



MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

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

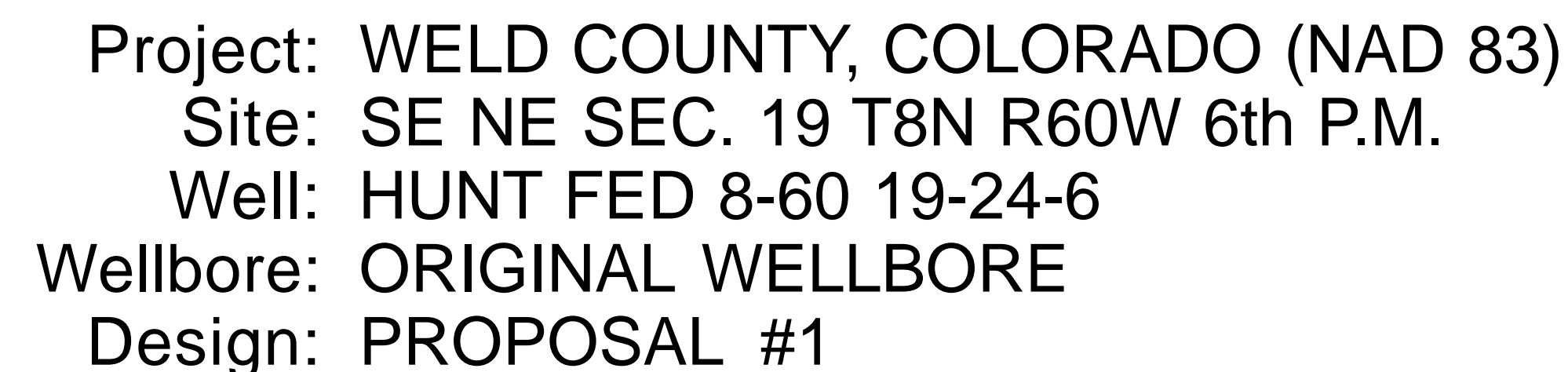
HUNT FED 8-60 19-24-6

ORIGINAL WELLBORE

06 April, 2020

Plan: PROPOSAL #1





Geological Map Data:

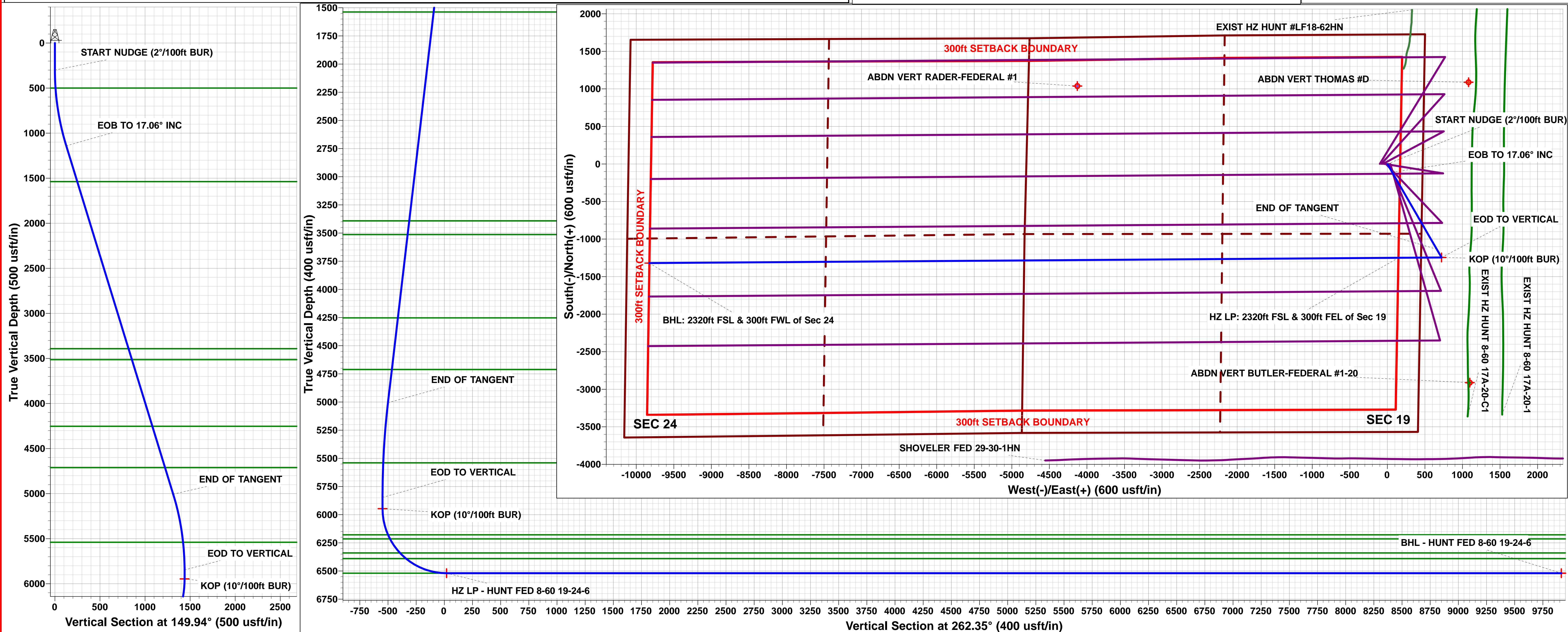
Section	Approx. North-South Range (150 usf/in)	Approx. East-West Range (150 usf/in)
HUNT FED 8-60 19-24-1	100 - 200	0 - 100
HUNT FED 8-60 19-24-2	200 - 300	0 - 100
HUNT FED 8-60 19-24-3	300 - 400	0 - 100
HUNT FED 8-60 19-24-4	400 - 500	0 - 100
HUNT FED 8-60 19-24-5	-100 - -200	0 - 100
HUNT FED 8-60 19-24-6	-200 - -300	0 - 100
HUNT FED 8-60 19-24-7	-300 - -400	0 - 100
HUNT FED 8-60 19-24-8	-400 - -500	0 - 100

