



Project: Mesa County, CO
Site: Bruton 30-03 Pad
Well: Bruton 30-10W
Wellbore: Wellbore #1
Design: Design #1
Latitude: 39.252592
Longitude: -107.814328
Ground Level: 7512.0
well @ 7534.0usft (H&P #290)

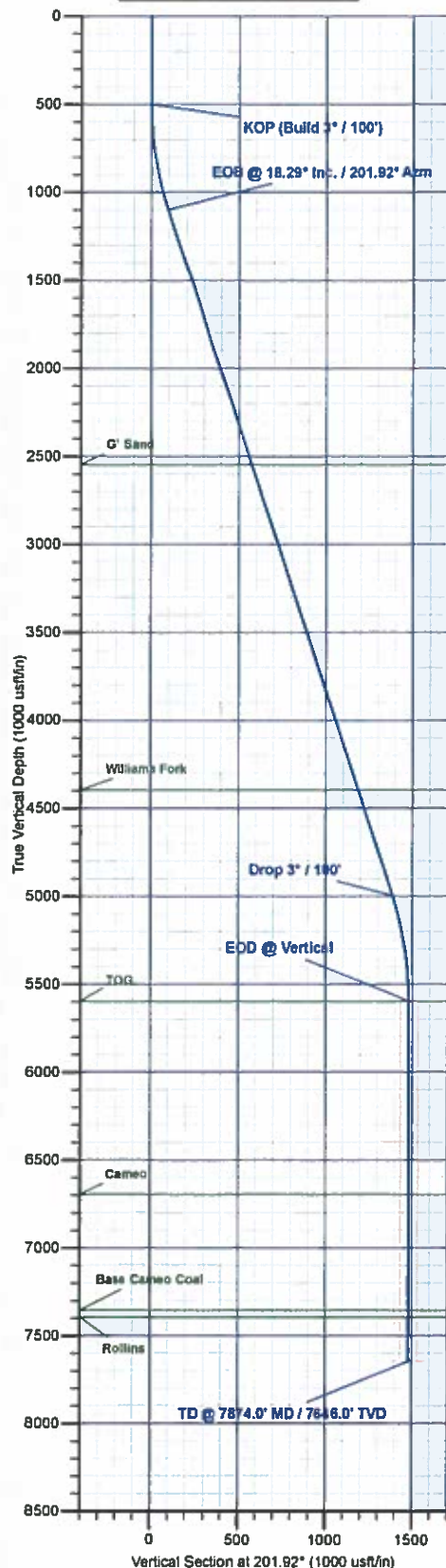


PROJECT DETAILS: Mesa County, CO

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 Bruton 30-10W, True North
Vertical (TVD) Reference: well @ 7534.0usft (H&P #290)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: well @ 7534.0usft (H&P #290)
Calculation Method: Minimum Curvature



WELL DETAILS: Bruton 30-10W

Ground Level: 7512.0
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 1525238.17 2344707.90 39.252592 -107.814328

DESIGN TARGET DETAILS

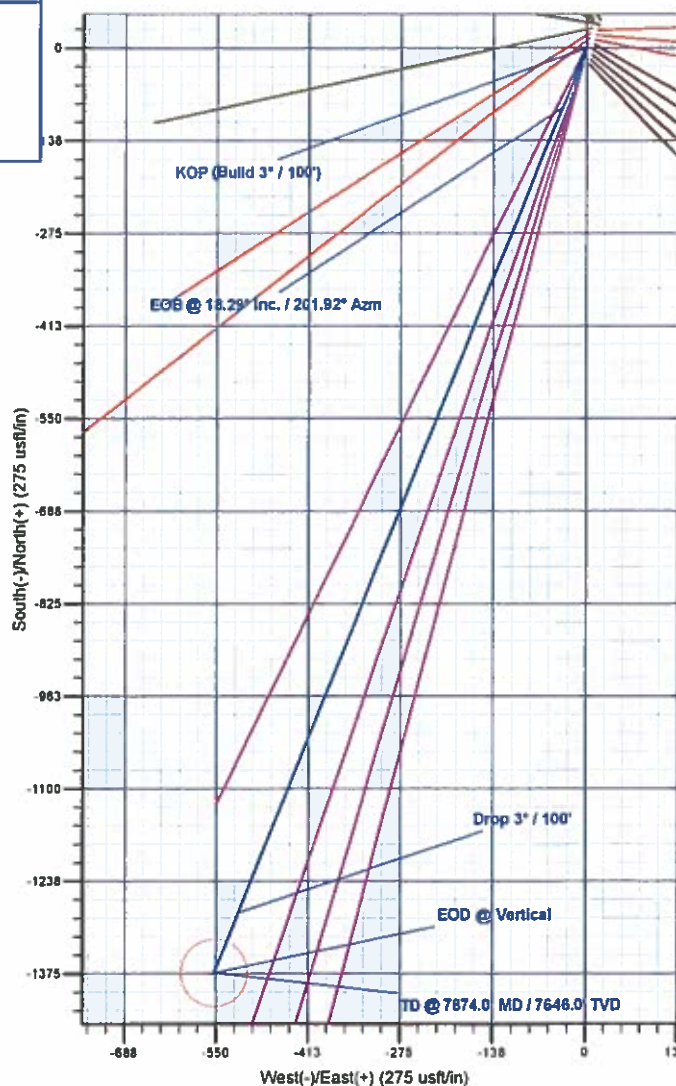
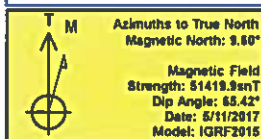
Name TVD +N/-S +E/-W Northing Easting Latitude Longitude
PBHL - Bruton 30-10W 7546.0 -1374.2 -553.1 1523878.53 2344120.91 39.248819 -107.816281

