



# Surface Location: Greeley-Rothe Pad Sec.1-T5N-R67W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

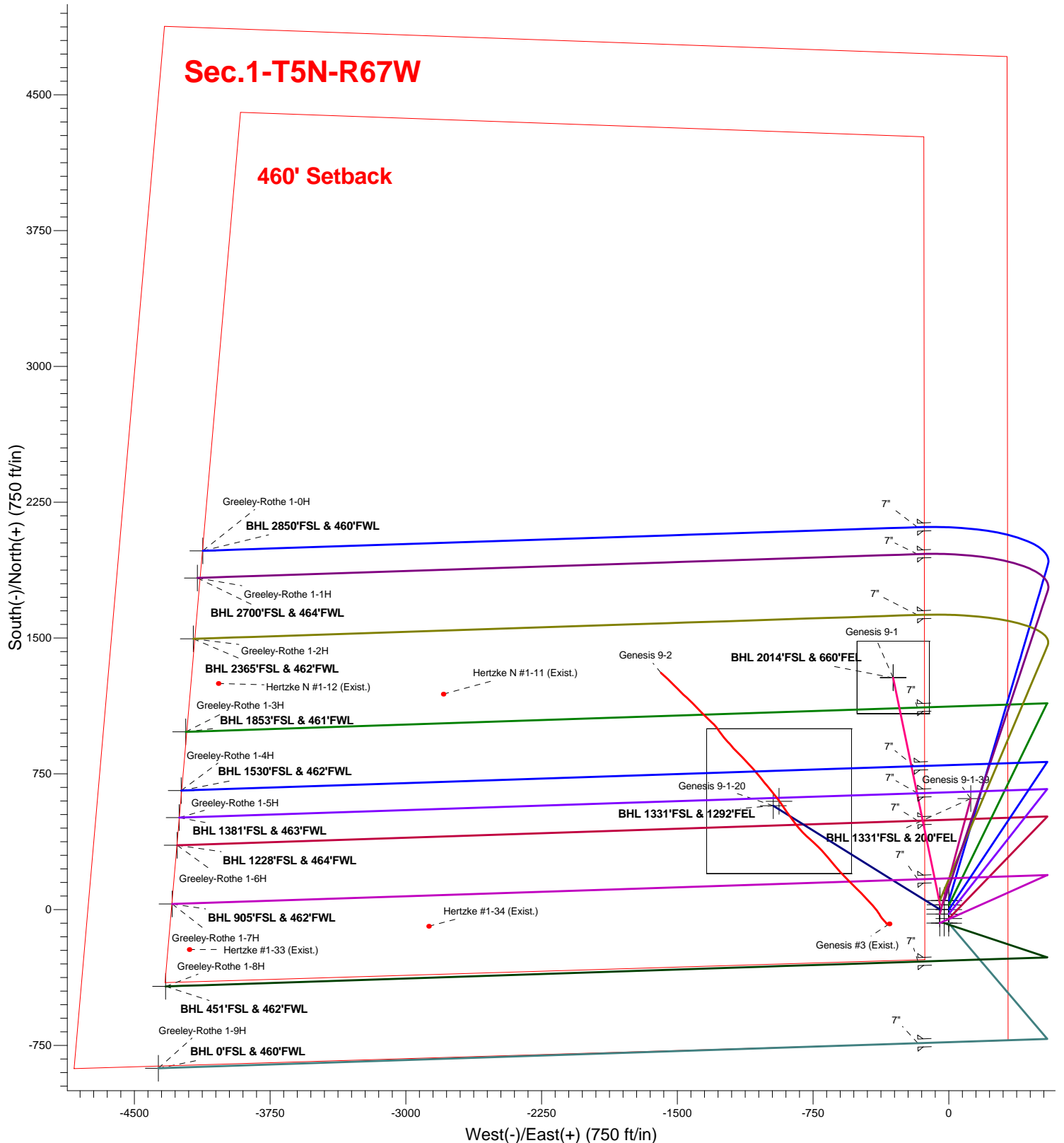
Ground Elevation: 4876.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1397831.58	3185528.81	40.423536	-104.833615	

Design Version: Plan #2 (6-05-14)

## Sec.1-T5N-R67W

460' Setback





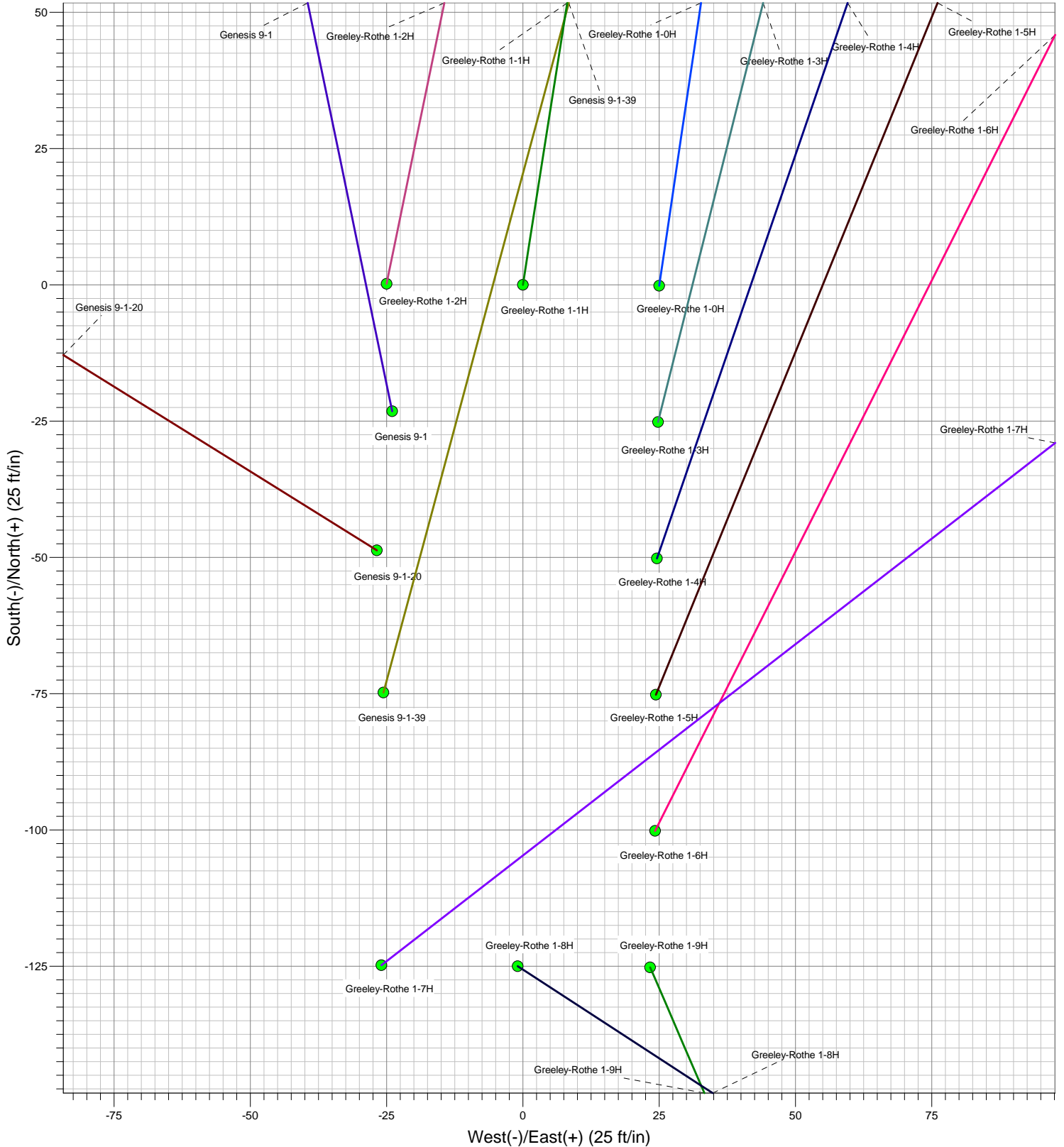
# Surface Location: Greeley-Rothe Pad Sec.1-T5N-R67W

North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone

Ground Elevation: 4875.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1397881.60	3185503.82	40.423674	-104.833704	

Design Version: Plan #2 (6-05-14)



**KP KAUFFMAN**

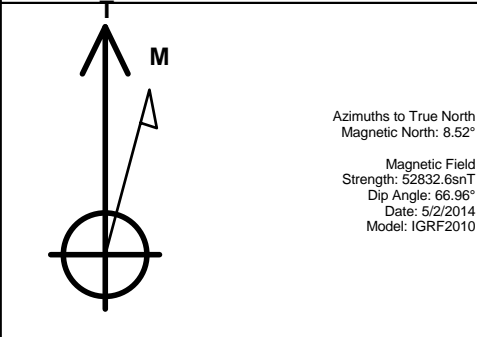
Well Name: <b>Greeley-Rothe 1-2H</b>						
Surface Location: Greeley-Rothe Pad Sec.1-T5N-R67W						
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone						
Ground Elevation: 4875.0						
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1397881.59	3185478.81	40.423674	-104.833794	
Original Well Elev			WELL @ 4890.0ft (Original Well Elev)			

Ground Elevation: 4875.0

Original Well Elev WELL @ 4890.0ft (Original Well Elev)

WELLBORE TARGET DETAILS	
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Name	TVD	+N/-S	+E/-W	Shape
SHL 775'FSL & 377'FEL	1.0	0.0	0.0	Point
BHL 2365'FSL & 462'FWL	7282.0	1445.1	-4125.0	Point

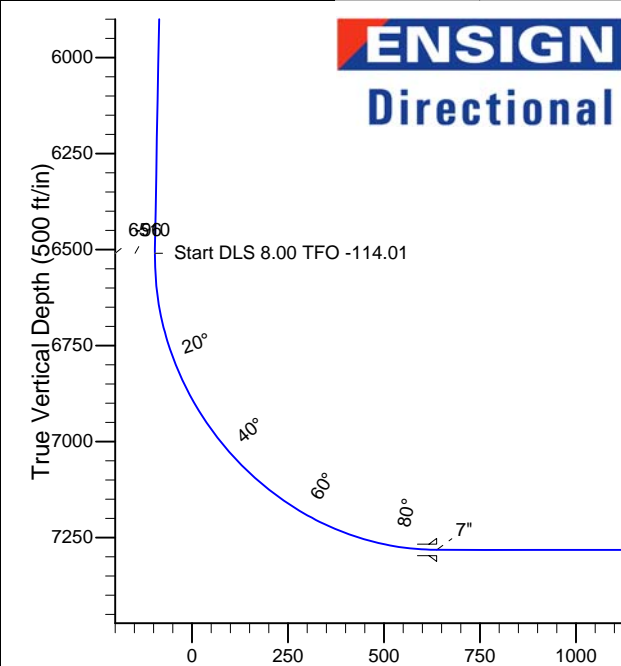
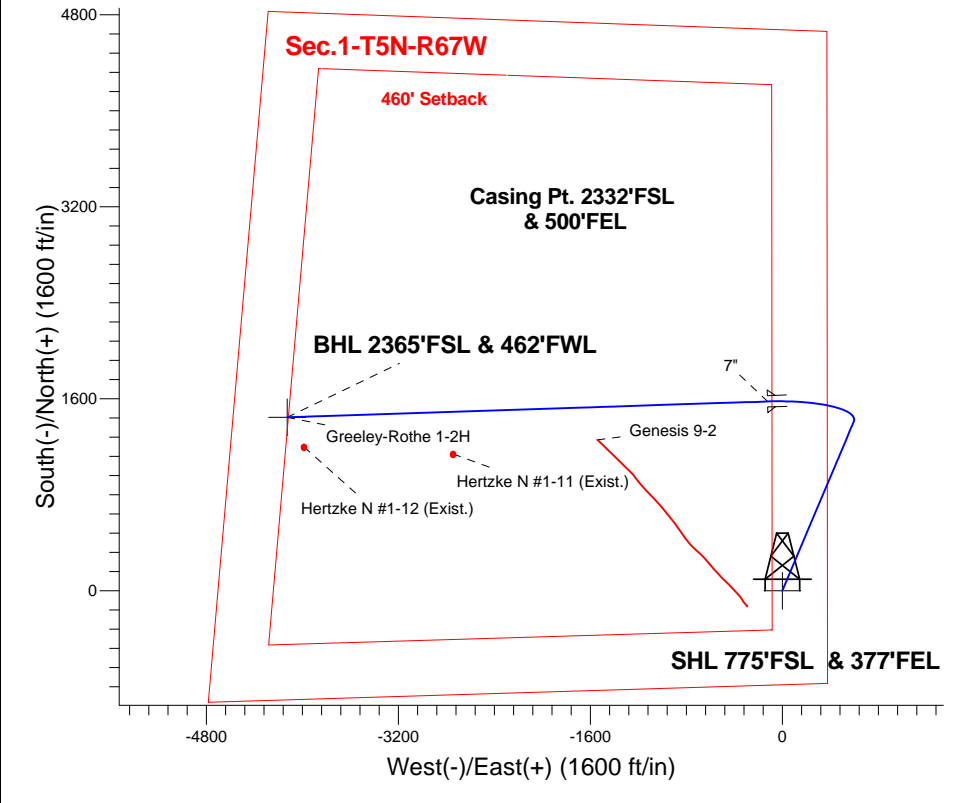


Magnetic Field  
Strength: 52832.6snT  
Dip Angle: 66.96°  
Date: 5/2/2014  
Model: IGRF2010

Greeley-Rothe Pad Sec.1-T5N-R67W  
Greeley-Rothe 1-2H  
Plan #2 (6-05-14)  
14:58, June 06 2014

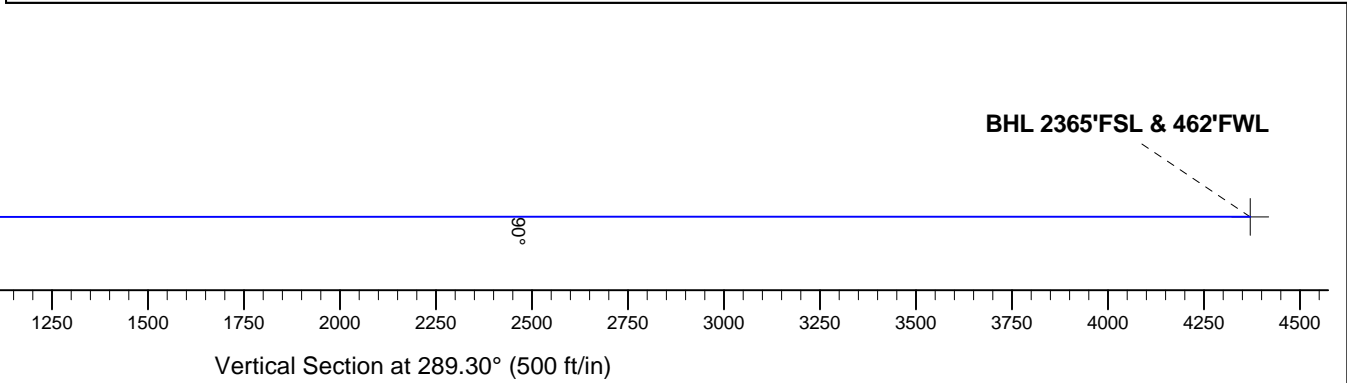
## ANNOTATIONS

TVD	MD	Annotation
600.0	600.0	KOP - Start Build 2.00
6509.7	6712.3	Start DLS 8.00 TFO -114.01
7282.0	11921.8	TD at 11921.8



SECTION DETAILS	
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Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.0	
3	1373.2	15.46	22.92	1363.8	95.5	40.4	2.00	22.92	-6.5	
4	6712.3	15.46	22.92	6509.7	1406.6	594.7	0.00	0.00	-96.3	
5	7917.6	90.00	268.11	7282.0	1577.0	-123.0	8.00	-114.01	637.4	
6	11921.8	90.00	268.11	7282.0	1444.9	-4125.1	0.00	0.00	4370.8	BHL 2365'FSL & 462'FWL





## **KP KAUFFMAN**

**SEC.1-T5N-R67W**

**Greeley-Rothe Pad Sec.1-T5N-R67W**

**Greeley-Rothe 1-2H**

**Wellbore #1**

**Plan: Plan #2 (6-05-14)**

## **Standard Planning Report**

**06 June, 2014**

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Company:</b>	KP KAUFFMAN	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (6-05-14)		

<b>Project</b>	SEC.1-T5N-R67W, Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site	Greeley-Rothe Pad Sec.1-T5N-R67W				
Site Position:		Northing:	1,397,880.45 ft	Latitude:	40.423670
From:	Lat/Long	Easting:	3,185,529.97 ft	Longitude:	-104.833610
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.43 °

Well	Greeley-Rothe 1-2H					
Well Position	+N-S	1.5 ft	Northing:	1,397,881.59 ft	Latitude:	40.423674
	+E-W	-51.1 ft	Easting:	3,185,478.81 ft	Longitude:	-104.833794
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,875.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	5/2/2014	8.52	66.96	52,833

<b>Design</b>	Plan #2 (6-05-14)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	289.30

<b>Plan Sections</b>										
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	
600.0	0.00	0.00	600.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,373.2	15.46	22.92	1,363.8	95.5	40.4	2.00	2.00	0.00	22.92	
6,712.3	15.46	22.92	6,509.7	1,406.6	594.7	0.00	0.00	0.00	0.00	
7,917.6	90.00	268.11	7,282.0	1,577.0	-123.0	8.00	6.18	-9.53	-114.01	
11,921.8	90.00	268.11	7,282.0	1,444.9	-4,125.1	0.00	0.00	0.00	0.00	BHL 2365'FSL & 46

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Company:</b>	KP KAUFFMAN	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (6-05-14)		

