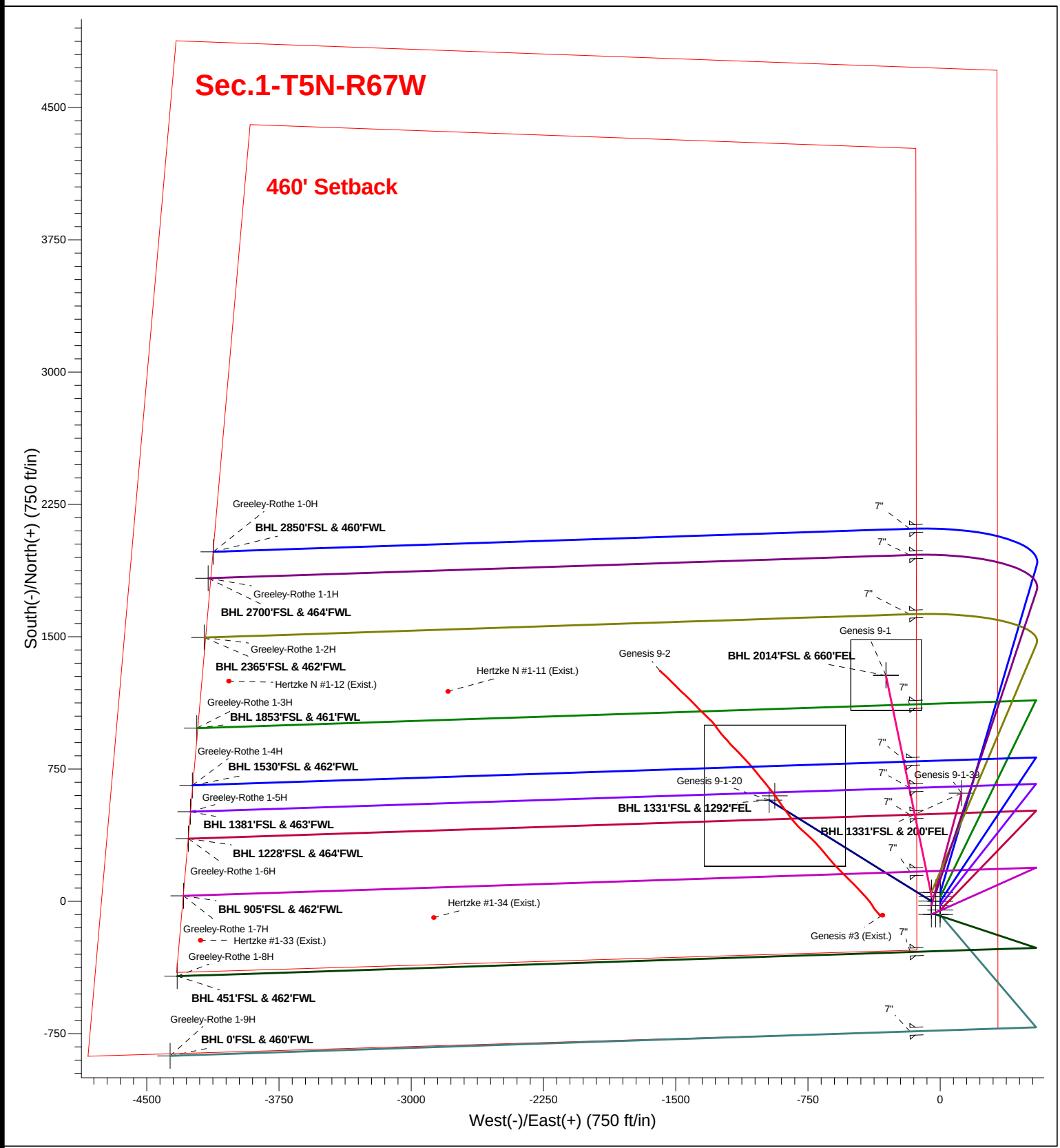
ENSIGN Directional

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)



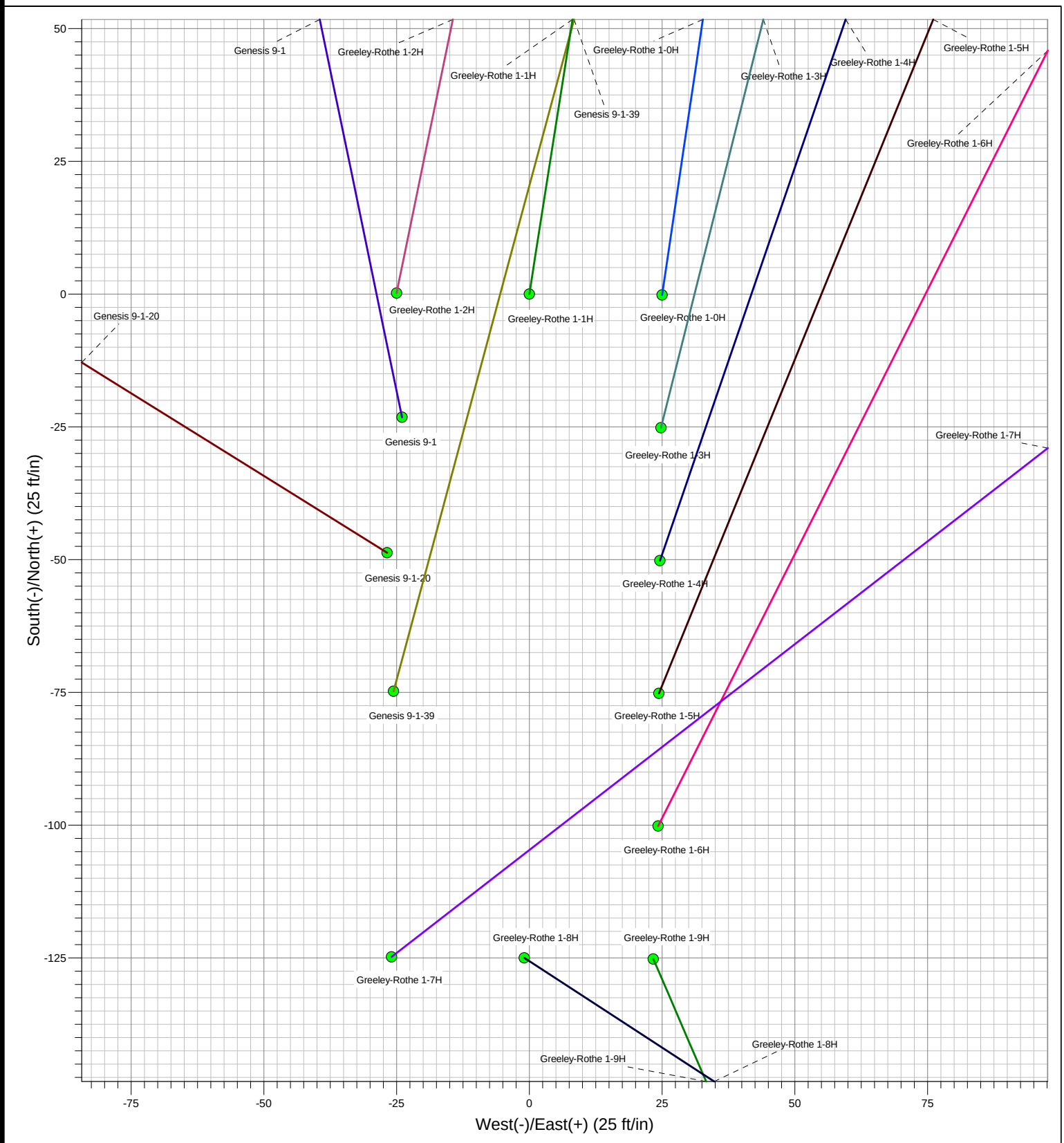
ENSIGN Directional

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 1-7H**

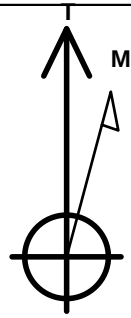
Surface Location: Greeley-Rothe Pad Sec.1-T5N-R67W
North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
Ground Elevation: 4876.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1397756.60	3185478.81	40.423331	-104.833797	

RKB - 15' WELL @ 4891.0ft (RKB - 15')

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
SHL 650'FSL & 379'FEL	1.0	0.0	0.0	Point
BHL 905'FSL & 462'FWL	7282.0	105.6	-4241.2	Point



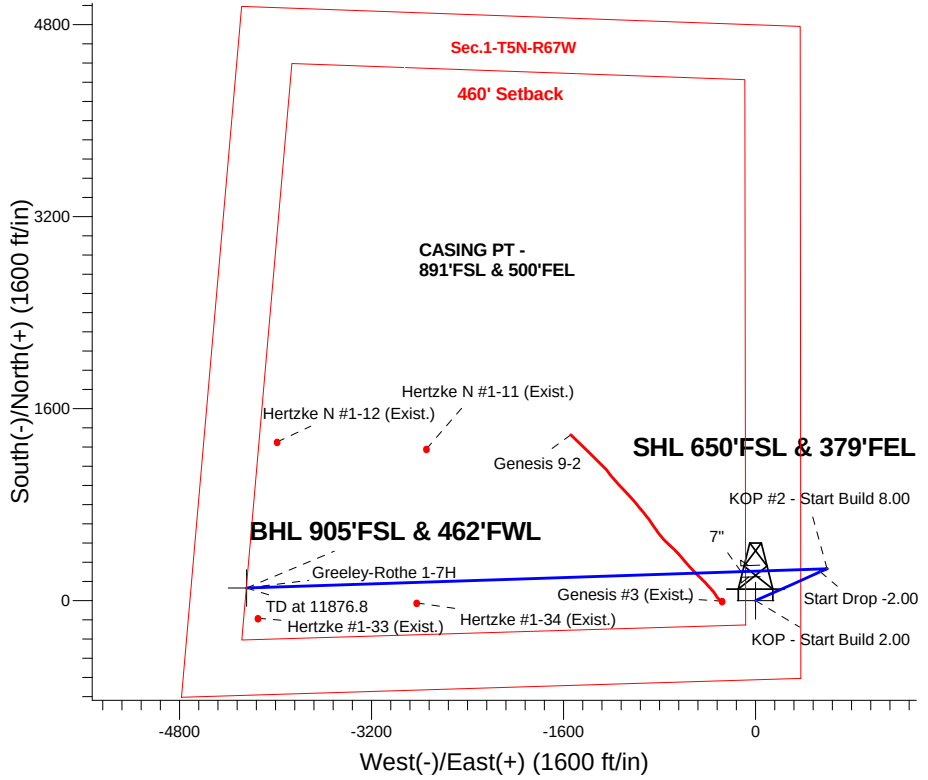
Azimuths to True North
Magnetic North: 8.50°

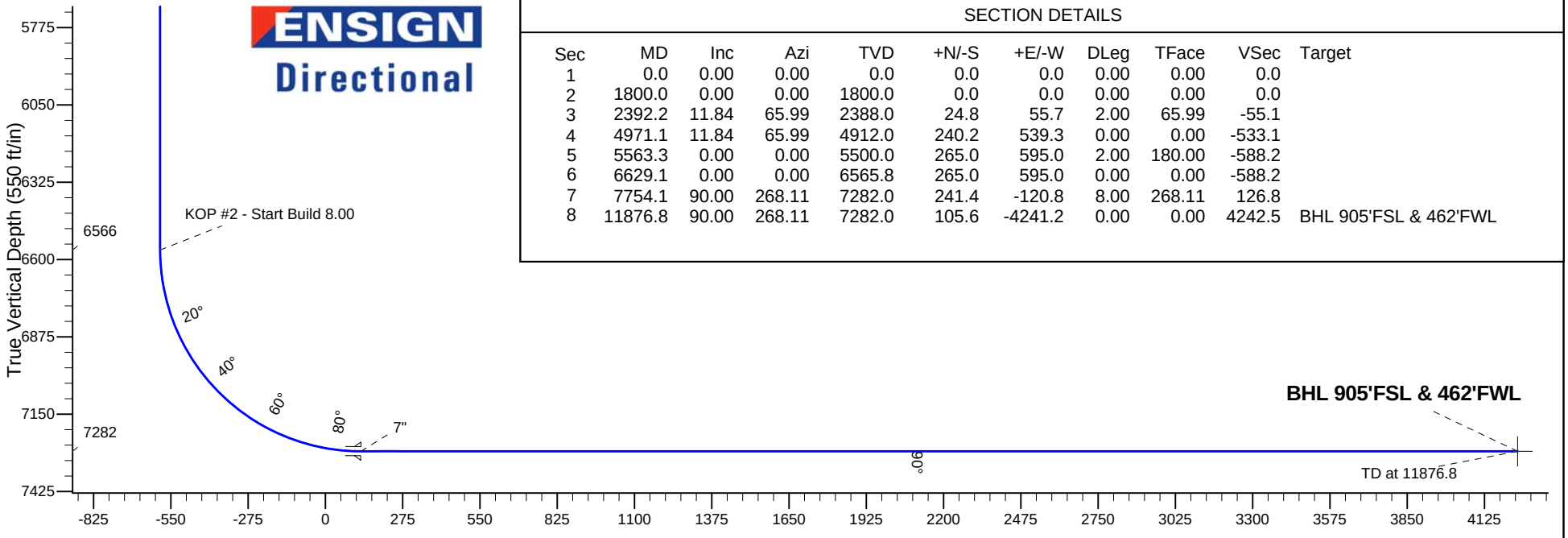
Magnetic Field
Strength: 52822.3snT
Dip Angle: 66.96°
Date: 6/6/2014
Model: IGRF2010

Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-7H
Plan #2 (6-05-14)
15:29, June 06 2014

ANNOTATIONS

TVD	MD	Annotation
1800.0	1800.0	KOP - Start Build 2.00
4912.0	4971.1	Start Drop -2.00
6565.8	6629.1	KOP #2 - Start Build 8.00
7282.0	11876.8	TD at 11876.8





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	1800.0	0.00	0.00	1800.0	0.0	0.0	0.00	0.00	0.0	
3	2392.2	11.84	65.99	2388.0	24.8	55.7	2.00	65.99	-55.1	
4	4971.1	11.84	65.99	4912.0	240.2	539.3	0.00	0.00	-533.1	
5	5563.3	0.00	0.00	5500.0	265.0	595.0	2.00	180.00	-588.2	
6	6629.1	0.00	0.00	6565.8	265.0	595.0	0.00	0.00	-588.2	
7	7754.1	90.00	268.11	7282.0	241.4	-120.8	8.00	268.11	126.8	
8	11876.8	90.00	268.11	7282.0	105.6	-4241.2	0.00	0.00	4242.5	BHL 905'FSL & 462'FWL

KP KAUFFMAN

SEC.1-T5N-R67W
Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-7H

Wellbore #1

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

Standard Planning Report

06 June, 2014

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-7H	**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 1-7H

Well Position	**+N/-S**	-123.5 ft	**Northing:**	1,397,756.60 ft	**Latitude:**	40.423331
	+E/-W	-52.1 ft	**Easting:**	3,185,478.81 ft	**Longitude:**	-104.833797
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,876.0 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	271.43

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	
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,392.2	11.84	65.99	2,388.0	24.8	55.7	2.00	2.00	0.00	65.99	
4,971.1	11.84	65.99	4,912.0	240.2	539.3	0.00	0.00	0.00	0.00	
5,563.3	0.00	0.00	5,500.0	265.0	595.0	2.00	-2.00	0.00	180.00	
6,629.1	0.00	0.00	6,565.8	265.0	595.0	0.00	0.00	0.00	0.00	
7,754.1	90.00	268.11	7,282.0	241.4	-120.8	8.00	8.00	0.00	268.11	
11,876.8	90.00	268.11	7,282.0	105.6	-4,241.2	0.00	0.00	0.00	0.00	BHL 905'FSL & 462

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-7H	**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
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - Start Build 2.00									
1,900.0	2.00	65.99	1,900.0	0.7	1.6	-1.6	2.00	2.00	0.00
2,000.0	4.00	65.99	1,999.8	2.8	6.4	-6.3	2.00	2.00	0.00
2,100.0	6.00	65.99	2,099.5	6.4	14.3	-14.2	2.00	2.00	0.00
2,200.0	8.00	65.99	2,198.7	11.3	25.5	-25.2	2.00	2.00	0.00
2,300.0	10.00	65.99	2,297.5	17.7	39.8	-39.3	2.00	2.00	0.00
2,392.2	11.84	65.99	2,388.0	24.8	55.7	-55.1	2.00	2.00	0.00
2,400.0	11.84	65.99	2,395.6	25.5	57.2	-56.5	0.00	0.00	0.00
2,500.0	11.84	65.99	2,493.5	33.8	75.9	-75.1	0.00	0.00	0.00
2,600.0	11.84	65.99	2,591.4	42.2	94.7	-93.6	0.00	0.00	0.00
2,700.0	11.84	65.99	2,689.2	50.5	113.4	-112.1	0.00	0.00	0.00
2,800.0	11.84	65.99	2,787.1	58.9	132.2	-130.7	0.00	0.00	0.00
2,900.0	11.84	65.99	2,885.0	67.2	150.9	-149.2	0.00	0.00	0.00
3,000.0	11.84	65.99	2,982.8	75.6	169.7	-167.7	0.00	0.00	0.00
3,100.0	11.84	65.99	3,080.7	83.9	188.4	-186.3	0.00	0.00	0.00
3,200.0	11.84	65.99	3,178.6	92.3	207.2	-204.8	0.00	0.00	0.00
3,300.0	11.84	65.99	3,276.5	100.6	225.9	-223.4	0.00	0.00	0.00
3,400.0	11.84	65.99	3,374.3	109.0	244.7	-241.9	0.00	0.00	0.00
3,500.0	11.84	65.99	3,472.2	117.3	263.4	-260.4	0.00	0.00	0.00
3,600.0	11.84	65.99	3,570.1	125.7	282.2	-279.0	0.00	0.00	0.00
3,700.0	11.84	65.99	3,667.9	134.0	300.9	-297.5	0.00	0.00	0.00
3,800.0	11.84	65.99	3,765.8	142.4	319.7	-316.0	0.00	0.00	0.00
3,900.0	11.84	65.99	3,863.7	150.7	338.4	-334.6	0.00	0.00	0.00
4,000.0	11.84	65.99	3,961.6	159.1	357.2	-353.1	0.00	0.00	0.00
4,100.0	11.84	65.99	4,059.4	167.4	375.9	-371.7	0.00	0.00	0.00
4,200.0	11.84	65.99	4,157.3	175.8	394.7	-390.2	0.00	0.00	0.00
4,300.0	11.84	65.99	4,255.2	184.1	413.4	-408.7	0.00	0.00	0.00
4,400.0	11.84	65.99	4,353.0	192.5	432.2	-427.3	0.00	0.00	0.00
4,500.0	11.84	65.99	4,450.9	200.8	450.9	-445.8	0.00	0.00	0.00
4,600.0	11.84	65.99	4,548.8	209.2	469.7	-464.3	0.00	0.00	0.00
4,700.0	11.84	65.99	4,646.7	217.5	488.4	-482.9	0.00	0.00	0.00
4,800.0	11.84	65.99	4,744.5	225.9	507.2	-501.4	0.00	0.00	0.00
4,900.0	11.84	65.99	4,842.4	234.2	525.9	-520.0	0.00	0.00	0.00
4,971.1	11.84	65.99	4,912.0	240.2	539.3	-533.1	0.00	0.00	0.00
Start Drop -2.00									

