

MALLARD EXPLORATION

WELD COUNTY, COLORADO (NAD 83)

SE SW SEC. 34 T8N R60W 6th P.M.

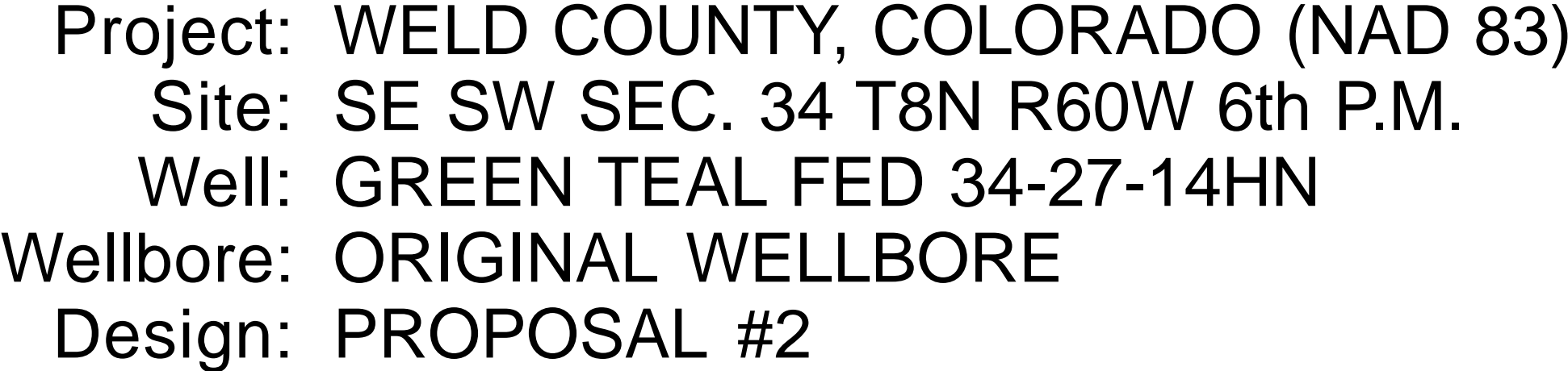
GREEN TEAL FED 34-27-14HN

ORIGINAL WELLBORE

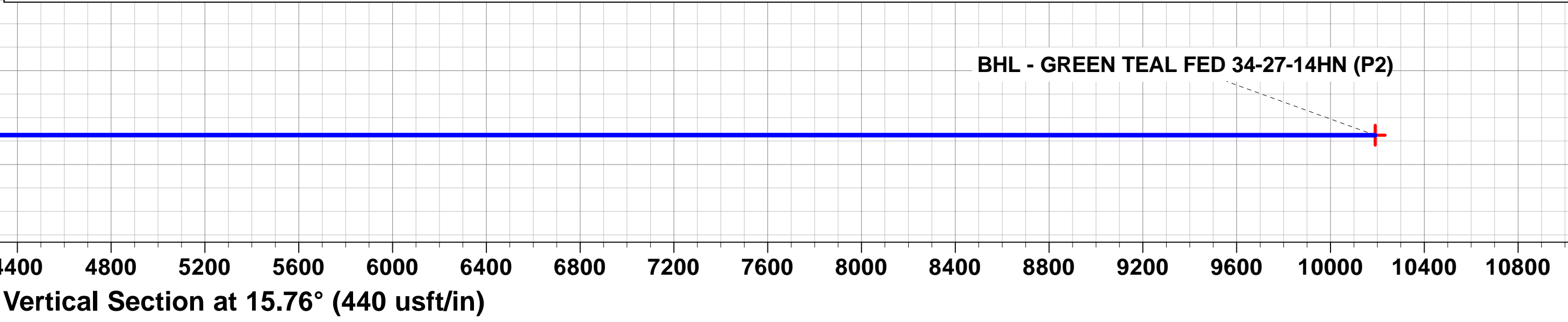
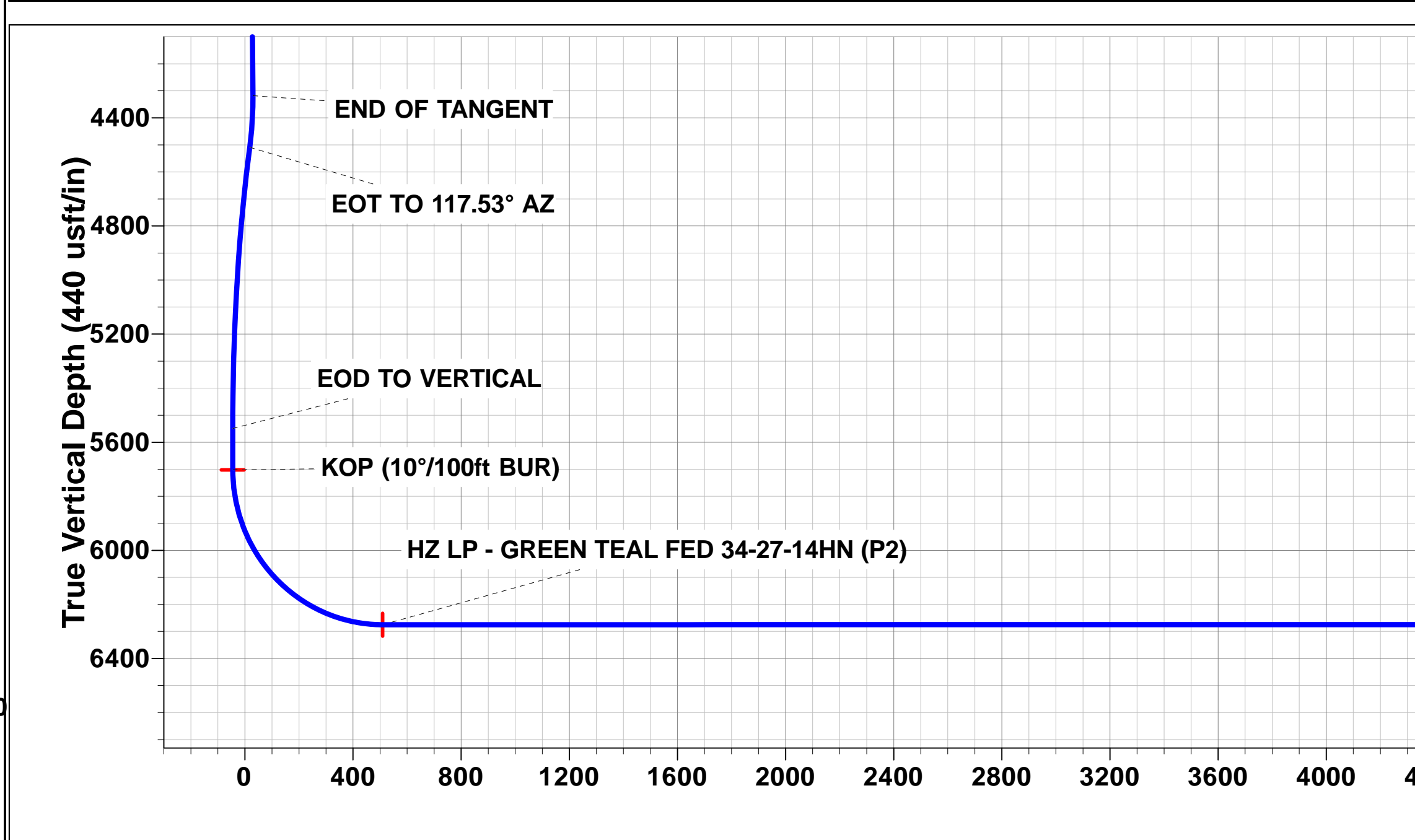
09 January, 2019

Plan: PROPOSAL #2





WELLBORE TARGET DETAILS (LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
KOP - GREEN TEAL FED 34-27-14HN (P2)	5702.09	-767.32	2553.56	40.610770°N	104.071773°W	
HZ LP - GREEN TEAL FED 34-27-14HN (P2)	6275.00	-194.48	2565.16	40.612343°N	104.071731°W	
BHL - GREEN TEAL FED 34-27-14HN (P2)	6275.00	9807.58	2767.27	40.639796°N	104.070999°W	



Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-14HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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 SW SEC. 34 T8N R60W 6th P.M.		
Site Position:		Northing:	1,469,260.15 usft
From:	Lat/Long	Easting:	3,393,696.59 usft
Position Uncertainty:	0.00 usft	Slot Radius:	1.10 ft
		Latitude:	40.612875°N
		Longitude:	104.081907°W
		Grid Convergence:	0.92 °

Well	GREEN TEAL FED 34-27-14HN		
