

Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_MORTON 17-12 PAD
 Well: Morton 17-12
 Wellbore: OH
 Section: SECTION 12 T1N R67W
 SHL:
 Design: Morton 17-12(wp01)
 Latitude: 40° 4' 8.105 N
 Longitude: 104° 50' 10.140 W
 GL: 4905.00
 KB: GL 4905 & KB 15 @ 4920.00ft (ASSUMED)

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3260.00	3273.21	PARKMAN
4590.00	4611.59	SUSSEX
7130.00	7159.95	NIOBRARA
7470.00	7499.95	CODELL



Azimuths to True North
Magnetic North: 8.89°

Magnetic Field
 Strength: 52961.0snT
 Dip Angle: 66.77°
 Date: 05/03/2011
 Model: IGRF2010

WELL DETAILS: Morton 17-12

+N/-S	+E/-W	Northing	Easting	Ground Level: 4905.00 Latitude	Longitude	Slot
0.00	0.00	1268647.40	3185790.28	40° 4' 8.105 N	104° 50' 10.140 W	

CASING DETAILS

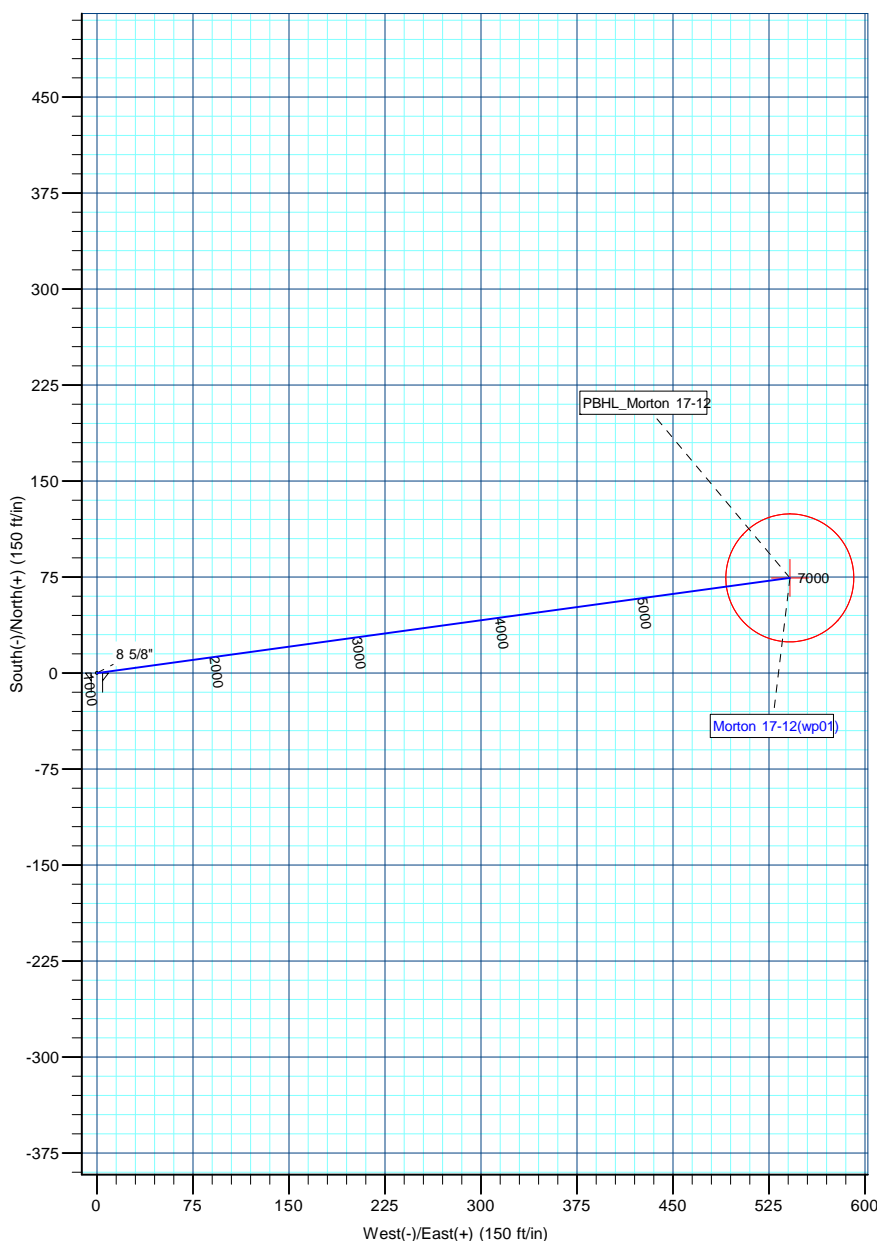
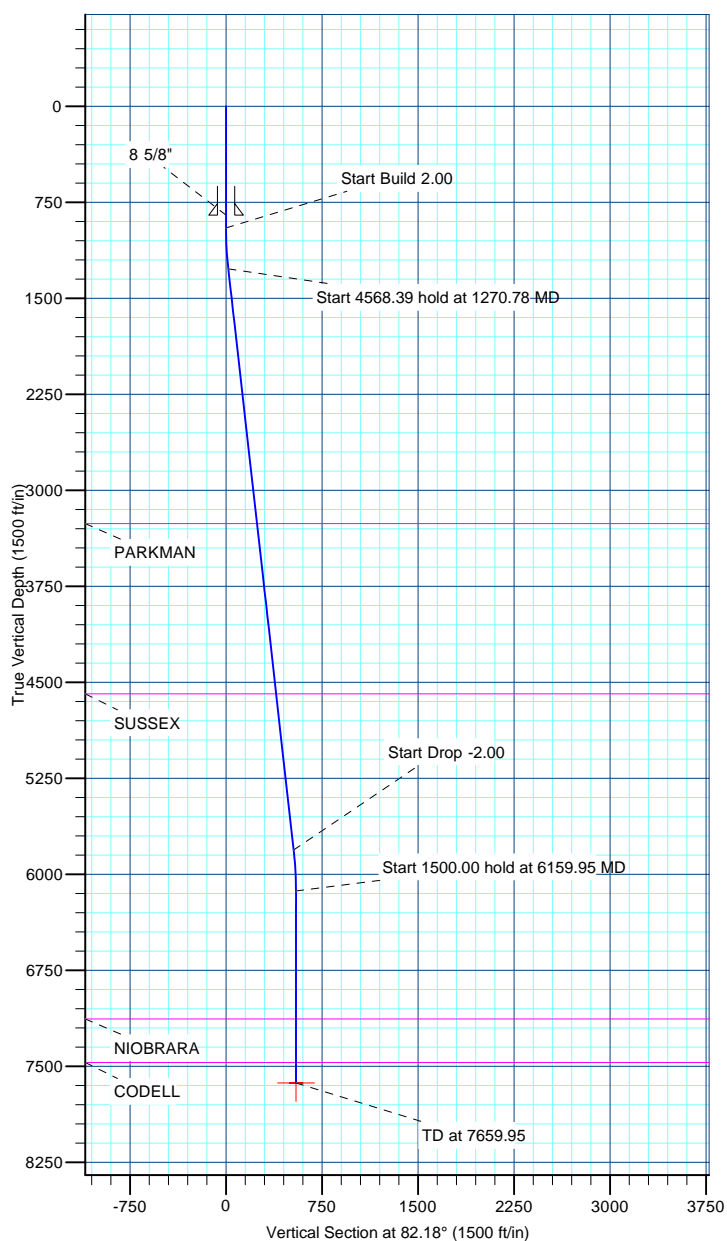
TVD	MD	Name	Size
850.00	850.00	8 5/8"	8.625

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL_Morton 17-12	7630.00	74.32	541.27	1268725.76	3186330.98	40° 4' 8.839 N	104° 50' 3.178 W	Circle (Radius: 50.00)