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-7H	**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	11.27	65.99	4,940.3	242.5	544.6	-538.4	2.00	-2.00	0.00
5,100.0	9.27	65.99	5,038.7	249.8	560.8	-554.5	2.00	-2.00	0.00
5,200.0	7.27	65.99	5,137.6	255.6	574.0	-567.4	2.00	-2.00	0.00
5,300.0	5.27	65.99	5,237.0	260.1	584.0	-577.3	2.00	-2.00	0.00
5,400.0	3.27	65.99	5,336.8	263.1	590.7	-584.0	2.00	-2.00	0.00
5,500.0	1.27	65.99	5,436.7	264.7	594.4	-587.6	2.00	-2.00	0.00
5,563.3	0.00	0.00	5,500.0	265.0	595.0	-588.2	2.00	-2.00	0.00
5,600.0	0.00	0.00	5,536.7	265.0	595.0	-588.2	0.00	0.00	0.00
5,700.0	0.00	0.00	5,636.7	265.0	595.0	-588.2	0.00	0.00	0.00
5,800.0	0.00	0.00	5,736.7	265.0	595.0	-588.2	0.00	0.00	0.00
5,900.0	0.00	0.00	5,836.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,000.0	0.00	0.00	5,936.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,100.0	0.00	0.00	6,036.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,200.0	0.00	0.00	6,136.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,300.0	0.00	0.00	6,236.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,400.0	0.00	0.00	6,336.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,500.0	0.00	0.00	6,436.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,600.0	0.00	0.00	6,536.7	265.0	595.0	-588.2	0.00	0.00	0.00
6,629.1	0.00	0.00	6,565.8	265.0	595.0	-588.2	0.00	0.00	0.00
KOP #2 - Start Build 8.00									
6,700.0	5.67	268.11	6,636.6	264.9	591.5	-584.7	8.00	8.00	0.00
6,800.0	13.67	268.11	6,735.1	264.3	574.7	-568.0	8.00	8.00	0.00
6,900.0	21.67	268.11	6,830.3	263.3	544.4	-537.7	8.00	8.00	0.00
7,000.0	29.67	268.11	6,920.3	261.9	501.2	-494.5	8.00	8.00	0.00
7,100.0	37.67	268.11	7,003.5	260.1	445.8	-439.2	8.00	8.00	0.00
7,200.0	45.67	268.11	7,078.1	257.9	379.4	-372.9	8.00	8.00	0.00
7,300.0	53.67	268.11	7,142.8	255.4	303.3	-296.8	8.00	8.00	0.00
7,400.0	61.67	268.11	7,196.2	252.6	218.9	-212.5	8.00	8.00	0.00
7,500.0	69.67	268.11	7,237.4	249.6	127.9	-121.6	8.00	8.00	0.00
7,600.0	77.67	268.11	7,265.5	246.4	32.1	-25.9	8.00	8.00	0.00
7,700.0	85.67	268.11	7,280.0	243.2	-66.8	72.8	8.00	8.00	0.00
7,754.1	90.00	268.11	7,282.0	241.4	-120.8	126.7	8.00	8.00	0.00
7"									
7,800.0	90.00	268.11	7,282.0	239.9	-166.7	172.6	0.01	0.01	0.00
7,900.0	90.00	268.11	7,282.0	236.6	-266.6	272.4	0.00	0.00	0.00
8,000.0	90.00	268.11	7,282.0	233.3	-366.5	372.2	0.00	0.00	0.00
8,100.0	90.00	268.11	7,282.0	230.0	-466.5	472.1	0.00	0.00	0.00
8,200.0	90.00	268.11	7,282.0	226.7	-566.4	571.9	0.00	0.00	0.00
8,300.0	90.00	268.11	7,282.0	223.4	-666.4	671.7	0.00	0.00	0.00
8,400.0	90.00	268.11	7,282.0	220.1	-766.3	771.6	0.00	0.00	0.00
8,500.0	90.00	268.11	7,282.0	216.8	-866.3	871.4	0.00	0.00	0.00
8,600.0	90.00	268.11	7,282.0	213.6	-966.2	971.2	0.00	0.00	0.00
8,700.0	90.00	268.11	7,282.0	210.3	-1,066.2	1,071.1	0.00	0.00	0.00
8,800.0	90.00	268.11	7,282.0	207.0	-1,166.1	1,170.9	0.00	0.00	0.00
8,900.0	90.00	268.11	7,282.0	203.7	-1,266.1	1,270.7	0.00	0.00	0.00
9,000.0	90.00	268.11	7,282.0	200.4	-1,366.0	1,370.6	0.00	0.00	0.00
9,100.0	90.00	268.11	7,282.0	197.1	-1,465.9	1,470.4	0.00	0.00	0.00
9,200.0	90.00	268.11	7,282.0	193.8	-1,565.9	1,570.2	0.00	0.00	0.00
9,300.0	90.00	268.11	7,282.0	190.5	-1,665.8	1,670.1	0.00	0.00	0.00
9,400.0	90.00	268.11	7,282.0	187.2	-1,765.8	1,769.9	0.00	0.00	0.00
9,500.0	90.00	268.11	7,282.0	183.9	-1,865.7	1,869.7	0.00	0.00	0.00
9,600.0	90.00	268.11	7,282.0	180.6	-1,965.7	1,969.6	0.00	0.00	0.00
9,700.0	90.00	268.11	7,282.0	177.3	-2,065.6	2,069.4	0.00	0.00	0.00
9,800.0	90.00	268.11	7,282.0	174.0	-2,165.6	2,169.2	0.00	0.00	0.00

Database:	landmark	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Company:	KP KAUFFMAN	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Project:	SEC.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**North Reference:**	True
Well:	Greeley-Rothe 1-7H	**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	170.7	-2,265.5	2,269.1	0.00	0.00	0.00
10,000.0	90.00	268.11	7,282.0	167.4	-2,365.5	2,368.9	0.00	0.00	0.00
10,100.0	90.00	268.11	7,282.0	164.1	-2,465.4	2,468.7	0.00	0.00	0.00
10,200.0	90.00	268.11	7,282.0	160.9	-2,565.3	2,568.6	0.00	0.00	0.00
10,300.0	90.00	268.11	7,282.0	157.6	-2,665.3	2,668.4	0.00	0.00	0.00
10,400.0	90.00	268.11	7,282.0	154.3	-2,765.2	2,768.2	0.00	0.00	0.00
10,500.0	90.00	268.11	7,282.0	151.0	-2,865.2	2,868.1	0.00	0.00	0.00
10,600.0	90.00	268.11	7,282.0	147.7	-2,965.1	2,967.9	0.00	0.00	0.00
10,700.0	90.00	268.11	7,282.0	144.4	-3,065.1	3,067.7	0.00	0.00	0.00
10,800.0	90.00	268.11	7,282.0	141.1	-3,165.0	3,167.6	0.00	0.00	0.00
10,900.0	90.00	268.11	7,282.0	137.8	-3,265.0	3,267.4	0.00	0.00	0.00
11,000.0	90.00	268.11	7,282.0	134.5	-3,364.9	3,367.2	0.00	0.00	0.00
11,100.0	90.00	268.11	7,282.0	131.2	-3,464.9	3,467.1	0.00	0.00	0.00
11,200.0	90.00	268.11	7,282.0	127.9	-3,564.8	3,566.9	0.00	0.00	0.00
11,300.0	90.00	268.11	7,282.0	124.6	-3,664.8	3,666.7	0.00	0.00	0.00
11,400.0	90.00	268.11	7,282.0	121.3	-3,764.7	3,766.6	0.00	0.00	0.00
11,500.0	90.00	268.11	7,282.0	118.0	-3,864.6	3,866.4	0.00	0.00	0.00
11,600.0	90.00	268.11	7,282.0	114.7	-3,964.6	3,966.2	0.00	0.00	0.00
11,700.0	90.00	268.11	7,282.0	111.4	-4,064.5	4,066.0	0.00	0.00	0.00
11,800.0	90.00	268.11	7,282.0	108.2	-4,164.5	4,165.9	0.00	0.00	0.00
11,876.8	90.00	268.11	7,282.0	105.6	-4,241.2	4,242.5	0.00	0.00	0.00

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,754.1	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
1,800.0	1,800.0	0.0	0.0	KOP - Start Build 2.00
4,971.1	4,912.0	24.8	55.7	Start Drop -2.00
6,629.1	6,565.8	209.4	470.2	KOP #2 - Start Build 8.00
11,876.8	7,282.0	240.2	539.3	TD at 11876.8

KP KAUFFMAN

SEC.1-T5N-R67W
Greeley-Rothe Pad Sec.1-T5N-R67W
Greeley-Rothe 1-7H

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

Anticollision Report

06 June, 2014

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	11,876.8	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	7,919.4	7,286.0	240.1	69.0	1.403	Level 3, CC, ES, SF
Genesis 9-2 - Wellbore #1 - Wellbore #1	152.8	154.8	292.5	292.0	613.147	CC
Genesis 9-2 - Wellbore #1 - Wellbore #1	200.0	199.8	292.7	292.0	431.531	ES
Genesis 9-2 - Wellbore #1 - Wellbore #1	1,500.0	1,401.1	477.3	469.2	58.480	SF
Greeley-Rothe Pad Sec.1-T5N-R67W						
Genesis 9-1 - Wellbore #1 - Plan #2 (5-2-14)	800.0	800.0	101.6	98.3	30.143	CC, ES
Genesis 9-1 - Wellbore #1 - Plan #2 (5-2-14)	1,100.0	1,089.0	116.4	111.7	24.773	SF
Genesis 9-1-20 - Wellbore #1 - Plan #1 (5-02-14)	1,000.0	1,000.0	76.1	71.8	17.820	CC, ES
Genesis 9-1-20 - Wellbore #1 - Plan #1 (5-02-14)	8,600.0	7,251.2	464.7	403.1	7.541	SF
Genesis 9-1-39 - Wellbore #1 - Plan #2 (6-05-14)	2,144.7	2,143.8	45.5	36.1	4.848	CC, ES
Genesis 9-1-39 - Wellbore #1 - Plan #2 (6-05-14)	2,200.0	2,198.7	46.1	36.5	4.782	SF
Greeley-Rothe 1-0H - Wellbore #1 - Plan #1 (6-5-14)	200.0	199.0	134.6	134.0	200.349	CC, ES
Greeley-Rothe 1-0H - Wellbore #1 - Plan #1 (6-5-14)	1,800.0	1,695.0	480.4	469.9	45.703	SF
Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)	400.0	399.0	127.5	125.9	81.142	CC, ES
Greeley-Rothe 1-1H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,147.7	232.0	226.4	41.731	SF
Greeley-Rothe 1-2H - Wellbore #1 - Plan #2 (6-05-14)	600.0	599.0	125.0	122.5	50.603	CC, ES
Greeley-Rothe 1-2H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,168.2	181.5	176.2	34.418	SF
Greeley-Rothe 1-3H - Wellbore #1 - Plan #2 (6-05-14)	800.0	799.0	111.8	108.5	33.189	CC, ES
Greeley-Rothe 1-3H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,181.7	138.4	133.3	26.863	SF
Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)	1,000.0	1,000.0	90.1	85.9	21.105	CC, ES
Greeley-Rothe 1-4H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,193.6	96.9	91.7	18.809	SF
Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,200.0	70.7	65.5	13.677	CC, ES
Greeley-Rothe 1-5H - Wellbore #1 - Plan #2 (6-05-14)	11,876.8	11,976.9	491.8	241.3	1.964	SF
Greeley-Rothe 1-6H - Wellbore #1 - Plan #2 (6-05-14)	1,600.0	1,600.0	55.9	48.9	8.025	CC, ES
Greeley-Rothe 1-6H - Wellbore #1 - Plan #2 (6-05-14)	11,830.4	11,846.3	323.1	67.0	1.262	Level 3, SF
Greeley-Rothe 1-8H - Wellbore #1 - Plan #2 (6-05-14)	1,166.3	1,167.3	25.0	20.0	4.980	CC
Greeley-Rothe 1-8H - Wellbore #1 - Plan #2 (6-05-14)	1,200.0	1,201.0	25.0	19.8	4.835	ES
Greeley-Rothe 1-8H - Wellbore #1 - Plan #2 (6-05-14)	11,876.8	11,845.7	453.9	195.7	1.758	SF
Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)	966.3	967.3	49.3	45.2	11.964	CC
Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)	1,000.0	1,001.0	49.3	45.0	11.541	ES
Greeley-Rothe 1-9H - Wellbore #1 - Plan #2 (6-6-14)	1,200.0	1,198.4	54.1	49.0	10.608	SF
Hertzke #1-33 (Exist.) - Wellbore #1 - Wellbore #1	11,790.4	7,311.0	254.4	119.3	1.883	CC
Hertzke #1-33 (Exist.) - Wellbore #1 - Wellbore #1	11,800.0	7,311.0	254.6	119.2	1.880	ES, SF
Hertzke #1-34 (Exist.) - Wellbore #1 - Wellbore #1	10,464.1	7,288.0	169.6	71.1	1.721	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

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 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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

