



Site: Sec 4-T1N-R100W
Well: Fletcher Gulch Federal 4-24-2 Deep
Wellbore: Wellbore #1
Design: Plan #1

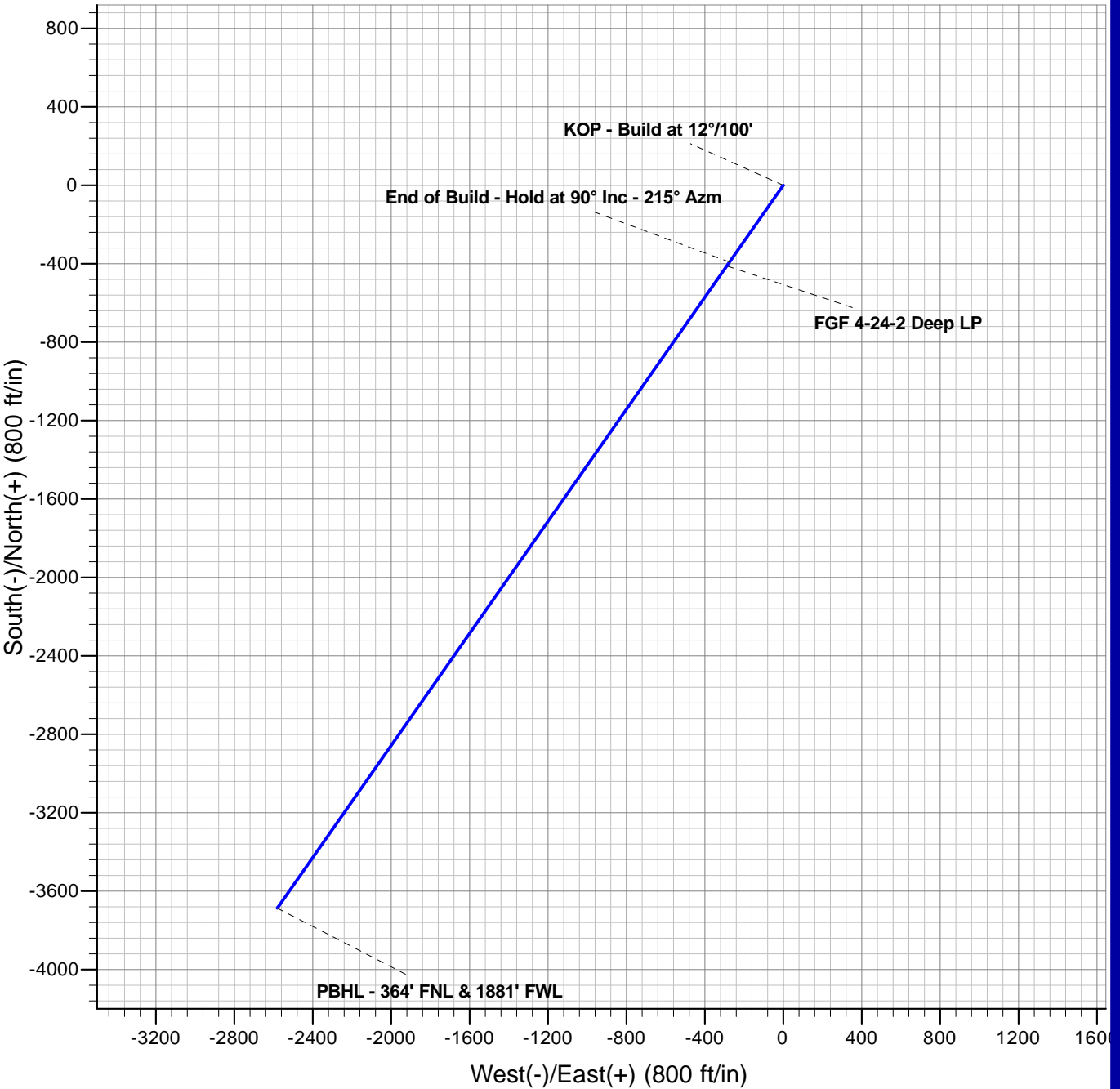
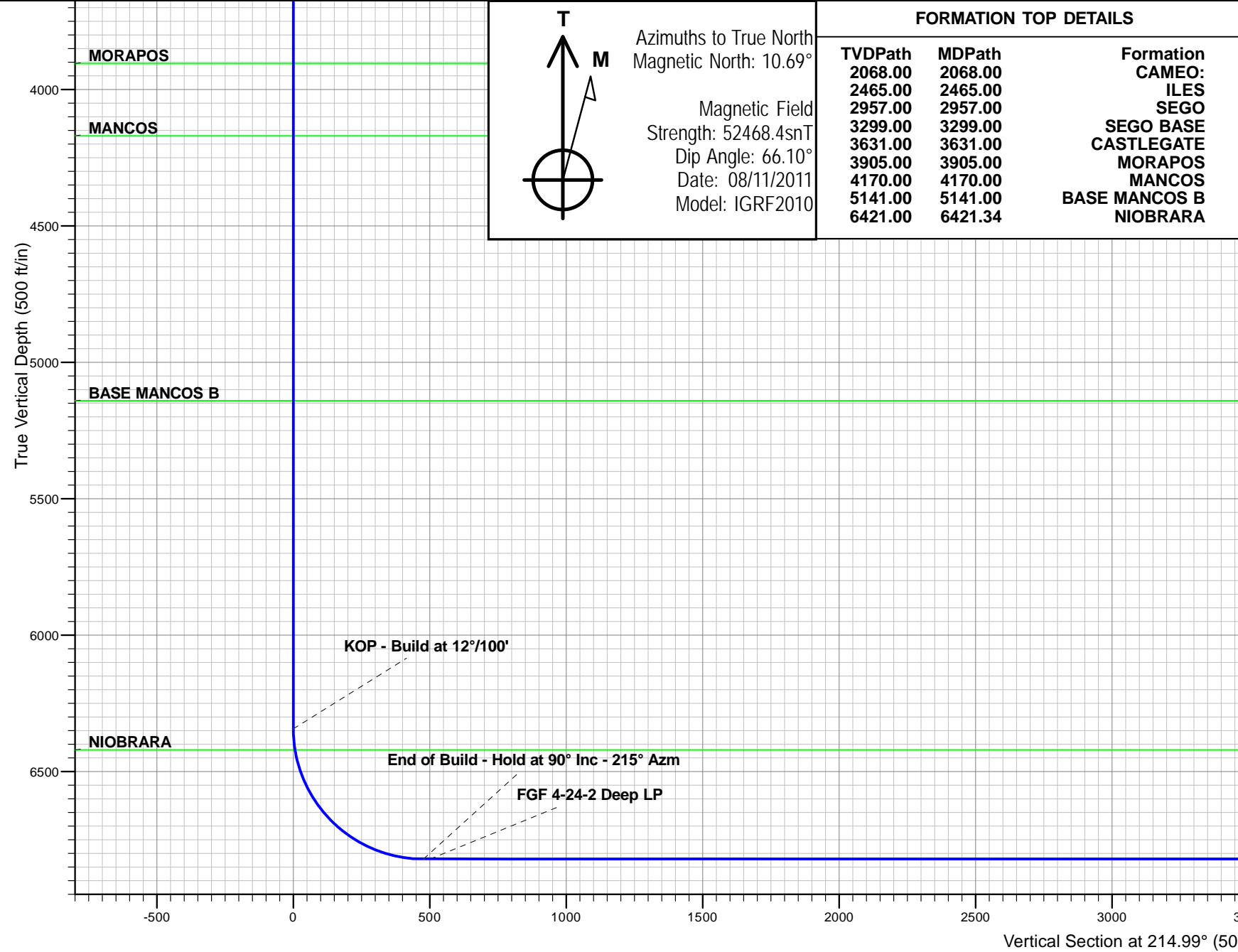
Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
Northing: 1289764.27
Easting: 2128411.03
Latitude: 40° 5' 12.29979 N
Longitude: 108° 36' 56.62800 W
Grid Convergence: 2.01° East
Ground Elevation: 6505.00
KB Elevation: WELL @ 6526.00ft (Original Well Elev)

