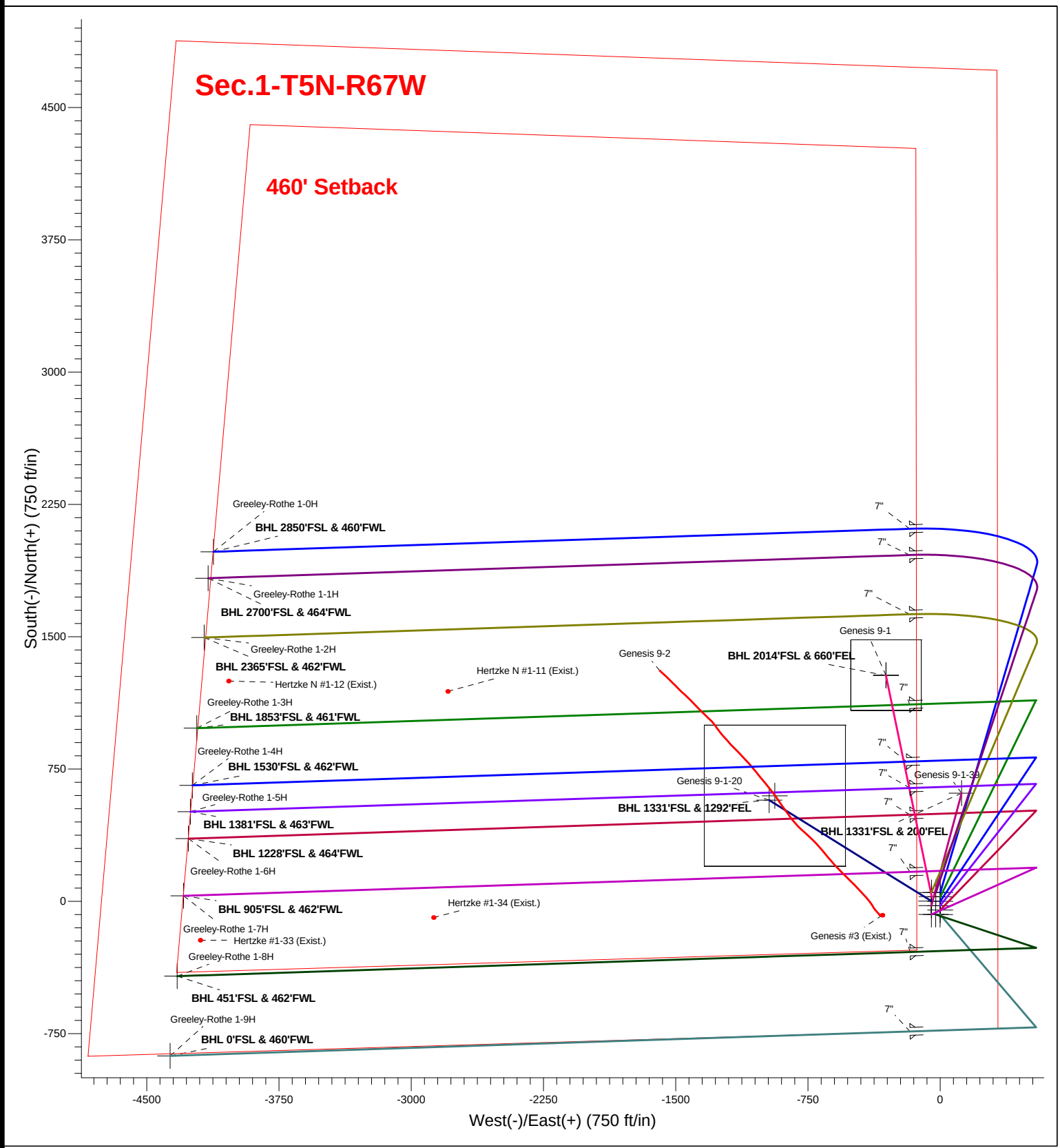
ENSIGN Directional

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	Latittude	Longitude	Slot
0.0	0.0	1397831.58	3185528.81	40.423536	-104.833615	

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



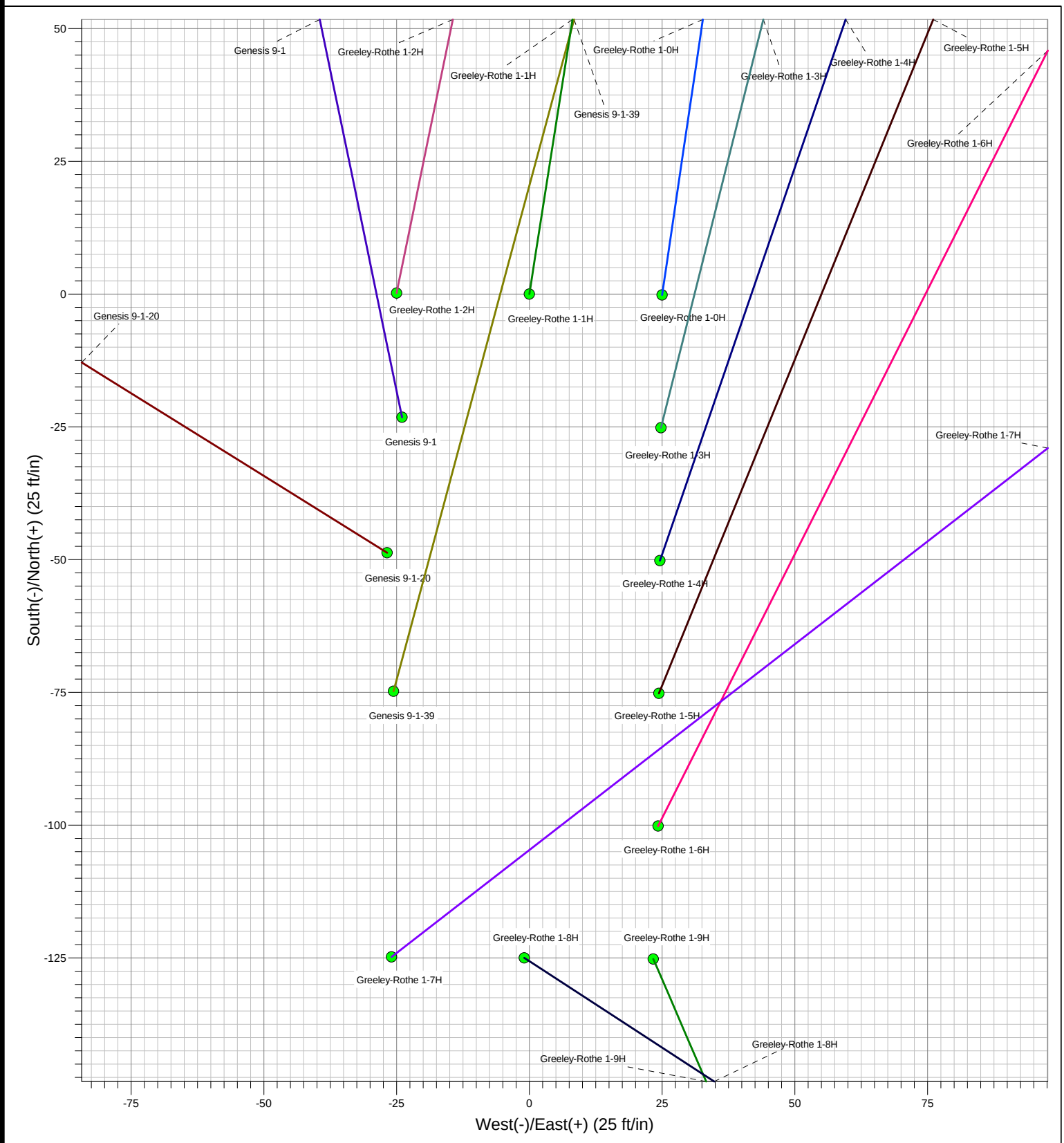
ENSIGN Directional

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	Latittude	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: **Greeley-Rothe 1-8H**

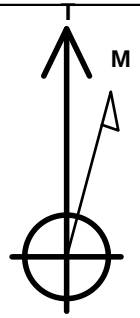
Surface Location: Greeley-Rothe Pad Sec.1-T5N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4877.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1397756.60	3185503.81	40.423331	-104.833707	

RKB - 15' WELL @ 4892.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 649'FSL & 354'FEL	1.0	0.0	0.0	Point
BHL 451'FSL & 462'FWL	7282.0	-349.6	-4302.5	Point



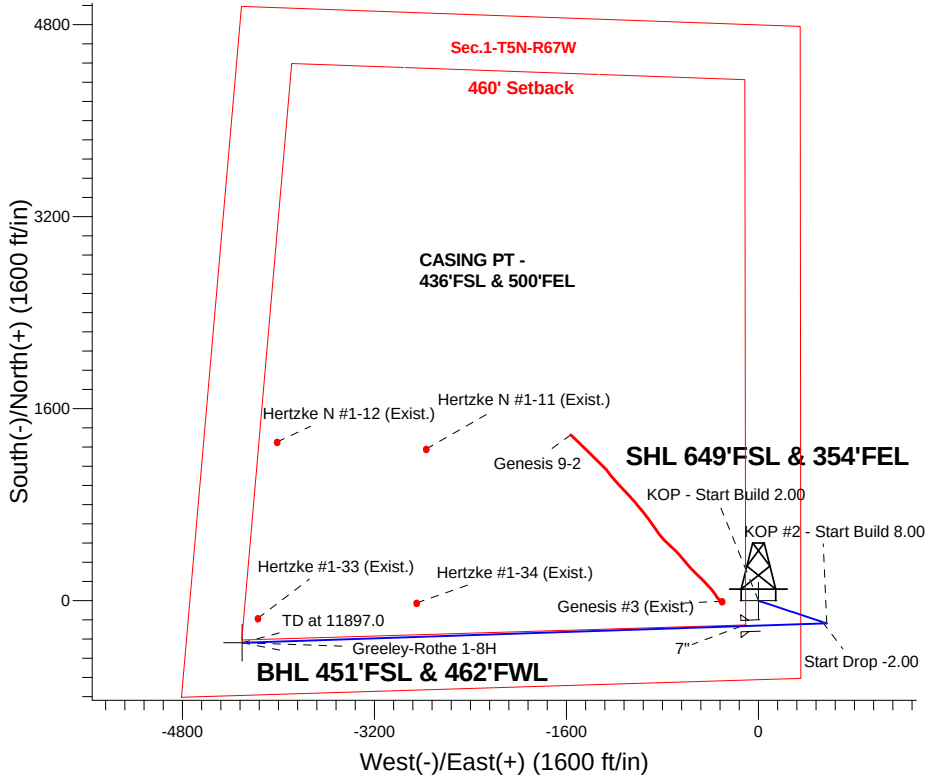
Azimuths to True North
Magnetic North: 8.50°

Magnetic Field
Strength: 52822.3snT
Dip Angle: 66.96°
Date: 6/6/2014
Model: IGRF2010

Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-8H
Plan #2 (6-05-14)
15:39, June 06 2014

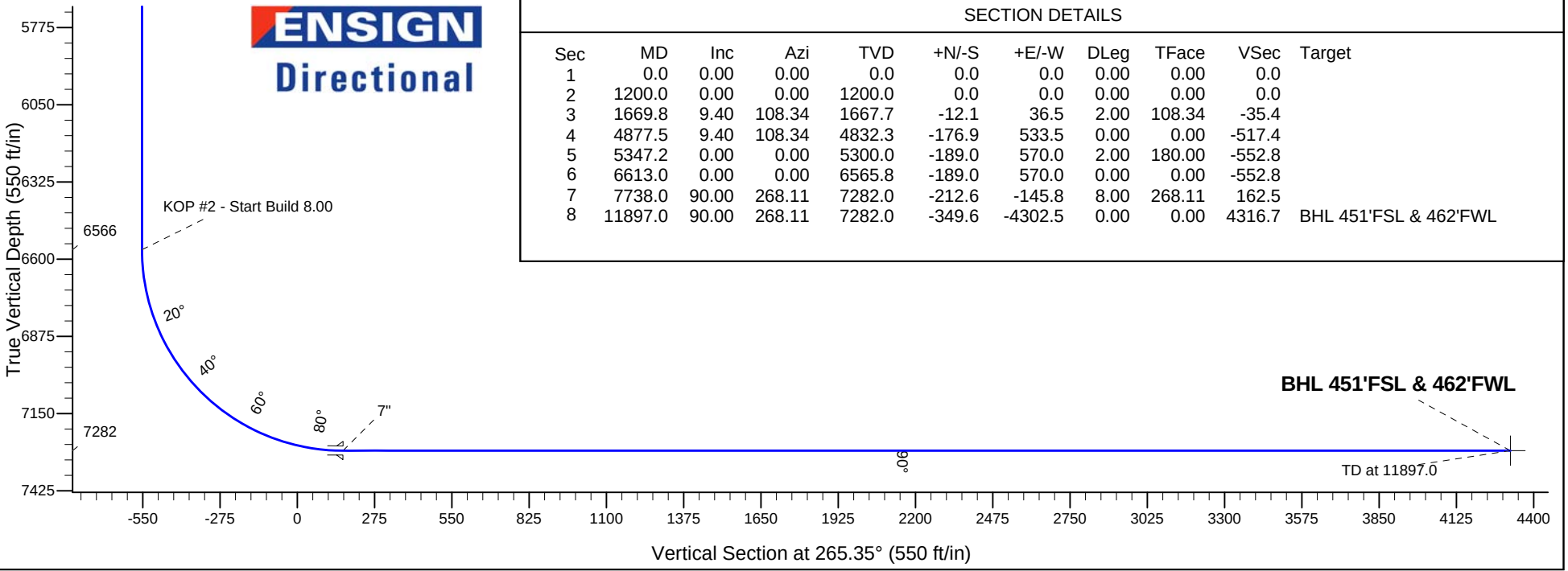
ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP - Start Build 2.00
4832.3	4877.5	Start Drop -2.00
6565.8	6613.0	KOP #2 - Start Build 8.00
7282.0	11897.0	TD at 11897.0



SECTION DETAILS

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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1669.8	9.40	108.34	1667.7	-12.1	36.5	2.00	108.34	-35.4	
4	4877.5	9.40	108.34	4832.3	-176.9	533.5	0.00	0.00	-517.4	
5	5347.2	0.00	0.00	5300.0	-189.0	570.0	2.00	180.00	-552.8	
6	6613.0	0.00	0.00	6565.8	-189.0	570.0	0.00	0.00	-552.8	
7	7738.0	90.00	268.11	7282.0	-212.6	-145.8	8.00	268.11	162.5	
8	11897.0	90.00	268.11	7282.0	-349.6	-4302.5	0.00	0.00	4316.7	BHL 451'FSL & 462'FWL



KP KAUFFMAN

SEC.1-T5N-R67W
Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-8H

Wellbore #1

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

Standard Planning Report

06 June, 2014

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (6-05-14)		

Project SEC.1-T5N-R67W, Weld County, CO

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site 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 1-8H

Well Position	**+N/-S**	-123.7 ft	**Northing:**	1,397,756.60 ft	**Latitude:**	40.423331
	+E/-W	-27.1 ft	**Easting:**	3,185,503.81 ft	**Longitude:**	-104.833707
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,877.0 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/6/2014	8.50	66.96	52,822

Design Plan #2 (6-05-14)

