

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_RIVERBEND 19-19 PAD

RIVERBEND 13-19

RIVERBEND 13-19

Plan: RIVERBEND 13-19 (wp02)

Standard Planning Report

07 June, 2011



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_RIVERBEND 19-19 PAD
 Well: RIVERBEND 13-19
 Wellbore: RIVERBEND 13-19
 Section:
 SHL: P_RIVERBEND 13-19
 Design: RIVERBEND 13-19 (wp02)
 Latitude: 40.032027
 Longitude: -104.825962
 GL: 4929.00
 KB: 15' RKB + 4929' GL @ 4944.00ft

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
4044.00	4120.94	PK Depth
4685.00	4761.94	SX Depth
7217.00	7293.94	NIO Depth
7564.00	7640.94	CD Depth
7649.00	7725.94	GH Depth



Azimuths to Grid North
 True North: -0.44°
 Magnetic North: 8.75°
 Magnetic Field
 Strength: 53223.1snT
 Dip Angle: 66.84°
 Date: 10/31/2008
 Model: IGRF200510

WELL DETAILS: RIVERBEND 13-19

+N/-S	+E/-W	Northing	Ground Level: Easting	4929.00 Latitude	40.032027 Longitude	Slot
0.00	0.00	1255230.78	3188743.67	40.032027	-104.825962	