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)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
1.0	0.00	0.00	1.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>SHL 775'FSL &amp; 377'FEL</b>									
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
<b>KOP - Start Build 2.00</b>									
700.0	2.00	22.92	700.0	1.6	0.7	-0.1	2.00	2.00	0.00
800.0	4.00	22.92	799.8	6.4	2.7	-0.4	2.00	2.00	0.00
900.0	6.00	22.92	899.5	14.5	6.1	-1.0	2.00	2.00	0.00
1,000.0	8.00	22.92	998.7	25.7	10.9	-1.8	2.00	2.00	0.00
1,100.0	10.00	22.92	1,097.5	40.1	16.9	-2.7	2.00	2.00	0.00
1,200.0	12.00	22.92	1,195.6	57.7	24.4	-3.9	2.00	2.00	0.00
1,300.0	14.00	22.92	1,293.1	78.4	33.1	-5.4	2.00	2.00	0.00
1,373.2	15.46	22.92	1,363.8	95.5	40.4	-6.5	2.00	2.00	0.00
1,400.0	15.46	22.92	1,389.7	102.1	43.2	-7.0	0.00	0.00	0.00
1,500.0	15.46	22.92	1,486.1	126.7	53.6	-8.7	0.00	0.00	0.00
1,600.0	15.46	22.92	1,582.4	151.2	63.9	-10.3	0.00	0.00	0.00
1,700.0	15.46	22.92	1,678.8	175.8	74.3	-12.0	0.00	0.00	0.00
1,800.0	15.46	22.92	1,775.2	200.3	84.7	-13.7	0.00	0.00	0.00
1,900.0	15.46	22.92	1,871.6	224.9	95.1	-15.4	0.00	0.00	0.00
2,000.0	15.46	22.92	1,968.0	249.4	105.5	-17.1	0.00	0.00	0.00
2,100.0	15.46	22.92	2,064.3	274.0	115.8	-18.7	0.00	0.00	0.00
2,200.0	15.46	22.92	2,160.7	298.6	126.2	-20.4	0.00	0.00	0.00
2,300.0	15.46	22.92	2,257.1	323.1	136.6	-22.1	0.00	0.00	0.00
2,400.0	15.46	22.92	2,353.5	347.7	147.0	-23.8	0.00	0.00	0.00
2,500.0	15.46	22.92	2,449.9	372.2	157.4	-25.5	0.00	0.00	0.00
2,600.0	15.46	22.92	2,546.2	396.8	167.8	-27.2	0.00	0.00	0.00
2,700.0	15.46	22.92	2,642.6	421.3	178.1	-28.8	0.00	0.00	0.00
2,800.0	15.46	22.92	2,739.0	445.9	188.5	-30.5	0.00	0.00	0.00
2,900.0	15.46	22.92	2,835.4	470.5	198.9	-32.2	0.00	0.00	0.00
3,000.0	15.46	22.92	2,931.8	495.0	209.3	-33.9	0.00	0.00	0.00
3,100.0	15.46	22.92	3,028.1	519.6	219.7	-35.6	0.00	0.00	0.00
3,200.0	15.46	22.92	3,124.5	544.1	230.1	-37.2	0.00	0.00	0.00
3,300.0	15.46	22.92	3,220.9	568.7	240.4	-38.9	0.00	0.00	0.00
3,400.0	15.46	22.92	3,317.3	593.2	250.8	-40.6	0.00	0.00	0.00
3,500.0	15.46	22.92	3,413.7	617.8	261.2	-42.3	0.00	0.00	0.00
3,600.0	15.46	22.92	3,510.0	642.4	271.6	-44.0	0.00	0.00	0.00
3,700.0	15.46	22.92	3,606.4	666.9	282.0	-45.6	0.00	0.00	0.00
3,800.0	15.46	22.92	3,702.8	691.5	292.3	-47.3	0.00	0.00	0.00
3,900.0	15.46	22.92	3,799.2	716.0	302.7	-49.0	0.00	0.00	0.00
4,000.0	15.46	22.92	3,895.6	740.6	313.1	-50.7	0.00	0.00	0.00
4,100.0	15.46	22.92	3,991.9	765.1	323.5	-52.4	0.00	0.00	0.00
4,200.0	15.46	22.92	4,088.3	789.7	333.9	-54.0	0.00	0.00	0.00
4,300.0	15.46	22.92	4,184.7	814.3	344.3	-55.7	0.00	0.00	0.00
4,400.0	15.46	22.92	4,281.1	838.8	354.6	-57.4	0.00	0.00	0.00
4,500.0	15.46	22.92	4,377.5	863.4	365.0	-59.1	0.00	0.00	0.00
4,600.0	15.46	22.92	4,473.8	887.9	375.4	-60.8	0.00	0.00	0.00
4,700.0	15.46	22.92	4,570.2	912.5	385.8	-62.4	0.00	0.00	0.00
4,800.0	15.46	22.92	4,666.6	937.0	396.2	-64.1	0.00	0.00	0.00
4,900.0	15.46	22.92	4,763.0	961.6	406.6	-65.8	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Company:</b>	KP KAUFFMAN	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (6-05-14)		

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)	Turn Rate (°/100ft)
5,000.0	15.46	22.92	4,859.4	986.2	416.9	-67.5	0.00	0.00	0.00
5,100.0	15.46	22.92	4,955.7	1,010.7	427.3	-69.2	0.00	0.00	0.00
5,200.0	15.46	22.92	5,052.1	1,035.3	437.7	-70.8	0.00	0.00	0.00
5,300.0	15.46	22.92	5,148.5	1,059.8	448.1	-72.5	0.00	0.00	0.00
5,400.0	15.46	22.92	5,244.9	1,084.4	458.5	-74.2	0.00	0.00	0.00
5,500.0	15.46	22.92	5,341.3	1,108.9	468.8	-75.9	0.00	0.00	0.00
5,600.0	15.46	22.92	5,437.6	1,133.5	479.2	-77.6	0.00	0.00	0.00
5,700.0	15.46	22.92	5,534.0	1,158.1	489.6	-79.2	0.00	0.00	0.00
5,800.0	15.46	22.92	5,630.4	1,182.6	500.0	-80.9	0.00	0.00	0.00
5,900.0	15.46	22.92	5,726.8	1,207.2	510.4	-82.6	0.00	0.00	0.00
6,000.0	15.46	22.92	5,823.2	1,231.7	520.8	-84.3	0.00	0.00	0.00
6,100.0	15.46	22.92	5,919.5	1,256.3	531.1	-86.0	0.00	0.00	0.00
6,200.0	15.46	22.92	6,015.9	1,280.8	541.5	-87.6	0.00	0.00	0.00
6,300.0	15.46	22.92	6,112.3	1,305.4	551.9	-89.3	0.00	0.00	0.00
6,400.0	15.46	22.92	6,208.7	1,330.0	562.3	-91.0	0.00	0.00	0.00
6,500.0	15.46	22.92	6,305.1	1,354.5	572.7	-92.7	0.00	0.00	0.00
6,600.0	15.46	22.92	6,401.5	1,379.1	583.1	-94.4	0.00	0.00	0.00
6,700.0	15.46	22.92	6,497.8	1,403.6	593.4	-96.0	0.00	0.00	0.00
6,712.3	15.46	22.92	6,509.7	1,406.6	594.7	-96.3	0.00	0.00	0.00
Start DLS 8.00 TFO -114.01									
6,800.0	14.11	355.67	6,594.6	1,428.1	598.5	-92.7	8.00	-1.55	-31.07
6,900.0	16.46	326.28	6,691.2	1,452.1	589.7	-76.5	8.00	2.36	-29.38
7,000.0	21.64	307.37	6,785.8	1,475.1	567.1	-47.6	8.00	5.18	-18.92
7,100.0	28.13	296.13	6,876.5	1,496.7	531.2	-6.6	8.00	6.48	-11.24
7,200.0	35.20	288.96	6,961.6	1,516.5	482.7	45.8	8.00	7.07	-7.16
7,300.0	42.57	283.97	7,039.4	1,534.0	422.5	108.4	8.00	7.37	-4.99
7,400.0	50.10	280.23	7,108.4	1,549.0	351.9	180.0	8.00	7.53	-3.74
7,500.0	57.73	277.23	7,167.2	1,561.2	272.0	259.4	8.00	7.63	-3.00
7,600.0	65.41	274.71	7,214.8	1,570.3	184.6	344.9	8.00	7.69	-2.53
7,700.0	73.14	272.48	7,250.2	1,576.1	91.4	434.8	8.00	7.72	-2.23
7,800.0	80.88	270.42	7,272.7	1,578.5	-6.0	527.5	8.00	7.75	-2.06
7,900.0	88.64	268.45	7,281.8	1,577.5	-105.4	621.0	8.00	7.76	-1.97
7,917.6	90.00	268.11	7,282.0	1,577.0	-123.0	637.5	7.98	7.74	-1.94
7"									
8,000.0	90.00	268.11	7,282.0	1,574.3	-205.4	714.3	0.00	0.00	0.00
8,100.0	90.00	268.11	7,282.0	1,571.0	-305.3	807.5	0.00	0.00	0.00
8,200.0	90.00	268.11	7,282.0	1,567.7	-405.3	900.8	0.00	0.00	0.00
8,300.0	90.00	268.11	7,282.0	1,564.4	-505.2	994.0	0.00	0.00	0.00
8,400.0	90.00	268.11	7,282.0	1,561.1	-605.2	1,087.2	0.00	0.00	0.00
8,500.0	90.00	268.11	7,282.0	1,557.8	-705.1	1,180.5	0.00	0.00	0.00
8,600.0	90.00	268.11	7,282.0	1,554.5	-805.1	1,273.7	0.00	0.00	0.00
8,700.0	90.00	268.11	7,282.0	1,551.2	-905.0	1,366.9	0.00	0.00	0.00
8,800.0	90.00	268.11	7,282.0	1,547.9	-1,005.0	1,460.2	0.00	0.00	0.00
8,900.0	90.00	268.11	7,282.0	1,544.6	-1,104.9	1,553.4	0.00	0.00	0.00
9,000.0	90.00	268.11	7,282.0	1,541.3	-1,204.8	1,646.6	0.00	0.00	0.00
9,100.0	90.00	268.11	7,282.0	1,538.0	-1,304.8	1,739.9	0.00	0.00	0.00
9,200.0	90.00	268.11	7,282.0	1,534.7	-1,404.7	1,833.1	0.00	0.00	0.00
9,300.0	90.00	268.11	7,282.0	1,531.4	-1,504.7	1,926.4	0.00	0.00	0.00
9,400.0	90.00	268.11	7,282.0	1,528.1	-1,604.6	2,019.6	0.00	0.00	0.00
9,500.0	90.00	268.11	7,282.0	1,524.8	-1,704.6	2,112.8	0.00	0.00	0.00
9,600.0	90.00	268.11	7,282.0	1,521.5	-1,804.5	2,206.1	0.00	0.00	0.00
9,700.0	90.00	268.11	7,282.0	1,518.2	-1,904.5	2,299.3	0.00	0.00	0.00
9,800.0	90.00	268.11	7,282.0	1,514.9	-2,004.4	2,392.5	0.00	0.00	0.00
9,900.0	90.00	268.11	7,282.0	1,511.6	-2,104.4	2,485.8	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Company:</b>	KP KAUFFMAN	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Project:</b>	SEC.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>North Reference:</b>	True
<b>Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #2 (6-05-14)		

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)	Turn Rate (°/100ft)	
10,000.0	90.00	268.11	7,282.0	1,508.3	-2,204.3	2,579.0	0.00	0.00	0.00	
10,100.0	90.00	268.11	7,282.0	1,505.0	-2,304.3	2,672.2	0.00	0.00	0.00	
10,200.0	90.00	268.11	7,282.0	1,501.7	-2,404.2	2,765.5	0.00	0.00	0.00	
10,300.0	90.00	268.11	7,282.0	1,498.4	-2,504.1	2,858.7	0.00	0.00	0.00	
10,400.0	90.00	268.11	7,282.0	1,495.1	-2,604.1	2,951.9	0.00	0.00	0.00	
10,500.0	90.00	268.11	7,282.0	1,491.8	-2,704.0	3,045.2	0.00	0.00	0.00	
10,600.0	90.00	268.11	7,282.0	1,488.5	-2,804.0	3,138.4	0.00	0.00	0.00	
10,700.0	90.00	268.11	7,282.0	1,485.2	-2,903.9	3,231.7	0.00	0.00	0.00	
10,800.0	90.00	268.11	7,282.0	1,481.9	-3,003.9	3,324.9	0.00	0.00	0.00	
10,900.0	90.00	268.11	7,282.0	1,478.6	-3,103.8	3,418.1	0.00	0.00	0.00	
11,000.0	90.00	268.11	7,282.0	1,475.3	-3,203.8	3,511.4	0.00	0.00	0.00	
11,100.0	90.00	268.11	7,282.0	1,472.0	-3,303.7	3,604.6	0.00	0.00	0.00	
11,200.0	90.00	268.11	7,282.0	1,468.7	-3,403.7	3,697.8	0.00	0.00	0.00	
11,300.0	90.00	268.11	7,282.0	1,465.4	-3,503.6	3,791.1	0.00	0.00	0.00	
11,400.0	90.00	268.11	7,282.0	1,462.1	-3,603.5	3,884.3	0.00	0.00	0.00	
11,500.0	90.00	268.11	7,282.0	1,458.8	-3,703.5	3,977.5	0.00	0.00	0.00	
11,600.0	90.00	268.11	7,282.0	1,455.6	-3,803.4	4,070.8	0.00	0.00	0.00	
11,700.0	90.00	268.11	7,282.0	1,452.3	-3,903.4	4,164.0	0.00	0.00	0.00	
11,800.0	90.00	268.11	7,282.0	1,449.0	-4,003.3	4,257.2	0.00	0.00	0.00	
11,900.0	90.00	268.11	7,282.0	1,445.7	-4,103.3	4,350.5	0.00	0.00	0.00	
11,921.7	90.00	268.11	7,282.0	1,444.9	-4,125.0	4,370.7	0.00	0.00	0.00	
<b>BHL 2365'FSL &amp; 462'FWL</b>										
11,921.8	90.00	268.11	7,282.0	1,444.9	-4,125.1	4,370.8	0.00	0.00	0.00	

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name		Casing Diameter (")	Hole Diameter (")
7,917.6	7,282.0	7"		7	7-1/2

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
600.0	600.0	0.0	0.0	KOP - Start Build 2.00	
6,712.3	6,509.7	95.5	40.4	Start DLS 8.00 TFO -114.01	
11,921.8	7,282.0	1,406.6	594.7	TD at 11921.8	





# **KP KAUFFMAN**

**SEC.1-T5N-R67W**

**Greeley-Rothe Pad Sec.1-T5N-R67W**

**Greeley-Rothe 1-2H**

**Wellbore #1**

**Plan #2 (6-05-14)**

## **Anticollision Report**

**06 June, 2014**



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

**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						

**Offset Design**

Genesis 9-1 Pad Sec.1-T5N-R67W - Genesis #3 (Exist.) - Wellbore #1 - Wellbore #1

Offset Site Error: 0.0 ft

Survey Program: 7800-UNKNOWN

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)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	5.0	5.0	0.0	0.1	-114.82	-129.0	-279.1	307.4	307.3	0.10	3,068.270	
100.0	100.0	105.0	105.0	0.1	2.1	-114.82	-129.0	-279.1	307.4	305.2	2.21	138.951	
200.0	200.0	205.0	205.0	0.3	4.1	-114.82	-129.0	-279.1	307.4	303.0	4.44	69.285	
300.0	300.0	305.0	305.0	0.6	6.1	-114.82	-129.0	-279.1	307.4	300.8	6.66	46.148	
400.0	400.0	405.0	405.0	0.8	8.1	-114.82	-129.0	-279.1	307.4	298.6	8.89	34.595	
500.0	500.0	505.0	505.0	1.0	10.1	-114.82	-129.0	-279.1	307.4	296.3	11.11	27.668	
600.0	600.0	605.0	605.0	1.2	12.1	-114.82	-129.0	-279.1	307.4	294.1	13.34	23.053 CC	
700.0	700.0	705.0	705.0	1.5	14.1	-137.93	-129.0	-279.1	308.7	293.2	15.55	19.849 ES	
800.0	799.8	804.8	804.8	1.7	16.1	-138.52	-129.0	-279.1	312.6	294.9	17.76	17.607	
900.0	899.5	904.5	904.5	1.9	18.1	-139.47	-129.0	-279.1	319.2	299.3	19.94	16.009	
1,000.0	998.7	1,003.7	1,003.7	2.2	20.1	-140.73	-129.0	-279.1	328.6	306.5	22.10	14.869	
1,100.0	1,097.5	1,102.5	1,102.5	2.5	22.0	-142.24	-129.0	-279.1	340.9	316.7	24.23	14.070	
1,200.0	1,195.6	1,200.6	1,200.6	2.8	24.0	-143.92	-129.0	-279.1	356.3	329.9	26.32	13.536	
1,300.0	1,293.1	1,298.1	1,298.1	3.2	26.0	-145.72	-129.0	-279.1	374.8	346.4	28.36	13.216	
1,400.0	1,389.7	1,394.7	1,394.7	3.6	27.9	-147.62	-129.0	-279.1	396.5	366.2	30.39	13.048	
1,500.0	1,486.1	1,491.1	1,491.1	4.1	29.8	-149.56	-129.0	-279.1	419.5	387.0	32.54	12.892	
1,600.0	1,582.4	1,587.4	1,587.4	4.6	31.7	-151.29	-129.0	-279.1	442.9	408.2	34.69	12.768	
1,700.0	1,678.8	1,683.8	1,683.8	5.1	33.7	-152.85	-129.0	-279.1	466.7	429.8	36.84	12.668	
1,800.0	1,775.2	1,780.2	1,780.2	5.6	35.6	-154.26	-129.0	-279.1	490.7	451.7	38.99	12.587 SF	

