



GMT Exploration Company, LLC

Elbert County, CO (NAD 83)

Irwin-Taylor Pad

IRWIN 6-65 23-11 8HN

Wellbore #1

Plan: Design #1

Standard Planning Report

25 May, 2019



Project: Elbert County, CO (NAD 83)
 Site: Irwin-Taylor Pad
 Well: IRWIN 6-65 23-11 8HN
 Wellbore: Wellbore #1
 Design: Design #1

GMT Exploration Company, LLC

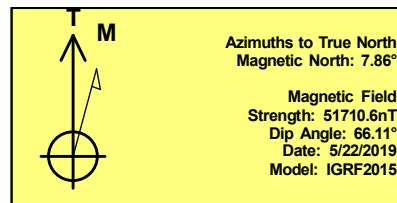
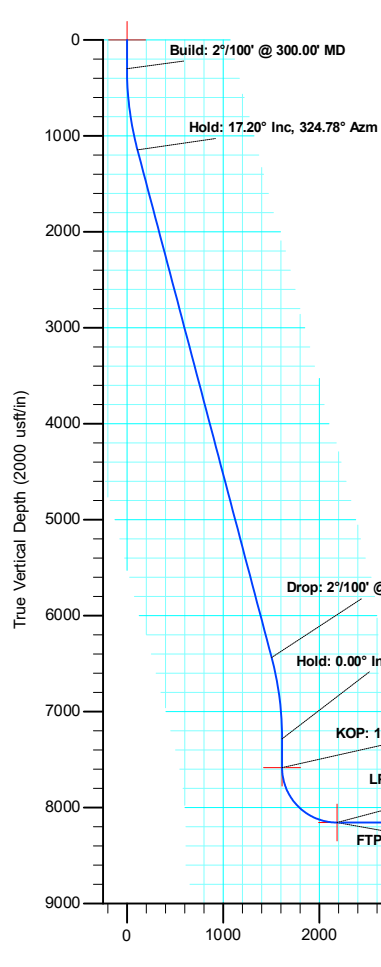
Geodetic System: US State Plane 1983
 Datum: North American Datum 1983
 Ellipsoid: GRS 1980
 Zone: Colorado Central Zone
 System Datum: Mean Sea Level

WELL DETAILS: IRWIN 6-65 23-11 8HN

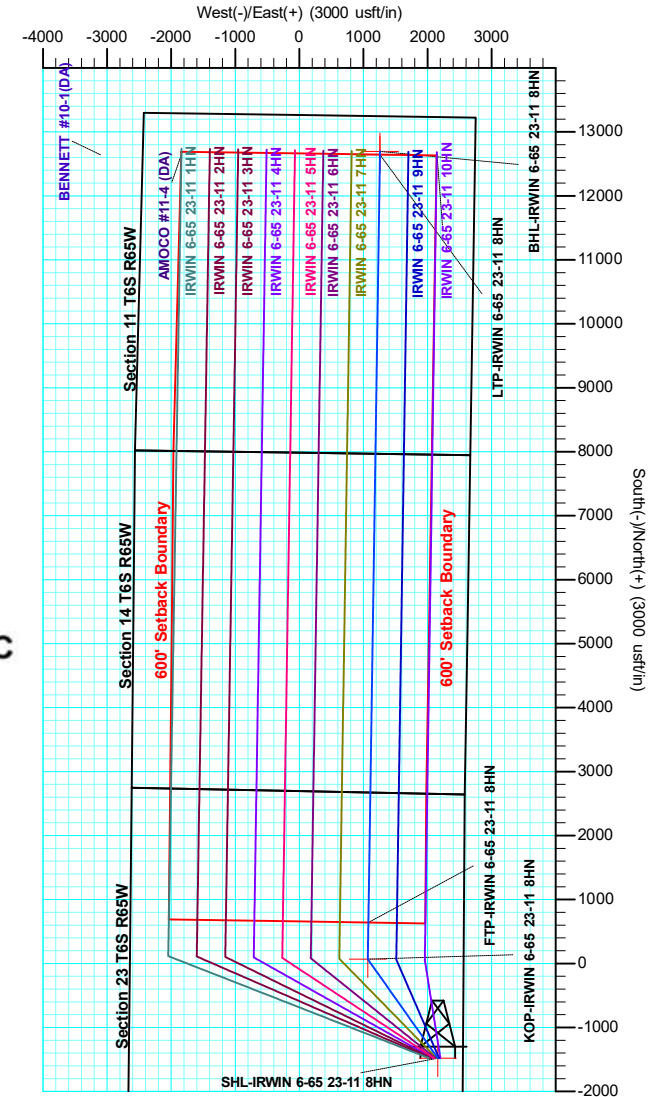
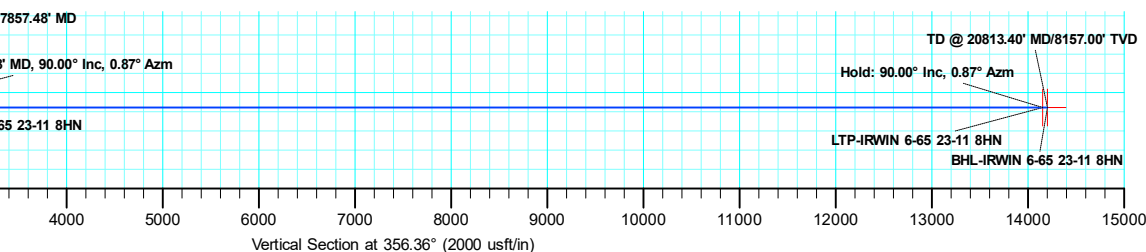
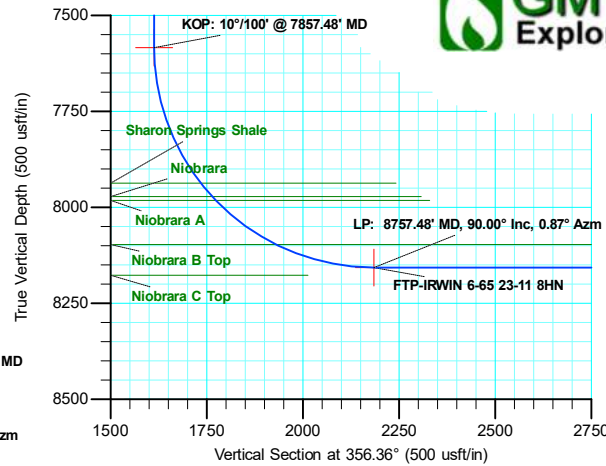
+N/-S	+E/-W	Northing	Ground Level: Easting	6222.00 Latitude	Longitude
-1478.78	2160.76	1611774.07	3246666.90	39.509838	-104.625731