Well Position	+N/-S	0.70 usft	Northing:
	+E/-W	260.15 usft	Easting:
Position Uncertainty		0.00 usft	Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	ORIGINAL WELLBORE				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	06/09/2017	7.83	67.12	52,546

Design	PROPOSAL #2			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	6,275.00	0.00	0.00	15.76

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	-4,939.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	-4,639.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	33.00	105.00	1,340.18	-3,598.82	-79.75	297.62	3.00	3.00	0.00	105.00	
4,950.90	33.00	105.00	4,318.22	-620.78	-580.29	2,165.68	0.00	0.00	0.00	0.00	
5,178.04	33.00	117.53	4,508.95	-430.05	-624.94	2,280.41	3.00	0.00	5.52	95.30	
6,277.89	0.00	0.00	5,549.00	610.00	-767.32	2,553.56	3.00	-3.00	0.00	180.00	
6,430.98	0.00	0.00	5,702.09	763.09	-767.32	2,553.56	0.00	0.00	0.00	0.00	KOP - GREEN TEA
7,330.95	90.00	1.16	6,275.00	1,336.00	-194.48	2,565.16	10.00	10.00	0.13	1.16	HZ LP - GREEN TE
17,335.05	90.00	1.16	6,275.00	1,336.00	9,807.58	2,767.27	0.00	0.00	0.00	-149.69	BHL - GREEN TEA