Offset Design      Genesis 9-1 Pad Sec.1-T5N-R67W -   Genesis 9-2 - Wellbore #1 - Wellbore #1													Offset Site Error:      0.0 ft	
Survey Program:   78-MWD													Offset Well Error:      0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	3.1	3.1	0.0	0.0	-113.69	-129.1	-294.1	321.2	321.2	0.00	N/A		
100.0	100.0	104.2	104.2	0.1	0.1	-113.81	-129.5	-293.6	320.9	320.6	0.25	1,259.997		
197.8	197.8	200.8	200.8	0.3	0.3	-113.71	-128.9	-293.6	320.7	320.0	0.67	475.060		
200.0	200.0	203.0	203.0	0.3	0.3	-113.70	-128.9	-293.6	320.7	320.0	0.68	468.435		
300.0	300.0	299.5	299.4	0.6	0.6	-113.08	-125.9	-295.4	321.1	320.0	1.12	286.719		
400.0	400.0	394.4	394.2	0.8	0.8	-112.04	-121.2	-299.4	323.1	321.5	1.57	205.909		
500.0	500.0	490.1	489.3	1.0	1.0	-110.47	-114.1	-305.6	326.5	324.5	2.04	159.786		
600.0	600.0	587.4	585.9	1.2	1.3	-108.55	-105.3	-313.7	331.3	328.8	2.55	129.963		
700.0	700.0	689.0	686.6	1.5	1.6	-129.51	-95.2	-322.3	337.6	334.5	3.07	110.087		
800.0	799.8	789.9	786.2	1.7	2.0	-127.45	-81.4	-330.9	345.4	341.7	3.61	95.563		
900.0	899.5	881.1	875.6	1.9	2.3	-125.50	-66.1	-340.3	356.7	352.5	4.18	85.358		
1,000.0	998.7	967.1	959.3	2.2	2.7	-123.70	-50.2	-351.9	373.0	368.2	4.77	78.138		
1,100.0	1,097.5	1,054.1	1,043.4	2.5	3.1	-122.12	-33.4	-366.7	394.8	389.4	5.41	72.973		
1,200.0	1,195.6	1,148.7	1,134.3	2.8	3.6	-120.70	-14.0	-384.2	419.8	413.6	6.13	68.508		
1,300.0	1,293.1	1,246.8	1,228.5	3.2	4.1	-119.65	6.6	-402.4	446.6	439.7	6.87	64.978		
1,400.0	1,389.7	1,338.5	1,316.6	3.6	4.6	-119.21	25.4	-419.4	475.0	467.4	7.64	62.179		
9,000.0	7,282.0	7,531.7	7,285.1	49.4	36.6	-90.02	1,228.9	-1,509.7	436.5	361.3	75.20	5.805		
9,100.0	7,282.0	7,539.1	7,292.4	51.8	36.6	-91.41	1,229.4	-1,510.2	370.8	292.9	77.86	4.762		
9,200.0	7,282.0	7,546.5	7,299.8	54.2	36.6	-92.81	1,230.0	-1,510.8	323.0	242.5	80.50	4.012		
9,300.0	7,282.0	7,553.8	7,307.1	56.7	36.7	-94.20	1,230.5	-1,511.4	301.8	218.6	83.13	3.630		
9,316.7	7,282.0	7,555.0	7,308.3	57.1	36.7	-94.44	1,230.6	-1,511.5	301.3	217.7	83.56	3.606 CC, ES, SF		
9,400.0	7,282.0	7,561.1	7,314.4	59.2	36.7	-95.59	1,231.1	-1,511.9	312.5	226.8	85.72	3.646		
9,500.0	7,282.0	7,568.4	7,321.6	61.7	36.7	-96.97	1,231.6	-1,512.5	352.4	264.2	88.27	3.992		
9,600.0	7,282.0	7,575.6	7,328.7	64.3	36.7	-98.33	1,232.2	-1,513.0	413.1	322.3	90.78	4.550		
9,700.0	7,282.0	7,582.7	7,335.8	66.9	36.7	-99.66	1,232.7	-1,513.6	486.7	393.5	93.25	5.220		

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	177.48	-23.4	1.0	23.4	23.4	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	177.48	-23.4	1.0	23.4	23.2	0.23	103.129		
200.0	200.0	201.0	201.0	0.3	0.3	177.48	-23.4	1.0	23.4	22.7	0.68	34.605		
300.0	300.0	301.0	301.0	0.6	0.6	177.48	-23.4	1.0	23.4	22.3	1.13	20.790		
400.0	400.0	401.0	401.0	0.8	0.8	177.48	-23.4	1.0	23.4	21.8	1.58	14.859		
500.0	500.0	501.0	501.0	1.0	1.0	177.48	-23.4	1.0	23.4	21.4	2.03	11.560		
600.0	600.0	601.0	601.0	1.2	1.2	177.48	-23.4	1.0	23.4	20.9	2.47	9.460 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	156.27	-23.4	1.0	25.0	22.1	2.92	8.548		
800.0	799.8	800.8	800.8	1.7	1.7	160.28	-23.4	1.0	29.9	26.5	3.37	8.849		
900.0	899.5	901.7	901.7	1.9	1.9	165.64	-21.6	0.7	36.5	32.7	3.82	9.549		
1,000.0	998.7	1,002.6	1,002.5	2.2	2.1	172.09	-16.4	-0.4	43.6	39.4	4.27	10.227		
1,100.0	1,097.5	1,103.6	1,103.0	2.5	2.4	178.96	-7.6	-2.2	51.6	46.9	4.71	10.963		
1,200.0	1,195.6	1,204.5	1,203.2	2.8	2.6	-174.20	4.5	-4.7	60.9	55.8	5.17	11.788		
1,300.0	1,293.1	1,305.4	1,302.7	3.2	2.9	-167.71	20.1	-8.0	71.8	66.1	5.66	12.675		
1,400.0	1,389.7	1,406.0	1,401.5	3.6	3.2	-161.75	39.2	-11.9	84.3	78.1	6.23	13.527		
1,500.0	1,486.1	1,506.7	1,499.5	4.1	3.6	-155.86	61.5	-16.5	96.5	89.5	6.92	13.932		
1,600.0	1,582.4	1,607.2	1,596.6	4.6	4.0	-149.68	87.2	-21.8	107.8	100.1	7.74	13.929		
1,700.0	1,678.8	1,706.0	1,691.4	5.1	4.5	-143.92	114.4	-27.4	119.4	110.7	8.66	13.786		
1,800.0	1,775.2	1,804.6	1,786.1	5.6	5.0	-139.21	141.5	-33.0	132.0	122.4	9.64	13.694		
1,900.0	1,871.6	1,903.3	1,880.8	6.1	5.5	-135.33	168.6	-38.6	145.3	134.7	10.65	13.644		
2,000.0	1,968.0	2,002.0	1,975.5	6.6	6.0	-132.11	195.7	-44.2	159.2	147.5	11.68	13.624		
2,100.0	2,064.3	2,100.6	2,070.2	7.1	6.5	-129.41	222.8	-49.8	173.5	160.8	12.73	13.626		
2,200.0	2,160.7	2,199.3	2,164.9	7.6	7.0	-127.12	249.9	-55.4	188.1	174.3	13.79	13.644		
2,300.0	2,257.1	2,298.0	2,259.6	8.2	7.5	-125.16	277.0	-61.0	203.0	188.1	14.85	13.671		
2,400.0	2,353.5	2,396.6	2,354.3	8.7	8.1	-123.47	304.0	-66.6	218.0	202.1	15.91	13.705		
2,500.0	2,449.9	2,495.3	2,449.0	9.2	8.6	-122.00	331.1	-72.2	233.2	216.3	16.97	13.743		
2,600.0	2,546.2	2,594.0	2,543.8	9.8	9.2	-120.71	358.2	-77.8	248.6	230.6	18.04	13.782		
2,700.0	2,642.6	2,692.7	2,638.5	10.3	9.7	-119.57	385.3	-83.4	264.1	245.0	19.10	13.823		
2,800.0	2,739.0	2,791.3	2,733.2	10.8	10.3	-118.56	412.4	-89.0	279.6	259.5	20.17	13.864		
2,900.0	2,835.4	2,890.0	2,827.9	11.4	10.8	-117.65	439.5	-94.6	295.3	274.0	21.24	13.904		
3,000.0	2,931.8	2,988.7	2,922.6	11.9	11.3	-116.84	466.6	-100.2	311.0	288.7	22.30	13.943		
3,100.0	3,028.1	3,087.3	3,017.3	12.4	11.9	-116.10	493.7	-105.8	326.7	303.3	23.37	13.981		
3,200.0	3,124.5	3,186.0	3,112.0	13.0	12.5	-115.43	520.8	-111.4	342.5	318.1	24.44	14.017		
3,300.0	3,220.9	3,284.7	3,206.7	13.5	13.0	-114.82	547.9	-117.0	358.4	332.9	25.50	14.053		
3,400.0	3,317.3	3,383.3	3,301.4	14.1	13.6	-114.26	575.0	-122.6	374.2	347.7	26.57	14.087		
3,500.0	3,413.7	3,482.0	3,396.1	14.6	14.1	-113.75	602.1	-128.2	390.2	362.5	27.63	14.119		
3,600.0	3,510.0	3,580.7	3,490.8	15.1	14.7	-113.28	629.2	-133.8	406.1	377.4	28.70	14.150		
3,700.0	3,606.4	3,679.3	3,585.5	15.7	15.2	-112.84	656.3	-139.4	422.1	392.3	29.76	14.180		
3,800.0	3,702.8	3,778.0	3,680.3	16.2	15.8	-112.43	683.4	-145.0	438.1	407.2	30.83	14.209		
3,900.0	3,799.2	3,876.7	3,775.0	16.8	16.3	-112.06	710.5	-150.6	454.1	422.2	31.90	14.236		
4,000.0	3,895.6	3,975.3	3,869.7	17.3	16.9	-111.71	737.6	-156.2	470.1	437.1	32.96	14.262		
4,100.0	3,991.9	4,074.0	3,964.4	17.8	17.4	-111.38	764.7	-161.8	486.1	452.1	34.03	14.287		
7,700.0	7,250.2	7,423.3	7,251.2	33.1	28.3	-74.98	1,229.9	-257.9	491.8	453.2	38.55	12.758		
7,800.0	7,272.7	7,445.7	7,273.7	33.0	28.4	-83.57	1,229.9	-257.9	430.2	389.2	40.92	10.513		
7,900.0	7,281.8	7,454.9	7,282.8	33.0	28.4	-89.36	1,229.9	-257.9	379.6	336.8	42.86	8.858		
8,000.0	7,282.0	7,455.1	7,283.0	33.1	28.4	-90.00	1,229.9	-257.9	348.4	304.1	44.30	7.865		
8,063.8	7,282.0	7,455.1	7,283.0	33.3	28.4	-90.00	1,229.9	-257.9	342.5	297.2	45.32	7.558		
8,100.0	7,282.0	7,455.1	7,283.0	33.4	28.4	-90.00	1,229.9	-257.9	344.4	298.5	45.90	7.504 SF		
8,200.0	7,282.0	7,455.1	7,283.0	34.1	28.4	-90.00	1,229.9	-257.9	368.6	320.9	47.68	7.731		
8,300.0	7,282.0	7,455.1	7,283.0	35.2	28.4	-90.00	1,229.9	-257.9	416.0	366.4	49.61	8.386		
8,400.0	7,282.0	7,455.1	7,283.0	36.6	28.4	-90.00	1,229.9	-257.9	479.9	428.3	51.66	9.289		

Greeley-Rothe Pad Sec.1-T5N-R67W - Genesis 9-1-20 - Wellbore #1 - Plan #1 (5-02-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth 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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-177.95	-48.9	-1.8	48.9	48.9	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-177.95	-48.9	-1.8	48.9	48.7	0.23	215.540		
200.0	200.0	201.0	201.0	0.3	0.3	-177.95	-48.9	-1.8	48.9	48.3	0.68	72.324		
300.0	300.0	301.0	301.0	0.6	0.6	-177.95	-48.9	-1.8	48.9	47.8	1.13	43.452		
400.0	400.0	401.0	401.0	0.8	0.8	-177.95	-48.9	-1.8	48.9	47.4	1.58	31.055		
500.0	500.0	501.0	501.0	1.0	1.0	-177.95	-48.9	-1.8	48.9	46.9	2.03	24.162		
600.0	600.0	601.0	601.0	1.2	1.2	-177.95	-48.9	-1.8	48.9	46.5	2.47	19.773 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	159.83	-48.9	-1.8	50.6	47.6	2.92	17.289		
800.0	799.8	800.8	800.8	1.7	1.7	161.66	-48.9	-1.8	55.5	52.1	3.37	16.448 SF		
900.0	899.5	900.5	900.5	1.9	1.9	164.08	-48.9	-1.8	63.8	60.0	3.82	16.694		
1,000.0	998.7	999.7	999.7	2.2	2.1	166.55	-48.9	-1.8	75.6	71.4	4.27	17.706		
1,100.0	1,097.5	1,099.5	1,099.5	2.5	2.4	169.85	-48.0	-3.2	90.4	85.6	4.71	19.180		
1,200.0	1,195.6	1,198.7	1,198.5	2.8	2.6	174.24	-45.3	-7.6	107.8	102.6	5.14	20.957		
1,300.0	1,293.1	1,296.9	1,296.4	3.2	2.8	178.97	-40.8	-14.8	128.5	122.9	5.58	23.005		
1,400.0	1,389.7	1,393.9	1,392.7	3.6	3.0	-176.40	-34.6	-24.7	152.6	146.6	6.05	25.223		
1,500.0	1,486.1	1,490.1	1,487.7	4.1	3.3	-172.02	-26.8	-37.3	178.3	171.7	6.58	27.102		
1,600.0	1,582.4	1,585.5	1,581.4	4.6	3.6	-167.86	-17.4	-52.4	204.8	197.7	7.16	28.611		
1,700.0	1,678.8	1,679.9	1,673.5	5.1	3.9	-163.89	-6.5	-69.9	232.5	224.7	7.80	29.799		
1,800.0	1,775.2	1,774.1	1,764.9	5.6	4.3	-160.23	5.6	-89.4	261.4	252.9	8.50	30.752		
1,900.0	1,871.6	1,868.5	1,856.5	6.1	4.7	-157.26	17.9	-109.0	291.1	281.9	9.23	31.532		
2,000.0	1,968.0	1,963.0	1,948.1	6.6	5.1	-154.83	30.1	-128.6	321.5	311.5	10.00	32.162		
2,100.0	2,064.3	2,057.5	2,039.7	7.1	5.5	-152.82	42.3	-148.2	352.3	341.5	10.77	32.713		
2,200.0	2,160.7	2,151.9	2,131.3	7.6	6.0	-151.13	54.5	-167.9	383.4	371.8	11.56	33.176		
2,300.0	2,257.1	2,246.4	2,222.9	8.2	6.4	-149.69	66.7	-187.5	414.8	402.4	12.35	33.573		
2,400.0	2,353.5	2,340.9	2,314.5	8.7	6.9	-148.45	79.0	-207.1	446.3	433.2	13.16	33.918		
2,500.0	2,449.9	2,435.3	2,406.0	9.2	7.3	-147.37	91.2	-226.8	478.1	464.1	13.97	34.220		

Greeley-Rothe Pad Sec.1-T5N-R67W - Genesis 9-1-39 - Wellbore #1 - Plan #2 (6-05-14)												Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	1.0	1.0	0.0	0.0	-179.57	-75.0	-0.6	75.0	75.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	-179.57	-75.0	-0.6	75.0	74.8	0.23	330.279	
200.0	200.0	201.0	201.0	0.3	0.3	-179.57	-75.0	-0.6	75.0	74.3	0.68	110.824	
300.0	300.0	301.0	301.0	0.6	0.6	-179.57	-75.0	-0.6	75.0	73.9	1.13	66.583	
400.0	400.0	401.0	401.0	0.8	0.8	-179.57	-75.0	-0.6	75.0	73.4	1.58	47.587	
500.0	500.0	501.0	501.0	1.0	1.0	-179.57	-75.0	-0.6	75.0	73.0	2.03	37.023	
600.0	600.0	601.0	601.0	1.2	1.2	-179.57	-75.0	-0.6	75.0	72.5	2.47	30.298 CC, ES	
700.0	700.0	701.0	701.0	1.5	1.5	157.99	-75.0	-0.6	76.6	73.7	2.92	26.189	
800.0	799.8	800.8	800.8	1.7	1.7	159.34	-75.0	-0.6	81.5	78.1	3.37	24.140	
900.0	899.5	900.5	900.5	1.9	1.9	161.25	-75.0	-0.6	89.7	85.9	3.82	23.448 SF	
1,000.0	998.7	999.7	999.7	2.2	2.1	163.40	-75.0	-0.6	101.3	97.0	4.27	23.705	
1,100.0	1,097.5	1,098.5	1,098.5	2.5	2.4	165.52	-75.0	-0.6	116.4	111.7	4.72	24.655	
1,200.0	1,195.6	1,196.6	1,196.6	2.8	2.6	167.46	-75.0	-0.6	135.0	129.8	5.17	26.125	
1,300.0	1,293.1	1,294.1	1,294.1	3.2	2.8	169.16	-75.0	-0.6	157.0	151.4	5.61	27.993	
1,400.0	1,389.7	1,390.7	1,390.7	3.6	3.0	170.62	-75.0	-0.6	182.4	176.3	6.06	30.113	
1,500.0	1,486.1	1,487.1	1,487.1	4.1	3.2	171.81	-75.0	-0.6	208.8	202.2	6.53	31.984	
1,600.0	1,582.4	1,583.4	1,583.4	4.6	3.4	172.74	-75.0	-0.6	235.2	228.2	7.00	33.591	
1,700.0	1,678.8	1,679.8	1,679.8	5.1	3.7	173.47	-75.0	-0.6	261.7	254.2	7.48	34.982	
1,800.0	1,775.2	1,776.2	1,776.2	5.6	3.9	174.08	-75.0	-0.6	288.2	280.2	7.96	36.196	
1,900.0	1,871.6	1,872.6	1,872.6	6.1	4.1	174.58	-75.0	-0.6	314.7	306.3	8.45	37.263	
2,000.0	1,968.0	1,969.0	1,969.0	6.6	4.3	175.00	-75.0	-0.6	341.3	332.4	8.93	38.207	
2,100.0	2,064.3	2,065.3	2,065.3	7.1	4.5	175.36	-75.0	-0.6	367.9	358.5	9.42	39.048	
2,200.0	2,160.7	2,161.7	2,161.7	7.6	4.7	175.67	-75.0	-0.6	394.5	384.6	9.91	39.800	
2,300.0	2,257.1	2,268.1	2,268.1	8.2	5.0	175.98	-74.2	-0.3	420.4	410.0	10.42	40.337	
2,400.0	2,353.5	2,382.8	2,382.6	8.7	5.2	176.31	-69.3	1.0	442.8	431.8	10.95	40.449	
2,500.0	2,449.9	2,499.4	2,498.8	9.2	5.5	176.66	-59.9	3.5	461.2	449.7	11.48	40.182	
2,600.0	2,546.2	2,617.5	2,616.1	9.8	5.8	177.02	-45.6	7.3	475.6	463.6	12.02	39.572	
2,700.0	2,642.6	2,736.9	2,733.8	10.3	6.1	177.42	-26.5	12.5	486.0	473.4	12.57	38.664	
2,800.0	2,739.0	2,857.1	2,851.4	10.8	6.4	177.86	-2.5	18.9	492.2	479.1	13.13	37.489	
2,900.0	2,835.4	2,967.6	2,958.6	11.4	6.7	178.29	23.4	25.9	494.7	481.1	13.67	36.197	
3,000.0	2,931.8	3,067.6	3,055.4	11.9	7.1	178.69	47.3	32.3	496.8	482.6	14.20	34.992	
3,100.0	3,028.1	3,167.5	3,152.2	12.4	7.4	179.09	71.3	38.7	498.8	484.1	14.73	33.870	