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

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	4.0	4.0	0.0	0.1	-90.83	-4.0	-278.1	278.1	278.1	0.08	3,468.031	
100.0	100.0	104.0	104.0	0.1	2.1	-90.83	-4.0	-278.1	278.1	275.9	2.19	126.853	
200.0	200.0	204.0	204.0	0.3	4.1	-90.83	-4.0	-278.1	278.1	273.7	4.42	62.964	
300.0	300.0	304.0	304.0	0.6	6.1	-90.83	-4.0	-278.1	278.1	271.5	6.64	41.875	
400.0	400.0	404.0	404.0	0.8	8.1	-90.83	-4.0	-278.1	278.1	269.3	8.87	31.368	
500.0	500.0	504.0	504.0	1.0	10.1	-90.83	-4.0	-278.1	278.1	267.0	11.09	25.076	
600.0	600.0	604.0	604.0	1.2	12.1	-90.83	-4.0	-278.1	278.1	264.8	13.32	20.887	
700.0	700.0	704.0	704.0	1.5	14.1	-90.83	-4.0	-278.1	278.1	262.6	15.54	17.897	
800.0	800.0	804.0	804.0	1.7	16.1	-90.83	-4.0	-278.1	278.1	260.4	17.77	15.656	
900.0	900.0	904.0	904.0	1.9	18.1	-90.83	-4.0	-278.1	278.1	258.1	19.99	13.913	
1,000.0	1,000.0	1,004.0	1,004.0	2.1	20.1	-90.83	-4.0	-278.1	278.1	255.9	22.22	12.520	
1,100.0	1,100.0	1,104.0	1,104.0	2.4	22.1	-90.83	-4.0	-278.1	278.1	253.7	24.44	11.380	
1,200.0	1,200.0	1,204.0	1,204.0	2.6	24.1	-90.83	-4.0	-278.1	278.1	251.5	26.66	10.431	
1,300.0	1,300.0	1,304.0	1,304.0	2.8	26.1	-90.83	-4.0	-278.1	278.1	249.2	28.89	9.627	
1,400.0	1,400.0	1,404.0	1,404.0	3.0	28.1	-90.83	-4.0	-278.1	278.1	247.0	31.11	8.939	
1,500.0	1,500.0	1,504.0	1,504.0	3.3	30.1	-90.83	-4.0	-278.1	278.1	244.8	33.34	8.343	
1,600.0	1,600.0	1,604.0	1,604.0	3.5	32.1	-90.83	-4.0	-278.1	278.1	242.6	35.56	7.821	
1,700.0	1,700.0	1,704.0	1,704.0	3.7	34.1	-90.83	-4.0	-278.1	278.1	240.3	37.79	7.360	
1,800.0	1,800.0	1,804.0	1,804.0	3.9	36.1	-90.83	-4.0	-278.1	278.1	238.1	40.01	6.951	
1,900.0	1,900.0	1,904.0	1,904.0	4.2	38.1	-156.95	-4.0	-278.1	279.7	237.5	42.21	6.628	
2,000.0	1,999.8	2,003.8	2,003.8	4.4	40.1	-157.33	-4.0	-278.1	284.6	240.2	44.34	6.417	
2,100.0	2,099.5	2,103.5	2,103.5	4.6	42.1	-157.92	-4.0	-278.1	292.6	246.2	46.42	6.304	
2,200.0	2,198.7	2,202.7	2,202.7	4.8	44.1	-158.70	-4.0	-278.1	304.0	255.5	48.43	6.276	
2,300.0	2,297.5	2,301.5	2,301.5	5.1	46.0	-159.62	-4.0	-278.1	318.6	268.2	50.36	6.326	
2,400.0	2,395.6	2,399.6	2,399.6	5.4	48.0	-160.64	-4.0	-278.1	336.6	284.3	52.23	6.444	
2,500.0	2,493.5	2,497.5	2,497.5	5.7	50.0	-161.73	-4.0	-278.1	356.1	301.7	54.37	6.549	
2,600.0	2,591.4	2,595.4	2,595.4	6.0	51.9	-162.71	-4.0	-278.1	375.6	319.1	56.51	6.648	
2,700.0	2,689.2	2,693.2	2,693.2	6.3	53.9	-163.59	-4.0	-278.1	395.3	336.7	58.65	6.740	
2,800.0	2,787.1	2,791.1	2,791.1	6.7	55.8	-164.39	-4.0	-278.1	415.1	354.3	60.80	6.827	
2,900.0	2,885.0	2,889.0	2,889.0	7.0	57.8	-165.12	-4.0	-278.1	434.9	372.0	62.95	6.909	
3,000.0	2,982.8	2,986.8	2,986.8	7.4	59.7	-165.78	-4.0	-278.1	454.8	389.7	65.10	6.986	
3,100.0	3,080.7	3,084.7	3,084.7	7.8	61.7	-166.39	-4.0	-278.1	474.8	407.5	67.26	7.059	
3,200.0	3,178.6	3,182.6	3,182.6	8.2	63.7	-166.95	-4.0	-278.1	494.8	425.3	69.42	7.127	
7,500.0	7,237.4	7,241.4	7,241.4	19.5	144.8	-59.07	-4.0	-278.1	478.7	335.1	143.62	3.333	
7,600.0	7,265.5	7,269.5	7,269.5	20.5	145.4	-74.20	-4.0	-278.1	398.7	239.0	159.69	2.497	
7,700.0	7,280.0	7,284.0	7,284.0	21.8	145.7	-86.05	-4.0	-278.1	325.3	158.3	166.97	1.948	
7,800.0	7,282.0	7,286.0	7,286.0	23.3	145.7	-90.00	-4.0	-278.1	268.2	99.2	169.01	1.587	
7,900.0	7,282.0	7,286.0	7,286.0	25.0	145.7	-90.00	-4.0	-278.1	240.9	70.2	170.76	1.411	Level 3
7,919.4	7,282.0	7,286.0	7,286.0	25.4	145.7	-90.00	-4.0	-278.1	240.1	69.0	171.14	1.403	Level 3, CC, ES, SF
8,000.0	7,282.0	7,286.0	7,286.0	27.0	145.7	-90.00	-4.0	-278.1	253.3	80.6	172.70	1.467	Level 3
8,100.0	7,282.0	7,286.0	7,286.0	29.1	145.7	-90.00	-4.0	-278.1	300.4	125.7	174.77	1.719	
8,200.0	7,282.0	7,286.0	7,286.0	31.3	145.7	-90.00	-4.0	-278.1	369.3	192.3	176.96	2.087	
8,300.0	7,282.0	7,286.0	7,286.0	33.5	145.7	-90.00	-4.0	-278.1	450.0	270.8	179.24	2.511	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	2.1	2.1	0.0	0.0	-90.79	-4.1	-293.2	293.2				
100.0	100.0	103.7	103.7	0.1	0.1	-90.89	-4.5	-292.6	292.7	292.4	0.25	1,154.651	
152.8	152.8	154.8	154.8	0.2	0.2	-90.88	-4.5	-292.5	292.5	292.0	0.48	613.147	CC
200.0	200.0	199.8	199.8	0.3	0.3	-90.77	-4.0	-292.6	292.7	292.0	0.68	431.531	ES
300.0	300.0	293.8	293.7	0.6	0.5	-90.21	-1.1	-294.3	294.4	293.3	1.11	265.621	
400.0	400.0	386.6	386.3	0.8	0.8	-89.35	3.4	-298.0	298.4	296.9	1.55	192.625	
500.0	500.0	479.0	478.3	1.0	1.0	-88.12	10.0	-303.8	304.9	302.9	2.01	151.641	
600.0	600.0	575.2	573.8	1.2	1.3	-86.58	18.6	-311.7	313.5	311.0	2.51	125.121	
700.0	700.0	673.6	671.4	1.5	1.6	-84.99	28.1	-320.1	322.7	319.7	3.03	106.619	
800.0	800.0	771.0	767.6	1.7	1.9	-82.93	40.7	-328.3	332.6	329.0	3.56	93.312	
900.0	900.0	859.1	854.1	1.9	2.2	-80.73	55.0	-336.9	344.7	340.5	4.12	83.566	
1,000.0	1,000.0	944.4	937.2	2.1	2.6	-78.53	70.6	-347.6	360.5	355.8	4.71	76.515	
1,100.0	1,100.0	1,027.0	1,017.3	2.4	3.0	-76.55	86.3	-360.9	380.6	375.3	5.32	71.545	
1,200.0	1,200.0	1,119.5	1,106.3	2.6	3.5	-74.49	104.8	-377.8	403.6	397.5	6.04	66.863	
1,300.0	1,300.0	1,215.5	1,198.5	2.8	4.0	-72.46	125.0	-395.7	427.7	421.0	6.76	63.280	
1,400.0	1,400.0	1,311.8	1,291.0	3.0	4.5	-70.68	144.9	-413.4	451.9	444.4	7.48	60.435	
1,500.0	1,500.0	1,401.1	1,376.7	3.3	4.9	-69.28	162.9	-430.8	477.3	469.2	8.16	58.480	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	1.11	101.6	2.0	101.6				
100.0	100.0	100.0	100.0	0.1	0.1	1.11	101.6	2.0	101.6	101.4	0.22	452.143	
200.0	200.0	200.0	200.0	0.3	0.3	1.11	101.6	2.0	101.6	101.0	0.67	150.714	
300.0	300.0	300.0	300.0	0.6	0.6	1.11	101.6	2.0	101.6	100.5	1.12	90.429	
400.0	400.0	400.0	400.0	0.8	0.8	1.11	101.6	2.0	101.6	100.1	1.57	64.592	
500.0	500.0	500.0	500.0	1.0	1.0	1.11	101.6	2.0	101.6	99.6	2.02	50.238	
600.0	600.0	600.0	600.0	1.2	1.2	1.11	101.6	2.0	101.6	99.2	2.47	41.104	
700.0	700.0	700.0	700.0	1.5	1.5	1.11	101.6	2.0	101.6	98.7	2.92	34.780	
800.0	800.0	800.0	800.0	1.7	1.7	1.11	101.6	2.0	101.6	98.3	3.37	30.143	CC, ES
900.0	900.0	896.6	896.6	1.9	1.9	0.91	103.2	1.6	103.3	99.5	3.81	27.087	
1,000.0	1,000.0	993.0	992.9	2.1	2.1	0.35	108.0	0.7	108.2	104.0	4.25	25.435	
1,100.0	1,100.0	1,089.0	1,088.5	2.4	2.3	-0.48	115.9	-1.0	116.4	111.7	4.70	24.773	SF
1,200.0	1,200.0	1,184.3	1,183.2	2.6	2.6	-1.46	126.8	-3.2	128.0	122.8	5.16	24.819	
1,300.0	1,300.0	1,278.8	1,276.5	2.8	2.8	-2.48	140.7	-6.1	142.8	137.1	5.63	25.370	
1,400.0	1,400.0	1,372.2	1,368.4	3.0	3.1	-3.47	157.4	-9.5	160.8	154.7	6.12	26.271	
1,500.0	1,500.0	1,464.4	1,458.5	3.3	3.4	-4.38	176.7	-13.5	182.0	175.4	6.64	27.405	
1,600.0	1,600.0	1,555.3	1,546.5	3.5	3.8	-5.19	198.5	-18.0	206.4	199.2	7.20	28.685	
1,700.0	1,700.0	1,647.0	1,634.8	3.7	4.2	-5.92	223.2	-23.1	233.7	225.9	7.79	30.003	
1,800.0	1,800.0	1,743.0	1,726.9	3.9	4.7	-6.53	249.5	-28.6	261.6	253.2	8.42	31.049	
1,900.0	1,900.0	1,839.1	1,819.1	4.2	5.1	-72.82	275.9	-34.0	289.0	280.7	8.36	34.585	
2,000.0	1,999.8	1,935.2	1,911.4	4.4	5.6	-73.62	302.3	-39.5	315.6	306.8	8.82	35.788	
2,100.0	2,099.5	2,031.4	2,003.7	4.6	6.1	-74.80	328.7	-44.9	341.4	332.2	9.29	36.755	
2,200.0	2,198.7	2,127.4	2,095.9	4.8	6.6	-76.28	355.1	-50.4	366.7	357.0	9.78	37.516	
2,300.0	2,297.5	2,223.1	2,187.8	5.1	7.1	-78.02	381.4	-55.8	391.7	381.4	10.28	38.088	
2,400.0	2,395.6	2,318.5	2,279.3	5.4	7.7	-79.98	407.6	-61.2	416.6	405.8	10.83	38.481	
2,500.0	2,493.5	2,413.6	2,370.7	5.7	8.2	-82.33	433.7	-66.6	442.0	430.6	11.40	38.759	
2,600.0	2,591.4	2,508.8	2,462.0	6.0	8.7	-84.43	459.9	-72.0	468.0	456.0	12.01	38.970	
2,700.0	2,689.2	2,604.0	2,553.4	6.3	9.2	-86.31	486.0	-77.4	494.5	481.9	12.64	39.123	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	-0.61	76.1	-0.8	76.1				
100.0	100.0	100.0	100.0	0.1	0.1	-0.61	76.1	-0.8	76.1	75.9	0.22	338.580	
200.0	200.0	200.0	200.0	0.3	0.3	-0.61	76.1	-0.8	76.1	75.4	0.67	112.860	
300.0	300.0	300.0	300.0	0.6	0.6	-0.61	76.1	-0.8	76.1	75.0	1.12	67.716	
400.0	400.0	400.0	400.0	0.8	0.8	-0.61	76.1	-0.8	76.1	74.5	1.57	48.369	
500.0	500.0	500.0	500.0	1.0	1.0	-0.61	76.1	-0.8	76.1	74.1	2.02	37.620	
600.0	600.0	600.0	600.0	1.2	1.2	-0.61	76.1	-0.8	76.1	73.6	2.47	30.780	
700.0	700.0	700.0	700.0	1.5	1.5	-0.61	76.1	-0.8	76.1	73.2	2.92	26.045	
800.0	800.0	800.0	800.0	1.7	1.7	-0.61	76.1	-0.8	76.1	72.7	3.37	22.572	
900.0	900.0	900.0	900.0	1.9	1.9	-0.61	76.1	-0.8	76.1	72.3	3.82	19.916	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-0.61	76.1	-0.8	76.1	71.8	4.27	17.820	CC, ES
1,100.0	1,100.0	1,098.6	1,098.5	2.4	2.4	-1.67	77.0	-2.2	77.0	72.3	4.71	16.354	
1,200.0	1,200.0	1,196.9	1,196.7	2.6	2.6	-4.70	79.7	-6.5	80.0	74.9	5.15	15.542	
1,300.0	1,300.0	1,294.7	1,294.2	2.8	2.8	-9.23	84.1	-13.7	85.4	79.8	5.59	15.284	
1,400.0	1,400.0	1,391.9	1,390.7	3.0	3.0	-14.61	90.2	-23.5	93.7	87.7	6.03	15.540	
1,500.0	1,500.0	1,488.2	1,485.8	3.3	3.3	-20.18	98.0	-36.0	105.4	98.9	6.48	16.257	
1,600.0	1,600.0	1,583.4	1,579.3	3.5	3.6	-25.43	107.4	-51.1	120.7	113.7	6.95	17.358	
1,700.0	1,700.0	1,677.2	1,671.0	3.7	3.9	-30.07	118.2	-68.4	139.7	132.2	7.45	18.748	
1,800.0	1,800.0	1,772.9	1,763.7	3.9	4.3	-34.05	130.5	-88.2	161.6	153.6	7.98	20.248	
1,900.0	1,900.0	1,869.6	1,857.5	4.2	4.7	-103.20	143.0	-108.3	184.7	176.3	8.38	22.047	
2,000.0	1,999.8	1,965.7	1,950.6	4.4	5.1	-106.44	155.4	-128.2	209.3	200.5	8.82	23.737	
2,100.0	2,099.5	2,061.1	2,043.1	4.6	5.6	-109.68	167.8	-148.0	235.8	226.5	9.25	25.481	
2,200.0	2,198.7	2,155.6	2,134.8	4.8	6.0	-112.82	180.0	-167.7	264.3	254.6	9.68	27.289	
2,300.0	2,297.5	2,249.2	2,225.6	5.1	6.4	-115.82	192.1	-187.1	295.1	284.9	10.12	29.162	
2,400.0	2,395.6	2,341.8	2,315.3	5.4	6.9	-118.70	204.1	-206.4	328.3	317.8	10.56	31.089	
2,500.0	2,493.5	2,433.9	2,404.6	5.7	7.3	-121.73	216.0	-225.5	363.2	352.2	11.03	32.937	
2,600.0	2,591.4	2,525.9	2,493.9	6.0	7.8	-124.24	227.9	-244.6	398.9	387.4	11.51	34.644	
2,700.0	2,689.2	2,618.0	2,583.2	6.3	8.3	-126.34	239.8	-263.8	435.1	423.1	12.02	36.212	
2,800.0	2,787.1	2,710.1	2,672.5	6.7	8.7	-128.12	251.7	-282.9	471.8	459.3	12.53	37.651	
8,400.0	7,282.0	7,251.2	7,124.0	35.9	25.9	69.94	648.1	-919.6	481.3	424.2	57.03	8.438	
8,500.0	7,282.0	7,251.2	7,124.0	38.3	25.9	69.94	648.1	-919.6	462.4	403.1	59.31	7.796	
8,539.1	7,282.0	7,251.2	7,124.0	39.3	25.9	69.94	648.1	-919.6	460.7	400.5	60.21	7.651	
8,600.0	7,282.0	7,251.2	7,124.0	40.8	25.9	69.94	648.1	-919.6	464.7	403.1	61.63	7.541	SF
8,700.0	7,282.0	7,251.2	7,124.0	43.3	25.9	69.94	648.1	-919.6	488.0	424.0	63.99	7.627	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	0.45	50.0	0.4	50.0				
100.0	100.0	100.0	100.0	0.1	0.1	0.45	50.0	0.4	50.0	49.8	0.22	222.550	
200.0	200.0	200.0	200.0	0.3	0.3	0.45	50.0	0.4	50.0	49.3	0.67	74.183	
300.0	300.0	300.0	300.0	0.6	0.6	0.45	50.0	0.4	50.0	48.9	1.12	44.510	
400.0	400.0	400.0	400.0	0.8	0.8	0.45	50.0	0.4	50.0	48.4	1.57	31.793	
500.0	500.0	500.0	500.0	1.0	1.0	0.45	50.0	0.4	50.0	48.0	2.02	24.728	
600.0	600.0	600.0	600.0	1.2	1.2	0.45	50.0	0.4	50.0	47.5	2.47	20.232	
700.0	700.0	700.0	700.0	1.5	1.5	0.45	50.0	0.4	50.0	47.1	2.92	17.119	
800.0	800.0	800.0	800.0	1.7	1.7	0.45	50.0	0.4	50.0	46.7	3.37	14.837	
900.0	900.0	900.0	900.0	1.9	1.9	0.45	50.0	0.4	50.0	46.2	3.82	13.091	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	0.45	50.0	0.4	50.0	45.8	4.27	11.713	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	0.45	50.0	0.4	50.0	45.3	4.72	10.598	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	0.45	50.0	0.4	50.0	44.9	5.17	9.676	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	0.45	50.0	0.4	50.0	44.4	5.62	8.902	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	0.45	50.0	0.4	50.0	44.0	6.07	8.243	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	0.45	50.0	0.4	50.0	43.5	6.52	7.674	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	0.45	50.0	0.4	50.0	43.1	6.97	7.179	
1,700.0	1,700.0	1,700.0	1,700.0	3.7	3.7	0.45	50.0	0.4	50.0	42.6	7.42	6.744	
1,800.0	1,800.0	1,800.0	1,800.0	3.9	3.9	0.45	50.0	0.4	50.0	42.2	7.87	6.359	
1,900.0	1,900.0	1,900.0	1,900.0	4.2	4.2	-67.40	50.0	0.4	49.3	41.0	8.31	5.937	
2,000.0	1,999.8	1,999.8	1,999.8	4.4	4.4	-73.26	50.0	0.4	47.6	38.8	8.74	5.439	
2,100.0	2,099.5	2,099.5	2,099.5	4.6	4.6	-83.75	50.0	0.4	45.8	36.6	9.19	4.985	
2,144.7	2,143.8	2,143.8	2,143.8	4.7	4.7	-90.00	50.0	0.4	45.5	36.1	9.39	4.848	CC, ES
2,200.0	2,198.7	2,198.7	2,198.7	4.8	4.8	-98.87	50.0	0.4	46.1	36.5	9.64	4.782	SF
2,300.0	2,297.5	2,296.7	2,296.7	5.1	5.0	-114.49	51.6	0.8	51.6	41.6	10.08	5.124	
2,400.0	2,395.6	2,394.7	2,394.6	5.4	5.3	-125.91	56.4	2.1	63.2	52.7	10.50	6.019	
2,500.0	2,493.5	2,492.9	2,492.4	5.7	5.5	-132.09	64.5	4.3	77.9	67.0	10.95	7.121	
2,600.0	2,591.4	2,591.2	2,590.0	6.0	5.7	-134.21	75.8	7.3	93.6	82.2	11.43	8.192	
2,700.0	2,689.2	2,689.6	2,687.2	6.3	6.0	-133.94	90.3	11.2	109.7	97.8	11.95	9.180	
2,800.0	2,787.1	2,787.6	2,783.5	6.7	6.2	-132.20	108.0	16.0	126.2	113.7	12.52	10.082	
2,900.0	2,885.0	2,885.2	2,878.7	7.0	6.5	-129.54	128.8	21.5	143.4	130.3	13.14	10.915	
3,000.0	2,982.8	2,982.9	2,973.4	7.4	6.8	-126.52	152.0	27.8	161.5	147.6	13.81	11.691	
3,100.0	3,080.7	3,080.9	3,068.3	7.8	7.1	-124.04	175.5	34.1	179.9	165.4	14.51	12.401	
3,200.0	3,178.6	3,178.9	3,163.2	8.2	7.5	-122.02	199.0	40.4	198.6	183.4	15.22	13.046	
3,300.0	3,276.5	3,276.9	3,258.2	8.6	7.9	-120.35	222.6	46.7	217.5	201.6	15.96	13.631	
3,400.0	3,374.3	3,374.9	3,353.1	9.0	8.2	-118.95	246.1	53.1	236.6	219.9	16.70	14.162	
3,500.0	3,472.2	3,473.0	3,448.1	9.4	8.6	-117.75	269.6	59.4	255.7	238.3	17.46	14.645	
3,600.0	3,570.1	3,571.0	3,543.0	9.8	9.0	-116.73	293.1	65.7	275.0	256.8	18.23	15.083	
3,700.0	3,667.9	3,669.0	3,638.0	10.2	9.5	-115.83	316.6	72.0	294.3	275.3	19.01	15.483	
3,800.0	3,765.8	3,767.0	3,732.9	10.6	9.9	-115.05	340.1	78.3	313.7	293.9	19.80	15.847	
3,900.0	3,863.7	3,865.0	3,827.9	11.0	10.3	-114.36	363.6	84.6	333.2	312.6	20.59	16.181	
4,000.0	3,961.6	3,963.0	3,922.8	11.5	10.7	-113.74	387.1	90.9	352.7	331.3	21.39	16.488	
4,100.0	4,059.4	4,061.1	4,017.7	11.9	11.2	-113.19	410.6	97.3	372.2	350.0	22.20	16.769	
4,200.0	4,157.3	4,159.1	4,112.7	12.3	11.6	-112.70	434.1	103.6	391.8	368.8	23.01	17.029	
4,300.0	4,255.2	4,257.1	4,207.6	12.7	12.1	-112.25	457.6	109.9	411.4	387.5	23.82	17.269	
4,400.0	4,353.0	4,355.1	4,302.6	13.2	12.5	-111.84	481.2	116.2	431.0	406.3	24.64	17.491	
4,500.0	4,450.9	4,453.1	4,397.5	13.6	13.0	-111.47	504.7	122.5	450.6	425.1	25.46	17.697	
4,600.0	4,548.8	4,551.1	4,492.5	14.0	13.5	-111.13	528.2	128.8	470.2	443.9	26.29	17.889	
4,700.0	4,646.7	4,649.1	4,587.4	14.5	13.9	-110.81	551.7	135.1	489.9	462.8	27.11	18.067	
7,200.0	7,078.1	7,153.9	7,078.1	18.5	19.4	72.82	688.2	171.8	477.7	442.7	34.99	13.655	
7,300.0	7,142.8	7,210.8	7,135.0	18.5	19.5	80.17	688.2	171.8	452.4	417.3	35.10	12.890	
7,399.7	7,196.1	7,210.8	7,135.0	18.9	19.5	80.97	688.2	171.8	442.3	407.0	35.39	12.500	