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Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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: 500ft FSL & 1942ft FWL of Sec 34										
0.00	0.00	0.00	0.00	4,939.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	4,839.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	4,739.00	0.00	0.00	0.00	0.00	0.00	0.00
START NUDGE (3°/100ft BUR)										
300.00	0.00	0.00	300.00	4,639.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	3.00	105.00	399.95	4,539.05	-0.68	2.53	0.03	3.00	3.00	0.00
500.00	6.00	105.00	499.63	4,439.37	-2.71	10.11	0.14	3.00	3.00	0.00
600.00	9.00	105.00	598.77	4,340.23	-6.09	22.71	0.31	3.00	3.00	0.00
700.00	12.00	105.00	697.08	4,241.92	-10.80	40.31	0.55	3.00	3.00	0.00
800.00	15.00	105.00	794.31	4,144.69	-16.84	62.86	0.86	3.00	3.00	0.00
900.00	18.00	105.00	890.18	4,048.82	-24.19	90.29	1.23	3.00	3.00	0.00
1,000.00	21.00	105.00	984.43	3,954.57	-32.83	122.53	1.68	3.00	3.00	0.00
1,100.00	24.00	105.00	1,076.81	3,862.19	-42.74	159.49	2.18	3.00	3.00	0.00
1,200.00	27.00	105.00	1,167.06	3,771.94	-53.88	201.07	2.75	3.00	3.00	0.00
1,300.00	30.00	105.00	1,254.93	3,684.07	-66.22	247.15	3.38	3.00	3.00	0.00
EOB TO 33° INC										
1,400.00	33.00	105.00	1,340.18	3,598.82	-79.75	297.62	4.07	3.00	3.00	0.00
1,500.00	33.00	105.00	1,424.05	3,514.95	-93.84	350.23	4.79	0.00	0.00	0.00
1,600.00	33.00	105.00	1,507.92	3,431.08	-107.94	402.83	5.51	0.00	0.00	0.00
FOX HILLS BASE										
1,606.06	33.00	105.00	1,513.00	3,426.00	-108.79	406.02	5.55	0.00	0.00	0.00
1,700.00	33.00	105.00	1,591.79	3,347.21	-122.04	455.44	6.23	0.00	0.00	0.00
1,800.00	33.00	105.00	1,675.65	3,263.35	-136.13	508.05	6.95	0.00	0.00	0.00
1,900.00	33.00	105.00	1,759.52	3,179.48	-150.23	560.66	7.67	0.00	0.00	0.00
2,000.00	33.00	105.00	1,843.39	3,095.61	-164.32	613.27	8.39	0.00	0.00	0.00
2,100.00	33.00	105.00	1,927.25	3,011.75	-178.42	665.87	9.10	0.00	0.00	0.00
2,200.00	33.00	105.00	2,011.12	2,927.88	-192.52	718.48	9.82	0.00	0.00	0.00
2,300.00	33.00	105.00	2,094.99	2,844.01	-206.61	771.09	10.54	0.00	0.00	0.00
2,400.00	33.00	105.00	2,178.85	2,760.15	-220.71	823.70	11.26	0.00	0.00	0.00
2,500.00	33.00	105.00	2,262.72	2,676.28	-234.81	876.31	11.98	0.00	0.00	0.00
2,600.00	33.00	105.00	2,346.59	2,592.41	-248.90	928.91	12.70	0.00	0.00	0.00
2,700.00	33.00	105.00	2,430.46	2,508.54	-263.00	981.52	13.42	0.00	0.00	0.00
2,800.00	33.00	105.00	2,514.32	2,424.68	-277.09	1,034.13	14.14	0.00	0.00	0.00
2,900.00	33.00	105.00	2,598.19	2,340.81	-291.19	1,086.74	14.86	0.00	0.00	0.00
3,000.00	33.00	105.00	2,682.06	2,256.94	-305.29	1,139.35	15.58	0.00	0.00	0.00
3,100.00	33.00	105.00	2,765.92	2,173.08	-319.38	1,191.96	16.30	0.00	0.00	0.00
3,200.00	33.00	105.00	2,849.79	2,089.21	-333.48	1,244.56	17.02	0.00	0.00	0.00
3,300.00	33.00	105.00	2,933.66	2,005.34	-347.58	1,297.17	17.74	0.00	0.00	0.00
3,400.00	33.00	105.00	3,017.53	1,921.47	-361.67	1,349.78	18.46	0.00	0.00	0.00
3,500.00	33.00	105.00	3,101.39	1,837.61	-375.77	1,402.39	19.18	0.00	0.00	0.00
3,600.00	33.00	105.00	3,185.26	1,753.74	-389.86	1,455.00	19.89	0.00	0.00	0.00
3,700.00	33.00	105.00	3,269.13	1,669.87	-403.96	1,507.60	20.61	0.00	0.00	0.00
RICHARD SANDSTONE										
3,776.16	33.00	105.00	3,333.00	1,606.00	-414.70	1,547.67	21.16	0.00	0.00	0.00
3,800.00	33.00	105.00	3,352.99	1,586.01	-418.06	1,560.21	21.33	0.00	0.00	0.00
3,900.00	33.00	105.00	3,436.86	1,502.14	-432.15	1,612.82	22.05	0.00	0.00	0.00
PARKMAN SANDSTONE										
3,919.24	33.00	105.00	3,453.00	1,486.00	-434.87	1,622.94	22.19	0.00	0.00	0.00
4,000.00	33.00	105.00	3,520.73	1,418.27	-446.25	1,665.43	22.77	0.00	0.00	0.00
4,100.00	33.00	105.00	3,604.59	1,334.41	-460.35	1,718.04	23.49	0.00	0.00	0.00
4,200.00	33.00	105.00	3,688.46	1,250.54	-474.44	1,770.64	24.21	0.00	0.00	0.00
4,300.00	33.00	105.00	3,772.33	1,166.67	-488.54	1,823.25	24.93	0.00	0.00	0.00