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
0.00	0.00	0.00	0.00	-1478.78	2160.76	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-1478.78	2160.76	0.00	0.00	0.00	
1160.13	17.20	324.77	1147.26	-1374.09	2086.83	2.00	324.77	109.17	
6697.35	17.20	324.77	6436.78	-36.38	1142.16	0.00	0.00	1504.18	
7557.48	0.00	0.00	7284.04	68.30	1068.23	2.00	180.00	1613.35	
7857.48	0.00	0.00	7584.04	68.30	1068.23	0.00	0.00	1613.35	
8757.48	90.00	0.86	8157.00	641.19	1076.87	10.00	0.00	2184.54	FTP-IRWIN 6-65 23-11 8HN
20763.40	90.00	0.86	8157.00	12645.75	1257.83	0.00	0.00	14153.36	LTP-IRWIN 6-65 23-11 8HN
20813.40	90.00	0.86	8157.00	12695.75	1258.59	0.00	0.00	14203.20	BHL-IRWIN 6-65 23-11 8HN



SHL: 1124 FSL/ 391 FEL Sec. 23
 FTP: 2033 FNL/ 1489 FEL Sec. 23
 LTP: 600 FNL/ 1485 FEL Sec. 11
 BHL: 550 FNL/ 1485 FEL Sec. 11





Database:	Local	Local Co-ordinate Reference:	Well IRWIN 6-65 23-11 8HN
Company:	GMT Exploration Company, LLC	TVD Reference:	KB @ 6242.00usft
Project:	Elbert County, CO (NAD 83)	MD Reference:	KB @ 6242.00usft
Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Elbert County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	Irwin-Taylor Pad				
Site Position:		Northing:	1,613,232.16 usft	Latitude:	39.513898
From:	Lat/Long	Easting:	3,244,492.14 usft	Longitude:	-104.633389
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well	IRWIN 6-65 23-11 8HN					
Well Position	+N/-S	-1,478.78 usft	Northing:	1,611,774.07 usft	Latitude:	39.509838
	+E/-W	2,160.76 usft	Easting:	3,246,666.90 usft	Longitude:	-104.625731
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	6,222.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/22/2019	7.86	66.11	51,710.61970352

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	356.36

Plan Survey Tool Program	Date	5/24/2019			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	20,813.40	Design #1 (Wellbore #1)	MWD	
				OWSG MWD - Standard	

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		
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00		
1,160.13	17.20	324.78	1,147.26	104.69	-73.92	2.00	2.00	0.00	324.78		
6,697.35	17.20	324.78	6,436.78	1,442.48	-1,018.47	0.00	0.00	0.00	0.00		
7,557.48	0.00	0.00	7,284.04	1,547.17	-1,092.39	2.00	-2.00	0.00	180.00		
7,857.48	0.00	0.00	7,584.04	1,547.17	-1,092.39	0.00	0.00	0.00	0.00		
8,757.48	90.00	0.87	8,157.00	2,120.06	-1,083.71	10.00	10.00	0.00	0.00	FTP-IRWIN 6-65 23	
20,763.40	90.00	0.87	8,157.00	14,124.61	-901.73	0.00	0.00	0.00	0.00	LTP-IRWIN 6-65 23	
20,813.40	90.00	0.87	8,157.00	14,174.60	-900.97	0.00	0.00	0.00	0.00	BHL-IRWIN 6-65 23	