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	90.42	-0.4	50.0	50.0					
100.0	100.0	100.0	100.0	0.1	0.1	90.42	-0.4	50.0	50.0	49.8	0.22	222.482		
200.0	200.0	200.0	200.0	0.3	0.3	90.42	-0.4	50.0	50.0	49.3	0.67	74.161 CC, ES		
300.0	300.0	299.5	299.5	0.6	0.6	88.53	1.3	50.5	50.5	49.4	1.12	44.978		
400.0	400.0	398.7	398.6	0.8	0.8	83.15	6.2	52.0	52.3	50.8	1.58	33.143		
500.0	500.0	497.5	497.0	1.0	1.0	75.13	14.4	54.4	56.3	54.3	2.05	27.545		
600.0	600.0	595.6	594.3	1.2	1.3	65.93	25.8	57.7	63.5	61.0	2.52	25.224		
700.0	700.0	693.0	690.5	1.5	1.6	34.74	40.2	62.0	73.1	70.0	3.01	24.249		
800.0	799.8	789.9	785.8	1.7	2.0	28.30	57.7	67.1	83.5	80.0	3.50	23.869		
900.0	899.5	886.4	879.9	1.9	2.4	23.17	78.1	73.2	94.5	90.5	3.99	23.695		
1,000.0	998.7	982.5	972.8	2.2	2.8	18.97	101.5	80.0	105.9	101.4	4.48	23.609		
1,100.0	1,097.5	1,078.2	1,064.5	2.5	3.3	15.47	127.7	87.8	117.4	112.4	4.98	23.558		
1,200.0	1,195.6	1,176.8	1,158.4	2.8	3.9	12.54	156.8	96.3	128.0	122.5	5.50	23.287		
1,300.0	1,293.1	1,276.4	1,253.1	3.2	4.5	10.32	186.1	105.0	135.5	129.5	6.01	22.532		
1,400.0	1,389.7	1,376.2	1,348.1	3.6	5.1	8.54	215.5	113.7	139.8	133.3	6.54	21.376		
1,500.0	1,486.1	1,476.1	1,443.2	4.1	5.7	6.93	244.9	122.3	143.4	136.3	7.10	20.199		
1,600.0	1,582.4	1,575.9	1,538.2	4.6	6.3	5.40	274.4	131.0	147.0	139.4	7.66	19.207		
1,700.0	1,678.8	1,675.8	1,633.2	5.1	6.9	3.94	303.8	139.7	150.8	142.6	8.21	18.358		
1,800.0	1,775.2	1,775.6	1,728.2	5.6	7.5	2.55	333.2	148.4	154.6	145.9	8.78	17.622		
1,900.0	1,871.6	1,875.5	1,823.3	6.1	8.1	1.23	362.6	157.0	158.6	149.2	9.34	16.977		
2,000.0	1,968.0	1,975.4	1,918.3	6.6	8.7	-0.02	392.1	165.7	162.6	152.7	9.91	16.405		
2,100.0	2,064.3	2,075.2	2,013.3	7.1	9.3	-1.21	421.5	174.4	166.7	156.2	10.49	15.894		
2,200.0	2,160.7	2,175.1	2,108.4	7.6	9.9	-2.35	450.9	183.1	170.8	159.8	11.07	15.433		
2,300.0	2,257.1	2,274.9	2,203.4	8.2	10.5	-3.43	480.3	191.7	175.1	163.4	11.66	15.013		
2,400.0	2,353.5	2,374.8	2,298.4	8.7	11.1	-4.46	509.8	200.4	179.3	167.1	12.26	14.630		
2,500.0	2,449.9	2,474.6	2,393.4	9.2	11.7	-5.44	539.2	209.1	183.7	170.8	12.86	14.278		
2,600.0	2,546.2	2,574.5	2,488.5	9.8	12.3	-6.38	568.6	217.8	188.1	174.6	13.48	13.952		
2,700.0	2,642.6	2,674.4	2,583.5	10.3	13.0	-7.27	598.1	226.4	192.5	178.4	14.10	13.650		
2,800.0	2,739.0	2,774.2	2,678.5	10.8	13.6	-8.12	627.5	235.1	197.0	182.2	14.73	13.369		
2,900.0	2,835.4	2,874.1	2,773.5	11.4	14.2	-8.94	656.9	243.8	201.5	186.1	15.37	13.107		
3,000.0	2,931.8	2,973.9	2,868.6	11.9	14.8	-9.72	686.3	252.5	206.1	190.0	16.02	12.861		
3,100.0	3,028.1	3,073.8	2,963.6	12.4	15.4	-10.46	715.8	261.1	210.6	194.0	16.68	12.630		
3,200.0	3,124.5	3,173.6	3,058.6	13.0	16.0	-11.17	745.2	269.8	215.3	197.9	17.34	12.413		
3,300.0	3,220.9	3,273.5	3,153.7	13.5	16.6	-11.86	774.6	278.5	219.9	201.9	18.02	12.209		
3,400.0	3,317.3	3,373.4	3,248.7	14.1	17.2	-12.51	804.0	287.2	224.6	205.9	18.69	12.016		
3,500.0	3,413.7	3,473.2	3,343.7	14.6	17.8	-13.14	833.5	295.8	229.4	210.0	19.38	11.833		
3,600.0	3,510.0	3,573.1	3,438.7	15.1	18.4	-13.74	862.9	304.5	234.1	214.0	20.08	11.661		
3,700.0	3,606.4	3,672.9	3,533.8	15.7	19.1	-14.32	892.3	313.2	238.9	218.1	20.78	11.497		
3,800.0	3,702.8	3,772.8	3,628.8	16.2	19.7	-14.88	921.7	321.9	243.7	222.2	21.48	11.342		
3,900.0	3,799.2	3,872.7	3,723.8	16.8	20.3	-15.41	951.2	330.5	248.5	226.3	22.20	11.195		
4,000.0	3,895.6	3,972.5	3,818.9	17.3	20.9	-15.92	980.6	339.2	253.3	230.4	22.91	11.055		
4,100.0	3,991.9	4,072.4	3,913.9	17.8	21.5	-16.42	1,010.0	347.9	258.2	234.5	23.64	10.922		
4,200.0	4,088.3	4,172.2	4,008.9	18.4	22.1	-16.89	1,039.4	356.6	263.0	238.7	24.37	10.795		
4,300.0	4,184.7	4,272.1	4,103.9	18.9	22.7	-17.35	1,068.9	365.2	267.9	242.8	25.10	10.674		
4,400.0	4,281.1	4,371.9	4,199.0	19.5	23.3	-17.80	1,098.3	373.9	272.8	247.0	25.84	10.559		
4,500.0	4,377.5	4,471.8	4,294.0	20.0	24.0	-18.22	1,127.7	382.6	277.8	251.2	26.58	10.449		
4,600.0	4,473.8	4,571.7	4,389.0	20.6	24.6	-18.63	1,157.2	391.3	282.7	255.4	27.33	10.343		
4,700.0	4,570.2	4,671.5	4,484.1	21.1	25.2	-19.03	1,186.6	399.9	287.7	259.6	28.08	10.243		
4,800.0	4,666.6	4,771.4	4,579.1	21.6	25.8	-19.42	1,216.0	408.6	292.6	263.8	28.84	10.146		
4,900.0	4,763.0	4,871.2	4,674.1	22.2	26.4	-19.79	1,245.4	417.3	297.6	268.0	29.60	10.054		
5,000.0	4,859.4	4,971.1	4,769.1	22.7	27.0	-20.15	1,274.9	426.0	302.6	272.2	30.36	9.966		
5,100.0	4,955.7	5,070.9	4,864.2	23.3	27.6	-20.50	1,304.3	434.7	307.6	276.5	31.13	9.881		

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



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWDD												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)	Minimum Separation (ft)	Separation Factor	
5,200.0	5,052.1	5,170.8	4,959.2	23.8	28.2	-20.83	1,333.7	443.3	312.6	280.7	31.90	9.800	
5,300.0	5,148.5	5,270.7	5,054.2	24.4	28.9	-21.16	1,363.1	452.0	317.6	285.0	32.67	9.722	
5,400.0	5,244.9	5,370.5	5,149.3	24.9	29.5	-21.47	1,392.6	460.7	322.7	289.2	33.45	9.647	
5,500.0	5,341.3	5,470.4	5,244.3	25.4	30.1	-21.78	1,422.0	469.4	327.7	293.5	34.23	9.575	
5,600.0	5,437.6	5,570.2	5,339.3	26.0	30.7	-22.08	1,451.4	478.0	332.8	297.8	35.01	9.505	
5,700.0	5,534.0	5,670.1	5,434.3	26.5	31.3	-22.36	1,480.8	486.7	337.8	302.0	35.79	9.439	
5,800.0	5,630.4	5,769.9	5,529.4	27.1	31.9	-22.64	1,510.3	495.4	342.9	306.3	36.58	9.374	
5,900.0	5,726.8	5,869.8	5,624.4	27.6	32.5	-22.91	1,539.7	504.1	348.0	310.6	37.37	9.313	
6,000.0	5,823.2	5,969.7	5,719.4	28.2	33.1	-23.18	1,569.1	512.7	353.1	314.9	38.16	9.253	
6,100.0	5,919.5	6,069.5	5,814.5	28.7	33.8	-23.43	1,598.5	521.4	358.2	319.2	38.95	9.195	
6,200.0	6,015.9	6,169.4	5,909.5	29.2	34.4	-23.68	1,628.0	530.1	363.3	323.5	39.75	9.140	
6,300.0	6,112.3	6,269.2	6,004.5	29.8	35.0	-23.92	1,657.4	538.8	368.4	327.8	40.54	9.086	
6,400.0	6,208.7	6,369.1	6,099.5	30.3	35.6	-24.16	1,686.8	547.4	373.5	332.1	41.34	9.034	
6,500.0	6,305.1	6,469.0	6,194.6	30.9	36.2	-24.39	1,716.2	556.1	378.6	336.5	42.14	8.984	
6,600.0	6,401.5	6,568.8	6,289.6	31.4	36.8	-24.61	1,745.7	564.8	383.7	340.8	42.94	8.936	
6,700.0	6,497.8	6,668.7	6,384.6	32.0	37.4	-24.83	1,775.1	573.5	388.9	345.1	43.75	8.889	
6,800.0	6,594.6	6,768.4	6,479.5	32.4	38.0	1.77	1,804.5	582.1	393.9	349.6	44.28	8.897	
6,900.0	6,691.2	6,866.6	6,573.0	32.8	38.6	32.22	1,833.4	590.7	399.2	355.4	43.87	9.100	
7,000.0	6,785.8	6,962.8	6,664.6	33.0	39.2	53.74	1,861.8	598.7	406.5	363.5	42.91	9.473	
7,100.0	6,876.5	7,065.4	6,762.6	33.2	39.7	68.00	1,891.8	597.0	416.4	374.4	42.00	9.914	
7,200.0	6,961.6	7,173.9	6,865.0	33.3	40.1	77.94	1,922.6	579.4	428.5	387.1	41.41	10.348	
7,300.0	7,039.4	7,289.3	6,970.0	33.3	40.5	85.37	1,953.6	543.2	442.0	401.0	41.06	10.765	
7,400.0	7,108.4	7,412.3	7,074.3	33.3	40.8	91.13	1,983.7	485.8	456.1	415.2	40.90	11.150	
7,500.0	7,167.2	7,543.2	7,173.6	33.3	41.0	95.63	2,011.5	405.3	469.6	428.7	40.96	11.464	
7,600.0	7,214.8	7,682.1	7,261.8	33.2	41.2	99.03	2,035.1	301.1	481.5	440.1	41.40	11.631	
7,700.0	7,250.2	7,828.0	7,332.2	33.1	41.2	101.40	2,052.5	174.8	490.6	448.2	42.43	11.563	
7,800.0	7,272.7	7,978.9	7,377.9	33.0	41.3	102.73	2,061.8	31.5	496.0	451.8	44.26	11.207	
7,900.0	7,281.8	8,132.2	7,394.0	33.0	41.4	103.03	2,061.7	-120.6	497.2	450.3	46.91	10.601	
7,946.9	7,282.6	8,179.9	7,394.0	33.0	41.4	102.95	2,060.1	-168.3	496.8	448.7	48.17	10.313	
8,000.0	7,282.0	8,233.0	7,394.0	33.1	41.5	103.02	2,058.4	-221.4	497.2	447.6	49.57	10.028	
8,100.0	7,282.0	8,333.0	7,394.0	33.4	41.7	103.02	2,055.1	-321.3	497.2	444.5	52.67	9.440	
8,200.0	7,282.0	8,433.0	7,394.0	34.1	42.2	103.02	2,051.8	-421.3	497.2	441.0	56.12	8.859	
8,300.0	7,282.0	8,533.0	7,394.0	35.2	42.8	103.02	2,048.5	-521.2	497.2	437.3	59.87	8.303	
8,400.0	7,282.0	8,633.0	7,394.0	36.6	43.6	103.02	2,045.2	-621.2	497.2	433.3	63.88	7.783	
8,500.0	7,282.0	8,733.0	7,394.0	38.4	44.7	103.02	2,041.9	-721.1	497.2	429.1	68.08	7.302	
8,600.0	7,282.0	8,833.0	7,394.0	40.4	46.1	103.02	2,038.6	-821.0	497.2	424.7	72.46	6.861	
8,700.0	7,282.0	8,933.0	7,394.0	42.5	47.6	103.02	2,035.3	-921.0	497.2	420.2	76.97	6.459	
8,800.0	7,282.0	9,033.0	7,394.0	44.7	49.4	103.02	2,032.0	-1,020.9	497.2	415.6	81.60	6.093	
8,900.0	7,282.0	9,133.0	7,394.0	47.0	51.3	103.02	2,028.7	-1,120.9	497.2	410.8	86.33	5.759	
9,000.0	7,282.0	9,233.0	7,394.0	49.4	53.4	103.02	2,025.4	-1,220.8	497.2	406.0	91.14	5.455	
9,041.0	7,282.0	9,274.0	7,394.0	50.3	54.2	103.02	2,024.1	-1,261.8	497.2	404.0	93.14	5.338	
9,100.0	7,282.0	9,333.0	7,394.0	51.8	55.5	103.02	2,022.1	-1,320.8	497.2	401.1	96.02	5.178	
9,200.0	7,282.0	9,433.0	7,394.0	54.2	57.7	103.02	2,018.8	-1,420.7	497.2	396.2	100.96	4.924	
9,300.0	7,282.0	9,533.0	7,394.0	56.7	60.0	103.02	2,015.5	-1,520.7	497.2	391.2	105.95	4.692	
9,341.0	7,282.0	9,574.0	7,394.0	57.7	61.0	103.02	2,014.2	-1,561.7	497.2	389.1	108.01	4.603	
9,400.0	7,282.0	9,633.0	7,394.0	59.2	62.4	103.02	2,012.2	-1,620.6	497.2	386.2	110.99	4.479	
9,500.0	7,282.0	9,733.0	7,394.0	61.7	64.8	103.02	2,008.9	-1,720.6	497.2	381.1	116.06	4.284	
9,600.0	7,282.0	9,833.0	7,394.0	64.3	67.2	103.02	2,005.6	-1,820.5	497.2	376.0	121.17	4.103	
9,700.0	7,282.0	9,933.0	7,394.0	66.9	69.7	103.02	2,002.3	-1,920.4	497.2	370.8	126.31	3.936	
9,800.0	7,282.0	10,033.0	7,394.0	69.5	72.2	103.02	1,999.0	-2,020.4	497.2	365.7	131.47	3.781	
9,900.0	7,282.0	10,133.0	7,394.0	72.1	74.7	103.02	1,995.7	-2,120.3	497.2	360.5	136.66	3.638	
10,000.0	7,282.0	10,233.0	7,394.0	74.7	77.3	103.02	1,992.4	-2,220.3	497.2	355.3	141.87	3.504	

