



# **MALLARD EXPLORATION**

**WELD COUNTY, COLORADO (NAD 83)**

**SE NE SEC. 19 T8N R60W 6th P.M.**

**HUNT FED 8-60 19-24-8**

**ORIGINAL WELLBORE**

**06 April, 2020**

**Plan: PROPOSAL #1**





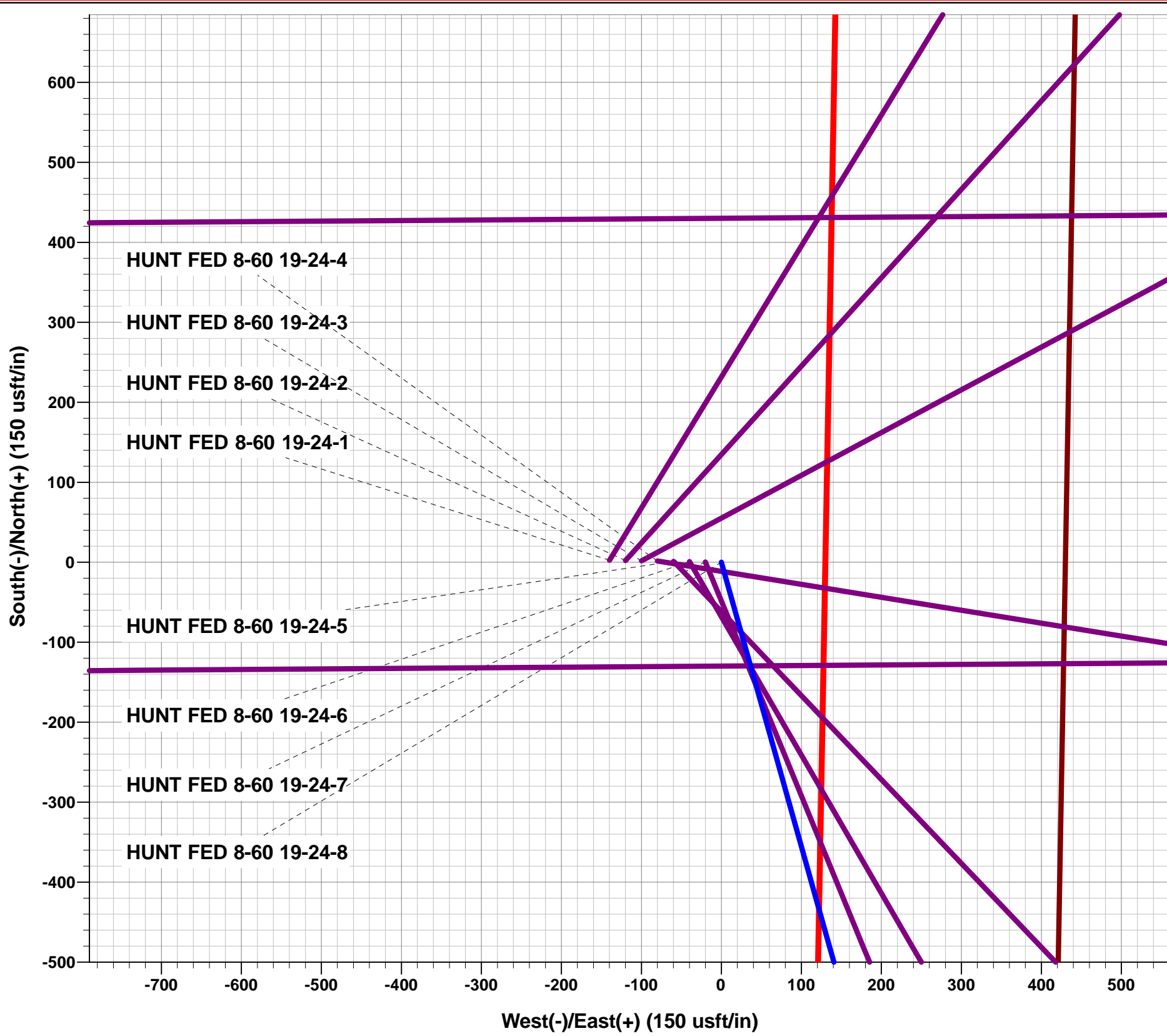
Project: WELD COUNTY, COLORADO (NAD 83)  
Site: SE NE SEC. 19 T8N R60W 6th P.M.  
Well: HUNT FED 8-60 19-24-8  
Wellbore: ORIGINAL WELLBORE  
Design: PROPOSAL #1

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Dep	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	SHL: 1725ft FNL & 430ft FEL of Sec 19
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1649.44	30.99	164.29	1575.00	-393.62	110.73	-13.77	408.90	EOB TO 30.99° INC
4801.37	30.99	164.29	4277.04	-1955.82	550.20	-68.41	2031.74	END OF TANGENT
6350.81	0.00	0.00	5752.04	-2349.44	660.93	-82.18	2440.63	EOD TO VERTICAL
6450.81	0.00	0.00	5852.04	-2349.44	660.93	-82.18	2440.63	KOP (10°/100ft BUR)
7350.83	90.00	269.59	6425.00	-2353.54	87.97	475.26	3013.61	HZ LP: 1215ft FSL & 300ft FEL of Sec 19
17321.07	90.00	269.60	6425.00	-2424.06	-9882.02	10174.99	12983.85	BHL: 1215ft FSL & 300ft FWL of Sec 24