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 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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
7,400.0	7,196.2	7,210.8	7,135.0	18.9	19.5	80.97	688.2	171.8	442.3	407.0	35.39	12.500	
7,500.0	7,237.4	7,210.8	7,135.0	19.5	19.5	80.17	688.2	171.8	452.5	416.5	35.98	12.576	
7,600.0	7,265.5	7,210.8	7,135.0	20.5	19.5	77.79	688.2	171.8	481.3	444.5	36.79	13.083	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	22.24	124.6	51.0	134.6				
100.0	100.0	99.0	99.0	0.1	0.1	22.24	124.6	51.0	134.6	134.4	0.22	602.048	
200.0	200.0	199.0	199.0	0.3	0.3	22.24	124.6	51.0	134.6	134.0	0.67	200.349	CC, ES
300.0	300.0	294.5	294.5	0.6	0.6	22.17	126.1	51.4	136.3	135.2	1.11	122.565	
400.0	400.0	389.8	389.7	0.8	0.8	21.98	130.7	52.7	141.2	139.7	1.56	90.657	
500.0	500.0	484.7	484.2	1.0	1.0	21.68	138.2	54.9	149.4	147.4	2.02	74.132	
600.0	600.0	579.0	577.8	1.2	1.3	21.33	148.6	58.0	161.0	158.5	2.49	64.535	
700.0	700.0	672.4	670.2	1.5	1.6	20.94	161.9	61.9	175.7	172.7	3.00	58.587	
800.0	800.0	764.8	761.2	1.7	1.9	20.54	177.9	66.6	193.7	190.1	3.54	54.784	
900.0	900.0	856.1	850.3	1.9	2.3	20.16	196.4	72.1	214.8	210.7	4.11	52.320	
1,000.0	1,000.0	946.0	937.6	2.1	2.7	19.81	217.3	78.3	239.0	234.3	4.71	50.740	
1,100.0	1,100.0	1,034.4	1,022.7	2.4	3.1	19.49	240.4	85.1	266.2	260.8	5.35	49.769	
1,200.0	1,200.0	1,124.0	1,108.1	2.6	3.6	19.20	266.2	92.7	296.2	290.1	6.03	49.114	
1,300.0	1,300.0	1,219.2	1,198.7	2.8	4.2	18.94	294.2	101.0	326.8	320.1	6.76	48.345	
1,400.0	1,400.0	1,314.3	1,289.2	3.0	4.7	18.72	322.3	109.2	357.5	350.0	7.50	47.667	
1,500.0	1,500.0	1,409.5	1,379.8	3.3	5.3	18.54	350.3	117.5	388.2	380.0	8.25	47.075	
1,600.0	1,600.0	1,504.7	1,470.4	3.5	5.8	18.39	378.4	125.8	419.0	410.0	9.00	46.557	
1,700.0	1,700.0	1,599.8	1,560.9	3.7	6.4	18.25	406.4	134.0	449.7	439.9	9.75	46.103	
1,800.0	1,800.0	1,695.0	1,651.5	3.9	7.0	18.14	434.4	142.3	480.4	469.9	10.51	45.703	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	11.74	124.8	25.9	127.5				
100.0	100.0	99.0	99.0	0.1	0.1	11.74	124.8	25.9	127.5	127.3	0.22	570.025	
200.0	200.0	199.0	199.0	0.3	0.3	11.74	124.8	25.9	127.5	126.8	0.67	189.692	
300.0	300.0	299.0	299.0	0.6	0.6	11.74	124.8	25.9	127.5	126.4	1.12	113.663	
400.0	400.0	399.0	399.0	0.8	0.8	11.74	124.8	25.9	127.5	125.9	1.57	81.142	CC, ES
500.0	500.0	494.8	494.8	1.0	1.0	11.83	126.3	26.4	129.1	127.1	2.01	64.225	
600.0	600.0	590.3	590.2	1.2	1.2	12.06	130.8	28.0	134.1	131.6	2.45	54.667	
700.0	700.0	685.4	684.9	1.5	1.4	12.42	138.3	30.4	142.3	139.4	2.90	48.992	
800.0	800.0	779.9	778.8	1.7	1.7	12.85	148.7	33.9	153.8	150.4	3.38	45.575	
900.0	900.0	873.5	871.4	1.9	2.0	13.32	161.8	38.3	168.6	164.7	3.87	43.544	
1,000.0	1,000.0	966.2	962.5	2.1	2.3	13.79	177.7	43.6	186.6	182.2	4.40	42.410	
1,100.0	1,100.0	1,057.6	1,051.9	2.4	2.6	14.24	196.1	49.8	207.7	202.8	4.96	41.869	
1,200.0	1,200.0	1,147.7	1,139.3	2.6	3.0	14.65	216.8	56.7	232.0	226.4	5.56	41.731	SF
1,300.0	1,300.0	1,236.4	1,224.5	2.8	3.4	15.02	239.8	64.3	259.2	253.0	6.19	41.884	
1,400.0	1,400.0	1,327.6	1,311.6	3.0	3.9	15.36	265.7	73.0	289.0	282.2	6.87	42.070	
1,500.0	1,500.0	1,422.9	1,402.5	3.3	4.5	15.66	293.0	82.1	319.3	311.7	7.59	42.058	
1,600.0	1,600.0	1,518.3	1,493.3	3.5	5.0	15.90	320.4	91.3	349.5	341.2	8.32	41.997	
1,700.0	1,700.0	1,613.6	1,584.1	3.7	5.5	16.10	347.8	100.4	379.8	370.7	9.06	41.914	
1,800.0	1,800.0	1,708.9	1,675.0	3.9	6.1	16.28	375.1	109.5	410.0	400.2	9.80	41.822	
1,900.0	1,900.0	1,804.5	1,766.1	4.2	6.7	-49.28	402.6	118.7	439.2	430.6	8.55	51.392	
2,000.0	1,999.8	1,900.8	1,857.9	4.4	7.2	-49.22	430.2	127.9	466.2	457.1	9.04	51.579	
2,100.0	2,099.5	1,997.5	1,950.1	4.6	7.8	-49.48	458.0	137.2	491.0	481.4	9.54	51.458	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	0.43	125.0	0.9	125.0				
100.0	100.0	99.0	99.0	0.1	0.1	0.43	125.0	0.9	125.0	124.8	0.22	558.922	
200.0	200.0	199.0	199.0	0.3	0.3	0.43	125.0	0.9	125.0	124.3	0.67	185.997	
300.0	300.0	299.0	299.0	0.6	0.6	0.43	125.0	0.9	125.0	123.9	1.12	111.449	
400.0	400.0	399.0	399.0	0.8	0.8	0.43	125.0	0.9	125.0	123.4	1.57	79.561	
500.0	500.0	499.0	499.0	1.0	1.0	0.43	125.0	0.9	125.0	123.0	2.02	61.861	
600.0	600.0	599.0	599.0	1.2	1.2	0.43	125.0	0.9	125.0	122.5	2.47	50.603	CC, ES
700.0	700.0	695.1	695.1	1.5	1.5	0.71	126.5	1.6	126.5	123.6	2.91	43.487	
800.0	800.0	791.0	790.9	1.7	1.7	1.50	130.9	3.4	131.2	127.8	3.35	39.158	
900.0	900.0	886.5	886.0	1.9	1.9	2.70	138.2	6.5	138.9	135.1	3.80	36.584	
1,000.0	1,000.0	981.3	980.1	2.1	2.1	4.17	148.3	10.8	149.9	145.7	4.26	35.166	
1,100.0	1,100.0	1,075.3	1,073.1	2.4	2.4	5.76	161.2	16.3	164.1	159.3	4.75	34.526	
1,200.0	1,200.0	1,168.2	1,164.5	2.6	2.7	7.36	176.7	22.8	181.5	176.2	5.27	34.418	SF
1,300.0	1,300.0	1,260.0	1,254.2	2.8	3.0	8.88	194.7	30.4	202.1	196.3	5.83	34.674	
1,400.0	1,400.0	1,350.4	1,341.8	3.0	3.4	10.28	215.0	39.0	225.9	219.4	6.42	35.198	
1,500.0	1,500.0	1,445.0	1,433.1	3.3	3.8	11.58	238.2	48.8	251.9	244.8	7.06	35.670	
1,600.0	1,600.0	1,541.4	1,526.0	3.5	4.3	12.66	261.8	58.8	278.1	270.4	7.73	35.972	
1,700.0	1,700.0	1,637.8	1,618.8	3.7	4.8	13.55	285.5	68.8	304.4	296.0	8.41	36.188	
1,800.0	1,800.0	1,734.2	1,711.7	3.9	5.2	14.30	309.2	78.8	330.8	321.7	9.10	36.345	
1,900.0	1,900.0	1,830.9	1,804.9	4.2	5.7	-50.87	332.9	88.8	356.1	347.7	8.46	42.115	
2,000.0	1,999.8	1,928.1	1,898.7	4.4	6.2	-50.56	356.8	98.9	379.3	370.4	8.93	42.459	
2,100.0	2,099.5	2,025.8	1,992.8	4.6	6.7	-50.67	380.8	109.1	400.4	391.0	9.43	42.476	
2,200.0	2,198.7	2,123.9	2,087.3	4.8	7.2	-51.15	404.9	119.3	419.3	409.4	9.94	42.200	
2,300.0	2,297.5	2,222.1	2,182.0	5.1	7.8	-51.96	429.0	129.5	436.2	425.8	10.47	41.657	
2,400.0	2,395.6	2,320.4	2,276.8	5.4	8.3	-53.09	453.1	139.7	451.2	440.2	11.04	40.862	
2,500.0	2,493.5	2,418.7	2,371.5	5.7	8.8	-54.50	477.3	149.9	465.6	453.9	11.65	39.947	
2,600.0	2,591.4	2,517.1	2,466.3	6.0	9.3	-55.82	501.4	160.1	480.2	467.9	12.29	39.066	
2,700.0	2,689.2	2,615.4	2,561.1	6.3	9.8	-57.07	525.6	170.3	495.0	482.1	12.95	38.222	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	26.99	99.6	50.8	111.8				
100.0	100.0	99.0	99.0	0.1	0.1	26.99	99.6	50.8	111.8	111.6	0.22	500.003	
200.0	200.0	199.0	199.0	0.3	0.3	26.99	99.6	50.8	111.8	111.2	0.67	166.391	
300.0	300.0	299.0	299.0	0.6	0.6	26.99	99.6	50.8	111.8	110.7	1.12	99.701	
400.0	400.0	399.0	399.0	0.8	0.8	26.99	99.6	50.8	111.8	110.3	1.57	71.174	
500.0	500.0	499.0	499.0	1.0	1.0	26.99	99.6	50.8	111.8	109.8	2.02	55.340	
600.0	600.0	599.0	599.0	1.2	1.2	26.99	99.6	50.8	111.8	109.4	2.47	45.269	
700.0	700.0	699.0	699.0	1.5	1.5	26.99	99.6	50.8	111.8	108.9	2.92	38.299	
800.0	800.0	799.0	799.0	1.7	1.7	26.99	99.6	50.8	111.8	108.5	3.37	33.189	CC, ES
900.0	900.0	895.2	895.2	1.9	1.9	26.98	101.1	51.5	113.5	109.7	3.81	29.790	
1,000.0	1,000.0	991.2	991.1	2.1	2.1	26.94	105.4	53.6	118.5	114.2	4.25	27.880	
1,100.0	1,100.0	1,086.8	1,086.3	2.4	2.3	26.88	112.5	57.0	126.8	122.1	4.70	27.005	
1,200.0	1,200.0	1,181.7	1,180.6	2.6	2.6	26.81	122.5	61.9	138.4	133.3	5.15	26.863	SF
1,300.0	1,300.0	1,275.8	1,273.6	2.8	2.8	26.73	135.1	68.0	153.4	147.7	5.63	27.236	
1,400.0	1,400.0	1,368.9	1,365.2	3.0	3.1	26.66	150.2	75.4	171.5	165.4	6.13	27.967	
1,500.0	1,500.0	1,460.8	1,454.9	3.3	3.4	26.59	167.8	84.0	192.8	186.1	6.66	28.939	
1,600.0	1,600.0	1,554.3	1,545.7	3.5	3.8	26.52	188.1	93.9	216.9	209.7	7.23	29.999	
1,700.0	1,700.0	1,651.2	1,639.6	3.7	4.2	26.47	209.5	104.3	241.5	233.7	7.84	30.821	
1,800.0	1,800.0	1,748.1	1,733.6	3.9	4.6	26.42	231.0	114.8	266.1	257.6	8.46	31.467	
1,900.0	1,900.0	1,845.4	1,827.8	4.2	5.1	-39.53	252.5	125.2	289.4	281.0	8.33	34.735	
2,000.0	1,999.8	1,943.1	1,922.6	4.4	5.5	-39.90	274.1	135.8	310.0	301.3	8.79	35.272	
2,100.0	2,099.5	2,041.3	2,017.8	4.6	6.0	-40.63	295.8	146.4	328.2	318.9	9.26	35.445	
2,200.0	2,198.7	2,139.8	2,113.2	4.8	6.4	-41.68	317.6	157.0	343.8	334.1	9.74	35.304	
2,300.0	2,297.5	2,238.5	2,208.9	5.1	6.9	-43.02	339.4	167.6	357.0	346.8	10.24	34.882	
2,400.0	2,395.6	2,337.2	2,304.6	5.4	7.4	-44.67	361.2	178.2	368.1	357.3	10.76	34.202	
2,500.0	2,493.5	2,436.0	2,400.3	5.7	7.9	-46.52	383.0	188.9	378.4	367.1	11.33	33.390	
2,600.0	2,591.4	2,534.7	2,496.0	6.0	8.3	-48.26	404.8	199.5	389.1	377.2	11.93	32.618	
2,700.0	2,689.2	2,633.4	2,591.7	6.3	8.8	-49.91	426.7	210.2	400.2	387.7	12.55	31.885	
2,800.0	2,787.1	2,732.2	2,687.4	6.7	9.3	-51.48	448.5	220.8	411.6	398.4	13.20	31.191	
2,900.0	2,885.0	2,830.9	2,783.1	7.0	9.8	-52.96	470.3	231.4	423.3	409.4	13.86	30.534	
3,000.0	2,982.8	2,929.6	2,878.8	7.4	10.3	-54.36	492.2	242.1	435.2	420.7	14.55	29.915	
3,100.0	3,080.7	3,028.4	2,974.5	7.8	10.8	-55.68	514.0	252.7	447.4	432.1	15.25	29.332	
3,200.0	3,178.6	3,127.1	3,070.2	8.2	11.3	-56.94	535.8	263.4	459.8	443.8	15.97	28.784	
3,300.0	3,276.5	3,225.8	3,165.9	8.6	11.8	-58.13	557.6	274.0	472.4	455.7	16.71	28.269	
3,400.0	3,374.3	3,324.6	3,261.6	9.0	12.3	-59.25	579.5	284.6	485.2	467.8	17.46	27.787	
3,500.0	3,472.2	3,423.3	3,357.3	9.4	12.8	-60.32	601.3	295.3	498.2	480.0	18.23	27.334	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	34.12	74.6	50.6	90.1				
100.0	100.0	100.0	100.0	0.1	0.1	34.12	74.6	50.6	90.1	89.9	0.22	400.994	
200.0	200.0	200.0	200.0	0.3	0.3	34.12	74.6	50.6	90.1	89.5	0.67	133.665	
300.0	300.0	300.0	300.0	0.6	0.6	34.12	74.6	50.6	90.1	89.0	1.12	80.199	
400.0	400.0	400.0	400.0	0.8	0.8	34.12	74.6	50.6	90.1	88.6	1.57	57.285	
500.0	500.0	500.0	500.0	1.0	1.0	34.12	74.6	50.6	90.1	88.1	2.02	44.555	
600.0	600.0	600.0	600.0	1.2	1.2	34.12	74.6	50.6	90.1	87.7	2.47	36.454	
700.0	700.0	700.0	700.0	1.5	1.5	34.12	74.6	50.6	90.1	87.2	2.92	30.846	
800.0	800.0	800.0	800.0	1.7	1.7	34.12	74.6	50.6	90.1	86.8	3.37	26.733	
900.0	900.0	900.0	900.0	1.9	1.9	34.12	74.6	50.6	90.1	86.3	3.82	23.588	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	34.12	74.6	50.6	90.1	85.9	4.27	21.105	CC, ES
1,100.0	1,100.0	1,096.9	1,096.9	2.4	2.4	34.12	76.0	51.5	91.8	87.1	4.71	19.491	
1,200.0	1,200.0	1,193.6	1,193.5	2.6	2.6	34.09	80.1	54.2	96.9	91.7	5.15	18.809	SF
1,300.0	1,300.0	1,289.9	1,289.4	2.8	2.8	34.06	86.8	58.7	105.3	99.7	5.60	18.816	
1,400.0	1,400.0	1,385.5	1,384.3	3.0	3.0	34.03	96.2	64.9	117.1	111.0	6.05	19.339	
1,500.0	1,500.0	1,480.2	1,478.0	3.3	3.3	33.99	108.0	72.8	132.1	125.6	6.53	20.240	
1,600.0	1,600.0	1,573.9	1,570.1	3.5	3.6	33.96	122.3	82.3	150.4	143.4	7.03	21.412	
1,700.0	1,700.0	1,666.4	1,660.4	3.7	3.9	33.92	138.8	93.4	171.9	164.4	7.55	22.768	
1,800.0	1,800.0	1,757.4	1,748.6	3.9	4.2	33.90	157.4	105.8	196.5	188.4	8.11	24.239	
1,900.0	1,900.0	1,847.4	1,835.1	4.2	4.6	-32.06	178.1	119.6	222.7	214.5	8.27	26.935	
2,000.0	1,999.8	1,942.0	1,925.4	4.4	5.0	-32.43	201.6	135.3	248.3	239.6	8.72	28.494	
2,100.0	2,099.5	2,039.3	2,018.2	4.6	5.5	-33.12	225.9	151.4	271.3	262.1	9.17	29.581	
2,200.0	2,198.7	2,137.0	2,111.4	4.8	6.0	-34.09	250.3	167.7	291.4	281.8	9.64	30.235	
2,300.0	2,297.5	2,235.2	2,205.1	5.1	6.6	-35.30	274.8	184.0	308.9	298.8	10.13	30.508	
2,400.0	2,395.6	2,333.7	2,299.1	5.4	7.1	-36.76	299.3	200.4	323.8	313.2	10.64	30.434	
2,500.0	2,493.5	2,432.3	2,393.1	5.7	7.7	-38.40	323.9	216.8	337.8	326.6	11.20	30.145	
2,600.0	2,591.4	2,530.8	2,487.1	6.0	8.2	-39.91	348.5	233.2	352.0	340.2	11.79	29.846	
2,700.0	2,689.2	2,629.4	2,581.2	6.3	8.8	-41.31	373.1	249.6	366.4	354.0	12.40	29.540	
2,800.0	2,787.1	2,728.0	2,675.2	6.7	9.4	-42.59	397.7	265.9	381.1	368.0	13.04	29.232	
2,900.0	2,885.0	2,826.5	2,769.2	7.0	9.9	-43.78	422.3	282.3	395.9	382.2	13.69	28.923	
3,000.0	2,982.8	2,925.1	2,863.3	7.4	10.5	-44.89	446.9	298.7	410.9	396.5	14.36	28.617	
3,100.0	3,080.7	3,023.7	2,957.3	7.8	11.1	-45.92	471.5	315.1	426.0	410.9	15.04	28.316	
3,200.0	3,178.6	3,122.3	3,051.4	8.2	11.7	-46.88	496.0	331.5	441.2	425.5	15.75	28.021	
3,300.0	3,276.5	3,220.8	3,145.4	8.6	12.2	-47.77	520.6	347.9	456.6	440.1	16.46	27.736	
3,400.0	3,374.3	3,319.4	3,239.4	9.0	12.8	-48.61	545.2	364.3	472.0	454.8	17.19	27.459	
3,500.0	3,472.2	3,418.0	3,333.5	9.4	13.4	-49.39	569.8	380.7	487.6	469.6	17.93	27.192	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	45.43	49.6	50.4	70.7				
100.0	100.0	100.0	100.0	0.1	0.1	45.43	49.6	50.4	70.7	70.5	0.22	314.564	
200.0	200.0	200.0	200.0	0.3	0.3	45.43	49.6	50.4	70.7	70.0	0.67	104.855	
300.0	300.0	300.0	300.0	0.6	0.6	45.43	49.6	50.4	70.7	69.6	1.12	62.913	
400.0	400.0	400.0	400.0	0.8	0.8	45.43	49.6	50.4	70.7	69.1	1.57	44.938	
500.0	500.0	500.0	500.0	1.0	1.0	45.43	49.6	50.4	70.7	68.7	2.02	34.952	
600.0	600.0	600.0	600.0	1.2	1.2	45.43	49.6	50.4	70.7	68.2	2.47	28.597	
700.0	700.0	700.0	700.0	1.5	1.5	45.43	49.6	50.4	70.7	67.8	2.92	24.197	
800.0	800.0	800.0	800.0	1.7	1.7	45.43	49.6	50.4	70.7	67.3	3.37	20.971	
900.0	900.0	900.0	900.0	1.9	1.9	45.43	49.6	50.4	70.7	66.9	3.82	18.504	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	45.43	49.6	50.4	70.7	66.4	4.27	16.556	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	45.43	49.6	50.4	70.7	66.0	4.72	14.979	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	45.43	49.6	50.4	70.7	65.5	5.17	13.677	CC, ES
1,300.0	1,300.0	1,297.6	1,297.6	2.8	2.8	45.26	50.9	51.4	72.4	66.8	5.61	12.902	
1,400.0	1,400.0	1,394.9	1,394.8	3.0	3.0	44.81	54.8	54.5	77.5	71.4	6.05	12.799	
1,500.0	1,500.0	1,491.8	1,491.3	3.3	3.2	44.18	61.3	59.6	85.9	79.4	6.50	13.219	
1,600.0	1,600.0	1,588.0	1,586.9	3.5	3.5	43.48	70.2	66.6	97.7	90.7	6.95	14.048	
1,700.0	1,700.0	1,683.4	1,681.1	3.7	3.7	42.79	81.6	75.5	112.8	105.4	7.42	15.192	
1,800.0	1,800.0	1,777.7	1,773.8	3.9	4.0	42.18	95.2	86.3	131.1	123.2	7.91	16.570	
1,900.0	1,900.0	1,873.5	1,867.4	4.2	4.3	-24.47	111.2	98.9	150.8	142.5	8.26	18.244	
2,000.0	1,999.8	1,972.0	1,963.6	4.4	4.6	-25.48	127.9	112.0	167.7	159.0	8.70	19.286	
2,100.0	2,099.5	2,071.0	2,060.2	4.6	5.0	-26.80	144.7	125.3	181.6	172.5	9.13	19.890	
2,200.0	2,198.7	2,170.2	2,157.1	4.8	5.4	-28.43	161.6	138.5	192.6	183.0	9.58	20.110	
2,300.0	2,297.5	2,269.6	2,254.2	5.1	5.8	-30.38	178.5	151.8	200.7	190.6	10.03	20.002	
2,400.0	2,395.6	2,369.1	2,351.3	5.4	6.2	-32.72	195.4	165.1	206.1	195.6	10.51	19.603	
2,500.0	2,493.5	2,468.6	2,448.4	5.7	6.6	-35.21	212.3	178.4	210.6	199.6	11.05	19.058	
2,600.0	2,591.4	2,568.1	2,545.6	6.0	7.0	-37.59	229.1	191.7	215.6	204.0	11.62	18.555	
2,700.0	2,689.2	2,667.6	2,642.7	6.3	7.4	-39.86	246.0	205.0	220.9	208.6	12.21	18.090	
2,800.0	2,787.1	2,767.0	2,739.8	6.7	7.8	-42.03	262.9	218.3	226.5	213.6	12.83	17.658	
2,900.0	2,885.0	2,866.5	2,837.0	7.0	8.3	-44.09	279.8	231.6	232.4	218.9	13.47	17.256	
3,000.0	2,982.8	2,966.0	2,934.1	7.4	8.7	-46.04	296.7	244.9	238.6	224.5	14.13	16.881	
3,100.0	3,080.7	3,065.5	3,031.2	7.8	9.1	-47.89	313.6	258.2	245.1	230.3	14.82	16.533	
3,200.0	3,178.6	3,165.0	3,128.4	8.2	9.6	-49.65	330.5	271.5	251.8	236.3	15.53	16.209	
3,300.0	3,276.5	3,264.5	3,225.5	8.6	10.0	-51.31	347.4	284.8	258.7	242.5	16.26	15.909	
3,400.0	3,374.3	3,363.9	3,322.6	9.0	10.5	-52.89	364.3	298.1	265.9	248.9	17.01	15.629	
3,500.0	3,472.2	3,463.4	3,419.8	9.4	10.9	-54.38	381.2	311.4	273.2	255.5	17.78	15.370	
3,600.0	3,570.1	3,562.9	3,516.9	9.8	11.3	-55.80	398.1	324.7	280.8	262.2	18.56	15.130	
3,700.0	3,667.9	3,662.4	3,614.0	10.2	11.8	-57.14	414.9	338.0	288.4	269.1	19.35	14.907	
3,800.0	3,765.8	3,761.9	3,711.2	10.6	12.2	-58.41	431.8	351.3	296.3	276.1	20.15	14.701	
3,900.0	3,863.7	3,861.3	3,808.3	11.0	12.7	-59.61	448.7	364.6	304.2	283.3	20.97	14.510	
4,000.0	3,961.6	3,960.8	3,905.4	11.5	13.1	-60.76	465.6	377.9	312.3	290.5	21.79	14.333	
4,100.0	4,059.4	4,060.3	4,002.5	11.9	13.6	-61.84	482.5	391.2	320.5	297.9	22.62	14.168	
4,200.0	4,157.3	4,159.8	4,099.7	12.3	14.0	-62.87	499.4	404.5	328.9	305.4	23.46	14.016	
4,300.0	4,255.2	4,259.3	4,196.8	12.7	14.5	-63.85	516.3	417.8	337.3	313.0	24.31	13.875	
4,400.0	4,353.0	4,358.8	4,293.9	13.2	14.9	-64.78	533.2	431.1	345.8	320.6	25.16	13.743	
4,500.0	4,450.9	4,458.2	4,391.1	13.6	15.4	-65.67	550.1	444.4	354.4	328.4	26.02	13.621	
4,600.0	4,548.8	4,557.7	4,488.2	14.0	15.8	-66.52	567.0	457.7	363.1	336.2	26.88	13.508	
4,700.0	4,646.7	4,657.2	4,585.3	14.5	16.3	-67.32	583.9	471.0	371.8	344.1	27.74	13.402	
4,800.0	4,744.5	4,756.7	4,682.5	14.9	16.7	-68.09	600.8	484.3	380.7	352.0	28.61	13.303	
4,900.0	4,842.4	4,856.2	4,779.6	15.3	17.2	-68.82	617.6	497.6	389.5	360.1	29.49	13.211	
5,000.0	4,940.3	4,955.7	4,876.7	15.8	17.6	-69.55	634.5	510.9	398.5	368.2	30.34	13.134	
5,100.0	5,038.7	5,055.1	4,973.9	16.1	18.1	-70.05	651.4	524.1	408.5	377.4	31.06	13.151	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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
5,200.0	5,137.6	5,154.5	5,070.9	16.3	18.6	-70.10	668.3	537.4	419.6	387.9	31.68	13.244	
5,300.0	5,237.0	5,253.6	5,167.7	16.6	19.0	-69.74	685.1	550.7	432.0	399.7	32.21	13.409	
5,400.0	5,336.8	5,363.7	5,275.5	16.8	19.4	-69.03	702.6	564.4	444.5	411.9	32.61	13.630	
5,500.0	5,436.7	5,476.3	5,386.5	17.0	19.8	-68.22	717.0	575.8	455.5	422.6	32.91	13.841	
5,600.0	5,536.7	5,589.5	5,498.9	17.1	20.0	-1.29	728.2	584.6	464.8	433.6	31.23	14.885	
5,700.0	5,636.7	5,703.7	5,612.6	17.3	20.3	-0.54	735.8	590.6	471.4	439.7	31.78	14.836	
5,800.0	5,736.7	5,818.4	5,727.2	17.4	20.5	-0.15	739.9	593.8	475.0	442.8	32.22	14.740	
5,900.0	5,836.7	5,927.9	5,836.7	17.6	20.6	-0.08	740.6	594.4	475.6	443.0	32.58	14.598	
6,000.0	5,936.7	6,027.9	5,936.7	17.7	20.8	-0.08	740.6	594.4	475.6	442.7	32.92	14.448	
6,100.0	6,036.7	6,127.9	6,036.7	17.9	20.9	-0.08	740.6	594.4	475.6	442.4	33.26	14.299	
6,200.0	6,136.7	6,227.9	6,136.7	18.1	21.0	-0.08	740.6	594.4	475.6	442.0	33.61	14.153	
6,300.0	6,236.7	6,327.9	6,236.7	18.2	21.2	-0.08	740.6	594.4	475.6	441.7	33.95	14.009	
6,400.0	6,336.7	6,427.9	6,336.7	18.4	21.3	-0.08	740.6	594.4	475.6	441.3	34.30	13.866	
6,500.0	6,436.7	6,527.9	6,436.7	18.6	21.4	-0.08	740.6	594.4	475.6	441.0	34.65	13.726	
6,600.0	6,536.7	6,627.9	6,536.7	18.7	21.6	-0.08	740.6	594.4	475.6	440.6	35.00	13.587	
6,601.3	6,537.9	6,629.1	6,537.9	18.7	21.6	91.81	740.6	594.4	475.6	439.3	36.36	13.081	
6,700.0	6,636.6	6,727.8	6,636.6	18.8	21.7	92.22	740.6	594.4	475.7	439.2	36.59	13.001	
6,800.0	6,735.1	6,829.1	6,737.8	18.9	21.9	93.91	740.5	591.9	476.5	440.0	36.49	13.059	
6,900.0	6,830.3	6,933.9	6,841.2	18.8	21.9	95.71	740.0	575.5	477.8	441.6	36.19	13.203	
7,000.0	6,920.3	7,041.1	6,943.4	18.7	21.8	97.40	738.9	543.3	479.5	443.7	35.78	13.399	
7,100.0	7,003.5	7,150.8	7,041.8	18.5	21.7	98.94	737.4	495.0	481.3	446.0	35.38	13.606	
7,200.0	7,078.1	7,262.9	7,133.4	18.5	21.5	100.31	735.2	430.8	483.3	448.2	35.12	13.762	
7,300.0	7,142.8	7,377.0	7,215.4	18.5	21.2	101.46	732.6	351.5	485.1	450.0	35.19	13.786	
7,400.0	7,196.2	7,493.1	7,284.7	18.9	21.0	102.36	729.6	258.7	486.7	450.9	35.80	13.597	
7,500.0	7,237.4	7,610.5	7,338.6	19.5	20.9	102.99	726.2	154.5	487.9	450.8	37.11	13.147	
7,600.0	7,265.5	7,728.9	7,375.0	20.5	20.9	103.32	722.5	42.1	488.6	449.4	39.20	12.463	
7,700.0	7,280.0	7,847.6	7,392.5	21.8	21.9	103.34	718.6	-75.1	488.6	446.6	42.00	11.635	
7,799.6	7,283.7	7,954.4	7,394.0	23.3	23.6	103.06	715.1	-181.8	488.1	442.9	45.20	10.798	
7,800.0	7,282.0	7,954.9	7,394.0	23.3	23.6	103.26	715.1	-182.3	488.4	443.3	45.17	10.813	
7,900.0	7,282.0	8,054.9	7,394.0	25.0	25.4	103.26	711.8	-282.2	488.5	439.9	48.59	10.052	
8,000.0	7,282.0	8,154.9	7,394.0	27.0	27.4	103.26	708.5	-382.2	488.5	436.1	52.36	9.329	
8,100.0	7,282.0	8,254.9	7,394.0	29.1	29.5	103.26	705.2	-482.1	488.5	432.1	56.41	8.659	
8,200.0	7,282.0	8,354.9	7,394.0	31.3	31.7	103.25	701.9	-582.1	488.5	427.8	60.68	8.050	
8,300.0	7,282.0	8,454.9	7,394.0	33.5	34.0	103.25	698.6	-682.0	488.5	423.4	65.13	7.501	
8,400.0	7,282.0	8,554.9	7,394.0	35.9	36.4	103.25	695.4	-782.0	488.5	418.8	69.72	7.007	
8,500.0	7,282.0	8,654.9	7,394.0	38.3	38.8	103.25	692.1	-881.9	488.5	414.1	74.43	6.563	
8,600.0	7,282.0	8,754.9	7,394.0	40.8	41.2	103.25	688.8	-981.8	488.5	409.3	79.23	6.165	
8,700.0	7,282.0	8,854.9	7,394.0	43.3	43.7	103.25	685.5	-1,081.8	488.5	404.4	84.12	5.807	
8,800.0	7,282.0	8,954.9	7,394.0	45.8	46.3	103.25	682.2	-1,181.7	488.5	399.4	89.07	5.484	
8,900.0	7,282.0	9,054.9	7,394.0	48.4	48.8	103.25	678.9	-1,281.7	488.5	394.4	94.08	5.193	
9,000.0	7,282.0	9,154.9	7,394.0	51.0	51.4	103.25	675.6	-1,381.6	488.5	389.4	99.14	4.928	
9,100.0	7,282.0	9,254.9	7,394.0	53.6	54.0	103.25	672.3	-1,481.6	488.5	384.3	104.23	4.687	
9,200.0	7,282.0	9,354.9	7,394.0	56.2	56.7	103.25	669.1	-1,581.5	488.5	379.2	109.37	4.467	
9,300.0	7,282.0	9,454.9	7,394.0	58.9	59.3	103.25	665.8	-1,681.5	488.5	374.0	114.53	4.266	
9,400.0	7,282.0	9,554.9	7,394.0	61.5	62.0	103.25	662.5	-1,781.4	488.6	368.8	119.72	4.081	
9,500.0	7,282.0	9,654.9	7,394.0	64.2	64.6	103.25	659.2	-1,881.4	488.6	363.6	124.93	3.911	
9,600.0	7,282.0	9,754.9	7,394.0	66.9	67.3	103.25	655.9	-1,981.3	488.6	358.4	130.16	3.754	
9,700.0	7,282.0	9,854.9	7,394.0	69.6	70.0	103.25	652.6	-2,081.3	488.6	353.2	135.41	3.608	
9,800.0	7,282.0	9,954.9	7,394.0	72.3	72.7	103.25	649.3	-2,181.2	488.6	347.9	140.68	3.473	
9,900.0	7,282.0	10,054.9	7,394.0	75.0	75.4	103.25	646.1	-2,281.1	488.6	342.6	145.96	3.347	
10,000.0	7,282.0	10,154.9	7,394.0	77.7	78.1	103.25	642.8	-2,381.1	488.6	337.3	151.25	3.230	
10,100.0	7,282.0	10,254.9	7,394.0	80.4	80.8	103.25	639.5	-2,481.0	488.6	332.0	156.56	3.121	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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
10,200.0	7,282.0	10,354.9	7,394.0	83.1	83.5	103.25	636.2	-2,581.0	488.6	326.7	161.87	3.018	
10,300.0	7,282.0	10,454.9	7,394.0	85.9	86.3	103.25	632.9	-2,680.9	488.6	321.4	167.20	2.922	
10,400.0	7,282.0	10,554.9	7,394.0	88.6	89.0	103.25	629.6	-2,780.9	488.6	316.1	172.53	2.832	
10,500.0	7,282.0	10,654.9	7,394.0	91.3	91.7	103.25	626.3	-2,880.8	488.6	310.8	177.87	2.747	
10,600.0	7,282.0	10,754.9	7,394.0	94.1	94.5	103.25	623.0	-2,980.8	488.6	305.4	183.22	2.667	
10,700.0	7,282.0	10,854.9	7,394.0	96.8	97.2	103.25	619.8	-3,080.7	488.6	300.1	188.57	2.591	
10,800.0	7,282.0	10,954.9	7,394.0	99.6	100.0	103.25	616.5	-3,180.7	488.6	294.7	193.93	2.520	
10,900.0	7,282.0	11,054.9	7,394.0	102.3	102.7	103.25	613.2	-3,280.6	488.7	289.4	199.30	2.452	
11,000.0	7,282.0	11,154.9	7,394.0	105.1	105.5	103.25	609.9	-3,380.5	488.7	284.0	204.67	2.388	
11,100.0	7,282.0	11,254.9	7,394.0	107.8	108.2	103.25	606.6	-3,480.5	488.7	278.6	210.04	2.327	
11,200.0	7,282.0	11,354.9	7,394.0	110.6	111.0	103.25	603.3	-3,580.4	488.7	273.3	215.42	2.268	
11,300.0	7,282.0	11,454.9	7,394.0	113.4	113.7	103.25	600.0	-3,680.4	488.7	267.9	220.81	2.213	
11,400.0	7,282.0	11,554.9	7,394.0	116.1	116.5	103.25	596.7	-3,780.3	488.7	262.5	226.19	2.160	
11,500.0	7,282.0	11,654.9	7,394.0	118.9	119.2	103.25	593.5	-3,880.3	488.7	257.1	231.58	2.110	
11,600.0	7,282.0	11,754.9	7,394.0	121.7	122.0	103.25	590.2	-3,980.2	488.7	251.7	236.98	2.062	
11,700.0	7,282.0	11,854.9	7,394.0	124.4	124.8	103.25	586.9	-4,080.2	488.7	246.3	242.37	2.016	
11,800.0	7,282.0	11,954.9	7,394.0	127.2	127.5	103.25	583.6	-4,180.1	488.7	240.9	247.77	1.972	
11,876.8	7,282.0	11,976.9	7,394.0	129.3	128.2	103.25	582.9	-4,202.2	491.8	241.3	250.44	1.964 SF	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	63.87	24.6	50.2	55.9				
100.0	100.0	100.0	100.0	0.1	0.1	63.87	24.6	50.2	55.9	55.7	0.22	248.773	
200.0	200.0	200.0	200.0	0.3	0.3	63.87	24.6	50.2	55.9	55.2	0.67	82.924	
300.0	300.0	300.0	300.0	0.6	0.6	63.87	24.6	50.2	55.9	54.8	1.12	49.755	
400.0	400.0	400.0	400.0	0.8	0.8	63.87	24.6	50.2	55.9	54.3	1.57	35.539	
500.0	500.0	500.0	500.0	1.0	1.0	63.87	24.6	50.2	55.9	53.9	2.02	27.641	
600.0	600.0	600.0	600.0	1.2	1.2	63.87	24.6	50.2	55.9	53.4	2.47	22.616	
700.0	700.0	700.0	700.0	1.5	1.5	63.87	24.6	50.2	55.9	53.0	2.92	19.136	
800.0	800.0	800.0	800.0	1.7	1.7	63.87	24.6	50.2	55.9	52.5	3.37	16.585	
900.0	900.0	900.0	900.0	1.9	1.9	63.87	24.6	50.2	55.9	52.1	3.82	14.634	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	63.87	24.6	50.2	55.9	51.6	4.27	13.093	
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	63.87	24.6	50.2	55.9	51.2	4.72	11.846	
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	63.87	24.6	50.2	55.9	50.7	5.17	10.816	
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	63.87	24.6	50.2	55.9	50.3	5.62	9.951	
1,400.0	1,400.0	1,400.0	1,400.0	3.0	3.0	63.87	24.6	50.2	55.9	49.8	6.07	9.214	
1,500.0	1,500.0	1,500.0	1,500.0	3.3	3.3	63.87	24.6	50.2	55.9	49.4	6.52	8.578	
1,600.0	1,600.0	1,600.0	1,600.0	3.5	3.5	63.87	24.6	50.2	55.9	48.9	6.97	8.025	CC, ES
1,700.0	1,700.0	1,698.2	1,698.1	3.7	3.7	63.30	25.8	51.4	57.5	50.1	7.41	7.764	
1,800.0	1,800.0	1,796.1	1,795.9	3.9	3.9	61.77	29.5	54.9	62.4	54.5	7.85	7.948	
1,900.0	1,900.0	1,893.7	1,893.2	4.2	4.1	-6.44	35.4	60.7	68.9	60.6	8.27	8.322	
2,000.0	1,999.8	1,991.1	1,989.8	4.4	4.4	-9.23	43.8	68.7	75.3	66.6	8.69	8.665	
2,100.0	2,099.5	2,088.1	2,085.8	4.6	4.6	-12.46	54.5	79.0	81.8	72.7	9.09	8.990	
2,200.0	2,198.7	2,186.9	2,183.0	4.8	4.9	-16.03	67.1	91.3	87.7	78.2	9.51	9.226	
2,300.0	2,297.5	2,286.7	2,281.1	5.1	5.2	-19.90	80.1	103.8	90.9	80.9	9.93	9.153	
2,400.0	2,395.6	2,386.4	2,379.2	5.4	5.5	-24.38	93.0	116.3	91.2	80.9	10.37	8.799	
2,500.0	2,493.5	2,486.1	2,477.3	5.7	5.8	-29.24	105.9	128.8	90.9	80.0	10.89	8.346	
2,506.9	2,500.3	2,493.0	2,484.1	5.7	5.8	-29.58	106.8	129.6	90.9	79.9	10.93	8.317	
2,600.0	2,591.4	2,585.8	2,575.3	6.0	6.1	-34.10	118.9	141.3	91.1	79.7	11.44	7.967	
2,700.0	2,689.2	2,685.5	2,673.4	6.3	6.5	-38.91	131.8	153.7	92.1	80.1	12.04	7.651	
2,800.0	2,787.1	2,785.2	2,771.5	6.7	6.8	-43.58	144.7	166.2	93.7	81.0	12.67	7.391	
2,900.0	2,885.0	2,884.9	2,869.5	7.0	7.2	-48.07	157.6	178.7	95.8	82.5	13.35	7.178	
3,000.0	2,982.8	2,984.6	2,967.6	7.4	7.5	-52.34	170.6	191.2	98.6	84.5	14.07	7.006	
3,100.0	3,080.7	3,084.3	3,065.7	7.8	7.9	-56.36	183.5	203.7	101.8	87.0	14.82	6.871	
3,200.0	3,178.6	3,184.0	3,163.7	8.2	8.2	-60.11	196.4	216.2	105.6	90.0	15.60	6.767	
3,300.0	3,276.5	3,283.7	3,261.8	8.6	8.6	-63.59	209.3	228.7	109.7	93.3	16.40	6.690	
3,400.0	3,374.3	3,383.4	3,359.8	9.0	9.0	-66.81	222.3	241.2	114.3	97.0	17.22	6.636	
3,500.0	3,472.2	3,483.1	3,457.9	9.4	9.4	-69.78	235.2	253.7	119.1	101.1	18.05	6.601	
3,600.0	3,570.1	3,582.8	3,556.0	9.8	9.7	-72.51	248.1	266.2	124.3	105.4	18.88	6.582	
3,700.0	3,667.9	3,682.5	3,654.0	10.2	10.1	-75.01	261.0	278.6	129.7	110.0	19.72	6.576	
3,800.0	3,765.8	3,782.2	3,752.1	10.6	10.5	-77.31	274.0	291.1	135.3	114.8	20.57	6.580	
3,900.0	3,863.7	3,881.9	3,850.2	11.0	10.9	-79.43	286.9	303.6	141.2	119.8	21.41	6.594	
4,000.0	3,961.6	3,981.6	3,948.2	11.5	11.3	-81.37	299.8	316.1	147.2	124.9	22.26	6.614	
4,100.0	4,059.4	4,081.3	4,046.3	11.9	11.6	-83.16	312.7	328.6	153.4	130.3	23.10	6.640	
4,200.0	4,157.3	4,181.0	4,144.4	12.3	12.0	-84.81	325.7	341.1	159.7	135.7	23.94	6.670	
4,300.0	4,255.2	4,280.7	4,242.4	12.7	12.4	-86.34	338.6	353.6	166.1	141.3	24.78	6.703	
4,400.0	4,353.0	4,380.4	4,340.5	13.2	12.8	-87.75	351.5	366.1	172.7	147.0	25.62	6.739	
4,500.0	4,450.9	4,480.1	4,438.6	13.6	13.2	-89.05	364.4	378.6	179.3	152.9	26.46	6.776	
4,600.0	4,548.8	4,579.8	4,536.6	14.0	13.6	-90.27	377.4	391.0	186.0	158.7	27.30	6.815	
4,700.0	4,646.7	4,679.5	4,634.7	14.5	14.0	-91.39	390.3	403.5	192.8	164.7	28.13	6.855	
4,800.0	4,744.5	4,779.2	4,732.8	14.9	14.4	-92.44	403.2	416.0	199.7	170.8	28.97	6.895	
4,900.0	4,842.4	4,878.9	4,830.8	15.3	14.8	-93.42	416.1	428.5	206.7	176.9	29.80	6.935	
5,000.0	4,940.3	4,978.6	4,928.9	15.8	15.1	-94.34	429.1	441.0	213.6	183.0	30.61	6.979	