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	265.35

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,669.8	9.40	108.34	1,667.7	-12.1	36.5	2.00	2.00	0.00	108.34	
4,877.5	9.40	108.34	4,832.3	-176.9	533.5	0.00	0.00	0.00	0.00	
5,347.2	0.00	0.00	5,300.0	-189.0	570.0	2.00	-2.00	0.00	180.00	
6,613.0	0.00	0.00	6,565.8	-189.0	570.0	0.00	0.00	0.00	0.00	
7,738.0	90.00	268.11	7,282.0	-212.6	-145.8	8.00	8.00	0.00	268.11	
11,897.0	90.00	268.11	7,282.0	-349.6	-4,302.5	0.00	0.00	0.00	0.00	BHL 451'FSL & 462

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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
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
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
1,300.0	2.00	108.34	1,300.0	-0.5	1.7	-1.6	2.00	2.00	0.00
1,400.0	4.00	108.34	1,399.8	-2.2	6.6	-6.4	2.00	2.00	0.00
1,500.0	6.00	108.34	1,499.5	-4.9	14.9	-14.4	2.00	2.00	0.00
1,600.0	8.00	108.34	1,598.7	-8.8	26.5	-25.7	2.00	2.00	0.00
1,669.8	9.40	108.34	1,667.7	-12.1	36.5	-35.4	2.00	2.00	0.00
1,700.0	9.40	108.34	1,697.5	-13.6	41.2	-39.9	0.00	0.00	0.00
1,800.0	9.40	108.34	1,796.2	-18.8	56.7	-54.9	0.00	0.00	0.00
1,900.0	9.40	108.34	1,894.8	-23.9	72.2	-70.0	0.00	0.00	0.00
2,000.0	9.40	108.34	1,993.5	-29.1	87.6	-85.0	0.00	0.00	0.00
2,100.0	9.40	108.34	2,092.1	-34.2	103.1	-100.0	0.00	0.00	0.00
2,200.0	9.40	108.34	2,190.8	-39.3	118.6	-115.1	0.00	0.00	0.00
2,300.0	9.40	108.34	2,289.4	-44.5	134.1	-130.1	0.00	0.00	0.00
2,400.0	9.40	108.34	2,388.1	-49.6	149.6	-145.1	0.00	0.00	0.00
2,500.0	9.40	108.34	2,486.8	-54.8	165.1	-160.1	0.00	0.00	0.00
2,600.0	9.40	108.34	2,585.4	-59.9	180.6	-175.2	0.00	0.00	0.00
2,700.0	9.40	108.34	2,684.1	-65.0	196.1	-190.2	0.00	0.00	0.00
2,800.0	9.40	108.34	2,782.7	-70.2	211.6	-205.2	0.00	0.00	0.00
2,900.0	9.40	108.34	2,881.4	-75.3	227.1	-220.3	0.00	0.00	0.00
3,000.0	9.40	108.34	2,980.1	-80.4	242.6	-235.3	0.00	0.00	0.00
3,100.0	9.40	108.34	3,078.7	-85.6	258.1	-250.3	0.00	0.00	0.00
3,200.0	9.40	108.34	3,177.4	-90.7	273.6	-265.3	0.00	0.00	0.00
3,300.0	9.40	108.34	3,276.0	-95.9	289.1	-280.4	0.00	0.00	0.00
3,400.0	9.40	108.34	3,374.7	-101.0	304.6	-295.4	0.00	0.00	0.00
3,500.0	9.40	108.34	3,473.3	-106.1	320.1	-310.4	0.00	0.00	0.00
3,600.0	9.40	108.34	3,572.0	-111.3	335.6	-325.5	0.00	0.00	0.00
3,700.0	9.40	108.34	3,670.7	-116.4	351.1	-340.5	0.00	0.00	0.00
3,800.0	9.40	108.34	3,769.3	-121.5	366.6	-355.5	0.00	0.00	0.00
3,900.0	9.40	108.34	3,868.0	-126.7	382.1	-370.5	0.00	0.00	0.00
4,000.0	9.40	108.34	3,966.6	-131.8	397.6	-385.6	0.00	0.00	0.00
4,100.0	9.40	108.34	4,065.3	-137.0	413.1	-400.6	0.00	0.00	0.00
4,200.0	9.40	108.34	4,164.0	-142.1	428.5	-415.6	0.00	0.00	0.00
4,300.0	9.40	108.34	4,262.6	-147.2	444.0	-430.7	0.00	0.00	0.00
4,400.0	9.40	108.34	4,361.3	-152.4	459.5	-445.7	0.00	0.00	0.00
4,500.0	9.40	108.34	4,459.9	-157.5	475.0	-460.7	0.00	0.00	0.00
4,600.0	9.40	108.34	4,558.6	-162.6	490.5	-475.7	0.00	0.00	0.00
4,700.0	9.40	108.34	4,657.2	-167.8	506.0	-490.8	0.00	0.00	0.00
4,800.0	9.40	108.34	4,755.9	-172.9	521.5	-505.8	0.00	0.00	0.00
4,877.5	9.40	108.34	4,832.4	-176.9	533.5	-517.4	0.00	0.00	0.00
Start Drop -2.00									
4,900.0	8.94	108.34	4,854.6	-178.0	536.9	-520.7	2.00	-2.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	6.94	108.34	4,953.6	-182.4	550.0	-533.5	2.00	-2.00	0.00
5,100.0	4.94	108.34	5,053.1	-185.6	559.9	-543.0	2.00	-2.00	0.00
5,200.0	2.94	108.34	5,152.8	-187.8	566.4	-549.3	2.00	-2.00	0.00
5,300.0	0.94	108.34	5,252.8	-188.9	569.6	-552.5	2.00	-2.00	0.00
5,347.2	0.00	0.00	5,300.0	-189.0	570.0	-552.8	2.00	-2.00	0.00
5,400.0	0.00	0.00	5,352.8	-189.0	570.0	-552.8	0.00	0.00	0.00
5,500.0	0.00	0.00	5,452.8	-189.0	570.0	-552.8	0.00	0.00	0.00
5,600.0	0.00	0.00	5,552.8	-189.0	570.0	-552.8	0.00	0.00	0.00
5,700.0	0.00	0.00	5,652.8	-189.0	570.0	-552.8	0.00	0.00	0.00
5,800.0	0.00	0.00	5,752.8	-189.0	570.0	-552.8	0.00	0.00	0.00
5,900.0	0.00	0.00	5,852.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,000.0	0.00	0.00	5,952.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,100.0	0.00	0.00	6,052.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,200.0	0.00	0.00	6,152.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,300.0	0.00	0.00	6,252.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,400.0	0.00	0.00	6,352.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,500.0	0.00	0.00	6,452.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,600.0	0.00	0.00	6,552.8	-189.0	570.0	-552.8	0.00	0.00	0.00
6,613.0	0.00	0.00	6,565.8	-189.0	570.0	-552.8	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,700.0	6.96	268.11	6,652.5	-189.2	564.7	-547.6	8.00	8.00	0.00
6,800.0	14.96	268.11	6,750.6	-189.8	545.7	-528.6	8.00	8.00	0.00
6,900.0	22.96	268.11	6,845.1	-190.9	513.3	-496.2	8.00	8.00	0.00
7,000.0	30.96	268.11	6,934.2	-192.4	468.0	-450.9	8.00	8.00	0.00
7,100.0	38.96	268.11	7,016.1	-194.2	410.8	-393.7	8.00	8.00	0.00
7,200.0	46.96	268.11	7,089.2	-196.5	342.8	-325.7	8.00	8.00	0.00
7,300.0	54.96	268.11	7,152.2	-199.0	265.2	-248.2	8.00	8.00	0.00
7,400.0	62.96	268.11	7,203.7	-201.9	179.6	-162.7	8.00	8.00	0.00
7,500.0	70.96	268.11	7,242.8	-204.9	87.7	-70.9	8.00	8.00	0.00
7,600.0	78.96	268.11	7,268.7	-208.1	-8.7	25.5	8.00	8.00	0.00
7,700.0	86.96	268.11	7,281.0	-211.3	-107.8	124.6	8.00	8.00	0.00
7,738.0	90.00	268.11	7,282.0	-212.6	-145.8	162.5	8.00	8.00	0.00
7"									
7,800.0	90.00	268.11	7,282.0	-214.6	-207.7	224.4	0.01	0.01	0.00
7,900.0	90.00	268.11	7,282.0	-217.9	-307.7	324.3	0.00	0.00	0.00
8,000.0	90.00	268.11	7,282.0	-221.2	-407.6	424.2	0.00	0.00	0.00
8,100.0	90.00	268.11	7,282.0	-224.5	-507.6	524.1	0.00	0.00	0.00
8,200.0	90.00	268.11	7,282.0	-227.8	-607.5	624.0	0.00	0.00	0.00
8,300.0	90.00	268.11	7,282.0	-231.1	-707.5	723.9	0.00	0.00	0.00
8,400.0	90.00	268.11	7,282.0	-234.4	-807.4	823.7	0.00	0.00	0.00
8,500.0	90.00	268.11	7,282.0	-237.7	-907.4	923.6	0.00	0.00	0.00
8,600.0	90.00	268.11	7,282.0	-241.0	-1,007.3	1,023.5	0.00	0.00	0.00
8,700.0	90.00	268.11	7,282.0	-244.3	-1,107.2	1,123.4	0.00	0.00	0.00
8,800.0	90.00	268.11	7,282.0	-247.6	-1,207.2	1,223.3	0.00	0.00	0.00
8,900.0	90.00	268.11	7,282.0	-250.9	-1,307.1	1,323.2	0.00	0.00	0.00
9,000.0	90.00	268.11	7,282.0	-254.2	-1,407.1	1,423.0	0.00	0.00	0.00
9,100.0	90.00	268.11	7,282.0	-257.5	-1,507.0	1,522.9	0.00	0.00	0.00
9,200.0	90.00	268.11	7,282.0	-260.7	-1,607.0	1,622.8	0.00	0.00	0.00
9,300.0	90.00	268.11	7,282.0	-264.0	-1,706.9	1,722.7	0.00	0.00	0.00
9,400.0	90.00	268.11	7,282.0	-267.3	-1,806.9	1,822.6	0.00	0.00	0.00
9,500.0	90.00	268.11	7,282.0	-270.6	-1,906.8	1,922.5	0.00	0.00	0.00
9,600.0	90.00	268.11	7,282.0	-273.9	-2,006.8	2,022.4	0.00	0.00	0.00
9,700.0	90.00	268.11	7,282.0	-277.2	-2,106.7	2,122.2	0.00	0.00	0.00
9,800.0	90.00	268.11	7,282.0	-280.5	-2,206.7	2,222.1	0.00	0.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
9,900.0	90.00	268.11	7,282.0	-283.8	-2,306.6	2,322.0	0.00	0.00	0.00
10,000.0	90.00	268.11	7,282.0	-287.1	-2,406.5	2,421.9	0.00	0.00	0.00
10,100.0	90.00	268.11	7,282.0	-290.4	-2,506.5	2,521.8	0.00	0.00	0.00
10,200.0	90.00	268.11	7,282.0	-293.7	-2,606.4	2,621.7	0.00	0.00	0.00
10,300.0	90.00	268.11	7,282.0	-297.0	-2,706.4	2,721.5	0.00	0.00	0.00
10,400.0	90.00	268.11	7,282.0	-300.3	-2,806.3	2,821.4	0.00	0.00	0.00
10,500.0	90.00	268.11	7,282.0	-303.6	-2,906.3	2,921.3	0.00	0.00	0.00
10,600.0	90.00	268.11	7,282.0	-306.9	-3,006.2	3,021.2	0.00	0.00	0.00
10,700.0	90.00	268.11	7,282.0	-310.2	-3,106.2	3,121.1	0.00	0.00	0.00
10,800.0	90.00	268.11	7,282.0	-313.4	-3,206.1	3,221.0	0.00	0.00	0.00
10,900.0	90.00	268.11	7,282.0	-316.7	-3,306.1	3,320.8	0.00	0.00	0.00
11,000.0	90.00	268.11	7,282.0	-320.0	-3,406.0	3,420.7	0.00	0.00	0.00
11,100.0	90.00	268.11	7,282.0	-323.3	-3,505.9	3,520.6	0.00	0.00	0.00
11,200.0	90.00	268.11	7,282.0	-326.6	-3,605.9	3,620.5	0.00	0.00	0.00
11,300.0	90.00	268.11	7,282.0	-329.9	-3,705.8	3,720.4	0.00	0.00	0.00
11,400.0	90.00	268.11	7,282.0	-333.2	-3,805.8	3,820.3	0.00	0.00	0.00
11,500.0	90.00	268.11	7,282.0	-336.5	-3,905.7	3,920.2	0.00	0.00	0.00
11,600.0	90.00	268.11	7,282.0	-339.8	-4,005.7	4,020.0	0.00	0.00	0.00
11,700.0	90.00	268.11	7,282.0	-343.1	-4,105.6	4,119.9	0.00	0.00	0.00
11,800.0	90.00	268.11	7,282.0	-346.4	-4,205.6	4,219.8	0.00	0.00	0.00
11,897.0	90.00	268.11	7,282.0	-349.6	-4,302.5	4,316.7	0.00	0.00	0.00

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,738.0	7,282.0	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,200.0	1,200.0	0.0	0.0	KOP - Start Build 2.00
4,877.5	4,832.3	-12.1	36.5	Start Drop -2.00
6,613.0	6,565.8	-140.6	424.0	KOP #2 - Start Build 8.00
11,897.0	7,282.0	-176.9	533.5	TD at 11897.0

ENSIGN Directional

KP KAUFFMAN

SEC.1-T5N-R67W
Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-8H

Wellbore #1
Plan #2 (6-05-14)

Anticollision Report

06 June, 2014

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Reference Plan #2 (6-05-14)

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	**Error Surface:**	Elliptical Conic

Warning Levels Evaluated at: 2.00 **Sigma**

Survey Tool Program **Date** 6/6/2014

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	11,897.0	Plan #2 (6-05-14) (Wellbore #1)	MWD	MWD - Standard

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Genesis 9-1 Pad Sec.1-T5N-R67W						
Genesis #3 (Exist.) - Wellbore #1 - Wellbore #1	7,888.4	7,285.0	213.8	43.2	1.253	Level 3, CC, ES, SF
Genesis 9-2 - Wellbore #1 - Wellbore #1	153.7	154.7	317.5	317.0	663.430	CC
Genesis 9-2 - Wellbore #1 - Wellbore #1	200.0	198.7	317.7	317.0	469.896	ES
Genesis 9-2 - Wellbore #1 - Wellbore #1	1,400.0	1,304.9	481.4	474.9	74.329	SF
Greeley-Rothe Pad Sec.1-T5N-R67W						
Genesis 9-1 - Wellbore #1 - Plan #2 (5-2-14)	800.0	799.0	104.4	101.0	30.975	CC, ES
Genesis 9-1 - Wellbore #1 - Plan #2 (5-2-14)	1,200.0	1,182.7	131.0	125.9	25.395	SF
Genesis 9-1-20 - Wellbore #1 - Plan #1 (5-02-14)	1,000.0	999.0	80.5	76.3	18.866	CC, ES
Genesis 9-1-20 - Wellbore #1 - Plan #1 (5-02-14)	1,200.0	1,194.5	85.9	80.7	16.693	SF
Genesis 9-1-39 - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,199.0	55.9	50.7	10.820	CC, ES
Genesis 9-1-39 - Wellbore #1 - Plan #2 (6-05-14)	1,400.0	1,398.8	61.0	55.0	10.145	SF
Greeley-Rothe 1-0H - Wellbore #1 - Plan #1 (6-5-14)	200.0	198.0	127.5	126.8	190.329	CC, ES
Greeley-Rothe 1-0H - Wellbore #1 - Plan #1 (6-5-14)	1,200.0	1,125.2	289.2	283.1	47.451	SF
Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)	400.0	398.0	125.0	123.4	79.675	CC, ES
Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,148.7	227.1	221.5	41.221	SF
Greeley-Rothe 1-2H - Wellbore #1 - Plan #2 (6-05-14)	600.0	598.0	127.5	125.0	51.650	CC, ES
Greeley-Rothe 1-2H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,169.1	180.1	174.9	34.532	SF
Greeley-Rothe 1-3H - Wellbore #1 - Plan #2 (6-05-14)	800.0	798.0	103.1	99.7	30.618	CC, ES
Greeley-Rothe 1-3H - Wellbore #1 - Plan #2 (6-05-14)	1,100.0	1,086.9	117.8	113.1	25.103	SF
Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)	1,000.0	999.0	79.0	74.8	18.518	CC, ES
Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,193.5	85.6	80.4	16.618	SF
Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,199.0	55.9	50.7	10.816	CC, ES
Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)	1,300.0	1,297.1	57.3	51.7	10.244	SF
Greeley-Rothe 1-6H - Wellbore #1 - Plan #2 (6-05-14)	1,503.9	1,502.4	31.5	25.0	4.864	CC, ES, SF
Greeley-Rothe 1-7H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,199.0	25.0	19.8	4.839	CC, ES
Greeley-Rothe 1-7H - Wellbore #1 - Plan #2 (6-05-14)	11,897.0	11,876.8	456.8	197.1	1.759	SF
Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)	1,000.0	1,000.0	24.3	20.0	5.692	CC, ES
Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)	11,897.0	11,909.4	450.2	189.8	1.729	SF
Hertzke #1-33 (Exist.) - Wellbore #1 - Wellbore #1	11,759.4	7,310.0	199.6	64.8	1.481	Level 3, CC, ES, SF
Hertzke #1-34 (Exist.) - Wellbore #1 - Wellbore #1	10,433.1	7,287.0	284.3	186.2	2.897	CC, ES, SF
Hertzke N #1-11 (Exist.) - Wellbore #1 - Wellbore #1						Out of range
Hertzke N #1-12 (Exist.) - Wellbore #1 - Wellbore #1						Out of range