Denver, Colorado
Phone: 303.542.2000

Casper, Wyoming
Phone: 307.265.2231
Fax: 307.472.5064
www.departureus.com

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
6343.54	6343.54	0.00	0.00	0.00	0.00	0.00	0.00	KOP - Build at 12°/100'
6821.00	7093.54	90.00	214.99	-391.17	-273.79	477.46	477.46	End of Build - Hold at 90° Inc - 215° Azm
6821.00	11115.64	90.00	214.99	-3686.34	-2580.12	4499.57	4499.57	PBHL - 364' FNL & 1881' FWL





Departure
Energy Services (US) LP

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Laramie Energy II, LLC

Rio Blanco County, Colorado

Sec 4 – T1N – R100W

Fletcher Gulch Federal 4-24-2 Deep

HZ Well

Well Plan #1

Job Number: TBD

Well Plan Report

August 25, 2011

Database:	EDM Depart	Local Co-ordinate Reference:	Well Fletcher Gulch Federal 4-24-2 Deep
Company:	Laramie Energy II, LLC	TVD Reference:	WELL @ 6526.00ft (Original Well Elev)
Project:	Rio Blanco County, CO	MD Reference:	WELL @ 6526.00ft (Original Well Elev)
Site:	Sec 4-T1N-R100W	North Reference:	True
Well:	Fletcher Gulch Federal 4-24-2 Deep	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

Project	Rio Blanco County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec 4-T1N-R100W			
Site Position:		Northing:	1,288,048.65 ft	Latitude:	40° 4' 55.59600 N
From:	Lat/Long	Easting:	2,129,103.89 ft	Longitude:	108° 36' 46.94400 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	-2.01

Well	Fletcher Gulch Federal 4-24-2 Deep					
Well Position	+N/-S	1,690.24 ft	Northing:	1,289,764.27 ft	Latitude:	40° 5' 12.29979 N
	+E/-W	-752.66 ft	Easting:	2,128,411.02 ft	Longitude:	108° 36' 56.62800 W
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	6,505.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	08/11/11	10.69	66.10	52,468

Design	Plan #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	214.99

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6,343.54	0.00	0.00	6,343.54	0.00	0.00	0.00	0.00	0.00	0.00	
7,093.54	90.00	214.99	6,821.00	-391.17	-273.79	12.00	12.00	0.00	214.99	
11,115.64	90.00	214.99	6,821.00	-3,686.34	-2,580.12	0.00	0.00	0.00	0.00	FGF 4-24-2 Deep TD

Database:	EDM Depart	Local Co-ordinate Reference:	Well Fletcher Gulch Federal 4-24-2 Deep
Company:	Laramie Energy II, LLC	TVD Reference:	WELL @ 6526.00ft (Original Well Elev)
Project:	Rio Blanco County, CO	MD Reference:	WELL @ 6526.00ft (Original Well Elev)
Site:	Sec 4-T1N-R100W	North Reference:	True
Well:	Fletcher Gulch Federal 4-24-2 Deep	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

