

# Well Planning Proposal FOR

**Fram Operating LLC  
Collard 24-12-98 M  
Mesa Co., CO**

Well File: Design #1 (7/13/11)

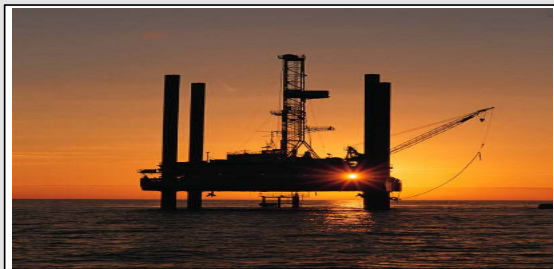
Presented By:

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Pat Rasmussen  
Regional Manager

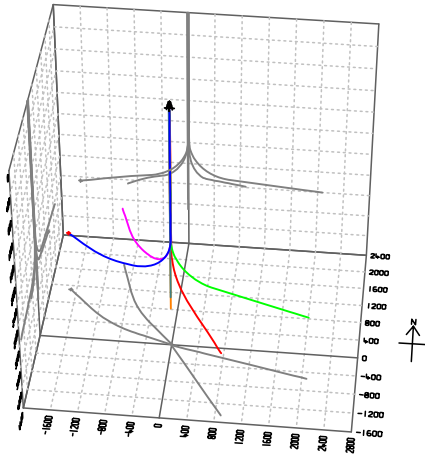
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Bret Wolford  
Well Planner



# Fram Operating, LLC

Project: Mesa Co., CO  
Site: Sec.24-T12S-R98W  
Well: Collard 24-12-98 M  
Wellbore: Wellbore #1  
Design: Design #1  
Latitude: 38° 59' 15.469 N  
Longitude: 108° 18' 7.479 W  
Ground Level: 5968.00  
WELL @ 5982.00usft (Frontier 4)



## PROJECT DETAILS: Mesa Co., CO

Geodetic System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Central Zone  
System Datum: Mean Sea Level

## REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Collard 24-12-98 M, True North  
Vertical (TVD) Reference: WELL @ 5982.00usft (Frontier 4)  
Section (VS) Reference: Slot - (0.00N, 0.00E)  
Measured Depth Reference: WELL @ 5982.00usft (Frontier 4)  
Calculation Method: Minimum Curvature

## WELL DETAILS: Collard 24-12-98 M

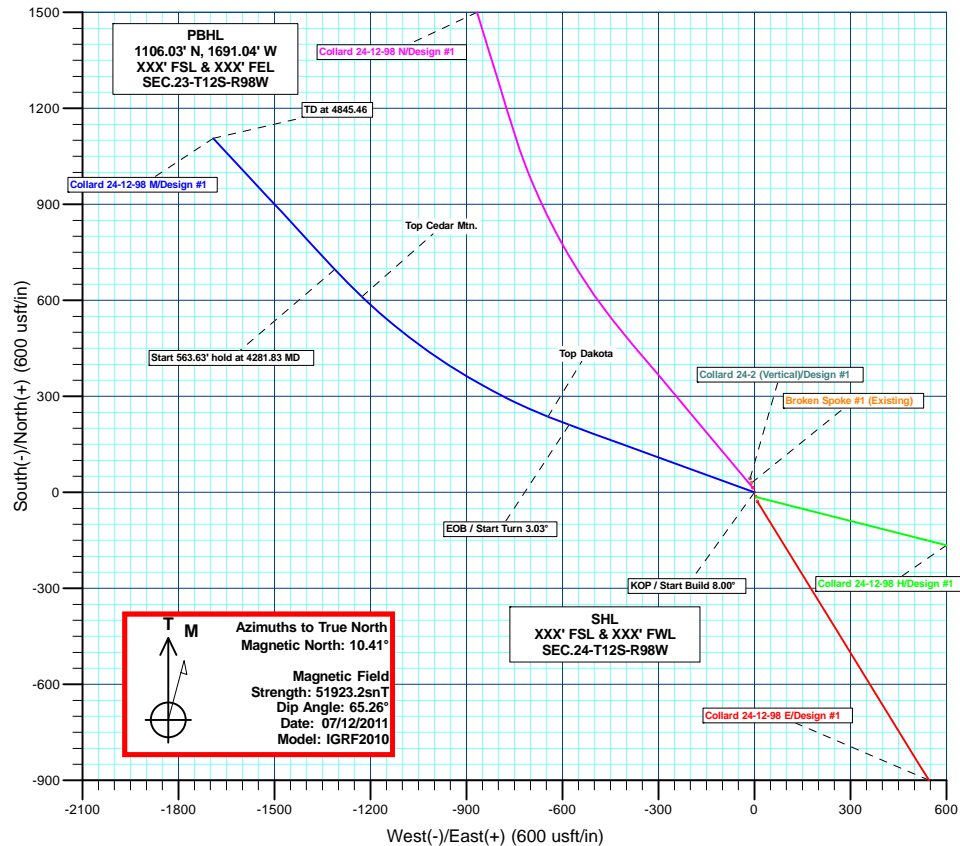
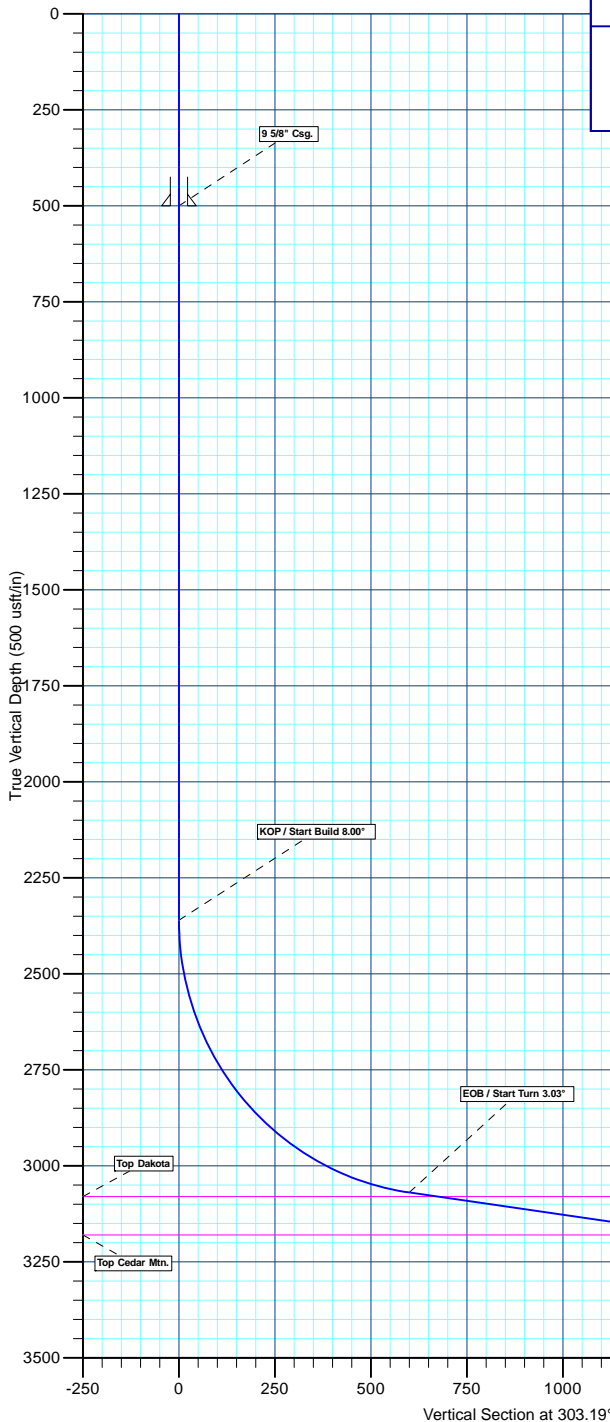
Ground Level: 5968.00  
+N/-S +E/-W Northing Easting Latitude Longitude Slot  
0.00 0.00 1432671.818 2203667.704 38° 59' 15.469 N 108° 18' 7.479 W

## WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Collard 24-M PBHL	3275.49	1106.03	-1691.04	1433829.475	2202011.581	38° 59' 26.401 N	108° 18' 28.897 W	Point

## SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP / Start Build 8.00°
2360.77	0.00	0.00	2360.77	0.00	0.00	0.00	0.00	0.00	EOB / Start Turn 3.03°
3385.77	82.00	290.00	3070.00	210.86	-579.34	8.00	290.00	600.26	Start 563.63' hold at 4281.83 MD
4281.83	82.00	317.15	3197.04	696.83	-1311.46	3.00	91.92	1478.97	TD at 4845.46
4845.46	82.00	317.15	3275.49	1106.03	-1691.04	0.00	0.00	2020.62	



## FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3080.00	3457.34	Top Dakota	0.00	
3180.00	4160.21	Top Cedar Mtn.	0.00	

## CASING DETAILS

TVD	MD	Name	Size
500.00	500.00	9 5/8" Csg.	9-5/8

Plan: Design #1 (Collard 24-12-98 M/Wellbore #1)

