

# **MALLARD EXPLORATION**

**WELD COUNTY**

**SEC 22-T8N-R60W**

**BLUE TEAL FED 15-3-5HN**

**ORIGINAL WELLBORE**

**Plan: PROPOSAL 1**

## **Standard Planning Report**

**09 September, 2020**



Project: WELD COUNTY  
Site: SEC 22-T8N-R60W  
Well: BLUE TEAL FED 15-3-5HN  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL 1

PROJECT DETAILS: WELD COUNTY

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



Azimuths to True North  
Magnetic North: 7.60°  
Magnetic Field  
Strength: 52254.6nT  
Dip Angle: 66.99°  
Date: 7/6/2020  
Model: IGRF2020

WELL DETAILS: BLUE TEAL FED 15-3-5HN

+N/-S	+E/-W	Northing	Easting	4892.00	Latitude	Longitude	Slot
0.00	0.00	1484206.81	3395176.12		40.653831°N	104.075714°W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	
3	922.40	8.45	285.75	920.87	8.44	-29.92	2.00	285.75	9.74	
4	5760.04	8.45	285.75	5706.02	201.40	-713.93	0.00	0.00	232.53	
5	6638.66	90.00	1.05	6252.00	775.30	-781.88	10.00	75.45	808.86	BT FED 5HN - LP
6	18658.22	90.00	1.05	6252.00	12792.84	-561.86	0.00	0.00	12805.17	BT FED 5HN - PBHL

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
440.00	440.00	Fox Hills Base
1443.00	1450.26	Pierre Shale Top
3301.00	3328.64	Richard Sandstone
3416.00	3444.90	Parkman Sandstone
4192.00	4229.41	Sussex Sandstone
4630.00	4672.22	Shannon Sandstone
5393.00	5443.59	TeePee Buttes
6068.00	6163.64	Sharon Springs
6108.00	6221.19	Niobrara Top
6244.00	6542.31	Niobrara B2 Chalk Target Top
6252.00	6638.66	Niobrara B2 Chalk Target Center

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	Start Build 2.00
922.40	8.45	285.75	920.87	8.44	-29.92	9.74	31.08	Start 4837.63 hold at 922.40 MD
5760.04	8.45	285.75	5706.02	201.40	-713.93	232.53	741.80	Start DLS 10.00 TFO 75.45
6638.66	90.00	1.05	6252.00	775.30	-781.88	808.86	1328.43	Start 12019.56 hold at 6638.66 MD
18658.22	90.00	1.05	6252.00	12792.84	-561.86	12805.17	13347.98	TD at 18658.22