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

Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-0H - Wellbore #1 - Plan #1 (6-5-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,100.0	7,282.0	10,333.0	7,394.0	77.3	79.8	103.02	1,989.1	-2,320.2	497.2	350.1	147.10	3.380		
10,154.3	7,282.0	10,387.3	7,394.0	78.8	81.2	103.02	1,987.3	-2,374.5	497.2	347.2	149.95	3.316		
10,200.0	7,282.0	10,433.0	7,394.0	80.0	82.4	103.02	1,985.8	-2,420.2	497.2	344.8	152.34	3.263		
10,300.0	7,282.0	10,533.0	7,394.0	82.6	85.0	103.02	1,982.5	-2,520.1	497.2	339.6	157.60	3.154		
10,400.0	7,282.0	10,633.0	7,394.0	85.3	87.6	103.02	1,979.2	-2,620.1	497.2	334.3	162.87	3.052		
10,500.0	7,282.0	10,733.0	7,394.0	88.0	90.2	103.02	1,975.9	-2,720.0	497.2	329.0	168.16	2.956		
10,600.0	7,282.0	10,833.0	7,394.0	90.6	92.8	103.02	1,972.6	-2,820.0	497.2	323.7	173.45	2.866		
10,700.0	7,282.0	10,933.0	7,394.0	93.3	95.5	103.02	1,969.3	-2,919.9	497.2	318.4	178.76	2.781		
10,800.0	7,282.0	11,033.0	7,394.0	96.0	98.1	103.02	1,966.0	-3,019.8	497.2	313.1	184.08	2.701		
10,900.0	7,282.0	11,133.0	7,394.0	98.7	100.8	103.02	1,962.7	-3,119.8	497.2	307.8	189.40	2.625		
11,000.0	7,282.0	11,233.0	7,394.0	101.4	103.5	103.02	1,959.4	-3,219.7	497.2	302.4	194.73	2.553		
11,100.0	7,282.0	11,333.0	7,394.0	104.1	106.1	103.02	1,956.1	-3,319.7	497.2	297.1	200.07	2.485		
11,200.0	7,282.0	11,433.0	7,394.0	106.9	108.8	103.02	1,952.9	-3,419.6	497.2	291.7	205.42	2.420		
11,300.0	7,282.0	11,533.0	7,394.0	109.6	111.5	103.02	1,949.6	-3,519.6	497.2	286.4	210.77	2.359		
11,400.0	7,282.0	11,633.0	7,394.0	112.3	114.2	103.02	1,946.3	-3,619.5	497.2	281.0	216.12	2.300		
11,500.0	7,282.0	11,733.0	7,394.0	115.0	116.9	103.02	1,943.0	-3,719.5	497.2	275.7	221.49	2.245		
11,600.0	7,282.0	11,833.0	7,394.0	117.7	119.6	103.02	1,939.7	-3,819.4	497.2	270.3	226.85	2.192		
11,700.0	7,282.0	11,933.0	7,394.0	120.5	122.3	103.02	1,936.4	-3,919.4	497.2	264.9	232.23	2.141		
11,800.0	7,282.0	12,033.0	7,394.0	123.2	124.7	103.02	1,933.1	-4,019.3	497.2	259.9	237.28	2.095		
11,832.5	7,282.0	12,065.5	7,394.0	124.1	125.3	103.02	1,932.0	-4,051.8	497.2	258.4	238.71	2.083		
11,900.0	7,282.0	12,086.3	7,394.0	125.9	125.7	103.02	1,931.3	-4,072.6	499.3	258.4	240.89	2.073 SF		

Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth 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)	Minimum Separation (ft)	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	90.42	-0.2	25.0	25.0				
100.0	100.0	100.0	100.0	0.1	0.1	90.42	-0.2	25.0	25.0	24.8	0.22	111.241	
200.0	200.0	200.0	200.0	0.3	0.3	90.42	-0.2	25.0	25.0	24.3	0.67	37.080	
300.0	300.0	300.0	300.0	0.6	0.6	90.42	-0.2	25.0	25.0	23.9	1.12	22.248	
400.0	400.0	400.0	400.0	0.8	0.8	90.42	-0.2	25.0	25.0	23.4	1.57	15.892 CC, ES	
500.0	500.0	499.7	499.7	1.0	1.0	86.72	1.5	25.6	25.6	23.6	2.02	12.661	
600.0	600.0	599.1	599.0	1.2	1.2	76.80	6.4	27.2	28.0	25.5	2.47	11.294	
700.0	700.0	698.3	697.7	1.5	1.5	43.15	14.5	29.9	32.0	29.1	2.93	10.946	
800.0	799.8	797.2	795.9	1.7	1.7	34.77	25.9	33.7	36.8	33.4	3.39	10.860	
900.0	899.5	895.8	893.4	1.9	2.0	28.14	40.4	38.6	42.0	38.1	3.86	10.887	
1,000.0	998.7	994.2	990.0	2.2	2.4	22.75	58.1	44.5	47.5	43.1	4.33	10.959	
1,100.0	1,097.5	1,092.4	1,085.7	2.5	2.8	18.28	78.8	51.4	53.1	48.3	4.81	11.043	
1,200.0	1,195.6	1,190.4	1,180.4	2.8	3.2	14.46	102.6	59.3	58.9	53.6	5.30	11.124	
1,300.0	1,293.1	1,288.3	1,274.2	3.2	3.7	11.14	129.4	68.3	64.8	59.0	5.79	11.192	
1,400.0	1,389.7	1,388.2	1,369.3	3.6	4.3	8.47	158.1	77.8	68.9	62.6	6.30	10.939	
1,500.0	1,486.1	1,488.1	1,464.5	4.1	4.8	6.20	186.8	87.4	72.3	65.4	6.83	10.572	
1,600.0	1,582.4	1,588.0	1,559.8	4.6	5.4	4.13	215.4	97.0	75.7	68.3	7.38	10.254	
1,700.0	1,678.8	1,687.9	1,655.0	5.1	6.0	2.25	244.1	106.6	79.2	71.3	7.94	9.986	
1,800.0	1,775.2	1,787.8	1,750.2	5.6	6.6	0.53	272.8	116.2	82.9	74.4	8.50	9.753	
1,900.0	1,871.6	1,887.7	1,845.4	6.1	7.1	-1.05	301.5	125.7	86.5	77.5	9.06	9.547	
2,000.0	1,968.0	1,987.6	1,940.6	6.6	7.7	-2.50	330.2	135.3	90.3	80.6	9.64	9.362	
2,100.0	2,064.3	2,087.5	2,035.9	7.1	8.3	-3.83	358.8	144.9	94.1	83.9	10.23	9.194	
2,200.0	2,160.7	2,187.4	2,131.1	7.6	8.9	-5.06	387.5	154.5	97.9	87.1	10.83	9.041	
2,300.0	2,257.1	2,287.3	2,226.3	8.2	9.5	-6.19	416.2	164.1	101.8	90.4	11.44	8.899	
2,400.0	2,353.5	2,387.2	2,321.5	8.7	10.1	-7.24	444.9	173.6	105.7	93.7	12.06	8.767	
2,500.0	2,449.9	2,487.1	2,416.7	9.2	10.7	-8.22	473.6	183.2	109.7	97.0	12.69	8.645	
2,600.0	2,546.2	2,587.0	2,512.0	9.8	11.3	-9.13	502.2	192.8	113.7	100.4	13.33	8.530	
2,700.0	2,642.6	2,686.9	2,607.2	10.3	11.9	-9.97	530.9	202.4	117.7	103.7	13.97	8.422	
2,800.0	2,739.0	2,786.8	2,702.4	10.8	12.5	-10.76	559.6	211.9	121.7	107.1	14.63	8.322	
2,900.0	2,835.4	2,886.8	2,797.6	11.4	13.1	-11.50	588.3	221.5	125.8	110.5	15.29	8.227	
3,000.0	2,931.8	2,986.7	2,892.8	11.9	13.7	-12.19	617.0	231.1	129.9	113.9	15.96	8.137	
3,100.0	3,028.1	3,086.6	2,988.1	12.4	14.3	-12.84	645.7	240.7	134.0	117.3	16.64	8.053	
3,200.0	3,124.5	3,186.5	3,083.3	13.0	14.9	-13.45	674.3	250.3	138.1	120.8	17.32	7.973	
3,300.0	3,220.9	3,286.4	3,178.5	13.5	15.5	-14.03	703.0	259.8	142.2	124.2	18.00	7.898	
3,400.0	3,317.3	3,386.3	3,273.7	14.1	16.1	-14.57	731.7	269.4	146.3	127.6	18.70	7.826	
3,500.0	3,413.7	3,486.2	3,368.9	14.6	16.7	-15.09	760.4	279.0	150.5	131.1	19.40	7.759	
3,600.0	3,510.0	3,586.1	3,464.1	15.1	17.3	-15.57	789.1	288.6	154.7	134.6	20.10	7.695	
3,700.0	3,606.4	3,686.0	3,559.4	15.7	17.9	-16.04	817.7	298.1	158.8	138.0	20.80	7.634	
3,800.0	3,702.8	3,785.9	3,654.6	16.2	18.5	-16.47	846.4	307.7	163.0	141.5	21.52	7.576	
3,900.0	3,799.2	3,885.8	3,749.8	16.8	19.1	-16.89	875.1	317.3	167.2	145.0	22.23	7.521	
4,000.0	3,895.6	3,985.7	3,845.0	17.3	19.7	-17.28	903.8	326.9	171.4	148.5	22.95	7.469	
4,100.0	3,991.9	4,085.6	3,940.2	17.8	20.3	-17.66	932.5	336.5	175.6	151.9	23.67	7.419	
4,200.0	4,088.3	4,185.5	4,035.5	18.4	20.9	-18.02	961.2	346.0	179.8	155.4	24.39	7.372	
4,300.0	4,184.7	4,285.4	4,130.7	18.9	21.5	-18.36	989.8	355.6	184.1	158.9	25.12	7.327	
4,400.0	4,281.1	4,385.3	4,225.9	19.5	22.1	-18.69	1,018.5	365.2	188.3	162.4	25.85	7.283	
4,500.0	4,377.5	4,485.2	4,321.1	20.0	22.8	-19.00	1,047.2	374.8	192.5	165.9	26.58	7.242	
4,600.0	4,473.8	4,585.1	4,416.3	20.6	23.4	-19.30	1,075.9	384.3	196.8	169.4	27.32	7.202	
4,700.0	4,570.2	4,685.0	4,511.6	21.1	24.0	-19.58	1,104.6	393.9	201.0	172.9	28.05	7.165	
4,800.0	4,666.6	4,784.9	4,606.8	21.6	24.6	-19.86	1,133.2	403.5	205.3	176.5	28.79	7.128	
4,900.0	4,763.0	4,884.9	4,702.0	22.2	25.2	-20.12	1,161.9	413.1	209.5	180.0	29.53	7.094	
5,000.0	4,859.4	4,984.8	4,797.2	22.7	25.8	-20.37	1,190.6	422.7	213.8	183.5	30.28	7.060	
5,100.0	4,955.7	5,084.7	4,892.4	23.3	26.4	-20.61	1,219.3	432.2	218.0	187.0	31.02	7.028	

COMPASS 2003.21 Build 46

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor	
5,200.0	5,052.1	5,184.6	4,987.6	23.8	27.0	-20.85	1,248.0	441.8	222.3	190.5	31.77	6.998	
5,300.0	5,148.5	5,284.5	5,082.9	24.4	27.6	-21.07	1,276.7	451.4	226.6	194.1	32.51	6.968	
5,400.0	5,244.9	5,384.4	5,178.1	24.9	28.2	-21.29	1,305.3	461.0	230.8	197.6	33.26	6.940	
5,500.0	5,341.3	5,484.3	5,273.3	25.4	28.8	-21.50	1,334.0	470.5	235.1	201.1	34.01	6.912	
5,600.0	5,437.6	5,584.2	5,368.5	26.0	29.4	-21.70	1,362.7	480.1	239.4	204.6	34.76	6.886	
5,700.0	5,534.0	5,684.1	5,463.7	26.5	30.0	-21.89	1,391.4	489.7	243.7	208.2	35.52	6.861	
5,800.0	5,630.4	5,784.0	5,559.0	27.1	30.6	-22.08	1,420.1	499.3	248.0	211.7	36.27	6.836	
5,900.0	5,726.8	5,883.9	5,654.2	27.6	31.2	-22.26	1,448.7	508.9	252.3	215.2	37.03	6.813	
6,000.0	5,823.2	5,983.8	5,749.4	28.2	31.8	-22.44	1,477.4	518.4	256.5	218.8	37.78	6.790	
6,100.0	5,919.5	6,083.7	5,844.6	28.7	32.4	-22.60	1,506.1	528.0	260.8	222.3	38.54	6.768	
6,200.0	6,015.9	6,183.6	5,939.8	29.2	33.0	-22.77	1,534.8	537.6	265.1	225.8	39.30	6.747	
6,300.0	6,112.3	6,283.5	6,035.1	29.8	33.6	-22.93	1,563.5	547.2	269.4	229.4	40.05	6.726	
6,400.0	6,208.7	6,383.4	6,130.3	30.3	34.2	-23.08	1,592.1	556.7	273.7	232.9	40.81	6.707	
6,500.0	6,305.1	6,483.3	6,225.5	30.9	34.8	-23.23	1,620.8	566.3	278.0	236.5	41.57	6.687	
6,600.0	6,401.5	6,583.2	6,320.7	31.4	35.4	-23.37	1,649.5	575.9	282.3	240.0	42.34	6.669	
6,700.0	6,497.8	6,683.1	6,415.9	32.0	36.1	-23.51	1,678.2	585.5	286.6	243.5	43.10	6.651	
6,800.0	6,594.6	6,782.9	6,511.0	32.4	36.7	3.48	1,706.8	595.0	291.0	247.6	43.46	6.697	
6,900.0	6,691.2	6,883.5	6,607.2	32.8	37.2	34.05	1,735.6	599.3	295.9	252.9	43.00	6.881	
7,000.0	6,785.8	6,986.2	6,705.2	33.0	37.6	54.05	1,764.5	589.3	301.2	258.7	42.55	7.079	
7,100.0	6,876.5	7,091.0	6,802.8	33.2	37.9	66.19	1,792.7	564.1	306.8	264.7	42.18	7.275	
7,200.0	6,961.6	7,197.8	6,897.7	33.3	38.2	74.04	1,819.7	523.5	312.5	270.6	41.94	7.451	
7,300.0	7,039.4	7,306.6	6,987.5	33.3	38.4	79.45	1,844.6	467.6	318.0	276.1	41.90	7.590	
7,400.0	7,108.4	7,417.2	7,069.5	33.3	38.5	83.32	1,866.7	396.9	323.1	281.0	42.13	7.671	
7,500.0	7,167.2	7,529.5	7,141.3	33.3	38.6	86.10	1,885.3	312.6	327.6	284.9	42.72	7.669	
7,600.0	7,214.8	7,643.2	7,200.2	33.2	38.6	88.05	1,899.7	216.6	331.3	287.5	43.77	7.569	
7,700.0	7,250.2	7,758.0	7,244.3	33.1	38.6	89.31	1,909.3	111.2	333.9	288.5	45.34	7.364	
7,800.0	7,272.7	7,873.3	7,271.9	33.0	38.6	89.95	1,913.8	-0.6	335.4	287.9	47.44	7.070	
7,900.0	7,281.8	7,988.9	7,282.0	33.0	38.7	90.03	1,913.1	-115.5	335.7	285.7	49.96	6.719	
7,951.7	7,282.7	8,041.5	7,282.0	33.0	38.7	89.88	1,911.3	-168.1	335.5	284.0	51.42	6.524	
8,000.0	7,282.0	8,089.9	7,282.0	33.1	38.8	90.00	1,909.7	-216.5	335.6	282.9	52.72	6.366	
8,100.0	7,282.0	8,189.9	7,282.0	33.4	39.0	90.00	1,906.4	-316.4	335.6	279.7	55.90	6.004	
8,200.0	7,282.0	8,289.9	7,282.0	34.1	39.5	90.00	1,903.1	-416.4	335.6	276.2	59.43	5.647	
8,300.0	7,282.0	8,389.9	7,282.0	35.2	40.1	90.00	1,899.8	-516.3	335.6	272.4	63.27	5.305	
8,400.0	7,282.0	8,489.9	7,282.0	36.6	41.1	90.00	1,896.5	-616.2	335.6	268.3	67.35	4.984	
8,500.0	7,282.0	8,589.9	7,282.0	38.4	42.4	90.00	1,893.2	-716.2	335.6	264.0	71.64	4.685	
8,600.0	7,282.0	8,689.9	7,282.0	40.4	43.9	90.00	1,889.9	-816.1	335.6	259.5	76.09	4.411	
8,700.0	7,282.0	8,789.9	7,282.0	42.5	45.6	90.00	1,886.6	-916.1	335.6	254.9	80.70	4.159	
8,800.0	7,282.0	8,889.9	7,282.0	44.7	47.6	90.00	1,883.3	-1,016.0	335.6	250.2	85.42	3.929	
8,900.0	7,282.0	8,989.9	7,282.0	47.0	49.6	90.00	1,880.1	-1,116.0	335.6	245.4	90.24	3.719	
9,000.0	7,282.0	9,089.9	7,282.0	49.4	51.8	90.00	1,876.8	-1,215.9	335.6	240.5	95.14	3.528	
9,100.0	7,282.0	9,189.9	7,282.0	51.8	54.1	90.00	1,873.5	-1,315.9	335.6	235.5	100.12	3.352	
9,200.0	7,282.0	9,289.9	7,282.0	54.2	56.4	90.00	1,870.2	-1,415.8	335.6	230.5	105.17	3.191	
9,300.0	7,282.0	9,389.9	7,282.0	56.7	58.7	90.00	1,866.9	-1,515.8	335.6	225.4	110.26	3.044	
9,400.0	7,282.0	9,489.9	7,282.0	59.2	61.2	90.00	1,863.6	-1,615.7	335.6	220.2	115.40	2.908	
9,500.0	7,282.0	9,589.9	7,282.0	61.7	63.6	90.00	1,860.3	-1,715.6	335.6	215.0	120.59	2.783	
9,600.0	7,282.0	9,689.9	7,282.0	64.3	66.1	90.00	1,857.0	-1,815.6	335.6	209.8	125.81	2.668	
9,700.0	7,282.0	9,789.9	7,282.0	66.9	68.6	90.00	1,853.7	-1,915.5	335.6	204.6	131.06	2.561	
9,800.0	7,282.0	9,889.9	7,282.0	69.5	71.1	90.00	1,850.4	-2,015.5	335.6	199.3	136.34	2.462	
9,900.0	7,282.0	9,989.9	7,282.0	72.1	73.7	90.00	1,847.1	-2,115.4	335.6	194.0	141.64	2.370	
10,000.0	7,282.0	10,089.9	7,282.0	74.7	76.3	90.00	1,843.8	-2,215.4	335.6	188.7	146.97	2.284	
10,100.0	7,282.0	10,189.9	7,282.0	77.3	78.9	90.00	1,840.5	-2,315.3	335.6	183.3	152.31	2.204	
10,200.0	7,282.0	10,289.9	7,282.0	80.0	81.5	90.00	1,837.2	-2,415.3	335.6	178.0	157.67	2.129	