Created By: Bret Wolford Date: 10:21, July 13 2011

# **Fram Operating, LLC**

**Mesa Co., CO**

**Sec.24-T12S-R98W**

**Collard 24-12-98 M**

**Wellbore #1**

**Plan: Design #1**

## **Standard Planning Report**

**13 July, 2011**



**Great White Directional Services, LLC**  
Planning Report



<b>Database:</b>	EDM 5000.1 EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Company:</b>	Fram Operating, LLC	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Project:</b>	Mesa Co., CO	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site:</b>	Sec.24-T12S-R98W	<b>North Reference:</b>	True
<b>Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Project	Mesa Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Sec.24-T12S-R98W			
Site Position:		Northing:	1,432,701.128 usft	Latitude:	38° 59' 15.756 N
From:	Lat/Long	Easting:	2,203,659.335 usft	Longitude:	108° 18' 7.596 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	-1.77 °

Well	Collard 24-12-98 M					
Well Position	+N/-S	-29.04 usft	Northing:	1,432,671.818 usft	Latitude:	38° 59' 15.469 N
	+E/-W	9.27 usft	Easting:	2,203,667.704 usft	Longitude:	108° 18' 7.479 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	5,968.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	07/12/11	10.41	65.26	51,923

Design	Design #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	303.19

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,360.77	0.00	0.00	2,360.77	0.00	0.00	0.00	0.00	0.00	0.00	
3,385.77	82.00	290.00	3,070.00	210.86	-579.34	8.00	8.00	0.00	290.00	
4,281.83	82.00	317.15	3,197.04	696.83	-1,311.46	3.00	0.00	3.03	91.92	Collard 24-M PBHL
4,845.46	82.00	317.15	3,275.49	1,106.03	-1,691.04	0.00	0.00	0.00	0.00	Collard 24-M PBHL

<b>Database:</b>	EDM 5000.1 EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Company:</b>	Fram Operating, LLC	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Project:</b>	Mesa Co., CO	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site:</b>	Sec.24-T12S-R98W	<b>North Reference:</b>	True
<b>Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8" Csg.</b>									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>KOP / Start Build 8.00°</b>									
2,360.77	0.00	0.00	2,360.77	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	3.14	290.00	2,399.98	0.37	-1.01	1.05	8.00	8.00	0.00
2,450.00	7.14	290.00	2,449.77	1.90	-5.22	5.40	8.00	8.00	0.00
2,500.00	11.14	290.00	2,499.12	4.61	-12.68	13.13	8.00	8.00	0.00
2,550.00	15.14	290.00	2,547.81	8.50	-23.35	24.20	8.00	8.00	0.00
2,600.00	19.14	290.00	2,595.58	13.54	-37.20	38.54	8.00	8.00	0.00
2,650.00	23.14	290.00	2,642.20	19.70	-54.14	56.09	8.00	8.00	0.00
2,700.00	27.14	290.00	2,687.46	26.97	-74.09	76.77	8.00	8.00	0.00
2,750.00	31.14	290.00	2,731.12	35.29	-96.97	100.47	8.00	8.00	0.00
2,800.00	35.14	290.00	2,772.98	44.64	-122.65	127.08	8.00	8.00	0.00
2,850.00	39.14	290.00	2,812.83	54.96	-151.01	156.46	8.00	8.00	0.00
2,900.00	43.14	290.00	2,850.48	66.21	-181.91	188.48	8.00	8.00	0.00
2,950.00	47.14	290.00	2,885.74	78.33	-215.21	222.98	8.00	8.00	0.00
3,000.00	51.14	290.00	2,918.45	91.26	-250.73	259.79	8.00	8.00	0.00
3,050.00	55.14	290.00	2,948.44	104.94	-288.32	298.73	8.00	8.00	0.00
3,100.00	59.14	290.00	2,975.56	119.30	-327.78	339.61	8.00	8.00	0.00
3,150.00	63.14	290.00	2,999.69	134.27	-368.92	382.24	8.00	8.00	0.00
3,200.00	67.14	290.00	3,020.71	149.79	-411.54	426.40	8.00	8.00	0.00
3,250.00	71.14	290.00	3,038.51	165.76	-455.43	471.88	8.00	8.00	0.00
3,300.00	75.14	290.00	3,053.01	182.13	-500.39	518.46	8.00	8.00	0.00
3,350.00	79.14	290.00	3,064.14	198.80	-546.19	565.91	8.00	8.00	0.00
<b>EOB / Start Turn 3.03°</b>									
3,385.77	82.00	290.00	3,070.00	210.86	-579.34	600.26	8.00	8.00	0.00
3,400.00	81.99	290.43	3,071.98	215.73	-592.56	614.00	3.00	-0.10	3.03
<b>Top Dakota</b>									
3,457.34	81.93	292.17	3,080.00	236.35	-645.46	669.55	3.00	-0.09	3.03
3,500.00	81.90	293.46	3,086.00	252.73	-684.39	711.10	3.00	-0.08	3.03
3,600.00	81.84	296.49	3,100.15	294.52	-774.12	809.06	3.00	-0.06	3.03

<b>Database:</b>	EDM 5000.1 EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Company:</b>	Fram Operating, LLC	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Project:</b>	Mesa Co., CO	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site:</b>	Sec.24-T12S-R98W	<b>North Reference:</b>	True
<b>Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
3,700.00	81.79	299.52	3,114.39	340.99	-861.50	907.63	3.00	-0.04	3.03
3,800.00	81.77	302.55	3,128.68	392.01	-946.30	1,006.52	3.00	-0.02	3.03
3,900.00	81.78	305.58	3,142.99	447.45	-1,028.27	1,105.47	3.00	0.00	3.03
4,000.00	81.80	308.61	3,157.27	507.14	-1,107.21	1,204.20	3.00	0.03	3.03
4,100.00	81.85	311.64	3,171.49	570.93	-1,182.88	1,302.45	3.00	0.05	3.03
<b>Top Cedar Mtn.</b>									
4,160.21	81.89	313.47	3,180.00	611.24	-1,226.78	1,361.26	3.00	0.07	3.03
4,200.00	81.92	314.67	3,185.60	638.64	-1,255.09	1,399.94	3.00	0.08	3.03
<b>Start 563.63' hold at 4281.83 MD</b>									
4,281.83	82.00	317.15	3,197.04	696.83	-1,311.46	1,478.97	3.00	0.09	3.03
4,300.00	82.00	317.15	3,199.57	710.02	-1,323.70	1,496.43	0.00	0.00	0.00
4,400.00	82.00	317.15	3,213.49	782.62	-1,391.04	1,592.53	0.00	0.00	0.00
4,500.00	82.00	317.15	3,227.41	855.22	-1,458.39	1,688.63	0.00	0.00	0.00
4,600.00	82.00	317.15	3,241.32	927.83	-1,525.73	1,784.73	0.00	0.00	0.00
4,700.00	82.00	317.15	3,255.24	1,000.43	-1,593.08	1,880.83	0.00	0.00	0.00
4,800.00	82.00	317.15	3,269.16	1,073.03	-1,660.42	1,976.93	0.00	0.00	0.00
<b>TD at 4845.46 - Collard 24-M PBHL</b>									
4,845.46	82.00	317.15	3,275.49	1,106.03	-1,691.04	2,020.62	0.00	0.00	0.00

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Collard 24-M PBHL	0.00	0.00	3,275.49	1,106.03	-1,691.04	1,433,829.475	2,202,011.581	38° 59' 26.401 N	108° 18' 28.897 W
- plan hits target center									
- Point									

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
500.00	500.00	9 5/8" Csg.	9-5/8	12-1/4

Formations				
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip Direction (°)
3,457.34	3,080.00	Top Dakota		0.00
4,160.21	3,180.00	Top Cedar Mtn.		0.00



<b>Database:</b>	EDM 5000.1 EDMDBBW	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Company:</b>	Fram Operating, LLC	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Project:</b>	Mesa Co., CO	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site:</b>	Sec.24-T12S-R98W	<b>North Reference:</b>	True
<b>Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Design #1		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,360.77	2,360.77	0.00	0.00	KOP / Start Build 8.00°
3,385.77	3,070.00	210.86	-579.34	EOB / Start Turn 3.03°
4,281.83	3,197.04	696.83	-1,311.46	Start 563.63' hold at 4281.83 MD
4,845.46	3,275.49	1,106.03	-1,691.04	TD at 4845.46

# **Fram Operating, LLC**

**Mesa Co., CO**

**Sec.24-T12S-R98W**

**Collard 24-12-98 M**

**Wellbore #1**

**Design #1**

## **Anticollision Report**

**13 July, 2011**





**Great White Directional Services, LLC**  
Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Reference	Design #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 10,000.00 usft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	07/12/11		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.00	4,845.46	Design #1 (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference	Offset	Distance		Separation	Warning
	Measured	Measured	Between	Between		
Offset Well - Wellbore - Design	Depth	Depth	Centres	Ellipses	Factor	
Sec.24-T12S-R98W						
Broken Spoke #1 (Existing) - Wellbore #1 - Wellbore #1	2,524.52	2,523.10	24.11	15.75	2.883	CC, ES, SF
Collard 24-12-98 E - Wellbore #1 - Design #1	2,360.77	2,360.77	29.99	19.63	2.896	CC, ES, SF
Collard 24-12-98 H - Wellbore #1 - Design #1	2,338.99	2,338.99	15.00	4.74	1.462	Level 3, CC
Collard 24-12-98 H - Wellbore #1 - Design #1	2,360.77	2,360.72	15.00	4.65	1.449	Level 3, ES, SF
Collard 24-12-98 N - Wellbore #1 - Design #1	2,360.77	2,360.77	15.00	4.64	1.448	Level 3, CC, ES, SF
Collard 24-2 (Vertical) - Wellbore #1 - Design #1	2,559.93	2,557.37	35.59	24.34	3.164	CC, ES, SF