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Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
4,400.00	33.00	105.00	3,856.20	1,082.80	-502.64	1,875.86	25.65	0.00	0.00	0.00
4,500.00	33.00	105.00	3,940.06	998.94	-516.73	1,928.47	26.37	0.00	0.00	0.00
4,600.00	33.00	105.00	4,023.93	915.07	-530.83	1,981.08	27.09	0.00	0.00	0.00
4,700.00	33.00	105.00	4,107.80	831.20	-544.92	2,033.68	27.81	0.00	0.00	0.00
4,800.00	33.00	105.00	4,191.66	747.34	-559.02	2,086.29	28.53	0.00	0.00	0.00
SUSSEX SANDSTONE										
4,825.44	33.00	105.00	4,213.00	726.00	-562.61	2,099.68	28.71	0.00	0.00	0.00
4,900.00	33.00	105.00	4,275.53	663.47	-573.12	2,138.90	29.25	0.00	0.00	0.00
END OF TANGENT										
4,950.90	33.00	105.00	4,318.22	620.78	-580.29	2,165.68	29.61	0.00	0.00	0.00
5,000.00	32.89	107.70	4,359.43	579.57	-587.81	2,191.30	29.34	3.00	-0.22	5.50
5,100.00	32.86	113.23	4,443.43	495.57	-606.77	2,242.10	24.89	3.00	-0.04	5.53
EOT TO 117.53° AZ										
5,178.04	33.00	117.53	4,508.94	430.06	-624.94	2,280.40	17.80	3.00	0.18	5.51
5,200.00	32.34	117.53	4,527.43	411.57	-630.42	2,290.92	15.38	3.00	-3.00	0.00
5,300.00	29.34	117.53	4,613.28	325.72	-654.11	2,336.37	4.92	3.00	-3.00	0.00
SHANNON SANDSTONE										
5,328.23	28.49	117.53	4,638.00	301.00	-660.42	2,348.47	2.13	3.00	-3.00	0.00
5,400.00	26.34	117.53	4,701.70	237.30	-675.69	2,377.77	-4.61	3.00	-3.00	0.00
5,500.00	23.34	117.53	4,792.44	146.56	-695.10	2,415.01	-13.18	3.00	-3.00	0.00
5,600.00	20.34	117.53	4,885.26	53.74	-712.29	2,447.99	-20.76	3.00	-3.00	0.00
5,700.00	17.34	117.53	4,979.89	-40.89	-727.21	2,476.62	-27.35	3.00	-3.00	0.00
5,800.00	14.34	117.53	5,076.08	-137.08	-739.83	2,500.82	-32.92	3.00	-3.00	0.00
5,900.00	11.34	117.53	5,173.57	-234.57	-750.09	2,520.52	-37.45	3.00	-3.00	0.00
6,000.00	8.34	117.53	5,272.09	-333.09	-757.99	2,535.66	-40.94	3.00	-3.00	0.00
6,100.00	5.34	117.53	5,371.37	-432.37	-763.49	2,546.22	-43.37	3.00	-3.00	0.00
6,200.00	2.34	117.53	5,471.14	-532.14	-766.58	2,552.15	-44.73	3.00	-3.00	0.00
EOD TO VERTICAL										
6,277.89	0.00	0.00	5,549.00	-610.00	-767.32	2,553.56	-45.06	3.00	-3.00	0.00
6,300.00	0.00	0.00	5,571.11	-632.11	-767.32	2,553.56	-45.06	0.00	0.00	0.00
6,400.00	0.00	0.00	5,671.11	-732.11	-767.32	2,553.56	-45.06	0.00	0.00	0.00
KOP (10°/100ft BUR)										
6,430.98	0.00	0.00	5,702.09	-763.09	-767.32	2,553.56	-45.06	0.00	0.00	0.00
6,500.00	6.90	1.16	5,770.95	-831.95	-763.16	2,553.64	-41.04	10.00	10.00	0.00
6,600.00	16.90	1.16	5,868.67	-929.67	-742.57	2,554.06	-21.10	10.00	10.00	0.00
6,700.00	26.90	1.16	5,961.34	-1,022.34	-705.32	2,554.81	14.95	10.00	10.00	0.00
6,800.00	36.91	1.16	6,046.12	-1,107.12	-652.55	2,555.88	66.04	10.00	10.00	0.00
SHARON SPRINGS										
6,872.24	44.13	1.16	6,101.00	-1,162.00	-605.65	2,556.83	111.42	10.00	10.00	0.00
6,900.00	46.91	1.16	6,120.45	-1,181.45	-585.85	2,557.23	130.59	10.00	10.00	0.00
NIORARA A CHALK										
6,980.25	54.93	1.16	6,171.00	-1,232.00	-523.62	2,558.49	190.82	10.00	10.00	0.00
7,000.00	56.91	1.16	6,182.07	-1,243.07	-507.27	2,558.83	206.65	10.00	10.00	0.00
NIORARA A CHALK BASE										
7,032.44	60.15	1.16	6,199.00	-1,260.00	-479.61	2,559.39	233.42	10.00	10.00	0.00
NIORARA B1 CHALK TOP										
7,092.23	66.13	1.16	6,226.00	-1,287.00	-426.30	2,560.47	285.02	10.00	10.00	0.00
7,100.00	66.91	1.16	6,229.10	-1,290.10	-419.18	2,560.61	291.92	10.00	10.00	0.00
NIORARA B1 CHALK BASE										
7,171.62	74.07	1.16	6,253.00	-1,314.00	-351.73	2,561.98	357.20	10.00	10.00	0.00
7,200.00	76.91	1.16	6,260.11	-1,321.11	-324.26	2,562.53	383.79	10.00	10.00	0.00
7,300.00	86.91	1.16	6,274.17	-1,335.17	-225.40	2,564.53	479.47	10.00	10.00	0.00