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

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)												Offset Well Error:	0.0 ft
Survey Program: 0-MWD													
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)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,282.0	10,389.9	7,282.0	82.6	84.1	90.00	1,833.9	-2,515.2	335.6	172.6	163.05	2.058	
10,400.0	7,282.0	10,489.9	7,282.0	85.3	86.7	90.00	1,830.6	-2,615.2	335.6	167.2	168.45	1.993	
10,444.1	7,282.0	10,534.0	7,282.0	86.5	87.9	90.00	1,829.1	-2,659.2	335.6	164.8	170.83	1.965	
10,500.0	7,282.0	10,589.9	7,282.0	88.0	89.4	90.00	1,827.3	-2,715.1	335.6	161.8	173.85	1.931	
10,600.0	7,282.0	10,689.9	7,282.0	90.6	92.0	90.00	1,824.0	-2,815.0	335.6	156.4	179.27	1.872	
10,700.0	7,282.0	10,789.9	7,282.0	93.3	94.7	90.00	1,820.7	-2,915.0	335.6	150.9	184.70	1.817	
10,800.0	7,282.0	10,889.9	7,282.0	96.0	97.3	90.00	1,817.4	-3,014.9	335.6	145.5	190.14	1.765	
10,900.0	7,282.0	10,989.9	7,282.0	98.7	100.0	90.00	1,814.1	-3,114.9	335.6	140.0	195.59	1.716	
11,000.0	7,282.0	11,089.9	7,282.0	101.4	102.7	90.00	1,810.8	-3,214.8	335.6	134.6	201.05	1.669	
11,100.0	7,282.0	11,189.9	7,282.0	104.1	105.4	90.00	1,807.5	-3,314.8	335.6	129.1	206.51	1.625	
11,200.0	7,282.0	11,289.9	7,282.0	106.9	108.1	90.00	1,804.2	-3,414.7	335.6	123.7	211.98	1.583	
11,244.1	7,282.0	11,334.0	7,282.0	108.1	109.2	90.00	1,802.7	-3,458.8	335.6	121.2	214.40	1.565	
11,300.0	7,282.0	11,389.9	7,282.0	109.6	110.8	90.00	1,800.9	-3,514.7	335.6	118.2	217.46	1.543	
11,400.0	7,282.0	11,489.9	7,282.0	112.3	113.5	90.00	1,797.6	-3,614.6	335.6	112.7	222.94	1.505	
11,500.0	7,282.0	11,589.9	7,282.0	115.0	116.2	90.00	1,794.3	-3,714.6	335.6	107.2	228.43	1.469 Level 3	
11,600.0	7,282.0	11,689.9	7,282.0	117.7	118.9	90.00	1,791.0	-3,814.5	335.6	101.7	233.93	1.435 Level 3	
11,700.0	7,282.0	11,789.9	7,282.0	120.5	121.6	90.00	1,787.7	-3,914.5	335.6	96.2	239.43	1.402 Level 3	
11,800.0	7,282.0	11,889.9	7,282.0	123.2	124.3	90.00	1,784.4	-4,014.4	335.6	90.7	244.93	1.370 Level 3	
11,857.2	7,282.0	11,947.1	7,282.0	124.8	125.4	90.00	1,782.5	-4,071.6	335.6	88.0	247.61	1.355 Level 3	
11,900.0	7,282.0	11,978.1	7,282.0	125.9	126.0	90.00	1,781.5	-4,102.5	335.8	86.5	249.34	1.347 Level 3, SF	
11,921.8	7,282.0	11,978.1	7,282.0	126.4	126.0	90.00	1,781.5	-4,102.5	337.3	87.6	249.72	1.351 Level 3	

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	116.98	-25.4	49.8	55.9					
100.0	100.0	100.0	100.0	0.1	0.1	116.98	-25.4	49.8	55.9	55.7	0.22	248.670		
200.0	200.0	200.0	200.0	0.3	0.3	116.98	-25.4	49.8	55.9	55.2	0.67	82.890		
300.0	300.0	300.0	300.0	0.6	0.6	116.98	-25.4	49.8	55.9	54.8	1.12	49.734		
400.0	400.0	400.0	400.0	0.8	0.8	116.98	-25.4	49.8	55.9	54.3	1.57	35.524		
500.0	500.0	500.0	500.0	1.0	1.0	116.98	-25.4	49.8	55.9	53.9	2.02	27.630		
600.0	600.0	600.0	600.0	1.2	1.2	116.98	-25.4	49.8	55.9	53.4	2.47	22.606 CC		
700.0	700.0	700.0	700.0	1.5	1.5	95.84	-25.4	49.8	56.0	53.1	2.92	19.191 ES		
800.0	799.8	799.8	799.8	1.7	1.7	101.07	-25.4	49.8	56.8	53.4	3.37	16.861		
900.0	899.5	900.0	900.0	1.9	1.9	107.74	-23.8	50.6	58.6	54.8	3.83	15.320		
1,000.0	998.7	1,000.4	1,000.2	2.2	2.1	113.85	-19.1	52.9	61.4	57.1	4.30	14.266		
1,100.0	1,097.5	1,101.0	1,100.5	2.5	2.4	119.29	-11.2	56.7	64.9	60.1	4.81	13.510		
1,200.0	1,195.6	1,201.9	1,200.6	2.8	2.6	124.02	-0.1	62.1	69.2	63.8	5.34	12.940		
1,300.0	1,293.1	1,303.1	1,300.5	3.2	2.9	128.07	14.2	69.1	73.9	68.0	5.92	12.486		
1,400.0	1,389.7	1,404.5	1,400.0	3.6	3.2	131.46	31.8	77.6	79.0	72.5	6.54	12.083		
1,500.0	1,486.1	1,506.2	1,499.1	4.1	3.6	133.08	52.5	87.8	82.7	75.5	7.23	11.446		
1,600.0	1,582.4	1,606.3	1,596.1	4.6	4.0	133.55	74.6	98.5	85.2	77.2	7.96	10.699		
1,700.0	1,678.8	1,706.2	1,693.0	5.1	4.4	133.99	96.7	109.3	87.6	78.9	8.71	10.057		
1,800.0	1,775.2	1,806.2	1,789.9	5.6	4.9	134.40	118.8	120.1	90.1	80.6	9.48	9.503		
1,900.0	1,871.6	1,906.2	1,886.8	6.1	5.3	134.79	140.9	130.9	92.5	82.3	10.25	9.024		
2,000.0	1,968.0	2,006.1	1,983.7	6.6	5.8	135.16	163.0	141.6	95.0	84.0	11.04	8.608		
2,100.0	2,064.3	2,106.1	2,080.6	7.1	6.3	135.52	185.1	152.4	97.5	85.7	11.82	8.244		
2,200.0	2,160.7	2,206.1	2,177.4	7.6	6.7	135.85	207.2	163.2	100.0	87.3	12.61	7.923		
2,300.0	2,257.1	2,306.0	2,274.3	8.2	7.2	136.17	229.3	173.9	102.4	89.0	13.41	7.640		
2,400.0	2,353.5	2,406.0	2,371.2	8.7	7.7	136.47	251.4	184.7	104.9	90.7	14.20	7.388		
2,500.0	2,449.9	2,506.0	2,468.1	9.2	8.2	136.76	273.5	195.5	107.4	92.4	14.99	7.163		
2,600.0	2,546.2	2,605.9	2,565.0	9.8	8.7	137.04	295.6	206.3	109.9	94.1	15.79	6.960		
2,700.0	2,642.6	2,705.9	2,661.9	10.3	9.2	137.30	317.7	217.0	112.4	95.8	16.58	6.777		
2,800.0	2,739.0	2,805.9	2,758.8	10.8	9.7	137.56	339.8	227.8	114.9	97.5	17.38	6.611		
2,900.0	2,835.4	2,905.8	2,855.7	11.4	10.2	137.80	361.9	238.6	117.4	99.2	18.17	6.460		
3,000.0	2,931.8	3,005.8	2,952.6	11.9	10.7	138.03	384.0	249.3	119.9	100.9	18.96	6.321		
3,100.0	3,028.1	3,105.8	3,049.5	12.4	11.2	138.25	406.1	260.1	122.4	102.6	19.75	6.195		
3,200.0	3,124.5	3,205.7	3,146.4	13.0	11.7	138.47	428.2	270.9	124.9	104.3	20.54	6.078		
3,300.0	3,220.9	3,305.7	3,243.3	13.5	12.2	138.67	450.3	281.7	127.4	106.0	21.33	5.970		
3,400.0	3,317.3	3,405.7	3,340.2	14.1	12.7	138.87	472.4	292.4	129.9	107.7	22.12	5.870		
3,500.0	3,413.7	3,505.7	3,437.1	14.6	13.2	139.06	494.5	303.2	132.4	109.5	22.91	5.778		
3,600.0	3,510.0	3,605.6	3,534.0	15.1	13.7	139.24	516.6	314.0	134.9	111.2	23.69	5.692		
3,700.0	3,606.4	3,705.6	3,630.9	15.7	14.2	139.42	538.7	324.7	137.4	112.9	24.48	5.611		
3,800.0	3,702.8	3,805.6	3,727.8	16.2	14.7	139.59	560.8	335.5	139.9	114.6	25.27	5.536		
3,900.0	3,799.2	3,905.5	3,824.7	16.8	15.2	139.75	582.9	346.3	142.4	116.3	26.05	5.466		
4,000.0	3,895.6	4,005.5	3,921.6	17.3	15.7	139.91	605.0	357.1	144.9	118.1	26.83	5.400		
4,100.0	3,991.9	4,105.5	4,018.5	17.8	16.2	140.06	627.1	367.8	147.4	119.8	27.62	5.338		
4,200.0	4,088.3	4,205.4	4,115.4	18.4	16.7	140.21	649.2	378.6	149.9	121.5	28.40	5.280		
4,300.0	4,184.7	4,305.4	4,212.3	18.9	17.2	140.35	671.3	389.4	152.4	123.3	29.18	5.224		
4,400.0	4,281.1	4,405.4	4,309.2	19.5	17.7	140.49	693.4	400.2	155.0	125.0	29.96	5.172		
4,500.0	4,377.5	4,505.3	4,406.1	20.0	18.2	140.63	715.5	410.9	157.5	126.7	30.74	5.123		
4,600.0	4,473.8	4,605.3	4,503.0	20.6	18.7	140.76	737.6	421.7	160.0	128.5	31.52	5.076		
4,700.0	4,570.2	4,705.3	4,599.9	21.1	19.2	140.88	759.7	432.5	162.5	130.2	32.29	5.032		
4,800.0	4,666.6	4,805.2	4,696.8	21.6	19.7	141.00	781.8	443.2	165.0	131.9	33.07	4.990		
4,900.0	4,763.0	4,905.2	4,793.7	22.2	20.2	141.12	803.9	454.0	167.5	133.7	33.85	4.950		
5,000.0	4,859.4	5,005.2	4,890.6	22.7	20.7	141.24	826.0	464.8	170.1	135.4	34.62	4.912		
5,100.0	4,955.7	5,105.1	4,987.5	23.3	21.2	141.35	848.1	475.6	172.6	137.2	35.40	4.875		

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

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
5,200.0	5,052.1	5,205.1	5,084.4	23.8	21.8	141.45	870.2	486.3	175.1	138.9	36.17	4.841		
5,300.0	5,148.5	5,305.1	5,181.3	24.4	22.3	141.56	892.3	497.1	177.6	140.7	36.95	4.807		
5,400.0	5,244.9	5,405.0	5,278.2	24.9	22.8	141.66	914.4	507.9	180.1	142.4	37.72	4.776		
5,500.0	5,341.3	5,505.0	5,375.1	25.4	23.3	141.76	936.5	518.6	182.7	144.2	38.49	4.745		
5,600.0	5,437.6	5,605.0	5,472.0	26.0	23.8	141.86	958.6	529.4	185.2	145.9	39.26	4.716		
5,700.0	5,534.0	5,704.9	5,568.9	26.5	24.3	141.95	980.7	540.2	187.7	147.7	40.04	4.688		
5,800.0	5,630.4	5,804.9	5,665.8	27.1	24.8	142.04	1,002.8	551.0	190.2	149.4	40.81	4.662 SF		
5,900.0	5,726.8	5,900.0	5,758.1	27.6	25.2	142.27	1,023.2	560.9	193.4	151.9	41.47	4.662		
6,000.0	5,823.2	5,996.4	5,852.4	28.2	25.6	143.06	1,041.2	569.7	198.9	157.1	41.85	4.753		
6,100.0	5,919.5	6,090.7	5,945.3	28.7	25.9	144.35	1,056.0	576.9	207.1	165.1	42.00	4.930		
6,200.0	6,015.9	6,184.4	6,038.0	29.2	26.1	146.03	1,068.0	582.7	217.9	176.0	41.95	5.195		
6,300.0	6,112.3	6,277.2	6,130.2	29.8	26.3	147.98	1,077.2	587.2	231.6	189.9	41.75	5.547		
6,400.0	6,208.7	6,369.0	6,221.7	30.3	26.5	150.08	1,083.7	590.4	248.2	206.8	41.47	5.986		
6,500.0	6,305.1	6,459.6	6,312.2	30.9	26.7	152.22	1,087.4	592.2	267.9	226.8	41.14	6.512		
6,600.0	6,401.5	6,548.8	6,401.5	31.4	26.8	154.34	1,088.6	592.8	290.6	249.8	40.80	7.122		
6,700.0	6,497.8	6,645.2	6,497.8	32.0	26.9	156.43	1,088.6	592.8	315.0	274.5	40.51	7.775		
6,800.0	6,594.6	6,741.3	6,593.9	32.4	27.0	-174.45	1,088.6	592.3	339.5	299.6	39.96	8.497		
6,900.0	6,691.2	6,835.8	6,687.8	32.8	27.0	-143.91	1,088.3	582.3	363.9	324.3	39.53	9.205		
7,000.0	6,785.8	6,930.3	6,779.6	33.0	27.0	-124.08	1,087.6	560.2	387.6	348.5	39.16	9.900		
7,100.0	6,876.5	7,024.9	6,867.8	33.2	26.9	-112.19	1,086.4	526.1	410.4	371.5	38.87	10.558		
7,200.0	6,961.6	7,119.9	6,951.0	33.3	26.7	-104.63	1,084.9	480.4	431.7	393.0	38.71	11.153		
7,300.0	7,039.4	7,215.5	7,027.9	33.3	26.6	-99.53	1,083.1	423.9	451.1	412.4	38.73	11.649		
7,400.0	7,108.4	7,311.7	7,097.1	33.3	26.4	-95.95	1,080.9	357.1	468.4	429.4	39.01	12.007		
7,500.0	7,167.2	7,408.7	7,157.0	33.3	26.2	-93.42	1,078.3	281.0	483.0	443.4	39.64	12.185		
7,600.0	7,214.8	7,506.5	7,206.5	33.2	25.9	-91.68	1,075.6	196.8	494.9	454.2	40.73	12.151		