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	3.0	3.0	0.0	0.1	-90.73	-3.9	-303.1	303.1	303.1	0.06	5,035.448	
100.0	100.0	103.0	103.0	0.1	2.1	-90.73	-3.9	-303.1	303.1	301.0	2.17	139.527	
200.0	200.0	203.0	203.0	0.3	4.1	-90.73	-3.9	-303.1	303.1	298.7	4.40	68.936	
300.0	300.0	303.0	303.0	0.6	6.1	-90.73	-3.9	-303.1	303.1	296.5	6.62	45.776	
400.0	400.0	403.0	403.0	0.8	8.1	-90.73	-3.9	-303.1	303.1	294.3	8.85	34.264	
500.0	500.0	503.0	503.0	1.0	10.1	-90.73	-3.9	-303.1	303.1	292.1	11.07	27.379	
600.0	600.0	603.0	603.0	1.2	12.1	-90.73	-3.9	-303.1	303.1	289.8	13.30	22.798	
700.0	700.0	703.0	703.0	1.5	14.1	-90.73	-3.9	-303.1	303.1	287.6	15.52	19.530	
800.0	800.0	803.0	803.0	1.7	16.1	-90.73	-3.9	-303.1	303.1	285.4	17.75	17.082	
900.0	900.0	903.0	903.0	1.9	18.1	-90.73	-3.9	-303.1	303.1	283.2	19.97	15.179	
1,000.0	1,000.0	1,003.0	1,003.0	2.1	20.1	-90.73	-3.9	-303.1	303.1	280.9	22.20	13.657	
1,100.0	1,100.0	1,103.0	1,103.0	2.4	22.1	-90.73	-3.9	-303.1	303.1	278.7	24.42	12.413	
1,200.0	1,200.0	1,203.0	1,203.0	2.6	24.1	-90.73	-3.9	-303.1	303.1	276.5	26.64	11.377	
1,300.0	1,300.0	1,303.0	1,303.0	2.8	26.1	161.02	-3.9	-303.1	304.8	275.9	28.84	10.570	
1,400.0	1,399.8	1,402.8	1,402.8	3.0	28.1	161.31	-3.9	-303.1	309.7	278.8	30.97	10.000	
1,500.0	1,499.5	1,502.5	1,502.5	3.2	30.0	161.76	-3.9	-303.1	318.0	284.9	33.07	9.616	
1,600.0	1,598.7	1,601.7	1,601.7	3.4	32.0	162.35	-3.9	-303.1	329.6	294.5	35.11	9.387	
1,700.0	1,697.5	1,700.5	1,700.5	3.7	34.0	163.07	-3.9	-303.1	344.4	307.3	37.16	9.268	
1,800.0	1,796.2	1,799.2	1,799.2	4.0	36.0	163.83	-3.9	-303.1	360.1	320.8	39.32	9.157	
1,900.0	1,894.8	1,897.8	1,897.8	4.3	38.0	164.52	-3.9	-303.1	375.8	334.3	41.49	9.057	
2,000.0	1,993.5	1,996.5	1,996.5	4.6	39.9	165.16	-3.9	-303.1	391.6	347.9	43.67	8.967	
2,100.0	2,092.1	2,095.1	2,095.1	4.9	41.9	165.74	-3.9	-303.1	407.4	361.5	45.84	8.887	
2,200.0	2,190.8	2,193.8	2,193.8	5.2	43.9	166.29	-3.9	-303.1	423.2	375.2	48.02	8.813	
2,300.0	2,289.4	2,292.4	2,292.4	5.6	45.8	166.79	-3.9	-303.1	439.1	388.9	50.20	8.747	
2,400.0	2,388.1	2,391.1	2,391.1	5.9	47.8	167.26	-3.9	-303.1	455.0	402.7	52.39	8.686	
2,500.0	2,486.8	2,489.8	2,489.8	6.3	49.8	167.70	-3.9	-303.1	471.0	416.4	54.57	8.631	
2,600.0	2,585.4	2,588.4	2,588.4	6.6	51.8	168.11	-3.9	-303.1	487.0	430.2	56.76	8.580	
7,500.0	7,242.8	7,245.8	7,245.8	19.2	144.9	59.63	-3.9	-303.1	439.5	295.5	144.02	3.052	
7,600.0	7,268.7	7,271.7	7,271.7	20.3	145.4	75.55	-3.9	-303.1	358.3	197.7	160.59	2.231	
7,700.0	7,281.0	7,284.0	7,284.0	21.7	145.7	87.32	-3.9	-303.1	284.9	117.8	167.12	1.705	
7,800.0	7,282.0	7,285.0	7,285.0	23.3	145.7	90.00	-3.9	-303.1	231.4	62.4	168.96	1.369	Level 3
7,888.4	7,282.0	7,285.0	7,285.0	24.9	145.7	90.00	-3.9	-303.1	213.8	43.2	170.57	1.253	Level 3, CC, ES, SF
7,900.0	7,282.0	7,285.0	7,285.0	25.1	145.7	90.00	-3.9	-303.1	214.1	43.3	170.79	1.254	Level 3
8,000.0	7,282.0	7,285.0	7,285.0	27.1	145.7	90.00	-3.9	-303.1	241.2	68.4	172.78	1.396	Level 3
8,100.0	7,282.0	7,285.0	7,285.0	29.2	145.7	90.00	-3.9	-303.1	300.8	125.9	174.90	1.720	
8,200.0	7,282.0	7,285.0	7,285.0	31.4	145.7	90.00	-3.9	-303.1	377.9	200.8	177.13	2.134	
8,300.0	7,282.0	7,285.0	7,285.0	33.8	145.7	90.00	-3.9	-303.1	463.8	284.4	179.45	2.585	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	-90.70	-3.9	-318.2	318.2				
100.0	100.0	102.9	102.9	0.1	0.1	-90.79	-4.4	-317.6	317.7	317.4	0.25	1,261.717	
153.7	153.7	154.7	154.7	0.2	0.2	-90.78	-4.3	-317.5	317.5	317.0	0.48	663.430	CC
200.0	200.0	198.7	198.7	0.3	0.3	-90.68	-3.8	-317.6	317.7	317.0	0.68	469.896	ES
300.0	300.0	292.2	292.1	0.6	0.5	-90.18	-1.0	-319.2	319.4	318.2	1.11	288.232	
400.0	400.0	384.4	384.2	0.8	0.8	-89.39	3.4	-322.9	323.3	321.8	1.54	209.297	
500.0	500.0	476.3	475.7	1.0	1.0	-88.27	9.9	-328.6	329.8	327.8	1.99	165.427	
600.0	600.0	572.1	570.7	1.2	1.3	-86.85	18.5	-336.4	338.3	335.9	2.46	137.675	
700.0	700.0	670.5	668.4	1.5	1.6	-85.37	27.9	-344.8	347.5	344.5	2.93	118.678	
800.0	800.0	768.1	764.7	1.7	1.9	-83.46	40.5	-353.0	357.2	353.8	3.41	104.829	
900.0	900.0	855.7	850.8	1.9	2.2	-81.42	54.6	-361.5	369.0	365.1	3.89	94.876	
1,000.0	1,000.0	940.5	933.5	2.1	2.6	-79.34	70.0	-372.0	384.5	380.1	4.39	87.682	
1,100.0	1,100.0	1,027.0	1,017.3	2.4	3.0	-77.37	86.5	-385.9	404.2	399.3	4.91	82.309	
1,200.0	1,200.0	1,114.1	1,101.1	2.6	3.5	-75.50	103.9	-401.8	426.8	421.4	5.49	77.814	
1,300.0	1,300.0	1,209.3	1,192.4	2.8	3.9	178.10	123.9	-419.6	452.4	446.4	6.01	75.247	
1,400.0	1,399.8	1,304.9	1,284.3	3.0	4.4	179.85	143.7	-437.1	481.4	474.9	6.48	74.329	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Genesis 9-1 - Wellbore #1 - Plan #2 (5-2-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-12.75	101.8	-23.0	104.4				
100.0	100.0	99.0	99.0	0.1	0.1	-12.75	101.8	-23.0	104.4	104.1	0.22	466.639	
200.0	200.0	199.0	199.0	0.3	0.3	-12.75	101.8	-23.0	104.4	103.7	0.67	155.288	
300.0	300.0	299.0	299.0	0.6	0.6	-12.75	101.8	-23.0	104.4	103.2	1.12	93.048	
400.0	400.0	399.0	399.0	0.8	0.8	-12.75	101.8	-23.0	104.4	102.8	1.57	66.425	
500.0	500.0	499.0	499.0	1.0	1.0	-12.75	101.8	-23.0	104.4	102.3	2.02	51.647	
600.0	600.0	599.0	599.0	1.2	1.2	-12.75	101.8	-23.0	104.4	101.9	2.47	42.248	
700.0	700.0	699.0	699.0	1.5	1.5	-12.75	101.8	-23.0	104.4	101.4	2.92	35.744	
800.0	800.0	799.0	799.0	1.7	1.7	-12.75	101.8	-23.0	104.4	101.0	3.37	30.975	CC, ES
900.0	900.0	895.5	895.5	1.9	1.9	-12.73	103.3	-23.3	106.0	102.2	3.81	27.823	
1,000.0	1,000.0	991.7	991.6	2.1	2.1	-12.68	108.1	-24.3	111.0	106.8	4.25	26.110	
1,100.0	1,100.0	1,087.5	1,087.0	2.4	2.3	-12.62	115.9	-25.9	119.4	114.7	4.70	25.401	
1,200.0	1,200.0	1,182.7	1,181.5	2.6	2.6	-12.54	126.8	-28.2	131.0	125.9	5.16	25.395	SF
1,300.0	1,300.0	1,276.8	1,274.7	2.8	2.8	-121.09	140.6	-31.0	146.9	141.3	5.58	26.312	
1,400.0	1,399.8	1,369.5	1,365.7	3.0	3.1	-122.06	157.0	-34.4	167.7	161.7	6.00	27.945	
1,500.0	1,499.5	1,460.2	1,454.4	3.2	3.4	-123.43	176.0	-38.3	193.7	187.2	6.43	30.115	
1,600.0	1,598.7	1,548.6	1,540.1	3.4	3.8	-124.91	197.0	-42.7	224.6	217.8	6.87	32.705	
1,700.0	1,697.5	1,636.1	1,624.3	3.7	4.2	-126.54	220.3	-47.5	260.4	253.1	7.33	35.540	
1,800.0	1,796.2	1,728.5	1,713.0	4.0	4.6	-128.32	245.7	-52.8	297.8	290.0	7.81	38.152	
1,900.0	1,894.8	1,820.9	1,801.7	4.3	5.1	-129.70	271.1	-58.0	335.4	327.1	8.30	40.404	
2,000.0	1,993.5	1,913.3	1,890.4	4.6	5.5	-130.80	296.5	-63.3	373.1	364.2	8.81	42.357	
2,100.0	2,092.1	2,005.7	1,979.1	4.9	6.0	-131.70	321.9	-68.5	410.8	401.5	9.33	44.051	
2,200.0	2,190.8	2,098.1	2,067.8	5.2	6.5	-132.45	347.2	-73.7	448.7	438.8	9.86	45.527	
2,300.0	2,289.4	2,190.5	2,156.5	5.6	7.0	-133.08	372.6	-79.0	486.6	476.2	10.39	46.818	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-18.69	76.3	-25.8	80.5				
100.0	100.0	99.0	99.0	0.1	0.1	-18.69	76.3	-25.8	80.5	80.3	0.22	360.069	
200.0	200.0	199.0	199.0	0.3	0.3	-18.69	76.3	-25.8	80.5	79.9	0.67	119.823	
300.0	300.0	299.0	299.0	0.6	0.6	-18.69	76.3	-25.8	80.5	79.4	1.12	71.798	
400.0	400.0	399.0	399.0	0.8	0.8	-18.69	76.3	-25.8	80.5	79.0	1.57	51.255	
500.0	500.0	499.0	499.0	1.0	1.0	-18.69	76.3	-25.8	80.5	78.5	2.02	39.852	
600.0	600.0	599.0	599.0	1.2	1.2	-18.69	76.3	-25.8	80.5	78.1	2.47	32.600	
700.0	700.0	699.0	699.0	1.5	1.5	-18.69	76.3	-25.8	80.5	77.6	2.92	27.581	
800.0	800.0	799.0	799.0	1.7	1.7	-18.69	76.3	-25.8	80.5	77.2	3.37	23.901	
900.0	900.0	899.0	899.0	1.9	1.9	-18.69	76.3	-25.8	80.5	76.7	3.82	21.087	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-18.69	76.3	-25.8	80.5	76.3	4.27	18.866	CC, ES
1,100.0	1,100.0	1,096.9	1,096.8	2.4	2.3	-19.42	77.1	-27.2	81.8	77.1	4.71	17.384	
1,200.0	1,200.0	1,194.5	1,194.3	2.6	2.6	-21.49	79.8	-31.4	85.9	80.7	5.14	16.693	SF
1,300.0	1,300.0	1,291.4	1,290.9	2.8	2.8	-133.52	84.1	-38.4	94.0	88.4	5.57	16.867	
1,400.0	1,399.8	1,387.1	1,385.9	3.0	3.0	-138.57	90.1	-48.0	108.0	102.0	5.99	18.035	
1,500.0	1,499.5	1,480.8	1,478.5	3.2	3.3	-143.79	97.5	-60.0	128.5	122.1	6.41	20.056	
1,600.0	1,598.7	1,571.9	1,568.1	3.4	3.6	-148.43	106.3	-74.1	155.7	148.9	6.82	22.829	
1,700.0	1,697.5	1,660.1	1,654.2	3.7	3.9	-152.32	116.3	-90.1	189.5	182.2	7.23	26.197	
1,800.0	1,796.2	1,748.7	1,740.3	4.0	4.2	-155.49	127.6	-108.2	227.1	219.5	7.65	29.675	
1,900.0	1,894.8	1,840.5	1,829.3	4.3	4.6	-157.87	139.4	-127.2	265.7	257.6	8.08	32.875	
2,000.0	1,993.5	1,932.3	1,918.3	4.6	5.0	-159.65	151.3	-146.3	304.6	296.1	8.51	35.769	
2,100.0	2,092.1	2,024.1	2,007.3	4.9	5.4	-161.02	163.2	-165.4	343.6	334.7	8.95	38.398	
2,200.0	2,190.8	2,115.8	2,096.3	5.2	5.8	-162.12	175.0	-184.4	382.8	373.4	9.39	40.769	
2,300.0	2,289.4	2,207.6	2,185.2	5.6	6.2	-163.02	186.9	-203.5	422.1	412.3	9.84	42.914	
2,400.0	2,388.1	2,299.4	2,274.2	5.9	6.7	-163.76	198.8	-222.6	461.5	451.2	10.29	44.861	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-26.12	50.2	-24.6	55.9				
100.0	100.0	99.0	99.0	0.1	0.1	-26.12	50.2	-24.6	55.9	55.7	0.22	250.001	
200.0	200.0	199.0	199.0	0.3	0.3	-26.12	50.2	-24.6	55.9	55.2	0.67	83.195	
300.0	300.0	299.0	299.0	0.6	0.6	-26.12	50.2	-24.6	55.9	54.8	1.12	49.850	
400.0	400.0	399.0	399.0	0.8	0.8	-26.12	50.2	-24.6	55.9	54.3	1.57	35.587	
500.0	500.0	499.0	499.0	1.0	1.0	-26.12	50.2	-24.6	55.9	53.9	2.02	27.670	
600.0	600.0	599.0	599.0	1.2	1.2	-26.12	50.2	-24.6	55.9	53.4	2.47	22.635	
700.0	700.0	699.0	699.0	1.5	1.5	-26.12	50.2	-24.6	55.9	53.0	2.92	19.150	
800.0	800.0	799.0	799.0	1.7	1.7	-26.12	50.2	-24.6	55.9	52.5	3.37	16.595	
900.0	900.0	899.0	899.0	1.9	1.9	-26.12	50.2	-24.6	55.9	52.1	3.82	14.641	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-26.12	50.2	-24.6	55.9	51.6	4.27	13.099	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	-26.12	50.2	-24.6	55.9	51.2	4.72	11.851	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	-26.12	50.2	-24.6	55.9	50.7	5.17	10.820	CC, ES
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	-135.69	50.2	-24.6	57.1	51.5	5.60	10.208	
1,400.0	1,399.8	1,398.8	1,398.8	3.0	3.0	-139.08	50.2	-24.6	61.0	55.0	6.01	10.145	SF
1,500.0	1,499.5	1,498.5	1,498.5	3.2	3.3	-143.82	50.2	-24.6	67.8	61.4	6.43	10.551	
1,600.0	1,598.7	1,597.7	1,597.7	3.4	3.5	-148.99	50.2	-24.6	78.0	71.2	6.84	11.400	
1,700.0	1,697.5	1,696.5	1,696.5	3.7	3.7	-153.89	50.2	-24.6	91.7	84.4	7.26	12.625	
1,800.0	1,796.2	1,795.2	1,795.2	4.0	3.9	-157.75	50.2	-24.6	106.6	98.9	7.69	13.855	
1,900.0	1,894.8	1,893.8	1,893.8	4.3	4.1	-160.65	50.2	-24.6	121.9	113.8	8.13	14.991	
2,000.0	1,993.5	1,992.5	1,992.5	4.6	4.4	-162.90	50.2	-24.6	137.4	128.9	8.57	16.033	
2,100.0	2,092.1	2,091.1	2,091.1	4.9	4.6	-164.70	50.2	-24.6	153.1	144.1	9.01	16.987	
2,200.0	2,190.8	2,189.8	2,189.8	5.2	4.8	-166.16	50.2	-24.6	168.9	159.5	9.46	17.859	
2,300.0	2,289.4	2,286.9	2,286.9	5.6	5.0	-166.95	51.5	-24.3	185.2	175.3	9.91	18.697	
2,400.0	2,388.1	2,383.6	2,383.4	5.9	5.2	-166.72	55.9	-23.1	202.4	192.1	10.36	19.543	
2,500.0	2,486.8	2,479.8	2,479.3	6.3	5.5	-165.70	63.4	-21.1	220.6	209.8	10.82	20.391	
2,600.0	2,585.4	2,575.3	2,574.2	6.6	5.7	-164.10	73.9	-18.2	239.9	228.6	11.29	21.243	
2,700.0	2,684.1	2,669.9	2,667.8	7.0	5.9	-162.09	87.3	-14.6	260.5	248.7	11.79	22.101	
2,800.0	2,782.7	2,763.4	2,759.8	7.3	6.1	-159.79	103.5	-10.3	282.7	270.3	12.30	22.972	
2,900.0	2,881.4	2,855.7	2,850.0	7.7	6.4	-157.32	122.4	-5.2	306.6	293.7	12.85	23.859	
3,000.0	2,980.1	2,948.0	2,939.6	8.1	6.7	-154.75	143.9	0.5	332.3	318.9	13.43	24.754	
3,100.0	3,078.7	3,043.4	3,032.0	8.4	7.0	-152.37	166.7	6.7	359.1	345.1	14.03	25.595	
3,200.0	3,177.4	3,138.7	3,124.3	8.8	7.3	-150.31	189.6	12.8	386.4	371.7	14.65	26.379	
3,300.0	3,276.0	3,234.1	3,216.7	9.2	7.7	-148.53	212.4	19.0	414.0	398.8	15.27	27.108	
3,400.0	3,374.7	3,329.4	3,309.0	9.6	8.1	-146.96	235.3	25.1	442.0	426.1	15.91	27.788	
3,500.0	3,473.3	3,424.7	3,401.3	9.9	8.4	-145.58	258.2	31.3	470.3	453.8	16.55	28.422	
3,600.0	3,572.0	3,520.1	3,493.7	10.3	8.8	-144.36	281.0	37.4	498.8	481.6	17.19	29.014	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	11.74	124.8	25.9	127.5				
100.0	100.0	98.0	98.0	0.1	0.1	11.74	124.8	25.9	127.5	127.3	0.22	572.899	
200.0	200.0	198.0	198.0	0.3	0.3	11.74	124.8	25.9	127.5	126.8	0.67	190.329	CC, ES
300.0	300.0	293.8	293.8	0.6	0.5	11.80	126.3	26.4	129.1	128.0	1.11	116.339	
400.0	400.0	389.3	389.2	0.8	0.8	11.96	130.8	27.7	134.0	132.5	1.55	86.200	
500.0	500.0	484.4	483.9	1.0	1.0	12.21	138.3	29.9	142.2	140.2	2.01	70.647	
600.0	600.0	578.9	577.8	1.2	1.3	12.51	148.8	33.0	153.8	151.3	2.49	61.647	
700.0	700.0	672.5	670.4	1.5	1.6	12.84	162.1	36.9	168.5	165.5	3.00	56.107	
800.0	800.0	765.2	761.5	1.7	1.9	13.17	178.1	41.7	186.5	183.0	3.55	52.583	
900.0	900.0	856.6	850.9	1.9	2.3	13.48	196.7	47.1	207.7	203.5	4.13	50.319	
1,000.0	1,000.0	946.7	938.3	2.1	2.7	13.76	217.6	53.3	231.9	227.1	4.74	48.885	
1,100.0	1,100.0	1,035.4	1,023.6	2.4	3.1	14.02	240.8	60.1	259.1	253.7	5.40	48.023	
1,200.0	1,200.0	1,125.2	1,109.2	2.6	3.6	14.26	266.7	67.8	289.2	283.1	6.09	47.451	SF
1,300.0	1,300.0	1,220.3	1,199.7	2.8	4.2	-93.56	294.7	76.1	320.0	314.2	5.73	55.800	
1,400.0	1,399.8	1,315.3	1,290.1	3.0	4.7	-93.60	322.7	84.3	351.0	344.8	6.19	56.701	
1,500.0	1,499.5	1,410.0	1,380.3	3.2	5.3	-94.07	350.6	92.5	382.4	375.7	6.66	57.373	
1,600.0	1,598.7	1,504.3	1,470.0	3.4	5.8	-94.86	378.4	100.7	414.1	407.0	7.16	57.822	
1,700.0	1,697.5	1,598.2	1,559.3	3.7	6.4	-96.08	406.1	108.9	446.4	438.7	7.69	58.034	
1,800.0	1,796.2	1,691.9	1,648.5	4.0	7.0	-97.65	433.7	117.0	479.2	470.9	8.26	58.039	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	0.43	125.0	0.9	125.0				
100.0	100.0	98.0	98.0	0.1	0.1	0.43	125.0	0.9	125.0	124.8	0.22	561.739	
200.0	200.0	198.0	198.0	0.3	0.3	0.43	125.0	0.9	125.0	124.3	0.67	186.621	
300.0	300.0	298.0	298.0	0.6	0.6	0.43	125.0	0.9	125.0	123.9	1.12	111.673	
400.0	400.0	398.0	398.0	0.8	0.8	0.43	125.0	0.9	125.0	123.4	1.57	79.675	CC, ES
500.0	500.0	494.1	494.0	1.0	1.0	0.65	126.5	1.4	126.5	124.5	2.01	62.988	
600.0	600.0	589.8	589.7	1.2	1.2	1.29	131.0	2.9	131.3	128.8	2.45	53.544	
700.0	700.0	685.2	684.7	1.5	1.4	2.25	138.4	5.4	139.2	136.3	2.90	47.963	
800.0	800.0	779.9	778.8	1.7	1.7	3.43	148.9	8.9	150.4	147.0	3.37	44.644	
900.0	900.0	873.8	871.6	1.9	2.0	4.70	162.1	13.3	164.7	160.9	3.86	42.730	
1,000.0	1,000.0	966.7	963.0	2.1	2.3	5.98	178.0	18.6	182.3	178.0	4.37	41.710	
1,100.0	1,100.0	1,058.4	1,052.6	2.4	2.6	7.20	196.4	24.8	203.1	198.2	4.92	41.273	
1,200.0	1,200.0	1,148.7	1,140.2	2.6	3.0	8.32	217.3	31.8	227.1	221.5	5.51	41.221	SF
1,300.0	1,300.0	1,237.5	1,225.6	2.8	3.4	-98.83	240.3	39.4	254.3	248.6	5.65	44.993	
1,400.0	1,399.8	1,328.9	1,312.8	3.0	3.9	-98.30	266.2	48.1	284.6	278.5	6.10	46.623	