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
499.90	500.06	Fox Hills Base
1537.90	1568.75	Pierre Shale Top
3391.90	3508.10	Richard Sandstone
3513.90	3635.72	Parkman Sandstone
4252.90	4408.74	Sussex Sandstone
4711.90	4888.87	Shannon Sandstone
5539.90	5742.39	TeePee Buttes
6178.90	6388.83	Sharon Springs
6214.90	6428.86	Niobrara Top
6339.90	6583.04	Niobrara B2 Chalk Top
6389.90	6656.36	Niobrara C Chalk Top
6519.90	7050.04	Codell Top (Landing Point)

PROPOSED LOCAL COORDINATES:

- SHL: 1724ft FNL & 470ft FEL of Sec 19
- HZ LP: 2320ft FSL & 300ft FEL of Sec 19
- BHL: 2320ft FSL & 300ft FWL of Sec 24



Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Project	WELD COUNTY, COLORADO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	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 19-24-6				
Well Position	+N/-S	-1.83 usft	Northing:	1,482,695.56 usft	Latitude:	40.650296
	+E/-W	99.90 usft	Easting:	3,381,026.45 usft	Longitude:	-104.126788
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	4,932.90 usft

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	2020-04-06	7.65	66.99	52,273.65765631

Design	PROPOSAL #1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	6,519.90	0.00	0.00	262.35

Plan Sections											
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	-4,959.90	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-4,659.90	0.00	0.00	0.00	0.00	0.00	0.00	
1,153.09	17.06	149.94	1,140.54	-3,819.36	-109.13	63.15	2.00	2.00	0.00	149.94	
5,196.93	17.06	149.94	5,006.40	46.50	-1,136.04	657.44	0.00	0.00	0.00	0.00	
6,050.02	0.00	0.00	5,846.94	887.04	-1,245.17	720.59	2.00	-2.00	0.00	180.00	
6,150.02	0.00	0.00	5,946.94	987.04	-1,245.17	720.59	0.00	0.00	0.00	0.00	KOP - HUNT FED 8
7,050.04	90.00	269.59	6,519.90	1,560.00	-1,249.27	147.63	10.00	10.00	-10.05	269.59	HZ LP - HUNT FED 8
17,023.44	90.00	269.60	6,519.90	1,560.00	-1,319.81	-9,825.52	0.00	0.00	0.00	106.71	BHL - HUNT FED 8

Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
SHL: 1724ft FNL & 470ft FEL of Sec 19										
0.00	0.00	0.00	0.00	4,959.90	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,859.90	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,759.90	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (2°/100ft BUR)										
300.00	0.00	0.00	300.00	4,659.90	0.00	0.00	0.00	0.00	0.00	0.00
400.00	2.00	149.94	399.98	4,559.92	-1.51	0.87	-0.67	2.00	2.00	0.00
500.00	4.00	149.94	499.84	4,460.06	-6.04	3.50	-2.66	2.00	2.00	0.00
Fox Hills Base										
500.06	4.00	149.94	499.90	4,460.00	-6.04	3.50	-2.66	0.00	0.00	0.00
600.00	6.00	149.94	599.45	4,360.45	-13.58	7.86	-5.98	2.00	2.00	0.00
700.00	8.00	149.94	698.70	4,261.20	-24.13	13.96	-10.63	2.00	2.00	0.00
800.00	10.00	149.94	797.47	4,162.43	-37.67	21.80	-16.59	2.00	2.00	0.00
900.00	12.00	149.94	895.62	4,064.28	-54.18	31.36	-23.86	2.00	2.00	0.00
1,000.00	14.00	149.94	993.06	3,966.84	-73.65	42.62	-32.44	2.00	2.00	0.00
1,100.00	16.00	149.94	1,089.64	3,870.26	-96.05	55.59	-42.30	2.00	2.00	0.00
EOB TO 17.06° INC										
1,153.09	17.06	149.94	1,140.54	3,819.36	-109.13	63.15	-48.06	2.00	2.00	0.00
1,200.00	17.06	149.94	1,185.38	3,774.52	-121.04	70.05	-53.31	0.00	0.00	0.00
1,300.00	17.06	149.94	1,280.98	3,678.92	-146.43	84.74	-64.49	0.00	0.00	0.00
1,400.00	17.06	149.94	1,376.58	3,583.32	-171.83	99.44	-75.68	0.00	0.00	0.00
1,500.00	17.06	149.94	1,472.18	3,487.72	-197.22	114.13	-86.86	0.00	0.00	0.00
Pierre Shale Top										
1,568.75	17.06	149.94	1,537.90	3,422.00	-214.68	124.24	-94.55	0.00	0.00	0.00
1,600.00	17.06	149.94	1,567.78	3,392.12	-222.62	128.83	-98.05	0.00	0.00	0.00
1,700.00	17.06	149.94	1,663.38	3,296.52	-248.01	143.53	-109.23	0.00	0.00	0.00
1,800.00	17.06	149.94	1,758.98	3,200.92	-273.41	158.22	-120.42	0.00	0.00	0.00
1,900.00	17.06	149.94	1,854.58	3,105.32	-298.80	172.92	-131.60	0.00	0.00	0.00
2,000.00	17.06	149.94	1,950.17	3,009.73	-324.20	187.61	-142.78	0.00	0.00	0.00
2,100.00	17.06	149.94	2,045.77	2,914.13	-349.59	202.31	-153.97	0.00	0.00	0.00
2,200.00	17.06	149.94	2,141.37	2,818.53	-374.99	217.01	-165.15	0.00	0.00	0.00
2,300.00	17.06	149.94	2,236.97	2,722.93	-400.38	231.70	-176.34	0.00	0.00	0.00
2,400.00	17.06	149.94	2,332.57	2,627.33	-425.77	246.40	-187.52	0.00	0.00	0.00
2,500.00	17.06	149.94	2,428.17	2,531.73	-451.17	261.10	-198.71	0.00	0.00	0.00
2,600.00	17.06	149.94	2,523.77	2,436.13	-476.56	275.79	-209.89	0.00	0.00	0.00
2,700.00	17.06	149.94	2,619.37	2,340.53	-501.96	290.49	-221.08	0.00	0.00	0.00
2,800.00	17.06	149.94	2,714.96	2,244.94	-527.35	305.18	-232.26	0.00	0.00	0.00
2,900.00	17.06	149.94	2,810.56	2,149.34	-552.75	319.88	-243.45	0.00	0.00	0.00
3,000.00	17.06	149.94	2,906.16	2,053.74	-578.14	334.58	-254.63	0.00	0.00	0.00
3,100.00	17.06	149.94	3,001.76	1,958.14	-603.54	349.27	-265.81	0.00	0.00	0.00
3,200.00	17.06	149.94	3,097.36	1,862.54	-628.93	363.97	-277.00	0.00	0.00	0.00
3,300.00	17.06	149.94	3,192.96	1,766.94	-654.33	378.66	-288.18	0.00	0.00	0.00
3,400.00	17.06	149.94	3,288.56	1,671.34	-679.72	393.36	-299.37	0.00	0.00	0.00
3,500.00	17.06	149.94	3,384.16	1,575.74	-705.11	408.06	-310.55	0.00	0.00	0.00
Richard Sandstone										
3,508.10	17.06	149.94	3,391.90	1,568.00	-707.17	409.25	-311.46	0.00	0.00	0.00
3,600.00	17.06	149.94	3,479.76	1,480.14	-730.51	422.75	-321.74	0.00	0.00	0.00
Parkman Sandstone										
3,635.72	17.06	149.94	3,513.90	1,446.00	-739.58	428.00	-325.73	0.00	0.00	0.00
3,700.00	17.06	149.94	3,575.35	1,384.55	-755.90	437.45	-332.92	0.00	0.00	0.00
3,800.00	17.06	149.94	3,670.95	1,288.95	-781.30	452.14	-344.11	0.00	0.00	0.00
3,900.00	17.06	149.94	3,766.55	1,193.35	-806.69	466.84	-355.29	0.00	0.00	0.00
4,000.00	17.06	149.94	3,862.15	1,097.75	-832.09	481.54	-366.47	0.00	0.00	0.00

Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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	17.06	149.94	3,957.75	1,002.15	-857.48	496.23	-377.66	0.00	0.00	0.00
4,200.00	17.06	149.94	4,053.35	906.55	-882.88	510.93	-388.84	0.00	0.00	0.00
4,300.00	17.06	149.94	4,148.95	810.95	-908.27	525.62	-400.03	0.00	0.00	0.00
4,400.00	17.06	149.94	4,244.55	715.35	-933.67	540.32	-411.21	0.00	0.00	0.00
Sussex Sandstone										
4,408.74	17.06	149.94	4,252.90	707.00	-935.89	541.60	-412.19	0.00	0.00	0.00
4,500.00	17.06	149.94	4,340.15	619.75	-959.06	555.02	-422.40	0.00	0.00	0.00
4,600.00	17.06	149.94	4,435.74	524.16	-984.46	569.71	-433.58	0.00	0.00	0.00
4,700.00	17.06	149.94	4,531.34	428.56	-1,009.85	584.41	-444.77	0.00	0.00	0.00
4,800.00	17.06	149.94	4,626.94	332.96	-1,035.24	599.10	-455.95	0.00	0.00	0.00
Shannon Sandstone										
4,888.87	17.06	149.94	4,711.90	248.00	-1,057.81	612.16	-465.89	0.00	0.00	0.00
4,900.00	17.06	149.94	4,722.54	237.36	-1,060.64	613.80	-467.14	0.00	0.00	0.00
5,000.00	17.06	149.94	4,818.14	141.76	-1,086.03	628.50	-478.32	0.00	0.00	0.00
5,100.00	17.06	149.94	4,913.74	46.16	-1,111.43	643.19	-489.50	0.00	0.00	0.00
END OF TANGENT										
5,196.93	17.06	149.94	5,006.40	-46.50	-1,136.04	657.44	-500.34	0.00	0.00	0.00
5,200.00	17.00	149.94	5,009.34	-49.44	-1,136.82	657.89	-500.69	2.00	-2.00	0.00
5,300.00	15.00	149.94	5,105.46	-145.56	-1,160.68	671.69	-511.20	2.00	-2.00	0.00
5,400.00	13.00	149.94	5,202.48	-242.58	-1,181.62	683.81	-520.42	2.00	-2.00	0.00
5,500.00	11.00	149.94	5,300.29	-340.39	-1,199.61	694.22	-528.34	2.00	-2.00	0.00
5,600.00	9.00	149.94	5,398.77	-438.87	-1,214.64	702.92	-534.96	2.00	-2.00	0.00
5,700.00	7.00	149.94	5,497.79	-537.89	-1,226.69	709.89	-540.27	2.00	-2.00	0.00
TeePee Buttes										
5,742.39	6.15	149.94	5,539.90	-580.00	-1,230.89	712.32	-542.12	2.00	-2.00	0.00
5,800.00	5.00	149.94	5,597.24	-637.34	-1,235.73	715.13	-544.25	2.00	-2.00	0.00
5,900.00	3.00	149.94	5,696.99	-737.09	-1,241.77	718.62	-546.91	2.00	-2.00	0.00
6,000.00	1.00	149.94	5,796.92	-837.02	-1,244.79	720.37	-548.24	2.00	-2.00	0.00
EOD TO VERTICAL										
6,050.02	0.00	0.00	5,846.94	-887.04	-1,245.17	720.59	-548.41	2.00	-2.00	0.00
6,100.00	0.00	0.00	5,896.92	-937.02	-1,245.17	720.59	-548.41	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,150.02	0.00	0.00	5,946.94	-987.04	-1,245.17	720.59	-548.41	0.00	0.00	0.00
6,200.00	5.00	269.59	5,996.86	-1,036.96	-1,245.19	718.41	-546.25	10.00	10.00	0.00
6,300.00	15.00	269.59	6,095.21	-1,135.31	-1,245.31	701.07	-529.05	10.00	10.00	0.00
Sharon Springs										
6,388.84	23.88	269.59	6,178.90	-1,219.00	-1,245.52	671.54	-499.75	10.00	10.00	0.00
6,400.00	25.00	269.59	6,189.06	-1,229.16	-1,245.55	666.92	-495.16	10.00	10.00	0.00
Niobrara Top										
6,428.86	27.88	269.59	6,214.90	-1,255.00	-1,245.65	654.07	-482.42	10.00	10.00	0.00
6,500.00	35.00	269.59	6,275.56	-1,315.66	-1,245.91	616.99	-445.63	10.00	10.00	0.00
Niobrara B2 Chalk Top										
6,583.04	43.30	269.59	6,339.90	-1,380.00	-1,246.29	564.61	-393.66	10.00	10.00	0.00
6,600.00	45.00	269.59	6,352.07	-1,392.17	-1,246.37	552.79	-381.95	10.00	10.00	0.00
Niobrara C Chalk Top										
6,656.36	50.63	269.59	6,389.90	-1,430.00	-1,246.67	511.05	-340.53	10.00	10.00	0.00
6,700.00	55.00	269.59	6,416.27	-1,456.37	-1,246.92	476.29	-306.05	10.00	10.00	0.00
6,800.00	65.00	269.59	6,466.21	-1,506.31	-1,247.54	389.80	-220.25	10.00	10.00	0.00
6,900.00	75.00	269.59	6,500.37	-1,540.47	-1,248.21	295.96	-127.15	10.00	10.00	0.00
7,000.00	85.00	269.59	6,517.72	-1,557.82	-1,248.91	197.60	-29.58	10.00	10.00	0.00
HZ LP: 2320ft FSL & 300ft FEL of Sec 19 - Codell Top (Landing Point)										
7,050.04	90.00	269.59	6,519.90	-1,560.00	-1,249.27	147.63	20.00	10.00	10.00	0.00
7,100.00	90.00	269.59	6,519.90	-1,560.00	-1,249.63	97.67	69.56	0.00	0.00	0.00

Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
7,200.00	90.00	269.59	6,519.90	-1,560.00	-1,250.34	-2.33	168.76	0.00	0.00	0.00
7,300.00	90.00	269.59	6,519.89	-1,559.99	-1,251.06	-102.33	267.97	0.00	0.00	0.00
7,400.00	90.00	269.59	6,519.89	-1,559.99	-1,251.77	-202.32	367.17	0.00	0.00	0.00
7,500.00	90.00	269.59	6,519.89	-1,559.99	-1,252.49	-302.32	466.37	0.00	0.00	0.00
7,600.00	90.00	269.59	6,519.89	-1,559.99	-1,253.20	-402.32	565.57	0.00	0.00	0.00
7,700.00	90.00	269.59	6,519.89	-1,559.99	-1,253.92	-502.32	664.78	0.00	0.00	0.00
7,800.00	90.00	269.59	6,519.88	-1,559.98	-1,254.63	-602.31	763.98	0.00	0.00	0.00
7,900.00	90.00	269.59	6,519.88	-1,559.98	-1,255.34	-702.31	863.18	0.00	0.00	0.00
8,000.00	90.00	269.59	6,519.88	-1,559.98	-1,256.06	-802.31	962.38	0.00	0.00	0.00
8,100.00	90.00	269.59	6,519.88	-1,559.98	-1,256.77	-902.31	1,061.59	0.00	0.00	0.00
8,200.00	90.00	269.59	6,519.88	-1,559.98	-1,257.48	-1,002.30	1,160.79	0.00	0.00	0.00
8,300.00	90.00	269.59	6,519.87	-1,559.97	-1,258.20	-1,102.30	1,259.99	0.00	0.00	0.00
8,400.00	90.00	269.59	6,519.87	-1,559.97	-1,258.91	-1,202.30	1,359.19	0.00	0.00	0.00
8,500.00	90.00	269.59	6,519.87	-1,559.97	-1,259.62	-1,302.29	1,458.40	0.00	0.00	0.00
8,600.00	90.00	269.59	6,519.87	-1,559.97	-1,260.34	-1,402.29	1,557.60	0.00	0.00	0.00
8,700.00	90.00	269.59	6,519.87	-1,559.97	-1,261.05	-1,502.29	1,656.80	0.00	0.00	0.00
8,800.00	90.00	269.59	6,519.86	-1,559.96	-1,261.76	-1,602.29	1,756.00	0.00	0.00	0.00
8,900.00	90.00	269.59	6,519.86	-1,559.96	-1,262.48	-1,702.28	1,855.20	0.00	0.00	0.00
9,000.00	90.00	269.59	6,519.86	-1,559.96	-1,263.19	-1,802.28	1,954.41	0.00	0.00	0.00
9,100.00	90.00	269.59	6,519.86	-1,559.96	-1,263.90	-1,902.28	2,053.61	0.00	0.00	0.00
9,200.00	90.00	269.59	6,519.86	-1,559.96	-1,264.61	-2,002.28	2,152.81	0.00	0.00	0.00
9,300.00	90.00	269.59	6,519.86	-1,559.96	-1,265.32	-2,102.27	2,252.01	0.00	0.00	0.00
9,400.00	90.00	269.59	6,519.86	-1,559.96	-1,266.04	-2,202.27	2,351.21	0.00	0.00	0.00
9,500.00	90.00	269.59	6,519.86	-1,559.96	-1,266.75	-2,302.27	2,450.42	0.00	0.00	0.00
9,600.00	90.00	269.59	6,519.85	-1,559.95	-1,267.46	-2,402.27	2,549.62	0.00	0.00	0.00
9,700.00	90.00	269.59	6,519.85	-1,559.95	-1,268.17	-2,502.26	2,648.82	0.00	0.00	0.00
9,800.00	90.00	269.59	6,519.85	-1,559.95	-1,268.88	-2,602.26	2,748.02	0.00	0.00	0.00