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	135.44	-50.4	49.6	70.7	70.7	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	135.44	-50.4	49.6	70.7	70.5	0.23	311.491		
200.0	200.0	201.0	201.0	0.3	0.3	135.44	-50.4	49.6	70.7	70.0	0.68	104.520		
300.0	300.0	301.0	301.0	0.6	0.6	135.44	-50.4	49.6	70.7	69.6	1.13	62.796		
400.0	400.0	401.0	401.0	0.8	0.8	135.44	-50.4	49.6	70.7	69.1	1.58	44.880		
500.0	500.0	501.0	501.0	1.0	1.0	135.44	-50.4	49.6	70.7	68.7	2.03	34.917		
600.0	600.0	601.0	601.0	1.2	1.2	135.44	-50.4	49.6	70.7	68.2	2.47	28.575 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	113.80	-50.4	49.6	71.4	68.5	2.92	24.426		
800.0	799.8	800.8	800.8	1.7	1.7	117.49	-50.4	49.6	73.7	70.3	3.37	21.840		
900.0	899.5	900.5	900.5	1.9	1.9	123.08	-50.4	49.6	78.1	74.3	3.83	20.384		
1,000.0	998.7	999.7	999.7	2.2	2.1	129.80	-50.4	49.6	85.4	81.1	4.30	19.866		
1,100.0	1,097.5	1,100.4	1,100.4	2.5	2.4	136.08	-48.9	50.6	95.2	90.4	4.77	19.949		
1,200.0	1,195.6	1,201.6	1,201.5	2.8	2.6	140.87	-44.5	53.6	106.3	101.1	5.25	20.258		
1,300.0	1,293.1	1,303.3	1,302.8	3.2	2.8	144.47	-37.0	58.5	118.5	112.8	5.74	20.637		
1,400.0	1,389.7	1,405.5	1,404.2	3.6	3.1	147.14	-26.5	65.5	131.3	125.0	6.26	20.970		
1,500.0	1,486.1	1,508.5	1,505.8	4.1	3.4	148.65	-12.9	74.6	142.4	135.6	6.82	20.868		
1,600.0	1,582.4	1,612.1	1,607.4	4.6	3.7	149.02	3.8	85.7	150.9	143.5	7.43	20.305		
1,700.0	1,678.8	1,716.1	1,708.6	5.1	4.0	148.44	23.7	99.0	156.7	148.6	8.10	19.352		
1,800.0	1,775.2	1,820.2	1,809.0	5.6	4.5	146.99	46.6	114.3	159.9	151.1	8.84	18.086		
1,900.0	1,871.6	1,922.1	1,906.4	6.1	5.0	144.82	71.7	131.0	161.0	151.3	9.67	16.647		
2,000.0	1,968.0	2,021.9	2,001.6	6.6	5.4	142.60	96.6	147.6	161.9	151.3	10.55	15.343		
2,100.0	2,064.3	2,121.7	2,096.8	7.1	6.0	140.41	121.5	164.2	163.1	151.6	11.49	14.197		
2,200.0	2,160.7	2,221.5	2,192.0	7.6	6.5	138.25	146.4	180.8	164.5	152.0	12.47	13.192		
2,300.0	2,257.1	2,321.3	2,287.2	8.2	7.0	136.14	171.3	197.4	166.1	152.6	13.49	12.312		
2,400.0	2,353.5	2,421.1	2,382.4	8.7	7.6	134.07	196.1	214.0	168.0	153.5	14.56	11.542		
2,500.0	2,449.9	2,520.9	2,477.6	9.2	8.2	132.04	221.0	230.6	170.1	154.4	15.65	10.867		
2,600.0	2,546.2	2,620.7	2,572.8	9.8	8.7	130.07	245.9	247.2	172.4	155.6	16.78	10.276		
2,700.0	2,642.6	2,720.5	2,668.1	10.3	9.3	128.15	270.8	263.8	174.9	157.0	17.92	9.757		
2,800.0	2,739.0	2,820.3	2,763.3	10.8	9.9	126.29	295.7	280.4	177.6	158.5	19.09	9.301		
2,900.0	2,835.4	2,920.1	2,858.5	11.4	10.5	124.49	320.6	296.9	180.4	160.2	20.27	8.899		
3,000.0	2,931.8	3,019.9	2,953.7	11.9	11.0	122.74	345.5	313.5	183.5	162.0	21.47	8.545		
3,100.0	3,028.1	3,119.7	3,048.9	12.4	11.6	121.05	370.4	330.1	186.7	164.0	22.68	8.231		
3,200.0	3,124.5	3,219.5	3,144.1	13.0	12.2	119.42	395.3	346.7	190.0	166.1	23.89	7.954		
3,300.0	3,220.9	3,319.3	3,239.3	13.5	12.8	117.85	420.2	363.3	193.5	168.4	25.11	7.708		
3,400.0	3,317.3	3,419.1	3,334.5	14.1	13.4	116.33	445.1	379.9	197.2	170.9	26.33	7.489		
3,500.0	3,413.7	3,518.9	3,429.7	14.6	14.0	114.87	470.0	396.5	201.0	173.4	27.56	7.293		
3,600.0	3,510.0	3,618.7	3,524.9	15.1	14.6	113.47	494.9	413.1	204.9	176.1	28.78	7.119		
3,700.0	3,606.4	3,718.5	3,620.1	15.7	15.2	112.11	519.8	429.7	208.9	178.9	30.00	6.964		
3,800.0	3,702.8	3,818.3	3,715.4	16.2	15.8	110.81	544.6	446.3	213.1	181.8	31.22	6.824		
3,900.0	3,799.2	3,918.1	3,810.6	16.8	16.4	109.56	569.5	462.9	217.3	184.9	32.44	6.699		
4,000.0	3,895.6	4,017.9	3,905.8	17.3	17.0	108.36	594.4	479.5	221.6	188.0	33.65	6.587		
4,100.0	3,991.9	4,117.7	4,001.0	17.8	17.6	107.21	619.3	496.1	226.1	191.2	34.86	6.486		
4,200.0	4,088.3	4,217.5	4,096.2	18.4	18.2	106.09	644.2	512.7	230.6	194.6	36.06	6.395		
4,300.0	4,184.7	4,316.9	4,191.2	18.9	18.7	105.15	668.6	529.0	235.3	198.1	37.20	6.325		
4,400.0	4,281.1	4,416.1	4,286.8	19.5	19.1	104.97	690.6	543.6	240.2	202.0	38.16	6.294		
4,500.0	4,377.5	4,515.2	4,383.3	20.0	19.5	105.59	709.7	556.4	245.4	206.4	39.03	6.288 SF		
4,600.0	4,473.8	4,614.0	4,480.1	20.6	19.9	106.96	726.0	567.2	251.1	211.3	39.79	6.310		
4,700.0	4,570.2	4,712.3	4,576.9	21.1	20.2	109.01	739.5	576.2	257.3	216.9	40.42	6.367		
4,800.0	4,666.6	4,809.7	4,673.5	21.6	20.4	111.66	750.1	583.3	264.6	223.7	40.88	6.471		
4,900.0	4,763.0	4,906.1	4,769.5	22.2	20.6	114.79	757.9	588.5	273.2	232.0	41.16	6.636		
5,000.0	4,859.4	5,000.0	4,863.2	22.7	20.8	118.26	762.9	591.8	283.6	242.4	41.25	6.876		
5,100.0	4,955.7	5,095.2	4,958.4	23.3	20.9	122.09	765.4	593.4	296.3	255.2	41.11	7.207		

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



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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)	Minimum Separation (ft)	Separation Factor	Warning
5,200.0	5,052.1	5,190.0	5,053.1	23.8	21.0	126.04	765.6	593.6	311.5	270.7	40.81	7.633	
5,300.0	5,148.5	5,286.4	5,149.5	24.4	21.2	129.72	765.6	593.6	328.2	287.8	40.46	8.112	
5,400.0	5,244.9	5,382.7	5,245.9	24.9	21.3	133.05	765.6	593.6	346.2	306.1	40.13	8.629	
5,500.0	5,341.3	5,479.1	5,342.3	25.4	21.4	136.06	765.6	593.6	365.3	325.5	39.82	9.174	
5,600.0	5,437.6	5,575.5	5,438.6	26.0	21.5	138.77	765.6	593.6	385.3	345.7	39.55	9.742	
5,700.0	5,534.0	5,671.9	5,535.0	26.5	21.6	141.21	765.6	593.6	406.0	366.7	39.32	10.324	
5,800.0	5,630.4	5,768.3	5,631.4	27.1	21.7	143.42	765.6	593.6	427.4	388.2	39.15	10.917	
5,900.0	5,726.8	5,864.6	5,727.8	27.6	21.8	145.43	765.6	593.6	449.3	410.3	39.02	11.514	
6,000.0	5,823.2	5,961.0	5,824.2	28.2	22.0	147.24	765.6	593.6	471.8	432.8	38.95	12.113	
6,100.0	5,919.5	6,057.4	5,920.5	28.7	22.1	148.90	765.6	593.6	494.6	455.7	38.92	12.710	

Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
0.0	0.0	1.0	1.0	0.0	0.0	146.75	-75.4	49.4	90.1	90.1	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	146.75	-75.4	49.4	90.1	89.9	0.23	397.039		
200.0	200.0	201.0	201.0	0.3	0.3	146.75	-75.4	49.4	90.1	89.5	0.68	133.226		
300.0	300.0	301.0	301.0	0.6	0.6	146.75	-75.4	49.4	90.1	89.0	1.13	80.042		
400.0	400.0	401.0	401.0	0.8	0.8	146.75	-75.4	49.4	90.1	88.6	1.58	57.205		
500.0	500.0	501.0	501.0	1.0	1.0	146.75	-75.4	49.4	90.1	88.1	2.03	44.507		
600.0	600.0	601.0	601.0	1.2	1.2	146.75	-75.4	49.4	90.1	87.7	2.47	36.422 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	124.73	-75.4	49.4	91.1	88.2	2.92	31.167		
800.0	799.8	800.8	800.8	1.7	1.7	127.29	-75.4	49.4	94.2	90.8	3.37	27.921		
900.0	899.5	900.5	900.5	1.9	1.9	131.19	-75.4	49.4	99.7	95.9	3.83	26.041		
1,000.0	998.7	999.7	999.7	2.2	2.1	135.91	-75.4	49.4	108.2	103.9	4.29	25.196		
1,100.0	1,097.5	1,098.5	1,098.5	2.5	2.4	140.95	-75.4	49.4	119.9	115.2	4.76	25.190		
1,200.0	1,195.6	1,196.6	1,196.6	2.8	2.6	145.84	-75.4	49.4	135.4	130.1	5.23	25.878		
1,300.0	1,293.1	1,297.8	1,297.8	3.2	2.8	150.03	-74.1	50.5	153.5	147.8	5.70	26.915		
1,400.0	1,389.7	1,399.8	1,399.7	3.6	3.0	153.09	-69.9	53.7	172.6	166.4	6.18	27.930		
1,500.0	1,486.1	1,503.0	1,502.5	4.1	3.3	155.07	-62.8	59.3	190.2	183.5	6.69	28.436		
1,600.0	1,582.4	1,607.4	1,606.1	4.6	3.5	156.05	-52.6	67.3	205.1	197.9	7.22	28.406		
1,700.0	1,678.8	1,712.8	1,710.0	5.1	3.8	156.27	-39.4	77.7	217.3	209.5	7.79	27.902		
1,800.0	1,775.2	1,818.7	1,813.9	5.6	4.1	155.85	-23.1	90.6	226.7	218.3	8.40	26.998		
1,900.0	1,871.6	1,918.7	1,911.5	6.1	4.5	155.18	-6.1	104.0	234.4	225.4	9.03	25.972		
2,000.0	1,968.0	2,018.4	2,008.8	6.6	4.8	154.54	10.8	117.3	242.2	232.6	9.67	25.039		
2,100.0	2,064.3	2,118.0	2,106.1	7.1	5.2	153.95	27.7	130.6	250.1	239.7	10.34	24.177		
2,200.0	2,160.7	2,217.7	2,203.5	7.6	5.6	153.39	44.7	143.9	257.9	246.9	11.03	23.391		
2,300.0	2,257.1	2,317.3	2,300.8	8.2	6.0	152.87	61.6	157.2	265.8	254.1	11.72	22.671		
2,400.0	2,353.5	2,417.0	2,398.1	8.7	6.4	152.37	78.5	170.6	273.7	261.3	12.43	22.012		
2,500.0	2,449.9	2,516.7	2,495.4	9.2	6.8	151.90	95.4	183.9	281.6	268.5	13.15	21.408		
2,600.0	2,546.2	2,616.3	2,592.7	9.8	7.2	151.46	112.3	197.2	289.6	275.7	13.89	20.853		
2,700.0	2,642.6	2,716.0	2,690.0	10.3	7.6	151.05	129.3	210.5	297.5	282.9	14.62	20.343		
2,800.0	2,739.0	2,815.6	2,787.3	10.8	8.1	150.65	146.2	223.8	305.5	290.1	15.37	19.873		
2,900.0	2,835.4	2,915.3	2,884.6	11.4	8.5	150.27	163.1	237.2	313.5	297.3	16.13	19.439		
3,000.0	2,931.8	3,015.0	2,981.9	11.9	8.9	149.92	180.0	250.5	321.5	304.6	16.89	19.037		
3,100.0	3,028.1	3,114.6	3,079.2	12.4	9.4	149.58	196.9	263.8	329.5	311.8	17.65	18.665		
3,200.0	3,124.5	3,214.3	3,176.5	13.0	9.8	149.25	213.9	277.1	337.5	319.1	18.42	18.318		
3,300.0	3,220.9	3,313.9	3,273.8	13.5	10.2	148.95	230.8	290.5	345.5	326.3	19.20	17.996		
3,400.0	3,317.3	3,413.6	3,371.1	14.1	10.7	148.65	247.7	303.8	353.5	333.6	19.98	17.695		
3,500.0	3,413.7	3,513.3	3,468.4	14.6	11.1	148.37	264.6	317.1	361.6	340.8	20.76	17.414		
3,600.0	3,510.0	3,612.9	3,565.7	15.1	11.6	148.10	281.6	330.4	369.6	348.1	21.55	17.151		
3,700.0	3,606.4	3,712.6	3,663.0	15.7	12.0	147.84	298.5	343.7	377.7	355.4	22.34	16.904		
3,800.0	3,702.8	3,812.2	3,760.3	16.2	12.5	147.60	315.4	357.1	385.8	362.6	23.14	16.672		
3,900.0	3,799.2	3,911.9	3,857.6	16.8	12.9	147.36	332.3	370.4	393.8	369.9	23.94	16.454		
4,000.0	3,895.6	4,011.6	3,955.0	17.3	13.4	147.13	349.2	383.7	401.9	377.2	24.74	16.248		
4,100.0	3,991.9	4,111.2	4,052.3	17.8	13.8	146.91	366.2	397.0	410.0	384.5	25.54	16.054		
4,200.0	4,088.3	4,210.9	4,149.6	18.4	14.3	146.70	383.1	410.3	418.1	391.8	26.34	15.871		
4,300.0	4,184.7	4,310.5	4,246.9	18.9	14.7	146.50	400.0	423.7	426.2	399.1	27.15	15.697		
4,400.0	4,281.1	4,410.2	4,344.2	19.5	15.2	146.31	416.9	437.0	434.3	406.4	27.96	15.533		
4,500.0	4,377.5	4,509.9	4,441.5	20.0	15.6	146.12	433.8	450.3	442.4	413.6	28.77	15.377		
4,600.0	4,473.8	4,609.5	4,538.8	20.6	16.1	145.94	450.8	463.6	450.5	421.0	29.59	15.228		
4,700.0	4,570.2	4,709.2	4,636.1	21.1	16.5	145.76	467.7	477.0	458.7	428.3	30.40	15.087		
4,800.0	4,666.6	4,808.8	4,733.4	21.6	17.0	145.60	484.6	490.3	466.8	435.6	31.22	14.953		
4,900.0	4,763.0	4,908.5	4,830.7	22.2	17.4	145.43	501.5	503.6	474.9	442.9	32.03	14.825		
5,000.0	4,859.4	5,008.2	4,928.0	22.7	17.9	145.28	518.5	516.9	483.0	450.2	32.85	14.702		
5,100.0	4,955.7	5,107.8	5,025.3	23.3	18.3	145.13	535.4	530.2	491.2	457.5	33.67	14.586		

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<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	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)	Minimum Separation (ft)	Separation Factor	
5,200.0	5,052.1	5,207.5	5,122.6	23.8	18.8	144.98	552.3	543.6	499.3	464.8	34.50	14.474 SF	

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	153.86	-100.4	49.3	111.8	111.8	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	153.86	-100.4	49.3	111.8	111.6	0.23	492.491		
200.0	200.0	201.0	201.0	0.3	0.3	153.86	-100.4	49.3	111.8	111.1	0.68	165.254		
300.0	300.0	301.0	301.0	0.6	0.6	153.86	-100.4	49.3	111.8	110.7	1.13	99.285		
400.0	400.0	401.0	401.0	0.8	0.8	153.86	-100.4	49.3	111.8	110.2	1.58	70.958		
500.0	500.0	501.0	501.0	1.0	1.0	153.86	-100.4	49.3	111.8	109.8	2.03	55.207		
600.0	600.0	601.0	601.0	1.2	1.2	153.86	-100.4	49.3	111.8	109.3	2.47	45.179 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	131.59	-100.4	49.3	113.0	110.0	2.92	38.633		
800.0	799.8	800.8	800.8	1.7	1.7	133.47	-100.4	49.3	116.5	113.1	3.37	34.527		
900.0	899.5	900.5	900.5	1.9	1.9	136.33	-100.4	49.3	122.7	118.8	3.83	32.036		
1,000.0	998.7	999.7	999.7	2.2	2.1	139.86	-100.4	49.3	131.8	127.5	4.29	30.716		
1,100.0	1,097.5	1,098.5	1,098.5	2.5	2.4	143.71	-100.4	49.3	144.1	139.4	4.76	30.303		
1,200.0	1,195.6	1,196.6	1,196.6	2.8	2.6	147.57	-100.4	49.3	160.0	154.7	5.22	30.618		
1,300.0	1,293.1	1,294.1	1,294.1	3.2	2.8	151.21	-100.4	49.3	179.5	173.8	5.69	31.525		
1,400.0	1,389.7	1,390.7	1,390.7	3.6	3.0	154.55	-100.4	49.3	202.6	196.4	6.16	32.867		
1,500.0	1,486.1	1,487.1	1,487.1	4.1	3.2	157.43	-100.4	49.3	227.1	220.4	6.65	34.166		
1,600.0	1,582.4	1,583.4	1,583.4	4.6	3.4	159.74	-100.4	49.3	252.0	244.9	7.13	35.350		
1,700.0	1,678.8	1,686.3	1,686.3	5.1	3.7	161.59	-99.4	50.2	276.3	268.7	7.62	36.258		
1,800.0	1,775.2	1,792.1	1,791.9	5.6	3.9	162.70	-95.7	53.7	298.1	290.0	8.12	36.698		
1,900.0	1,871.6	1,899.4	1,898.8	6.1	4.1	163.23	-89.1	60.1	317.0	308.4	8.64	36.680		
2,000.0	1,968.0	2,007.8	2,006.5	6.6	4.4	163.27	-79.5	69.4	333.1	323.9	9.19	36.245		
2,100.0	2,064.3	2,117.2	2,114.4	7.1	4.7	162.88	-66.9	81.6	346.1	336.3	9.76	35.451		
2,200.0	2,160.7	2,216.7	2,212.3	7.6	5.0	162.36	-54.0	94.1	357.6	347.3	10.34	34.580		
2,300.0	2,257.1	2,316.0	2,309.9	8.2	5.3	161.87	-41.1	106.5	369.1	358.2	10.93	33.771		
2,400.0	2,353.5	2,415.3	2,407.6	8.7	5.6	161.41	-28.2	118.9	380.7	369.2	11.53	33.010		
2,500.0	2,449.9	2,514.6	2,505.3	9.2	5.9	160.98	-15.4	131.4	392.3	380.1	12.15	32.298		
2,600.0	2,546.2	2,613.9	2,602.9	9.8	6.2	160.57	-2.5	143.8	403.9	391.1	12.77	31.634		
2,700.0	2,642.6	2,713.1	2,700.6	10.3	6.6	160.18	10.4	156.3	415.5	402.1	13.40	31.013		
2,800.0	2,739.0	2,812.4	2,798.2	10.8	6.9	159.82	23.2	168.7	427.1	413.1	14.03	30.433		
2,900.0	2,835.4	2,911.7	2,895.9	11.4	7.3	159.48	36.1	181.1	438.8	424.1	14.68	29.890		
3,000.0	2,931.8	3,011.0	2,993.5	11.9	7.6	159.15	49.0	193.6	450.4	435.1	15.33	29.382		
3,100.0	3,028.1	3,110.3	3,091.2	12.4	8.0	158.84	61.9	206.0	462.1	446.1	15.99	28.905		
3,200.0	3,124.5	3,209.6	3,188.9	13.0	8.3	158.55	74.7	218.4	473.8	457.2	16.65	28.458		
3,300.0	3,220.9	3,308.9	3,286.5	13.5	8.7	158.27	87.6	230.9	485.5	468.2	17.32	28.039		
3,400.0	3,317.3	3,408.1	3,384.2	14.1	9.1	158.00	100.5	243.3	497.2	479.2	17.99	27.644 SF		