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Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	0.00
SHL-IRWIN 6-65 23-11 8HN										
100.00	0.00	0.00	100.00	0.00	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	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Build: 2°/100' @ 300.00' MD										
400.00	2.00	324.78	399.98	1.43	-1.01	1.49	2.00	2.00	2.00	0.00
500.00	4.00	324.78	499.84	5.70	-4.03	5.94	2.00	2.00	2.00	0.00
600.00	6.00	324.78	599.45	12.82	-9.05	13.37	2.00	2.00	2.00	0.00
700.00	8.00	324.78	698.70	22.78	-16.08	23.75	2.00	2.00	2.00	0.00
800.00	10.00	324.78	797.47	35.55	-25.10	37.07	2.00	2.00	2.00	0.00
900.00	12.00	324.78	895.62	51.14	-36.11	53.33	2.00	2.00	2.00	0.00
1,000.00	14.00	324.78	993.06	69.52	-49.08	72.49	2.00	2.00	2.00	0.00
1,100.00	16.00	324.78	1,089.64	90.66	-64.01	94.54	2.00	2.00	2.00	0.00
1,160.13	17.20	324.78	1,147.26	104.69	-73.92	109.17	2.00	2.00	2.00	0.00
Hold: 17.20° Inc, 324.78° Azm										
1,200.00	17.20	324.78	1,185.35	114.32	-80.72	119.21	0.00	0.00	0.00	0.00
1,300.00	17.20	324.78	1,280.88	138.48	-97.78	144.41	0.00	0.00	0.00	0.00
1,400.00	17.20	324.78	1,376.40	162.64	-114.84	169.60	0.00	0.00	0.00	0.00
1,500.00	17.20	324.78	1,471.93	186.80	-131.89	194.79	0.00	0.00	0.00	0.00
1,600.00	17.20	324.78	1,567.46	210.96	-148.95	219.99	0.00	0.00	0.00	0.00
1,700.00	17.20	324.78	1,662.98	235.12	-166.01	245.18	0.00	0.00	0.00	0.00
1,800.00	17.20	324.78	1,758.51	259.28	-183.07	270.37	0.00	0.00	0.00	0.00
1,900.00	17.20	324.78	1,854.04	283.44	-200.13	295.57	0.00	0.00	0.00	0.00
2,000.00	17.20	324.78	1,949.56	307.60	-217.19	320.76	0.00	0.00	0.00	0.00
2,100.00	17.20	324.78	2,045.09	331.76	-234.24	345.95	0.00	0.00	0.00	0.00
2,200.00	17.20	324.78	2,140.62	355.92	-251.30	371.15	0.00	0.00	0.00	0.00
2,300.00	17.20	324.78	2,236.14	380.08	-268.36	396.34	0.00	0.00	0.00	0.00
2,400.00	17.20	324.78	2,331.67	404.24	-285.42	421.53	0.00	0.00	0.00	0.00
2,500.00	17.20	324.78	2,427.20	428.40	-302.48	446.73	0.00	0.00	0.00	0.00
2,600.00	17.20	324.78	2,522.72	452.56	-319.53	471.92	0.00	0.00	0.00	0.00
2,700.00	17.20	324.78	2,618.25	476.72	-336.59	497.11	0.00	0.00	0.00	0.00
2,800.00	17.20	324.78	2,713.78	500.88	-353.65	522.31	0.00	0.00	0.00	0.00
2,900.00	17.20	324.78	2,809.30	525.04	-370.71	547.50	0.00	0.00	0.00	0.00
3,000.00	17.20	324.78	2,904.83	549.20	-387.77	572.69	0.00	0.00	0.00	0.00
3,100.00	17.20	324.78	3,000.36	573.36	-404.83	597.89	0.00	0.00	0.00	0.00
3,200.00	17.20	324.78	3,095.88	597.52	-421.88	623.08	0.00	0.00	0.00	0.00
3,300.00	17.20	324.78	3,191.41	621.68	-438.94	648.27	0.00	0.00	0.00	0.00
3,400.00	17.20	324.78	3,286.93	645.84	-456.00	673.47	0.00	0.00	0.00	0.00
3,500.00	17.20	324.78	3,382.46	670.00	-473.06	698.66	0.00	0.00	0.00	0.00
3,600.00	17.20	324.78	3,477.99	694.16	-490.12	723.85	0.00	0.00	0.00	0.00
3,700.00	17.20	324.78	3,573.51	718.32	-507.18	749.05	0.00	0.00	0.00	0.00
3,800.00	17.20	324.78	3,669.04	742.48	-524.23	774.24	0.00	0.00	0.00	0.00
3,900.00	17.20	324.78	3,764.57	766.64	-541.29	799.43	0.00	0.00	0.00	0.00
4,000.00	17.20	324.78	3,860.09	790.80	-558.35	824.63	0.00	0.00	0.00	0.00
4,100.00	17.20	324.78	3,955.62	814.96	-575.41	849.82	0.00	0.00	0.00	0.00
4,200.00	17.20	324.78	4,051.15	839.12	-592.47	875.01	0.00	0.00	0.00	0.00
4,300.00	17.20	324.78	4,146.67	863.28	-609.53	900.21	0.00	0.00	0.00	0.00
4,400.00	17.20	324.78	4,242.20	887.44	-626.58	925.40	0.00	0.00	0.00	0.00
4,500.00	17.20	324.78	4,337.73	911.60	-643.64	950.59	0.00	0.00	0.00	0.00
4,600.00	17.20	324.78	4,433.25	935.76	-660.70	975.79	0.00	0.00	0.00	0.00
4,700.00	17.20	324.78	4,528.78	959.92	-677.76	1,000.98	0.00	0.00	0.00	0.00
4,800.00	17.20	324.78	4,624.31	984.08	-694.82	1,026.17	0.00	0.00	0.00	0.00