1,500.0	1,499.5	1,423.8	1,403.3	3.2	4.5	-98.37	293.5	57.2	315.8	309.2	6.57	48.052	
1,600.0	1,598.7	1,518.4	1,493.5	3.4	5.0	-98.89	320.6	66.3	347.5	340.4	7.07	49.181	
1,700.0	1,697.5	1,612.6	1,583.2	3.7	5.5	-99.92	347.7	75.3	379.9	372.3	7.60	50.006	
1,800.0	1,796.2	1,706.6	1,672.9	4.0	6.1	-101.31	374.7	84.3	412.7	404.5	8.16	50.544	
1,900.0	1,894.8	1,800.7	1,762.5	4.3	6.6	-102.50	401.7	93.3	445.6	436.9	8.75	50.904	
2,000.0	1,993.5	1,894.7	1,852.1	4.6	7.2	-103.52	428.7	102.4	478.7	469.3	9.36	51.134	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-2H - Wellbore #1 - Plan #2 (6-05-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-10.88	125.2	-24.1	127.5				
100.0	100.0	98.0	98.0	0.1	0.1	-10.88	125.2	-24.1	127.5	127.2	0.22	572.835	
200.0	200.0	198.0	198.0	0.3	0.3	-10.88	125.2	-24.1	127.5	126.8	0.67	190.308	
300.0	300.0	298.0	298.0	0.6	0.6	-10.88	125.2	-24.1	127.5	126.3	1.12	113.879	
400.0	400.0	398.0	398.0	0.8	0.8	-10.88	125.2	-24.1	127.5	125.9	1.57	81.249	
500.0	500.0	498.0	498.0	1.0	1.0	-10.88	125.2	-24.1	127.5	125.5	2.02	63.153	
600.0	600.0	598.0	598.0	1.2	1.2	-10.88	125.2	-24.1	127.5	125.0	2.47	51.650	CC, ES
700.0	700.0	694.5	694.5	1.5	1.4	-10.49	126.6	-23.4	128.8	125.9	2.91	44.289	
800.0	800.0	790.7	790.5	1.7	1.7	-9.36	131.0	-21.6	133.0	129.6	3.35	39.694	
900.0	900.0	886.4	885.9	1.9	1.9	-7.61	138.4	-18.5	140.1	136.3	3.80	36.899	
1,000.0	1,000.0	981.5	980.4	2.1	2.1	-5.45	148.5	-14.2	150.3	146.0	4.25	35.335	
1,100.0	1,100.0	1,075.8	1,073.6	2.4	2.4	-3.09	161.5	-8.7	163.5	158.8	4.72	34.634	
1,200.0	1,200.0	1,169.1	1,165.3	2.6	2.7	-0.69	177.1	-2.1	180.1	174.9	5.21	34.532	SF
1,300.0	1,300.0	1,261.1	1,255.3	2.8	3.0	-106.79	195.1	5.5	200.3	194.7	5.63	35.583	
1,400.0	1,399.8	1,351.8	1,343.2	3.0	3.4	-105.36	215.5	14.1	224.6	218.5	6.07	36.975	
1,500.0	1,499.5	1,446.4	1,434.4	3.2	3.8	-104.64	238.7	23.9	251.8	245.3	6.55	38.465	
1,600.0	1,598.7	1,542.3	1,526.9	3.4	4.3	-104.63	262.2	33.9	280.0	272.9	7.04	39.765	
1,700.0	1,697.5	1,637.9	1,618.9	3.7	4.8	-105.30	285.7	43.8	309.0	301.4	7.57	40.796	
1,800.0	1,796.2	1,733.3	1,710.9	4.0	5.2	-106.34	309.1	53.7	338.3	330.2	8.14	41.553	
1,900.0	1,894.8	1,828.7	1,802.9	4.3	5.7	-107.21	332.6	63.6	367.8	359.0	8.73	42.114	
2,000.0	1,993.5	1,924.2	1,894.9	4.6	6.2	-107.96	356.0	73.5	397.2	387.9	9.34	42.531	
2,100.0	2,092.1	2,019.6	1,986.9	4.9	6.7	-108.60	379.4	83.4	426.8	416.8	9.96	42.840	
2,200.0	2,190.8	2,115.0	2,078.8	5.2	7.2	-109.16	402.9	93.4	456.4	445.8	10.60	43.068	
2,300.0	2,289.4	2,210.5	2,170.8	5.6	7.7	-109.65	426.3	103.3	486.0	474.8	11.24	43.237	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-3H - Wellbore #1 - Plan #2 (6-05-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	14.47	99.8	25.8	103.1				
100.0	100.0	98.0	98.0	0.1	0.1	14.47	99.8	25.8	103.1	102.9	0.22	463.283	
200.0	200.0	198.0	198.0	0.3	0.3	14.47	99.8	25.8	103.1	102.4	0.67	153.912	
300.0	300.0	298.0	298.0	0.6	0.6	14.47	99.8	25.8	103.1	102.0	1.12	92.100	
400.0	400.0	398.0	398.0	0.8	0.8	14.47	99.8	25.8	103.1	101.5	1.57	65.710	
500.0	500.0	498.0	498.0	1.0	1.0	14.47	99.8	25.8	103.1	101.1	2.02	51.076	
600.0	600.0	598.0	598.0	1.2	1.2	14.47	99.8	25.8	103.1	100.6	2.47	41.772	
700.0	700.0	698.0	698.0	1.5	1.5	14.47	99.8	25.8	103.1	100.2	2.92	35.336	
800.0	800.0	798.0	798.0	1.7	1.7	14.47	99.8	25.8	103.1	99.7	3.37	30.618	CC, ES
900.0	900.0	894.6	894.6	1.9	1.9	14.64	101.2	26.4	104.7	100.9	3.81	27.496	
1,000.0	1,000.0	991.0	990.8	2.1	2.1	15.13	105.5	28.5	109.6	105.3	4.25	25.801	
1,100.0	1,100.0	1,086.9	1,086.4	2.4	2.3	15.87	112.7	32.0	117.8	113.1	4.69	25.103	SF
1,200.0	1,200.0	1,182.2	1,181.0	2.6	2.6	16.74	122.7	36.9	129.3	124.1	5.15	25.112	
1,300.0	1,300.0	1,276.6	1,274.4	2.8	2.8	-91.06	135.4	43.1	144.0	138.5	5.58	25.831	
1,400.0	1,399.8	1,370.0	1,366.3	3.0	3.1	-91.52	150.6	50.5	162.1	156.1	6.00	27.017	
1,500.0	1,499.5	1,462.1	1,456.2	3.2	3.4	-92.62	168.3	59.1	183.5	177.0	6.44	28.481	
1,600.0	1,598.7	1,555.6	1,547.0	3.4	3.8	-94.16	188.6	69.0	207.9	201.0	6.92	30.058	
1,700.0	1,697.5	1,651.9	1,640.3	3.7	4.2	-96.26	209.9	79.4	233.4	226.0	7.43	31.421	
1,800.0	1,796.2	1,748.0	1,733.5	4.0	4.6	-98.43	231.1	89.8	259.3	251.3	7.97	32.525	
1,900.0	1,894.8	1,844.2	1,826.7	4.3	5.0	-100.21	252.4	100.1	285.5	276.9	8.54	33.431	
2,000.0	1,993.5	1,940.4	1,919.9	4.6	5.5	-101.69	273.6	110.5	311.9	302.8	9.13	34.170	
2,100.0	2,092.1	2,036.5	2,013.1	4.9	5.9	-102.94	294.9	120.8	338.5	328.7	9.73	34.777	
2,200.0	2,190.8	2,132.7	2,106.3	5.2	6.4	-104.01	316.2	131.2	365.2	354.8	10.35	35.279	
2,300.0	2,289.4	2,228.8	2,199.5	5.6	6.9	-104.93	337.4	141.6	392.0	381.0	10.98	35.696	
2,400.0	2,388.1	2,325.0	2,292.7	5.9	7.3	-105.73	358.7	151.9	418.8	407.2	11.62	36.045	
2,500.0	2,486.8	2,421.2	2,385.9	6.3	7.8	-106.44	379.9	162.3	445.8	433.5	12.27	36.339	
2,600.0	2,585.4	2,517.3	2,479.1	6.6	8.3	-107.07	401.2	172.7	472.8	459.9	12.92	36.589	
2,700.0	2,684.1	2,613.5	2,572.4	7.0	8.7	-107.63	422.4	183.0	499.8	486.3	13.58	36.802	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	18.87	74.8	25.6	79.0				
100.0	100.0	99.0	99.0	0.1	0.1	18.87	74.8	25.6	79.0	78.8	0.22	353.420	
200.0	200.0	199.0	199.0	0.3	0.3	18.87	74.8	25.6	79.0	78.4	0.67	117.611	
300.0	300.0	299.0	299.0	0.6	0.6	18.87	74.8	25.6	79.0	77.9	1.12	70.472	
400.0	400.0	399.0	399.0	0.8	0.8	18.87	74.8	25.6	79.0	77.5	1.57	50.308	
500.0	500.0	499.0	499.0	1.0	1.0	18.87	74.8	25.6	79.0	77.0	2.02	39.116	
600.0	600.0	599.0	599.0	1.2	1.2	18.87	74.8	25.6	79.0	76.6	2.47	31.998	
700.0	700.0	699.0	699.0	1.5	1.5	18.87	74.8	25.6	79.0	76.1	2.92	27.071	
800.0	800.0	799.0	799.0	1.7	1.7	18.87	74.8	25.6	79.0	75.7	3.37	23.459	
900.0	900.0	899.0	899.0	1.9	1.9	18.87	74.8	25.6	79.0	75.2	3.82	20.698	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	18.87	74.8	25.6	79.0	74.8	4.27	18.518	CC, ES
1,100.0	1,100.0	1,096.4	1,096.4	2.4	2.4	19.16	76.1	26.5	80.7	75.9	4.71	17.127	
1,200.0	1,200.0	1,193.5	1,193.4	2.6	2.6	19.99	80.2	29.2	85.6	80.4	5.15	16.618	SF
1,300.0	1,300.0	1,290.3	1,289.8	2.8	2.8	-88.04	87.0	33.7	93.7	88.1	5.58	16.790	
1,400.0	1,399.8	1,386.4	1,385.2	3.0	3.0	-89.13	96.4	40.0	105.0	99.0	6.00	17.502	
1,500.0	1,499.5	1,481.6	1,479.3	3.2	3.3	-91.10	108.4	48.0	119.6	113.2	6.44	18.577	
1,600.0	1,598.7	1,575.8	1,571.9	3.4	3.6	-93.48	122.8	57.5	137.6	130.7	6.90	19.935	
1,700.0	1,697.5	1,668.6	1,662.6	3.7	3.9	-96.03	139.4	68.6	159.2	151.8	7.41	21.493	
1,800.0	1,796.2	1,760.3	1,751.4	4.0	4.2	-98.05	158.2	81.2	184.0	176.1	7.94	23.169	
1,900.0	1,894.8	1,850.7	1,838.2	4.3	4.6	-99.23	179.1	95.1	211.8	203.3	8.50	24.903	
2,000.0	1,993.5	1,944.7	1,927.9	4.6	5.1	-99.94	202.5	110.7	241.5	232.4	9.10	26.534	
2,100.0	2,092.1	2,040.1	2,018.9	4.9	5.5	-100.50	226.3	126.6	271.3	261.6	9.72	27.924	
2,200.0	2,190.8	2,135.5	2,110.0	5.2	6.0	-100.94	250.1	142.4	301.2	290.8	10.35	29.097	
2,300.0	2,289.4	2,230.9	2,201.0	5.6	6.6	-101.31	273.9	158.3	331.0	320.0	11.00	30.093	
2,400.0	2,388.1	2,326.3	2,292.0	5.9	7.1	-101.62	297.7	174.2	360.9	349.3	11.66	30.944	
2,500.0	2,486.8	2,421.7	2,383.0	6.3	7.6	-101.88	321.5	190.0	390.8	378.5	12.34	31.676	
2,600.0	2,585.4	2,517.2	2,474.1	6.6	8.1	-102.10	345.3	205.9	420.7	407.7	13.02	32.310	
2,700.0	2,684.1	2,612.6	2,565.1	7.0	8.7	-102.29	369.1	221.8	450.6	436.9	13.71	32.862	
2,800.0	2,782.7	2,708.0	2,656.1	7.3	9.2	-102.46	392.9	237.6	480.5	466.1	14.41	33.345	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design 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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	26.99	49.8	25.4	55.9				
100.0	100.0	99.0	99.0	0.1	0.1	26.99	49.8	25.4	55.9	55.7	0.22	249.901	
200.0	200.0	199.0	199.0	0.3	0.3	26.99	49.8	25.4	55.9	55.2	0.67	83.162	
300.0	300.0	299.0	299.0	0.6	0.6	26.99	49.8	25.4	55.9	54.8	1.12	49.830	
400.0	400.0	399.0	399.0	0.8	0.8	26.99	49.8	25.4	55.9	54.3	1.57	35.573	
500.0	500.0	499.0	499.0	1.0	1.0	26.99	49.8	25.4	55.9	53.9	2.02	27.659	
600.0	600.0	599.0	599.0	1.2	1.2	26.99	49.8	25.4	55.9	53.4	2.47	22.625	
700.0	700.0	699.0	699.0	1.5	1.5	26.99	49.8	25.4	55.9	53.0	2.92	19.142	
800.0	800.0	799.0	799.0	1.7	1.7	26.99	49.8	25.4	55.9	52.5	3.37	16.588	
900.0	900.0	899.0	899.0	1.9	1.9	26.99	49.8	25.4	55.9	52.1	3.82	14.635	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	26.99	49.8	25.4	55.9	51.6	4.27	13.094	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	26.99	49.8	25.4	55.9	51.2	4.72	11.846	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	26.99	49.8	25.4	55.9	50.7	5.17	10.816	CC, ES
1,300.0	1,300.0	1,297.1	1,297.1	2.8	2.8	-82.70	51.1	26.4	57.3	51.7	5.59	10.244	SF
1,400.0	1,399.8	1,395.0	1,394.8	3.0	3.0	-86.33	55.0	29.5	61.7	55.7	6.01	10.277	
1,500.0	1,499.5	1,492.4	1,491.9	3.2	3.2	-91.26	61.5	34.6	69.6	63.2	6.44	10.813	
1,600.0	1,598.7	1,589.1	1,587.9	3.4	3.5	-96.45	70.5	41.7	81.3	74.5	6.90	11.796	
1,700.0	1,697.5	1,685.0	1,682.6	3.7	3.7	-101.16	82.0	50.7	97.1	89.7	7.39	13.145	
1,800.0	1,796.2	1,780.0	1,776.1	4.0	4.0	-104.18	95.8	61.6	116.2	108.3	7.91	14.701	
1,900.0	1,894.8	1,876.1	1,869.9	4.3	4.3	-105.67	111.8	74.2	137.9	129.4	8.46	16.295	
2,000.0	1,993.5	1,973.6	1,965.1	4.6	4.7	-106.71	128.4	87.2	159.8	150.8	9.03	17.688	
2,100.0	2,092.1	2,071.1	2,060.4	4.9	5.0	-107.49	144.9	100.3	181.8	172.2	9.63	18.876	
2,200.0	2,190.8	2,168.7	2,155.6	5.2	5.4	-108.10	161.5	113.3	203.8	193.6	10.24	19.899	
2,300.0	2,289.4	2,266.2	2,250.8	5.6	5.8	-108.60	178.1	126.3	225.8	215.0	10.87	20.779	
2,400.0	2,388.1	2,363.7	2,346.0	5.9	6.2	-109.00	194.6	139.4	247.9	236.4	11.51	21.543	
2,500.0	2,486.8	2,461.2	2,441.3	6.3	6.6	-109.34	211.2	152.4	269.9	257.8	12.15	22.209	
2,600.0	2,585.4	2,558.8	2,536.5	6.6	7.0	-109.63	227.7	165.5	292.0	279.2	12.81	22.793	
2,700.0	2,684.1	2,656.3	2,631.7	7.0	7.4	-109.88	244.3	178.5	314.1	300.6	13.47	23.307	
2,800.0	2,782.7	2,753.8	2,726.9	7.3	7.8	-110.10	260.9	191.5	336.1	322.0	14.15	23.763	
2,900.0	2,881.4	2,851.3	2,822.1	7.7	8.2	-110.29	277.4	204.6	358.2	343.4	14.82	24.170	
3,000.0	2,980.1	2,948.9	2,917.4	8.1	8.6	-110.45	294.0	217.6	380.3	364.8	15.50	24.533	
3,100.0	3,078.7	3,046.4	3,012.6	8.4	9.1	-110.60	310.5	230.6	402.4	386.2	16.19	24.860	
3,200.0	3,177.4	3,143.9	3,107.8	8.8	9.5	-110.73	327.1	243.7	424.5	407.6	16.87	25.155	
3,300.0	3,276.0	3,241.4	3,203.0	9.2	9.9	-110.85	343.7	256.7	446.5	429.0	17.57	25.422	
3,400.0	3,374.7	3,339.0	3,298.3	9.6	10.3	-110.96	360.2	269.7	468.6	450.4	18.26	25.665	
3,500.0	3,473.3	3,436.5	3,393.5	9.9	10.8	-111.06	376.8	282.8	490.7	471.8	18.96	25.887	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-6H - Wellbore #1 - Plan #2 (6-05-14) — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	45.44	24.8	25.2	35.4				
100.0	100.0	99.0	99.0	0.1	0.1	45.44	24.8	25.2	35.4	35.1	0.22	158.115	
200.0	200.0	199.0	199.0	0.3	0.3	45.44	24.8	25.2	35.4	34.7	0.67	52.617	
300.0	300.0	299.0	299.0	0.6	0.6	45.44	24.8	25.2	35.4	34.2	1.12	31.528	
400.0	400.0	399.0	399.0	0.8	0.8	45.44	24.8	25.2	35.4	33.8	1.57	22.507	
500.0	500.0	499.0	499.0	1.0	1.0	45.44	24.8	25.2	35.4	33.3	2.02	17.500	
600.0	600.0	599.0	599.0	1.2	1.2	45.44	24.8	25.2	35.4	32.9	2.47	14.315	
700.0	700.0	699.0	699.0	1.5	1.5	45.44	24.8	25.2	35.4	32.4	2.92	12.111	
800.0	800.0	799.0	799.0	1.7	1.7	45.44	24.8	25.2	35.4	32.0	3.37	10.495	
900.0	900.0	899.0	899.0	1.9	1.9	45.44	24.8	25.2	35.4	31.5	3.82	9.260	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	45.44	24.8	25.2	35.4	31.1	4.27	8.285	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	45.44	24.8	25.2	35.4	30.6	4.72	7.495	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	45.44	24.8	25.2	35.4	30.2	5.17	6.843	
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	-65.49	24.8	25.2	34.6	29.0	5.60	6.180	
1,400.0	1,399.8	1,398.8	1,398.8	3.0	3.0	-73.86	24.8	25.2	32.8	26.8	6.02	5.446	
1,500.0	1,499.5	1,498.5	1,498.5	3.2	3.3	-89.25	24.8	25.2	31.5	25.0	6.45	4.878	
1,503.9	1,503.4	1,502.4	1,502.4	3.2	3.3	-90.00	24.8	25.2	31.5	25.0	6.47	4.864	CC, ES, SF
1,600.0	1,598.7	1,597.7	1,597.7	3.4	3.5	-110.32	24.8	25.2	33.6	26.7	6.90	4.872	
1,700.0	1,697.5	1,695.9	1,695.9	3.7	3.7	-128.41	26.0	26.3	42.3	35.0	7.33	5.776	
1,800.0	1,796.2	1,794.2	1,794.1	4.0	3.9	-136.92	29.5	29.8	55.3	47.6	7.76	7.127	
1,900.0	1,894.8	1,892.5	1,892.0	4.3	4.1	-139.41	35.5	35.6	69.8	61.6	8.22	8.494	
2,000.0	1,993.5	1,990.7	1,989.5	4.6	4.4	-138.80	43.9	43.7	85.3	76.6	8.72	9.783	
2,100.0	2,092.1	2,088.4	2,086.0	4.9	4.6	-136.55	54.7	54.1	101.7	92.4	9.25	10.990	
2,200.0	2,190.8	2,186.3	2,182.4	5.2	4.9	-133.72	67.3	66.2	119.0	109.2	9.82	12.118	
2,300.0	2,289.4	2,284.7	2,279.1	5.6	5.2	-131.55	80.0	78.5	136.7	126.2	10.41	13.123	
2,400.0	2,388.1	2,383.0	2,375.8	5.9	5.5	-129.87	92.7	90.8	154.4	143.4	11.02	14.014	
2,500.0	2,486.8	2,481.3	2,472.5	6.3	5.8	-128.54	105.5	103.2	172.3	160.7	11.64	14.807	
2,600.0	2,585.4	2,579.6	2,569.2	6.6	6.1	-127.46	118.2	115.5	190.3	178.0	12.27	15.512	
2,700.0	2,684.1	2,677.9	2,665.9	7.0	6.4	-126.56	131.0	127.8	208.3	195.4	12.90	16.142	
2,800.0	2,782.7	2,776.3	2,762.7	7.3	6.8	-125.81	143.7	140.1	226.3	212.8	13.55	16.706	
2,900.0	2,881.4	2,874.6	2,859.4	7.7	7.1	-125.17	156.5	152.4	244.4	230.2	14.20	17.213	
3,000.0	2,980.1	2,972.9	2,956.1	8.1	7.5	-124.62	169.2	164.7	262.5	247.7	14.86	17.671	
3,100.0	3,078.7	3,071.2	3,052.8	8.4	7.8	-124.14	182.0	177.1	280.7	265.1	15.52	18.086	
3,200.0	3,177.4	3,169.5	3,149.5	8.8	8.2	-123.72	194.7	189.4	298.8	282.6	16.18	18.463	
3,300.0	3,276.0	3,267.8	3,246.2	9.2	8.6	-123.34	207.5	201.7	317.0	300.1	16.85	18.807	
3,400.0	3,374.7	3,366.2	3,342.9	9.6	8.9	-123.01	220.2	214.0	335.1	317.6	17.53	19.122	
3,500.0	3,473.3	3,464.5	3,439.6	9.9	9.3	-122.71	232.9	226.3	353.3	335.1	18.20	19.411	
3,600.0	3,572.0	3,562.8	3,536.3	10.3	9.7	-122.44	245.7	238.6	371.5	352.6	18.88	19.677	
3,700.0	3,670.7	3,661.1	3,633.0	10.7	10.0	-122.19	258.4	251.0	389.7	370.2	19.56	19.922	
3,800.0	3,769.3	3,759.4	3,729.7	11.1	10.4	-121.97	271.2	263.3	407.9	387.7	20.24	20.149	
3,900.0	3,868.0	3,857.7	3,826.4	11.4	10.8	-121.77	283.9	275.6	426.1	405.2	20.93	20.360	
4,000.0	3,966.6	3,956.1	3,923.1	11.8	11.2	-121.58	296.7	287.9	444.3	422.7	21.62	20.556	
4,100.0	4,065.3	4,054.4	4,019.8	12.2	11.5	-121.41	309.4	300.2	462.6	440.3	22.30	20.738	
4,200.0	4,164.0	4,152.7	4,116.5	12.6	11.9	-121.25	322.2	312.5	480.8	457.8	22.99	20.909	
4,300.0	4,262.6	4,251.0	4,213.2	12.9	12.3	-121.10	334.9	324.9	499.0	475.3	23.69	21.068	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-7H - Wellbore #1 - Plan #2 (6-05-14) — **Offset Site Error:** 0.0 ft