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 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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
5,100.0	5,038.7	5,078.3	5,027.0	16.1	15.5	-94.62	442.0	453.5	220.5	189.1	31.32	7.040	
5,200.0	5,137.6	5,178.1	5,125.1	16.3	15.9	-94.01	454.9	466.0	227.0	195.0	31.97	7.100	
5,300.0	5,237.0	5,277.7	5,223.1	16.6	16.3	-92.58	467.8	478.5	233.4	200.8	32.57	7.167	
5,400.0	5,336.8	5,377.0	5,320.8	16.8	16.7	-90.42	480.7	490.9	239.9	206.9	33.09	7.252	
5,500.0	5,436.7	5,475.9	5,418.1	17.0	17.1	-87.60	493.5	503.3	247.0	213.5	33.51	7.370	
5,600.0	5,536.7	5,574.4	5,515.0	17.1	17.5	-18.20	506.3	515.6	254.9	228.0	26.89	9.482	
5,700.0	5,636.7	5,672.8	5,611.7	17.3	17.9	-14.78	519.0	528.0	263.9	236.2	27.71	9.525	
5,800.0	5,736.7	5,771.1	5,708.5	17.4	18.3	-11.59	531.8	540.3	273.8	245.2	28.56	9.586	
5,900.0	5,836.7	5,869.5	5,805.2	17.6	18.7	-8.62	544.6	552.6	284.5	255.1	29.43	9.665	
6,000.0	5,936.7	5,969.2	5,903.3	17.7	19.1	-5.85	557.4	565.1	295.8	265.5	30.31	9.760	
6,100.0	6,036.7	6,075.4	6,008.2	17.9	19.4	-3.48	569.3	576.5	306.2	275.0	31.11	9.840	
6,200.0	6,136.7	6,182.7	6,114.8	18.1	19.6	-1.77	578.4	585.3	314.3	282.5	31.80	9.884	
6,300.0	6,236.7	6,290.9	6,222.6	18.2	19.9	-0.65	584.7	591.4	320.0	287.6	32.38	9.883	
6,400.0	6,336.7	6,399.5	6,331.1	18.4	20.1	-0.07	588.0	594.6	323.1	290.2	32.85	9.835	
6,500.0	6,436.7	6,505.1	6,436.7	18.6	20.2	0.04	588.6	595.2	323.6	290.4	33.22	9.741	
6,600.0	6,536.7	6,605.1	6,536.7	18.7	20.4	0.04	588.6	595.2	323.6	290.0	33.59	9.635	
6,700.0	6,636.6	6,706.2	6,637.6	18.8	20.5	91.91	588.5	591.6	323.6	287.2	36.47	8.875	
6,800.0	6,735.1	6,807.7	6,737.6	18.9	20.5	91.87	587.9	574.3	323.6	287.1	36.51	8.864	
6,900.0	6,830.3	6,909.2	6,834.0	18.8	20.4	91.79	586.9	543.1	323.6	287.2	36.39	8.892	
7,000.0	6,920.3	7,010.6	6,925.0	18.7	20.3	91.67	585.4	498.6	323.6	287.4	36.19	8.941	
7,100.0	7,003.5	7,111.8	7,008.8	18.5	20.1	91.52	583.6	441.9	323.5	287.5	36.01	8.984	
7,200.0	7,078.1	7,213.0	7,083.6	18.5	19.9	91.34	581.3	373.9	323.5	287.5	36.01	8.985	
7,300.0	7,142.8	7,313.9	7,148.0	18.5	19.7	91.13	578.8	296.3	323.5	287.1	36.34	8.901	
7,400.0	7,196.2	7,414.7	7,200.7	18.9	19.7	90.90	575.9	210.6	323.5	286.3	37.18	8.699	
7,500.0	7,237.4	7,515.3	7,240.9	19.5	19.8	90.66	572.9	118.5	323.4	284.8	38.64	8.371	
7,600.0	7,265.5	7,615.8	7,267.7	20.5	20.5	90.40	569.7	21.8	323.4	282.7	40.73	7.941	
7,700.0	7,280.0	7,716.0	7,280.7	21.8	21.7	90.13	566.4	-77.4	323.4	280.0	43.39	7.454	
7,800.0	7,282.0	7,816.0	7,282.0	23.3	23.2	90.00	563.1	-177.3	323.4	276.9	46.51	6.953	
7,900.0	7,282.0	7,916.0	7,282.0	25.0	25.0	90.00	559.8	-277.3	323.4	273.4	50.04	6.463	
8,000.0	7,282.0	8,016.0	7,282.0	27.0	27.0	90.00	556.5	-377.2	323.4	269.5	53.92	5.997	
8,100.0	7,282.0	8,116.0	7,282.0	29.1	29.1	90.00	553.2	-477.2	323.4	265.3	58.08	5.567	
8,200.0	7,282.0	8,216.0	7,282.0	31.3	31.3	90.00	549.9	-577.1	323.4	260.9	62.47	5.176	
8,300.0	7,282.0	8,316.0	7,282.0	33.5	33.6	90.00	546.6	-677.0	323.4	256.3	67.04	4.823	
8,400.0	7,282.0	8,416.0	7,282.0	35.9	36.0	90.00	543.3	-777.0	323.4	251.6	71.76	4.506	
8,500.0	7,282.0	8,516.0	7,282.0	38.3	38.4	90.00	540.0	-876.9	323.4	246.8	76.59	4.222	
8,600.0	7,282.0	8,616.0	7,282.0	40.8	40.9	90.00	536.7	-976.9	323.3	241.8	81.52	3.966	
8,700.0	7,282.0	8,716.0	7,282.0	43.3	43.4	90.00	533.4	-1,076.8	323.3	236.8	86.54	3.736	
8,800.0	7,282.0	8,816.0	7,282.0	45.8	46.0	90.00	530.1	-1,176.8	323.3	231.7	91.62	3.529	
8,900.0	7,282.0	8,916.0	7,282.0	48.4	48.5	90.00	526.8	-1,276.7	323.3	226.6	96.76	3.342	
9,000.0	7,282.0	9,016.0	7,282.0	51.0	51.1	90.00	523.5	-1,376.7	323.3	221.4	101.95	3.171	
9,100.0	7,282.0	9,116.0	7,282.0	53.6	53.7	90.00	520.2	-1,476.6	323.3	216.1	107.18	3.017	
9,200.0	7,282.0	9,216.0	7,282.0	56.2	56.4	90.00	516.9	-1,576.6	323.3	210.9	112.44	2.875	
9,300.0	7,282.0	9,316.0	7,282.0	58.9	59.0	90.00	513.6	-1,676.5	323.3	205.6	117.74	2.746	
9,400.0	7,282.0	9,416.0	7,282.0	61.5	61.7	90.00	510.3	-1,776.5	323.3	200.2	123.06	2.627	
9,500.0	7,282.0	9,516.0	7,282.0	64.2	64.4	90.00	507.0	-1,876.4	323.3	194.9	128.41	2.518	
9,600.0	7,282.0	9,616.0	7,282.0	66.9	67.0	90.00	503.7	-1,976.3	323.3	189.5	133.78	2.417	
9,700.0	7,282.0	9,716.0	7,282.0	69.6	69.7	90.00	500.4	-2,076.3	323.3	184.1	139.17	2.323	
9,800.0	7,282.0	9,816.0	7,282.0	72.3	72.4	90.00	497.1	-2,176.2	323.3	178.7	144.57	2.236	
9,900.0	7,282.0	9,916.0	7,282.0	75.0	75.1	90.00	493.8	-2,276.2	323.3	173.3	149.99	2.155	
10,000.0	7,282.0	10,016.0	7,282.0	77.7	77.8	90.00	490.5	-2,376.1	323.3	167.8	155.42	2.080	
10,100.0	7,282.0	10,116.0	7,282.0	80.4	80.6	90.00	487.2	-2,476.1	323.3	162.4	160.86	2.010	
10,200.0	7,282.0	10,216.0	7,282.0	83.1	83.3	90.00	483.9	-2,576.0	323.2	156.9	166.31	1.944	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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
10,300.0	7,282.0	10,316.0	7,282.0	85.9	86.0	90.00	480.6	-2,676.0	323.2	151.5	171.77	1.882	
10,400.0	7,282.0	10,416.0	7,282.0	88.6	88.8	90.00	477.3	-2,775.9	323.2	146.0	177.24	1.824	
10,500.0	7,282.0	10,516.0	7,282.0	91.3	91.5	90.00	474.0	-2,875.9	323.2	140.5	182.72	1.769	
10,600.0	7,282.0	10,616.0	7,282.0	94.1	94.2	90.00	470.7	-2,975.8	323.2	135.0	188.21	1.717	
10,700.0	7,282.0	10,716.0	7,282.0	96.8	97.0	90.00	467.4	-3,075.7	323.2	129.5	193.70	1.669	
10,800.0	7,282.0	10,816.0	7,282.0	99.6	99.7	90.00	464.1	-3,175.7	323.2	124.0	199.20	1.623	
10,900.0	7,282.0	10,916.0	7,282.0	102.3	102.5	90.00	460.8	-3,275.6	323.2	118.5	204.70	1.579	
11,000.0	7,282.0	11,016.0	7,282.0	105.1	105.2	90.00	457.5	-3,375.6	323.2	113.0	210.21	1.538	
11,100.0	7,282.0	11,116.0	7,282.0	107.8	108.0	90.00	454.2	-3,475.5	323.2	107.5	215.72	1.498	Level 3
11,200.0	7,282.0	11,216.0	7,282.0	110.6	110.7	90.00	450.9	-3,575.5	323.2	101.9	221.24	1.461	Level 3
11,300.0	7,282.0	11,316.0	7,282.0	113.4	113.5	90.00	447.6	-3,675.4	323.2	96.4	226.76	1.425	Level 3
11,400.0	7,282.0	11,416.0	7,282.0	116.1	116.3	90.00	444.3	-3,775.4	323.2	90.9	232.29	1.391	Level 3
11,500.0	7,282.0	11,516.0	7,282.0	118.9	119.0	90.00	441.0	-3,875.3	323.2	85.3	237.82	1.359	Level 3
11,600.0	7,282.0	11,616.0	7,282.0	121.7	121.8	90.00	437.7	-3,975.3	323.2	79.8	243.35	1.328	Level 3
11,700.0	7,282.0	11,716.0	7,282.0	124.4	124.6	90.00	434.4	-4,075.2	323.2	74.3	248.89	1.298	Level 3
11,800.0	7,282.0	11,816.0	7,282.0	127.2	127.3	90.00	431.1	-4,175.1	323.2	68.7	254.43	1.270	Level 3
11,830.4	7,282.0	11,846.3	7,282.0	128.0	128.2	90.00	430.1	-4,205.5	323.1	67.0	256.11	1.262	Level 3, SF
11,876.8	7,282.0	11,854.2	7,282.0	129.3	128.4	90.00	429.9	-4,213.3	325.4	67.8	257.61	1.263	Level 3