CASING DETAILS

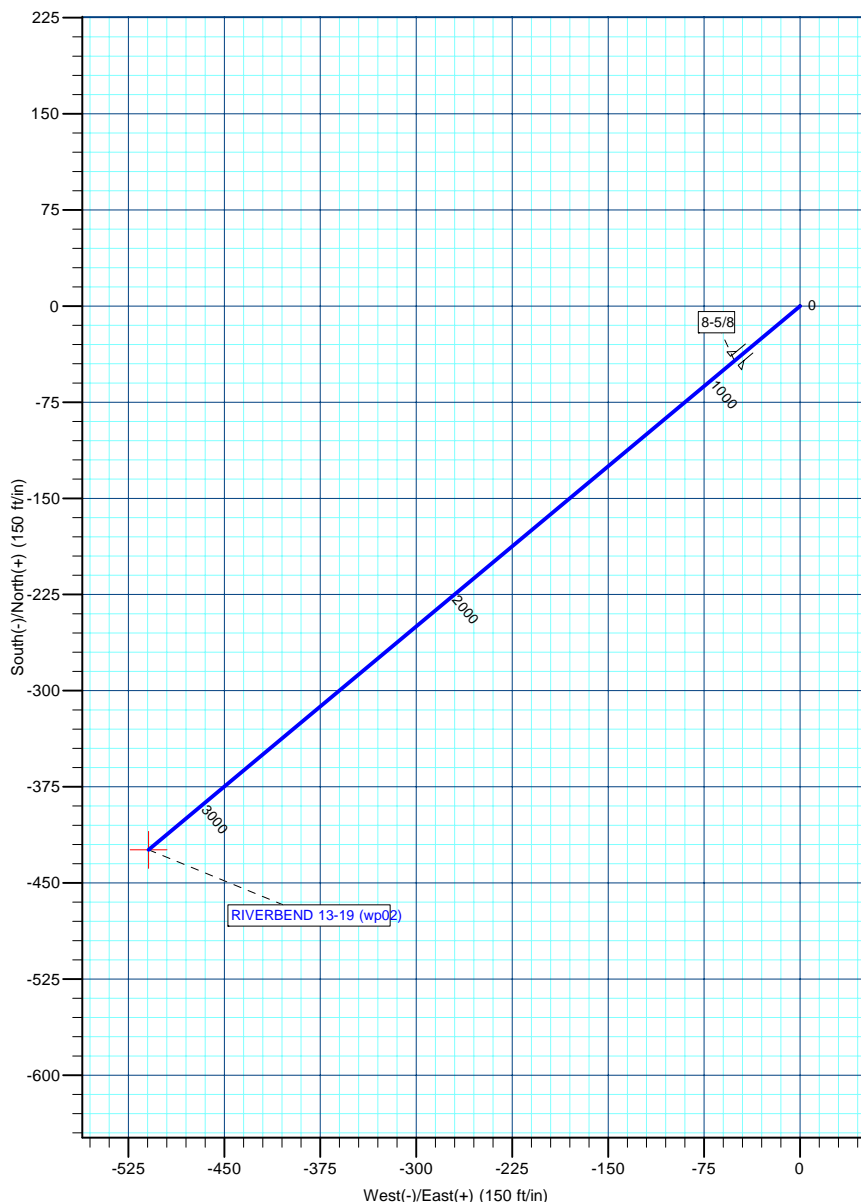
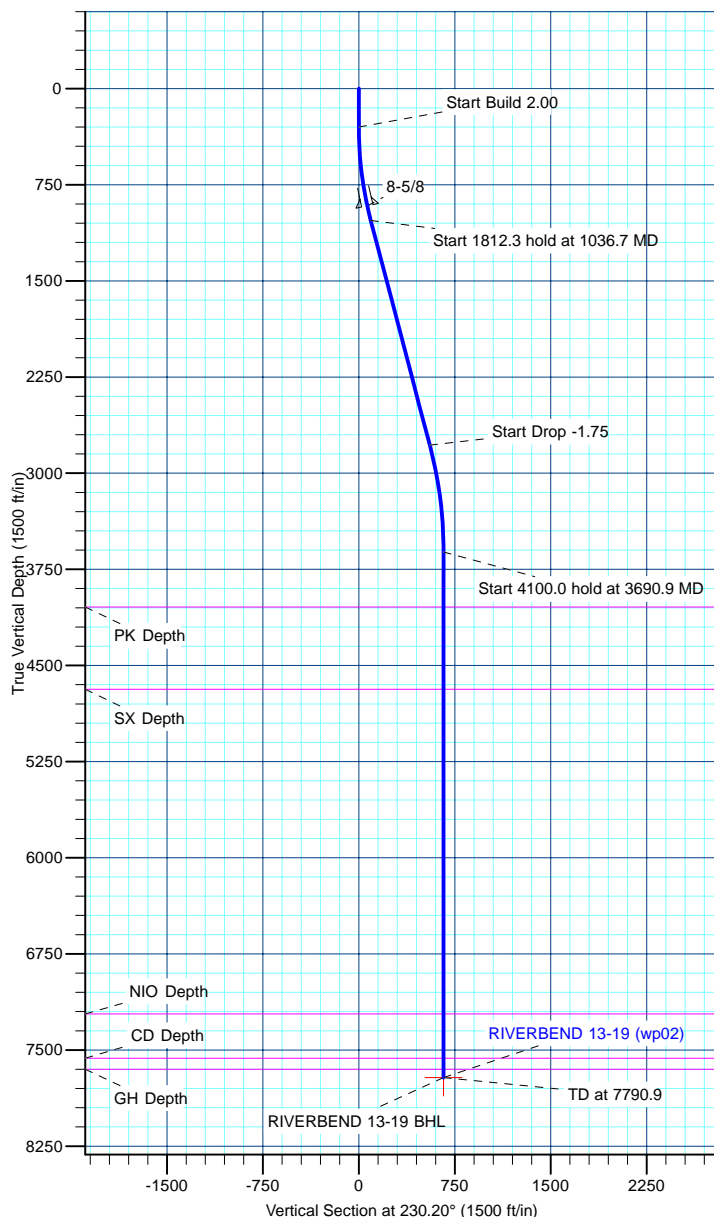
TVD	MD	Name	Size
915.00	919.82	8-5/8	8-5/8