Survey Program: 0-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.58	0.2	-25.0	25.0				
100.0	100.0	99.0	99.0	0.1	0.1	-89.58	0.2	-25.0	25.0	24.8	0.22	111.799	
200.0	200.0	199.0	199.0	0.3	0.3	-89.58	0.2	-25.0	25.0	24.3	0.67	37.205	
300.0	300.0	299.0	299.0	0.6	0.6	-89.58	0.2	-25.0	25.0	23.9	1.12	22.293	
400.0	400.0	399.0	399.0	0.8	0.8	-89.58	0.2	-25.0	25.0	23.4	1.57	15.914	
500.0	500.0	499.0	499.0	1.0	1.0	-89.58	0.2	-25.0	25.0	23.0	2.02	12.374	
600.0	600.0	599.0	599.0	1.2	1.2	-89.58	0.2	-25.0	25.0	22.5	2.47	10.122	
700.0	700.0	699.0	699.0	1.5	1.5	-89.58	0.2	-25.0	25.0	22.1	2.92	8.564	
800.0	800.0	799.0	799.0	1.7	1.7	-89.58	0.2	-25.0	25.0	21.6	3.37	7.421	
900.0	900.0	899.0	899.0	1.9	1.9	-89.58	0.2	-25.0	25.0	21.2	3.82	6.547	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	-89.58	0.2	-25.0	25.0	20.7	4.27	5.858	
1,100.0	1,100.0	1,099.0	1,099.0	2.4	2.4	-89.58	0.2	-25.0	25.0	20.3	4.72	5.300	
1,200.0	1,200.0	1,199.0	1,199.0	2.6	2.6	-89.58	0.2	-25.0	25.0	19.8	5.17	4.839	CC, ES
1,300.0	1,300.0	1,299.0	1,299.0	2.8	2.8	163.22	0.2	-25.0	26.7	21.1	5.60	4.765	
1,400.0	1,399.8	1,398.8	1,398.8	3.0	3.0	165.92	0.2	-25.0	31.7	25.7	6.01	5.280	
1,500.0	1,499.5	1,498.5	1,498.5	3.2	3.3	168.91	0.2	-25.0	40.2	33.8	6.42	6.270	
1,600.0	1,598.7	1,597.7	1,597.7	3.4	3.5	171.45	0.2	-25.0	52.2	45.4	6.82	7.659	
1,700.0	1,697.5	1,696.5	1,696.5	3.7	3.7	173.37	0.2	-25.0	67.6	60.4	7.23	9.348	
1,800.0	1,796.2	1,795.2	1,795.2	4.0	3.9	174.66	0.2	-25.0	83.8	76.2	7.66	10.941	
1,900.0	1,894.8	1,896.4	1,896.4	4.3	4.1	176.13	0.8	-23.5	98.9	90.8	8.09	12.215	
2,000.0	1,993.5	1,998.5	1,998.3	4.6	4.4	178.41	3.0	-18.7	111.2	102.7	8.52	13.055	
2,100.0	2,092.1	2,100.9	2,100.3	4.9	4.6	-178.61	6.6	-10.6	121.2	112.2	8.96	13.525	
2,200.0	2,190.8	2,203.4	2,202.1	5.2	4.8	-174.91	11.7	0.9	128.9	119.5	9.41	13.694	
2,300.0	2,289.4	2,305.8	2,303.2	5.6	5.1	-170.47	18.3	15.7	134.9	125.0	9.90	13.623	
2,400.0	2,388.1	2,407.4	2,402.9	5.9	5.4	-165.25	26.3	33.6	139.6	129.1	10.43	13.376	
2,500.0	2,486.8	2,506.4	2,499.8	6.3	5.7	-160.09	34.5	52.1	144.7	133.7	11.02	13.132	
2,600.0	2,585.4	2,605.5	2,596.7	6.6	6.0	-155.32	42.8	70.7	150.9	139.3	11.65	12.954	
2,700.0	2,684.1	2,704.5	2,693.6	7.0	6.3	-150.94	51.1	89.3	158.1	145.8	12.33	12.829	
2,800.0	2,782.7	2,803.5	2,790.6	7.3	6.7	-146.97	59.3	107.8	166.2	153.2	13.04	12.749	
2,900.0	2,881.4	2,902.6	2,887.5	7.7	7.1	-143.37	67.6	126.4	175.0	161.2	13.77	12.706	
3,000.0	2,980.1	3,001.6	2,984.4	8.1	7.4	-140.12	75.9	145.0	184.4	169.9	14.53	12.693	
3,100.0	3,078.7	3,100.6	3,081.3	8.4	7.8	-137.20	84.2	163.5	194.3	179.0	15.30	12.705	
3,200.0	3,177.4	3,199.7	3,178.3	8.8	8.2	-134.56	92.4	182.1	204.7	188.7	16.07	12.736	
3,300.0	3,276.0	3,298.7	3,275.2	9.2	8.6	-132.18	100.7	200.7	215.5	198.7	16.86	12.783	
3,400.0	3,374.7	3,397.7	3,372.1	9.6	9.0	-130.03	109.0	219.3	226.6	209.0	17.65	12.841	
3,500.0	3,473.3	3,496.8	3,469.0	9.9	9.4	-128.08	117.2	237.8	238.1	219.6	18.44	12.909	
3,600.0	3,572.0	3,595.8	3,566.0	10.3	9.8	-126.31	125.5	256.4	249.7	230.5	19.23	12.983	
3,700.0	3,670.7	3,694.8	3,662.9	10.7	10.2	-124.70	133.8	275.0	261.6	241.6	20.03	13.061	
3,800.0	3,769.3	3,793.9	3,759.8	11.1	10.6	-123.23	142.1	293.5	273.7	252.8	20.82	13.142	
3,900.0	3,868.0	3,892.9	3,856.7	11.4	11.0	-121.88	150.3	312.1	285.9	264.3	21.62	13.225	
4,000.0	3,966.6	3,991.9	3,953.7	11.8	11.4	-120.65	158.6	330.7	298.3	275.8	22.41	13.310	
4,100.0	4,065.3	4,091.0	4,050.6	12.2	11.9	-119.51	166.9	349.2	310.8	287.6	23.20	13.394	
4,200.0	4,164.0	4,190.0	4,147.5	12.6	12.3	-118.46	175.1	367.8	323.4	299.4	23.99	13.477	
4,300.0	4,262.6	4,289.0	4,244.4	12.9	12.7	-117.49	183.4	386.4	336.1	311.3	24.78	13.560	
4,400.0	4,361.3	4,388.1	4,341.4	13.3	13.1	-116.59	191.7	405.0	348.9	323.3	25.57	13.642	
4,500.0	4,459.9	4,487.1	4,438.3	13.7	13.5	-115.75	199.9	423.5	361.7	335.4	26.36	13.722	
4,600.0	4,558.6	4,586.1	4,535.2	14.1	14.0	-114.97	208.2	442.1	374.7	347.5	27.15	13.801	
4,700.0	4,657.2	4,685.2	4,632.1	14.5	14.4	-114.25	216.5	460.7	387.7	359.8	27.94	13.877	
4,800.0	4,755.9	4,784.2	4,729.1	14.9	14.8	-113.57	224.8	479.2	400.8	372.0	28.72	13.952	
4,900.0	4,854.6	4,883.2	4,826.0	15.2	15.3	-112.98	233.0	497.8	413.8	384.3	29.50	14.026	
5,000.0	4,953.6	4,982.9	4,923.5	15.5	15.7	-112.29	241.3	516.5	426.0	395.8	30.20	14.106	
5,100.0	5,053.1	5,087.5	5,026.4	15.7	16.0	-111.41	249.1	534.0	436.3	405.5	30.78	14.177	