Planning Report



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Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
NIORARA B2 CHALK TOP										
7,330.86	90.00	1.16	6,275.00	-1,336.00	-194.57	2,565.16	509.32	10.00	10.00	0.00
HZ LP: 300ft FSL & 790ft FEL of Sec 34										
7,330.95	90.00	1.16	6,275.00	-1,336.00	-194.48	2,565.16	509.41	9.54	9.54	0.00
7,400.00	90.00	1.16	6,274.99	-1,335.99	-125.44	2,566.56	576.23	0.00	0.00	0.00
7,500.00	90.00	1.16	6,274.99	-1,335.99	-25.46	2,568.58	673.00	0.00	0.00	0.00
7,600.00	90.00	1.16	6,274.98	-1,335.98	74.52	2,570.61	769.78	0.00	0.00	0.00
7,700.00	90.00	1.16	6,274.97	-1,335.97	174.50	2,572.63	866.55	0.00	0.00	0.00
7,800.00	90.00	1.16	6,274.97	-1,335.97	274.48	2,574.66	963.32	0.00	0.00	0.00
7,900.00	90.00	1.16	6,274.96	-1,335.96	374.46	2,576.68	1,060.09	0.00	0.00	0.00
8,000.00	90.00	1.16	6,274.95	-1,335.95	474.44	2,578.70	1,156.87	0.00	0.00	0.00
8,100.00	90.00	1.16	6,274.95	-1,335.95	574.42	2,580.73	1,253.64	0.00	0.00	0.00
8,200.00	90.00	1.16	6,274.94	-1,335.94	674.40	2,582.75	1,350.41	0.00	0.00	0.00
8,300.00	90.00	1.16	6,274.93	-1,335.93	774.38	2,584.78	1,447.18	0.00	0.00	0.00
8,400.00	90.00	1.16	6,274.93	-1,335.93	874.36	2,586.80	1,543.96	0.00	0.00	0.00
8,500.00	90.00	1.16	6,274.92	-1,335.92	974.33	2,588.82	1,640.73	0.00	0.00	0.00
8,600.00	90.00	1.16	6,274.91	-1,335.91	1,074.31	2,590.85	1,737.50	0.00	0.00	0.00
8,700.00	90.00	1.16	6,274.91	-1,335.91	1,174.29	2,592.87	1,834.27	0.00	0.00	0.00
8,800.00	90.00	1.16	6,274.90	-1,335.90	1,274.27	2,594.90	1,931.04	0.00	0.00	0.00
8,900.00	90.00	1.16	6,274.90	-1,335.90	1,374.25	2,596.92	2,027.82	0.00	0.00	0.00
9,000.00	90.00	1.16	6,274.89	-1,335.89	1,474.23	2,598.94	2,124.59	0.00	0.00	0.00
9,100.00	90.00	1.16	6,274.89	-1,335.89	1,574.21	2,600.97	2,221.36	0.00	0.00	0.00
9,200.00	90.00	1.16	6,274.88	-1,335.88	1,674.19	2,602.99	2,318.13	0.00	0.00	0.00
9,300.00	90.00	1.16	6,274.88	-1,335.88	1,774.17	2,605.01	2,414.90	0.00	0.00	0.00
9,400.00	90.00	1.16	6,274.87	-1,335.87	1,874.15	2,607.03	2,511.68	0.00	0.00	0.00
9,500.00	90.00	1.16	6,274.87	-1,335.87	1,974.13	2,609.06	2,608.45	0.00	0.00	0.00
9,600.00	90.00	1.16	6,274.86	-1,335.86	2,074.11	2,611.08	2,705.22	0.00	0.00	0.00
9,700.00	90.00	1.16	6,274.86	-1,335.86	2,174.09	2,613.10	2,801.99	0.00	0.00	0.00