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
KOP - HUNT FED 8-60 19-24-8	5852.04	-2349.44	660.93	40.643845	-104.124262
HZ LP - HUNT FED 8-60 19-24-8	6425.00	-2353.54	87.97	40.643834	-104.126327
BHL - HUNT FED 8-60 19-24-8	6425.00	-2424.06	-9882.02	40.643635	-104.162253



T

M

Azimuths to True North  
Magnetic North: 7.65°

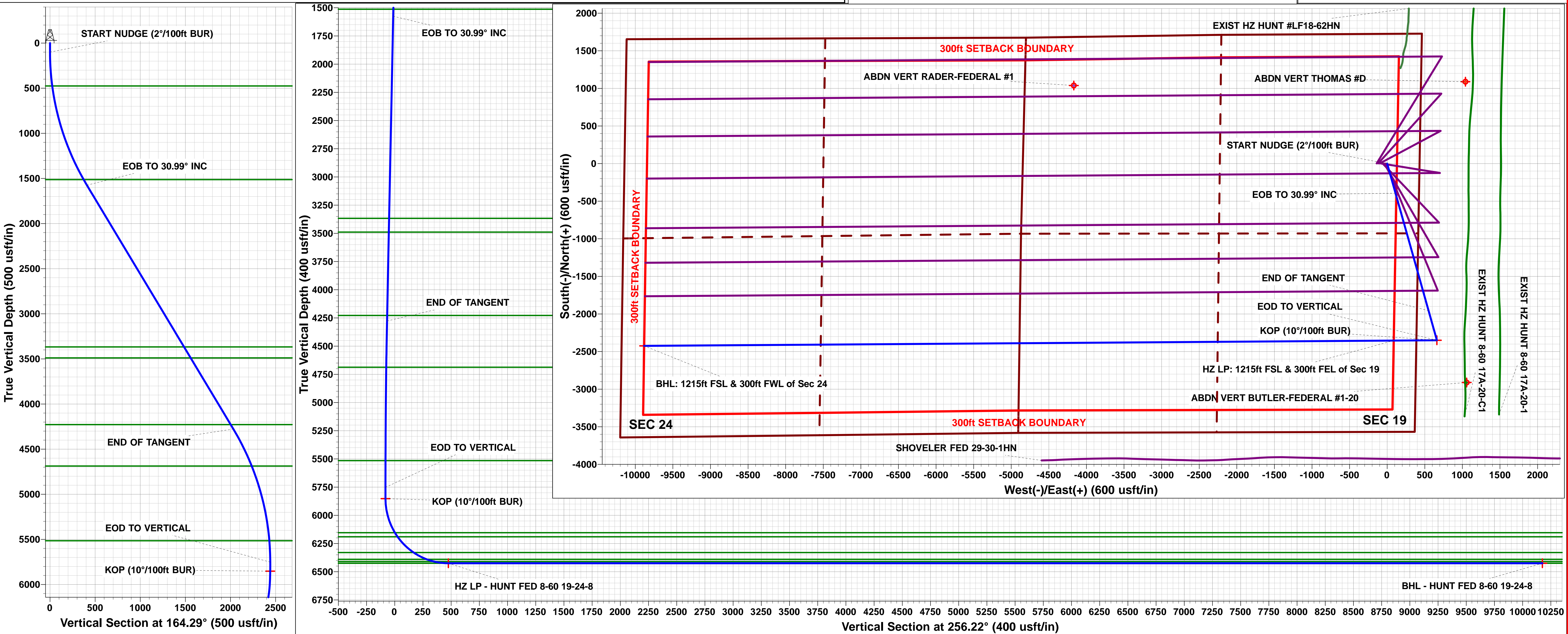
Magnetic Field  
Strength: 52273.7nT  
Dip Angle: 66.99°  
Date: 2020-04-06  
Model: IGRF2020

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
475.00	476.08	Fox Hills Base
1513.00	1577.66	Pierre Shale Top
3367.00	3739.81	Richard Sandstone
3489.00	3882.12	Parkman Sandstone
4228.00	4744.16	Sussex Sandstone
4687.00	5259.57	Shannon Sandstone
5515.00	6113.50	TeePee Buttes
6154.00	6768.86	Sharon Springs
6190.00	6812.28	Niobrara Top
6330.00	7016.14	Niobrara B2 Chalk Target Top
6390.00	7149.51	Niobrara C Chalk Top
6410.00	7219.42	Niobrara C Chalk Target Top
6425.00	7350.83	Niobrara C Chalk Landing Point

PROPOSED LOCAL COORDINATES:

SHL: 1725ft FNL & 430ft FEL of Sec 19  
HZ LP: 1215ft FSL & 300ft FEL of Sec 19  
BHL: 1215ft FSL & 300ft FWL of Sec 24



# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

<b>Project</b>	WELD COUNTY, COLORADO (NAD 83)		
<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		Using geodetic scale factor

Site	SE NE SEC. 19 T8N R60W 6th P.M.				
Site Position:		Northing:	1,482,695.84 usft	Latitude:	40.650301
From:	Lat/Long	Easting:	3,380,926.54 usft	Longitude:	-104.127148
Position Uncertainty:	0.00 usft	Slot Radius:	1.10 ft	Grid Convergence:	0.89 °