<b>Offset Design</b>	Sec.24-T12S-R98W - Broken Spoke #1 (Existing) - Wellbore #1 - Wellbore #1										<b>Offset Site Error:</b>	0.00 usft
<b>Survey Program:</b>	3705-MWD										<b>Offset Well Error:</b>	0.00 usft
<b>Reference</b>	<b>Offset</b>	<b>Semi Major Axis</b>	<b>Distance</b>	<b>Minimum Separation</b>	<b>Separation Factor</b>	<b>Warning</b>						
<b>Measured Depth (usft)</b>	<b>Vertical Depth (usft)</b>	<b>Measured Depth (usft)</b>	<b>Vertical Depth (usft)</b>	<b>Reference (usft)</b>	<b>Offset (usft)</b>	<b>Azimuth from North (°)</b>	<b>Offset Wellbore Centre +N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Between Centres (usft)</b>	<b>Between Ellipses (usft)</b>	<b>Minimum Separation (usft)</b>	<b>Separation Factor</b>
0.00	0.00	0.00	0.00	0.00	0.00	-17.71	29.03	-9.27	30.48			
100.00	100.00	100.00	100.00	0.10	0.11	-17.71	29.03	-9.27	30.48	30.27	0.21	146.096
200.00	200.00	200.00	200.00	0.32	0.22	-17.71	29.03	-9.27	30.48	29.93	0.55	55.887
300.00	300.00	300.00	300.00	0.55	0.34	-17.71	29.03	-9.27	30.48	29.59	0.88	34.552
400.00	400.00	400.00	400.00	0.77	0.45	-17.71	29.03	-9.27	30.48	29.26	1.22	25.006
500.00	500.00	500.00	500.00	1.00	0.56	-17.71	29.03	-9.27	30.48	28.92	1.56	19.593
600.00	600.00	600.00	600.00	1.22	0.67	-17.71	29.03	-9.27	30.48	28.58	1.89	16.106
700.00	700.00	700.00	700.00	1.45	0.78	-17.71	29.03	-9.27	30.48	28.25	2.23	13.673
800.00	800.00	800.00	800.00	1.67	0.90	-17.71	29.03	-9.27	30.48	27.91	2.57	11.879
900.00	900.00	900.00	900.00	1.89	1.01	-17.71	29.03	-9.27	30.48	27.57	2.90	10.501
1,000.00	1,000.00	1,000.00	1,000.00	2.12	1.12	-17.71	29.03	-9.27	30.48	27.24	3.24	9.409
1,100.00	1,100.00	1,100.00	1,100.00	2.34	1.23	-17.71	29.03	-9.27	30.48	26.90	3.58	8.523
1,200.00	1,200.00	1,200.00	1,200.00	2.57	1.34	-17.71	29.03	-9.27	30.48	26.56	3.91	7.789
1,300.00	1,300.00	1,300.00	1,300.00	2.79	1.46	-17.71	29.03	-9.27	30.48	26.23	4.25	7.172
1,400.00	1,400.00	1,400.00	1,400.00	3.02	1.57	-17.71	29.03	-9.27	30.48	25.89	4.59	6.646
1,500.00	1,500.00	1,500.00	1,500.00	3.24	1.68	-17.71	29.03	-9.27	30.48	25.55	4.92	6.191
1,600.00	1,600.00	1,600.00	1,600.00	3.47	1.79	-17.71	29.03	-9.27	30.48	25.22	5.26	5.795
1,700.00	1,700.00	1,700.00	1,700.00	3.69	1.90	-17.71	29.03	-9.27	30.48	24.88	5.60	5.446
1,800.00	1,800.00	1,800.00	1,800.00	3.92	2.02	-17.71	29.03	-9.27	30.48	24.54	5.93	5.137
1,900.00	1,900.00	1,900.00	1,900.00	4.14	2.13	-17.71	29.03	-9.27	30.48	24.21	6.27	4.861
2,000.00	2,000.00	2,000.00	2,000.00	4.37	2.24	-17.71	29.03	-9.27	30.48	23.87	6.61	4.613

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

# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 3705-MWVD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	2.35	-17.71	29.03	-9.27	30.48	23.53	6.94	4.390		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	2.46	-17.71	29.03	-9.27	30.48	23.20	7.28	4.186		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	2.58	-17.71	29.03	-9.27	30.48	22.86	7.62	4.001		
2,360.77	2,360.77	2,360.77	2,360.77	5.18	2.64	-17.71	29.03	-9.27	30.48	22.66	7.82	3.897		
2,400.00	2,399.98	2,399.98	2,399.98	5.26	2.69	-16.07	29.03	-9.27	29.83	21.88	7.95	3.754		
2,450.00	2,449.77	2,449.77	2,449.77	5.37	2.74	-8.49	29.03	-9.27	27.44	19.33	8.10	3.386		
2,500.00	2,499.12	2,499.12	2,499.12	5.48	2.80	7.95	29.03	-9.27	24.66	16.38	8.27	2.980		
2,524.52	2,523.10	2,523.10	2,523.10	5.54	2.82	20.00	29.03	-9.27	24.11	15.75	8.36	2.883 CC, ES, SF		
2,550.00	2,547.81	2,547.81	2,547.81	5.60	2.85	34.45	29.03	-9.27	24.90	16.46	8.44	2.951		
2,600.00	2,595.58	2,595.58	2,595.58	5.74	2.91	60.98	29.03	-9.27	31.94	23.45	8.49	3.763		
2,650.00	2,642.20	2,642.20	2,642.20	5.90	2.96	78.25	29.03	-9.27	45.83	37.38	8.45	5.422		
2,700.00	2,687.46	2,687.46	2,687.46	6.10	3.01	88.17	29.03	-9.27	64.86	56.46	8.40	7.722		
2,750.00	2,731.12	2,731.12	2,731.12	6.35	3.06	94.08	29.03	-9.27	87.92	79.59	8.34	10.548		
2,800.00	2,772.98	2,772.98	2,772.98	6.66	3.10	97.84	29.03	-9.27	114.45	106.19	8.26	13.854		
2,850.00	2,812.83	2,812.83	2,812.83	7.05	3.15	100.37	29.03	-9.27	144.09	135.91	8.18	17.624		
2,900.00	2,850.48	2,850.48	2,850.48	7.51	3.19	102.15	29.03	-9.27	176.60	168.52	8.08	21.850		
2,950.00	2,885.74	2,885.74	2,885.74	8.08	3.23	103.46	29.03	-9.27	211.76	203.77	7.98	26.521		
3,000.00	2,918.45	2,918.45	2,918.45	8.73	3.27	104.45	29.03	-9.27	249.35	241.47	7.89	31.612		
3,050.00	2,948.44	2,948.44	2,948.44	9.49	3.30	105.22	29.03	-9.27	289.19	281.39	7.80	37.080		
3,100.00	2,975.56	2,975.56	2,975.56	10.33	3.33	105.82	29.03	-9.27	331.05	323.33	7.73	42.843		
3,150.00	2,999.69	2,999.69	2,999.69	11.26	3.36	106.31	29.03	-9.27	374.73	367.05	7.68	48.774		
3,200.00	3,020.71	3,020.71	3,020.71	12.27	3.38	106.71	29.03	-9.27	420.00	412.32	7.68	54.667		
3,250.00	3,038.51	3,038.51	3,038.51	13.35	3.40	107.04	29.03	-9.27	466.65	458.89	7.75	60.179		
3,300.00	3,053.01	3,053.01	3,053.01	14.49	3.42	107.31	29.03	-9.27	514.43	506.48	7.95	64.687		
3,350.00	3,064.14	3,064.14	3,064.14	15.67	3.43	107.55	29.03	-9.27	563.12	554.69	8.42	66.850		
3,385.77	3,070.00	3,070.00	3,070.00	16.55	3.44	107.69	29.03	-9.27	598.37	589.20	9.17	65.250		
3,400.00	3,071.98	3,071.98	3,071.98	16.90	3.44	107.75	29.03	-9.27	612.45	602.67	9.78	62.615		
3,500.00	3,086.00	3,086.00	3,086.00	19.36	3.46	108.33	29.03	-9.27	711.22	697.01	14.21	50.051		
3,600.00	3,100.15	3,100.15	3,100.15	21.87	3.47	109.14	29.03	-9.27	809.62	791.37	18.25	44.365		
3,700.00	3,114.39	3,114.39	3,114.39	24.39	3.49	110.11	29.03	-9.27	907.53	885.71	21.82	41.588		
3,800.00	3,128.68	3,128.68	3,128.68	26.90	3.50	111.18	29.03	-9.27	1,004.87	979.84	25.03	40.139		
3,900.00	3,142.99	3,142.99	3,142.99	29.38	3.52	112.32	29.03	-9.27	1,101.56	1,073.59	27.97	39.381		
4,000.00	3,157.27	3,157.27	3,157.27	31.84	3.53	113.53	29.03	-9.27	1,197.52	1,166.84	30.68	39.029		
4,100.00	3,171.49	3,171.49	3,171.49	34.25	3.55	114.78	29.03	-9.27	1,292.68	1,259.48	33.20	38.941		
4,200.00	3,185.60	3,185.60	3,185.60	36.61	3.57	116.07	29.03	-9.27	1,386.97	1,351.44	35.53	39.042		
4,281.83	3,197.04	3,197.04	3,197.04	38.50	3.58	117.15	29.03	-9.27	1,463.44	1,426.14	37.30	39.234		
4,300.00	3,199.57	3,199.57	3,199.57	38.91	3.58	117.39	29.03	-9.27	1,480.36	1,442.70	37.66	39.312		
4,400.00	3,213.49	3,213.49	3,213.49	41.22	3.60	118.61	29.03	-9.27	1,573.91	1,534.32	39.59	39.753		
4,500.00	3,227.41	3,227.41	3,227.41	43.55	3.61	119.69	29.03	-9.27	1,668.09	1,626.61	41.48	40.211		
4,600.00	3,241.32	3,241.32	3,241.32	45.90	3.63	120.65	29.03	-9.27	1,762.81	1,719.48	43.33	40.685		
4,700.00	3,255.24	3,255.24	3,255.24	48.26	3.64	121.52	29.03	-9.27	1,857.97	1,812.84	45.13	41.172		
4,800.00	3,269.16	3,269.16	3,269.16	50.63	3.66	122.30	29.03	-9.27	1,953.52	1,906.64	46.88	41.673		
4,845.46	3,275.49	3,275.49	3,275.49	51.71	3.67	122.64	29.03	-9.27	1,997.07	1,949.41	47.66	41.904		