9,800.00	90.00	1.16	6,274.86	-1,335.86	2,274.07	2,615.13	2,898.76	0.00	0.00	0.00
9,900.00	90.00	1.16	6,274.85	-1,335.85	2,374.05	2,617.15	2,995.54	0.00	0.00	0.00
10,000.00	90.00	1.16	6,274.85	-1,335.85	2,474.03	2,619.17	3,092.31	0.00	0.00	0.00
10,100.00	90.00	1.16	6,274.85	-1,335.85	2,574.01	2,621.19	3,189.08	0.00	0.00	0.00
10,200.00	90.00	1.16	6,274.84	-1,335.84	2,673.99	2,623.21	3,285.85	0.00	0.00	0.00
10,300.00	90.00	1.16	6,274.84	-1,335.84	2,773.97	2,625.24	3,382.62	0.00	0.00	0.00
10,400.00	90.00	1.16	6,274.84	-1,335.84	2,873.95	2,627.26	3,479.39	0.00	0.00	0.00
10,500.00	90.00	1.16	6,274.83	-1,335.83	2,973.93	2,629.28	3,576.17	0.00	0.00	0.00
10,600.00	90.00	1.16	6,274.83	-1,335.83	3,073.91	2,631.30	3,672.94	0.00	0.00	0.00
10,700.00	90.00	1.16	6,274.83	-1,335.83	3,173.88	2,633.32	3,769.71	0.00	0.00	0.00
10,800.00	90.00	1.16	6,274.83	-1,335.83	3,273.86	2,635.35	3,866.48	0.00	0.00	0.00
10,900.00	90.00	1.16	6,274.82	-1,335.82	3,373.84	2,637.37	3,963.25	0.00	0.00	0.00
11,000.00	90.00	1.16	6,274.82	-1,335.82	3,473.82	2,639.39	4,060.02	0.00	0.00	0.00
11,100.00	90.00	1.16	6,274.82	-1,335.82	3,573.80	2,641.41	4,156.80	0.00	0.00	0.00
11,200.00	90.00	1.16	6,274.82	-1,335.82	3,673.78	2,643.43	4,253.57	0.00	0.00	0.00
11,300.00	90.00	1.16	6,274.82	-1,335.82	3,773.76	2,645.45	4,350.34	0.00	0.00	0.00
11,400.00	90.00	1.16	6,274.81	-1,335.81	3,873.74	2,647.47	4,447.11	0.00	0.00	0.00
11,500.00	90.00	1.16	6,274.81	-1,335.81	3,973.72	2,649.50	4,543.88	0.00	0.00	0.00
11,600.00	90.00	1.16	6,274.81	-1,335.81	4,073.70	2,651.52	4,640.65	0.00	0.00	0.00
11,700.00	90.00	1.16	6,274.81	-1,335.81	4,173.68	2,653.54	4,737.43	0.00	0.00	0.00
11,800.00	90.00	1.16	6,274.81	-1,335.81	4,273.66	2,655.56	4,834.20	0.00	0.00	0.00
11,900.00	90.00	1.16	6,274.81	-1,335.81	4,373.64	2,657.58	4,930.97	0.00	0.00	0.00
12,000.00	90.00	1.16	6,274.81	-1,335.81	4,473.62	2,659.60	5,027.74	0.00	0.00	0.00
12,100.00	90.00	1.16	6,274.81	-1,335.81	4,573.60	2,661.62	5,124.51	0.00	0.00	0.00
12,200.00	90.00	1.16	6,274.81	-1,335.81	4,673.58	2,663.64	5,221.28	0.00	0.00	0.00
12,300.00	90.00	1.16	6,274.81	-1,335.81	4,773.56	2,665.66	5,318.05	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-14HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