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V5ect	Annotation
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.0	KOP (Build 3° / 100')
1109.7	18.29	201.92	1099.4	-89.5	-36.0	3.00	201.92	96.5	EOB @ 18.29° Inc. / 201.92° Azm
5214.3	18.29	201.92	4996.6	-1284.6	-517.0	0.00	0.00	1384.8	Drop 3° / 100'
5824.0	0.00	0.00	5596.0	-1374.2	-553.1	3.00	180.00	1481.3	EOD @ Vertical
7874.0	0.00	0.00	7646.0	-1374.2	-553.1	0.00	0.00	1481.3	TD @ 7874.0' MD / 7646.0' TVD

FORMATION TOP DETAILS

TVDPth	MDPath	Formation
2546.0	2633.3	G' Sand
4396.0	4581.8	Williams Fork
5596.0	5824.0	TOG
5696.0	5924.0	Cameo
7356.0	7584.0	Base Cameo Coal
7396.0	7624.0	Rollins



Plan: Design #1 (Bruton 30-10W/Wellbore #1)

Created By: Will Jircik Date: 11:57, May 15 2017



Laramie Energy, LLC

Mesa County, CO

Bruton 30-03 Pad

Bruton 30-10W

Wellbore #1

Plan: Design #1

QES Well Planning Report

15 May, 2017





Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-10W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-10W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

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

Site	Bruton 30-03 Pad				
Site Position:		Northing:	1,525,281.27 usft	Latitude:	39.252711
From:	Lat/Long	Easting:	2,344,720.08 usft	Longitude:	-107.814289
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.46 "

Well	Bruton 30-10W					
Well Position	+N/-S	-43.4 usft	Northing:	1,525,238.17 usft	Latitude:	39.252592
	+E/-W	-11.1 usft	Easting:	2,344,707.91 usft	Longitude:	-107.814328
Position Uncertainty		0.0 usft	Wellhead Elevation:	0.0 usft	Ground Level:	7,512.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	5/11/2017	9.60	65.42	51,420

Design	Design #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	201.92	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,109.7	18.29	201.92	1,099.4	-89.5	-36.0	3.00	3.00	0.00	201.92	
5,214.3	18.29	201.92	4,996.6	-1,284.6	-517.0	0.00	0.00	0.00	0.00	
5,824.0	0.00	0.00	5,596.0	-1,374.2	-553.1	3.00	-3.00	0.00	180.00	
7,874.0	0.00	0.00	7,646.0	-1,374.2	-553.1	0.00	0.00	0.00	0.00	PBHL - Bruton 30-10W



