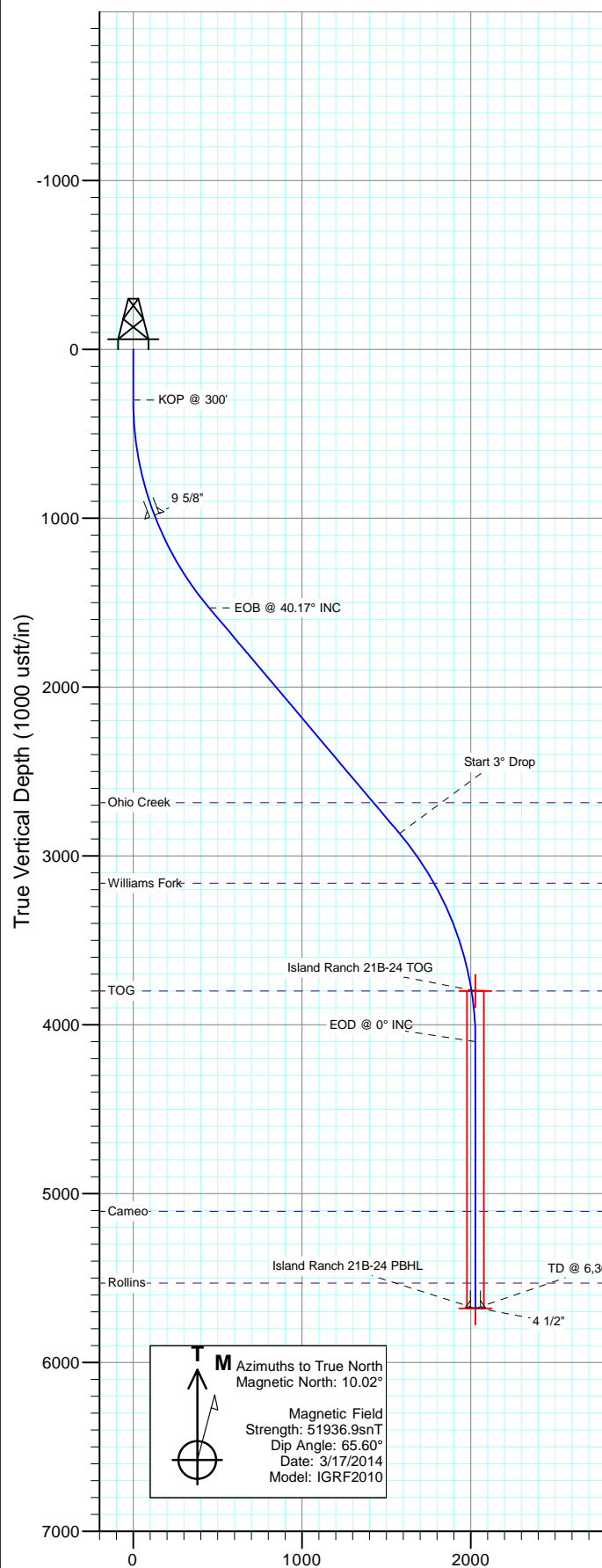
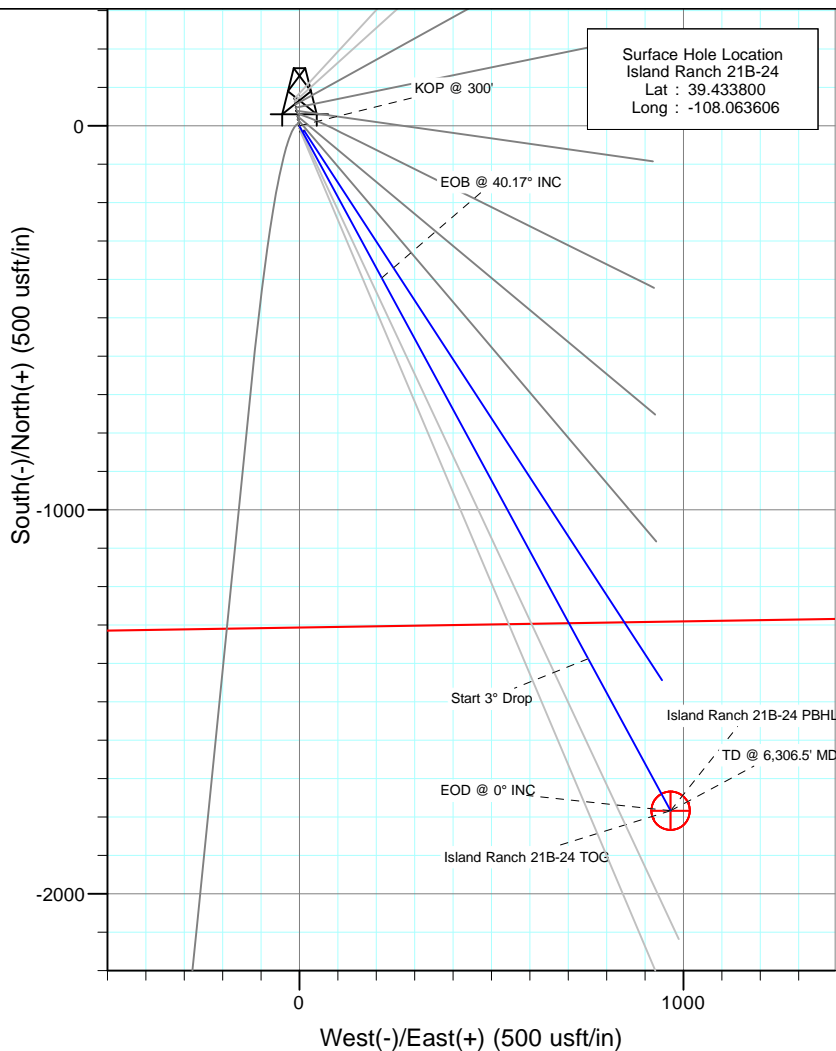