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

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-7H - Wellbore #1 - Plan #2 (6-05-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.0	5,152.8	5,192.8	5,130.5	15.9	16.3	-110.55	255.4	548.1	444.1	412.9	31.27	14.204	
5,300.0	5,252.8	5,298.7	5,235.8	16.1	16.6	-109.69	260.2	558.8	449.5	417.8	31.69	14.186	
5,400.0	5,352.8	5,405.0	5,341.8	16.2	16.8	-0.51	263.4	566.0	452.5	426.8	25.75	17.576	
5,500.0	5,452.8	5,511.8	5,448.4	16.4	17.0	-0.05	265.0	569.6	454.0	427.9	26.13	17.375	
5,600.0	5,552.8	5,615.1	5,551.8	16.5	17.1	0.00	265.2	570.0	454.2	427.7	26.50	17.141	
5,700.0	5,652.8	5,715.1	5,651.8	16.7	17.3	0.00	265.2	570.0	454.2	427.3	26.87	16.901	
5,800.0	5,752.8	5,815.1	5,751.8	16.8	17.4	0.00	265.2	570.0	454.2	426.9	27.25	16.666	
5,900.0	5,852.8	5,915.1	5,851.8	17.0	17.6	0.00	265.2	570.0	454.2	426.5	27.63	16.436	
6,000.0	5,952.8	6,015.1	5,951.8	17.1	17.8	0.00	265.2	570.0	454.2	426.2	28.02	16.211	
6,100.0	6,052.8	6,115.1	6,051.8	17.3	17.9	0.00	265.2	570.0	454.2	425.8	28.40	15.991	
6,200.0	6,152.8	6,215.1	6,151.8	17.5	18.1	0.00	265.2	570.0	454.2	425.4	28.79	15.777	
6,300.0	6,252.8	6,315.1	6,251.8	17.6	18.2	0.00	265.2	570.0	454.2	425.0	29.18	15.566	
6,400.0	6,352.8	6,415.1	6,351.8	17.8	18.4	0.00	265.2	570.0	454.2	424.6	29.57	15.361	
6,500.0	6,452.8	6,515.1	6,451.8	17.9	18.6	0.00	265.2	570.0	454.2	424.2	29.96	15.160	
6,600.0	6,552.8	6,615.1	6,551.8	18.1	18.7	0.00	265.2	570.0	454.2	423.8	30.35	14.963	
6,700.0	6,652.5	6,716.9	6,653.4	18.2	18.9	91.89	265.0	564.6	454.2	418.0	36.20	12.546	
6,800.0	6,750.6	6,819.0	6,753.5	18.2	18.8	91.86	264.4	545.0	454.2	418.0	36.21	12.544	
6,900.0	6,845.1	6,921.1	6,849.8	18.2	18.8	91.78	263.2	511.3	454.2	418.1	36.06	12.596	
7,000.0	6,934.2	7,023.1	6,940.2	18.1	18.6	91.68	261.7	464.4	454.1	418.3	35.84	12.672	
7,100.0	7,016.1	7,124.9	7,022.9	18.0	18.5	91.54	259.8	405.3	454.1	418.4	35.68	12.728	
7,200.0	7,089.2	7,226.5	7,096.3	18.0	18.5	91.37	257.4	335.1	454.1	418.3	35.73	12.707	
7,300.0	7,152.2	7,327.9	7,158.9	18.1	18.6	91.17	254.8	255.5	454.0	417.9	36.18	12.550	
7,400.0	7,203.7	7,429.1	7,209.5	18.5	19.0	90.96	251.9	168.0	454.0	416.8	37.17	12.215	
7,500.0	7,242.8	7,530.0	7,247.2	19.2	19.7	90.72	248.9	74.5	454.0	415.2	38.79	11.704	
7,600.0	7,268.7	7,630.7	7,271.4	20.3	20.8	90.47	245.6	-23.0	454.0	412.9	41.04	11.060	
7,700.0	7,281.0	7,731.0	7,281.6	21.7	22.2	90.21	242.4	-122.7	453.9	410.1	43.85	10.353	
7,758.4	7,283.2	7,789.4	7,282.0	22.6	23.1	89.98	240.4	-181.1	453.9	408.2	45.71	9.931	
7,800.0	7,282.0	7,831.1	7,282.0	23.3	23.8	90.13	239.1	-222.7	453.9	406.8	47.09	9.639	
7,900.0	7,282.0	7,931.1	7,282.0	25.1	25.6	90.13	235.8	-322.6	453.9	403.2	50.73	8.948	
8,000.0	7,282.0	8,031.1	7,282.0	27.1	27.6	90.13	232.5	-422.6	453.9	399.2	54.70	8.299	
8,100.0	7,282.0	8,131.1	7,282.0	29.2	29.7	90.13	229.2	-522.5	453.9	395.0	58.94	7.702	
8,200.0	7,282.0	8,231.1	7,282.0	31.4	32.0	90.13	225.9	-622.5	453.9	390.6	63.38	7.162	
8,300.0	7,282.0	8,331.1	7,282.0	33.8	34.3	90.13	222.6	-722.4	453.9	385.9	68.00	6.675	
8,400.0	7,282.0	8,431.1	7,282.0	36.1	36.6	90.13	219.3	-822.4	453.9	381.2	72.76	6.239	
8,500.0	7,282.0	8,531.1	7,282.0	38.6	39.1	90.13	216.0	-922.3	453.9	376.3	77.63	5.848	
8,600.0	7,282.0	8,631.1	7,282.0	41.1	41.5	90.13	212.7	-1,022.3	453.9	371.3	82.59	5.496	
8,700.0	7,282.0	8,731.1	7,282.0	43.6	44.1	90.13	209.4	-1,122.2	453.9	366.3	87.63	5.180	
8,800.0	7,282.0	8,831.1	7,282.0	46.2	46.6	90.13	206.1	-1,222.1	453.9	361.2	92.74	4.895	
8,900.0	7,282.0	8,931.1	7,282.0	48.7	49.2	90.13	202.8	-1,322.1	453.9	356.0	97.89	4.637	
9,000.0	7,282.0	9,031.1	7,282.0	51.3	51.8	90.13	199.5	-1,422.0	453.9	350.8	103.10	4.403	
9,100.0	7,282.0	9,131.1	7,282.0	54.0	54.4	90.13	196.2	-1,522.0	453.9	345.6	108.34	4.190	
9,200.0	7,282.0	9,231.1	7,282.0	56.6	57.0	90.13	192.9	-1,621.9	453.9	340.3	113.62	3.995	
9,300.0	7,282.0	9,331.1	7,282.0	59.3	59.7	90.13	189.7	-1,721.9	453.9	335.0	118.93	3.817	
9,400.0	7,282.0	9,431.1	7,282.0	61.9	62.4	90.13	186.4	-1,821.8	453.9	329.7	124.26	3.653	
9,500.0	7,282.0	9,531.1	7,282.0	64.6	65.0	90.13	183.1	-1,921.8	453.9	324.3	129.62	3.502	
9,600.0	7,282.0	9,631.1	7,282.0	67.3	67.7	90.13	179.8	-2,021.7	453.9	318.9	134.99	3.363	
9,700.0	7,282.0	9,731.1	7,282.0	70.0	70.4	90.13	176.5	-2,121.7	453.9	313.6	140.39	3.233	
9,800.0	7,282.0	9,831.1	7,282.0	72.7	73.1	90.13	173.2	-2,221.6	453.9	308.1	145.80	3.113	
9,900.0	7,282.0	9,931.1	7,282.0	75.4	75.8	90.13	169.9	-2,321.5	453.9	302.7	151.22	3.002	
10,000.0	7,282.0	10,031.1	7,282.0	78.1	78.5	90.13	166.6	-2,421.5	453.9	297.3	156.66	2.898	
10,100.0	7,282.0	10,131.1	7,282.0	80.9	81.3	90.13	163.3	-2,521.4	453.9	291.8	162.10	2.800	
10,200.0	7,282.0	10,231.1	7,282.0	83.6	84.0	90.13	160.0	-2,621.4	453.9	286.4	167.56	2.709	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Greeley-Rothe 1-7H - Wellbore #1 - Plan #2 (6-05-14)