Well	HUNT FED 8-60 19-24-8					
Well Position	+N-S	-2.56 usft	Northing:	1,482,695.45 usft	Latitude:	40.650294
	+E-W	139.85 usft	Easting:	3,381,066.42 usft	Longitude:	-104.126644
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,933.00 usft

<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	2020-04-06	7.65	66.99	52,273.65406276

<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>
	6,425.00	0.00	0.00	256.22

<b>Plan Sections</b>											
MD (usft)	Inc (°)	Azi (°)	Vertical Depth	SS (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100usf)	Turn Rate (°/100usf)	TFO (°)	Target
0.00	0.00	0.00	0.00	-4,960.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	-4,860.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,649.44	30.99	164.29	1,575.00	-3,385.00	-393.62	110.73	2.00	2.00	0.00	164.29	
4,801.37	30.99	164.29	4,277.04	-682.96	-1,955.82	550.20	0.00	0.00	0.00	0.00	
6,350.81	0.00	0.00	5,752.04	792.04	-2,349.44	660.93	2.00	-2.00	0.00	180.00	
6,450.81	0.00	0.00	5,852.04	892.04	-2,349.44	660.93	0.00	0.00	0.00	0.00	KOP - HUNT FED 8
7,350.83	90.00	269.59	6,425.00	1,465.00	-2,353.54	87.97	10.00	10.00	-10.05	269.59	HZ LP - HUNT FED 8
17,321.07	90.00	269.60	6,425.00	1,465.00	-2,424.06	-9,882.02	0.00	0.00	0.00	104.13	BHL - HUNT FED 8

# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>SHL: 1725ft FNL &amp; 430ft FEL of Sec 19</b>										
0.00	0.00	0.00	0.00	4,960.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>START NUDGE (2°/100ft BUR)</b>										
100.00	0.00	0.00	100.00	4,860.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	2.00	164.29	199.98	4,760.02	-1.68	0.47	-0.06	2.00	2.00	0.00
300.00	4.00	164.29	299.84	4,660.16	-6.72	1.89	-0.23	2.00	2.00	0.00
400.00	6.00	164.29	399.45	4,560.55	-15.11	4.25	-0.53	2.00	2.00	0.00
<b>Fox Hills Base</b>										
476.08	7.52	164.29	475.00	4,485.00	-23.73	6.68	-0.83	2.00	2.00	0.00
500.00	8.00	164.29	498.70	4,461.30	-26.84	7.55	-0.94	2.00	2.00	0.00
600.00	10.00	164.29	597.47	4,362.53	-41.90	11.79	-1.47	2.00	2.00	0.00
700.00	12.00	164.29	695.62	4,264.38	-60.26	16.95	-2.11	2.00	2.00	0.00
800.00	14.00	164.29	793.06	4,166.94	-81.92	23.04	-2.87	2.00	2.00	0.00
900.00	16.00	164.29	889.64	4,070.36	-106.83	30.05	-3.74	2.00	2.00	0.00
1,000.00	18.00	164.29	985.27	3,974.73	-134.97	37.97	-4.72	2.00	2.00	0.00
1,100.00	20.00	164.29	1,079.82	3,880.18	-166.31	46.79	-5.82	2.00	2.00	0.00
1,200.00	22.00	164.29	1,173.17	3,786.83	-200.81	56.49	-7.02	2.00	2.00	0.00
1,300.00	24.00	164.29	1,265.21	3,694.79	-238.42	67.07	-8.34	2.00	2.00	0.00
1,400.00	26.00	164.29	1,355.84	3,604.16	-279.10	78.51	-9.76	2.00	2.00	0.00
1,500.00	28.00	164.29	1,444.94	3,515.06	-322.80	90.81	-11.29	2.00	2.00	0.00
<b>Pierre Shale Top</b>										
1,577.66	29.55	164.29	1,513.00	3,447.00	-358.79	100.93	-12.55	2.00	2.00	0.00
1,600.00	30.00	164.29	1,532.39	3,427.61	-369.47	103.94	-12.92	2.00	2.00	0.00
<b>EOB TO 30.99° INC</b>										
1,649.44	30.99	164.29	1,575.00	3,385.00	-393.62	110.73	-13.77	2.00	2.00	0.00
1,700.00	30.99	164.29	1,618.34	3,341.66	-418.68	117.78	-14.64	0.00	0.00	0.00
1,800.00	30.99	164.29	1,704.07	3,255.93	-468.24	131.72	-16.38	0.00	0.00	0.00
1,900.00	30.99	164.29	1,789.79	3,170.21	-517.80	145.67	-18.11	0.00	0.00	0.00
2,000.00	30.99	164.29	1,875.52	3,084.48	-567.37	159.61	-19.84	0.00	0.00	0.00
2,100.00	30.99	164.29	1,961.25	2,998.75	-616.93	173.55	-21.58	0.00	0.00	0.00
2,200.00	30.99	164.29	2,046.97	2,913.03	-666.49	187.49	-23.31	0.00	0.00	0.00
2,300.00	30.99	164.29	2,132.70	2,827.30	-716.06	201.44	-25.05	0.00	0.00	0.00
2,400.00	30.99	164.29	2,218.43	2,741.57	-765.62	215.38	-26.78	0.00	0.00	0.00
2,500.00	30.99	164.29	2,304.15	2,655.85	-815.18	229.32	-28.51	0.00	0.00	0.00
2,600.00	30.99	164.29	2,389.88	2,570.12	-864.75	243.27	-30.25	0.00	0.00	0.00
2,700.00	30.99	164.29	2,475.61	2,484.39	-914.31	257.21	-31.98	0.00	0.00	0.00
2,800.00	30.99	164.29	2,561.33	2,398.67	-963.87	271.15	-33.71	0.00	0.00	0.00
2,900.00	30.99	164.29	2,647.06	2,312.94	-1,013.44	285.09	-35.45	0.00	0.00	0.00
3,000.00	30.99	164.29	2,732.79	2,227.21	-1,063.00	299.04	-37.18	0.00	0.00	0.00
3,100.00	30.99	164.29	2,818.51	2,141.49	-1,112.56	312.98	-38.91	0.00	0.00	0.00
3,200.00	30.99	164.29	2,904.24	2,055.76	-1,162.13	326.92	-40.65	0.00	0.00	0.00
3,300.00	30.99	164.29	2,989.97	1,970.03	-1,211.69	340.87	-42.38	0.00	0.00	0.00
3,400.00	30.99	164.29	3,075.69	1,884.31	-1,261.25	354.81	-44.11	0.00	0.00	0.00
3,500.00	30.99	164.29	3,161.42	1,798.58	-1,310.82	368.75	-45.85	0.00	0.00	0.00
3,600.00	30.99	164.29	3,247.15	1,712.85	-1,360.38	382.69	-47.58	0.00	0.00	0.00
3,700.00	30.99	164.29	3,332.87	1,627.13	-1,409.94	396.64	-49.32	0.00	0.00	0.00
<b>Richard Sandstone</b>										
3,739.81	30.99	164.29	3,367.00	1,593.00	-1,429.67	402.19	-50.01	0.00	0.00	0.00
3,800.00	30.99	164.29	3,418.60	1,541.40	-1,459.51	410.58	-51.05	0.00	0.00	0.00
<b>Parkman Sandstone</b>										
3,882.12	30.99	164.29	3,489.00	1,471.00	-1,500.21	422.03	-52.47	0.00	0.00	0.00
3,900.00	30.99	164.29	3,504.33	1,455.67	-1,509.07	424.52	-52.78	0.00	0.00	0.00
4,000.00	30.99	164.29	3,590.05	1,369.95	-1,558.63	438.47	-54.52	0.00	0.00	0.00



# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,100.00	30.99	164.29	3,675.78	1,284.22	-1,608.20	452.41	-56.25	0.00	0.00	0.00
4,200.00	30.99	164.29	3,761.51	1,198.49	-1,657.76	466.35	-57.98	0.00	0.00	0.00
4,300.00	30.99	164.29	3,847.23	1,112.77	-1,707.32	480.29	-59.72	0.00	0.00	0.00
4,400.00	30.99	164.29	3,932.96	1,027.04	-1,756.89	494.24	-61.45	0.00	0.00	0.00
4,500.00	30.99	164.29	4,018.69	941.31	-1,806.45	508.18	-63.18	0.00	0.00	0.00
4,600.00	30.99	164.29	4,104.41	855.59	-1,856.01	522.12	-64.92	0.00	0.00	0.00
4,700.00	30.99	164.29	4,190.14	769.86	-1,905.58	536.07	-66.65	0.00	0.00	0.00
Sussex Sandstone										
4,744.16	30.99	164.29	4,228.00	732.00	-1,927.47	542.22	-67.42	0.00	0.00	0.00
4,800.00	30.99	164.29	4,275.87	684.13	-1,955.14	550.01	-68.38	0.00	0.00	0.00
END OF TANGENT										
4,801.37	30.99	164.29	4,277.04	682.96	-1,955.82	550.20	-68.41	0.00	0.00	0.00
4,900.00	29.02	164.29	4,362.45	597.55	-2,003.29	563.55	-70.07	2.00	-2.00	0.00
5,000.00	27.02	164.29	4,450.73	509.27	-2,048.51	576.27	-71.65	2.00	-2.00	0.00
5,100.00	25.02	164.29	4,540.59	419.41	-2,090.73	588.15	-73.13	2.00	-2.00	0.00
5,200.00	23.02	164.29	4,631.93	328.07	-2,129.91	599.17	-74.50	2.00	-2.00	0.00
Shannon Sandstone										
5,259.57	21.82	164.29	4,687.00	273.00	-2,151.78	605.33	-75.26	2.00	-2.00	0.00
5,300.00	21.02	164.29	4,724.63	235.37	-2,165.99	609.32	-75.76	2.00	-2.00	0.00
5,400.00	19.02	164.29	4,818.59	141.41	-2,198.94	618.59	-76.91	2.00	-2.00	0.00
5,500.00	17.02	164.29	4,913.68	46.32	-2,228.71	626.97	-77.95	2.00	-2.00	0.00
5,600.00	15.02	164.29	5,009.79	-49.79	-2,255.27	634.44	-78.88	2.00	-2.00	0.00
5,700.00	13.02	164.29	5,106.81	-146.81	-2,278.58	641.00	-79.70	2.00	-2.00	0.00
5,800.00	11.02	164.29	5,204.61	-244.61	-2,298.62	646.63	-80.40	2.00	-2.00	0.00
5,900.00	9.02	164.29	5,303.09	-343.09	-2,315.37	651.34	-80.98	2.00	-2.00	0.00
6,000.00	7.02	164.29	5,402.10	-442.10	-2,328.79	655.12	-81.45	2.00	-2.00	0.00
6,100.00	5.02	164.29	5,501.55	-541.55	-2,338.88	657.96	-81.81	2.00	-2.00	0.00
TeePee Buttes										
6,113.50	4.75	164.29	5,515.00	-555.00	-2,339.98	658.27	-81.85	2.00	-2.00	0.00
6,200.00	3.02	164.29	5,601.30	-641.30	-2,345.62	659.86	-82.04	2.00	-2.00	0.00
6,300.00	1.02	164.29	5,701.23	-741.23	-2,349.01	660.81	-82.16	2.00	-2.00	0.00
EOD TO VERTICAL										
6,350.81	0.00	0.00	5,752.04	-792.04	-2,349.44	660.93	-82.18	2.00	-2.00	0.00
6,400.00	0.00	0.00	5,801.23	-841.23	-2,349.44	660.93	-82.18	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,450.81	0.00	0.00	5,852.04	-892.04	-2,349.44	660.93	-82.18	0.00	0.00	0.00
6,500.00	4.92	269.59	5,901.17	-941.17	-2,349.46	658.82	-80.12	10.00	10.00	0.00
6,600.00	14.92	269.59	5,999.55	-1,039.55	-2,349.58	641.62	-63.39	10.00	10.00	0.00
6,700.00	24.92	269.59	6,093.45	-1,133.45	-2,349.82	607.59	-30.28	10.00	10.00	0.00
Sharon Springs										
6,768.86	31.80	269.59	6,154.00	-1,194.00	-2,350.06	574.90	1.52	10.00	10.00	0.00
6,800.00	34.92	269.59	6,180.01	-1,220.01	-2,350.18	557.78	18.18	10.00	10.00	0.00
Niobrara Top										
6,812.28	36.15	269.59	6,190.00	-1,230.00	-2,350.23	550.65	25.12	10.00	10.00	0.00
6,900.00	44.92	269.59	6,256.61	-1,296.61	-2,350.64	493.69	80.53	10.00	10.00	0.00
7,000.00	54.92	269.59	6,320.91	-1,360.91	-2,351.18	417.28	154.87	10.00	10.00	0.00
Niobrara B2 Chalk Target Top										
7,016.14	56.53	269.59	6,330.00	-1,370.00	-2,351.28	403.95	167.85	10.00	10.00	0.00
7,100.00	64.92	269.59	6,370.97	-1,410.97	-2,351.80	330.86	238.95	10.00	10.00	0.00
Niobrara C Chalk Top										
7,149.51	69.87	269.59	6,390.00	-1,430.00	-2,352.13	285.17	283.41	10.00	10.00	0.00
7,200.00	74.92	269.59	6,405.27	-1,445.27	-2,352.48	237.06	330.21	10.00	10.00	0.00
Niobrara C Chalk Target Top										

# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
<b>7,219.42</b>	<b>76.86</b>	<b>269.59</b>	<b>6,410.00</b>	<b>-1,450.00</b>	<b>-2,352.61</b>	<b>218.23</b>	<b>348.54</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
7,300.00	84.92	269.59	6,422.75	-1,462.75	-2,353.18	138.73	425.88	10.00	10.00	0.00
<b>HZ LP: 1215ft FSL &amp; 300ft FEL of Sec 19 - Niobrara C Chalk Landing Point</b>										
<b>7,350.83</b>	<b>90.00</b>	<b>269.59</b>	<b>6,425.00</b>	<b>-1,465.00</b>	<b>-2,353.54</b>	<b>87.97</b>	<b>475.26</b>	<b>10.00</b>	<b>10.00</b>	<b>0.00</b>
7,400.00	90.00	269.59	6,425.00	-1,465.00	-2,353.90	38.80	523.10	0.00	0.00	0.00
7,500.00	90.00	269.59	6,425.00	-1,465.00	-2,354.61	-61.20	620.39	0.00	0.00	0.00
7,600.00	90.00	269.59	6,424.99	-1,464.99	-2,355.33	-161.19	717.68	0.00	0.00	0.00
7,700.00	90.00	269.59	6,424.99	-1,464.99	-2,356.04	-261.19	814.97	0.00	0.00	0.00
7,800.00	90.00	269.59	6,424.99	-1,464.99	-2,356.76	-361.19	912.26	0.00	0.00	0.00
7,900.00	90.00	269.59	6,424.99	-1,464.99	-2,357.47	-461.18	1,009.54	0.00	0.00	0.00
8,000.00	90.00	269.59	6,424.99	-1,464.99	-2,358.19	-561.18	1,106.83	0.00	0.00	0.00
8,100.00	90.00	269.59	6,424.98	-1,464.98	-2,358.90	-661.18	1,204.12	0.00	0.00	0.00
8,200.00	90.00	269.59	6,424.98	-1,464.98	-2,359.62	-761.18	1,301.41	0.00	0.00	0.00
8,300.00	90.00	269.59	6,424.98	-1,464.98	-2,360.33	-861.17	1,398.70	0.00	0.00	0.00
8,400.00	90.00	269.59	6,424.98	-1,464.98	-2,361.05	-961.17	1,495.99	0.00	0.00	0.00
8,500.00	90.00	269.59	6,424.98	-1,464.98	-2,361.76	-1,061.17	1,593.27	0.00	0.00	0.00
8,600.00	90.00	269.59	6,424.98	-1,464.98	-2,362.48	-1,161.17	1,690.56	0.00	0.00	0.00
8,700.00	90.00	269.59	6,424.97	-1,464.97	-2,363.19	-1,261.16	1,787.85	0.00	0.00	0.00
8,800.00	90.00	269.59	6,424.97	-1,464.97	-2,363.90	-1,361.16	1,885.14	0.00	0.00	0.00
8,900.00	90.00	269.59	6,424.97	-1,464.97	-2,364.62	-1,461.16	1,982.43	0.00	0.00	0.00
9,000.00	90.00	269.59	6,424.97	-1,464.97	-2,365.33	-1,561.16	2,079.72	0.00	0.00	0.00
9,100.00	90.00	269.59	6,424.97	-1,464.97	-2,366.04	-1,661.15	2,177.00	0.00	0.00	0.00
9,200.00	90.00	269.59	6,424.97	-1,464.97	-2,366.76	-1,761.15	2,274.29	0.00	0.00	0.00
9,300.00	90.00	269.59	6,424.96	-1,464.96	-2,367.47	-1,861.15	2,371.58	0.00	0.00	0.00
9,400.00	90.00	269.59	6,424.96	-1,464.96	-2,368.18	-1,961.15	2,468.87	0.00	0.00	0.00
9,500.00	90.00	269.59	6,424.96	-1,464.96	-2,368.89	-2,061.14	2,566.16	0.00	0.00	0.00
9,600.00	90.00	269.59	6,424.96	-1,464.96	-2,369.61	-2,161.14	2,663.44	0.00	0.00	0.00
9,700.00	90.00	269.59	6,424.96	-1,464.96	-2,370.32	-2,261.14	2,760.73	0.00	0.00	0.00
9,800.00	90.00	269.59	6,424.96	-1,464.96	-2,371.03	-2,361.14	2,858.02	0.00	0.00	0.00
9,900.00	90.00	269.59	6,424.96	-1,464.96	-2,371.74	-2,461.13	2,955.31	0.00	0.00	0.00
10,000.00	90.00	269.59	6,424.96	-1,464.96	-2,372.45	-2,561.13	3,052.60	0.00	0.00	0.00
10,100.00	90.00	269.59	6,424.96	-1,464.96	-2,373.16	-2,661.13	3,149.88	0.00	0.00	0.00
10,200.00	90.00	269.59	6,424.95	-1,464.95	-2,373.88	-2,761.13	3,247.17	0.00	0.00	0.00
10,300.00	90.00	269.59	6,424.95	-1,464.95	-2,374.59	-2,861.12	3,344.46	0.00	0.00	0.00
10,400.00	90.00	269.59	6,424.95	-1,464.95	-2,375.30	-2,961.12	3,441.75	0.00	0.00	0.00