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-10W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534 Ousft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534 Ousft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-10W	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)	Buidl Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP (Buidl 3° / 100')									
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	3.00	201.92	600.0	-2.4	-1.0	2.6	3.00	3.00	0.00
700.0	6.00	201.92	699.6	-9.7	-3.9	10.5	3.00	3.00	0.00
800.0	9.00	201.92	798.8	-21.8	-8.8	23.5	3.00	3.00	0.00
900.0	12.00	201.92	897.1	-38.7	-15.6	41.7	3.00	3.00	0.00
1,000.0	15.00	201.92	994.3	-60.4	-24.3	65.1	3.00	3.00	0.00
1,100.0	18.00	201.92	1,090.2	-86.7	-34.9	93.5	3.00	3.00	0.00
EOB @ 18.29° Inc. / 201.92° Azm									
1,109.7	18.29	201.92	1,099.4	-89.5	-36.0	98.5	3.00	3.00	0.00
1,200.0	18.29	201.92	1,185.1	-115.8	-46.6	124.8	0.00	0.00	0.00
1,300.0	18.29	201.92	1,280.1	-144.9	-58.3	156.2	0.00	0.00	0.00
1,400.0	18.29	201.92	1,375.0	-174.0	-70.0	187.6	0.00	0.00	0.00
1,500.0	18.29	201.92	1,470.0	-203.2	-81.8	219.0	0.00	0.00	0.00
8 5/8"									
1,522.0	18.29	201.92	1,490.9	-209.6	-84.3	225.9	0.00	0.00	0.00
1,600.0	18.29	201.92	1,564.9	-232.3	-93.5	250.4	0.00	0.00	0.00
1,700.0	18.29	201.92	1,659.9	-261.4	-105.2	281.8	0.00	0.00	0.00
1,800.0	18.29	201.92	1,754.8	-290.5	-116.9	313.2	0.00	0.00	0.00
1,900.0	18.29	201.92	1,849.8	-319.6	-128.6	344.5	0.00	0.00	0.00
2,000.0	18.29	201.92	1,944.7	-348.7	-140.4	375.9	0.00	0.00	0.00
2,100.0	18.29	201.92	2,039.7	-377.9	-152.1	407.3	0.00	0.00	0.00
2,200.0	18.29	201.92	2,134.6	-407.0	-163.8	438.7	0.00	0.00	0.00
2,300.0	18.29	201.92	2,229.5	-436.1	-175.5	470.1	0.00	0.00	0.00
2,400.0	18.29	201.92	2,324.5	-465.2	-187.2	501.5	0.00	0.00	0.00
2,500.0	18.29	201.92	2,419.4	-494.3	-199.0	532.9	0.00	0.00	0.00
2,600.0	18.29	201.92	2,514.4	-523.4	-210.7	564.3	0.00	0.00	0.00
G' Sand									
2,633.3	18.29	201.92	2,546.0	-533.1	-214.6	574.7	0.00	0.00	0.00
2,700.0	18.29	201.92	2,609.3	-552.6	-222.4	595.6	0.00	0.00	0.00
2,800.0	18.29	201.92	2,704.3	-581.7	-234.1	627.0	0.00	0.00	0.00
2,900.0	18.29	201.92	2,799.2	-610.8	-245.8	658.4	0.00	0.00	0.00
3,000.0	18.29	201.92	2,894.2	-639.9	-257.6	689.8	0.00	0.00	0.00
3,100.0	18.29	201.92	2,989.1	-669.0	-269.3	721.2	0.00	0.00	0.00
3,200.0	18.29	201.92	3,084.1	-698.1	-281.0	752.6	0.00	0.00	0.00
3,300.0	18.29	201.92	3,179.0	-727.3	-292.7	784.0	0.00	0.00	0.00
3,400.0	18.29	201.92	3,274.0	-756.4	-304.4	815.3	0.00	0.00	0.00
3,500.0	18.29	201.92	3,368.9	-785.5	-316.1	846.7	0.00	0.00	0.00
3,600.0	18.29	201.92	3,463.9	-814.6	-327.9	878.1	0.00	0.00	0.00
3,700.0	18.29	201.92	3,558.8	-843.7	-339.6	909.5	0.00	0.00	0.00
3,800.0	18.29	201.92	3,653.7	-872.8	-351.3	940.9	0.00	0.00	0.00
3,900.0	18.29	201.92	3,748.7	-902.0	-363.0	972.3	0.00	0.00	0.00
4,000.0	18.29	201.92	3,843.6	-931.1	-374.7	1,003.7	0.00	0.00	0.00
4,100.0	18.29	201.92	3,938.6	-960.2	-386.5	1,035.1	0.00	0.00	0.00
4,200.0	18.29	201.92	4,033.5	-989.3	-398.2	1,066.4	0.00	0.00	0.00
4,300.0	18.29	201.92	4,128.5	-1,018.4	-409.9	1,097.8	0.00	0.00	0.00
4,400.0	18.29	201.92	4,223.4	-1,047.6	-421.6	1,129.2	0.00	0.00	0.00
4,500.0	18.29	201.92	4,318.4	-1,076.7	-433.3	1,160.6	0.00	0.00	0.00