9,900.00	90.00	269.59	6,519.85	-1,559.95	-1,269.59	-2,702.26	2,847.23	0.00	0.00	0.00
10,000.00	90.00	269.59	6,519.85	-1,559.95	-1,270.30	-2,802.26	2,946.43	0.00	0.00	0.00
10,100.00	90.00	269.59	6,519.85	-1,559.95	-1,271.01	-2,902.25	3,045.63	0.00	0.00	0.00
10,200.00	90.00	269.59	6,519.85	-1,559.95	-1,271.72	-3,002.25	3,144.83	0.00	0.00	0.00
10,300.00	90.00	269.59	6,519.85	-1,559.95	-1,272.43	-3,102.25	3,244.03	0.00	0.00	0.00
10,400.00	90.00	269.59	6,519.85	-1,559.95	-1,273.14	-3,202.25	3,343.23	0.00	0.00	0.00
10,500.00	90.00	269.59	6,519.85	-1,559.95	-1,273.85	-3,302.24	3,442.44	0.00	0.00	0.00
10,600.00	90.00	269.59	6,519.84	-1,559.94	-1,274.56	-3,402.24	3,541.64	0.00	0.00	0.00
10,700.00	90.00	269.59	6,519.84	-1,559.94	-1,275.27	-3,502.24	3,640.84	0.00	0.00	0.00
10,800.00	90.00	269.59	6,519.84	-1,559.94	-1,275.98	-3,602.24	3,740.04	0.00	0.00	0.00
10,900.00	90.00	269.59	6,519.84	-1,559.94	-1,276.69	-3,702.23	3,839.24	0.00	0.00	0.00
11,000.00	90.00	269.59	6,519.84	-1,559.94	-1,277.40	-3,802.23	3,938.45	0.00	0.00	0.00
11,100.00	90.00	269.59	6,519.84	-1,559.94	-1,278.11	-3,902.23	4,037.65	0.00	0.00	0.00
11,200.00	90.00	269.59	6,519.84	-1,559.94	-1,278.82	-4,002.23	4,136.85	0.00	0.00	0.00
11,300.00	90.00	269.59	6,519.84	-1,559.94	-1,279.53	-4,102.22	4,236.05	0.00	0.00	0.00
11,400.00	90.00	269.59	6,519.84	-1,559.94	-1,280.23	-4,202.22	4,335.25	0.00	0.00	0.00
11,500.00	90.00	269.59	6,519.84	-1,559.94	-1,280.94	-4,302.22	4,434.45	0.00	0.00	0.00
11,600.00	90.00	269.59	6,519.84	-1,559.94	-1,281.65	-4,402.22	4,533.66	0.00	0.00	0.00
11,700.00	90.00	269.59	6,519.84	-1,559.94	-1,282.36	-4,502.21	4,632.86	0.00	0.00	0.00
11,800.00	90.00	269.59	6,519.84	-1,559.94	-1,283.07	-4,602.21	4,732.06	0.00	0.00	0.00
11,900.00	90.00	269.59	6,519.84	-1,559.94	-1,283.77	-4,702.21	4,831.26	0.00	0.00	0.00
12,000.00	90.00	269.59	6,519.84	-1,559.94	-1,284.48	-4,802.21	4,930.46	0.00	0.00	0.00
12,100.00	90.00	269.59	6,519.84	-1,559.94	-1,285.19	-4,902.20	5,029.66	0.00	0.00	0.00
12,200.00	90.00	269.59	6,519.84	-1,559.94	-1,285.90	-5,002.20	5,128.87	0.00	0.00	0.00
12,300.00	90.00	269.59	6,519.84	-1,559.94	-1,286.60	-5,102.20	5,228.07	0.00	0.00	0.00
12,400.00	90.00	269.60	6,519.84	-1,559.94	-1,287.31	-5,202.20	5,327.27	0.00	0.00	0.00
12,500.00	90.00	269.60	6,519.84	-1,559.94	-1,288.02	-5,302.19	5,426.47	0.00	0.00	0.00

Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	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)
12,600.00	90.00	269.60	6,519.84	-1,559.94	-1,288.72	-5,402.19	5,525.67	0.00	0.00	0.00
12,700.00	90.00	269.60	6,519.84	-1,559.94	-1,289.43	-5,502.19	5,624.87	0.00	0.00	0.00
12,800.00	90.00	269.60	6,519.84	-1,559.94	-1,290.13	-5,602.19	5,724.07	0.00	0.00	0.00
12,900.00	90.00	269.60	6,519.84	-1,559.94	-1,290.84	-5,702.18	5,823.28	0.00	0.00	0.00
13,000.00	90.00	269.60	6,519.84	-1,559.94	-1,291.55	-5,802.18	5,922.48	0.00	0.00	0.00
13,100.00	90.00	269.60	6,519.84	-1,559.94	-1,292.25	-5,902.18	6,021.68	0.00	0.00	0.00
13,200.00	90.00	269.60	6,519.84	-1,559.94	-1,292.96	-6,002.18	6,120.88	0.00	0.00	0.00
13,300.00	90.00	269.60	6,519.84	-1,559.94	-1,293.66	-6,102.17	6,220.08	0.00	0.00	0.00
13,400.00	90.00	269.60	6,519.84	-1,559.94	-1,294.37	-6,202.17	6,319.28	0.00	0.00	0.00
13,500.00	90.00	269.60	6,519.84	-1,559.94	-1,295.07	-6,302.17	6,418.48	0.00	0.00	0.00
13,600.00	90.00	269.60	6,519.85	-1,559.95	-1,295.78	-6,402.17	6,517.68	0.00	0.00	0.00
13,700.00	90.00	269.60	6,519.85	-1,559.95	-1,296.48	-6,502.16	6,616.89	0.00	0.00	0.00
13,800.00	90.00	269.60	6,519.85	-1,559.95	-1,297.19	-6,602.16	6,716.09	0.00	0.00	0.00
13,900.00	90.00	269.60	6,519.85	-1,559.95	-1,297.89	-6,702.16	6,815.29	0.00	0.00	0.00
14,000.00	90.00	269.60	6,519.85	-1,559.95	-1,298.60	-6,802.16	6,914.49	0.00	0.00	0.00
14,100.00	90.00	269.60	6,519.85	-1,559.95	-1,299.30	-6,902.15	7,013.69	0.00	0.00	0.00
14,200.00	90.00	269.60	6,519.85	-1,559.95	-1,300.00	-7,002.15	7,112.89	0.00	0.00	0.00
14,300.00	90.00	269.60	6,519.85	-1,559.95	-1,300.71	-7,102.15	7,212.09	0.00	0.00	0.00
14,400.00	90.00	269.60	6,519.85	-1,559.95	-1,301.41	-7,202.15	7,311.29	0.00	0.00	0.00
14,500.00	90.00	269.60	6,519.85	-1,559.95	-1,302.11	-7,302.14	7,410.50	0.00	0.00	0.00
14,600.00	90.00	269.60	6,519.86	-1,559.96	-1,302.82	-7,402.14	7,509.70	0.00	0.00	0.00
14,700.00	90.00	269.60	6,519.86	-1,559.96	-1,303.52	-7,502.14	7,608.90	0.00	0.00	0.00
14,800.00	90.00	269.60	6,519.86	-1,559.96	-1,304.22	-7,602.14	7,708.10	0.00	0.00	0.00
14,900.00	90.00	269.60	6,519.86	-1,559.96	-1,304.93	-7,702.13	7,807.30	0.00	0.00	0.00
15,000.00	90.00	269.60	6,519.86	-1,559.96	-1,305.63	-7,802.13	7,906.50	0.00	0.00	0.00
15,100.00	90.00	269.60	6,519.86	-1,559.96	-1,306.33	-7,902.13	8,005.70	0.00	0.00	0.00
15,200.00	90.00	269.60	6,519.86	-1,559.96	-1,307.03	-8,002.13	8,104.90	0.00	0.00	0.00
15,300.00	90.00	269.60	6,519.87	-1,559.97	-1,307.73	-8,102.12	8,204.10	0.00	0.00	0.00
15,400.00	90.00	269.60	6,519.87	-1,559.97	-1,308.44	-8,202.12	8,303.30	0.00	0.00	0.00
15,500.00	90.00	269.60	6,519.87	-1,559.97	-1,309.14	-8,302.12	8,402.50	0.00	0.00	0.00
15,600.00	90.00	269.60	6,519.87	-1,559.97	-1,309.84	-8,402.12	8,501.71	0.00	0.00	0.00
15,700.00	90.00	269.60	6,519.87	-1,559.97	-1,310.54	-8,502.11	8,600.91	0.00	0.00	0.00
15,800.00	90.00	269.60	6,519.87	-1,559.97	-1,311.24	-8,602.11	8,700.11	0.00	0.00	0.00
15,900.00	90.00	269.60	6,519.88	-1,559.98	-1,311.94	-8,702.11	8,799.31	0.00	0.00	0.00
16,000.00	90.00	269.60	6,519.88	-1,559.98	-1,312.64	-8,802.11	8,898.51	0.00	0.00	0.00
16,100.00	90.00	269.60	6,519.88	-1,559.98	-1,313.35	-8,902.11	8,997.71	0.00	0.00	0.00
16,200.00	90.00	269.60	6,519.88	-1,559.98	-1,314.05	-9,002.10	9,096.91	0.00	0.00	0.00
16,300.00	90.00	269.60	6,519.88	-1,559.98	-1,314.75	-9,102.10	9,196.11	0.00	0.00	0.00
16,400.00	90.00	269.60	6,519.89	-1,559.99	-1,315.45	-9,202.10	9,295.31	0.00	0.00	0.00
16,500.00	90.00	269.60	6,519.89	-1,559.99	-1,316.15	-9,302.10	9,394.51	0.00	0.00	0.00
16,600.00	90.00	269.60	6,519.89	-1,559.99	-1,316.85	-9,402.09	9,493.71	0.00	0.00	0.00
16,700.00	90.00	269.60	6,519.89	-1,559.99	-1,317.55	-9,502.09	9,592.91	0.00	0.00	0.00
16,800.00	90.00	269.60	6,519.89	-1,559.99	-1,318.25	-9,602.09	9,692.11	0.00	0.00	0.00
16,900.00	90.00	269.60	6,519.90	-1,560.00	-1,318.95	-9,702.09	9,791.31	0.00	0.00	0.00
17,000.00	90.00	269.60	6,519.90	-1,560.00	-1,319.64	-9,802.08	9,890.51	0.00	0.00	0.00
BHL: 2320ft FSL & 300ft FWL of Sec 24										
17,023.44	90.00	269.60	6,519.90	-1,560.00	-1,319.81	-9,825.52	9,913.77	0.00	0.00	0.00