Offset Site Error: 0.0 ft

Survey Program: 0-MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,282.0	10,331.1	7,282.0	86.3	86.7	90.13	156.7	-2,721.3	453.9	280.9	173.03	2.624	
10,400.0	7,282.0	10,431.1	7,282.0	89.1	89.5	90.13	153.4	-2,821.3	453.9	275.4	178.50	2.543	
10,500.0	7,282.0	10,531.1	7,282.0	91.8	92.2	90.13	150.1	-2,921.2	453.9	270.0	183.98	2.467	
10,600.0	7,282.0	10,631.1	7,282.0	94.6	94.9	90.13	146.8	-3,021.2	453.9	264.5	189.47	2.396	
10,700.0	7,282.0	10,731.1	7,282.0	97.3	97.7	90.13	143.5	-3,121.1	453.9	259.0	194.97	2.328	
10,800.0	7,282.0	10,831.1	7,282.0	100.1	100.4	90.13	140.2	-3,221.1	453.9	253.5	200.47	2.264	
10,900.0	7,282.0	10,931.1	7,282.0	102.8	103.2	90.13	137.0	-3,321.0	453.9	248.0	205.98	2.204	
11,000.0	7,282.0	11,031.1	7,282.0	105.6	105.9	90.13	133.7	-3,421.0	453.9	242.5	211.49	2.146	
11,100.0	7,282.0	11,131.1	7,282.0	108.3	108.7	90.13	130.4	-3,520.9	453.9	236.9	217.00	2.092	
11,200.0	7,282.0	11,231.1	7,282.0	111.1	111.5	90.13	127.1	-3,620.8	453.9	231.4	222.52	2.040	
11,300.0	7,282.0	11,331.1	7,282.0	113.9	114.2	90.13	123.8	-3,720.8	453.9	225.9	228.05	1.991	
11,400.0	7,282.0	11,431.1	7,282.0	116.6	117.0	90.13	120.5	-3,820.7	453.9	220.4	233.58	1.943	
11,500.0	7,282.0	11,531.1	7,282.0	119.4	119.7	90.13	117.2	-3,920.7	453.9	214.8	239.11	1.898	
11,600.0	7,282.0	11,631.1	7,282.0	122.2	122.5	90.13	113.9	-4,020.6	453.9	209.3	244.64	1.856	
11,700.0	7,282.0	11,731.1	7,282.0	124.9	125.3	90.13	110.6	-4,120.6	453.9	203.8	250.18	1.814	
11,800.0	7,282.0	11,831.1	7,282.0	127.7	128.0	90.13	107.3	-4,220.5	453.9	198.2	255.72	1.775	
11,822.8	7,282.0	11,853.8	7,282.0	128.3	128.7	90.13	106.6	-4,243.3	453.9	197.0	256.98	1.766	
11,897.0	7,282.0	11,876.8	7,282.0	130.4	129.3	90.13	105.8	-4,266.2	456.8	197.1	259.68	1.759	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	90.52	-0.2	24.3	24.3				
100.0	100.0	100.0	100.0	0.1	0.1	90.52	-0.2	24.3	24.3	24.1	0.22	108.146	
200.0	200.0	200.0	200.0	0.3	0.3	90.52	-0.2	24.3	24.3	23.6	0.67	36.049	
300.0	300.0	300.0	300.0	0.6	0.6	90.52	-0.2	24.3	24.3	23.2	1.12	21.629	
400.0	400.0	400.0	400.0	0.8	0.8	90.52	-0.2	24.3	24.3	22.7	1.57	15.449	
500.0	500.0	500.0	500.0	1.0	1.0	90.52	-0.2	24.3	24.3	22.3	2.02	12.016	
600.0	600.0	600.0	600.0	1.2	1.2	90.52	-0.2	24.3	24.3	21.8	2.47	9.831	
700.0	700.0	700.0	700.0	1.5	1.5	90.52	-0.2	24.3	24.3	21.4	2.92	8.319	
800.0	800.0	800.0	800.0	1.7	1.7	90.52	-0.2	24.3	24.3	20.9	3.37	7.210	
900.0	900.0	900.0	900.0	1.9	1.9	90.52	-0.2	24.3	24.3	20.5	3.82	6.362	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	90.52	-0.2	24.3	24.3	20.0	4.27	5.692	CC, ES
1,100.0	1,100.0	1,099.4	1,099.4	2.4	2.3	93.45	-1.5	25.4	25.5	20.8	4.69	5.427	
1,200.0	1,200.0	1,198.6	1,198.4	2.6	2.5	100.74	-5.5	28.8	29.3	24.2	5.10	5.746	
1,300.0	1,300.0	1,297.4	1,296.9	2.8	2.7	0.91	-12.0	34.3	34.7	29.2	5.49	6.324	
1,400.0	1,399.8	1,395.9	1,394.7	3.0	2.9	9.57	-21.0	42.0	40.4	34.6	5.87	6.884	
1,500.0	1,499.5	1,494.1	1,491.6	3.2	3.2	18.18	-32.6	51.9	46.8	40.6	6.26	7.479	
1,600.0	1,598.7	1,592.9	1,588.8	3.4	3.5	26.50	-46.3	63.6	53.7	47.0	6.67	8.053	
1,700.0	1,697.5	1,692.4	1,686.6	3.7	3.8	34.63	-60.3	75.5	58.9	51.8	7.11	8.288	
1,800.0	1,796.2	1,792.0	1,784.5	4.0	4.1	41.85	-74.3	87.5	64.5	56.9	7.61	8.477	
1,900.0	1,894.8	1,891.5	1,882.3	4.3	4.5	47.84	-88.3	99.4	71.0	62.8	8.16	8.701	
2,000.0	1,993.5	1,991.1	1,980.1	4.6	4.9	52.80	-102.3	111.3	78.1	69.3	8.74	8.931	
2,100.0	2,092.1	2,090.6	2,077.9	4.9	5.2	56.90	-116.2	123.3	85.7	76.3	9.36	9.151	
2,200.0	2,190.8	2,190.1	2,175.8	5.2	5.6	60.33	-130.2	135.2	93.6	83.6	10.01	9.354	
2,300.0	2,289.4	2,289.7	2,273.6	5.6	6.0	63.21	-144.2	147.1	101.9	91.2	10.68	9.540	
2,400.0	2,388.1	2,389.2	2,371.4	5.9	6.4	65.66	-158.2	159.1	110.3	98.9	11.36	9.709	
2,500.0	2,486.8	2,488.8	2,469.2	6.3	6.8	67.75	-172.2	171.0	118.9	106.9	12.06	9.862	
2,600.0	2,585.4	2,588.3	2,567.1	6.6	7.2	69.56	-186.2	183.0	127.7	114.9	12.77	10.000	
2,700.0	2,684.1	2,687.8	2,664.9	7.0	7.6	71.14	-200.2	194.9	136.6	123.1	13.49	10.124	
2,800.0	2,782.7	2,787.4	2,762.7	7.3	8.0	72.52	-214.2	206.8	145.5	131.3	14.21	10.238	
2,900.0	2,881.4	2,886.9	2,860.5	7.7	8.4	73.75	-228.2	218.8	154.6	139.6	14.95	10.341	
3,000.0	2,980.1	2,986.5	2,958.4	8.1	8.8	74.83	-242.2	230.7	163.7	148.0	15.68	10.435	
3,100.0	3,078.7	3,086.0	3,056.2	8.4	9.2	75.81	-256.2	242.6	172.8	156.4	16.43	10.521	
3,200.0	3,177.4	3,185.5	3,154.0	8.8	9.6	76.68	-270.2	254.6	182.0	164.8	17.17	10.600	
3,300.0	3,276.0	3,285.1	3,251.8	9.2	10.0	77.47	-284.2	266.5	191.2	173.3	17.92	10.673	
3,400.0	3,374.7	3,384.6	3,349.7	9.6	10.5	78.19	-298.2	278.5	200.5	181.8	18.67	10.740	
3,500.0	3,473.3	3,484.2	3,447.5	9.9	10.9	78.84	-312.2	290.4	209.8	190.4	19.42	10.802	
3,600.0	3,572.0	3,583.7	3,545.3	10.3	11.3	79.44	-326.2	302.3	219.1	198.9	20.18	10.859	
3,700.0	3,670.7	3,683.2	3,643.1	10.7	11.7	79.99	-340.2	314.3	228.5	207.5	20.94	10.913	
3,800.0	3,769.3	3,782.8	3,741.0	11.1	12.1	80.50	-354.2	326.2	237.8	216.1	21.69	10.963	
3,900.0	3,868.0	3,882.3	3,838.8	11.4	12.5	80.97	-368.2	338.1	247.2	224.7	22.45	11.009	
4,000.0	3,966.6	3,981.9	3,936.6	11.8	12.9	81.40	-382.2	350.1	256.6	233.4	23.22	11.053	
4,100.0	4,065.3	4,081.4	4,034.4	12.2	13.4	81.80	-396.2	362.0	266.0	242.0	23.98	11.094	
4,200.0	4,164.0	4,180.9	4,132.3	12.6	13.8	82.18	-410.2	374.0	275.4	250.7	24.74	11.132	
4,300.0	4,262.6	4,280.5	4,230.1	12.9	14.2	82.53	-424.2	385.9	284.9	259.3	25.51	11.168	
4,400.0	4,361.3	4,380.0	4,327.9	13.3	14.6	82.86	-438.2	397.8	294.3	268.0	26.27	11.202	
4,500.0	4,459.9	4,479.6	4,425.7	13.7	15.0	83.17	-452.2	409.8	303.7	276.7	27.04	11.235	
4,600.0	4,558.6	4,579.1	4,523.6	14.1	15.5	83.46	-466.2	421.7	313.2	285.4	27.80	11.265	
4,700.0	4,657.2	4,678.6	4,621.4	14.5	15.9	83.73	-480.2	433.7	322.7	294.1	28.57	11.294	
4,800.0	4,755.9	4,778.2	4,719.2	14.9	16.3	83.99	-494.2	445.6	332.1	302.8	29.34	11.321	
4,900.0	4,854.6	4,877.7	4,817.0	15.2	16.7	84.26	-508.2	457.5	341.6	311.5	30.10	11.351	
5,000.0	4,953.6	4,977.2	4,914.8	15.5	17.1	84.27	-522.2	469.5	351.3	320.6	30.72	11.436	
5,100.0	5,053.1	5,076.6	5,012.5	15.7	17.6	83.75	-536.1	481.4	361.5	330.2	31.26	11.563	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.0	5,152.8	5,175.7	5,109.9	15.9	18.0	82.74	-550.1	493.3	372.1	340.4	31.70	11.735	
5,300.0	5,252.8	5,274.5	5,207.0	16.1	18.4	81.30	-564.0	505.1	383.3	351.3	32.05	11.960	
5,400.0	5,352.8	5,372.8	5,303.6	16.2	18.8	-172.22	-577.8	516.9	395.5	367.7	27.79	14.228	
5,500.0	5,452.8	5,471.1	5,400.2	16.4	19.2	-174.14	-591.6	528.7	408.1	379.5	28.59	14.277	
5,600.0	5,552.8	5,572.5	5,499.9	16.5	19.6	-175.99	-605.8	540.8	421.1	391.7	29.38	14.334	
5,700.0	5,652.8	5,683.3	5,609.4	16.7	20.0	-177.59	-618.9	551.9	432.4	402.3	30.09	14.372	
5,800.0	5,752.8	5,795.3	5,720.6	16.8	20.2	-178.76	-628.8	560.4	441.1	410.4	30.70	14.370	
5,900.0	5,852.8	5,908.2	5,833.1	17.0	20.4	-179.51	-635.5	566.1	447.0	415.8	31.21	14.321	
6,000.0	5,952.8	6,021.6	5,946.4	17.1	20.6	-179.87	-638.8	569.0	449.9	418.2	31.64	14.220	
6,100.0	6,052.8	6,128.0	6,052.8	17.3	20.7	-179.91	-639.2	569.3	450.2	418.2	31.99	14.074	
6,200.0	6,152.8	6,228.0	6,152.8	17.5	20.9	-179.91	-639.2	569.3	450.2	417.9	32.32	13.931	
6,300.0	6,252.8	6,328.0	6,252.8	17.6	21.0	-179.91	-639.2	569.3	450.2	417.6	32.65	13.790	
6,400.0	6,352.8	6,428.0	6,352.8	17.8	21.1	-179.91	-639.2	569.3	450.2	417.2	32.98	13.651	
6,500.0	6,452.8	6,528.0	6,452.8	17.9	21.2	-179.91	-639.2	569.3	450.2	416.9	33.32	13.514	
6,600.0	6,552.8	6,628.0	6,552.8	18.1	21.4	-179.91	-639.2	569.3	450.2	416.6	33.65	13.378	
6,700.0	6,652.5	6,726.1	6,650.7	18.2	21.5	-88.04	-639.4	564.3	450.2	414.3	35.89	12.543	
6,800.0	6,750.6	6,824.0	6,746.8	18.2	21.5	-88.09	-640.0	546.1	450.2	414.3	35.89	12.543	
6,900.0	6,845.1	6,922.0	6,839.7	18.2	21.4	-88.18	-641.0	514.9	450.2	414.5	35.73	12.600	
7,000.0	6,934.2	7,020.1	6,927.5	18.1	21.3	-88.30	-642.5	471.3	450.2	414.7	35.49	12.685	
7,100.0	7,016.1	7,118.4	7,008.6	18.0	21.2	-88.46	-644.3	416.1	450.1	414.8	35.29	12.755	
7,200.0	7,089.2	7,216.8	7,081.5	18.0	21.0	-88.64	-646.5	350.2	450.1	414.8	35.29	12.755	
7,300.0	7,152.2	7,315.4	7,144.9	18.1	20.9	-88.85	-648.9	274.7	450.1	414.4	35.66	12.622	
7,400.0	7,203.7	7,414.3	7,197.3	18.5	20.8	-89.08	-651.7	191.1	450.0	413.5	36.55	12.311	
7,500.0	7,242.8	7,513.4	7,237.9	19.2	20.7	-89.34	-654.7	100.8	450.0	411.9	38.09	11.816	
7,600.0	7,268.7	7,612.8	7,265.7	20.3	20.8	-89.60	-657.8	5.5	450.0	409.7	40.26	11.176	
7,697.0	7,280.8	7,709.5	7,279.8	21.6	21.5	-89.87	-661.0	-90.1	450.0	407.1	42.93	10.482	
7,700.0	7,281.0	7,712.5	7,280.0	21.7	21.5	-89.87	-661.1	-93.0	450.0	407.0	43.02	10.461	
7,800.0	7,282.0	7,812.4	7,282.0	23.3	23.0	-90.00	-664.4	-192.9	450.0	403.8	46.24	9.733	
7,900.0	7,282.0	7,912.4	7,282.0	25.1	24.8	-90.00	-667.7	-292.8	450.0	400.1	49.86	9.025	
8,000.0	7,282.0	8,012.4	7,282.0	27.1	26.8	-90.00	-671.0	-392.8	450.0	396.2	53.83	8.360	
8,100.0	7,282.0	8,112.4	7,282.0	29.2	28.9	-90.00	-674.3	-492.7	450.0	391.9	58.07	7.750	
8,200.0	7,282.0	8,212.4	7,282.0	31.4	31.2	-90.00	-677.6	-592.7	450.0	387.5	62.52	7.198	
8,300.0	7,282.0	8,312.4	7,282.0	33.8	33.5	-90.00	-680.9	-692.6	450.0	382.9	67.15	6.702	
8,400.0	7,282.0	8,412.4	7,282.0	36.1	35.9	-90.00	-684.2	-792.6	450.0	378.1	71.91	6.258	
8,500.0	7,282.0	8,512.4	7,282.0	38.6	38.4	-90.00	-687.5	-892.5	450.0	373.2	76.79	5.861	
8,600.0	7,282.0	8,612.4	7,282.0	41.1	40.8	-90.00	-690.8	-992.5	450.0	368.3	81.76	5.505	
8,700.0	7,282.0	8,712.4	7,282.0	43.6	43.4	-90.00	-694.1	-1,092.4	450.0	363.2	86.80	5.185	
8,800.0	7,282.0	8,812.4	7,282.0	46.2	45.9	-90.00	-697.4	-1,192.3	450.0	358.1	91.91	4.896	
8,900.0	7,282.0	8,912.4	7,282.0	48.7	48.5	-90.00	-700.7	-1,292.3	450.1	353.0	97.08	4.636	
9,000.0	7,282.0	9,012.4	7,282.0	51.3	51.1	-90.00	-704.0	-1,392.2	450.1	347.8	102.29	4.400	
9,100.0	7,282.0	9,112.4	7,282.0	54.0	53.7	-90.00	-707.3	-1,492.2	450.1	342.5	107.54	4.185	
9,200.0	7,282.0	9,212.4	7,282.0	56.6	56.4	-90.00	-710.6	-1,592.1	450.1	337.2	112.82	3.989	
9,300.0	7,282.0	9,312.4	7,282.0	59.3	59.0	-90.00	-713.9	-1,692.1	450.1	331.9	118.14	3.810	
9,400.0	7,282.0	9,412.4	7,282.0	61.9	61.7	-90.00	-717.2	-1,792.0	450.1	326.6	123.48	3.645	
9,500.0	7,282.0	9,512.4	7,282.0	64.6	64.4	-90.00	-720.5	-1,892.0	450.1	321.2	128.84	3.493	
9,600.0	7,282.0	9,612.4	7,282.0	67.3	67.1	-90.00	-723.8	-1,991.9	450.1	315.9	134.22	3.353	
9,700.0	7,282.0	9,712.4	7,282.0	70.0	69.8	-90.00	-727.1	-2,091.9	450.1	310.5	139.62	3.224	
9,800.0	7,282.0	9,812.4	7,282.0	72.7	72.5	-90.00	-730.4	-2,191.8	450.1	305.1	145.03	3.104	
9,900.0	7,282.0	9,912.4	7,282.0	75.4	75.2	-90.00	-733.7	-2,291.7	450.1	299.6	150.46	2.992	
10,000.0	7,282.0	10,012.4	7,282.0	78.1	77.9	-90.00	-737.0	-2,391.7	450.1	294.2	155.89	2.887	
10,100.0	7,282.0	10,112.4	7,282.0	80.9	80.6	-90.00	-740.3	-2,491.6	450.1	288.8	161.34	2.790	
10,200.0	7,282.0	10,212.4	7,282.0	83.6	83.4	-90.00	-743.6	-2,591.6	450.1	283.3	166.80	2.698	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	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 Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.0	7,282.0	10,312.4	7,282.0	86.3	86.1	-90.00	-746.9	-2,691.5	450.1	277.8	172.27	2.613	
10,400.0	7,282.0	10,412.4	7,282.0	89.1	88.8	-90.00	-750.2	-2,791.5	450.1	272.4	177.75	2.532	
10,500.0	7,282.0	10,512.4	7,282.0	91.8	91.6	-90.00	-753.5	-2,891.4	450.1	266.9	183.24	2.457	
10,600.0	7,282.0	10,612.4	7,282.0	94.6	94.3	-90.00	-756.7	-2,991.4	450.1	261.4	188.73	2.385	
10,700.0	7,282.0	10,712.4	7,282.0	97.3	97.1	-90.00	-760.0	-3,091.3	450.1	255.9	194.23	2.318	
10,800.0	7,282.0	10,812.4	7,282.0	100.1	99.8	-90.00	-763.3	-3,191.3	450.1	250.4	199.73	2.254	
10,900.0	7,282.0	10,912.4	7,282.0	102.8	102.6	-90.00	-766.6	-3,291.2	450.2	244.9	205.24	2.193	
11,000.0	7,282.0	11,012.4	7,282.0	105.6	105.3	-90.00	-769.9	-3,391.1	450.2	239.4	210.75	2.136	
11,100.0	7,282.0	11,112.4	7,282.0	108.3	108.1	-90.00	-773.2	-3,491.1	450.2	233.9	216.27	2.081	
11,200.0	7,282.0	11,212.4	7,282.0	111.1	110.8	-90.00	-776.5	-3,591.0	450.2	228.4	221.79	2.030	
11,300.0	7,282.0	11,312.4	7,282.0	113.9	113.6	-90.00	-779.8	-3,691.0	450.2	222.9	227.32	1.980	
11,400.0	7,282.0	11,412.4	7,282.0	116.6	116.4	-90.00	-783.1	-3,790.9	450.2	217.3	232.85	1.933	
11,500.0	7,282.0	11,512.4	7,282.0	119.4	119.1	-90.00	-786.4	-3,890.9	450.2	211.8	238.38	1.888	
11,600.0	7,282.0	11,612.4	7,282.0	122.2	121.9	-90.00	-789.7	-3,990.8	450.2	206.3	243.92	1.846	
11,700.0	7,282.0	11,712.4	7,282.0	124.9	124.6	-90.00	-793.0	-4,090.8	450.2	200.7	249.46	1.805	
11,800.0	7,282.0	11,812.4	7,282.0	127.7	127.4	-90.00	-796.3	-4,190.7	450.2	195.2	255.00	1.765	
11,897.0	7,282.0	11,909.4	7,282.0	130.4	130.1	-90.00	-799.5	-4,287.6	450.2	189.8	260.38	1.729	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Hertzke #1-33 (Exist.) - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 ft

