7	66.5	-90.08	-560.6	2,541.5	612.0	480.2	131.77	4.644		
9,900.0	7,218.9	9,847.6	7,218.8	70.0	68.9	-90.08	-560.6	2,641.5	612.0	475.4	136.63	4.479		
10,000.0	7,217.3	9,947.6	7,217.1	72.4	71.3	-90.08	-560.6	2,741.4	612.0	470.5	141.50	4.325		
10,100.0	7,215.6	10,047.6	7,215.5	74.8	73.7	-90.08	-560.6	2,841.4	612.0	465.6	146.37	4.181		
10,200.0	7,214.0	10,147.6	7,213.8	77.2	76.2	-90.08	-560.6	2,941.4	612.0	460.8	151.25	4.046		
10,300.0	7,212.3	10,247.6	7,212.2	79.6	78.6	-90.08	-560.6	3,041.4	612.0	455.9	156.13	3.920		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-4H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,400.0	7,210.6	10,347.6	7,210.5	81.9	81.0	-90.08	-560.6	3,141.4	612.0	451.0	161.02	3.801		
10,500.0	7,209.0	10,447.6	7,208.8	84.3	83.5	-90.08	-560.6	3,241.4	612.0	446.1	165.91	3.689		
10,600.0	7,207.3	10,547.6	7,207.2	86.7	85.9	-90.08	-560.6	3,341.4	612.0	441.2	170.80	3.583		
10,700.0	7,205.7	10,647.6	7,205.5	89.2	88.3	-90.08	-560.6	3,441.3	612.0	436.3	175.70	3.483		
10,800.0	7,204.0	10,747.6	7,203.9	91.6	90.8	-90.08	-560.6	3,541.3	612.0	431.4	180.60	3.389		
10,900.0	7,202.4	10,847.6	7,202.2	94.0	93.2	-90.08	-560.6	3,641.3	612.0	426.5	185.50	3.299		
11,000.0	7,200.7	10,947.6	7,200.6	96.4	95.7	-90.08	-560.6	3,741.3	612.0	421.6	190.40	3.214		
11,100.0	7,199.0	11,047.6	7,198.9	98.8	98.1	-90.08	-560.6	3,841.3	612.0	416.7	195.31	3.133		
11,200.0	7,197.4	11,147.6	7,197.2	101.2	100.5	-90.08	-560.6	3,941.3	612.0	411.8	200.22	3.057		
11,300.0	7,195.7	11,247.6	7,195.6	103.7	103.0	-90.08	-560.6	4,041.3	612.0	406.9	205.13	2.984		
11,400.0	7,194.1	11,347.6	7,193.9	106.1	105.4	-90.08	-560.6	4,141.2	612.0	402.0	210.04	2.914		
11,500.0	7,192.4	11,447.6	7,192.3	108.5	107.9	-90.08	-560.6	4,241.2	612.0	397.0	214.95	2.847		
11,600.0	7,190.7	11,547.6	7,190.6	111.0	110.3	-90.08	-560.6	4,341.2	612.0	392.1	219.87	2.783		
11,700.0	7,189.1	11,647.6	7,189.0	113.4	112.8	-90.08	-560.6	4,441.2	612.0	387.2	224.79	2.723		
11,754.8	7,188.2	11,702.4	7,188.0	114.7	114.1	-90.08	-560.6	4,496.0	612.0	384.5	227.48	2.690		
11,795.2	7,187.5	11,734.3	7,187.5	115.7	114.9	-90.08	-560.6	4,527.9	612.1	382.8	229.26	2.670 SF		

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-5H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	0.00	43.7	0.0	43.7					
100.0	100.0	99.0	99.0	0.2	0.2	0.00	43.7	0.0	43.7	43.4	0.31	143.025		
200.0	200.0	199.0	199.0	0.3	0.3	0.00	43.7	0.0	43.7	43.1	0.65	66.791 CC, ES		
300.0	300.0	299.0	299.0	0.5	0.5	172.41	43.7	0.0	44.6	43.6	1.00	44.425		
400.0	400.0	399.0	399.0	0.7	0.7	172.82	43.7	0.0	47.2	45.8	1.35	34.887		
500.0	499.9	499.7	499.7	0.9	0.9	173.24	42.9	-0.2	50.7	49.0	1.70	29.764		
600.0	599.7	600.6	600.5	1.1	1.0	173.44	40.3	-0.8	54.2	52.1	2.05	26.392		
700.0	699.4	701.5	701.3	1.3	1.2	173.48	36.0	-1.7	57.7	55.3	2.40	24.004		
800.0	798.9	802.4	802.1	1.5	1.4	173.37	29.9	-3.1	61.2	58.4	2.75	22.222		
900.0	898.3	903.5	902.8	1.8	1.6	173.15	22.1	-4.8	64.7	61.6	3.10	20.840		
1,000.0	997.4	1,004.6	1,003.4	2.0	1.8	172.82	12.6	-6.9	68.2	64.8	3.46	19.732		
1,100.0	1,096.3	1,105.2	1,103.4	2.3	2.1	172.44	1.5	-9.3	71.9	68.1	3.81	18.868		
1,200.0	1,194.9	1,205.0	1,202.6	2.7	2.3	172.23	-9.7	-11.8	77.0	72.9	4.16	18.500		