Williams Fork



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-10W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-10W	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)
4,581.8	18.29	201.92	4,396.0	-1,100.5	-442.9	1,186.3	0.00	0.00	0.00
4,600.0	18.29	201.92	4,413.3	-1,105.8	-445.1	1,192.0	0.00	0.00	0.00
4,700.0	18.29	201.92	4,508.3	-1,134.9	-456.8	1,223.4	0.00	0.00	0.00
4,800.0	18.29	201.92	4,603.2	-1,164.0	-468.5	1,254.8	0.00	0.00	0.00
4,900.0	18.29	201.92	4,698.2	-1,193.1	-480.2	1,286.1	0.00	0.00	0.00
5,000.0	18.29	201.92	4,793.1	-1,222.3	-491.9	1,317.5	0.00	0.00	0.00
5,100.0	18.29	201.92	4,888.1	-1,251.4	-503.6	1,348.9	0.00	0.00	0.00
5,200.0	18.29	201.92	4,983.0	-1,280.5	-515.4	1,380.3	0.00	0.00	0.00
Start Drop -3.00									
5,214.3	18.29	201.92	4,996.6	-1,284.6	-517.0	1,384.8	0.00	0.00	0.00
5,300.0	15.72	201.92	5,078.5	-1,307.9	-526.4	1,409.9	3.00	-3.00	0.00
5,400.0	12.72	201.92	5,175.4	-1,330.7	-535.6	1,434.4	3.00	-3.00	0.00
5,500.0	9.72	201.92	5,273.5	-1,348.7	-542.8	1,453.9	3.00	-3.00	0.00
5,600.0	6.72	201.92	5,372.5	-1,362.0	-548.2	1,468.2	3.00	-3.00	0.00
5,700.0	3.72	201.92	5,472.1	-1,370.4	-551.6	1,477.3	3.00	-3.00	0.00
5,800.0	0.72	201.92	5,572.0	-1,374.0	-553.0	1,481.1	3.00	-3.00	0.00
Start 2050.0 hold at 5824.0 MD - TOG									
5,824.0	0.00	0.00	5,596.0	-1,374.2	-553.1	1,481.3	3.00	-3.00	657.93
5,900.0	0.00	0.00	5,672.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,000.0	0.00	0.00	5,772.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,100.0	0.00	0.00	5,872.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,200.0	0.00	0.00	5,972.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,300.0	0.00	0.00	6,072.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,400.0	0.00	0.00	6,172.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,500.0	0.00	0.00	6,272.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,600.0	0.00	0.00	6,372.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,700.0	0.00	0.00	6,472.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,800.0	0.00	0.00	6,572.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
6,900.0	0.00	0.00	6,672.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
Cameo									
6,924.0	0.00	0.00	6,696.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,000.0	0.00	0.00	6,772.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,100.0	0.00	0.00	6,872.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,200.0	0.00	0.00	6,972.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,300.0	0.00	0.00	7,072.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,400.0	0.00	0.00	7,172.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,500.0	0.00	0.00	7,272.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
Base Cameo Coal									
7,584.0	0.00	0.00	7,356.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,600.0	0.00	0.00	7,372.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
Rollins									
7,624.0	0.00	0.00	7,396.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,700.0	0.00	0.00	7,472.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
7,800.0	0.00	0.00	7,572.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00
TD at 7874.0									
7,874.0	0.00	0.00	7,646.0	-1,374.2	-553.1	1,481.3	0.00	0.00	0.00



Well Planning Report



Database:	EDM5002	Local Co-ordinate Reference:	Well Bruton 30-10W
Company:	Laramie Energy, LLC	TVD Reference:	well @ 7534.0usft (H&P #290)
Project:	Mesa County, CO	MD Reference:	well @ 7534.0usft (H&P #290)
Site:	Bruton 30-03 Pad	North Reference:	True
Well:	Bruton 30-10W	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
PBHL - Bruton 30-10W	0.00	0.00	7,646.0	-1,374.2	-553.1	1,523,878.53	2,344,120.01	39.248819	-107.818281
- plan hits target center									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
1,522.0	1,490.9	8 5/8"	8-5/8	11

Formations						
Measured Depth	Vertical Depth	Name	Lithology	Dip	Dip Direction	
(usft)	(usft)			(°)	(°)	
2,633.3	2,546.0	G' Sand				
4,581.8	4,396.0	Williams Fork				
5,824.0	5,596.0	TOG				
6,924.0	6,696.0	Cameo				
7,584.0	7,356.0	Base Cameo Coal				
7,624.0	7,396.0	Rollins				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates		Comment	
(usft)	(usft)	+N/-S	+E/-W		
(usft)	(usft)	(usft)	(usft)		
500.0	500.0	0.0	0.0	KOP (Build 3' / 100')	
1,109.7	1,099.4	-89.5	-36.0	EOB @ 18.29° Inc. / 201.92° Azm	
5,214.3	4,996.6	-1,284.6	-517.0	Start Drop -3.00	
5,824.0	5,596.0	-1,374.2	-553.1	Start 2050.0 hold at 5824.0 MD	
7,874.0	7,646.0	-1,374.2	-553.1	TD at 7874.0	