Planning Report

Database:	Database 1	Local Co-ordinate Reference:	Well HUNT FED 8-60 19-24-6
Company:	MALLARD EXPLORATION	TVD Reference:	KB 27' @ 4959.90usft
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB 27' @ 4959.90usft
Site:	SE NE SEC. 19 T8N R60W 6th P.M.	North Reference:	True
Well:	HUNT FED 8-60 19-24-6	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #1		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
500.06	499.90	Fox Hills Base		0.00	
1,568.75	1,537.90	Pierre Shale Top		0.00	
3,508.10	3,391.90	Richard Sandstone		0.00	
3,635.72	3,513.90	Parkman Sandstone		0.00	
4,408.74	4,252.90	Sussex Sandstone		0.00	
4,888.87	4,711.90	Shannon Sandstone		0.00	
5,742.39	5,539.90	TeePee Buttes		0.00	
6,388.84	6,178.90	Sharon Springs		0.00	
6,428.86	6,214.90	Niobrara Top		0.00	
6,583.04	6,339.90	Niobrara B2 Chalk Top		0.00	
6,656.36	6,389.90	Niobrara C Chalk Top		0.00	
7,050.04	6,519.90	Codell Top (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: 1724ft FNL & 470ft FEL of Sec 19
300.00	300.00	0.00	0.00	START NUDGE (2°/100ft BUR)
1,153.09	1,140.54	-109.13	63.15	EOB TO 17.06° INC
5,196.93	5,006.40	-1,136.04	657.44	END OF TANGENT
6,050.02	5,846.94	-1,245.17	720.59	EOD TO VERTICAL
6,150.02	5,946.94	-1,245.17	720.59	KOP (10°/100ft BUR)
7,050.04	6,519.90	-1,249.27	147.63	HZ LP: 2320ft FSL & 300ft FEL of Sec 19
17,023.44	6,519.90	-1,319.81	-9,825.52	BHL: 2320ft FSL & 300ft FWL of Sec 24