1,300.0	1,293.3	1,304.8	1,301.7	3.0	2.6	172.16	-21.0	-14.3	83.4	78.9	4.52	18.445		
1,400.0	1,391.8	1,404.6	1,400.9	3.3	2.8	172.11	-32.2	-16.8	89.8	84.9	4.88	18.402		
1,500.0	1,490.2	1,504.4	1,500.0	3.7	3.1	172.07	-43.5	-19.3	96.2	90.9	5.24	18.363		
1,600.0	1,588.6	1,604.2	1,599.1	4.0	3.3	172.03	-54.7	-21.8	102.6	97.0	5.60	18.328		
1,700.0	1,687.0	1,704.0	1,698.3	4.4	3.6	171.99	-66.0	-24.3	109.0	103.0	5.96	18.297		
1,800.0	1,785.4	1,803.8	1,797.4	4.7	3.9	171.96	-77.2	-26.7	115.4	109.0	6.31	18.269		
1,900.0	1,883.8	1,903.6	1,896.5	5.1	4.1	171.94	-88.5	-29.2	121.8	115.1	6.67	18.243		
2,000.0	1,982.2	2,003.4	1,995.6	5.4	4.4	171.91	-99.8	-31.7	128.2	121.1	7.03	18.219		
2,100.0	2,080.6	2,103.2	2,094.8	5.8	4.6	171.89	-111.0	-34.2	134.6	127.2	7.39	18.197		
2,200.0	2,179.0	2,203.0	2,193.9	6.1	4.9	171.87	-122.3	-36.7	141.0	133.2	7.75	18.177		
2,300.0	2,277.4	2,302.8	2,293.0	6.5	5.2	171.85	-133.5	-39.2	147.4	139.2	8.11	18.159		
2,400.0	2,375.8	2,402.6	2,392.1	6.8	5.4	171.83	-144.8	-41.7	153.7	145.3	8.47	18.142		
2,500.0	2,474.2	2,502.4	2,491.3	7.2	5.7	171.82	-156.0	-44.2	160.1	151.3	8.84	18.126		
2,600.0	2,572.6	2,602.2	2,590.4	7.5	6.0	171.80	-167.3	-46.7	166.5	157.3	9.20	18.111		
2,700.0	2,671.1	2,702.0	2,689.5	7.9	6.2	171.79	-178.5	-49.2	172.9	163.4	9.56	18.098		
2,800.0	2,769.5	2,801.8	2,788.7	8.2	6.5	171.78	-189.8	-51.6	179.3	169.4	9.92	18.085		
2,900.0	2,867.9	2,901.6	2,887.8	8.6	6.7	171.77	-201.1	-54.1	185.7	175.5	10.28	18.073		
3,000.0	2,966.3	3,001.4	2,986.9	8.9	7.0	171.76	-212.3	-56.6	192.1	181.5	10.64	18.062		
3,100.0	3,064.7	3,101.2	3,086.0	9.3	7.3	171.75	-223.6	-59.1	198.5	187.5	11.00	18.051		
3,200.0	3,163.1	3,201.0	3,185.2	9.6	7.5	171.74	-234.8	-61.6	204.9	193.6	11.36	18.041		
3,300.0	3,261.5	3,300.7	3,284.3	10.0	7.8	171.73	-246.1	-64.1	211.3	199.6	11.72	18.032		
3,400.0	3,359.9	3,400.5	3,383.4	10.4	8.1	171.72	-257.3	-66.6	217.7	205.6	12.08	18.023		
3,500.0	3,458.3	3,500.3	3,482.5	10.7	8.3	171.71	-268.6	-69.1	224.1	211.7	12.44	18.014		
3,600.0	3,556.7	3,600.1	3,581.7	11.1	8.6	171.70	-279.8	-71.6	230.5	217.7	12.80	18.006		
3,700.0	3,655.1	3,699.9	3,680.8	11.4	8.9	171.70	-291.1	-74.0	236.9	223.8	13.16	17.999		
3,800.0	3,753.5	3,799.7	3,779.9	11.8	9.1	171.69	-302.3	-76.5	243.3	229.8	13.52	17.991		
3,900.0	3,851.9	3,899.5	3,879.1	12.1	9.4	171.68	-313.6	-79.0	249.7	235.8	13.89	17.984		
4,000.0	3,950.4	3,999.3	3,978.2	12.5	9.7	171.68	-324.9	-81.5	256.1	241.9	14.25	17.978		
4,100.0	4,048.8	4,099.1	4,077.3	12.8	9.9	171.67	-336.1	-84.0	262.5	247.9	14.61	17.972		
4,200.0	4,147.2	4,198.9	4,176.4	13.2	10.2	171.67	-347.4	-86.5	268.9	253.9	14.97	17.966		
4,300.0	4,245.6	4,298.7	4,275.6	13.5	10.4	171.66	-358.6	-89.0	275.3	260.0	15.33	17.960		
4,400.0	4,344.0	4,398.5	4,374.7	13.9	10.7	171.66	-369.9	-91.5	281.7	266.0	15.69	17.954		
4,500.0	4,442.4	4,498.3	4,473.8	14.3	11.0	171.65	-381.1	-94.0	288.1	272.1	16.05	17.949		
4,600.0	4,540.8	4,598.1	4,572.9	14.6	11.2	171.65	-392.4	-96.4	294.5	278.1	16.41	17.944		
4,700.0	4,639.2	4,697.9	4,672.1	15.0	11.5	171.64	-403.6	-98.9	300.9	284.1	16.77	17.939		
4,800.0	4,737.6	4,797.7	4,771.2	15.3	11.8	171.64	-414.9	-101.4	307.3	290.2	17.13	17.935		