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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 1-8H - 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	1.0	1.0	0.0	0.0	90.42	-0.2	25.0	25.0	25.0	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.42	-0.2	25.0	25.0	24.8	0.23	110.140	
200.0	200.0	201.0	201.0	0.3	0.3	90.42	-0.2	25.0	25.0	24.3	0.68	36.957	
300.0	300.0	301.0	301.0	0.6	0.6	90.42	-0.2	25.0	25.0	23.9	1.13	22.204	
400.0	400.0	401.0	401.0	0.8	0.8	90.42	-0.2	25.0	25.0	23.4	1.58	15.869	
500.0	500.0	501.0	501.0	1.0	1.0	90.42	-0.2	25.0	25.0	23.0	2.03	12.346	
600.0	600.0	601.0	601.0	1.2	1.2	90.42	-0.2	25.0	25.0	22.5	2.47	10.104	
700.0	700.0	701.0	701.0	1.5	1.5	90.42	-0.2	25.0	25.0	22.1	2.92	8.550	
800.0	800.0	801.0	801.0	1.7	1.7	90.42	-0.2	25.0	25.0	21.6	3.37	7.411	
900.0	900.0	901.0	901.0	1.9	1.9	90.42	-0.2	25.0	25.0	21.2	3.82	6.540	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	90.42	-0.2	25.0	25.0	20.7	4.27	5.852	
1,100.0	1,100.0	1,101.0	1,101.0	2.4	2.4	90.42	-0.2	25.0	25.0	20.3	4.72	5.295	
1,166.3	1,166.3	1,167.3	1,167.3	2.5	2.5	90.42	-0.2	25.0	25.0	20.0	5.02	4.980	CC
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	90.42	-0.2	25.0	25.0	19.8	5.17	4.835	ES
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	91.57	-0.7	26.7	26.7	21.1	5.60	4.765	
1,400.0	1,400.0	1,399.0	1,398.9	3.0	3.0	94.27	-2.4	31.6	31.7	25.7	6.02	5.269	
1,500.0	1,500.0	1,497.4	1,496.9	3.3	3.2	97.24	-5.0	39.6	40.2	33.7	6.45	6.227	
1,600.0	1,600.0	1,595.2	1,593.9	3.5	3.4	99.76	-8.7	50.8	52.1	45.2	6.90	7.546	
1,700.0	1,700.0	1,692.5	1,690.1	3.7	3.7	101.69	-13.4	65.0	67.3	59.9	7.37	9.127	
1,800.0	1,800.0	1,791.2	1,787.4	3.9	3.9	102.98	-18.5	80.3	83.5	75.6	7.87	10.616	
1,900.0	1,900.0	1,890.0	1,884.9	4.2	4.2	38.31	-23.6	95.6	98.4	90.3	8.16	12.068	
2,000.0	1,999.8	1,989.2	1,982.8	4.4	4.6	40.42	-28.7	111.0	110.7	102.2	8.57	12.915	
2,100.0	2,099.5	2,088.5	2,080.8	4.6	4.9	43.21	-33.8	126.4	120.6	111.6	9.00	13.408	
2,200.0	2,198.7	2,187.9	2,178.8	4.8	5.2	46.69	-38.9	141.8	128.4	119.0	9.43	13.609	
2,300.0	2,297.5	2,287.2	2,276.8	5.1	5.5	50.89	-44.0	157.2	134.4	124.5	9.90	13.574	
2,400.0	2,395.6	2,386.3	2,374.6	5.4	5.9	55.88	-49.1	172.5	139.1	128.7	10.42	13.354	
2,500.0	2,493.5	2,485.4	2,472.3	5.7	6.2	61.08	-54.2	187.9	144.1	133.1	11.00	13.099	
2,600.0	2,591.4	2,584.4	2,570.0	6.0	6.6	65.89	-59.3	203.2	150.2	138.6	11.63	12.914	
2,700.0	2,689.2	2,683.4	2,667.7	6.3	6.9	70.31	-64.4	218.6	157.3	145.0	12.30	12.786	
2,800.0	2,787.1	2,782.5	2,765.4	6.7	7.3	74.33	-69.4	233.9	165.3	152.3	13.01	12.706	
2,900.0	2,885.0	2,881.5	2,863.2	7.0	7.6	77.97	-74.5	249.2	174.0	160.3	13.74	12.664	
3,000.0	2,982.8	2,980.5	2,960.9	7.4	8.0	81.25	-79.6	264.6	183.4	168.9	14.49	12.653	
3,100.0	3,080.7	3,079.6	3,058.6	7.8	8.4	84.21	-84.7	279.9	193.3	178.0	15.26	12.667	
3,200.0	3,178.6	3,178.6	3,156.3	8.2	8.7	86.87	-89.8	295.3	203.6	187.6	16.03	12.701	
3,300.0	3,276.5	3,277.6	3,254.0	8.6	9.1	89.28	-94.9	310.6	214.4	197.5	16.81	12.750	
3,400.0	3,374.3	3,376.7	3,351.7	9.0	9.5	91.45	-100.0	326.0	225.5	207.9	17.60	12.811	
3,500.0	3,472.2	3,475.7	3,449.4	9.4	9.8	93.42	-105.1	341.3	236.8	218.5	18.39	12.880	
3,600.0	3,570.1	3,574.8	3,547.1	9.8	10.2	95.21	-110.2	356.7	248.5	229.3	19.18	12.956	
3,700.0	3,667.9	3,673.8	3,644.8	10.2	10.6	96.84	-115.2	372.0	260.3	240.4	19.97	13.037	
3,800.0	3,765.8	3,772.8	3,742.5	10.6	11.0	98.32	-120.3	387.4	272.4	251.6	20.76	13.120	
3,900.0	3,863.7	3,871.9	3,840.2	11.0	11.3	99.68	-125.4	402.7	284.6	263.0	21.55	13.205	
4,000.0	3,961.6	3,970.9	3,937.9	11.5	11.7	100.93	-130.5	418.0	296.9	274.6	22.34	13.291	
4,100.0	4,059.4	4,069.9	4,035.6	11.9	12.1	102.07	-135.6	433.4	309.4	286.3	23.13	13.376	
4,200.0	4,157.3	4,169.0	4,133.3	12.3	12.5	103.13	-140.7	448.7	322.0	298.1	23.92	13.461	
4,300.0	4,255.2	4,268.0	4,231.0	12.7	12.8	104.11	-145.8	464.1	334.7	310.0	24.71	13.545	
4,400.0	4,353.0	4,367.0	4,328.7	13.2	13.2	105.02	-150.9	479.4	347.5	322.0	25.50	13.628	
4,500.0	4,450.9	4,466.1	4,426.4	13.6	13.6	105.86	-155.9	494.8	360.4	334.1	26.29	13.709	
4,600.0	4,548.8	4,565.1	4,524.1	14.0	14.0	106.64	-161.0	510.1	373.3	346.2	27.07	13.789	
4,700.0	4,646.7	4,664.1	4,621.9	14.5	14.3	107.37	-166.1	525.5	386.3	358.5	27.86	13.866	
4,800.0	4,744.5	4,763.2	4,719.6	14.9	14.7	108.06	-171.2	540.8	399.4	370.7	28.65	13.942	
4,900.0	4,842.4	4,862.2	4,817.3	15.3	15.1	108.70	-176.3	556.2	412.5	383.1	29.43	14.015	
5,000.0	4,940.3	4,966.2	4,920.1	15.8	15.4	109.55	-181.2	571.0	425.1	395.0	30.15	14.100	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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 1-8H - 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
5,100.0	5,038.7	5,071.3	5,024.5	16.1	15.6	110.62	-185.0	582.4	435.6	404.9	30.72	14.178	
5,200.0	5,137.6	5,176.5	5,129.4	16.3	15.9	111.61	-187.6	590.2	443.6	412.4	31.22	14.207	
5,300.0	5,237.0	5,281.8	5,234.6	16.6	16.0	112.56	-188.9	594.3	449.2	417.5	31.65	14.191	
5,400.0	5,336.8	5,385.0	5,337.8	16.8	16.2	113.43	-189.2	595.0	452.3	420.3	32.01	14.131	
5,500.0	5,436.7	5,484.9	5,437.7	17.0	16.3	113.92	-189.2	595.0	453.9	421.6	32.33	14.041	
5,600.0	5,536.7	5,584.9	5,537.7	17.1	16.5	180.00	-189.2	595.0	454.2	427.7	26.44	17.177	
5,700.0	5,636.7	5,684.9	5,637.7	17.3	16.6	180.00	-189.2	595.0	454.2	427.4	26.82	16.936	
5,800.0	5,736.7	5,784.9	5,737.7	17.4	16.8	180.00	-189.2	595.0	454.2	427.0	27.20	16.701	
5,900.0	5,836.7	5,884.9	5,837.7	17.6	17.0	180.00	-189.2	595.0	454.2	426.6	27.58	16.470	
6,000.0	5,936.7	5,984.9	5,937.7	17.7	17.1	180.00	-189.2	595.0	454.2	426.2	27.96	16.245	
6,100.0	6,036.7	6,084.9	6,037.7	17.9	17.3	180.00	-189.2	595.0	454.2	425.8	28.34	16.024	
6,200.0	6,136.7	6,184.9	6,137.7	18.1	17.4	180.00	-189.2	595.0	454.2	425.5	28.73	15.809	
6,300.0	6,236.7	6,284.9	6,237.7	18.2	17.6	180.00	-189.2	595.0	454.2	425.1	29.12	15.598	
6,400.0	6,336.7	6,384.9	6,337.7	18.4	17.8	180.00	-189.2	595.0	454.2	424.7	29.51	15.392	
6,500.0	6,436.7	6,484.9	6,437.7	18.6	17.9	180.00	-189.2	595.0	454.2	424.3	29.90	15.190	
6,600.0	6,536.7	6,584.9	6,537.7	18.7	18.1	180.00	-189.2	595.0	454.2	423.9	30.29	14.993	
6,700.0	6,636.6	6,683.4	6,636.1	18.8	18.2	-88.11	-189.3	591.5	454.2	418.0	36.18	12.553	
6,800.0	6,735.1	6,781.4	6,732.6	18.9	18.2	-88.14	-189.8	575.3	454.2	418.0	36.22	12.540	
6,900.0	6,830.3	6,879.4	6,826.1	18.8	18.2	-88.20	-190.8	546.1	454.2	418.1	36.10	12.582	
7,000.0	6,920.3	6,977.5	6,914.7	18.7	18.1	-88.29	-192.2	504.3	454.1	418.2	35.89	12.655	
7,100.0	7,003.5	7,075.7	6,996.9	18.5	18.0	-88.42	-193.9	450.8	454.1	418.4	35.70	12.719	
7,200.0	7,078.1	7,174.1	7,071.2	18.5	18.0	-88.58	-196.1	386.4	454.1	418.4	35.69	12.723	
7,300.0	7,142.8	7,272.6	7,136.0	18.5	18.1	-88.77	-198.5	312.3	454.0	418.0	36.01	12.610	
7,400.0	7,196.2	7,371.4	7,190.2	18.9	18.4	-88.98	-201.2	229.9	454.0	417.2	36.82	12.330	
7,500.0	7,237.4	7,470.3	7,232.6	19.5	19.0	-89.21	-204.2	140.6	454.0	415.7	38.24	11.872	
7,600.0	7,265.5	7,569.6	7,262.3	20.5	19.9	-89.46	-207.3	46.0	454.0	413.7	40.29	11.266	
7,700.0	7,280.0	7,669.1	7,278.7	21.8	21.2	-89.71	-210.5	-52.0	453.9	411.0	42.93	10.574	
7,798.9	7,283.7	7,767.8	7,282.0	23.3	22.7	-89.66	-213.8	-150.6	453.9	407.9	46.00	9.869	
7,800.0	7,282.0	7,768.9	7,282.0	23.3	22.8	-89.87	-213.8	-151.7	453.9	407.9	46.03	9.861	
7,900.0	7,282.0	7,868.9	7,282.0	25.0	24.5	-89.87	-217.1	-251.6	453.9	404.4	49.56	9.159	
8,000.0	7,282.0	7,968.9	7,282.0	27.0	26.5	-89.87	-220.4	-351.6	453.9	400.5	53.44	8.495	
8,100.0	7,282.0	8,068.9	7,282.0	29.1	28.5	-89.87	-223.7	-451.5	453.9	396.3	57.60	7.881	
8,200.0	7,282.0	8,168.9	7,282.0	31.3	30.7	-89.87	-227.0	-551.5	453.9	392.0	61.98	7.324	
8,300.0	7,282.0	8,268.9	7,282.0	33.5	33.0	-89.87	-230.3	-651.4	453.9	387.4	66.55	6.821	
8,400.0	7,282.0	8,368.9	7,282.0	35.9	35.4	-89.87	-233.6	-751.4	453.9	382.7	71.27	6.369	
8,500.0	7,282.0	8,468.9	7,282.0	38.3	37.8	-89.87	-236.8	-851.3	453.9	377.8	76.11	5.965	
8,600.0	7,282.0	8,568.9	7,282.0	40.8	40.3	-89.87	-240.1	-951.3	453.9	372.9	81.04	5.601	
8,700.0	7,282.0	8,668.9	7,282.0	43.3	42.8	-89.87	-243.4	-1,051.2	453.9	367.9	86.06	5.275	
8,800.0	7,282.0	8,768.9	7,282.0	45.8	45.4	-89.87	-246.7	-1,151.2	453.9	362.8	91.14	4.980	
8,900.0	7,282.0	8,868.9	7,282.0	48.4	47.9	-89.87	-250.0	-1,251.1	453.9	357.7	96.29	4.714	
9,000.0	7,282.0	8,968.9	7,282.0	51.0	50.5	-89.87	-253.3	-1,351.0	453.9	352.5	101.48	4.473	
9,100.0	7,282.0	9,068.9	7,282.0	53.6	53.1	-89.87	-256.6	-1,451.0	453.9	347.2	106.71	4.254	
9,200.0	7,282.0	9,168.9	7,282.0	56.2	55.8	-89.87	-259.9	-1,550.9	453.9	342.0	111.98	4.054	
9,300.0	7,282.0	9,268.9	7,282.0	58.9	58.4	-89.87	-263.2	-1,650.9	453.9	336.7	117.28	3.871	
9,400.0	7,282.0	9,368.9	7,282.0	61.5	61.1	-89.87	-266.5	-1,750.8	453.9	331.3	122.60	3.703	
9,500.0	7,282.0	9,468.9	7,282.0	64.2	63.8	-89.87	-269.8	-1,850.8	453.9	326.0	127.95	3.548	
9,600.0	7,282.0	9,568.9	7,282.0	66.9	66.5	-89.87	-273.1	-1,950.7	453.9	320.6	133.32	3.405	
9,700.0	7,282.0	9,668.9	7,282.0	69.6	69.2	-89.87	-276.4	-2,050.7	453.9	315.2	138.71	3.273	
9,800.0	7,282.0	9,768.9	7,282.0	72.3	71.9	-89.87	-279.7	-2,150.6	453.9	309.8	144.11	3.150	
9,900.0	7,282.0	9,868.9	7,282.0	75.0	74.6	-89.87	-283.0	-2,250.6	453.9	304.4	149.53	3.036	
10,000.0	7,282.0	9,968.9	7,282.0	77.7	77.3	-89.87	-286.3	-2,350.5	453.9	299.0	154.97	2.929	
10,100.0	7,282.0	10,068.9	7,282.0	80.4	80.0	-89.87	-289.5	-2,450.5	453.9	293.5	160.41	2.830	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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 1-8H - 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
10,200.0	7,282.0	10,168.9	7,282.0	83.1	82.7	-89.87	-292.8	-2,550.4	453.9	288.1	165.86	2.737	
10,300.0	7,282.0	10,268.9	7,282.0	85.9	85.5	-89.87	-296.1	-2,650.3	453.9	282.6	171.33	2.650	
10,400.0	7,282.0	10,368.9	7,282.0	88.6	88.2	-89.87	-299.4	-2,750.3	453.9	277.1	176.80	2.568	
10,500.0	7,282.0	10,468.9	7,282.0	91.3	91.0	-89.87	-302.7	-2,850.2	453.9	271.7	182.28	2.490	
10,600.0	7,282.0	10,568.9	7,282.0	94.1	93.7	-89.87	-306.0	-2,950.2	453.9	266.2	187.77	2.418	
10,700.0	7,282.0	10,668.9	7,282.0	96.8	96.5	-89.87	-309.3	-3,050.1	453.9	260.7	193.26	2.349	
10,800.0	7,282.0	10,768.9	7,282.0	99.6	99.2	-89.87	-312.6	-3,150.1	453.9	255.2	198.76	2.284	
10,900.0	7,282.0	10,868.9	7,282.0	102.3	102.0	-89.87	-315.9	-3,250.0	453.9	249.7	204.26	2.222	
11,000.0	7,282.0	10,968.9	7,282.0	105.1	104.7	-89.87	-319.2	-3,350.0	453.9	244.2	209.77	2.164	
11,100.0	7,282.0	11,068.9	7,282.0	107.8	107.5	-89.87	-322.5	-3,449.9	453.9	238.7	215.29	2.109	
11,200.0	7,282.0	11,168.9	7,282.0	110.6	110.2	-89.87	-325.8	-3,549.9	453.9	233.1	220.81	2.056	
11,300.0	7,282.0	11,268.9	7,282.0	113.4	113.0	-89.87	-329.1	-3,649.8	453.9	227.6	226.33	2.006	
11,400.0	7,282.0	11,368.9	7,282.0	116.1	115.8	-89.87	-332.4	-3,749.7	453.9	222.1	231.86	1.958	
11,500.0	7,282.0	11,468.9	7,282.0	118.9	118.5	-89.87	-335.7	-3,849.7	453.9	216.6	237.39	1.912	
11,600.0	7,282.0	11,568.9	7,282.0	121.7	121.3	-89.87	-339.0	-3,949.6	453.9	211.0	242.92	1.869	
11,700.0	7,282.0	11,668.9	7,282.0	124.4	124.1	-89.87	-342.2	-4,049.6	453.9	205.5	248.46	1.827	
11,800.0	7,282.0	11,768.9	7,282.0	127.2	126.8	-89.87	-345.5	-4,149.5	453.9	199.9	254.00	1.787	
11,876.8	7,282.0	11,845.7	7,282.0	129.3	129.0	-89.87	-348.1	-4,226.3	453.9	195.7	258.25	1.758	SF