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

# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	162.29	-28.57	9.12	29.99					
100.00	100.00	100.00	100.00	0.10	0.10	162.29	-28.57	9.12	29.99	29.80	0.19	155.150		
200.00	200.00	200.00	200.00	0.32	0.32	162.29	-28.57	9.12	29.99	29.35	0.64	46.653		
300.00	300.00	300.00	300.00	0.55	0.55	162.29	-28.57	9.12	29.99	28.90	1.09	27.455		
400.00	400.00	400.00	400.00	0.77	0.77	162.29	-28.57	9.12	29.99	28.45	1.54	19.450		
500.00	500.00	500.00	500.00	1.00	1.00	162.29	-28.57	9.12	29.99	28.00	1.99	15.060		
600.00	600.00	600.00	600.00	1.22	1.22	162.29	-28.57	9.12	29.99	27.55	2.44	12.286		
700.00	700.00	700.00	700.00	1.45	1.45	162.29	-28.57	9.12	29.99	27.10	2.89	10.376		
800.00	800.00	800.00	800.00	1.67	1.67	162.29	-28.57	9.12	29.99	26.65	3.34	8.979		
900.00	900.00	900.00	900.00	1.89	1.89	162.29	-28.57	9.12	29.99	26.20	3.79	7.914		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	162.29	-28.57	9.12	29.99	25.75	4.24	7.075		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	162.29	-28.57	9.12	29.99	25.30	4.69	6.396		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	162.29	-28.57	9.12	29.99	24.85	5.14	5.837		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	162.29	-28.57	9.12	29.99	24.40	5.59	5.367		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	162.29	-28.57	9.12	29.99	23.95	6.04	4.968		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	162.29	-28.57	9.12	29.99	23.50	6.49	4.623		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	162.29	-28.57	9.12	29.99	23.05	6.94	4.324		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	162.29	-28.57	9.12	29.99	22.60	7.39	4.061		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	162.29	-28.57	9.12	29.99	22.15	7.84	3.828		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	162.29	-28.57	9.12	29.99	21.71	8.28	3.620		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	162.29	-28.57	9.12	29.99	21.26	8.73	3.434		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	162.29	-28.57	9.12	29.99	20.81	9.18	3.266		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	4.82	162.29	-28.57	9.12	29.99	20.36	9.63	3.113		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	162.29	-28.57	9.12	29.99	19.91	10.08	2.974		
2,360.77	2,360.77	2,360.77	2,360.77	5.18	5.18	162.29	-28.57	9.12	29.99	19.63	10.36	2.896 CC, ES, SF		
2,400.00	2,399.98	2,399.98	2,399.98	5.26	5.27	160.70	-28.57	9.12	30.66	20.13	10.52	2.913		
2,450.00	2,449.77	2,449.77	2,449.77	5.37	5.38	154.80	-28.57	9.12	33.67	22.96	10.71	3.143		
2,500.00	2,499.12	2,499.12	2,499.12	5.48	5.49	146.70	-28.57	9.12	39.70	28.84	10.86	3.656		
2,550.00	2,547.81	2,544.74	2,544.72	5.60	5.58	138.99	-29.51	9.70	50.46	39.52	10.94	4.613		
2,600.00	2,595.58	2,586.89	2,586.66	5.74	5.66	133.51	-33.05	11.88	68.25	57.28	10.97	6.221		
2,650.00	2,642.20	2,625.33	2,624.53	5.90	5.74	130.01	-38.55	15.27	92.32	81.35	10.97	8.419		
2,700.00	2,687.46	2,659.50	2,657.79	6.10	5.81	127.69	-45.26	19.39	121.81	110.87	10.93	11.143		
2,750.00	2,731.12	2,689.22	2,686.27	6.35	5.87	126.00	-52.45	23.82	155.88	145.01	10.87	14.337		
2,800.00	2,772.98	2,714.51	2,710.14	6.66	5.93	124.63	-59.55	28.20	193.80	182.99	10.81	17.930		
2,850.00	2,812.83	2,735.60	2,729.75	7.05	5.98	123.46	-66.16	32.26	234.86	224.09	10.77	21.810		
2,900.00	2,850.48	2,750.00	2,742.98	7.51	6.01	122.29	-71.02	35.26	278.48	267.68	10.80	25.779		
2,950.00	2,885.74	2,766.44	2,757.89	8.08	6.06	121.42	-76.92	38.88	324.05	313.08	10.98	29.524		
3,000.00	2,918.45	2,776.91	2,767.28	8.73	6.09	120.51	-80.86	41.31	371.17	359.71	11.46	32.402		
3,050.00	2,948.44	2,784.54	2,774.07	9.49	6.12	119.66	-83.82	43.14	419.40	406.91	12.50	33.561		
3,100.00	2,975.56	2,800.00	2,787.68	10.33	6.17	119.19	-90.07	46.98	468.59	454.56	14.03	33.404		
3,150.00	2,999.69	2,800.00	2,787.68	11.26	6.17	118.34	-90.07	46.98	517.93	501.08	16.84	30.748		
3,200.00	3,020.71	2,800.00	2,787.68	12.27	6.17	117.61	-90.07	46.98	567.51	549.49	18.02	31.487		
3,250.00	3,038.51	2,800.00	2,787.68	13.35	6.17	116.99	-90.07	46.98	617.08	601.32	15.76	39.152		
3,300.00	3,053.01	2,800.00	2,787.68	14.49	6.17	116.44	-90.07	46.98	666.41	653.30	13.11	50.831		
3,350.00	3,064.14	2,786.06	2,775.41	15.67	6.12	115.65	-84.42	43.51	715.06	704.50	10.56	67.702		
3,385.77	3,070.00	2,782.47	2,772.23	16.55	6.11	115.29	-83.01	42.64	749.59	739.85	9.74	76.954		
3,400.00	3,071.98	2,780.92	2,770.85	16.90	6.10	115.16	-82.41	42.26	763.26	753.76	9.50	80.319		
3,500.00	3,086.00	2,770.47	2,761.51	19.36	6.07	114.57	-78.42	39.81	859.89	851.67	8.22	104.562		
3,600.00	3,100.15	2,750.00	2,742.98	21.87	6.01	114.31	-71.02	35.26	957.23	947.45	9.78	97.891		
3,700.00	3,114.39	2,750.00	2,742.98	24.39	6.01	114.68	-71.02	35.26	1,054.45	1,040.35	14.10	74.784		
3,800.00	3,128.68	2,750.00	2,742.98	26.90	6.01	115.26	-71.02	35.26	1,151.79	1,132.29	19.50	59.078		
3,900.00	3,142.99	2,750.00	2,742.98	29.38	6.01	115.99	-71.02	35.26	1,248.96	1,224.23	24.74	50.485		

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

**Great White Directional Services, LLC**  
Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

<b>Offset Design</b> Sec.24-T12S-R98W - Collard 24-12-98 E - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,000.00	3,157.27	2,727.94	2,722.67	31.84	5.96	116.64	-63.69	30.74	1,345.23	1,316.74	28.49	47.220	
4,100.00	3,171.49	2,721.12	2,716.32	34.25	5.94	117.55	-61.56	29.43	1,441.15	1,408.96	32.19	44.770	
4,200.00	3,185.60	2,700.00	2,696.49	36.61	5.89	118.45	-55.37	25.62	1,536.58	1,501.67	34.91	44.021	
4,281.83	3,197.04	2,700.00	2,696.49	38.50	5.89	119.36	-55.37	25.62	1,613.73	1,576.36	37.37	43.179	
4,300.00	3,199.57	2,700.00	2,696.49	38.91	5.89	119.56	-55.37	25.62	1,630.82	1,593.06	37.75	43.197	
4,400.00	3,213.49	2,700.00	2,696.49	41.22	5.89	120.61	-55.37	25.62	1,725.24	1,685.38	39.85	43.292	
4,500.00	3,227.41	2,700.00	2,696.49	43.55	5.89	121.53	-55.37	25.62	1,820.25	1,778.30	41.96	43.385	
4,600.00	3,241.32	2,700.00	2,696.49	45.90	5.89	122.37	-55.37	25.62	1,915.78	1,871.71	44.06	43.476	
4,700.00	3,255.24	2,700.00	2,696.49	48.26	5.89	123.11	-55.37	25.62	2,011.73	1,965.56	46.18	43.565	
4,800.00	3,269.16	2,700.00	2,696.49	50.63	5.89	123.79	-55.37	25.62	2,108.07	2,059.77	48.30	43.650	
4,845.46	3,275.49	2,700.00	2,696.49	51.71	5.89	124.08	-55.37	25.62	2,151.97	2,102.71	49.26	43.687	

# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	162.29	-14.28	4.56	15.00					
100.00	100.00	100.00	100.00	0.10	0.10	162.29	-14.28	4.56	15.00	14.80	0.19	77.576		
200.00	200.00	200.00	200.00	0.32	0.32	162.29	-14.28	4.56	15.00	14.35	0.64	23.327		
300.00	300.00	300.00	300.00	0.55	0.55	162.29	-14.28	4.56	15.00	13.90	1.09	13.727		
400.00	400.00	400.00	400.00	0.77	0.77	162.29	-14.28	4.56	15.00	13.45	1.54	9.725		
500.00	500.00	500.00	500.00	1.00	1.00	162.29	-14.28	4.56	15.00	13.00	1.99	7.530		
600.00	600.00	600.00	600.00	1.22	1.22	162.29	-14.28	4.56	15.00	12.55	2.44	6.143		
700.00	700.00	700.00	700.00	1.45	1.45	162.29	-14.28	4.56	15.00	12.10	2.89	5.188		
800.00	800.00	800.00	800.00	1.67	1.67	162.29	-14.28	4.56	15.00	11.66	3.34	4.490		
900.00	900.00	900.00	900.00	1.89	1.89	162.29	-14.28	4.56	15.00	11.21	3.79	3.957		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	162.29	-14.28	4.56	15.00	10.76	4.24	3.537		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	162.29	-14.28	4.56	15.00	10.31	4.69	3.198		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	162.29	-14.28	4.56	15.00	9.86	5.14	2.918		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	162.29	-14.28	4.56	15.00	9.41	5.59	2.684		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	162.29	-14.28	4.56	15.00	8.96	6.04	2.484		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	162.29	-14.28	4.56	15.00	8.51	6.49	2.312		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	162.29	-14.28	4.56	15.00	8.06	6.94	2.162		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	162.29	-14.28	4.56	15.00	7.61	7.39	2.030		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	162.29	-14.28	4.56	15.00	7.16	7.84	1.914		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	162.29	-14.28	4.56	15.00	6.71	8.28	1.810		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	162.29	-14.28	4.56	15.00	6.26	8.73	1.717		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	162.29	-14.28	4.56	15.00	5.81	9.18	1.633		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	4.82	162.29	-14.28	4.56	15.00	5.36	9.63	1.557		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	162.29	-14.28	4.56	15.00	4.91	10.08	1.487 Level 3		
2,338.99	2,338.99	2,338.99	2,338.99	5.13	5.13	162.29	-14.28	4.56	15.00	4.74	10.26	1.462 Level 3, CC		
2,360.77	2,360.77	2,360.72	2,360.72	5.18	5.18	162.25	-14.29	4.57	15.00	4.65	10.36	1.449 Level 3, ES, SF		
2,400.00	2,399.98	2,399.39	2,399.36	5.26	5.26	155.52	-14.60	5.80	16.46	5.94	10.52	1.565		
2,450.00	2,449.77	2,447.56	2,447.31	5.37	5.35	138.86	-15.71	10.16	23.50	12.83	10.68	2.201		
2,500.00	2,499.12	2,493.31	2,492.48	5.48	5.45	126.51	-17.49	17.18	37.74	26.95	10.79	3.497		
2,550.00	2,547.81	2,535.63	2,533.77	5.60	5.54	119.72	-19.76	26.16	58.71	47.86	10.85	5.409		
2,600.00	2,595.58	2,573.84	2,570.52	5.74	5.64	116.02	-22.33	36.27	85.51	74.65	10.87	7.870		
2,650.00	2,642.20	2,607.54	2,602.43	5.90	5.73	113.89	-24.99	46.76	117.30	106.48	10.82	10.841		
2,700.00	2,687.46	2,636.63	2,629.54	6.10	5.83	112.60	-27.58	56.98	153.33	142.61	10.72	14.301		
2,750.00	2,731.12	2,661.20	2,652.09	6.35	5.92	111.78	-29.98	66.43	192.89	182.32	10.57	18.248		
2,800.00	2,772.98	2,681.48	2,670.45	6.66	6.00	111.24	-32.10	74.80	235.34	224.97	10.37	22.692		
2,850.00	2,812.83	2,700.00	2,686.98	7.05	6.07	110.86	-34.15	82.87	280.14	270.01	10.13	27.642		
2,900.00	2,850.48	2,710.48	2,696.25	7.51	6.12	110.65	-35.36	87.63	326.73	316.87	9.86	33.146		
2,950.00	2,885.74	2,719.90	2,704.51	8.08	6.17	110.49	-36.47	92.01	374.71	365.15	9.56	39.205		
3,000.00	2,918.45	2,726.39	2,710.17	8.73	6.20	110.39	-37.25	95.09	423.66	414.42	9.24	45.828		
3,050.00	2,948.44	2,730.27	2,713.53	9.49	6.22	110.32	-37.72	96.96	473.25	464.31	8.94	52.925		
3,100.00	2,975.56	2,731.82	2,714.88	10.33	6.23	110.28	-37.92	97.71	523.17	513.87	9.30	56.232		
3,150.00	2,999.69	2,731.32	2,714.45	11.26	6.23	110.26	-37.85	97.47	573.15	564.83	8.33	68.835		
3,200.00	3,020.71	2,728.99	2,712.43	12.27	6.22	110.25	-37.57	96.34	622.96	614.98	7.99	78.015		
3,250.00	3,038.51	2,725.04	2,708.99	13.35	6.20	110.25	-37.09	94.45	672.38	664.66	7.73	87.028		
3,300.00	3,053.01	2,719.64	2,704.29	14.49	6.17	110.26	-36.44	91.89	721.23	713.71	7.52	95.940		
3,350.00	3,064.14	2,712.97	2,698.44	15.67	6.14	110.27	-35.65	88.77	769.33	761.97	7.37	104.437		
3,385.77	3,070.00	2,700.00	2,686.98	16.55	6.07	110.30	-34.15	82.87	803.28	795.98	7.30	110.008		
3,400.00	3,071.98	2,700.00	2,686.98	16.90	6.07	110.30	-34.15	82.87	816.63	809.23	7.39	110.464		
3,500.00	3,086.00	2,700.00	2,686.98	19.36	6.07	110.50	-34.15	82.87	911.16	902.24	8.92	102.187		
3,600.00	3,100.15	2,677.46	2,666.83	21.87	5.98	111.06	-31.67	73.10	1,005.96	994.38	11.58	86.908		
3,700.00	3,114.39	2,666.05	2,656.51	24.39	5.93	111.78	-30.48	68.39	1,101.06	1,085.95	15.11	72.868		
3,800.00	3,128.68	2,650.00	2,641.86	26.90	5.87	112.66	-28.86	62.03	1,196.19	1,177.40	18.78	63.692		

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



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

<b>Offset Design</b> Sec.24-T12S-R98W - Collard 24-12-98 H - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 usft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,900.00	3,142.99	2,650.00	2,641.86	29.38	5.87	113.60	-28.86	62.03	1,291.03	1,268.00	23.03	56.048	
4,000.00	3,157.27	2,650.00	2,641.86	31.84	5.87	114.63	-28.86	62.03	1,385.66	1,358.56	27.11	51.120	
4,100.00	3,171.49	2,632.27	2,625.51	34.25	5.81	115.78	-27.18	55.38	1,479.56	1,449.40	30.16	49.049	
4,200.00	3,185.60	2,626.09	2,619.77	36.61	5.79	116.95	-26.61	53.16	1,572.97	1,539.63	33.34	47.180	
4,281.83	3,197.04	2,621.56	2,615.56	38.50	5.78	117.94	-26.21	51.55	1,648.85	1,613.15	35.70	46.187	
4,300.00	3,199.57	2,620.61	2,614.67	38.91	5.78	118.17	-26.12	51.22	1,665.66	1,629.63	36.03	46.227	
4,400.00	3,213.49	2,600.00	2,595.34	41.22	5.71	119.35	-24.36	44.29	1,758.84	1,721.50	37.34	47.109	
4,500.00	3,227.41	2,600.00	2,595.34	43.55	5.71	120.34	-24.36	44.29	1,852.36	1,813.05	39.31	47.125	
4,600.00	3,241.32	2,600.00	2,595.34	45.90	5.71	121.24	-24.36	44.29	1,946.52	1,905.23	41.28	47.149	
4,700.00	3,255.24	2,600.00	2,595.34	48.26	5.71	122.04	-24.36	44.29	2,041.23	1,997.97	43.26	47.180	
4,800.00	3,269.16	2,600.00	2,595.34	50.63	5.71	122.77	-24.36	44.29	2,136.43	2,091.18	45.25	47.216	
4,845.46	3,275.49	2,600.00	2,595.34	51.71	5.71	123.08	-24.36	44.29	2,179.85	2,133.70	46.15	47.233	

# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-17.71	14.28	-4.56	15.00					
100.00	100.00	100.00	100.00	0.10	0.10	-17.71	14.28	-4.56	15.00	14.80	0.19	77.574		
200.00	200.00	200.00	200.00	0.32	0.32	-17.71	14.28	-4.56	15.00	14.35	0.64	23.327		
300.00	300.00	300.00	300.00	0.55	0.55	-17.71	14.28	-4.56	15.00	13.90	1.09	13.727		
400.00	400.00	400.00	400.00	0.77	0.77	-17.71	14.28	-4.56	15.00	13.45	1.54	9.725		
500.00	500.00	500.00	500.00	1.00	1.00	-17.71	14.28	-4.56	15.00	13.00	1.99	7.530		
600.00	600.00	600.00	600.00	1.22	1.22	-17.71	14.28	-4.56	15.00	12.55	2.44	6.143		
700.00	700.00	700.00	700.00	1.45	1.45	-17.71	14.28	-4.56	15.00	12.10	2.89	5.188		
800.00	800.00	800.00	800.00	1.67	1.67	-17.71	14.28	-4.56	15.00	11.66	3.34	4.490		
900.00	900.00	900.00	900.00	1.89	1.89	-17.71	14.28	-4.56	15.00	11.21	3.79	3.957		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-17.71	14.28	-4.56	15.00	10.76	4.24	3.537		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-17.71	14.28	-4.56	15.00	10.31	4.69	3.198		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-17.71	14.28	-4.56	15.00	9.86	5.14	2.918		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	-17.71	14.28	-4.56	15.00	9.41	5.59	2.684		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	-17.71	14.28	-4.56	15.00	8.96	6.04	2.484		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	-17.71	14.28	-4.56	15.00	8.51	6.49	2.312		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	-17.71	14.28	-4.56	15.00	8.06	6.94	2.162		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	-17.71	14.28	-4.56	15.00	7.61	7.39	2.030		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	-17.71	14.28	-4.56	15.00	7.16	7.84	1.914		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	-17.71	14.28	-4.56	15.00	6.71	8.28	1.810		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	-17.71	14.28	-4.56	15.00	6.26	8.73	1.717		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	-17.71	14.28	-4.56	15.00	5.81	9.18	1.633		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	4.82	-17.71	14.28	-4.56	15.00	5.36	9.63	1.557		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	-17.71	14.28	-4.56	15.00	4.91	10.08	1.487 Level 3		
2,360.77	2,360.77	2,360.77	2,360.77	5.18	5.18	-17.71	14.28	-4.56	15.00	4.64	10.36	1.448 Level 3, CC, ES, SF		
2,400.00	2,399.98	2,399.25	2,399.23	5.26	5.26	-15.99	15.08	-5.22	15.32	4.80	10.52	1.456 Level 3		
2,450.00	2,449.77	2,448.22	2,448.00	5.37	5.38	-9.55	18.37	-7.99	16.80	6.07	10.72	1.566		
2,500.00	2,499.12	2,497.03	2,496.21	5.48	5.49	-0.56	24.18	-12.87	19.79	8.85	10.94	1.809		
2,550.00	2,547.81	2,545.61	2,543.56	5.60	5.61	8.42	32.46	-19.81	24.58	13.40	11.19	2.198		
2,600.00	2,595.58	2,593.87	2,589.77	5.74	5.74	15.99	43.09	-28.73	31.28	19.82	11.46	2.729		
2,650.00	2,642.20	2,641.74	2,634.59	5.90	5.88	21.93	55.97	-39.54	39.83	28.05	11.77	3.382		
2,700.00	2,687.46	2,689.18	2,677.79	6.10	6.05	26.54	70.96	-52.12	50.12	37.98	12.14	4.128		
2,750.00	2,731.12	2,736.14	2,719.19	6.35	6.25	30.18	87.93	-66.36	62.05	49.47	12.58	4.932		
2,800.00	2,772.98	2,782.58	2,758.61	6.66	6.50	33.14	106.72	-82.12	75.51	62.40	13.11	5.760		
2,850.00	2,812.83	2,828.49	2,795.94	7.05	6.80	35.61	127.18	-99.29	90.42	76.66	13.75	6.574		
2,900.00	2,850.48	2,873.85	2,831.08	7.51	7.15	37.73	149.15	-117.73	106.66	92.13	14.52	7.343		
2,950.00	2,885.74	2,918.69	2,863.95	8.08	7.56	39.59	172.50	-137.32	124.14	108.71	15.43	8.045		
3,000.00	2,918.45	2,963.00	2,894.50	8.73	8.03	41.24	197.09	-157.95	142.76	126.29	16.48	8.664		
3,050.00	2,948.44	3,006.84	2,922.71	9.49	8.55	42.72	222.78	-179.51	162.44	144.77	17.67	9.194		
3,100.00	2,975.56	3,050.00	2,948.44	10.33	9.13	44.10	249.32	-201.78	183.07	164.08	18.99	9.639		
3,150.00	2,999.69	3,093.21	2,972.05	11.26	9.77	45.22	277.04	-225.03	204.57	184.11	20.46	9.998		
3,200.00	3,020.71	3,135.85	2,993.17	12.27	10.46	46.27	305.41	-248.84	226.82	204.77	22.04	10.290		
3,250.00	3,038.51	3,178.23	3,011.94	13.35	11.20	47.19	334.51	-273.26	249.73	226.00	23.73	10.523		
3,300.00	3,053.01	3,220.40	3,028.37	14.49	11.97	47.98	364.26	-298.22	273.22	247.71	25.52	10.708		
3,350.00	3,064.14	3,262.46	3,042.43	15.67	12.79	48.65	394.62	-323.70	297.18	269.80	27.38	10.854		
3,385.77	3,070.00	3,292.52	3,051.05	16.55	13.39	49.04	416.68	-342.21	314.56	285.81	28.76	10.939		
3,400.00	3,071.98	3,304.53	3,054.16	16.90	13.64	49.18	425.56	-349.67	321.48	292.14	29.34	10.956		
3,500.00	3,086.00	3,390.23	3,070.62	19.36	15.45	49.80	489.96	-403.69	367.84	334.25	33.59	10.951		
3,600.00	3,100.15	3,464.89	3,081.05	21.87	17.01	52.02	547.62	-449.94	411.72	374.05	37.67	10.930		
3,700.00	3,114.39	3,538.65	3,091.42	24.39	18.56	54.22	606.33	-493.36	454.37	412.64	41.74	10.887		
3,800.00	3,128.68	3,611.58	3,101.72	26.90	20.10	56.39	665.99	-534.01	495.75	449.99	45.76	10.834		
3,900.00	3,142.99	3,683.75	3,111.95	29.38	21.62	58.55	726.53	-571.93	535.81	486.12	49.69	10.782		

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

# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

<b>Offset Design</b> Sec.24-T12S-R98W - Collard 24-12-98 N - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 usft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	
4,000.00	3,157.27	3,755.21	3,122.09	31.84	23.11	60.69	787.86	-607.18	574.51	521.00	53.51	10.737	
4,100.00	3,171.49	3,826.03	3,132.14	34.25	24.57	62.81	849.90	-639.80	611.81	554.62	57.19	10.698	
4,200.00	3,185.60	3,900.00	3,142.63	36.61	26.09	64.59	915.97	-671.37	647.68	586.90	60.78	10.656	
4,281.83	3,197.04	3,953.30	3,150.17	38.50	27.15	66.63	964.31	-692.50	675.91	612.47	63.44	10.654	
4,300.00	3,199.57	3,965.90	3,151.95	38.91	27.40	67.01	975.83	-697.30	682.12	618.00	64.12	10.638	
4,400.00	3,213.49	4,034.13	3,161.56	41.22	28.74	69.06	1,038.72	-721.93	718.32	650.49	67.83	10.590	
4,500.00	3,227.41	4,100.00	3,170.79	43.55	30.02	71.08	1,100.25	-743.55	757.78	686.30	71.48	10.601	
4,600.00	3,241.32	4,173.68	3,181.06	45.90	31.41	72.34	1,169.86	-765.41	800.19	724.95	75.24	10.635	
4,700.00	3,255.24	4,263.90	3,193.61	48.26	33.13	72.36	1,255.28	-791.60	843.27	763.98	79.29	10.635	
4,800.00	3,269.16	4,354.13	3,206.17	50.63	34.87	72.38	1,340.70	-817.80	886.36	803.00	83.36	10.633	
4,845.46	3,275.49	4,395.14	3,211.88	51.71	35.66	72.38	1,379.53	-829.71	905.94	820.73	85.21	10.632	