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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)	
4,900.00	17.20	324.78	4,719.83	1,008.24	-711.88	1,051.37	0.00	0.00	0.00	
5,000.00	17.20	324.78	4,815.36	1,032.40	-728.93	1,076.56	0.00	0.00	0.00	
5,100.00	17.20	324.78	4,910.89	1,056.56	-745.99	1,101.75	0.00	0.00	0.00	
5,200.00	17.20	324.78	5,006.41	1,080.72	-763.05	1,126.95	0.00	0.00	0.00	
5,300.00	17.20	324.78	5,101.94	1,104.88	-780.11	1,152.14	0.00	0.00	0.00	
5,400.00	17.20	324.78	5,197.46	1,129.04	-797.17	1,177.33	0.00	0.00	0.00	
5,500.00	17.20	324.78	5,292.99	1,153.20	-814.23	1,202.53	0.00	0.00	0.00	
5,600.00	17.20	324.78	5,388.52	1,177.36	-831.28	1,227.72	0.00	0.00	0.00	
5,700.00	17.20	324.78	5,484.04	1,201.52	-848.34	1,252.91	0.00	0.00	0.00	
5,800.00	17.20	324.78	5,579.57	1,225.68	-865.40	1,278.11	0.00	0.00	0.00	
5,900.00	17.20	324.78	5,675.10	1,249.84	-882.46	1,303.30	0.00	0.00	0.00	
6,000.00	17.20	324.78	5,770.62	1,274.00	-899.52	1,328.50	0.00	0.00	0.00	
6,100.00	17.20	324.78	5,866.15	1,298.16	-916.57	1,353.69	0.00	0.00	0.00	
6,200.00	17.20	324.78	5,961.68	1,322.32	-933.63	1,378.88	0.00	0.00	0.00	
6,300.00	17.20	324.78	6,057.20	1,346.48	-950.69	1,404.08	0.00	0.00	0.00	
6,400.00	17.20	324.78	6,152.73	1,370.64	-967.75	1,429.27	0.00	0.00	0.00	
6,500.00	17.20	324.78	6,248.26	1,394.80	-984.81	1,454.46	0.00	0.00	0.00	
6,600.00	17.20	324.78	6,343.78	1,418.96	-1,001.87	1,479.66	0.00	0.00	0.00	
6,697.35	17.20	324.78	6,436.78	1,442.48	-1,018.47	1,504.18	0.00	0.00	0.00	
Drop: 2°/100' @ 6697.35' MD										
6,700.00	17.15	324.78	6,439.31	1,443.12	-1,018.92	1,504.85	2.00	-2.00	0.00	
6,800.00	15.15	324.78	6,535.36	1,465.84	-1,034.97	1,528.54	2.00	-2.00	0.00	
6,900.00	13.15	324.78	6,632.32	1,485.81	-1,049.06	1,549.36	2.00	-2.00	0.00	
7,000.00	11.15	324.78	6,730.08	1,503.00	-1,061.20	1,567.29	2.00	-2.00	0.00	
7,100.00	9.15	324.78	6,828.51	1,517.39	-1,071.37	1,582.30	2.00	-2.00	0.00	
7,200.00	7.15	324.78	6,927.49	1,528.97	-1,079.54	1,594.38	2.00	-2.00	0.00	
7,300.00	5.15	324.78	7,026.91	1,537.72	-1,085.72	1,603.50	2.00	-2.00	0.00	
7,400.00	3.15	324.78	7,126.64	1,543.64	-1,089.89	1,609.66	2.00	-2.00	0.00	
7,500.00	1.15	324.78	7,226.57	1,546.70	-1,092.06	1,612.86	2.00	-2.00	0.00	
7,557.48	0.00	0.00	7,284.04	1,547.17	-1,092.39	1,613.35	2.00	-2.00	0.00	
Hold: 0.00° Inc, 0.00° Azm										
7,600.00	0.00	0.00	7,326.56	1,547.17	-1,092.39	1,613.35	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,426.56	1,547.17	-1,092.39	1,613.35	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,526.56	1,547.17	-1,092.39	1,613.35	0.00	0.00	0.00	
7,857.48	0.00	0.00	7,584.04	1,547.17	-1,092.39	1,613.35	0.00	0.00	0.00	
KOP: 10°/100' @ 7857.48' MD - KOP-IRWIN 6-65 23-11 8HN										
7,900.00	4.25	0.87	7,626.52	1,548.75	-1,092.37	1,614.92	10.00	10.00	0.00	
7,950.00	9.25	0.87	7,676.16	1,554.62	-1,092.28	1,620.78	10.00	10.00	0.00	
8,000.00	14.25	0.87	7,725.10	1,564.80	-1,092.12	1,630.93	10.00	10.00	0.00	
8,050.00	19.25	0.87	7,772.96	1,579.21	-1,091.90	1,645.29	10.00	10.00	0.00	
8,100.00	24.25	0.87	7,819.39	1,597.73	-1,091.62	1,663.76	10.00	10.00	0.00	
8,150.00	29.25	0.87	7,864.02	1,620.23	-1,091.28	1,686.19	10.00	10.00	0.00	
8,200.00	34.25	0.87	7,906.52	1,646.53	-1,090.88	1,712.41	10.00	10.00	0.00	
8,250.00	39.25	0.87	7,946.57	1,676.43	-1,090.43	1,742.23	10.00	10.00	0.00	
8,300.00	44.25	0.87	7,983.86	1,709.71	-1,089.93	1,775.41	10.00	10.00	0.00	
8,350.00	49.25	0.87	8,018.11	1,746.12	-1,089.37	1,811.70	10.00	10.00	0.00	
8,400.00	54.25	0.87	8,049.05	1,785.37	-1,088.78	1,850.84	10.00	10.00	0.00	
8,450.00	59.25	0.87	8,076.46	1,827.17	-1,088.15	1,892.51	10.00	10.00	0.00	
8,500.00	64.25	0.87	8,100.11	1,871.19	-1,087.48	1,936.41	10.00	10.00	0.00	
8,550.00	69.25	0.87	8,119.84	1,917.11	-1,086.78	1,982.19	10.00	10.00	0.00	
8,600.00	74.25	0.87	8,135.49	1,964.58	-1,086.06	2,029.51	10.00	10.00	0.00	
8,650.00	79.25	0.87	8,146.95	2,013.23	-1,085.33	2,078.02	10.00	10.00	0.00	
8,700.00	84.25	0.87	8,154.12	2,062.69	-1,084.58	2,127.33	10.00	10.00	0.00	