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape Point
RIVERBEND 13-19 BHL	7714.00	-424.24	-509.24	1254806.54	3188234.43	40.030873	-104.827792	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
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
1036.72	14.73	230.20	1028.63	-60.30	-72.38	2.00	230.20	94.21
2848.97	14.73	230.20	2781.29	-355.32	-426.52	0.00	0.00	555.13
3690.94	0.00	0.00	3614.00	-424.24	-509.24	1.75	180.00	662.80
7790.94	0.00	0.00	7714.00	-424.24	-509.24	0.00	0.00	662.80



Database:	edm5000p	Local Co-ordinate Reference:	Well RIVERBEND 13-19
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4929' GL @ 4944.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4929' GL @ 4944.00ft
Site:	WELD_RIVERBEND 19-19 PAD	North Reference:	Grid
Well:	RIVERBEND 13-19	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 13-19		
Design:	RIVERBEND 13-19 (wp02)		

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site						WELD_RIVERBEND 19-19 PAD											
Site Position:						Northing:			1,255,293.55 ft			Latitude:			40.032199		
From:			Lat/Long			Easting:			3,188,756.35 ft			Longitude:			-104.825915		
Position Uncertainty:			0.00 ft			Slot Radius:			0 "			Grid Convergence:			0.44		

Well	RIVERBEND 13-19					
Well Position	+N-S	-62.77 ft	Northing:	1,255,230.78 ft	Latitude:	40.032027
	+E-W	-12.68 ft	Easting:	3,188,743.67 ft	Longitude:	-104.825962
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	4,929.00 ft

Wellbore	RIVERBEND 13-19				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	10/31/2008	9.18	66.84	53,223

Design	RIVERBEND 13-19 (wp02)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	230.20

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	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,036.72	14.73	230.20	1,028.63	-60.30	-72.38	2.00	2.00	0.00	230.20	
2,848.97	14.73	230.20	2,781.29	-355.32	-426.52	0.00	0.00	0.00	0.00	
3,690.94	0.00	0.00	3,614.00	-424.24	-509.24	1.75	-1.75	0.00	180.00	
7,790.94	0.00	0.00	7,714.00	-424.24	-509.24	0.00	0.00	0.00	0.00	RIVERBEND 13-19

Database:	edm5000p	Local Co-ordinate Reference:	Well RIVERBEND 13-19
Company:	US ROCKIES REGION PLANNING	TVD Reference:	15' RKB + 4929' GL @ 4944.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	15' RKB + 4929' GL @ 4944.00ft
Site:	WELD_RIVERBEND 19-19 PAD	North Reference:	Grid
Well:	RIVERBEND 13-19	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 13-19		
Design:	RIVERBEND 13-19 (wp02)		