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)
6,343.54	0.00	0.00	6,343.54	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Build at 12°/100'									
6,400.00	6.78	214.99	6,399.87	-2.73	-1.91	3.33	12.00	12.00	0.00
6,421.34	9.34	214.99	6,421.00	-5.18	-3.63	6.33	12.00	12.00	0.00
NIORARA									
6,500.00	18.78	214.99	6,497.21	-20.82	-14.57	25.41	12.00	12.00	0.00
6,600.00	30.78	214.99	6,587.84	-55.09	-38.56	67.24	12.00	12.00	0.00
6,700.00	42.78	214.99	6,667.80	-104.04	-72.82	127.00	12.00	12.00	0.00
6,800.00	54.78	214.99	6,733.58	-165.55	-115.87	202.07	12.00	12.00	0.00
6,900.00	66.78	214.99	6,782.31	-236.92	-165.82	289.19	12.00	12.00	0.00
7,000.00	78.78	214.99	6,811.87	-315.03	-220.49	384.53	12.00	12.00	0.00
7,093.54	90.00	214.99	6,821.00	-391.17	-273.79	477.46	12.00	12.00	0.00
End of Build - Hold at 90° Inc - 215° Azm									
7,100.00	90.00	214.99	6,821.00	-396.47	-277.49	483.93	0.00	0.00	0.00
7,200.00	90.00	214.99	6,821.00	-478.39	-334.83	583.93	0.00	0.00	0.00
7,300.00	90.00	214.99	6,821.00	-560.32	-392.18	683.93	0.00	0.00	0.00
7,400.00	90.00	214.99	6,821.00	-642.25	-449.52	783.93	0.00	0.00	0.00
7,500.00	90.00	214.99	6,821.00	-724.17	-506.86	883.93	0.00	0.00	0.00
7,600.00	90.00	214.99	6,821.00	-806.10	-564.20	983.93	0.00	0.00	0.00
7,700.00	90.00	214.99	6,821.00	-888.03	-621.54	1,083.93	0.00	0.00	0.00
7,800.00	90.00	214.99	6,821.00	-969.95	-678.88	1,183.93	0.00	0.00	0.00
7,900.00	90.00	214.99	6,821.00	-1,051.88	-736.22	1,283.93	0.00	0.00	0.00
8,000.00	90.00	214.99	6,821.00	-1,133.81	-793.57	1,383.93	0.00	0.00	0.00
8,100.00	90.00	214.99	6,821.00	-1,215.73	-850.91	1,483.93	0.00	0.00	0.00
8,200.00	90.00	214.99	6,821.00	-1,297.66	-908.25	1,583.93	0.00	0.00	0.00
8,300.00	90.00	214.99	6,821.00	-1,379.59	-965.59	1,683.93	0.00	0.00	0.00
8,400.00	90.00	214.99	6,821.00	-1,461.51	-1,022.93	1,783.93	0.00	0.00	0.00
8,500.00	90.00	214.99	6,821.00	-1,543.44	-1,080.27	1,883.93	0.00	0.00	0.00
8,600.00	90.00	214.99	6,821.00	-1,625.36	-1,137.61	1,983.93	0.00	0.00	0.00
8,700.00	90.00	214.99	6,821.00	-1,707.29	-1,194.96	2,083.93	0.00	0.00	0.00
8,800.00	90.00	214.99	6,821.00	-1,789.22	-1,252.30	2,183.93	0.00	0.00	0.00
8,900.00	90.00	214.99	6,821.00	-1,871.14	-1,309.64	2,283.93	0.00	0.00	0.00
9,000.00	90.00	214.99	6,821.00	-1,953.07	-1,366.98	2,383.93	0.00	0.00	0.00
9,100.00	90.00	214.99	6,821.00	-2,035.00	-1,424.32	2,483.93	0.00	0.00	0.00
9,200.00	90.00	214.99	6,821.00	-2,116.92	-1,481.66	2,583.93	0.00	0.00	0.00
9,300.00	90.00	214.99	6,821.00	-2,198.85	-1,539.00	2,683.93	0.00	0.00	0.00
9,400.00	90.00	214.99	6,821.00	-2,280.78	-1,596.35	2,783.93	0.00	0.00	0.00
9,500.00	90.00	214.99	6,821.00	-2,362.70	-1,653.69	2,883.93	0.00	0.00	0.00
9,600.00	90.00	214.99	6,821.00	-2,444.63	-1,711.03	2,983.93	0.00	0.00	0.00
9,700.00	90.00	214.99	6,821.00	-2,526.56	-1,768.37	3,083.93	0.00	0.00	0.00
9,800.00	90.00	214.99	6,821.00	-2,608.48	-1,825.71	3,183.93	0.00	0.00	0.00
9,900.00	90.00	214.99	6,821.00	-2,690.41	-1,883.05	3,283.93	0.00	0.00	0.00
10,000.00	90.00	214.99	6,821.00	-2,772.34	-1,940.39	3,383.93	0.00	0.00	0.00
10,100.00	90.00	214.99	6,821.00	-2,854.26	-1,997.74	3,483.93	0.00	0.00	0.00
10,200.00	90.00	214.99	6,821.00	-2,936.19	-2,055.08	3,583.93	0.00	0.00	0.00
10,300.00	90.00	214.99	6,821.00	-3,018.12	-2,112.42	3,683.93	0.00	0.00	0.00
10,400.00	90.00	214.99	6,821.00	-3,100.04	-2,169.76	3,783.93	0.00	0.00	0.00
10,500.00	90.00	214.99	6,821.00	-3,181.97	-2,227.10	3,883.93	0.00	0.00	0.00
10,600.00	90.00	214.99	6,821.00	-3,263.90	-2,284.44	3,983.93	0.00	0.00	0.00
10,700.00	90.00	214.99	6,821.00	-3,345.82	-2,341.79	4,083.93	0.00	0.00	0.00
10,800.00	90.00	214.99	6,821.00	-3,427.75	-2,399.13	4,183.93	0.00	0.00	0.00
10,900.00	90.00	214.99	6,821.00	-3,509.68	-2,456.47	4,283.93	0.00	0.00	0.00
11,000.00	90.00	214.99	6,821.00	-3,591.60	-2,513.81	4,383.93	0.00	0.00	0.00