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
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00
1270.78	6.42	82.18	1270.11	2.44	17.77	2.00	82.18	17.94
5839.17	6.42	82.18	5809.89	71.88	523.50	0.00	0.00	528.41
6159.95	0.00	0.00	6130.00	74.32	541.27	2.00	180.00	546.35
7659.95	0.00	0.00	7630.00	74.32	541.27	0.00	0.00	546.35



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_MORTON 17-12 PAD

Morton 17-12

OH

Plan: Morton 17-12(wp01)

Standard Planning Report

10 May, 2011

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well Morton 17-12
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Site:	WELD_MORTON 17-12 PAD	North Reference:	True
Well:	Morton 17-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Morton 17-12(wp01)		

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	WELD_MORTON 17-12 PAD, SECTION 12 T1N R67W			
Site Position:		Northing:	1,268,647.39 usft	Latitude: 40° 4' 8.105 N
From:	Lat/Long	Easting:	3,185,790.28 usft	Longitude: 104° 50' 10.140 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.43 °

Well	Morton 17-12, 1432 FNL 1760 FEL			
Well Position	+N/-S	0.00 ft	Northing:	1,268,647.39 usft
	+E/-W	0.00 ft	Easting:	3,185,790.28 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,905.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/03/2011	8.89	66.77	52,961

Design	Morton 17-12(wp01)			
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	82.18

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	
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,270.78	6.42	82.18	1,270.11	2.44	17.77	2.00	2.00	0.00	82.18	
5,839.17	6.42	82.18	5,809.89	71.88	523.50	0.00	0.00	0.00	0.00	
6,159.95	0.00	0.00	6,130.00	74.32	541.27	2.00	-2.00	0.00	180.00	
7,659.95	0.00	0.00	7,630.00	74.32	541.27	0.00	0.00	0.00	0.00	PBHL_Morton 17-12

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well Morton 17-12
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Site:	WELD_MORTON 17-12 PAD	North Reference:	True
Well:	Morton 17-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Morton 17-12(wp01)		