# Great White Directional Services, LLC

## Anticollision Report



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Offset Design Sec.24-T12S-R98W - Collard 24-2 (Vertical) - Wellbore #1 - Design #1													Offset Site Error:	0.00 usft
Survey Program: 0-MWD													Offset Well Error:	0.00 usft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-17.71	42.85	-13.68	44.99					
100.00	100.00	100.00	100.00	0.10	0.10	-17.71	42.85	-13.68	44.99	44.79	0.19	232.724		
200.00	200.00	200.00	200.00	0.32	0.32	-17.71	42.85	-13.68	44.99	44.34	0.64	69.980		
300.00	300.00	300.00	300.00	0.55	0.55	-17.71	42.85	-13.68	44.99	43.89	1.09	41.182		
400.00	400.00	400.00	400.00	0.77	0.77	-17.71	42.85	-13.68	44.99	43.44	1.54	29.175		
500.00	500.00	500.00	500.00	1.00	1.00	-17.71	42.85	-13.68	44.99	42.99	1.99	22.590		
600.00	600.00	600.00	600.00	1.22	1.22	-17.71	42.85	-13.68	44.99	42.54	2.44	18.429		
700.00	700.00	700.00	700.00	1.45	1.45	-17.71	42.85	-13.68	44.99	42.09	2.89	15.563		
800.00	800.00	800.00	800.00	1.67	1.67	-17.71	42.85	-13.68	44.99	41.65	3.34	13.469		
900.00	900.00	900.00	900.00	1.89	1.89	-17.71	42.85	-13.68	44.99	41.20	3.79	11.871		
1,000.00	1,000.00	1,000.00	1,000.00	2.12	2.12	-17.71	42.85	-13.68	44.99	40.75	4.24	10.612		
1,100.00	1,100.00	1,100.00	1,100.00	2.34	2.34	-17.71	42.85	-13.68	44.99	40.30	4.69	9.595		
1,200.00	1,200.00	1,200.00	1,200.00	2.57	2.57	-17.71	42.85	-13.68	44.99	39.85	5.14	8.755		
1,300.00	1,300.00	1,300.00	1,300.00	2.79	2.79	-17.71	42.85	-13.68	44.99	39.40	5.59	8.051		
1,400.00	1,400.00	1,400.00	1,400.00	3.02	3.02	-17.71	42.85	-13.68	44.99	38.95	6.04	7.451		
1,500.00	1,500.00	1,500.00	1,500.00	3.24	3.24	-17.71	42.85	-13.68	44.99	38.50	6.49	6.935		
1,600.00	1,600.00	1,600.00	1,600.00	3.47	3.47	-17.71	42.85	-13.68	44.99	38.05	6.94	6.486		
1,700.00	1,700.00	1,700.00	1,700.00	3.69	3.69	-17.71	42.85	-13.68	44.99	37.60	7.39	6.091		
1,800.00	1,800.00	1,800.00	1,800.00	3.92	3.92	-17.71	42.85	-13.68	44.99	37.15	7.84	5.741		
1,900.00	1,900.00	1,900.00	1,900.00	4.14	4.14	-17.71	42.85	-13.68	44.99	36.70	8.28	5.430		
2,000.00	2,000.00	2,000.00	2,000.00	4.37	4.37	-17.71	42.85	-13.68	44.99	36.25	8.73	5.150		
2,100.00	2,100.00	2,100.00	2,100.00	4.59	4.59	-17.71	42.85	-13.68	44.99	35.80	9.18	4.898		
2,200.00	2,200.00	2,200.00	2,200.00	4.82	4.82	-17.71	42.85	-13.68	44.99	35.35	9.63	4.670		
2,300.00	2,300.00	2,300.00	2,300.00	5.04	5.04	-17.71	42.85	-13.68	44.99	34.90	10.08	4.462		
2,360.77	2,360.77	2,360.77	2,360.77	5.18	5.18	-17.71	42.85	-13.68	44.99	34.63	10.36	4.344		
2,400.00	2,399.98	2,399.98	2,399.98	5.26	5.27	-16.61	42.85	-13.68	44.34	33.81	10.52	4.213		
2,450.00	2,449.77	2,449.77	2,449.77	5.37	5.38	-11.68	42.85	-13.68	41.82	31.09	10.73	3.898		
2,500.00	2,499.12	2,499.12	2,499.12	5.48	5.49	-1.51	42.85	-13.68	38.25	27.31	10.95	3.494		
2,550.00	2,547.81	2,547.81	2,547.81	5.60	5.60	15.73	42.85	-13.68	35.69	24.49	11.20	3.187		
2,559.93	2,557.37	2,557.37	2,557.37	5.63	5.62	20.00	42.85	-13.68	35.59	24.34	11.25	3.164 CC, ES, SF		
2,600.00	2,595.58	2,595.58	2,595.58	5.74	5.71	38.73	42.85	-13.68	37.58	26.19	11.39	3.300		
2,650.00	2,642.20	2,642.20	2,642.20	5.90	5.81	60.22	42.85	-13.68	46.61	35.23	11.38	4.095		
2,700.00	2,687.46	2,687.46	2,687.46	6.10	5.91	75.27	42.85	-13.68	62.46	51.23	11.24	5.558		
2,750.00	2,731.12	2,731.12	2,731.12	6.35	6.01	84.81	42.85	-13.68	83.63	72.58	11.05	7.571		
2,800.00	2,772.98	2,772.98	2,772.98	6.66	6.10	90.94	42.85	-13.68	108.98	98.15	10.83	10.060		
2,850.00	2,812.83	2,812.83	2,812.83	7.05	6.19	95.04	42.85	-13.68	137.86	127.26	10.60	13.003		
2,900.00	2,850.48	2,850.48	2,850.48	7.51	6.28	97.90	42.85	-13.68	169.84	159.49	10.35	16.403		
2,950.00	2,885.74	2,885.74	2,885.74	8.08	6.36	99.98	42.85	-13.68	204.62	194.53	10.09	20.271		
3,000.00	2,918.45	2,918.45	2,918.45	8.73	6.43	101.54	42.85	-13.68	241.94	232.11	9.83	24.611		
3,050.00	2,948.44	2,948.44	2,948.44	9.49	6.50	102.74	42.85	-13.68	281.57	271.99	9.57	29.407		
3,100.00	2,975.56	2,975.56	2,975.56	10.33	6.56	103.68	42.85	-13.68	323.26	313.92	9.34	34.601		
3,150.00	2,999.69	2,999.69	2,999.69	11.26	6.61	104.43	42.85	-13.68	366.81	357.65	9.16	40.052		
3,200.00	3,020.71	3,020.71	3,020.71	12.27	6.66	105.04	42.85	-13.68	411.98	402.92	9.06	45.479		
3,250.00	3,038.51	3,038.51	3,038.51	13.35	6.70	105.55	42.85	-13.68	458.53	449.43	9.10	50.365		
3,300.00	3,053.01	3,053.01	3,053.01	14.49	6.73	105.97	42.85	-13.68	506.24	496.83	9.42	53.764		
3,350.00	3,064.14	3,064.14	3,064.14	15.67	6.76	106.32	42.85	-13.68	554.87	544.59	10.28	53.981		
3,385.77	3,070.00	3,070.00	3,070.00	16.55	6.77	106.54	42.85	-13.68	590.08	578.43	11.65	50.661		
3,400.00	3,071.98	3,071.98	3,071.98	16.90	6.78	106.63	42.85	-13.68	604.15	591.79	12.36	48.898		
3,500.00	3,086.00	3,086.00	3,086.00	19.36	6.81	107.38	42.85	-13.68	702.78	685.71	17.07	41.166		
3,600.00	3,100.15	3,100.15	3,100.15	21.87	6.84	108.31	42.85	-13.68	801.00	779.81	21.19	37.794		
3,700.00	3,114.39	3,114.39	3,114.39	24.39	6.87	109.37	42.85	-13.68	898.71	873.89	24.82	36.204		
3,800.00	3,128.68	3,128.68	3,128.68	26.90	6.90	110.53	42.85	-13.68	995.83	967.74	28.09	35.450		

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



<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

<b>Offset Design</b> Sec.24-T12S-R98W - Collard 24-2 (Vertical) - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.00 usft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.00 usft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (usft)	Vertical Depth (usft)	Measured Depth (usft)	Vertical Depth (usft)	Reference (usft)	Offset (usft)	Azimuth from North (°)	Offset Wellbore Centre +N/-S (usft)	+E/-W (usft)	Between Centres (usft)	Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
3,900.00	3,142.99	3,142.99	3,142.99	29.38	6.94	111.74	42.85	-13.68	1,092.29	1,061.20	31.08	35.142	
4,000.00	3,157.27	3,157.27	3,157.27	31.84	6.97	113.00	42.85	-13.68	1,188.00	1,154.16	33.84	35.102	
4,100.00	3,171.49	3,171.49	3,171.49	34.25	7.00	114.31	42.85	-13.68	1,282.92	1,246.52	36.41	35.240	
4,200.00	3,185.60	3,185.60	3,185.60	36.61	7.03	115.64	42.85	-13.68	1,376.97	1,338.19	38.78	35.507	
4,281.83	3,197.04	3,197.04	3,197.04	38.50	7.06	116.74	42.85	-13.68	1,453.24	1,412.65	40.59	35.802	
4,300.00	3,199.57	3,199.57	3,199.57	38.91	7.06	116.99	42.85	-13.68	1,470.12	1,429.17	40.94	35.905	
4,400.00	3,213.49	3,213.49	3,213.49	41.22	7.09	118.24	42.85	-13.68	1,563.45	1,520.58	42.87	36.470	
4,500.00	3,227.41	3,227.41	3,227.41	43.55	7.13	119.35	42.85	-13.68	1,657.44	1,612.69	44.75	37.039	
4,600.00	3,241.32	3,241.32	3,241.32	45.90	7.16	120.34	42.85	-13.68	1,751.99	1,705.41	46.58	37.612	
4,700.00	3,255.24	3,255.24	3,255.24	48.26	7.19	121.23	42.85	-13.68	1,847.01	1,798.64	48.37	38.189	
4,800.00	3,269.16	3,269.16	3,269.16	50.63	7.22	122.03	42.85	-13.68	1,942.42	1,892.32	50.10	38.770	
4,845.46	3,275.49	3,275.49	3,275.49	51.71	7.23	122.37	42.85	-13.68	1,985.92	1,935.04	50.87	39.036	