Database:	Local	Local Co-ordinate Reference:	Well IRWIN6-65 23-11 8HN
Company:	GMT Exploration Company, LLC	TVD Reference:	KB @ 6242.00usft
Project:	Elbert County, CO (NAD 83)	MD Reference:	KB @ 6242.00usft
Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)	
8,750.00	89.25	0.87	8,156.95	2,112.58	-1,083.82	2,177.08	10.00	10.00	0.00	
8,757.48	90.00	0.87	8,157.00	2,120.06	-1,083.71	2,184.54	10.00	10.00	0.00	
LP: 8757.48' MD, 90.00° Inc, 0.87° Azm - FTP-IRWIN 6-65 23-11 8HN										
8,800.00	90.00	0.87	8,157.00	2,162.58	-1,083.06	2,226.93	0.00	0.00	0.00	
8,900.00	90.00	0.87	8,157.00	2,262.57	-1,081.55	2,326.62	0.00	0.00	0.00	
9,000.00	90.00	0.87	8,157.00	2,362.56	-1,080.03	2,426.31	0.00	0.00	0.00	
9,100.00	90.00	0.87	8,157.00	2,462.54	-1,078.51	2,526.00	0.00	0.00	0.00	
9,200.00	90.00	0.87	8,157.00	2,562.53	-1,077.00	2,625.69	0.00	0.00	0.00	
9,300.00	90.00	0.87	8,157.00	2,662.52	-1,075.48	2,725.38	0.00	0.00	0.00	
9,400.00	90.00	0.87	8,157.00	2,762.51	-1,073.97	2,825.07	0.00	0.00	0.00	
9,500.00	90.00	0.87	8,157.00	2,862.50	-1,072.45	2,924.76	0.00	0.00	0.00	
9,600.00	90.00	0.87	8,157.00	2,962.49	-1,070.94	3,024.45	0.00	0.00	0.00	
9,700.00	90.00	0.87	8,157.00	3,062.48	-1,069.42	3,124.15	0.00	0.00	0.00	
9,800.00	90.00	0.87	8,157.00	3,162.46	-1,067.90	3,223.84	0.00	0.00	0.00	
9,900.00	90.00	0.87	8,157.00	3,262.45	-1,066.39	3,323.53	0.00	0.00	0.00	
10,000.00	90.00	0.87	8,157.00	3,362.44	-1,064.87	3,423.22	0.00	0.00	0.00	
10,100.00	90.00	0.87	8,157.00	3,462.43	-1,063.36	3,522.91	0.00	0.00	0.00	
10,200.00	90.00	0.87	8,157.00	3,562.42	-1,061.84	3,622.60	0.00	0.00	0.00	
10,300.00	90.00	0.87	8,157.00	3,662.41	-1,060.33	3,722.29	0.00	0.00	0.00	
10,400.00	90.00	0.87	8,157.00	3,762.40	-1,058.81	3,821.98	0.00	0.00	0.00	
10,500.00	90.00	0.87	8,157.00	3,862.38	-1,057.29	3,921.67	0.00	0.00	0.00	
10,600.00	90.00	0.87	8,157.00	3,962.37	-1,055.78	4,021.36	0.00	0.00	0.00	
10,700.00	90.00	0.87	8,157.00	4,062.36	-1,054.26	4,121.06	0.00	0.00	0.00	
10,800.00	90.00	0.87	8,157.00	4,162.35	-1,052.75	4,220.75	0.00	0.00	0.00	
10,900.00	90.00	0.87	8,157.00	4,262.34	-1,051.23	4,320.44	0.00	0.00	0.00	
11,000.00	90.00	0.87	8,157.00	4,362.33	-1,049.72	4,420.13	0.00	0.00	0.00	
11,100.00	90.00	0.87	8,157.00	4,462.31	-1,048.20	4,519.82	0.00	0.00	0.00	
11,200.00	90.00	0.87	8,157.00	4,562.30	-1,046.68	4,619.51	0.00	0.00	0.00	
11,300.00	90.00	0.87	8,157.00	4,662.29	-1,045.17	4,719.20	0.00	0.00	0.00	
11,400.00	90.00	0.87	8,157.00	4,762.28	-1,043.65	4,818.89	0.00	0.00	0.00	
11,500.00	90.00	0.87	8,157.00	4,862.27	-1,042.14	4,918.58	0.00	0.00	0.00	
11,600.00	90.00	0.87	8,157.00	4,962.26	-1,040.62	5,018.27	0.00	0.00	0.00	
11,700.00	90.00	0.87	8,157.00	5,062.25	-1,039.11	5,117.97	0.00	0.00	0.00	
11,800.00	90.00	0.87	8,157.00	5,162.23	-1,037.59	5,217.66	0.00	0.00	0.00	
11,900.00	90.00	0.87	8,157.00	5,262.22	-1,036.07	5,317.35	0.00	0.00	0.00	
12,000.00	90.00	0.87	8,157.00	5,362.21	-1,034.56	5,417.04	0.00	0.00	0.00	
12,100.00	90.00	0.87	8,157.00	5,462.20	-1,033.04	5,516.73	0.00	0.00	0.00	
12,200.00	90.00	0.87	8,157.00	5,562.19	-1,031.53	5,616.42	0.00	0.00	0.00	
12,300.00	90.00	0.87	8,157.00	5,662.18	-1,030.01	5,716.11	0.00	0.00	0.00	
12,400.00	90.00	0.87	8,157.00	5,762.17	-1,028.50	5,815.80	0.00	0.00	0.00	
12,500.00	90.00	0.87	8,157.00	5,862.15	-1,026.98	5,915.49	0.00	0.00	0.00	
12,600.00	90.00	0.87	8,157.00	5,962.14	-1,025.46	6,015.18	0.00	0.00	0.00	
12,700.00	90.00	0.87	8,157.00	6,062.13	-1,023.95	6,114.88	0.00	0.00	0.00	
12,800.00	90.00	0.87	8,157.00	6,162.12	-1,022.43	6,214.57	0.00	0.00	0.00	
12,900.00	90.00	0.87	8,157.00	6,262.11	-1,020.92	6,314.26	0.00	0.00	0.00	
13,000.00	90.00	0.87	8,157.00	6,362.10	-1,019.40	6,413.95	0.00	0.00	0.00	
13,100.00	90.00	0.87	8,157.00	6,462.08	-1,017.89	6,513.64	0.00	0.00	0.00	
13,200.00	90.00	0.87	8,157.00	6,562.07	-1,016.37	6,613.33	0.00	0.00	0.00	
13,300.00	90.00	0.87	8,157.00	6,662.06	-1,014.85	6,713.02	0.00	0.00	0.00	
13,400.00	90.00	0.87	8,157.00	6,762.05	-1,013.34	6,812.71	0.00	0.00	0.00	
13,500.00	90.00	0.87	8,157.00	6,862.04	-1,011.82	6,912.40	0.00	0.00	0.00	
13,600.00	90.00	0.87	8,157.00	6,962.03	-1,010.31	7,012.09	0.00	0.00	0.00	
13,700.00	90.00	0.87	8,157.00	7,062.02	-1,008.79	7,111.79	0.00	0.00	0.00	
13,800.00	90.00	0.87	8,157.00	7,162.00	-1,007.28	7,211.48	0.00	0.00	0.00	