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)
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
Start Build 2.00									
400.00	2.00	230.20	399.98	-1.12	-1.34	1.75	2.00	2.00	0.00
500.00	4.00	230.20	499.84	-4.47	-5.36	6.98	2.00	2.00	0.00
600.00	6.00	230.20	599.45	-10.05	-12.06	15.69	2.00	2.00	0.00
700.00	8.00	230.20	698.70	-17.85	-21.42	27.88	2.00	2.00	0.00
800.00	10.00	230.20	797.47	-27.86	-33.44	43.52	2.00	2.00	0.00
900.00	12.00	230.20	895.62	-40.07	-48.10	62.60	2.00	2.00	0.00
919.82	12.40	230.20	915.00	-42.75	-51.32	66.79	2.00	2.00	0.00
8-5/8									
1,000.00	14.00	230.20	993.06	-54.47	-65.38	85.10	2.00	2.00	0.00
1,036.72	14.73	230.20	1,028.63	-60.30	-72.38	94.21	2.00	2.00	0.00
Start 1812.3 hold at 1036.7 MD									
1,100.00	14.73	230.20	1,089.83	-70.60	-84.75	110.30	0.00	0.00	0.00
1,200.00	14.73	230.20	1,186.54	-86.88	-104.29	135.74	0.00	0.00	0.00
1,300.00	14.73	230.20	1,283.25	-103.16	-123.83	161.17	0.00	0.00	0.00
1,400.00	14.73	230.20	1,379.96	-119.44	-143.37	186.60	0.00	0.00	0.00
1,500.00	14.73	230.20	1,476.67	-135.72	-162.91	212.04	0.00	0.00	0.00
1,600.00	14.73	230.20	1,573.38	-152.00	-182.45	237.47	0.00	0.00	0.00
1,700.00	14.73	230.20	1,670.09	-168.28	-201.99	262.91	0.00	0.00	0.00
1,800.00	14.73	230.20	1,766.81	-184.56	-221.54	288.34	0.00	0.00	0.00
1,900.00	14.73	230.20	1,863.52	-200.84	-241.08	313.77	0.00	0.00	0.00
2,000.00	14.73	230.20	1,960.23	-217.12	-260.62	339.21	0.00	0.00	0.00
2,100.00	14.73	230.20	2,056.94	-233.40	-280.16	364.64	0.00	0.00	0.00
2,200.00	14.73	230.20	2,153.65	-249.68	-299.70	390.07	0.00	0.00	0.00
2,300.00	14.73	230.20	2,250.36	-265.95	-319.24	415.51	0.00	0.00	0.00
2,400.00	14.73	230.20	2,347.08	-282.23	-338.78	440.94	0.00	0.00	0.00
2,500.00	14.73	230.20	2,443.79	-298.51	-358.32	466.38	0.00	0.00	0.00
2,600.00	14.73	230.20	2,540.50	-314.79	-377.87	491.81	0.00	0.00	0.00
2,700.00	14.73	230.20	2,637.21	-331.07	-397.41	517.24	0.00	0.00	0.00
2,800.00	14.73	230.20	2,733.92	-347.35	-416.95	542.68	0.00	0.00	0.00
2,848.97	14.73	230.20	2,781.29	-355.32	-426.52	555.13	0.00	0.00	0.00
Start Drop -1.75									
2,900.00	13.84	230.20	2,830.73	-363.39	-436.19	567.73	1.75	-1.75	0.00
3,000.00	12.09	230.20	2,928.18	-377.75	-453.43	590.16	1.75	-1.75	0.00
3,100.00	10.34	230.20	3,026.26	-390.20	-468.38	609.61	1.75	-1.75	0.00
3,200.00	8.59	230.20	3,124.90	-400.72	-481.01	626.06	1.75	-1.75	0.00
3,300.00	6.84	230.20	3,223.99	-409.32	-491.33	639.49	1.75	-1.75	0.00
3,400.00	5.09	230.20	3,323.44	-415.97	-499.31	649.88	1.75	-1.75	0.00
3,500.00	3.34	230.20	3,423.17	-420.68	-504.96	657.23	1.75	-1.75	0.00
3,600.00	1.59	230.20	3,523.07	-423.43	-508.27	661.54	1.75	-1.75	0.00
3,690.94	0.00	0.00	3,614.00	-424.24	-509.24	662.80	1.75	-1.75	0.00
Start 4100.0 hold at 3690.9 MD									
3,700.00	0.00	0.00	3,623.06	-424.24	-509.24	662.80	0.00	0.00	0.00
3,800.00	0.00	0.00	3,723.06	-424.24	-509.24	662.80	0.00	0.00	0.00
3,900.00	0.00	0.00	3,823.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,000.00	0.00	0.00	3,923.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,100.00	0.00	0.00	4,023.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,120.94	0.00	0.00	4,044.00	-424.24	-509.24	662.80	0.00	0.00	0.00
PK Depth									

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Site:	WELD_RIVERBEND 19-19 PAD	North Reference:	Grid
Well:	RIVERBEND 13-19	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 13-19		
Design:	RIVERBEND 13-19 (wp02)		