10,500.00	90.00	269.59	6,424.95	-1,464.95	-2,376.01	-3,061.12	3,539.03	0.00	0.00	0.00
10,600.00	90.00	269.59	6,424.95	-1,464.95	-2,376.72	-3,161.12	3,636.32	0.00	0.00	0.00
10,700.00	90.00	269.59	6,424.95	-1,464.95	-2,377.43	-3,261.11	3,733.61	0.00	0.00	0.00
10,800.00	90.00	269.59	6,424.95	-1,464.95	-2,378.14	-3,361.11	3,830.90	0.00	0.00	0.00
10,900.00	90.00	269.59	6,424.95	-1,464.95	-2,378.85	-3,461.11	3,928.18	0.00	0.00	0.00
11,000.00	90.00	269.59	6,424.95	-1,464.95	-2,379.56	-3,561.11	4,025.47	0.00	0.00	0.00
11,100.00	90.00	269.59	6,424.95	-1,464.95	-2,380.27	-3,661.10	4,122.76	0.00	0.00	0.00
11,200.00	90.00	269.59	6,424.95	-1,464.95	-2,380.98	-3,761.10	4,220.05	0.00	0.00	0.00
11,300.00	90.00	269.59	6,424.95	-1,464.95	-2,381.69	-3,861.10	4,317.33	0.00	0.00	0.00
11,400.00	90.00	269.59	6,424.95	-1,464.95	-2,382.40	-3,961.10	4,414.62	0.00	0.00	0.00
11,500.00	90.00	269.59	6,424.95	-1,464.95	-2,383.10	-4,061.09	4,511.91	0.00	0.00	0.00
11,600.00	90.00	269.59	6,424.95	-1,464.95	-2,383.81	-4,161.09	4,609.19	0.00	0.00	0.00
11,700.00	90.00	269.59	6,424.95	-1,464.95	-2,384.52	-4,261.09	4,706.48	0.00	0.00	0.00
11,800.00	90.00	269.59	6,424.94	-1,464.94	-2,385.23	-4,361.09	4,803.77	0.00	0.00	0.00
11,900.00	90.00	269.59	6,424.94	-1,464.94	-2,385.94	-4,461.08	4,901.05	0.00	0.00	0.00
12,000.00	90.00	269.59	6,424.94	-1,464.94	-2,386.65	-4,561.08	4,998.34	0.00	0.00	0.00
12,100.00	90.00	269.59	6,424.94	-1,464.94	-2,387.35	-4,661.08	5,095.63	0.00	0.00	0.00
12,200.00	90.00	269.59	6,424.94	-1,464.94	-2,388.06	-4,761.08	5,192.92	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Planned Survey										
MD (usft)	Inc (°)	Azi (°)	TVD (usft)	SS (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,300.00	90.00	269.59	6,424.94	-1,464.94	-2,388.77	-4,861.07	5,290.20	0.00	0.00	0.00
12,400.00	90.00	269.59	6,424.94	-1,464.94	-2,389.48	-4,961.07	5,387.49	0.00	0.00	0.00
12,500.00	90.00	269.59	6,424.94	-1,464.94	-2,390.18	-5,061.07	5,484.78	0.00	0.00	0.00
12,600.00	90.00	269.60	6,424.94	-1,464.94	-2,390.89	-5,161.07	5,582.06	0.00	0.00	0.00
12,700.00	90.00	269.60	6,424.94	-1,464.94	-2,391.60	-5,261.06	5,679.35	0.00	0.00	0.00
12,800.00	90.00	269.60	6,424.94	-1,464.94	-2,392.30	-5,361.06	5,776.64	0.00	0.00	0.00
12,900.00	90.00	269.60	6,424.95	-1,464.95	-2,393.01	-5,461.06	5,873.92	0.00	0.00	0.00
13,000.00	90.00	269.60	6,424.95	-1,464.95	-2,393.72	-5,561.06	5,971.21	0.00	0.00	0.00
13,100.00	90.00	269.60	6,424.95	-1,464.95	-2,394.42	-5,661.05	6,068.50	0.00	0.00	0.00
13,200.00	90.00	269.60	6,424.95	-1,464.95	-2,395.13	-5,761.05	6,165.78	0.00	0.00	0.00
13,300.00	90.00	269.60	6,424.95	-1,464.95	-2,395.83	-5,861.05	6,263.07	0.00	0.00	0.00
13,400.00	90.00	269.60	6,424.95	-1,464.95	-2,396.54	-5,961.05	6,360.35	0.00	0.00	0.00
13,500.00	90.00	269.60	6,424.95	-1,464.95	-2,397.24	-6,061.04	6,457.64	0.00	0.00	0.00
13,600.00	90.00	269.60	6,424.95	-1,464.95	-2,397.95	-6,161.04	6,554.93	0.00	0.00	0.00
13,700.00	90.00	269.60	6,424.95	-1,464.95	-2,398.65	-6,261.04	6,652.21	0.00	0.00	0.00
13,800.00	90.00	269.60	6,424.95	-1,464.95	-2,399.36	-6,361.04	6,749.50	0.00	0.00	0.00