DESIGN TARGET DETAILS

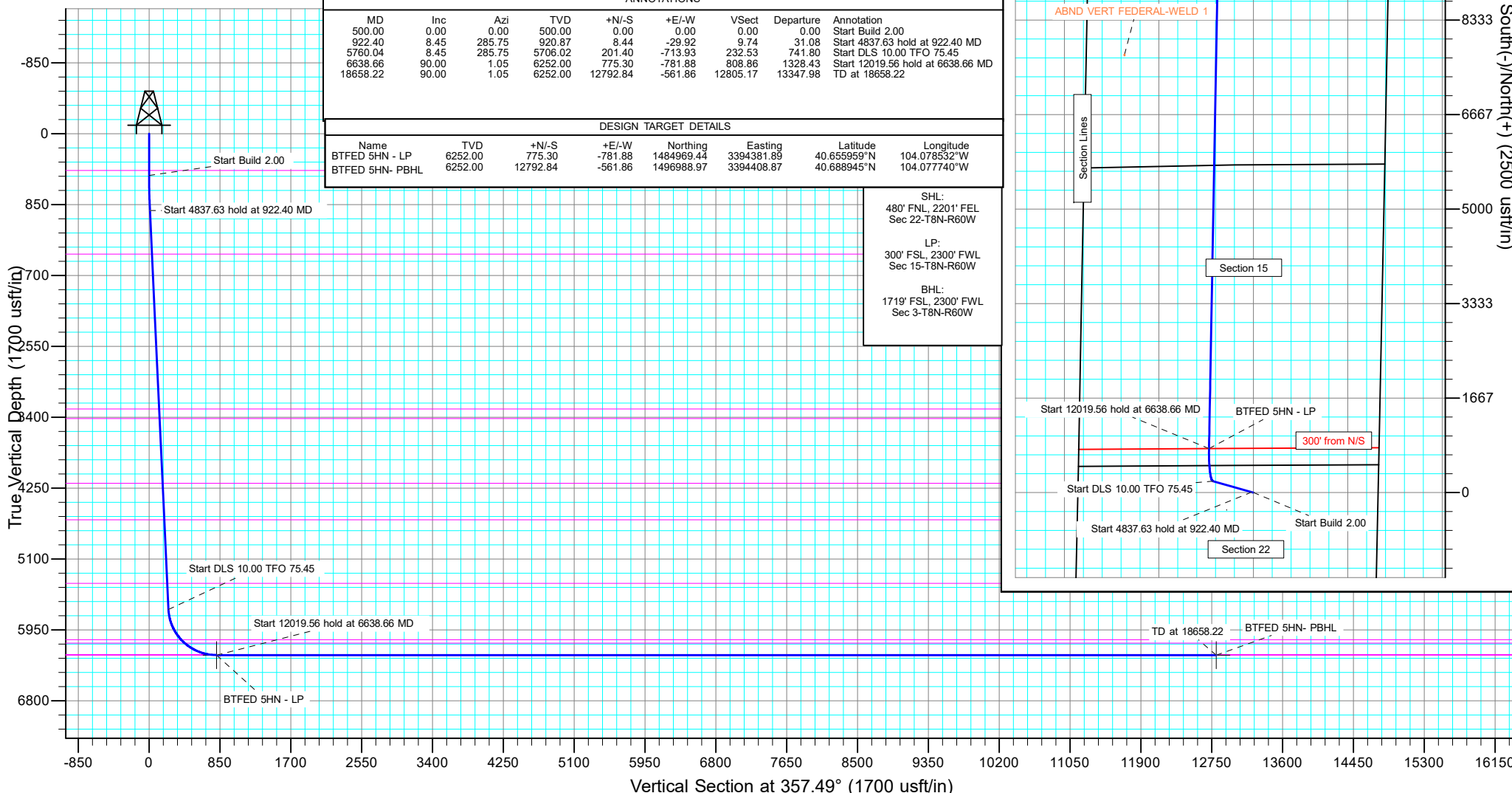
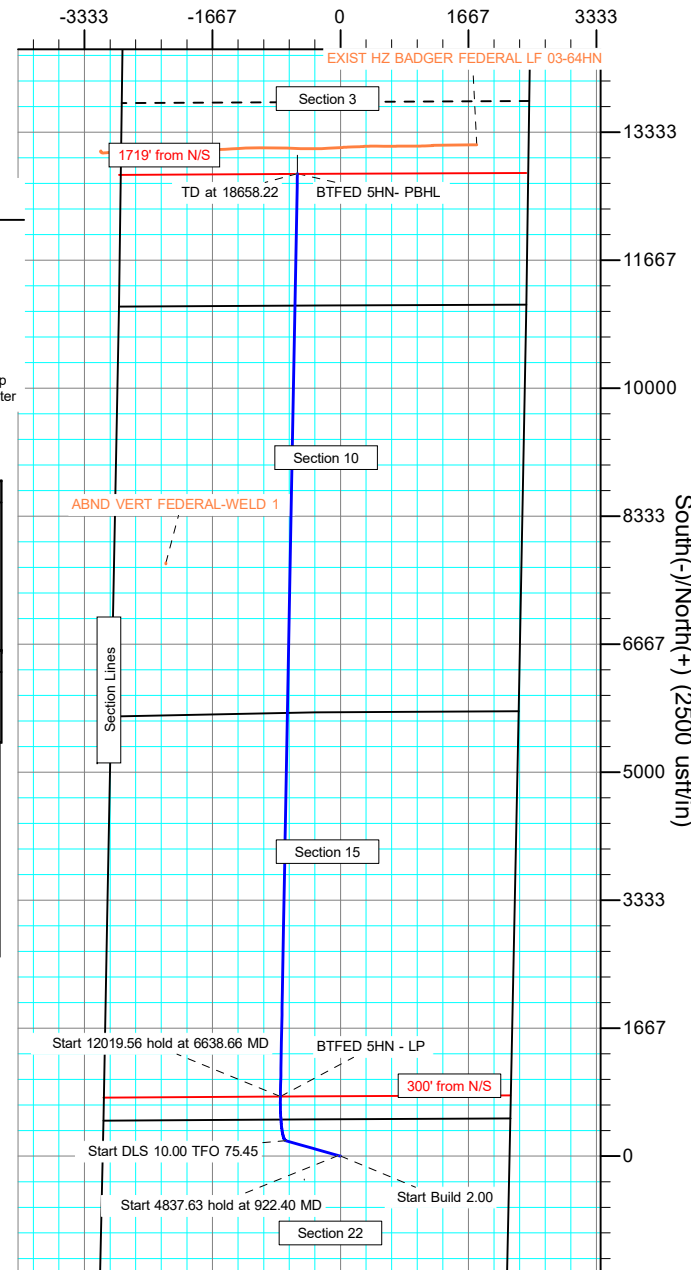
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
BT FED 5HN - LP	6252.00	775.30	-781.88	1484969.44	3394381.89	40.655959°N	104.078532°W
BT FED 5HN - PBHL	6252.00	12792.84	-561.86	1496988.97	3394408.87	40.688945°N	104.077740°W