Project: Garfield County, CO
Site: S13-T7S-R96W (Island Ranch)
Well: Island Ranch 21B-24
Wellbore: DD
Design: Plan #2



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	300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.0	
3	1639.0	40.17	151.54	1532.0	-396.0	214.7	3.00	151.54	450.5	
4	3387.5	40.17	151.54	2868.0	-1387.6	752.2	0.00	0.00	1578.3	
5	4726.5	0.00	0.00	4100.0	-1783.6	966.9	3.00	180.00	2028.8	
6	6306.5	0.00	0.00	5680.0	-1783.6	966.9	0.00	0.00	2028.8	Island Ranch 21B-24 PBHL

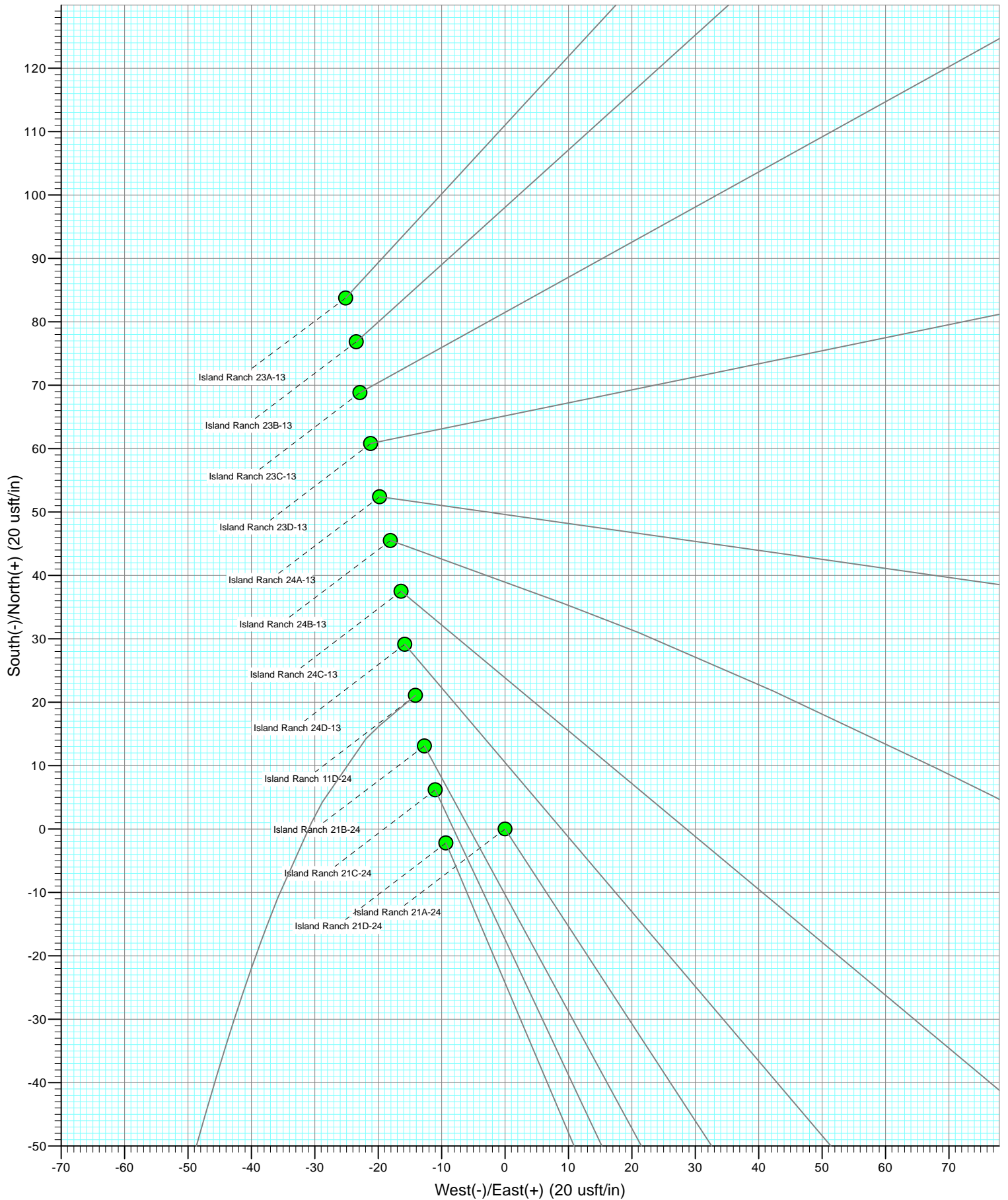


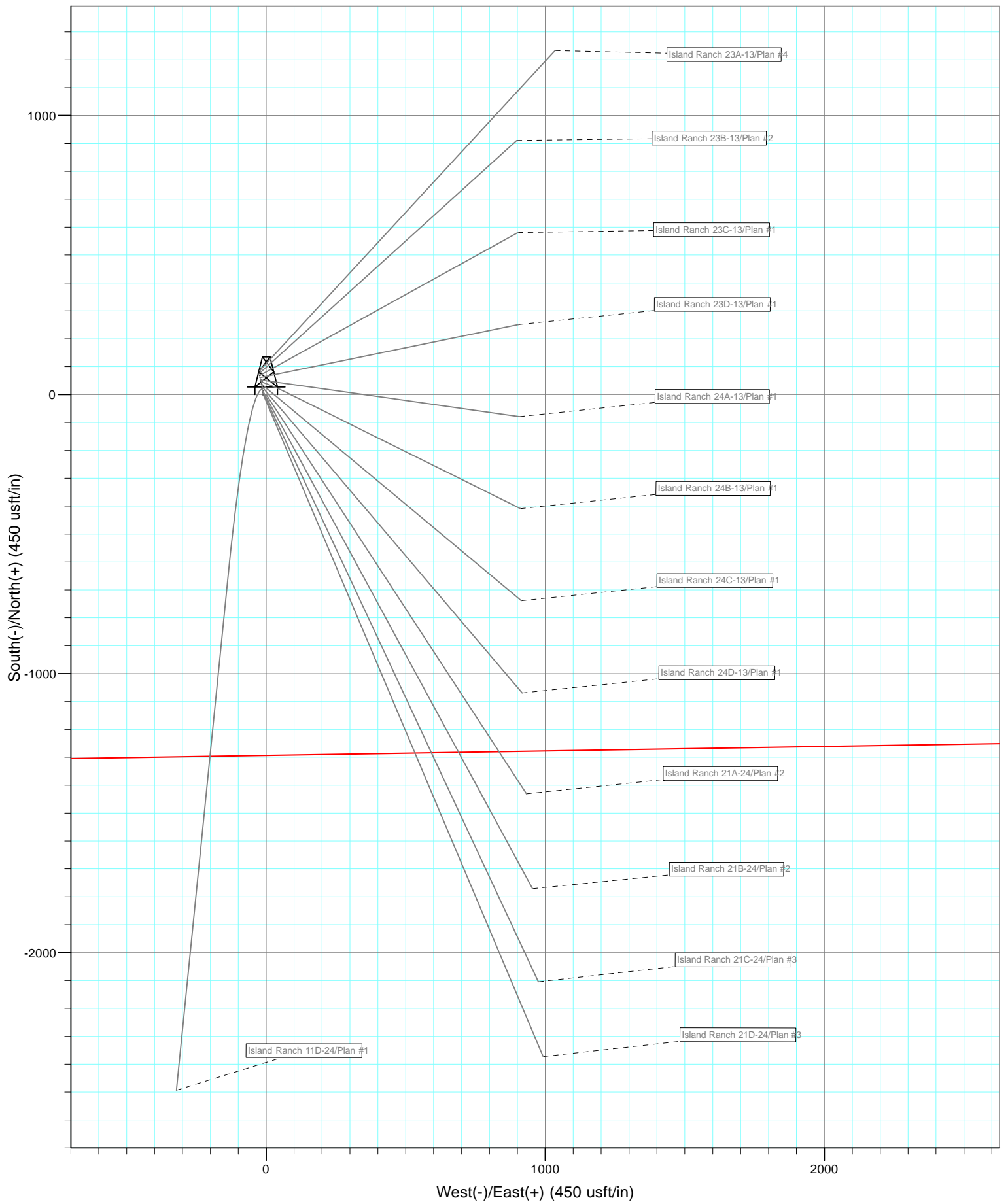
DESIGN TARGET DETAILS						
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Island Ranch 21B-24 TOG	-1783.6	966.9	591285.49	1276903.41	39.428903	-108.060183
Island Ranch 21B-24 PBHL	-1783.6	966.9	591285.49	1276903.41	39.428903	-108.060183