Database:	Local	Local Co-ordinate Reference:	Well IRWIN6-65 23-11 8HN
Company:	GMT Exploration Company, LLC	TVD Reference:	KB @ 6242.00usft
Project:	Elbert County, CO (NAD 83)	MD Reference:	KB @ 6242.00usft
Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)	
13,900.00	90.00	0.87	8,157.00	7,261.99	-1,005.76	7,311.17	0.00	0.00	0.00	
14,000.00	90.00	0.87	8,157.00	7,361.98	-1,004.24	7,410.86	0.00	0.00	0.00	
14,100.00	90.00	0.87	8,157.00	7,461.97	-1,002.73	7,510.55	0.00	0.00	0.00	
14,200.00	90.00	0.87	8,157.00	7,561.96	-1,001.21	7,610.24	0.00	0.00	0.00	
14,300.00	90.00	0.87	8,157.00	7,661.95	-999.70	7,709.93	0.00	0.00	0.00	
14,400.00	90.00	0.87	8,157.00	7,761.94	-998.18	7,809.62	0.00	0.00	0.00	
14,500.00	90.00	0.87	8,157.00	7,861.92	-996.67	7,909.31	0.00	0.00	0.00	
14,600.00	90.00	0.87	8,157.00	7,961.91	-995.15	8,009.00	0.00	0.00	0.00	
14,700.00	90.00	0.87	8,157.00	8,061.90	-993.63	8,108.70	0.00	0.00	0.00	
14,800.00	90.00	0.87	8,157.00	8,161.89	-992.12	8,208.39	0.00	0.00	0.00	
14,900.00	90.00	0.87	8,157.00	8,261.88	-990.60	8,308.08	0.00	0.00	0.00	
15,000.00	90.00	0.87	8,157.00	8,361.87	-989.09	8,407.77	0.00	0.00	0.00	
15,100.00	90.00	0.87	8,157.00	8,461.86	-987.57	8,507.46	0.00	0.00	0.00	
15,200.00	90.00	0.87	8,157.00	8,561.84	-986.06	8,607.15	0.00	0.00	0.00	
15,300.00	90.00	0.87	8,157.00	8,661.83	-984.54	8,706.84	0.00	0.00	0.00	
15,400.00	90.00	0.87	8,157.00	8,761.82	-983.02	8,806.53	0.00	0.00	0.00	
15,500.00	90.00	0.87	8,157.00	8,861.81	-981.51	8,906.22	0.00	0.00	0.00	
15,600.00	90.00	0.87	8,157.00	8,961.80	-979.99	9,005.91	0.00	0.00	0.00	
15,700.00	90.00	0.87	8,157.00	9,061.79	-978.48	9,105.61	0.00	0.00	0.00	
15,800.00	90.00	0.87	8,157.00	9,161.77	-976.96	9,205.30	0.00	0.00	0.00	
15,900.00	90.00	0.87	8,157.00	9,261.76	-975.45	9,304.99	0.00	0.00	0.00	
16,000.00	90.00	0.87	8,157.00	9,361.75	-973.93	9,404.68	0.00	0.00	0.00	
16,100.00	90.00	0.87	8,157.00	9,461.74	-972.41	9,504.37	0.00	0.00	0.00	
16,200.00	90.00	0.87	8,157.00	9,561.73	-970.90	9,604.06	0.00	0.00	0.00	
16,300.00	90.00	0.87	8,157.00	9,661.72	-969.38	9,703.75	0.00	0.00	0.00	
16,400.00	90.00	0.87	8,157.00	9,761.71	-967.87	9,803.44	0.00	0.00	0.00	
16,500.00	90.00	0.87	8,157.00	9,861.69	-966.35	9,903.13	0.00	0.00	0.00	
16,600.00	90.00	0.87	8,157.00	9,961.68	-964.84	10,002.82	0.00	0.00	0.00	
16,700.00	90.00	0.87	8,157.00	10,061.67	-963.32	10,102.52	0.00	0.00	0.00	
16,800.00	90.00	0.87	8,157.00	10,161.66	-961.80	10,202.21	0.00	0.00	0.00	
16,900.00	90.00	0.87	8,157.00	10,261.65	-960.29	10,301.90	0.00	0.00	0.00	
17,000.00	90.00	0.87	8,157.00	10,361.64	-958.77	10,401.59	0.00	0.00	0.00	
17,100.00	90.00	0.87	8,157.00	10,461.63	-957.26	10,501.28	0.00	0.00	0.00	
17,200.00	90.00	0.87	8,157.00	10,561.61	-955.74	10,600.97	0.00	0.00	0.00	
17,300.00	90.00	0.87	8,157.00	10,661.60	-954.23	10,700.66	0.00	0.00	0.00	
17,400.00	90.00	0.87	8,157.00	10,761.59	-952.71	10,800.35	0.00	0.00	0.00	
17,500.00	90.00	0.87	8,157.00	10,861.58	-951.19	10,900.04	0.00	0.00	0.00	
17,600.00	90.00	0.87	8,157.00	10,961.57	-949.68	10,999.73	0.00	0.00	0.00	
17,700.00	90.00	0.87	8,157.00	11,061.56	-948.16	11,099.42	0.00	0.00	0.00	
17,800.00	90.00	0.87	8,157.00	11,161.55	-946.65	11,199.12	0.00	0.00	0.00	
17,900.00	90.00	0.87	8,157.00	11,261.53	-945.13	11,298.81	0.00	0.00	0.00	
18,000.00	90.00	0.87	8,157.00	11,361.52	-943.62	11,398.50	0.00	0.00	0.00	
18,100.00	90.00	0.87	8,157.00	11,461.51	-942.10	11,498.19	0.00	0.00	0.00	
18,200.00	90.00	0.87	8,157.00	11,561.50	-940.58	11,597.88	0.00	0.00	0.00	
18,300.00	90.00	0.87	8,157.00	11,661.49	-939.07	11,697.57	0.00	0.00	0.00	
18,400.00	90.00	0.87	8,157.00	11,761.48	-937.55	11,797.26	0.00	0.00	0.00	
18,500.00	90.00	0.87	8,157.00	11,861.46	-936.04	11,896.95	0.00	0.00	0.00	
18,600.00	90.00	0.87	8,157.00	11,961.45	-934.52	11,996.64	0.00	0.00	0.00	
18,700.00	90.00	0.87	8,157.00	12,061.44	-933.01	12,096.33	0.00	0.00	0.00	
18,800.00	90.00	0.87	8,157.00	12,161.43	-931.49	12,196.03	0.00	0.00	0.00	
18,900.00	90.00	0.87	8,157.00	12,261.42	-929.97	12,295.72	0.00	0.00	0.00	
19,000.00	90.00	0.87	8,157.00	12,361.41	-928.46	12,395.41	0.00	0.00	0.00	
19,100.00	90.00	0.87	8,157.00	12,461.40	-926.94	12,495.10	0.00	0.00	0.00	
19,200.00	90.00	0.87	8,157.00	12,561.38	-925.43	12,594.79	0.00	0.00	0.00	