SHL:  
480' FNL, 2201' FEL  
Sec 22-T8N-R60W

LP:  
300' FSL, 2300' FWL  
Sec 15-T8N-R60W

BHL:  
1719' FSL, 2300' FWL  
Sec 3-T8N-R60W

West(-)/East(+) (2500 usft/in)



## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

<b>Project</b>	WELD COUNTY		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		SEC 22-T8N-R60W				
Site Position:		Northing:	1,488,376.93	usft	Latitude:	40.665181°N
From:	Lat/Long	Easting:	3,397,319.63	usft	Longitude:	104.067747°W
Position Uncertainty:		0.00	usft	Slot Radius:	13.200	in

Well		BLUE TEAL FED 15-3-5HN				
Well Position	+N/-S	0.00 usft	Northing:	1,484,206.81 usft	Latitude:	40.653831°N
	+E/-W	0.00 usft	Easting:	3,395,176.12 usft	Longitude:	104.075714°W
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,892.00 usft
Grid Convergence:		0.92 °				

<b>Wellbore</b>	ORIGINAL WELLBORE				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2020	7/6/2020	7.60	66.99	52,254.55621067

<b>Design</b>	PROPOSAL 1				
<b>Audit Notes:</b>					
<b>Version:</b>		<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>		<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>
		0.00	0.00	0.00	357.49

<b>Plan Survey Tool Program</b>	<b>Date</b>	9/9/2020			
<b>Depth From (usft)</b>	<b>Depth To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Remarks</b>	
1	0.00	18,658.22	PROPOSAL 1 (ORIGINAL WELL	MWD	
			OWSG MWD - Standard		

<b>Plan Sections</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	<b>TFO (°)</b>	<b>Target</b>
0.00	0.00	0.00	0.00	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	
922.40	8.45	285.75	920.87	8.44	-29.92	2.00	2.00	0.00	285.75	
5,760.04	8.45	285.75	5,706.02	201.40	-713.93	0.00	0.00	0.00	0.00	
6,638.66	90.00	1.05	6,252.00	775.30	-781.88	10.00	9.28	8.57	75.45	BT FED 5HN - LP
18,658.22	90.00	1.05	6,252.00	12,792.84	-561.86	0.00	0.00	0.00	0.00	BT FED 5HN- PBHL

# Planning Report

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<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	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
440.00	0.00	0.00	440.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
600.00	2.00	285.75	599.98	0.47	-1.68	0.55	2.00	2.00	0.00
700.00	4.00	285.75	699.84	1.89	-6.72	2.19	2.00	2.00	0.00
800.00	6.00	285.75	799.45	4.26	-15.10	4.92	2.00	2.00	0.00
900.00	8.00	285.75	898.70	7.57	-26.83	8.74	2.00	2.00	0.00
922.40	8.45	285.75	920.87	8.44	-29.92	9.74	2.00	2.00	0.00
Start 4837.63 hold at 922.40 MD									
1,000.00	8.45	285.75	997.63	11.53	-40.89	13.32	0.00	0.00	0.00
1,100.00	8.45	285.75	1,096.54	15.52	-55.03	17.92	0.00	0.00	0.00
1,200.00	8.45	285.75	1,195.46	19.51	-69.17	22.53	0.00	0.00	0.00
1,300.00	8.45	285.75	1,294.37	23.50	-83.31	27.13	0.00	0.00	0.00
1,400.00	8.45	285.75	1,393.29	27.49	-97.45	31.74	0.00	0.00	0.00
1,450.26	8.45	285.75	1,443.00	29.49	-104.55	34.05	0.00	0.00	0.00
Pierre Shale Top									
1,500.00	8.45	285.75	1,492.20	31.48	-111.59	36.34	0.00	0.00	0.00
1,600.00	8.45	285.75	1,591.12	35.47	-125.73	40.95	0.00	0.00	0.00
1,700.00	8.45	285.75	1,690.03	39.46	-139.87	45.55	0.00	0.00	0.00
1,800.00	8.45	285.75	1,788.95	43.44	-154.00	50.16	0.00	0.00	0.00
1,900.00	8.45	285.75	1,887.86	47.43	-168.14	54.76	0.00	0.00	0.00
2,000.00	8.45	285.75	1,986.78	51.42	-182.28	59.37	0.00	0.00	0.00
2,100.00	8.45	285.75	2,085.69	55.41	-196.42	63.98	0.00	0.00	0.00
2,200.00	8.45	285.75	2,184.61	59.40	-210.56	68.58	0.00	0.00	0.00
2,300.00	8.45	285.75	2,283.52	63.39	-224.70	73.19	0.00	0.00	0.00
2,400.00	8.45	285.75	2,382.44	67.38	-238.84	77.79	0.00	0.00	0.00
2,500.00	8.45	285.75	2,481.35	71.36	-252.98	82.40	0.00	0.00	0.00
2,600.00	8.45	285.75	2,580.27	75.35	-267.12	87.00	0.00	0.00	0.00
2,700.00	8.45	285.75	2,679.18	79.34	-281.26	91.61	0.00	0.00	0.00
2,800.00	8.45	285.75	2,778.10	83.33	-295.40	96.21	0.00	0.00	0.00
2,900.00	8.45	285.75	2,877.01	87.32	-309.54	100.82	0.00	0.00	0.00
3,000.00	8.45	285.75	2,975.93	91.31	-323.68	105.42	0.00	0.00	0.00
3,100.00	8.45	285.75	3,074.84	95.30	-337.82	110.03	0.00	0.00	0.00
3,200.00	8.45	285.75	3,173.76	99.29	-351.96	114.63	0.00	0.00	0.00
3,300.00	8.45	285.75	3,272.67	103.27	-366.10	119.24	0.00	0.00	0.00
3,328.64	8.45	285.75	3,301.00	104.42	-370.15	120.56	0.00	0.00	0.00
Richard Sandstone									
3,400.00	8.45	285.75	3,371.59	107.26	-380.24	123.84	0.00	0.00	0.00
3,444.90	8.45	285.75	3,416.00	109.05	-386.58	125.91	0.00	0.00	0.00
Parkman Sandstone									
3,500.00	8.45	285.75	3,470.50	111.25	-394.38	128.45	0.00	0.00	0.00
3,600.00	8.45	285.75	3,569.42	115.24	-408.52	133.05	0.00	0.00	0.00
3,700.00	8.45	285.75	3,668.33	119.23	-422.65	137.66	0.00	0.00	0.00
3,800.00	8.45	285.75	3,767.25	123.22	-436.79	142.26	0.00	0.00	0.00
3,900.00	8.45	285.75	3,866.16	127.21	-450.93	146.87	0.00	0.00	0.00
4,000.00	8.45	285.75	3,965.08	131.20	-465.07	151.48	0.00	0.00	0.00
4,100.00	8.45	285.75	4,063.99	135.18	-479.21	156.08	0.00	0.00	0.00