4,900.0	4,836.0	4,897.5	4,870.3	15.7	12.0	171.64	-426.2	-103.9	313.7	296.2	17.50	17.930		
5,000.0	4,934.4	4,997.3	4,969.5	16.0	12.3	171.63	-437.4	-106.4	320.1	302.2	17.86	17.926		
5,100.0	5,032.8	5,097.1	5,068.6	16.4	12.6	171.63	-448.7	-108.9	326.5	308.3	18.22	17.922		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-5H - HZ - Plan #1												Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,200.0	5,131.3	5,196.9	5,167.7	16.7	12.8	171.63	-459.9	-111.4	332.9	314.3	18.58	17.918	
5,300.0	5,229.7	5,296.7	5,266.8	17.1	13.1	171.62	-471.2	-113.9	339.3	320.4	18.94	17.914	
5,400.0	5,328.1	5,396.4	5,366.0	17.5	13.4	171.62	-482.4	-116.4	345.7	326.4	19.30	17.910	
5,500.0	5,426.5	5,496.2	5,465.1	17.8	13.6	171.62	-493.7	-118.8	352.1	332.4	19.66	17.907	
5,600.0	5,524.9	5,596.0	5,564.2	18.2	13.9	171.61	-504.9	-121.3	358.5	338.5	20.02	17.903	
5,700.0	5,623.3	5,695.8	5,663.3	18.5	14.2	171.61	-516.2	-123.8	364.9	344.5	20.38	17.900	
5,800.0	5,721.7	5,795.6	5,762.5	18.9	14.4	171.61	-527.4	-126.3	371.3	350.5	20.75	17.897	
5,900.0	5,820.1	5,895.4	5,861.6	19.2	14.7	171.60	-538.7	-128.8	377.7	356.6	21.11	17.894	
6,000.0	5,918.5	5,995.2	5,960.7	19.6	15.0	171.60	-550.0	-131.3	384.1	362.6	21.47	17.891	
6,100.0	6,016.9	6,095.0	6,059.9	19.9	15.2	171.60	-561.2	-133.8	390.5	368.6	21.83	17.888	
6,200.0	6,115.3	6,194.8	6,159.0	20.3	15.5	171.60	-572.5	-136.3	396.9	374.7	22.19	17.885	
6,300.0	6,213.7	6,294.6	6,258.1	20.7	15.8	171.59	-583.7	-138.8	403.3	380.7	22.55	17.882	
6,400.0	6,312.1	6,394.4	6,357.2	21.0	16.0	171.59	-595.0	-141.2	409.7	386.8	22.91	17.879	
6,500.0	6,410.6	6,494.2	6,456.4	21.4	16.3	171.59	-606.2	-143.7	416.1	392.8	23.27	17.877	
6,600.0	6,509.0	6,594.0	6,555.5	21.7	16.6	171.59	-617.5	-146.2	422.5	398.8	23.64	17.874	
6,700.0	6,607.4	6,693.8	6,654.6	22.1	16.8	171.59	-628.7	-148.7	428.9	404.9	24.00	17.872	
6,800.0	6,705.8	6,793.6	6,753.7	22.4	17.1	-172.87	-640.0	-151.2	435.3	410.9	24.34	17.883	
6,900.0	6,803.5	6,894.3	6,853.7	22.7	17.3	-133.54	-651.4	-149.7	441.9	417.2	24.67	17.909	
7,000.0	6,897.8	6,997.4	6,954.3	23.0	17.5	-118.24	-662.8	-131.0	448.6	423.7	24.88	18.029	
7,100.0	6,985.8	7,102.4	7,051.7	23.3	17.7	-111.67	-673.8	-93.5	455.1	430.1	25.01	18.194	
7,200.0	7,064.9	7,209.4	7,142.2	23.6	17.9	-108.36	-684.1	-37.7	461.2	435.9	25.23	18.279	
7,300.0	7,132.6	7,318.2	7,222.0	23.9	18.2	-106.50	-693.2	35.4	466.5	440.7	25.79	18.088	
7,400.0	7,187.0	7,428.5	7,287.5	24.3	18.6	-105.38	-700.6	123.7	470.9	444.0	26.97	17.459	
7,500.0	7,226.2	7,540.0	7,335.4	24.8	19.2	-104.68	-706.0	224.0	474.2	445.2	28.99	16.357	
7,600.0	7,249.3	7,652.1	7,363.2	25.5	20.1	-104.23	-709.2	332.4	476.2	444.3	31.87	14.943	
7,700.0	7,255.4	7,761.8	7,370.0	26.3	21.4	-104.03	-710.0	441.7	476.9	441.5	35.37	13.483	
7,800.0	7,253.8	7,861.8	7,370.0	27.2	22.7	-104.22	-710.0	541.7	477.3	438.4	38.88	12.275	
7,900.0	7,252.1	7,961.8	7,370.0	28.4	24.3	-104.41	-710.0	641.7	477.7	435.1	42.63	11.206	
8,000.0	7,250.4	8,061.8	7,370.0	29.7	26.1	-104.60	-710.0	741.7	478.1	431.5	46.55	10.270	
8,100.0	7,248.8	8,161.8	7,370.0	31.2	28.0	-104.80	-710.0	841.7	478.5	427.9	50.62	9.454	
8,200.0	7,247.1	8,261.8	7,370.0	32.9	30.0	-104.99	-710.0	941.7	478.9	424.2	54.78	8.743	