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	1.0	1.0	0.0	0.0	90.47	-0.4	49.3	49.3	49.3	0.00	N/A	
100.0	100.0	101.0	101.0	0.1	0.1	90.47	-0.4	49.3	49.3	49.1	0.23	217.215	
200.0	200.0	201.0	201.0	0.3	0.3	90.47	-0.4	49.3	49.3	48.6	0.68	72.886	
300.0	300.0	301.0	301.0	0.6	0.6	90.47	-0.4	49.3	49.3	48.2	1.13	43.790	
400.0	400.0	401.0	401.0	0.8	0.8	90.47	-0.4	49.3	49.3	47.7	1.58	31.296	
500.0	500.0	501.0	501.0	1.0	1.0	90.47	-0.4	49.3	49.3	47.3	2.03	24.349	
600.0	600.0	601.0	601.0	1.2	1.2	90.47	-0.4	49.3	49.3	46.8	2.47	19.926	
700.0	700.0	701.0	701.0	1.5	1.5	90.47	-0.4	49.3	49.3	46.4	2.92	16.863	
800.0	800.0	801.0	801.0	1.7	1.7	90.47	-0.4	49.3	49.3	45.9	3.37	14.616	
900.0	900.0	901.0	901.0	1.9	1.9	90.47	-0.4	49.3	49.3	45.5	3.82	12.898	
966.3	966.3	967.3	967.3	2.1	2.1	90.47	-0.4	49.3	49.3	45.2	4.12	11.964	CC
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	90.47	-0.4	49.3	49.3	45.0	4.27	11.541	ES
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.3	91.97	-1.7	50.4	50.5	45.8	4.70	10.750	
1,200.0	1,200.0	1,198.4	1,198.3	2.6	2.5	95.98	-5.6	53.8	54.1	49.0	5.10	10.608	SF
1,300.0	1,300.0	1,296.6	1,296.0	2.8	2.7	101.52	-12.1	59.3	60.7	55.2	5.52	10.985	
1,400.0	1,400.0	1,394.0	1,392.8	3.0	2.9	107.43	-21.0	66.9	70.6	64.6	5.97	11.825	
1,500.0	1,500.0	1,490.6	1,488.2	3.3	3.2	112.88	-32.3	76.5	84.0	77.6	6.44	13.046	
1,600.0	1,600.0	1,587.7	1,583.7	3.5	3.5	117.46	-45.7	88.0	100.6	93.7	6.95	14.478	
1,700.0	1,700.0	1,686.0	1,680.3	3.7	3.8	120.83	-59.5	99.7	118.0	110.5	7.49	15.758	
1,800.0	1,800.0	1,784.3	1,776.9	3.9	4.1	123.33	-73.4	111.5	135.7	127.6	8.04	16.870	
1,900.0	1,900.0	1,882.6	1,873.5	4.2	4.5	59.54	-87.2	123.3	152.6	144.5	8.13	18.768	
2,000.0	1,999.8	1,981.1	1,970.3	4.4	4.8	62.30	-101.0	135.1	168.2	159.7	8.56	19.652	
2,100.0	2,099.5	2,079.4	2,066.9	4.6	5.2	65.54	-114.9	146.9	182.8	173.8	8.99	20.322	
2,200.0	2,198.7	2,177.6	2,163.4	4.8	5.6	69.20	-128.7	158.7	196.6	187.2	9.44	20.828	
2,300.0	2,297.5	2,275.5	2,259.6	5.1	5.9	73.22	-142.4	170.4	210.3	200.4	9.92	21.207	
2,400.0	2,395.6	2,372.9	2,355.4	5.4	6.3	77.55	-156.1	182.1	224.3	213.8	10.44	21.486	
2,500.0	2,493.5	2,470.2	2,451.0	5.7	6.7	81.92	-169.8	193.8	239.3	228.3	11.01	21.740	
2,600.0	2,591.4	2,567.5	2,546.6	6.0	7.1	85.77	-183.5	205.5	255.5	243.9	11.61	22.006	
2,700.0	2,689.2	2,664.7	2,642.1	6.3	7.5	89.16	-197.2	217.1	272.8	260.5	12.25	22.274	
2,800.0	2,787.1	2,762.0	2,737.7	6.7	7.9	92.14	-210.8	228.8	290.9	278.0	12.91	22.539	
2,900.0	2,885.0	2,859.2	2,833.3	7.0	8.3	94.78	-224.5	240.5	309.7	296.1	13.58	22.796	
3,000.0	2,982.8	2,956.5	2,928.9	7.4	8.7	97.11	-238.2	252.1	329.0	314.8	14.28	23.045	
3,100.0	3,080.7	3,053.7	3,024.5	7.8	9.1	99.19	-251.9	263.8	348.9	333.9	14.98	23.284	
3,200.0	3,178.6	3,151.0	3,120.1	8.2	9.5	101.05	-265.5	275.4	369.1	353.4	15.70	23.514	
3,300.0	3,276.5	3,248.3	3,215.6	8.6	9.9	102.71	-279.2	287.1	389.7	373.3	16.42	23.734	
3,400.0	3,374.3	3,345.5	3,311.2	9.0	10.3	104.21	-292.9	298.8	410.5	393.4	17.15	23.944	
3,500.0	3,472.2	3,442.8	3,406.8	9.4	10.7	105.56	-306.6	310.4	431.6	413.8	17.88	24.145	
3,600.0	3,570.1	3,540.0	3,502.4	9.8	11.1	106.79	-320.2	322.1	452.9	434.3	18.61	24.337	
3,700.0	3,667.9	3,637.3	3,598.0	10.2	11.5	107.90	-333.9	333.8	474.4	455.1	19.35	24.520	
3,800.0	3,765.8	3,734.6	3,693.6	10.6	11.9	108.92	-347.6	345.4	496.1	476.0	20.09	24.695	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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	7,311.0	7,311.0	116.1	8.2	-90.00	-145.8	-4,146.6	466.0	341.7	124.33	3.748	
11,500.0	7,282.0	7,311.0	7,311.0	118.9	8.2	-90.00	-145.8	-4,146.6	386.1	259.0	127.09	3.038	
11,600.0	7,282.0	7,311.0	7,311.0	121.7	8.2	-90.00	-145.8	-4,146.6	317.8	187.9	129.86	2.447	
11,700.0	7,282.0	7,311.0	7,311.0	124.4	8.2	-90.00	-145.8	-4,146.6	270.0	137.4	132.62	2.036	
11,790.4	7,282.0	7,311.0	7,311.0	126.9	8.2	-90.00	-145.8	-4,146.6	254.4	119.3	135.13	1.883	CC
11,800.0	7,282.0	7,311.0	7,311.0	127.2	8.2	-90.00	-145.8	-4,146.6	254.6	119.2	135.39	1.880	ES, SF
11,876.8	7,282.0	7,311.0	7,311.0	129.3	8.2	-90.00	-145.8	-4,146.6	268.6	131.1	137.52	1.953	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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