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
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
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
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00
8 5/8"									
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,000.00	1.00	82.18	1,000.00	0.06	0.43	0.44	2.00	2.00	0.00
1,100.00	3.00	82.18	1,099.93	0.53	3.89	3.93	2.00	2.00	0.00
1,200.00	5.00	82.18	1,199.68	1.48	10.80	10.90	2.00	2.00	0.00
1,270.78	6.42	82.18	1,270.11	2.44	17.77	17.94	2.00	2.00	0.00
Start 4568.39 hold at 1270.78 MD									
1,300.00	6.42	82.18	1,299.15	2.88	21.01	21.21	0.00	0.00	0.00
1,400.00	6.42	82.18	1,398.52	4.40	32.08	32.38	0.00	0.00	0.00
1,500.00	6.42	82.18	1,497.89	5.92	43.15	43.55	0.00	0.00	0.00
1,600.00	6.42	82.18	1,597.27	7.44	54.22	54.73	0.00	0.00	0.00
1,700.00	6.42	82.18	1,696.64	8.96	65.29	65.90	0.00	0.00	0.00
1,800.00	6.42	82.18	1,796.02	10.48	76.36	77.08	0.00	0.00	0.00
1,900.00	6.42	82.18	1,895.39	12.00	87.43	88.25	0.00	0.00	0.00
2,000.00	6.42	82.18	1,994.76	13.52	98.50	99.42	0.00	0.00	0.00
2,100.00	6.42	82.18	2,094.14	15.04	109.57	110.60	0.00	0.00	0.00
2,200.00	6.42	82.18	2,193.51	16.56	120.64	121.77	0.00	0.00	0.00
2,300.00	6.42	82.18	2,292.88	18.08	131.71	132.94	0.00	0.00	0.00
2,400.00	6.42	82.18	2,392.26	19.60	142.78	144.12	0.00	0.00	0.00
2,500.00	6.42	82.18	2,491.63	21.12	153.85	155.29	0.00	0.00	0.00
2,600.00	6.42	82.18	2,591.01	22.64	164.92	166.47	0.00	0.00	0.00
2,700.00	6.42	82.18	2,690.38	24.16	175.99	177.64	0.00	0.00	0.00
2,800.00	6.42	82.18	2,789.75	25.68	187.06	188.81	0.00	0.00	0.00
2,900.00	6.42	82.18	2,889.13	27.20	198.13	199.99	0.00	0.00	0.00
3,000.00	6.42	82.18	2,988.50	28.72	209.20	211.16	0.00	0.00	0.00
3,100.00	6.42	82.18	3,087.87	30.24	220.27	222.34	0.00	0.00	0.00
3,200.00	6.42	82.18	3,187.25	31.76	231.34	233.51	0.00	0.00	0.00
3,273.21	6.42	82.18	3,260.00	32.88	239.44	241.69	0.00	0.00	0.00
PARKMAN									
3,300.00	6.42	82.18	3,286.62	33.28	242.41	244.68	0.00	0.00	0.00
3,400.00	6.42	82.18	3,386.00	34.80	253.48	255.86	0.00	0.00	0.00
3,500.00	6.42	82.18	3,485.37	36.32	264.55	267.03	0.00	0.00	0.00
3,600.00	6.42	82.18	3,584.74	37.84	275.62	278.20	0.00	0.00	0.00
3,700.00	6.42	82.18	3,684.12	39.36	286.69	289.38	0.00	0.00	0.00
3,800.00	6.42	82.18	3,783.49	40.88	297.76	300.55	0.00	0.00	0.00
3,900.00	6.42	82.18	3,882.87	42.40	308.83	311.73	0.00	0.00	0.00
4,000.00	6.42	82.18	3,982.24	43.92	319.90	322.90	0.00	0.00	0.00
4,100.00	6.42	82.18	4,081.61	45.44	330.97	334.07	0.00	0.00	0.00
4,200.00	6.42	82.18	4,180.99	46.96	342.04	345.25	0.00	0.00	0.00
4,300.00	6.42	82.18	4,280.36	48.48	353.11	356.42	0.00	0.00	0.00
4,400.00	6.42	82.18	4,379.73	50.00	364.18	367.60	0.00	0.00	0.00
4,500.00	6.42	82.18	4,479.11	51.52	375.25	378.77	0.00	0.00	0.00

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Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Site:	WELD_MORTON 17-12 PAD	North Reference:	True
Well:	Morton 17-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Morton 17-12(wp01)		