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<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,200.00	8.45	285.75	4,162.91	139.17	-493.35	160.69	0.00	0.00	0.00	
4,229.41	8.45	285.75	4,192.00	140.35	-497.51	162.04	0.00	0.00	0.00	
<b>Sussex Sandstone</b>										
4,300.00	8.45	285.75	4,261.82	143.16	-507.49	165.29	0.00	0.00	0.00	
4,400.00	8.45	285.75	4,360.74	147.15	-521.63	169.90	0.00	0.00	0.00	
4,500.00	8.45	285.75	4,459.65	151.14	-535.77	174.50	0.00	0.00	0.00	
4,600.00	8.45	285.75	4,558.57	155.13	-549.91	179.11	0.00	0.00	0.00	
4,672.22	8.45	285.75	4,630.00	158.01	-560.12	182.43	0.00	0.00	0.00	
<b>Shannon Sandstone</b>										
4,700.00	8.45	285.75	4,657.48	159.12	-564.05	183.71	0.00	0.00	0.00	
4,800.00	8.45	285.75	4,756.40	163.10	-578.19	188.32	0.00	0.00	0.00	
4,900.00	8.45	285.75	4,855.31	167.09	-592.33	192.92	0.00	0.00	0.00	
5,000.00	8.45	285.75	4,954.23	171.08	-606.47	197.53	0.00	0.00	0.00	
5,100.00	8.45	285.75	5,053.14	175.07	-620.61	202.13	0.00	0.00	0.00	
5,200.00	8.45	285.75	5,152.06	179.06	-634.75	206.74	0.00	0.00	0.00	
5,300.00	8.45	285.75	5,250.97	183.05	-648.89	211.34	0.00	0.00	0.00	
5,400.00	8.45	285.75	5,349.89	187.04	-663.03	215.95	0.00	0.00	0.00	
5,443.59	8.45	285.75	5,393.00	188.78	-669.19	217.96	0.00	0.00	0.00	
<b>TeePee Buttes</b>										
5,500.00	8.45	285.75	5,448.80	191.03	-677.17	220.55	0.00	0.00	0.00	
5,600.00	8.45	285.75	5,547.72	195.01	-691.30	225.16	0.00	0.00	0.00	
5,700.00	8.45	285.75	5,646.63	199.00	-705.44	229.76	0.00	0.00	0.00	
5,760.04	8.45	285.75	5,706.02	201.40	-713.93	232.53	0.00	0.00	0.00	
<b>Start DLS 10.00 TFO 75.45</b>										
5,800.00	10.21	308.13	5,745.46	204.38	-719.55	235.76	10.00	4.40	55.98	
5,850.00	13.78	325.20	5,794.38	212.01	-726.43	243.68	10.00	7.15	34.14	
5,900.00	18.04	334.87	5,842.46	223.92	-733.13	255.87	10.00	8.51	19.34	
5,950.00	22.59	340.85	5,889.34	240.01	-739.57	272.23	10.00	9.11	11.96	
6,000.00	27.30	344.89	5,934.67	260.16	-745.71	292.63	10.00	9.41	8.07	
6,050.00	32.08	347.80	5,978.10	284.23	-751.51	316.93	10.00	9.58	5.83	
6,100.00	36.92	350.03	6,019.29	312.02	-756.92	344.93	10.00	9.68	4.45	
6,150.00	41.80	351.80	6,057.94	343.32	-761.90	376.42	10.00	9.74	3.55	
6,163.64	43.13	352.23	6,068.00	352.44	-763.18	385.59	10.00	9.78	3.12	
<b>Sharon Springs</b>										
6,200.00	46.69	353.27	6,093.75	377.90	-766.41	411.16	10.00	9.79	2.86	
6,221.19	48.77	353.82	6,108.00	393.48	-768.18	426.81	10.00	9.81	2.60	
<b>Niobrara Top</b>										
6,250.00	51.60	354.51	6,126.44	415.49	-770.42	448.90	10.00	9.83	2.41	