<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Reference Depths are relative to WELL @ 5982.00usft (Frontier 4)

Offset Depths are relative to Offset Datum

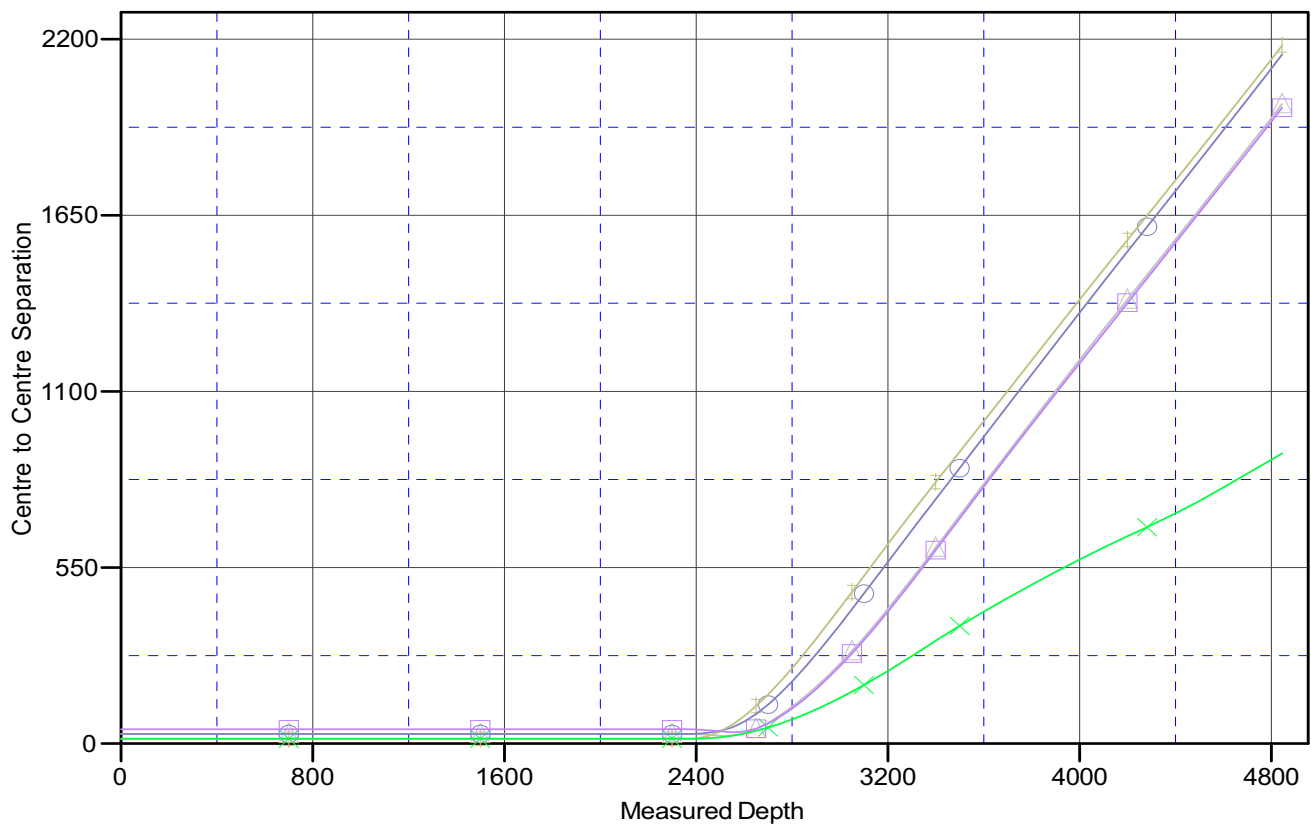
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Collard 24-12-98 M

Coordinate System is US State Plane 1983, Colorado Central Zone

Grid Convergence at Surface is: -1.77°

## Ladder Plot



### LEGEND

poke #1 (Existing), Wellbore #1, Wellbore #1 V0  
 4-12-98 E, Wellbore #1, Design #1 V0

—◆— Collard 24-12-98 H, Wellbore #1, Design #1 V0  
 —×— Collard 24-12-98 N, Wellbore #1, Design #1 V0

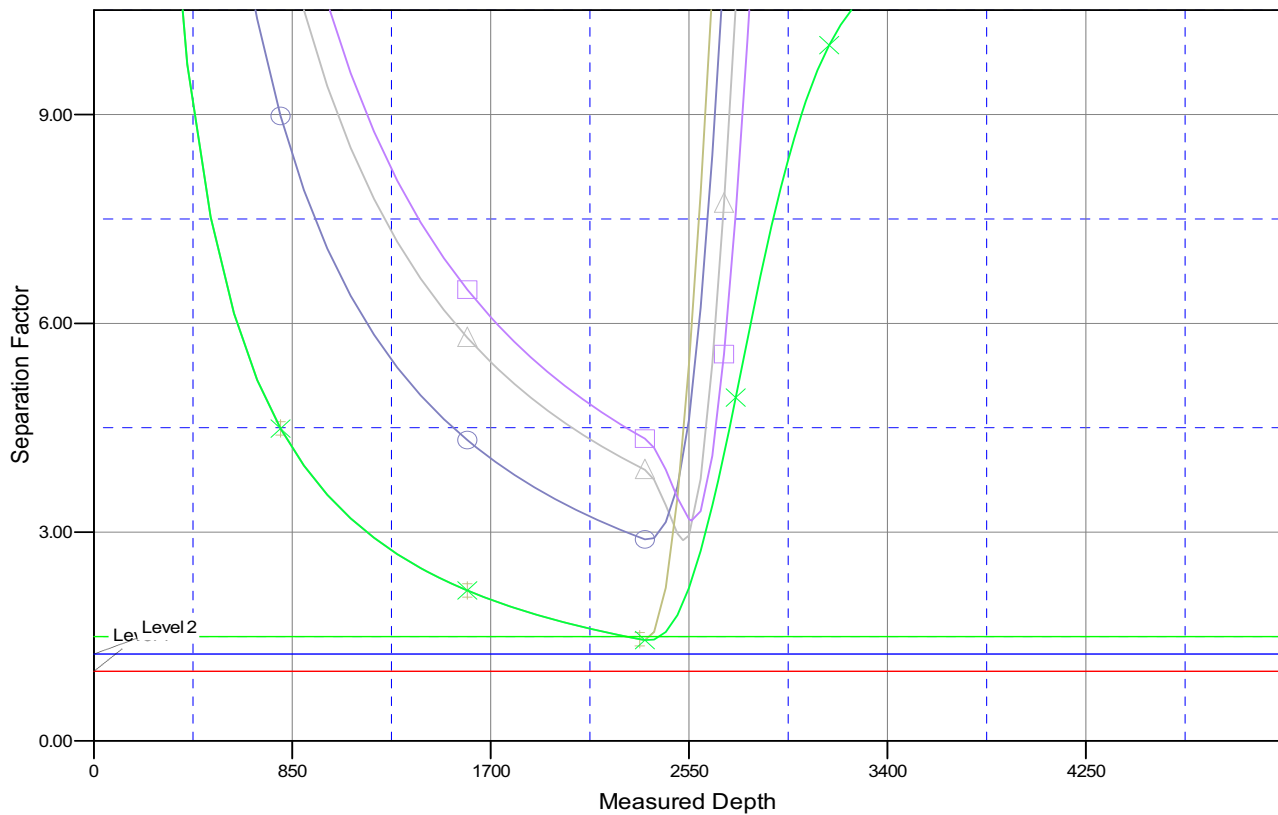
—□— Collard 24-2 (Vertical), Wellbore #1, Design #1 V0

<b>Company:</b>	Fram Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Collard 24-12-98 M
<b>Project:</b>	Mesa Co., CO	<b>TVD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Reference Site:</b>	Sec.24-T12S-R98W	<b>MD Reference:</b>	WELL @ 5982.00usft (Frontier 4)
<b>Site Error:</b>	0.00 usft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Collard 24-12-98 M	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.00 usft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	EDM 5000.1 EDMDBBW
<b>Reference Design:</b>	Design #1	<b>Offset TVD Reference:</b>	Reference Datum

Reference Depths are relative to WELL @ 5982.00usft (Frontier 4)  
Offset Depths are relative to Offset Datum  
Central Meridian is 105° 30' 0.000 W

Coordinates are relative to: Collard 24-12-98 M  
Coordinate System is US State Plane 1983, Colorado Central Zone  
Grid Convergence at Surface is: -1.77°

## Separation Factor Plot



### LEGEND

poke #1 (Existing), Wellbore #1, Wellbore #1 V0  
 4-12-98 E, Wellbore #1, Design #1 V0  
 Collard 24-12-98 H, Wellbore #1, Design #1 V0  
 Collard 24-12-98 N, Wellbore #1, Design #1 V0  
 Collard 24-2 (Vertical), Wellbore #1, Design #1 V0