13,900.00	90.00	269.60	6,424.95	-1,464.95	-2,400.06	-6,461.03	6,846.79	0.00	0.00	0.00
14,000.00	90.00	269.60	6,424.95	-1,464.95	-2,400.77	-6,561.03	6,944.07	0.00	0.00	0.00
14,100.00	90.00	269.60	6,424.95	-1,464.95	-2,401.47	-6,661.03	7,041.36	0.00	0.00	0.00
14,200.00	90.00	269.60	6,424.95	-1,464.95	-2,402.18	-6,761.03	7,138.64	0.00	0.00	0.00
14,300.00	90.00	269.60	6,424.95	-1,464.95	-2,402.88	-6,861.02	7,235.93	0.00	0.00	0.00
14,400.00	90.00	269.60	6,424.95	-1,464.95	-2,403.58	-6,961.02	7,333.22	0.00	0.00	0.00
14,500.00	90.00	269.60	6,424.95	-1,464.95	-2,404.29	-7,061.02	7,430.50	0.00	0.00	0.00
14,600.00	90.00	269.60	6,424.96	-1,464.96	-2,404.99	-7,161.02	7,527.79	0.00	0.00	0.00
14,700.00	90.00	269.60	6,424.96	-1,464.96	-2,405.69	-7,261.01	7,625.07	0.00	0.00	0.00
14,800.00	90.00	269.60	6,424.96	-1,464.96	-2,406.40	-7,361.01	7,722.36	0.00	0.00	0.00
14,900.00	90.00	269.60	6,424.96	-1,464.96	-2,407.10	-7,461.01	7,819.64	0.00	0.00	0.00
15,000.00	90.00	269.60	6,424.96	-1,464.96	-2,407.80	-7,561.01	7,916.93	0.00	0.00	0.00
15,100.00	90.00	269.60	6,424.96	-1,464.96	-2,408.50	-7,661.00	8,014.22	0.00	0.00	0.00
15,200.00	90.00	269.60	6,424.96	-1,464.96	-2,409.21	-7,761.00	8,111.50	0.00	0.00	0.00
15,300.00	90.00	269.60	6,424.96	-1,464.96	-2,409.91	-7,861.00	8,208.79	0.00	0.00	0.00
15,400.00	90.00	269.60	6,424.97	-1,464.97	-2,410.61	-7,961.00	8,306.07	0.00	0.00	0.00
15,500.00	90.00	269.60	6,424.97	-1,464.97	-2,411.31	-8,060.99	8,403.36	0.00	0.00	0.00
15,600.00	90.00	269.60	6,424.97	-1,464.97	-2,412.01	-8,160.99	8,500.64	0.00	0.00	0.00
15,700.00	90.00	269.60	6,424.97	-1,464.97	-2,412.72	-8,260.99	8,597.93	0.00	0.00	0.00
15,800.00	90.00	269.60	6,424.97	-1,464.97	-2,413.42	-8,360.99	8,695.21	0.00	0.00	0.00
15,900.00	90.00	269.60	6,424.97	-1,464.97	-2,414.12	-8,460.98	8,792.50	0.00	0.00	0.00
16,000.00	90.00	269.60	6,424.97	-1,464.97	-2,414.82	-8,560.98	8,889.79	0.00	0.00	0.00
16,100.00	90.00	269.60	6,424.98	-1,464.98	-2,415.52	-8,660.98	8,987.07	0.00	0.00	0.00
16,200.00	90.00	269.60	6,424.98	-1,464.98	-2,416.22	-8,760.98	9,084.36	0.00	0.00	0.00
16,300.00	90.00	269.60	6,424.98	-1,464.98	-2,416.92	-8,860.97	9,181.64	0.00	0.00	0.00
16,400.00	90.00	269.60	6,424.98	-1,464.98	-2,417.62	-8,960.97	9,278.93	0.00	0.00	0.00
16,500.00	90.00	269.60	6,424.98	-1,464.98	-2,418.32	-9,060.97	9,376.21	0.00	0.00	0.00
16,600.00	90.00	269.60	6,424.99	-1,464.99	-2,419.02	-9,160.97	9,473.50	0.00	0.00	0.00
16,700.00	90.00	269.60	6,424.99	-1,464.99	-2,419.72	-9,260.96	9,570.78	0.00	0.00	0.00
16,800.00	90.00	269.60	6,424.99	-1,464.99	-2,420.42	-9,360.96	9,668.07	0.00	0.00	0.00
16,900.00	90.00	269.60	6,424.99	-1,464.99	-2,421.12	-9,460.96	9,765.35	0.00	0.00	0.00
17,000.00	90.00	269.60	6,424.99	-1,464.99	-2,421.82	-9,560.96	9,862.64	0.00	0.00	0.00
17,100.00	90.00	269.60	6,425.00	-1,465.00	-2,422.52	-9,660.96	9,959.92	0.00	0.00	0.00
17,200.00	90.00	269.60	6,425.00	-1,465.00	-2,423.21	-9,760.95	10,057.21	0.00	0.00	0.00
17,300.00	90.00	269.60	6,425.00	-1,465.00	-2,423.91	-9,860.95	10,154.49	0.00	0.00	0.00
BHL: 1215ft FSL & 300ft FWL of Sec 24										
17,321.07	90.00	269.60	6,425.00	-1,465.00	-2,424.06	-9,882.02	10,174.99	0.00	0.00	0.00