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)
12,400.00	90.00	1.16	6,274.81	-1,335.81	4,873.54	2,667.68	5,414.82	0.00	0.00	0.00
12,500.00	90.00	1.16	6,274.81	-1,335.81	4,973.52	2,669.70	5,511.60	0.00	0.00	0.00
12,600.00	90.00	1.16	6,274.81	-1,335.81	5,073.50	2,671.72	5,608.37	0.00	0.00	0.00
12,700.00	90.00	1.16	6,274.81	-1,335.81	5,173.48	2,673.74	5,705.14	0.00	0.00	0.00
12,800.00	90.00	1.16	6,274.81	-1,335.81	5,273.46	2,675.76	5,801.91	0.00	0.00	0.00
12,900.00	90.00	1.16	6,274.81	-1,335.81	5,373.44	2,677.78	5,898.68	0.00	0.00	0.00
13,000.00	90.00	1.16	6,274.81	-1,335.81	5,473.42	2,679.80	5,995.45	0.00	0.00	0.00
13,100.00	90.00	1.16	6,274.81	-1,335.81	5,573.39	2,681.82	6,092.22	0.00	0.00	0.00
13,200.00	90.00	1.16	6,274.81	-1,335.81	5,673.37	2,683.84	6,188.99	0.00	0.00	0.00
13,300.00	90.00	1.16	6,274.81	-1,335.81	5,773.35	2,685.86	6,285.77	0.00	0.00	0.00
13,400.00	90.00	1.16	6,274.82	-1,335.82	5,873.33	2,687.88	6,382.54	0.00	0.00	0.00
13,500.00	90.00	1.16	6,274.82	-1,335.82	5,973.31	2,689.90	6,479.31	0.00	0.00	0.00
13,600.00	90.00	1.16	6,274.82	-1,335.82	6,073.29	2,691.92	6,576.08	0.00	0.00	0.00
13,700.00	90.00	1.16	6,274.82	-1,335.82	6,173.27	2,693.94	6,672.85	0.00	0.00	0.00
13,800.00	90.00	1.16	6,274.82	-1,335.82	6,273.25	2,695.96	6,769.62	0.00	0.00	0.00
13,900.00	90.00	1.16	6,274.83	-1,335.83	6,373.23	2,697.97	6,866.39	0.00	0.00	0.00
14,000.00	90.00	1.16	6,274.83	-1,335.83	6,473.21	2,699.99	6,963.16	0.00	0.00	0.00
14,100.00	90.00	1.16	6,274.83	-1,335.83	6,573.19	2,702.01	7,059.93	0.00	0.00	0.00
14,200.00	90.00	1.16	6,274.83	-1,335.83	6,673.17	2,704.03	7,156.70	0.00	0.00	0.00
14,300.00	90.00	1.16	6,274.84	-1,335.84	6,773.15	2,706.05	7,253.48	0.00	0.00	0.00
14,400.00	90.00	1.16	6,274.84	-1,335.84	6,873.13	2,708.07	7,350.25	0.00	0.00	0.00
14,500.00	90.00	1.16	6,274.84	-1,335.84	6,973.11	2,710.09	7,447.02	0.00	0.00	0.00
14,600.00	90.00	1.16	6,274.85	-1,335.85	7,073.09	2,712.10	7,543.79	0.00	0.00	0.00
14,700.00	90.00	1.16	6,274.85	-1,335.85	7,173.07	2,714.12	7,640.56	0.00	0.00	0.00
14,800.00	90.00	1.16	6,274.85	-1,335.85	7,273.05	2,716.14	7,737.33	0.00	0.00	0.00
14,900.00	90.00	1.16	6,274.86	-1,335.86	7,373.03	2,718.16	7,834.10	0.00	0.00	0.00
15,000.00	90.00	1.16	6,274.86	-1,335.86	7,473.01	2,720.18	7,930.87	0.00	0.00	0.00
15,100.00	90.00	1.16	6,274.87	-1,335.87	7,572.99	2,722.19	8,027.64	0.00	0.00	0.00
15,200.00	90.00	1.16	6,274.87	-1,335.87	7,672.97	2,724.21	8,124.41	0.00	0.00	0.00
15,300.00	90.00	1.16	6,274.87	-1,335.87	7,772.95	2,726.23	8,221.18	0.00	0.00	0.00
15,400.00	90.00	1.16	6,274.88	-1,335.88	7,872.93	2,728.25	8,317.95	0.00	0.00	0.00
15,500.00	90.00	1.16	6,274.88	-1,335.88	7,972.91	2,730.26	8,414.72	0.00	0.00	0.00
15,600.00	90.00	1.16	6,274.89	-1,335.89	8,072.89	2,732.28	8,511.49	0.00	0.00	0.00
15,700.00	90.00	1.16	6,274.89	-1,335.89	8,172.86	2,734.30	8,608.26	0.00	0.00	0.00
15,800.00	90.00	1.16	6,274.90	-1,335.90	8,272.84	2,736.32	8,705.04	0.00	0.00	0.00
15,900.00	90.00	1.16	6,274.91	-1,335.91	8,372.82	2,738.33	8,801.81	0.00	0.00	0.00
16,000.00	90.00	1.16	6,274.91	-1,335.91	8,472.80	2,740.35	8,898.58	0.00	0.00	0.00
16,100.00	90.00	1.16	6,274.92	-1,335.92	8,572.78	2,742.37	8,995.35	0.00	0.00	0.00
16,200.00	90.00	1.16	6,274.92	-1,335.92	8,672.76	2,744.38	9,092.12	0.00	0.00	0.00
16,300.00	90.00	1.16	6,274.93	-1,335.93	8,772.74	2,746.40	9,188.89	0.00	0.00	0.00
16,400.00	90.00	1.16	6,274.93	-1,335.93	8,872.72	2,748.42	9,285.66	0.00	0.00	0.00
16,500.00	90.00	1.16	6,274.94	-1,335.94	8,972.70	2,750.43	9,382.43	0.00	0.00	0.00
16,600.00	90.00	1.16	6,274.95	-1,335.95	9,072.68	2,752.45	9,479.20	0.00	0.00	0.00
16,700.00	90.00	1.16	6,274.95	-1,335.95	9,172.66	2,754.47	9,575.97	0.00	0.00	0.00
16,800.00	90.00	1.16	6,274.96	-1,335.96	9,272.64	2,756.48	9,672.74	0.00	0.00	0.00
16,900.00	90.00	1.16	6,274.97	-1,335.97	9,372.62	2,758.50	9,769.51	0.00	0.00	0.00
17,000.00	90.00	1.16	6,274.98	-1,335.98	9,472.60	2,760.52	9,866.28	0.00	0.00	0.00
17,100.00	90.00	1.16	6,274.98	-1,335.98	9,572.58	2,762.53	9,963.05	0.00	0.00	0.00
17,200.00	90.00	1.16	6,274.99	-1,335.99	9,672.56	2,764.55	10,059.82	0.00	0.00	0.00
17,300.00	90.00	1.16	6,275.00	-1,336.00	9,772.54	2,766.56	10,156.59	0.00	0.00	0.00
BHL: 300ft FNL & 790ft FEL of Sec 27										
17,335.05	90.00	1.16	6,275.00	-1,336.00	9,807.58	2,767.27	10,190.51	0.00	0.00	0.00