Database:	Local	Local Co-ordinate Reference:	Well IRWIN 6-65 23-11 8HN
Company:	GMT Exploration Company, LLC	TVD Reference:	KB @ 6242.00usft
Project:	Elbert County, CO (NAD 83)	MD Reference:	KB @ 6242.00usft
Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)	
19,300.00	90.00	0.87	8,157.00	12,661.37	-923.91	12,694.48	0.00	0.00	0.00	
19,400.00	90.00	0.87	8,157.00	12,761.36	-922.40	12,794.17	0.00	0.00	0.00	
19,500.00	90.00	0.87	8,157.00	12,861.35	-920.88	12,893.86	0.00	0.00	0.00	
19,600.00	90.00	0.87	8,157.00	12,961.34	-919.36	12,993.55	0.00	0.00	0.00	
19,700.00	90.00	0.87	8,157.00	13,061.33	-917.85	13,093.24	0.00	0.00	0.00	
19,800.00	90.00	0.87	8,157.00	13,161.32	-916.33	13,192.94	0.00	0.00	0.00	
19,900.00	90.00	0.87	8,157.00	13,261.30	-914.82	13,292.63	0.00	0.00	0.00	
20,000.00	90.00	0.87	8,157.00	13,361.29	-913.30	13,392.32	0.00	0.00	0.00	
20,100.00	90.00	0.87	8,157.00	13,461.28	-911.79	13,492.01	0.00	0.00	0.00	
20,200.00	90.00	0.87	8,157.00	13,561.27	-910.27	13,591.70	0.00	0.00	0.00	
20,300.00	90.00	0.87	8,157.00	13,661.26	-908.75	13,691.39	0.00	0.00	0.00	
20,400.00	90.00	0.87	8,157.00	13,761.25	-907.24	13,791.08	0.00	0.00	0.00	
20,500.00	90.00	0.87	8,157.00	13,861.24	-905.72	13,890.77	0.00	0.00	0.00	
20,600.00	90.00	0.87	8,157.00	13,961.22	-904.21	13,990.46	0.00	0.00	0.00	
20,700.00	90.00	0.87	8,157.00	14,061.21	-902.69	14,090.15	0.00	0.00	0.00	
20,763.40	90.00	0.87	8,157.00	14,124.61	-901.73	14,153.36	0.00	0.00	0.00	
Hold: 90.00° Inc, 0.87° Azm - LTP-IRWIN 6-65 23-11 8HN										
20,800.00	90.00	0.87	8,157.00	14,161.20	-901.18	14,189.85	0.00	0.00	0.00	
20,813.40	90.00	0.87	8,157.00	14,174.60	-900.97	14,203.20	0.00	0.00	0.00	
TD @ 20813.40' MD/8157.00' TVD - BHL-IRWIN 6-65 23-11 8HN										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
SHL-IRWIN 6-65 23-1 - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,611,774.07	3,246,666.90	39.509838	-104.625731	
KOP-IRWIN 6-65 23-1 - plan hits target center - Point	0.00	0.00	7,584.04	1,547.17	-1,092.39	1,613,310.65	3,245,559.67	39.514086	-104.629603	
LTP-IRWIN 6-65 23-1 - plan hits target center - Point	0.00	0.00	8,157.00	14,124.61	-901.73	1,625,889.34	3,245,629.29	39.548616	-104.628929	
FTP-IRWIN 6-65 23-1 - plan hits target center - Point	0.00	0.00	8,157.00	2,120.06	-1,083.71	1,613,883.60	3,245,562.84	39.515658	-104.629572	
BHL-IRWIN 6-65 23-1 - plan hits target center - Point	0.00	0.00	8,157.00	14,174.60	-900.97	1,625,939.34	3,245,629.56	39.548753	-104.628926	