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	1.0	1.0	0.0	0.0	-179.57	-125.0	-0.9	125.0	125.0	0.00	N/A		
100.0	100.0	101.0	101.0	0.1	0.1	-179.57	-125.0	-0.9	125.0	124.8	0.23	550.626		
200.0	200.0	201.0	201.0	0.3	0.3	-179.57	-125.0	-0.9	125.0	124.3	0.68	184.761		
300.0	300.0	301.0	301.0	0.6	0.6	-179.57	-125.0	-0.9	125.0	123.9	1.13	111.004		
400.0	400.0	401.0	401.0	0.8	0.8	-179.57	-125.0	-0.9	125.0	123.4	1.58	79.334		
500.0	500.0	501.0	501.0	1.0	1.0	-179.57	-125.0	-0.9	125.0	123.0	2.03	61.724		
600.0	600.0	601.0	601.0	1.2	1.2	-179.57	-125.0	-0.9	125.0	122.5	2.47	50.512 CC, ES		
700.0	700.0	701.0	701.0	1.5	1.5	157.81	-125.0	-0.9	126.6	123.7	2.92	43.292		
800.0	799.8	800.8	800.8	1.7	1.7	158.63	-125.0	-0.9	131.5	128.1	3.37	38.958		
900.0	899.5	900.5	900.5	1.9	1.9	159.88	-125.0	-0.9	139.6	135.8	3.82	36.507		
1,000.0	998.7	999.7	999.7	2.2	2.1	161.39	-125.0	-0.9	151.1	146.9	4.27	35.358		
1,100.0	1,097.5	1,098.5	1,098.5	2.5	2.4	163.03	-125.0	-0.9	166.0	161.3	4.72	35.152 SF		
1,200.0	1,195.6	1,196.6	1,196.6	2.8	2.6	164.66	-125.0	-0.9	184.4	179.2	5.17	35.655		
1,300.0	1,293.1	1,294.1	1,294.1	3.2	2.8	166.20	-125.0	-0.9	206.2	200.6	5.62	36.700		
1,400.0	1,389.7	1,390.7	1,390.7	3.6	3.0	167.64	-125.0	-0.9	231.3	225.3	6.07	38.108		
1,500.0	1,486.1	1,487.1	1,487.1	4.1	3.2	168.91	-125.0	-0.9	257.5	250.9	6.54	39.348		
1,600.0	1,582.4	1,583.4	1,583.4	4.6	3.4	169.94	-125.0	-0.9	283.7	276.7	7.02	40.412		
1,700.0	1,678.8	1,679.8	1,679.8	5.1	3.7	170.80	-125.0	-0.9	310.0	302.5	7.50	41.333		
1,800.0	1,775.2	1,776.2	1,776.2	5.6	3.9	171.53	-125.0	-0.9	336.4	328.4	7.98	42.136		
1,900.0	1,871.6	1,878.9	1,878.9	6.1	4.1	172.05	-124.6	0.0	362.2	353.7	8.48	42.730		
2,000.0	1,968.0	1,984.8	1,984.7	6.6	4.3	172.07	-122.6	4.5	385.8	376.8	8.97	42.991		
2,100.0	2,064.3	2,091.8	2,091.3	7.1	4.6	171.64	-119.0	12.6	407.1	397.6	9.49	42.905		
2,200.0	2,160.7	2,199.6	2,198.3	7.6	4.8	170.83	-113.7	24.5	426.2	416.2	10.03	42.496		
2,300.0	2,257.1	2,307.9	2,305.2	8.2	5.1	169.67	-106.7	40.1	443.1	432.5	10.60	41.784		
2,400.0	2,353.5	2,414.1	2,409.4	8.7	5.4	168.22	-98.4	58.9	458.0	446.7	11.22	40.830		
2,500.0	2,449.9	2,512.4	2,505.7	9.2	5.7	166.85	-90.1	77.3	472.4	460.6	11.84	39.903		
2,600.0	2,546.2	2,610.7	2,601.9	9.8	6.0	165.57	-81.9	95.7	487.2	474.7	12.49	39.009		

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor		
0.0	0.0	2.0	2.0	0.0	0.0	169.12	-125.2	24.1	127.5	127.5	0.00	N/A		
100.0	100.0	102.0	102.0	0.1	0.1	169.12	-125.2	24.1	127.5	127.2	0.23	555.997		
200.0	200.0	202.0	202.0	0.3	0.3	169.12	-125.2	24.1	127.5	126.8	0.68	187.787		
300.0	300.0	302.0	302.0	0.6	0.6	169.12	-125.2	24.1	127.5	126.3	1.13	112.972		
400.0	400.0	402.0	402.0	0.8	0.8	169.12	-125.2	24.1	127.5	125.9	1.58	80.786		
500.0	500.0	502.0	502.0	1.0	1.0	169.12	-125.2	24.1	127.5	125.4	2.03	62.873		
600.0	600.0	602.0	602.0	1.2	1.2	169.12	-125.2	24.1	127.5	125.0	2.48	51.463 CC, ES		
700.0	700.0	702.0	702.0	1.5	1.5	146.62	-125.2	24.1	128.9	126.0	2.93	44.052		
800.0	799.8	801.8	801.8	1.7	1.7	147.81	-125.2	24.1	133.3	129.9	3.38	39.482		
900.0	899.5	901.5	901.5	1.9	1.9	149.62	-125.2	24.1	140.8	137.0	3.83	36.769		
1,000.0	998.7	1,000.7	1,000.7	2.2	2.1	151.85	-125.2	24.1	151.4	147.2	4.28	35.357		
1,100.0	1,097.5	1,099.5	1,099.5	2.5	2.4	154.28	-125.2	24.1	165.4	160.7	4.74	34.905 SF		
1,200.0	1,195.6	1,197.6	1,197.6	2.8	2.6	156.73	-125.2	24.1	182.8	177.6	5.20	35.190		
1,300.0	1,293.1	1,293.2	1,293.2	3.2	2.8	158.60	-125.7	25.5	204.2	198.5	5.64	36.227		
1,400.0	1,389.7	1,387.9	1,387.8	3.6	3.0	159.62	-127.1	29.9	229.6	223.6	6.08	37.762		
1,500.0	1,486.1	1,482.1	1,481.6	4.1	3.2	159.92	-129.5	37.2	256.8	250.2	6.56	39.138		
1,600.0	1,582.4	1,575.8	1,574.7	4.6	3.4	159.54	-132.9	47.4	284.8	277.7	7.07	40.277		
1,700.0	1,678.8	1,669.8	1,667.7	5.1	3.6	158.66	-137.3	60.5	313.6	306.0	7.62	41.185		
1,800.0	1,775.2	1,764.2	1,760.9	5.6	3.9	157.66	-142.1	75.2	343.0	334.8	8.19	41.855		
1,900.0	1,871.6	1,859.7	1,855.0	6.1	4.2	156.81	-147.0	90.0	372.4	363.6	8.79	42.352		
2,000.0	1,968.0	1,955.1	1,949.2	6.6	4.4	156.09	-151.9	104.7	401.9	392.5	9.41	42.718		
2,100.0	2,064.3	2,050.5	2,043.3	7.1	4.7	155.46	-156.8	119.5	431.5	421.4	10.04	42.985		
2,200.0	2,160.7	2,146.0	2,137.5	7.6	5.1	154.92	-161.7	134.3	461.1	450.4	10.68	43.183		
2,300.0	2,257.1	2,241.4	2,231.6	8.2	5.4	154.44	-166.6	149.1	490.7	479.4	11.33	43.319		

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design		Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)											Offset Site Error:		0.0 ft	
Survey Program: 0-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)	Minimum Separation (ft)	Separation Factor				
0.0	0.0	2.0	2.0	0.0	0.0	158.91	-125.4	48.4	134.4	134.4	0.00	N/A				
100.0	100.0	102.0	102.0	0.1	0.1	158.91	-125.4	48.4	134.4	134.2	0.23	586.246				
200.0	200.0	202.0	202.0	0.3	0.3	158.91	-125.4	48.4	134.4	133.7	0.68	198.003				
300.0	300.0	302.0	302.0	0.6	0.6	158.91	-125.4	48.4	134.4	133.3	1.13	119.118				
400.0	400.0	402.0	402.0	0.8	0.8	158.91	-125.4	48.4	134.4	132.8	1.58	85.181				
500.0	500.0	502.0	502.0	1.0	1.0	158.91	-125.4	48.4	134.4	132.4	2.03	66.294				
600.0	600.0	602.0	602.0	1.2	1.2	158.91	-125.4	48.4	134.4	131.9	2.48	54.262	CC, ES			
700.0	700.0	702.0	702.0	1.5	1.5	136.49	-125.4	48.4	135.7	132.7	2.93	46.361				
800.0	799.8	801.8	801.8	1.7	1.7	137.91	-125.4	48.4	139.5	136.1	3.38	41.317				
900.0	899.5	901.5	901.5	1.9	1.9	140.12	-125.4	48.4	146.1	142.3	3.83	38.141				
1,000.0	998.7	1,000.0	1,000.0	2.2	2.1	142.85	-125.4	48.4	155.7	151.4	4.29	36.301				
1,100.0	1,097.5	1,094.6	1,094.6	2.5	2.3	145.50	-126.6	49.4	169.9	165.1	4.73	35.944	SF			
1,200.0	1,195.6	1,187.2	1,187.1	2.8	2.5	147.69	-130.1	52.3	190.1	184.9	5.16	36.832				
1,300.0	1,293.1	1,278.1	1,277.7	3.2	2.7	149.36	-135.7	57.1	216.1	210.5	5.61	38.511				
1,400.0	1,389.7	1,366.9	1,365.9	3.6	2.9	150.64	-143.3	63.6	247.6	241.5	6.08	40.704				
1,500.0	1,486.1	1,454.1	1,452.2	4.1	3.1	151.56	-152.7	71.7	282.3	275.7	6.58	42.903				
1,600.0	1,582.4	1,540.4	1,537.2	4.6	3.3	151.97	-164.1	81.3	319.3	312.2	7.10	44.977				
1,700.0	1,678.8	1,632.9	1,628.1	5.1	3.6	152.21	-177.1	92.4	357.2	349.6	7.64	46.779				
1,800.0	1,775.2	1,725.4	1,719.0	5.6	3.9	152.40	-190.1	103.5	395.2	387.0	8.19	48.278				
1,900.0	1,871.6	1,817.9	1,810.0	6.1	4.2	152.56	-203.1	114.6	433.1	424.4	8.75	49.522				
2,000.0	1,968.0	1,910.4	1,900.9	6.6	4.6	152.69	-216.1	125.7	471.1	461.8	9.32	50.554				

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Greeley-Rothe Pad Sec.1-T5N-R67W - Hertzke N #1-11 (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7304-MWD												<b>Offset Well Error:</b>	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)	Minimum Separation (ft)	Separation Factor	Warning
10,200.0	7,282.0	7,287.0	7,287.0	80.0	8.2	-90.00	1,139.3	-2,743.6	496.5	409.8	86.71	5.726	
10,300.0	7,282.0	7,287.0	7,287.0	82.6	8.2	-90.00	1,139.3	-2,743.6	431.6	342.2	89.40	4.828	
10,400.0	7,282.0	7,287.0	7,287.0	85.3	8.2	-90.00	1,139.3	-2,743.6	382.2	290.1	92.10	4.150	
10,500.0	7,282.0	7,287.0	7,287.0	88.0	8.2	-90.00	1,139.3	-2,743.6	354.8	259.9	94.81	3.742	
10,551.1	7,282.0	7,287.0	7,287.0	89.3	8.2	-90.00	1,139.3	-2,743.6	351.0	254.9	96.20	3.649	CC, ES
10,600.0	7,282.0	7,287.0	7,287.0	90.6	8.2	-90.00	1,139.3	-2,743.6	354.4	256.9	97.52	3.634	SF
10,700.0	7,282.0	7,287.0	7,287.0	93.3	8.2	-90.00	1,139.3	-2,743.6	381.3	281.1	100.24	3.804	
10,800.0	7,282.0	7,287.0	7,287.0	96.0	8.2	-90.00	1,139.3	-2,743.6	430.3	327.4	102.96	4.179	
10,900.0	7,282.0	7,287.0	7,287.0	98.7	8.2	-90.00	1,139.3	-2,743.6	494.9	389.2	105.69	4.683	

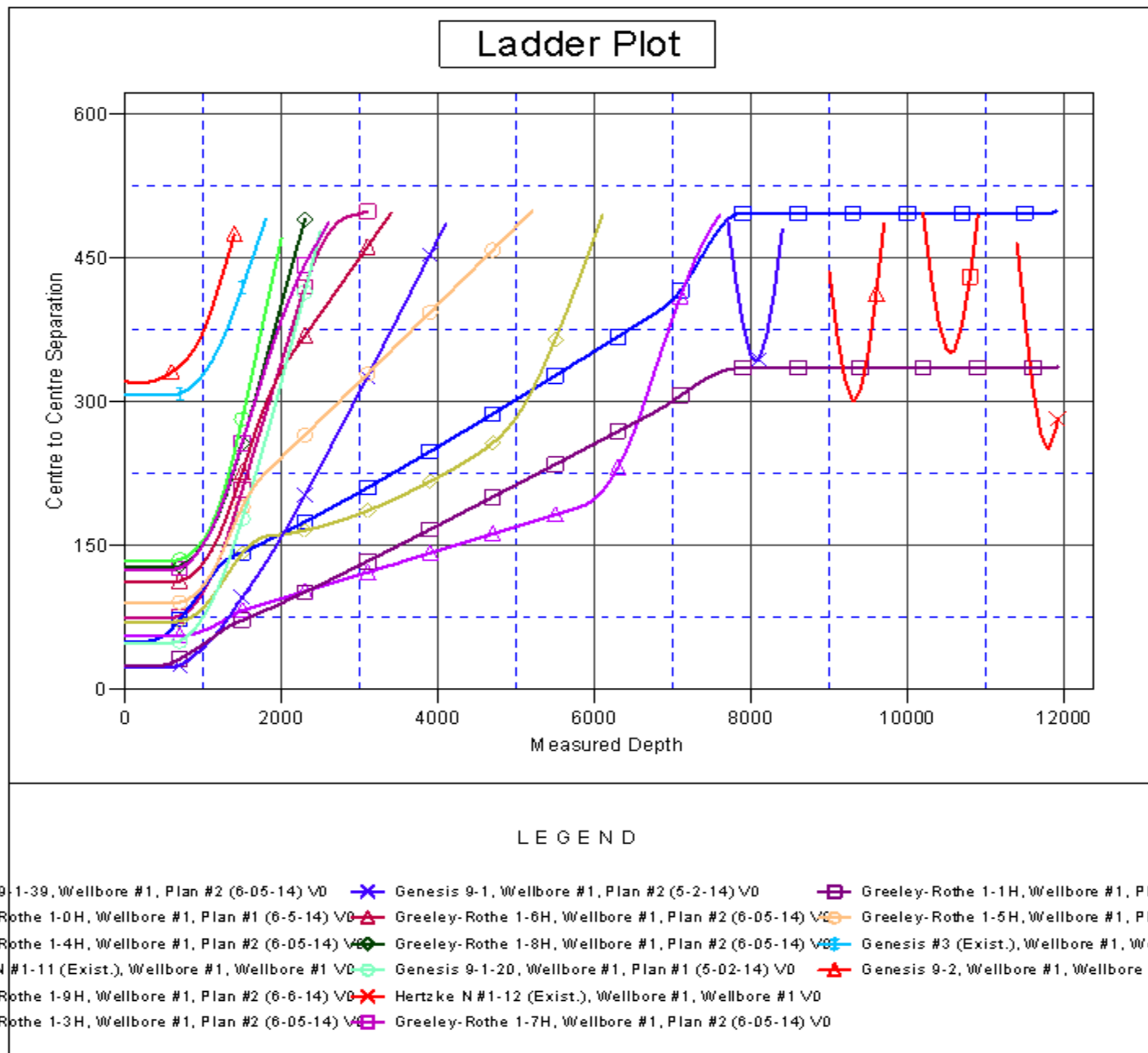


<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Greeley-Rothe Pad Sec.1-T5N-R67W - Hertzke N #1-12 (Exist.) - Wellbore #1 - Wellbore #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 7329-MWD												<b>Offset Well Error:</b>	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)	Minimum Separation (ft)	Separation Factor	Warning
11,400.0	7,282.0	7,310.0	7,310.0	112.3	8.2	-90.00	1,198.5	-3,987.2	465.5	346.1	119.41	3.899	
11,500.0	7,282.0	7,310.0	7,310.0	115.0	8.2	-90.00	1,198.5	-3,987.2	385.1	262.9	122.15	3.152	
11,600.0	7,282.0	7,310.0	7,310.0	117.7	8.2	-90.00	1,198.5	-3,987.2	316.0	191.1	124.90	2.530	
11,700.0	7,282.0	7,310.0	7,310.0	120.5	8.2	-90.00	1,198.5	-3,987.2	267.3	139.6	127.66	2.094	
11,792.1	7,282.0	7,310.0	7,310.0	123.0	8.2	-90.00	1,198.5	-3,987.2	250.9	120.7	130.19	1.927 CC	
11,800.0	7,282.0	7,310.0	7,310.0	123.2	8.2	-90.00	1,198.5	-3,987.2	251.0	120.6	130.41	1.925 ES, SF	
11,900.0	7,282.0	7,310.0	7,310.0	125.9	8.2	-90.00	1,198.5	-3,987.2	273.1	139.9	133.17	2.051	
11,921.8	7,282.0	7,310.0	7,310.0	126.4	8.2	-90.00	1,198.5	-3,987.2	282.4	148.8	133.55	2.115	

<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4890.0ft (Original Well Elev) Coordinates are relative to: Greeley-Rothe 1-2H  
 Offset Depths are relative to Offset Datum  
 Coordinate System is US State Plane 1983, Colorado Northern Zone  
 Central Meridian is -105.500000 °  
 Grid Convergence at Surface is: 0.43°



<b>Company:</b>	KP KAUFFMAN	<b>Local Co-ordinate Reference:</b>	Well Greeley-Rothe 1-2H
<b>Project:</b>	SEC.1-T5N-R67W	<b>TVD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Reference Site:</b>	Greeley-Rothe Pad Sec.1-T5N-R67W	<b>MD Reference:</b>	WELL @ 4890.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Greeley-Rothe 1-2H	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #2 (6-05-14)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4890.0ft (Original Well Elev) Coordinates are relative to: Greeley-Rothe 1-2H  
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