6,300.00	56.52	355.60	6,155.78	455.81	-773.90	489.33	10.00	9.84	2.17	
6,350.00	61.45	356.57	6,181.53	498.55	-776.82	532.16	10.00	9.86	1.94	
6,400.00	66.39	357.45	6,203.51	543.39	-779.16	577.05	10.00	9.87	1.76	
6,450.00	71.33	358.27	6,221.53	589.98	-780.89	623.67	10.00	9.88	1.64	
6,500.00	76.28	359.04	6,235.47	637.96	-782.02	671.66	10.00	9.89	1.54	
6,542.31	80.46	359.67	6,244.00	679.39	-782.48	713.07	10.00	9.89	1.48	
<b>Niobrara B2 Chalk Target Top</b>										
6,550.00	81.22	359.78	6,245.22	686.98	-782.52	720.66	10.00	9.90	1.46	
6,600.00	86.17	0.50	6,250.71	736.67	-782.40	770.29	10.00	9.90	1.44	
6,638.66	90.00	1.05	6,252.00	775.30	-781.88	808.86	10.00	9.90	1.42	
<b>Start 12019.56 hold at 6638.66 MD - Niobrara B2 Chalk Target Center</b>										
6,700.00	90.00	1.05	6,252.00	836.62	-780.76	870.07	0.00	0.00	0.00	
6,800.00	90.00	1.05	6,252.00	936.61	-778.93	969.88	0.00	0.00	0.00	
6,900.00	90.00	1.05	6,252.00	1,036.59	-777.10	1,069.69	0.00	0.00	0.00	
7,000.00	90.00	1.05	6,252.00	1,136.57	-775.27	1,169.49	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,100.00	90.00	1.05	6,252.00	1,236.56	-773.44	1,269.30	0.00	0.00	0.00	
7,200.00	90.00	1.05	6,252.00	1,336.54	-771.61	1,369.11	0.00	0.00	0.00	
7,300.00	90.00	1.05	6,252.00	1,436.52	-769.78	1,468.91	0.00	0.00	0.00	
7,400.00	90.00	1.05	6,252.00	1,536.51	-767.95	1,568.72	0.00	0.00	0.00	
7,500.00	90.00	1.05	6,252.00	1,636.49	-766.12	1,668.53	0.00	0.00	0.00	
7,600.00	90.00	1.05	6,252.00	1,736.47	-764.29	1,768.33	0.00	0.00	0.00	
7,700.00	90.00	1.05	6,252.00	1,836.46	-762.46	1,868.14	0.00	0.00	0.00	
7,800.00	90.00	1.05	6,252.00	1,936.44	-760.63	1,967.95	0.00	0.00	0.00	
7,900.00	90.00	1.05	6,252.00	2,036.42	-758.80	2,067.75	0.00	0.00	0.00	
8,000.00	90.00	1.05	6,252.00	2,136.41	-756.97	2,167.56	0.00	0.00	0.00	
8,100.00	90.00	1.05	6,252.00	2,236.39	-755.14	2,267.37	0.00	0.00	0.00	
8,200.00	90.00	1.05	6,252.00	2,336.37	-753.31	2,367.18	0.00	0.00	0.00	
8,300.00	90.00	1.05	6,252.00	2,436.36	-751.48	2,466.98	0.00	0.00	0.00	
8,400.00	90.00	1.05	6,252.00	2,536.34	-749.65	2,566.79	0.00	0.00	0.00	
8,500.00	90.00	1.05	6,252.00	2,636.32	-747.82	2,666.60	0.00	0.00	0.00	
8,600.00	90.00	1.05	6,252.00	2,736.30	-745.99	2,766.40	0.00	0.00	0.00	
8,700.00	90.00	1.05	6,252.00	2,836.29	-744.16	2,866.21	0.00	0.00	0.00	
8,800.00	90.00	1.05	6,252.00	2,936.27	-742.33	2,966.02	0.00	0.00	0.00	
8,900.00	90.00	1.05	6,252.00	3,036.25	-740.50	3,065.82	0.00	0.00	0.00	