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
2685.0	3147.9	Ohio Creek
3162.0	3746.0	Williams Fork
3800.0	4425.2	TOG
5105.0	5731.5	Cameo
5530.0	6156.5	Rollins

CASING DETAILS		
TVD	MD	Name
984.4	1000.0	9 5/8"
5675.5	6302.0	4 1/2"

Plan #2
Island Ranch 21B-24
KB=20' @ 5100.0usft (Patterson #303)
Ground Elevation @ 5080.0
NAD 1927 (NADCON CONUS)
Well Island Ranch 21B-24, True North





Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Island Ranch 21B-24
Company:	Caerus Oil & Gas (NAD 27)	TVD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Project:	Garfield County, CO	MD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Site:	S13-T7S-R96W (Island Ranch)	North Reference:	True
Well:	Island Ranch 21B-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Project	Garfield County, CO		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	Colorado Central 502		

Site		S13-T7S-R96W (Island Ranch)			
Site Position:		Northing:	593,103.71 usft	Latitude:	39.433822
From:	Lat/Long	Easting:	1,275,986.01 usft	Longitude:	-108.063611
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.62 °

Well	Island Ranch 21B-24					
Well Position	+N/-S	0.0 usft	Northing:	593,095.65 usft	Latitude:	39.433800
	+E/-W	0.0 usft	Easting:	1,275,987.20 usft	Longitude:	-108.063606
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	5,080.0 usft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/17/2014	10.02	65.60	51,937

Design	Plan #2			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	151.54

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,639.0	40.17	151.54	1,532.0	-396.0	214.7	3.00	3.00	0.00	151.54	
3,387.5	40.17	151.54	2,868.0	-1,387.6	752.2	0.00	0.00	0.00	0.00	
4,726.5	0.00	0.00	4,100.0	-1,783.6	966.9	3.00	-3.00	0.00	180.00	
6,306.5	0.00	0.00	5,680.0	-1,783.6	966.9	0.00	0.00	0.00	0.00	Island Ranch 21B-24