Planning Report



Database:	Database 1	Local Co-ordinate Reference:	Well GREEN TEAL FED 34-27-14HN
Company:	MALLARD EXPLORATION	TVD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Project:	WELD COUNTY, COLORADO (NAD 83)	MD Reference:	KB-EST @ 4939.00usft (Original Well Elev)
Site:	SE SW SEC. 34 T8N R60W 6th P.M.	North Reference:	True
Well:	GREEN TEAL FED 34-27-14HN	Survey Calculation Method:	Minimum Curvature
Wellbore:	ORIGINAL WELLBORE		
Design:	PROPOSAL #2		

Formations					
MD (usft)	TVD (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,606.06	1,513.00	FOX HILLS BASE			
3,776.16	3,333.00	RICHARD SANDSTONE			
3,919.24	3,453.00	PARKMAN SANDSTONE			
4,825.44	4,213.00	SUSSEX SANDSTONE			
5,328.23	4,638.00	SHANNON SANDSTONE			
6,872.24	6,101.00	SHARON SPRINGS			
6,980.25	6,171.00	NIOBRARA A CHALK			
7,032.44	6,199.00	NIOBRARA A CHALK BASE			
7,092.23	6,226.00	NIOBRARA B1 CHALK TOP			
7,171.62	6,253.00	NIOBRARA B1 CHALK BASE			
7,330.86	6,275.00	NIOBRARA B2 CHALK TOP			

Plan Annotations				
MD (usft)	TVD (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.00	0.00	0.00	0.00	SHL: 500ft FSL & 1942ft FWL of Sec 34
300.00	300.00	0.00	0.00	START NUDGE (3°/100ft BUR)
1,400.00	1,340.18	-79.75	297.62	EOB TO 33° INC
4,950.90	4,318.22	-580.29	2,165.68	END OF TANGENT
5,178.04	4,508.94	-624.94	2,280.40	EOT TO 117.53° AZ
6,277.89	5,549.00	-767.32	2,553.56	EOD TO VERTICAL
6,430.98	5,702.09	-767.32	2,553.56	KOP (10°/100ft BUR)
7,330.95	6,275.00	-194.48	2,565.16	HZ LP: 300ft FSL & 790ft FEL of Sec 34
17,335.05	6,275.00	9,807.58	2,767.27	BHL: 300ft FNL & 790ft FEL of Sec 27