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)
4,600.00	6.42	82.18	4,578.48	53.04	386.32	389.94	0.00	0.00	0.00
4,611.59	6.42	82.18	4,590.00	53.22	387.60	391.24	0.00	0.00	0.00
SUSSEX									
4,700.00	6.42	82.18	4,677.86	54.56	397.39	401.12	0.00	0.00	0.00
4,800.00	6.42	82.18	4,777.23	56.08	408.46	412.29	0.00	0.00	0.00
4,900.00	6.42	82.18	4,876.60	57.60	419.53	423.47	0.00	0.00	0.00
5,000.00	6.42	82.18	4,975.98	59.12	430.60	434.64	0.00	0.00	0.00
5,100.00	6.42	82.18	5,075.35	60.64	441.67	445.81	0.00	0.00	0.00
5,200.00	6.42	82.18	5,174.72	62.16	452.74	456.99	0.00	0.00	0.00
5,300.00	6.42	82.18	5,274.10	63.68	463.81	468.16	0.00	0.00	0.00
5,400.00	6.42	82.18	5,373.47	65.20	474.88	479.33	0.00	0.00	0.00
5,500.00	6.42	82.18	5,472.85	66.72	485.95	490.51	0.00	0.00	0.00
5,600.00	6.42	82.18	5,572.22	68.24	497.02	501.68	0.00	0.00	0.00
5,700.00	6.42	82.18	5,671.59	69.76	508.09	512.86	0.00	0.00	0.00
5,800.00	6.42	82.18	5,770.97	71.28	519.16	524.03	0.00	0.00	0.00
5,839.17	6.42	82.18	5,809.89	71.88	523.50	528.41	0.00	0.00	0.00
Start Drop -2.00									
5,900.00	5.20	82.18	5,870.41	72.72	529.59	534.56	2.00	-2.00	0.00
6,000.00	3.20	82.18	5,970.13	73.71	536.85	541.88	2.00	-2.00	0.00
6,100.00	1.20	82.18	6,070.06	74.23	540.65	545.72	2.00	-2.00	0.00
6,159.95	0.00	0.00	6,130.00	74.32	541.27	546.35	2.00	-2.00	0.00
Start 1500.00 hold at 6159.95 MD									
6,200.00	0.00	0.00	6,170.05	74.32	541.27	546.35	0.00	0.00	0.00
6,300.00	0.00	0.00	6,270.05	74.32	541.27	546.35	0.00	0.00	0.00
6,400.00	0.00	0.00	6,370.05	74.32	541.27	546.35	0.00	0.00	0.00
6,500.00	0.00	0.00	6,470.05	74.32	541.27	546.35	0.00	0.00	0.00
6,600.00	0.00	0.00	6,570.05	74.32	541.27	546.35	0.00	0.00	0.00
6,700.00	0.00	0.00	6,670.05	74.32	541.27	546.35	0.00	0.00	0.00
6,800.00	0.00	0.00	6,770.05	74.32	541.27	546.35	0.00	0.00	0.00
6,900.00	0.00	0.00	6,870.05	74.32	541.27	546.35	0.00	0.00	0.00
7,000.00	0.00	0.00	6,970.05	74.32	541.27	546.35	0.00	0.00	0.00
7,100.00	0.00	0.00	7,070.05	74.32	541.27	546.35	0.00	0.00	0.00
7,159.95	0.00	0.00	7,130.00	74.32	541.27	546.35	0.00	0.00	0.00
NIORARA									
7,200.00	0.00	0.00	7,170.05	74.32	541.27	546.35	0.00	0.00	0.00
7,300.00	0.00	0.00	7,270.05	74.32	541.27	546.35	0.00	0.00	0.00
7,400.00	0.00	0.00	7,370.05	74.32	541.27	546.35	0.00	0.00	0.00
7,499.95	0.00	0.00	7,470.00	74.32	541.27	546.35	0.00	0.00	0.00
CODELL									
7,500.00	0.00	0.00	7,470.05	74.32	541.27	546.35	0.00	0.00	0.00
7,600.00	0.00	0.00	7,570.05	74.32	541.27	546.35	0.00	0.00	0.00
7,659.95	0.00	0.00	7,630.00	74.32	541.27	546.35	0.00	0.00	0.00
PBHL_Morton 17-12									

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well Morton 17-12
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4905 & KB 15 @ 4920.00ft (ASSUMED)
Site:	WELD_MORTON 17-12 PAD	North Reference:	True
Well:	Morton 17-12	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Morton 17-12(wp01)		

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_Morton 17-12	0.00	0.43	7,630.00	74.32	541.27	1,268,725.76	3,186,330.98	40° 4' 8.839 N	104° 50' 3.178 W
- plan hits target center									
- Circle (radius 50.00)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
850.00	850.00	8 5/8"	8.625	11.000	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,273.21	3,260.00	PARKMAN				
4,611.59	4,590.00	SUSSEX				
7,159.95	7,130.00	NIOBRARA				
7,499.95	7,470.00	CODELL				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
950.00	950.00	0.00	0.00	Start Build 2.00	
1,270.78	1,270.11	2.44	17.77	Start 4568.39 hold at 1270.78 MD	
5,839.17	5,809.89	71.88	523.50	Start Drop -2.00	
6,159.95	6,130.00	74.32	541.27	Start 1500.00 hold at 6159.95 MD	
7,659.95	7,630.00	74.32	541.27	TD at 7659.95	