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Island Ranch 21B-24
Company:	Caerus Oil & Gas (NAD 27)	TVD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Project:	Garfield County, CO	MD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Site:	S13-T7S-R96W (Island Ranch)	North Reference:	True
Well:	Island Ranch 21B-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	KOP @ 300'
400.0	3.00	151.54	400.0	-2.3	1.2	2.6	3.00	3.00	
500.0	6.00	151.54	499.6	-9.2	5.0	10.5	3.00	3.00	
600.0	9.00	151.54	598.8	-20.7	11.2	23.5	3.00	3.00	
700.0	12.00	151.54	697.1	-36.7	19.9	41.7	3.00	3.00	
800.0	15.00	151.54	794.3	-57.2	31.0	65.1	3.00	3.00	
900.0	18.00	151.54	890.2	-82.2	44.5	93.5	3.00	3.00	
1,000.0	21.00	151.54	984.4	-111.5	60.5	126.9	3.00	3.00	9 5/8"
1,100.0	24.00	151.54	1,076.8	-145.2	78.7	165.1	3.00	3.00	
1,200.0	27.00	151.54	1,167.1	-183.0	99.2	208.2	3.00	3.00	
1,300.0	30.00	151.54	1,254.9	-224.9	121.9	255.9	3.00	3.00	
1,400.0	33.00	151.54	1,340.2	-270.9	146.8	308.1	3.00	3.00	
1,500.0	36.00	151.54	1,422.6	-320.7	173.8	364.8	3.00	3.00	
1,600.0	39.00	151.54	1,501.9	-374.2	202.8	425.6	3.00	3.00	
1,639.0	40.17	151.54	1,532.0	-396.0	214.7	450.5	3.00	3.00	EOB @ 40.17° INC
1,700.0	40.17	151.54	1,578.6	-430.6	233.4	489.8	0.00	0.00	
1,800.0	40.17	151.54	1,655.0	-487.3	264.2	554.3	0.00	0.00	
1,900.0	40.17	151.54	1,731.4	-544.0	294.9	618.8	0.00	0.00	
2,000.0	40.17	151.54	1,807.8	-600.7	325.7	683.3	0.00	0.00	
2,100.0	40.17	151.54	1,884.2	-657.4	356.4	747.8	0.00	0.00	
2,200.0	40.17	151.54	1,960.6	-714.2	387.2	812.4	0.00	0.00	
2,300.0	40.17	151.54	2,037.1	-770.9	417.9	876.9	0.00	0.00	
2,400.0	40.17	151.54	2,113.5	-827.6	448.6	941.4	0.00	0.00	
2,500.0	40.17	151.54	2,189.9	-884.3	479.4	1,005.9	0.00	0.00	
2,600.0	40.17	151.54	2,266.3	-941.0	510.1	1,070.4	0.00	0.00	
2,700.0	40.17	151.54	2,342.7	-997.7	540.9	1,134.9	0.00	0.00	
2,800.0	40.17	151.54	2,419.1	-1,054.4	571.6	1,199.4	0.00	0.00	
2,900.0	40.17	151.54	2,495.5	-1,111.1	602.4	1,263.9	0.00	0.00	
3,000.0	40.17	151.54	2,571.9	-1,167.8	633.1	1,328.4	0.00	0.00	
3,100.0	40.17	151.54	2,648.4	-1,224.5	663.8	1,392.9	0.00	0.00	
3,147.9	40.17	151.54	2,685.0	-1,251.7	678.6	1,423.8	0.00	0.00	Ohio Creek
3,200.0	40.17	151.54	2,724.8	-1,281.3	694.6	1,457.4	0.00	0.00	
3,300.0	40.17	151.54	2,801.2	-1,338.0	725.3	1,521.9	0.00	0.00	
3,387.5	40.17	151.54	2,868.0	-1,387.6	752.2	1,578.3	0.00	0.00	Start 3° Drop
3,400.0	39.79	151.54	2,877.6	-1,394.6	756.1	1,586.4	3.00	-3.00	
3,500.0	36.79	151.54	2,956.1	-1,449.1	785.6	1,648.4	3.00	-3.00	
3,600.0	33.79	151.54	3,037.7	-1,499.9	813.1	1,706.1	3.00	-3.00	
3,700.0	30.79	151.54	3,122.2	-1,546.9	838.6	1,759.6	3.00	-3.00	
3,746.0	29.42	151.54	3,162.0	-1,567.1	849.6	1,782.6	3.00	-3.00	Williams Fork
3,800.0	27.79	151.54	3,209.4	-1,589.9	861.9	1,808.5	3.00	-3.00	
3,900.0	24.79	151.54	3,299.1	-1,628.8	883.0	1,852.8	3.00	-3.00	
4,000.0	21.79	151.54	3,390.9	-1,663.6	901.9	1,892.3	3.00	-3.00	
4,100.0	18.79	151.54	3,484.7	-1,694.1	918.4	1,927.0	3.00	-3.00	
4,200.0	15.79	151.54	3,580.2	-1,720.2	932.6	1,956.7	3.00	-3.00	
4,300.0	12.79	151.54	3,677.1	-1,741.9	944.3	1,981.4	3.00	-3.00	
4,400.0	9.79	151.54	3,775.1	-1,759.1	953.7	2,001.0	3.00	-3.00	
4,425.2	9.04	151.54	3,800.0	-1,762.7	955.6	2,005.1	3.00	-3.00	TOG
4,500.0	6.79	151.54	3,874.1	-1,771.8	960.5	2,015.4	3.00	-3.00	