8,300.0	7,245.5	8,361.7	7,370.0	34.7	32.1	-105.18	-710.0	1,041.7	479.4	420.3	59.03	8.121	
8,400.0	7,243.8	8,461.7	7,370.0	36.6	34.2	-105.37	-710.0	1,141.6	479.8	416.5	63.34	7.576	
8,500.0	7,242.1	8,561.7	7,370.0	38.6	36.4	-105.56	-710.0	1,241.6	480.3	412.6	67.69	7.095	
8,600.0	7,240.5	8,661.7	7,370.0	40.6	38.6	-105.75	-710.0	1,341.6	480.7	408.6	72.09	6.668	
8,700.0	7,238.8	8,761.7	7,370.0	42.7	40.8	-105.94	-710.0	1,441.6	481.2	404.6	76.51	6.289	
8,800.0	7,237.2	8,861.7	7,370.0	44.9	43.1	-106.13	-710.0	1,541.6	481.6	400.7	80.95	5.949	
8,900.0	7,235.5	8,961.7	7,370.0	47.0	45.4	-106.32	-710.0	1,641.6	482.1	396.7	85.41	5.644	
9,000.0	7,233.9	9,061.6	7,370.0	49.2	47.7	-106.51	-710.0	1,741.6	482.5	392.7	89.89	5.368	
9,100.0	7,232.2	9,161.6	7,370.0	51.5	50.1	-106.70	-710.0	1,841.5	483.0	388.6	94.37	5.118	
9,200.0	7,230.5	9,261.6	7,370.0	53.8	52.4	-106.89	-710.0	1,941.5	483.5	384.6	98.86	4.891	
9,300.0	7,228.9	9,361.6	7,370.0	56.0	54.8	-107.07	-710.0	2,041.5	484.0	380.6	103.36	4.683	
9,400.0	7,227.2	9,461.6	7,370.0	58.3	57.1	-107.26	-710.0	2,141.5	484.5	376.6	107.85	4.492	
9,500.0	7,225.6	9,561.6	7,370.0	60.7	59.5	-107.45	-710.0	2,241.5	485.0	372.6	112.35	4.317	
9,600.0	7,223.9	9,661.6	7,370.0	63.0	61.9	-107.63	-710.0	2,341.5	485.5	368.6	116.85	4.155	
9,700.0	7,222.3	9,761.6	7,370.0	65.3	64.3	-107.82	-710.0	2,441.5	486.0	364.6	121.34	4.005	
9,800.0	7,220.6	9,861.5	7,370.0	67.7	66.7	-108.01	-710.0	2,541.5	486.5	360.6	125.83	3.866	
9,900.0	7,218.9	9,961.5	7,370.0	70.0	69.1	-108.19	-710.0	2,641.4	487.0	356.7	130.32	3.737	
10,000.0	7,217.3	10,061.5	7,370.0	72.4	71.5	-108.38	-710.0	2,741.4	487.5	352.7	134.81	3.616	
10,100.0	7,215.6	10,161.5	7,370.0	74.8	73.9	-108.56	-710.0	2,841.4	488.0	348.8	139.29	3.504	
10,200.0	7,214.0	10,261.5	7,370.0	77.2	76.3	-108.75	-710.0	2,941.4	488.6	344.8	143.76	3.399	
10,300.0	7,212.3	10,361.5	7,370.0	79.6	78.7	-108.93	-710.0	3,041.4	489.1	340.9	148.22	3.300	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-5H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,400.0	7,210.6	10,461.5	7,370.0	81.9	81.2	-109.11	-710.0	3,141.4	489.6	337.0	152.68	3.207		
10,500.0	7,209.0	10,561.4	7,370.0	84.3	83.6	-109.30	-710.0	3,241.4	490.2	333.1	157.13	3.120		
10,600.0	7,207.3	10,661.4	7,370.0	86.7	86.0	-109.48	-710.0	3,341.3	490.7	329.2	161.57	3.037		
10,700.0	7,205.7	10,761.4	7,370.0	89.2	88.4	-109.66	-710.0	3,441.3	491.3	325.3	166.01	2.959		
10,800.0	7,204.0	10,861.4	7,370.0	91.6	90.9	-109.84	-710.0	3,541.3	491.9	321.4	170.43	2.886		
10,900.0	7,202.4	10,961.4	7,370.0	94.0	93.3	-110.03	-710.0	3,641.3	492.4	317.6	174.85	2.816		
11,000.0	7,200.7	11,061.4	7,370.0	96.4	95.8	-110.21	-710.0	3,741.3	493.0	313.7	179.26	2.750		
11,100.0	7,199.0	11,161.4	7,370.0	98.8	98.2	-110.39	-710.0	3,841.3	493.6	309.9	183.65	2.687		
11,200.0	7,197.4	11,261.3	7,370.0	101.2	100.6	-110.57	-710.0	3,941.3	494.1	306.1	188.04	2.628		
11,300.0	7,195.7	11,361.3	7,370.0	103.7	103.1	-110.75	-710.0	4,041.2	494.7	302.3	192.42	2.571		
11,400.0	7,194.1	11,461.3	7,370.0	106.1	105.5	-110.93	-710.0	4,141.2	495.3	298.5	196.79	2.517		
11,500.0	7,192.4	11,561.3	7,370.0	108.5	108.0	-111.11	-710.0	4,241.2	495.9	294.8	201.14	2.466		