Database:	Local	Local Co-ordinate Reference:	Well IRWIN6-65 23-11 8HN
Company:	GMT Exploration Company, LLC	TVD Reference:	KB @ 6242.00usft
Project:	Elbert County, CO (NAD 83)	MD Reference:	KB @ 6242.00usft
Site:	Irwin-Taylor Pad	North Reference:	True
Well:	IRWIN 6-65 23-11 8HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
482.12	482.00	Denver			
2,327.07	2,262.00	Upper Arapahoe			
2,410.81	2,342.00	Laramie - Fox Hills			
2,505.03	2,432.00	Pierre Shale (Base of Fox Hills)			
5,865.35	5,642.00	Sussex Sandstone			
8,237.75	7,937.00	Sharon Springs Shale			
8,283.66	7,972.00	Niobrara			
8,297.41	7,982.00	Niobrara A			
8,492.92	8,097.00	Niobrara B Top			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
300.00	300.00	0.00	0.00	Build: 2°/100' @ 300.00' MD
1,160.13	1,147.26	104.69	-73.92	Hold: 17.20° Inc, 324.78° Azm
6,697.35	6,436.78	1,442.48	-1,018.47	Drop: 2°/100' @ 6697.35' MD
7,557.48	7,284.04	1,547.17	-1,092.39	Hold: 0.00° Inc, 0.00° Azm
7,857.48	7,584.04	1,547.17	-1,092.39	KOP: 10°/100' @ 7857.48' MD
8,757.48	8,157.00	2,120.06	-1,083.71	LP: 8757.48' MD, 90.00° Inc, 0.87° Azm
20,763.40	8,157.00	14,124.61	-901.73	Hold: 90.00° Inc, 0.87° Azm
20,813.40	8,157.00	14,174.60	-900.97	TD @ 20813.40' MD/8157.00' TVD