4,600.0	3.79	151.54	3,973.6	-1,779.9	964.9	2,024.6	3.00	-3.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Island Ranch 21B-24
Company:	Caerus Oil & Gas (NAD 27)	TVD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Project:	Garfield County, CO	MD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Site:	S13-T7S-R96W (Island Ranch)	North Reference:	True
Well:	Island Ranch 21B-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,700.0	0.79	151.54	4,073.5	-1,783.4	966.8	2,028.6	3.00	-3.00	
4,726.5	0.00	0.00	4,100.0	-1,783.6	966.9	2,028.8	3.00	-3.00	EOD @ 0° INC
4,800.0	0.00	0.00	4,173.5	-1,783.6	966.9	2,028.8	0.00	0.00	
4,900.0	0.00	0.00	4,273.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,000.0	0.00	0.00	4,373.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,100.0	0.00	0.00	4,473.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,200.0	0.00	0.00	4,573.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,300.0	0.00	0.00	4,673.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,400.0	0.00	0.00	4,773.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,500.0	0.00	0.00	4,873.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,600.0	0.00	0.00	4,973.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,700.0	0.00	0.00	5,073.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,731.5	0.00	0.00	5,105.0	-1,783.6	966.9	2,028.8	0.00	0.00	Cameo
5,800.0	0.00	0.00	5,173.5	-1,783.6	966.9	2,028.8	0.00	0.00	
5,900.0	0.00	0.00	5,273.5	-1,783.6	966.9	2,028.8	0.00	0.00	
6,000.0	0.00	0.00	5,373.5	-1,783.6	966.9	2,028.8	0.00	0.00	
6,100.0	0.00	0.00	5,473.5	-1,783.6	966.9	2,028.8	0.00	0.00	
6,156.5	0.00	0.00	5,530.0	-1,783.6	966.9	2,028.8	0.00	0.00	Rollins
6,200.0	0.00	0.00	5,573.5	-1,783.6	966.9	2,028.8	0.00	0.00	
6,302.0	0.00	0.00	5,675.5	-1,783.6	966.9	2,028.8	0.00	0.00	4 1/2"
6,306.5	0.00	0.00	5,680.0	-1,783.6	966.9	2,028.8	0.00	0.00	TD @ 6,306.5' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Island Ranch 21B-24 PE - hit/miss target - Shape - plan hits target center - Circle (radius 50.0)	0.00	0.00	5,680.0	-1,783.6	966.9	591,285.49	1,276,903.41	39.428903	-108.060183
Island Ranch 21B-24 TC - plan misses target center by 23.4usft at 4428.5usft MD (3803.2 TVD, -1763.2 N, 955.9 E) - Circle (radius 50.0)	0.00	0.00	3,800.0	-1,783.6	966.9	591,285.49	1,276,903.41	39.428903	-108.060183

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,000.0	984.4	9 5/8"	0	0	
6,302.0	5,675.5	4 1/2"	0	0	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Island Ranch 21B-24
Company:	Caerus Oil & Gas (NAD 27)	TVD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Project:	Garfield County, CO	MD Reference:	KB=20' @ 5100.0usft (Patterson #303)
Site:	S13-T7S-R96W (Island Ranch)	North Reference:	True
Well:	Island Ranch 21B-24	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #2		

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,147.9	2,685.0	Ohio Creek		0.00		
3,746.0	3,162.0	Williams Fork		0.00		
4,425.2	3,800.0	TOG		0.00		
5,731.5	5,105.0	Cameo		0.00		
6,156.5	5,530.0	Rollins		0.00		

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
300.0	300.0	0.0	0.0	KOP @ 300'	
1,639.0	1,532.0	-396.0	214.7	EOB @ 40.17° INC	
3,387.5	2,868.0	-1,387.6	752.2	Start 3° Drop	
4,726.5	4,100.0	-1,783.6	966.9	EOD @ 0° INC	
6,306.5	5,680.0	-1,783.6	966.9	TD @ 6,306.5' MD	