11,600.0	7,190.7	11,661.3	7,370.0	111.0	110.4	-111.28	-710.0	4,341.2	496.5	291.0	205.49	2.416		
11,700.0	7,189.1	11,761.3	7,370.0	113.4	112.9	-111.46	-710.0	4,441.2	497.1	287.3	209.82	2.369		
11,795.2	7,187.5	11,850.8	7,370.0	115.7	115.1	-111.62	-710.0	4,530.8	497.7	283.9	213.82	2.328 SF		

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-6H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: O-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
0.0	0.0	0.0	0.0	0.0	0.0	0.00	21.9	0.0	21.9					
100.0	100.0	100.0	100.0	0.2	0.2	0.00	21.9	0.0	21.9	21.6	0.31	71.155		
200.0	200.0	200.0	200.0	0.3	0.3	0.00	21.9	0.0	21.9	21.2	0.66	33.307 CC, ES		
300.0	300.0	300.0	300.0	0.5	0.5	172.55	21.9	0.0	22.7	21.7	1.01	22.604		
400.0	400.0	400.4	400.4	0.7	0.7	172.96	21.0	-0.2	24.5	23.1	1.35	18.054		
500.0	499.9	500.8	500.8	0.9	0.9	173.09	18.4	-0.7	26.2	24.5	1.70	15.375		
600.0	599.7	601.3	601.1	1.1	1.0	172.98	14.1	-1.5	28.0	25.9	2.05	13.611		
700.0	699.4	701.7	701.4	1.3	1.2	172.69	8.0	-2.7	29.7	27.3	2.40	12.360		
800.0	798.9	802.3	801.6	1.5	1.5	172.24	0.3	-4.3	31.5	28.7	2.76	11.427		
900.0	898.3	902.8	901.7	1.8	1.7	171.66	-9.2	-6.1	33.3	30.2	3.11	10.702		
1,000.0	997.4	1,003.4	1,001.6	2.0	1.9	170.96	-20.4	-8.3	35.1	31.6	3.46	10.121		
1,100.0	1,096.3	1,103.8	1,101.2	2.3	2.2	170.20	-33.3	-10.9	36.9	33.1	3.82	9.658		
1,200.0	1,194.9	1,203.7	1,200.2	2.7	2.5	169.80	-46.6	-13.5	40.1	35.9	4.18	9.575		
1,300.0	1,293.3	1,303.7	1,299.2	3.0	2.7	169.75	-59.8	-16.1	44.4	39.9	4.55	9.767		
1,400.0	1,391.8	1,403.6	1,398.2	3.3	3.0	169.72	-73.1	-18.7	48.8	43.9	4.91	9.937		
1,500.0	1,490.2	1,503.5	1,497.2	3.7	3.3	169.70	-86.4	-21.3	53.2	47.9	5.27	10.082		
1,600.0	1,588.6	1,603.4	1,596.1	4.0	3.6	169.68	-99.6	-23.9	57.6	51.9	5.64	10.209		
1,700.0	1,687.0	1,703.3	1,695.1	4.4	3.9	169.66	-112.9	-26.6	62.0	56.0	6.01	10.319		
1,800.0	1,785.4	1,803.2	1,794.1	4.7	4.2	169.65	-126.2	-29.2	66.4	60.0	6.37	10.416		
1,900.0	1,883.8	1,903.1	1,893.1	5.1	4.5	169.64	-139.4	-31.8	70.7	64.0	6.74	10.502		
2,000.0	1,982.2	2,003.0	1,992.1	5.4	4.7	169.63	-152.7	-34.4	75.1	68.0	7.10	10.579		
2,100.0	2,080.6	2,102.9	2,091.1	5.8	5.0	169.62	-166.0	-37.0	79.5	72.1	7.47	10.648		
2,200.0	2,179.0	2,202.8	2,190.0	6.1	5.3	169.61	-179.2	-39.6	83.9	76.1	7.84	10.711		
2,300.0	2,277.4	2,302.7	2,289.0	6.5	5.6	169.60	-192.5	-42.3	88.3	80.1	8.20	10.768		
2,400.0	2,375.8	2,402.6	2,388.0	6.8	5.9	169.59	-205.7	-44.9	92.7	84.1	8.57	10.820		
2,500.0	2,474.2	2,502.5	2,487.0	7.2	6.2	169.59	-219.0	-47.5	97.1	88.2	8.94	10.867		
2,600.0	2,572.6	2,602.4	2,586.0	7.5	6.5	169.58	-232.3	-50.1	101.5	92.2	9.30	10.911		
2,700.0	2,671.1	2,702.3	2,685.0	7.9	6.8	169.57	-245.5	-52.7	105.9	96.2	9.67	10.951		
2,800.0	2,769.5	2,802.2	2,784.0	8.2	7.1	169.57	-258.8	-55.3	110.3	100.2	10.04	10.988		
2,900.0	2,867.9	2,902.1	2,882.9	8.6	7.3	169.56	-272.1	-57.9	114.7	104.3	10.40	11.023		
3,000.0	2,966.3	3,002.0	2,981.9	8.9	7.6	169.56	-285.3	-60.6	119.1	108.3	10.77	11.055		
3,100.0	3,064.7	3,101.9	3,080.9	9.3	7.9	169.56	-298.6	-63.2	123.4	112.3	11.14	11.085		
3,200.0	3,163.1	3,201.8	3,179.9	9.6	8.2	169.55	-311.9	-65.8	127.8	116.3	11.50	11.113		