Survey Program: 7334-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,400.0	7,282.0	7,310.0	7,310.0	116.6	8.2	90.00	-145.6	-4,171.6	411.1	286.3	124.83	3.294	
11,500.0	7,282.0	7,310.0	7,310.0	119.4	8.2	90.00	-145.6	-4,171.6	327.3	199.7	127.59	2.565	
11,600.0	7,282.0	7,310.0	7,310.0	122.2	8.2	90.00	-145.6	-4,171.6	255.4	125.1	130.36	1.959	
11,700.0	7,282.0	7,310.0	7,310.0	124.9	8.2	90.00	-145.6	-4,171.6	208.2	75.1	133.13	1.564	
11,759.4	7,282.0	7,310.0	7,310.0	126.6	8.2	90.00	-145.6	-4,171.6	199.6	64.8	134.78	1.481	Level 3, CC, ES, SF
11,800.0	7,282.0	7,310.0	7,310.0	127.7	8.2	90.00	-145.6	-4,171.6	203.6	67.7	135.90	1.498	Level 3
11,897.0	7,282.0	7,310.0	7,310.0	130.4	8.2	90.00	-145.6	-4,171.6	242.4	103.8	138.59	1.749	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Offset Design Greeley-Rothe Pad Sec.1-T5N-R67W - Hertzke #1-34 (Exist.) - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.0 ft

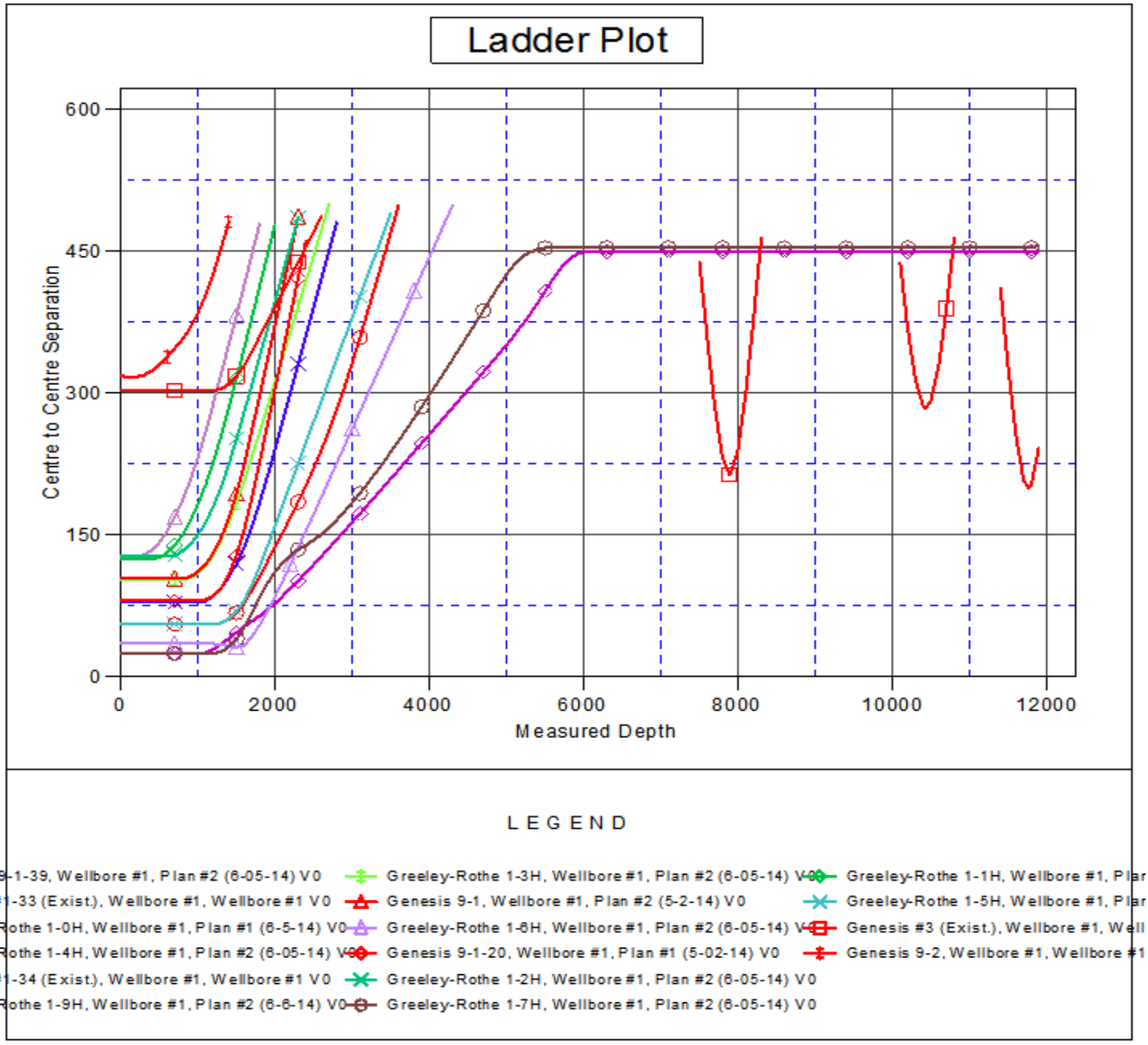
Survey Program: 7342-MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,100.0	7,282.0	7,287.0	7,287.0	80.9	8.2	90.00	-17.2	-2,848.8	437.9	348.9	89.05	4.918	
10,200.0	7,282.0	7,287.0	7,287.0	83.6	8.2	90.00	-17.2	-2,848.8	367.7	275.9	91.78	4.006	
10,300.0	7,282.0	7,287.0	7,287.0	86.3	8.2	90.00	-17.2	-2,848.8	313.9	219.4	94.51	3.322	
10,400.0	7,282.0	7,287.0	7,287.0	89.1	8.2	90.00	-17.2	-2,848.8	286.3	189.0	97.25	2.943	
10,433.1	7,282.0	7,287.0	7,287.0	90.0	8.2	90.00	-17.2	-2,848.8	284.3	186.2	98.16	2.897	CC, ES, SF
10,500.0	7,282.0	7,287.0	7,287.0	91.8	8.2	90.00	-17.2	-2,848.8	292.1	192.1	99.99	2.921	
10,600.0	7,282.0	7,287.0	7,287.0	94.6	8.2	90.00	-17.2	-2,848.8	329.7	227.0	102.74	3.209	
10,700.0	7,282.0	7,287.0	7,287.0	97.3	8.2	90.00	-17.2	-2,848.8	390.0	284.5	105.49	3.697	
10,800.0	7,282.0	7,287.0	7,287.0	100.1	8.2	90.00	-17.2	-2,848.8	464.2	355.9	108.24	4.288	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4892.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Greeley-Rothe 1-8H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.43°



Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-8H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4892.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4892.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-8H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	landmark
Reference Design:	Plan #2 (6-05-14)	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4892.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Greeley-Rothe 1-8H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.43°