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)
4,200.00	0.00	0.00	4,123.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,300.00	0.00	0.00	4,223.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,400.00	0.00	0.00	4,323.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,500.00	0.00	0.00	4,423.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,600.00	0.00	0.00	4,523.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,700.00	0.00	0.00	4,623.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,761.94	0.00	0.00	4,685.00	-424.24	-509.24	662.80	0.00	0.00	0.00
SX Depth									
4,800.00	0.00	0.00	4,723.06	-424.24	-509.24	662.80	0.00	0.00	0.00
4,900.00	0.00	0.00	4,823.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,000.00	0.00	0.00	4,923.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,100.00	0.00	0.00	5,023.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,200.00	0.00	0.00	5,123.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,300.00	0.00	0.00	5,223.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,400.00	0.00	0.00	5,323.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,500.00	0.00	0.00	5,423.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,600.00	0.00	0.00	5,523.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,700.00	0.00	0.00	5,623.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,800.00	0.00	0.00	5,723.06	-424.24	-509.24	662.80	0.00	0.00	0.00
5,900.00	0.00	0.00	5,823.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,000.00	0.00	0.00	5,923.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,100.00	0.00	0.00	6,023.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,200.00	0.00	0.00	6,123.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,300.00	0.00	0.00	6,223.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,400.00	0.00	0.00	6,323.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,500.00	0.00	0.00	6,423.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,600.00	0.00	0.00	6,523.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,700.00	0.00	0.00	6,623.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,800.00	0.00	0.00	6,723.06	-424.24	-509.24	662.80	0.00	0.00	0.00
6,900.00	0.00	0.00	6,823.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,000.00	0.00	0.00	6,923.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,100.00	0.00	0.00	7,023.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,200.00	0.00	0.00	7,123.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,293.94	0.00	0.00	7,217.00	-424.24	-509.24	662.80	0.00	0.00	0.00
NIO Depth									
7,300.00	0.00	0.00	7,223.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,400.00	0.00	0.00	7,323.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,500.00	0.00	0.00	7,423.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,600.00	0.00	0.00	7,523.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,640.94	0.00	0.00	7,564.00	-424.24	-509.24	662.80	0.00	0.00	0.00
CD Depth									
7,700.00	0.00	0.00	7,623.06	-424.24	-509.24	662.80	0.00	0.00	0.00
7,725.94	0.00	0.00	7,649.00	-424.24	-509.24	662.80	0.00	0.00	0.00
GH Depth									
7,790.94	0.00	0.00	7,714.00	-424.24	-509.24	662.80	0.00	0.00	0.00
TD at 7790.9 - RIVERBEND 13-19 BHL - PBHL_RIVERBEND 13-19									

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Site:	WELD_RIVERBEND 19-19 PAD	North Reference:	Grid
Well:	RIVERBEND 13-19	Survey Calculation Method:	Minimum Curvature
Wellbore:	RIVERBEND 13-19		
Design:	RIVERBEND 13-19 (wp02)		

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
RIVERBEND 13-19 B	0.00	0.00	7,714.00	-424.24	-509.24	1,254,806.54	3,188,234.43	40.030873	-104.827792
- plan hits target center									
- Point									

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(ft)	(ft)		Name	(")	(")
919.82	915.00	8-5/8		8-5/8	11

Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(ft)	(ft)		Name	Lithology	(°)	(°)
4,120.94	4,044.00	PK Depth				
4,761.94	4,685.00	SX Depth				
7,293.94	7,217.00	NIO Depth				
7,640.94	7,564.00	CD Depth				
7,725.94	7,649.00	GH Depth				

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
300.00	300.00	0.00	0.00	Start Build 2.00	
1,036.72	1,028.63	-60.30	-72.38	Start 1812.3 hold at 1036.7 MD	
2,848.97	2,781.29	-355.32	-426.52	Start Drop -1.75	
3,690.94	3,614.00	-424.24	-509.24	Start 4100.0 hold at 3690.9 MD	
7,790.94	7,714.00	-424.24	-509.24	TD at 7790.9	