Database:	EDM Depart	Local Co-ordinate Reference:	Well Fletcher Gulch Federal 4-24-2 Deep
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Project:	Rio Blanco County, CO	MD Reference:	WELL @ 6526.00ft (Original Well Elev)
Site:	Sec 4-T1N-R100W	North Reference:	True
Well:	Fletcher Gulch Federal 4-24-2 Deep	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1		

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)
11,100.00	90.00	214.99	6,821.00	-3,673.53	-2,571.15	4,483.93	0.00	0.00	0.00
11,115.64	90.00	214.99	6,821.00	-3,686.34	-2,580.12	4,499.57	0.00	0.00	0.00
PBHL - 364' FNL & 1881' FWL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
FGF 4-24-2 Deep TD	0.00	0.00	6,821.00	-3,686.34	-2,580.12	1,286,170.84	2,125,703.00	40° 4' 35.86796 N	108° 37' 29.82000 W
- hit/miss target									
- plan hits target center									
- Point									
FGF 4-24-2 Deep LP	0.00	0.00	6,821.00	-411.62	-285.40	1,289,362.94	2,128,111.34	40° 5' 8.23196 N	108° 37' 0.30000 W
- plan misses target center by 2.21ft at 7116.94ft MD (6821.00 TVD, -410.35 N, -287.21 E)									
- Point									

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
2,068.00	2,068.00	CAMEO:				
2,465.00	2,465.00	ILES				
2,957.00	2,957.00	SEGO				
3,299.00	3,299.00	SEGO BASE				
3,631.00	3,631.00	CASTLEGATE				
3,905.00	3,905.00	MORAPOS				
4,170.00	4,170.00	MANCOS				
5,141.00	5,141.00	BASE MANCOS B				
6,421.34	6,421.00	NIOBRARA				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,343.54	6,343.54	0.00	0.00	KOP - Build at 12°/100'
7,093.54	6,821.00	-391.17	-273.79	End of Build - Hold at 90° Inc - 215° Azm
11,115.64	6,821.00	-3,686.34	-2,580.12	PBHL - 364' FNL & 1881' FWL