3,300.0	3,261.5	3,301.7	3,278.9	10.0	8.5	169.55	-325.1	-68.4	132.2	120.4	11.87	11.139		
3,400.0	3,359.9	3,401.6	3,377.9	10.4	8.8	169.55	-338.4	-71.0	136.6	124.4	12.24	11.163		
3,500.0	3,458.3	3,501.5	3,476.8	10.7	9.1	169.54	-351.6	-73.6	141.0	128.4	12.61	11.187		
3,600.0	3,556.7	3,601.4	3,575.8	11.1	9.4	169.54	-364.9	-76.2	145.4	132.4	12.97	11.208		
3,700.0	3,655.1	3,701.3	3,674.8	11.4	9.7	169.54	-378.2	-78.9	149.8	136.5	13.34	11.229		
3,800.0	3,753.5	3,801.2	3,773.8	11.8	10.0	169.53	-391.4	-81.5	154.2	140.5	13.71	11.249		
3,900.0	3,851.9	3,901.1	3,872.8	12.1	10.3	169.53	-404.7	-84.1	158.6	144.5	14.08	11.267		
4,000.0	3,950.4	4,001.0	3,971.8	12.5	10.6	169.53	-418.0	-86.7	163.0	148.5	14.44	11.284		
4,100.0	4,048.8	4,100.9	4,070.8	12.8	10.9	169.53	-431.2	-89.3	167.4	152.6	14.81	11.301		
4,200.0	4,147.2	4,200.9	4,169.7	13.2	11.1	169.53	-444.5	-91.9	171.8	156.6	15.18	11.317		
4,300.0	4,245.6	4,300.8	4,268.7	13.5	11.4	169.52	-457.8	-94.5	176.1	160.6	15.54	11.332		
4,400.0	4,344.0	4,400.7	4,367.7	13.9	11.7	169.52	-471.0	-97.2	180.5	164.6	15.91	11.346		
4,500.0	4,442.4	4,500.6	4,466.7	14.3	12.0	169.52	-484.3	-99.8	184.9	168.7	16.28	11.360		
4,600.0	4,540.8	4,600.5	4,565.7	14.6	12.3	169.52	-497.5	-102.4	189.3	172.7	16.65	11.373		
4,700.0	4,639.2	4,700.4	4,664.7	15.0	12.6	169.52	-510.8	-105.0	193.7	176.7	17.01	11.385		
4,800.0	4,737.6	4,800.3	4,763.6	15.3	12.9	169.52	-524.1	-107.6	198.1	180.7	17.38	11.397		
4,900.0	4,836.0	4,900.2	4,862.6	15.7	13.2	169.51	-537.3	-110.2	202.5	184.8	17.75	11.409		
5,000.0	4,934.4	5,000.1	4,961.6	16.0	13.5	169.51	-550.6	-112.8	206.9	188.8	18.12	11.420		
5,100.0	5,032.8	5,100.0	5,060.6	16.4	13.8	169.51	-563.9	-115.5	211.3	192.8	18.48	11.430		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Offset Design S32-T4N-R67W (Hepp) - Hepp #32-6H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance				Total Uncertainty Axis	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
5,200.0	5,131.3	5,199.9	5,159.6	16.7	14.1	169.51	-577.1	-118.1	215.7	196.8	18.85	11.440		
5,300.0	5,229.7	5,299.8	5,258.6	17.1	14.4	169.51	-590.4	-120.7	220.1	200.8	19.22	11.450		
5,400.0	5,328.1	5,399.7	5,357.6	17.5	14.7	169.51	-603.7	-123.3	224.5	204.9	19.59	11.459		
5,500.0	5,426.5	5,499.6	5,456.5	17.8	15.0	169.51	-616.9	-125.9	228.8	208.9	19.95	11.468		
5,600.0	5,524.9	5,599.5	5,555.5	18.2	15.2	169.50	-630.2	-128.5	233.2	212.9	20.32	11.477		
5,700.0	5,623.3	5,699.4	5,654.5	18.5	15.5	169.50	-643.4	-131.1	237.6	216.9	20.69	11.485		
5,800.0	5,721.7	5,799.3	5,753.5	18.9	15.8	169.50	-656.7	-133.8	242.0	221.0	21.06	11.493		
5,900.0	5,820.1	5,899.2	5,852.5	19.2	16.1	169.50	-670.0	-136.4	246.4	225.0	21.43	11.501		
6,000.0	5,918.5	5,999.1	5,951.5	19.6	16.4	169.50	-683.2	-139.0	250.8	229.0	21.79	11.509		
6,100.0	6,016.9	6,099.0	6,050.4	19.9	16.7	169.50	-696.5	-141.6	255.2	233.0	22.16	11.516		
6,200.0	6,115.3	6,198.9	6,149.4	20.3	17.0	169.50	-709.8	-144.2	259.6	237.1	22.53	11.523		
6,300.0	6,213.7	6,298.8	6,248.4	20.7	17.3	169.50	-723.0	-146.8	264.0	241.1	22.90	11.530		
6,400.0	6,312.1	6,398.7	6,347.4	21.0	17.6	169.50	-736.3	-149.4	268.4	245.1	23.26	11.536		