# Planning Report

<b>Database:</b>	Database 1	<b>Local Co-ordinate Reference:</b>	Well HUNT FED 8-60 19-24-8
<b>Company:</b>	MALLARD EXPLORATION	<b>TVD Reference:</b>	KB 27' @ 4960.00usft
<b>Project:</b>	WELD COUNTY, COLORADO (NAD 83)	<b>MD Reference:</b>	KB 27' @ 4960.00usft
<b>Site:</b>	SE NE SEC. 19 T8N R60W 6th P.M.	<b>North Reference:</b>	True
<b>Well:</b>	HUNT FED 8-60 19-24-8	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	ORIGINAL WELLBORE		
<b>Design:</b>	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
476.08	475.00	Fox Hills Base		0.00	
1,577.66	1,513.00	Pierre Shale Top		0.00	
3,739.81	3,367.00	Richard Sandstone		0.00	
3,882.12	3,489.00	Parkman Sandstone		0.00	
4,744.16	4,228.00	Sussex Sandstone		0.00	
5,259.57	4,687.00	Shannon Sandstone		0.00	
6,113.50	5,515.00	TeePee Buttes		0.00	
6,768.86	6,154.00	Sharon Springs		0.00	
6,812.28	6,190.00	Niobrara Top		0.00	
7,016.14	6,330.00	Niobrara B2 Chalk Target Top		0.00	
7,149.51	6,390.00	Niobrara C Chalk Top		0.00	
7,219.42	6,410.00	Niobrara C Chalk Target Top		0.00	
7,350.83	6,425.00	Niobrara C Chalk Landing Point		0.00	

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 1725ft FNL & 430ft FEL of Sec 19
100.00	100.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,649.44	1,575.00	-393.62	110.73	EOB TO 30.99° INC
4,801.37	4,277.04	-1,955.82	550.20	END OF TANGENT
6,350.81	5,752.04	-2,349.44	660.93	EOD TO VERTICAL
6,450.81	5,852.04	-2,349.44	660.93	KOP (10°/100ft BUR)
7,350.83	6,425.00	-2,353.54	87.97	HZ LP: 1215ft FSL & 300ft FEL of Sec 19
17,321.07	6,425.00	-2,424.06	-9,882.02	BHL: 1215ft FSL & 300ft FWL of Sec 24