9,000.00	90.00	1.05	6,252.00	3,136.24	-738.67	3,165.63	0.00	0.00	0.00	
9,100.00	90.00	1.05	6,252.00	3,236.22	-736.84	3,265.44	0.00	0.00	0.00	
9,200.00	90.00	1.05	6,252.00	3,336.20	-735.01	3,365.24	0.00	0.00	0.00	
9,300.00	90.00	1.05	6,252.00	3,436.19	-733.18	3,465.05	0.00	0.00	0.00	
9,400.00	90.00	1.05	6,252.00	3,536.17	-731.35	3,564.86	0.00	0.00	0.00	
9,500.00	90.00	1.05	6,252.00	3,636.15	-729.52	3,664.66	0.00	0.00	0.00	
9,600.00	90.00	1.05	6,252.00	3,736.14	-727.69	3,764.47	0.00	0.00	0.00	
9,700.00	90.00	1.05	6,252.00	3,836.12	-725.86	3,864.28	0.00	0.00	0.00	
9,800.00	90.00	1.05	6,252.00	3,936.10	-724.03	3,964.08	0.00	0.00	0.00	
9,900.00	90.00	1.05	6,252.00	4,036.09	-722.20	4,063.89	0.00	0.00	0.00	
10,000.00	90.00	1.05	6,252.00	4,136.07	-720.37	4,163.70	0.00	0.00	0.00	
10,100.00	90.00	1.05	6,252.00	4,236.05	-718.54	4,263.50	0.00	0.00	0.00	
10,200.00	90.00	1.05	6,252.00	4,336.04	-716.71	4,363.31	0.00	0.00	0.00	
10,300.00	90.00	1.05	6,252.00	4,436.02	-714.88	4,463.12	0.00	0.00	0.00	
10,400.00	90.00	1.05	6,252.00	4,536.00	-713.05	4,562.92	0.00	0.00	0.00	
10,500.00	90.00	1.05	6,252.00	4,635.99	-711.22	4,662.73	0.00	0.00	0.00	
10,600.00	90.00	1.05	6,252.00	4,735.97	-709.39	4,762.54	0.00	0.00	0.00	
10,700.00	90.00	1.05	6,252.00	4,835.95	-707.56	4,862.34	0.00	0.00	0.00	
10,800.00	90.00	1.05	6,252.00	4,935.94	-705.73	4,962.15	0.00	0.00	0.00	
10,900.00	90.00	1.05	6,252.00	5,035.92	-703.90	5,061.96	0.00	0.00	0.00	
11,000.00	90.00	1.05	6,252.00	5,135.90	-702.07	5,161.76	0.00	0.00	0.00	
11,100.00	90.00	1.05	6,252.00	5,235.89	-700.24	5,261.57	0.00	0.00	0.00	
11,200.00	90.00	1.05	6,252.00	5,335.87	-698.41	5,361.38	0.00	0.00	0.00	
11,300.00	90.00	1.05	6,252.00	5,435.85	-696.58	5,461.18	0.00	0.00	0.00	
11,400.00	90.00	1.05	6,252.00	5,535.84	-694.76	5,560.99	0.00	0.00	0.00	
11,500.00	90.00	1.05	6,252.00	5,635.82	-692.93	5,660.80	0.00	0.00	0.00	
11,600.00	90.00	1.05	6,252.00	5,735.80	-691.10	5,760.60	0.00	0.00	0.00	
11,700.00	90.00	1.05	6,252.00	5,835.79	-689.27	5,860.41	0.00	0.00	0.00	
11,800.00	90.00	1.05	6,252.00	5,935.77	-687.44	5,960.22	0.00	0.00	0.00	
11,900.00	90.00	1.05	6,252.00	6,035.75	-685.61	6,060.02	0.00	0.00	0.00	
12,000.00	90.00	1.05	6,252.00	6,135.74	-683.78	6,159.83	0.00	0.00	0.00	
12,100.00	90.00	1.05	6,252.00	6,235.72	-681.95	6,259.64	0.00	0.00	0.00	
12,200.00	90.00	1.05	6,252.00	6,335.70	-680.12	6,359.44	0.00	0.00	0.00	
12,300.00	90.00	1.05	6,252.00	6,435.69	-678.29	6,459.25	0.00	0.00	0.00	
12,400.00	90.00	1.05	6,252.00	6,535.67	-676.46	6,559.06	0.00	0.00	0.00	

# Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
12,500.00	90.00	1.05	6,252.00	6,635.65	-674.63	6,658.86	0.00	0.00	0.00
12,600.00	90.00	1.05	6,252.00	6,735.64	-672.80	6,758.67	0.00	0.00	0.00
12,700.00	90.00	1.05	6,252.00	6,835.62	-670.97	6,858.48	0.00	0.00	0.00
12,800.00	90.00	1.05	6,252.00	6,935.60	-669.14	6,958.28	0.00	0.00	0.00
12,900.00	90.00	1.05	6,252.00	7,035.59	-667.31	7,058.09	0.00	0.00	0.00
13,000.00	90.00	1.05	6,252.00	7,135.57	-665.48	7,157.90	0.00	0.00	0.00
13,100.00	90.00	1.05	6,252.00	7,235.55	-663.65	7,257.70	0.00	0.00	0.00
13,200.00	90.00	1.05	6,252.00	7,335.53	-661.82	7,357.51	0.00	0.00	0.00
13,300.00	90.00	1.05	6,252.00	7,435.52	-659.99	7,457.32	0.00	0.00	0.00
13,400.00	90.00	1.05	6,252.00	7,535.50	-658.16	7,557.12	0.00	0.00	0.00
13,500.00	90.00	1.05	6,252.00	7,635.48	-656.33	7,656.93	0.00	0.00	0.00
13,600.00	90.00	1.05	6,252.00	7,735.47	-654.50	7,756.74	0.00	0.00	0.00
13,700.00	90.00	1.05	6,252.00	7,835.45	-652.67	7,856.54	0.00	0.00	0.00
13,800.00	90.00	1.05	6,252.00	7,935.43	-650.84	7,956.35	0.00	0.00	0.00
13,900.00	90.00	1.05	6,252.00	8,035.42	-649.01	8,056.16	0.00	0.00	0.00
14,000.00	90.00	1.05	6,252.00	8,135.40	-647.18	8,155.96	0.00	0.00	0.00
14,100.00	90.00	1.05	6,252.00	8,235.38	-645.35	8,255.77	0.00	0.00	0.00
14,200.00	90.00	1.05	6,252.00	8,335.37	-643.52	8,355.58	0.00	0.00	0.00
14,300.00	90.00	1.05	6,252.00	8,435.35	-641.69	8,455.38	0.00	0.00	0.00
14,400.00	90.00	1.05	6,252.00	8,535.33	-639.86	8,555.19	0.00	0.00	0.00
14,500.00	90.00	1.05	6,252.00	8,635.32	-638.03	8,655.00	0.00	0.00	0.00
14,600.00	90.00	1.05	6,252.00	8,735.30	-636.20	8,754.80	0.00	0.00	0.00
14,700.00	90.00	1.05	6,252.00	8,835.28	-634.37	8,854.61	0.00	0.00	0.00
14,800.00	90.00	1.05	6,252.00	8,935.27	-632.54	8,954.42	0.00	0.00	0.00
14,900.00	90.00	1.05	6,252.00	9,035.25	-630.71	9,054.22	0.00	0.00	0.00
15,000.00	90.00	1.05	6,252.00	9,135.23	-628.88	9,154.03	0.00	0.00	0.00
15,100.00	90.00	1.05	6,252.00	9,235.22	-627.05	9,253.84	0.00	0.00	0.00
15,200.00	90.00	1.05	6,252.00	9,335.20	-625.22	9,353.64	0.00	0.00	0.00
15,300.00	90.00	1.05	6,252.00	9,435.18	-623.39	9,453.45	0.00	0.00	0.00
15,400.00	90.00	1.05	6,252.00	9,535.17	-621.56	9,553.26	0.00	0.00	0.00
15,500.00	90.00	1.05	6,252.00	9,635.15	-619.73	9,653.06	0.00	0.00	0.00
15,600.00	90.00	1.05	6,252.00	9,735.13	-617.90	9,752.87	0.00	0.00	0.00
15,700.00	90.00	1.05	6,252.00	9,835.12	-616.07	9,852.68	0.00	0.00	0.00
15,800.00	90.00	1.05	6,252.00	9,935.10	-614.24	9,952.48	0.00	0.00	0.00
15,900.00	90.00	1.05	6,252.00	10,035.08	-612.41	10,052.29	0.00	0.00	0.00
16,000.00	90.00	1.05	6,252.00	10,135.07	-610.58	10,152.10	0.00	0.00	0.00
16,100.00	90.00	1.05	6,252.00	10,235.05	-608.75	10,251.90	0.00	0.00	0.00
16,200.00	90.00	1.05	6,252.00	10,335.03	-606.92	10,351.71	0.00	0.00	0.00
16,300.00	90.00	1.05	6,252.00	10,435.02	-605.09	10,451.52	0.00	0.00	0.00
16,400.00	90.00	1.05	6,252.00	10,535.00	-603.26	10,551.32	0.00	0.00	0.00
16,500.00	90.00	1.05	6,252.00	10,634.98	-601.43	10,651.13	0.00	0.00	0.00
16,600.00	90.00	1.05	6,252.00	10,734.97	-599.60	10,750.94	0.00	0.00	0.00
16,700.00	90.00	1.05	6,252.00	10,834.95	-597.77	10,850.74	0.00	0.00	0.00
16,800.00	90.00	1.05	6,252.00	10,934.93	-595.94	10,950.55	0.00	0.00	0.00
16,900.00	90.00	1.05	6,252.00	11,034.92	-594.11	11,050.36	0.00	0.00	0.00
17,000.00	90.00	1.05	6,252.00	11,134.90	-592.29	11,150.16	0.00	0.00	0.00
17,100.00	90.00	1.05	6,252.00	11,234.88	-590.46	11,249.97	0.00	0.00	0.00
17,200.00	90.00	1.05	6,252.00	11,334.87	-588.63	11,349.78	0.00	0.00	0.00
17,300.00	90.00	1.05	6,252.00	11,434.85	-586.80	11,449.58	0.00	0.00	0.00
17,400.00	90.00	1.05	6,252.00	11,534.83	-584.97	11,549.39	0.00	0.00	0.00
17,500.00	90.00	1.05	6,252.00	11,634.82	-583.14	11,649.20	0.00	0.00	0.00
17,600.00	90.00	1.05	6,252.00	11,734.80	-581.31	11,749.00	0.00	0.00	0.00
17,700.00	90.00	1.05	6,252.00	11,834.78	-579.48	11,848.81	0.00	0.00	0.00
17,800.00	90.00	1.05	6,252.00	11,934.76	-577.65	11,948.62	0.00	0.00	0.00