6,500.0	6,410.6	6,498.6	6,446.4	21.4	17.9	169.50	-749.6	-152.1	272.8	249.1	23.63	11.543		
6,600.0	6,509.0	6,598.5	6,545.4	21.7	18.2	169.50	-762.8	-154.7	277.2	253.2	24.00	11.549		
6,700.0	6,607.4	6,698.4	6,644.4	22.1	18.5	169.50	-776.1	-157.3	281.5	257.2	24.37	11.555		
6,800.0	6,705.8	6,799.9	6,744.8	22.4	18.7	-174.16	-789.6	-155.4	285.8	261.2	24.56	11.636		
6,900.0	6,803.5	6,900.8	6,842.9	22.7	19.0	-132.26	-802.7	-136.5	289.9	265.4	24.51	11.832		
7,000.0	6,897.8	7,000.3	6,935.0	23.0	19.2	-114.37	-815.2	-101.2	294.2	269.6	24.55	11.983		
7,100.0	6,985.8	7,098.6	7,018.6	23.3	19.4	-105.41	-826.5	-51.1	298.3	273.5	24.85	12.007		
7,200.0	7,064.9	7,195.6	7,091.7	23.6	19.6	-99.95	-836.4	11.8	302.3	276.8	25.51	11.847		
7,300.0	7,132.6	7,291.7	7,152.7	23.9	19.9	-96.24	-844.8	85.4	305.8	279.1	26.65	11.475		
7,400.0	7,187.0	7,386.8	7,200.2	24.3	20.4	-93.61	-851.3	167.4	308.8	280.5	28.27	10.922		
7,500.0	7,226.2	7,481.2	7,233.4	24.8	20.9	-91.76	-856.0	255.5	311.1	280.7	30.36	10.246		
7,600.0	7,249.3	7,575.0	7,251.8	25.5	21.7	-90.56	-858.6	347.4	312.6	279.8	32.84	9.519		
7,700.0	7,255.4	7,669.5	7,255.4	26.3	22.6	-89.99	-859.3	441.7	313.3	277.6	35.64	8.790		
7,800.0	7,253.8	7,769.5	7,253.7	27.2	23.9	-89.99	-859.3	541.7	313.3	273.9	39.34	7.964		
7,900.0	7,252.1	7,869.5	7,252.0	28.4	25.3	-89.99	-859.3	641.7	313.3	270.0	43.27	7.240		
8,000.0	7,250.4	7,969.5	7,250.4	29.7	27.0	-89.99	-859.3	741.7	313.3	265.9	47.40	6.609		
8,100.0	7,248.8	8,069.5	7,248.7	31.2	28.8	-89.99	-859.3	841.7	313.3	261.6	51.67	6.063		
8,200.0	7,247.1	8,169.5	7,247.1	32.9	30.7	-89.99	-859.3	941.7	313.3	257.2	56.05	5.589		
8,300.0	7,245.5	8,269.5	7,245.4	34.7	32.7	-89.99	-859.3	1,041.7	313.3	252.8	60.52	5.176		
8,400.0	7,243.8	8,369.5	7,243.8	36.6	34.8	-89.99	-859.3	1,141.6	313.3	248.2	65.06	4.815		
8,500.0	7,242.1	8,469.5	7,242.1	38.6	36.9	-89.99	-859.3	1,241.6	313.3	243.6	69.66	4.498		
8,600.0	7,240.5	8,569.5	7,240.4	40.6	39.1	-89.99	-859.3	1,341.6	313.3	239.0	74.30	4.217		
8,700.0	7,238.8	8,669.5	7,238.8	42.7	41.3	-89.99	-859.3	1,441.6	313.3	234.3	78.98	3.967		
8,800.0	7,237.2	8,769.5	7,237.1	44.9	43.6	-89.99	-859.3	1,541.6	313.3	229.6	83.68	3.744		
8,900.0	7,235.5	8,869.5	7,235.5	47.0	45.9	-89.99	-859.3	1,641.6	313.3	224.9	88.42	3.543		
9,000.0	7,233.9	8,969.5	7,233.8	49.2	48.2	-89.99	-859.3	1,741.6	313.3	220.1	93.18	3.362		
9,100.0	7,232.2	9,069.5	7,232.2	51.5	50.5	-89.99	-859.3	1,841.5	313.3	215.3	97.95	3.198		
9,200.0	7,230.5	9,169.5	7,230.5	53.8	52.8	-89.99	-859.3	1,941.5	313.3	210.5	102.75	3.049		
9,300.0	7,228.9	9,269.5	7,228.8	56.0	55.1	-89.99	-859.3	2,041.5	313.3	205.7	107.55	2.913		
9,400.0	7,227.2	9,369.5	7,227.2	58.3	57.5	-89.99	-859.3	2,141.5	313.3	200.9	112.37	2.788		
9,500.0	7,225.6	9,469.5	7,225.5	60.7	59.8	-89.99	-859.3	2,241.5	313.3	196.1	117.20	2.673		
9,600.0	7,223.9	9,569.5	7,223.9	63.0	62.2	-89.99	-859.3	2,341.5	313.3	191.2	122.04	2.567		
9,700.0	7,222.3	9,669.5	7,222.2	65.3	64.6	-89.99	-859.3	2,441.5	313.3	186.4	126.89	2.469		
9,800.0	7,220.6	9,769.5	7,220.5	67.7	67.0	-89.99	-859.3	2,541.5	313.3	181.5	131.74	2.378		
9,900.0	7,218.9	9,869.5	7,218.9	70.0	69.4	-89.99	-859.3	2,641.4	313.3	176.7	136.60	2.293		