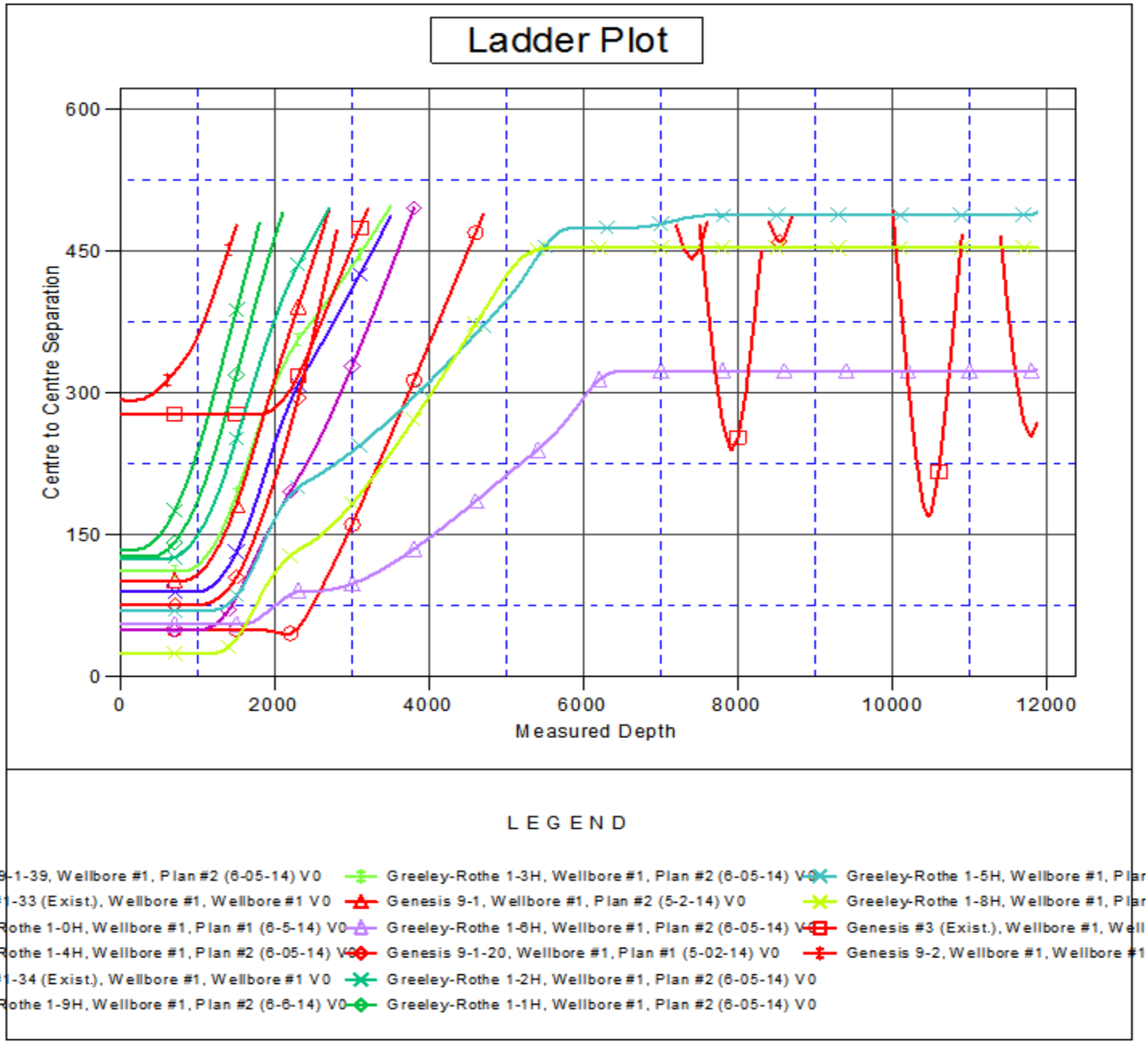
Survey Program: 7342-MWD — **Offset Well Error:** 0.0 ft

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
10,000.0	7,282.0	7,288.0	7,288.0	77.7	8.2	-90.00	-17.4	-2,823.8	494.2	408.3	85.87	5.755	
10,100.0	7,282.0	7,288.0	7,288.0	80.4	8.2	-90.00	-17.4	-2,823.8	401.7	313.1	88.59	4.535	
10,200.0	7,282.0	7,288.0	7,288.0	83.1	8.2	-90.00	-17.4	-2,823.8	313.9	222.6	91.32	3.438	
10,300.0	7,282.0	7,288.0	7,288.0	85.9	8.2	-90.00	-17.4	-2,823.8	236.0	142.0	94.05	2.510	
10,400.0	7,282.0	7,288.0	7,288.0	88.6	8.2	-90.00	-17.4	-2,823.8	181.3	84.6	96.78	1.874	
10,464.1	7,282.0	7,288.0	7,288.0	90.4	8.2	-90.00	-17.4	-2,823.8	169.6	71.1	98.54	1.721	CC, ES, SF
10,500.0	7,282.0	7,288.0	7,288.0	91.3	8.2	-90.00	-17.4	-2,823.8	173.4	73.8	99.52	1.742	
10,600.0	7,282.0	7,288.0	7,288.0	94.1	8.2	-90.00	-17.4	-2,823.8	217.3	115.0	102.26	2.125	
10,700.0	7,282.0	7,288.0	7,288.0	96.8	8.2	-90.00	-17.4	-2,823.8	290.5	185.5	105.01	2.767	
10,800.0	7,282.0	7,288.0	7,288.0	99.6	8.2	-90.00	-17.4	-2,823.8	376.2	268.5	107.76	3.492	
10,900.0	7,282.0	7,288.0	7,288.0	102.3	8.2	-90.00	-17.4	-2,823.8	467.7	357.2	110.51	4.232	

Company:	KP KAUFFMAN	**Local Co-ordinate Reference:**	Well Greeley-Rothe 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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 @ 4891.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Greeley-Rothe 1-7H
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 1-7H
Project:	SEC.1-T5N-R67W	**TVD Reference:**	WELL @ 4891.0ft (RKB - 15')
Reference Site:	Greeley-Rothe Pad Sec.1-T5N-R67W	**MD Reference:**	WELL @ 4891.0ft (RKB - 15')
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Greeley-Rothe 1-7H	**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 @ 4891.0ft (RKB - 15')
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Greeley-Rothe 1-7H
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.43°