## Planning Report

<b>Database:</b>	EDM 5000.16 Single User Db	<b>Local Co-ordinate Reference:</b>	Well BLUE TEAL FED 15-3-5HN
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4919.00usft
<b>Project:</b>	WELD COUNTY	<b>MD Reference:</b>	KB 27' @ 4919.00usft
<b>Site:</b>	SEC 22-T8N-R60W	<b>North Reference:</b>	True
<b>Well:</b>	BLUE TEAL FED 15-3-5HN	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL 1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
17,900.00	90.00	1.05	6,252.00	12,034.75	-575.82	12,048.42	0.00	0.00	0.00
18,000.00	90.00	1.05	6,252.00	12,134.73	-573.99	12,148.23	0.00	0.00	0.00
18,100.00	90.00	1.05	6,252.00	12,234.71	-572.16	12,248.04	0.00	0.00	0.00
18,200.00	90.00	1.05	6,252.00	12,334.70	-570.33	12,347.84	0.00	0.00	0.00
18,300.00	90.00	1.05	6,252.00	12,434.68	-568.50	12,447.65	0.00	0.00	0.00
18,400.00	90.00	1.05	6,252.00	12,534.66	-566.67	12,547.46	0.00	0.00	0.00
18,500.00	90.00	1.05	6,252.00	12,634.65	-564.84	12,647.26	0.00	0.00	0.00
18,600.00	90.00	1.05	6,252.00	12,734.63	-563.01	12,747.07	0.00	0.00	0.00
18,658.22	90.00	1.05	6,252.00	12,792.84	-561.86	12,805.17	0.00	0.00	0.00
TD at 18658.22									

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
BTFED 5HN- PBHL - plan hits target center - Point	0.00	0.00	6,252.00	12,792.84	-561.86	1,496,988.97	3,394,408.87	40.688945°N	104.077740°W
BTFED 5HN - LP - plan hits target center - Point	0.00	0.00	6,252.00	775.30	-781.88	1,484,969.45	3,394,381.89	40.655959°N	104.078532°W

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
440.00	440.00	Fox Hills Base			
1,450.26	1,443.00	Pierre Shale Top			
3,328.64	3,301.00	Richard Sandstone			
3,444.90	3,416.00	Parkman Sandstone			
4,229.41	4,192.00	Sussex Sandstone			
4,672.22	4,630.00	Shannon Sandstone			
5,443.59	5,393.00	TeePee Buttes			
6,163.64	6,068.00	Sharon Springs			
6,221.19	6,108.00	Niobrara Top			
6,542.31	6,244.00	Niobrara B2 Chalk Target Top			
6,638.66	6,252.00	Niobrara B2 Chalk Target Center			

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
500.00	500.00	0.00	0.00	Start Build 2.00
922.40	920.87	8.44	-29.92	Start 4837.63 hold at 922.40 MD
5,760.04	5,706.02	201.40	-713.93	Start DLS 10.00 TFO 75.45
6,638.66	6,252.00	775.30	-781.88	Start 12019.56 hold at 6638.66 MD
18,658.22	6,252.00	12,792.84	-561.86	TD at 18658.22