10,000.0	7,217.3	9,969.5	7,217.2	72.4	71.8	-89.99	-859.3	2,741.4	313.3	171.8	141.47	2.215		
10,100.0	7,215.6	10,069.5	7,215.6	74.8	74.2	-89.99	-859.3	2,841.4	313.3	166.9	146.34	2.141		
10,200.0	7,214.0	10,169.5	7,213.9	77.2	76.6	-89.99	-859.3	2,941.4	313.3	162.1	151.22	2.072		
10,300.0	7,212.3	10,269.5	7,212.3	79.6	79.0	-89.99	-859.3	3,041.4	313.3	157.2	156.10	2.007		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Anticollision Report

Company:	K. P. Kauffman Company, Inc.	Local Co-ordinate Reference:	Well Hepp #32-7H
Project:	Wattenberg	TVD Reference:	WELL @ 5031.0ft (Original Well Elev)
Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

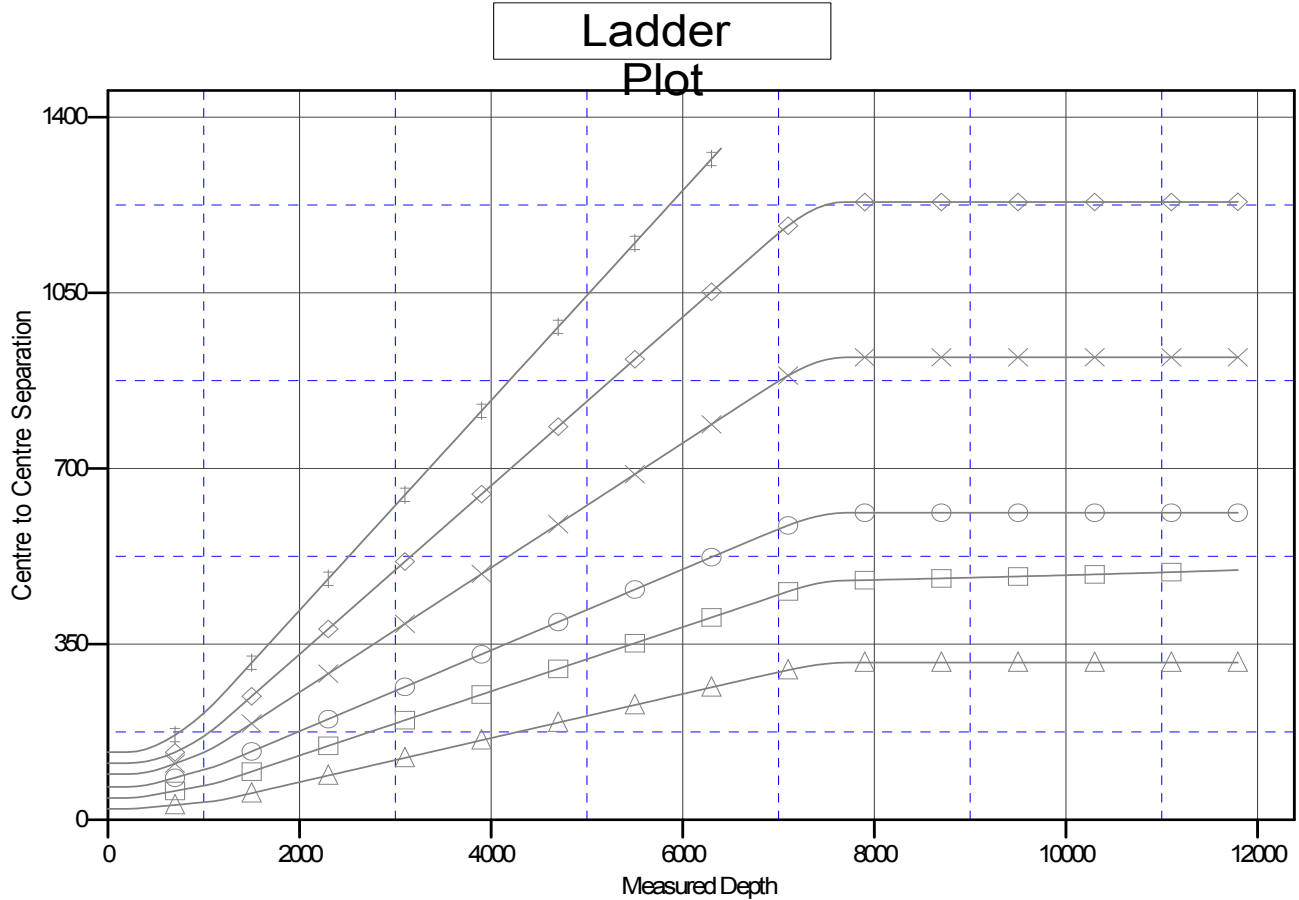
Offset Design S32-T4N-R67W (Hepp) - Hepp #32-6H - HZ - Plan #1													Offset Site Error:	0.0 ft
Survey Program: 0-Geolink MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor		
10,400.0	7,210.6	10,369.5	7,210.6	81.9	81.4	-89.99	-859.3	3,141.4	313.3	152.3	160.99	1.946		
10,500.0	7,209.0	10,469.5	7,208.9	84.3	83.8	-89.99	-859.3	3,241.4	313.3	147.4	165.88	1.889		
10,600.0	7,207.3	10,569.5	7,207.3	86.7	86.3	-89.99	-859.3	3,341.3	313.3	142.5	170.77	1.835		
10,700.0	7,205.7	10,669.5	7,205.6	89.2	88.7	-89.99	-859.3	3,441.3	313.3	137.6	175.67	1.783		
10,800.0	7,204.0	10,769.5	7,204.0	91.6	91.1	-89.99	-859.3	3,541.3	313.3	132.7	180.57	1.735		
10,900.0	7,202.4	10,869.5	7,202.3	94.0	93.5	-89.99	-859.3	3,641.3	313.3	127.8	185.47	1.689		
11,000.0	7,200.7	10,969.5	7,200.7	96.4	96.0	-89.99	-859.3	3,741.3	313.3	122.9	190.37	1.646		
11,100.0	7,199.0	11,069.5	7,199.0	98.8	98.4	-89.99	-859.3	3,841.3	313.3	118.0	195.28	1.604		
11,200.0	7,197.4	11,169.5	7,197.3	101.2	100.8	-89.99	-859.3	3,941.3	313.3	113.1	200.19	1.565		
11,300.0	7,195.7	11,269.5	7,195.7	103.7	103.3	-89.99	-859.3	4,041.2	313.3	108.2	205.10	1.528		
11,400.0	7,194.1	11,369.5	7,194.0	106.1	105.7	-89.99	-859.3	4,141.2	313.3	103.3	210.01	1.492	Level 3	
11,500.0	7,192.4	11,469.5	7,192.4	108.5	108.2	-89.99	-859.3	4,241.2	313.3	98.4	214.92	1.458	Level 3	
11,600.0	7,190.7	11,569.5	7,190.7	111.0	110.6	-89.99	-859.3	4,341.2	313.3	93.4	219.84	1.425	Level 3	
11,700.0	7,189.1	11,669.5	7,189.0	113.4	113.1	-89.99	-859.3	4,441.2	313.3	88.5	224.75	1.394	Level 3	
11,757.5	7,188.1	11,727.1	7,188.1	114.8	114.5	-89.99	-859.3	4,498.7	313.3	85.7	227.58	1.377	Level 3	
11,795.2	7,187.5	11,761.9	7,187.5	115.7	115.3	-89.99	-859.3	4,533.6	313.3	83.9	229.37	1.366	Level 3, SF	

Anticollision Report

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Reference Site:	S32-T4N-R67W (Hepp)	MD Reference:	WELL @ 5031.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Hepp #32-7H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	HZ	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 5031.0ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Hepp #32-7H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.37°



LEGEND

- | | | |
|-------------------------------|-------------------------------|-------------------------------|
| ◆ Hepp #32-1H, HZ, Plan #1 V0 | ✕ Hepp #32-3H, HZ, Plan #1 V0 | ○ Hepp #32-4H, HZ, Plan #1 V0 |
| ■ Hepp #32-5H, HZ, Plan #1 V0 | △ Hepp #32-6H, HZ, Plan #1 V0 | ◄ Hepp #32-2H, HZ, Plan #1 V0 |