MALLARD EXPLORATION

WELD COUNTY
SEC 34-T8N-R60W
GREEN TEAL FED 34-27-4HN

OWB

Design: FINAL SURVEY

Standard Survey Report

27 January, 2022

Project: WELD COUNTY
Site: SEC 34-T8N-R60W
Well: GREEN TEAL FED 34-27-4HN
Wellbore: OWB
Design: FINAL SURVEY

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: 7.47°

Magnetic Field
Strength: 52106.0nT
Dip Angle: 66.91°
Date: 9/16/2021
Model: IGRF2020

WELL DETAILS: GREEN TEAL FED 34-27-4HN

4923.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	1469264.39	3393916.72	40.612877°N	104.081114°W	

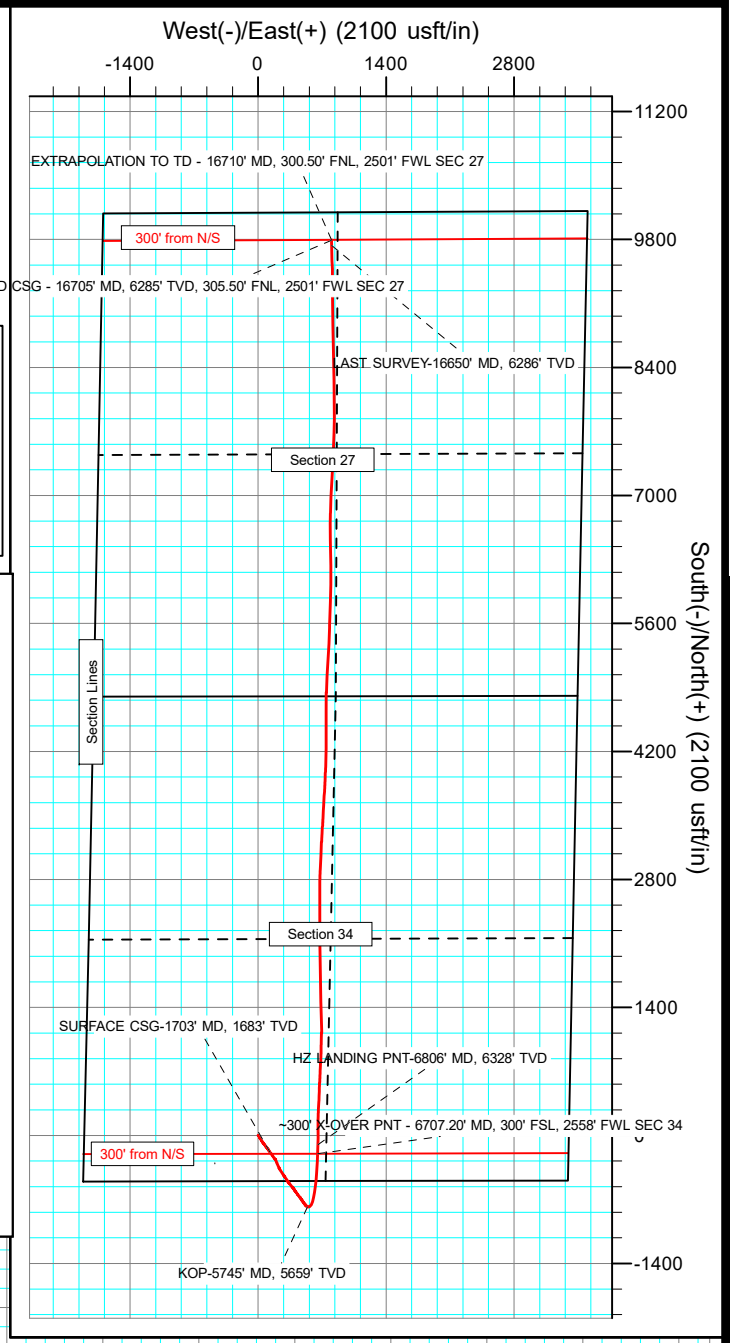
ANNOTATIONS

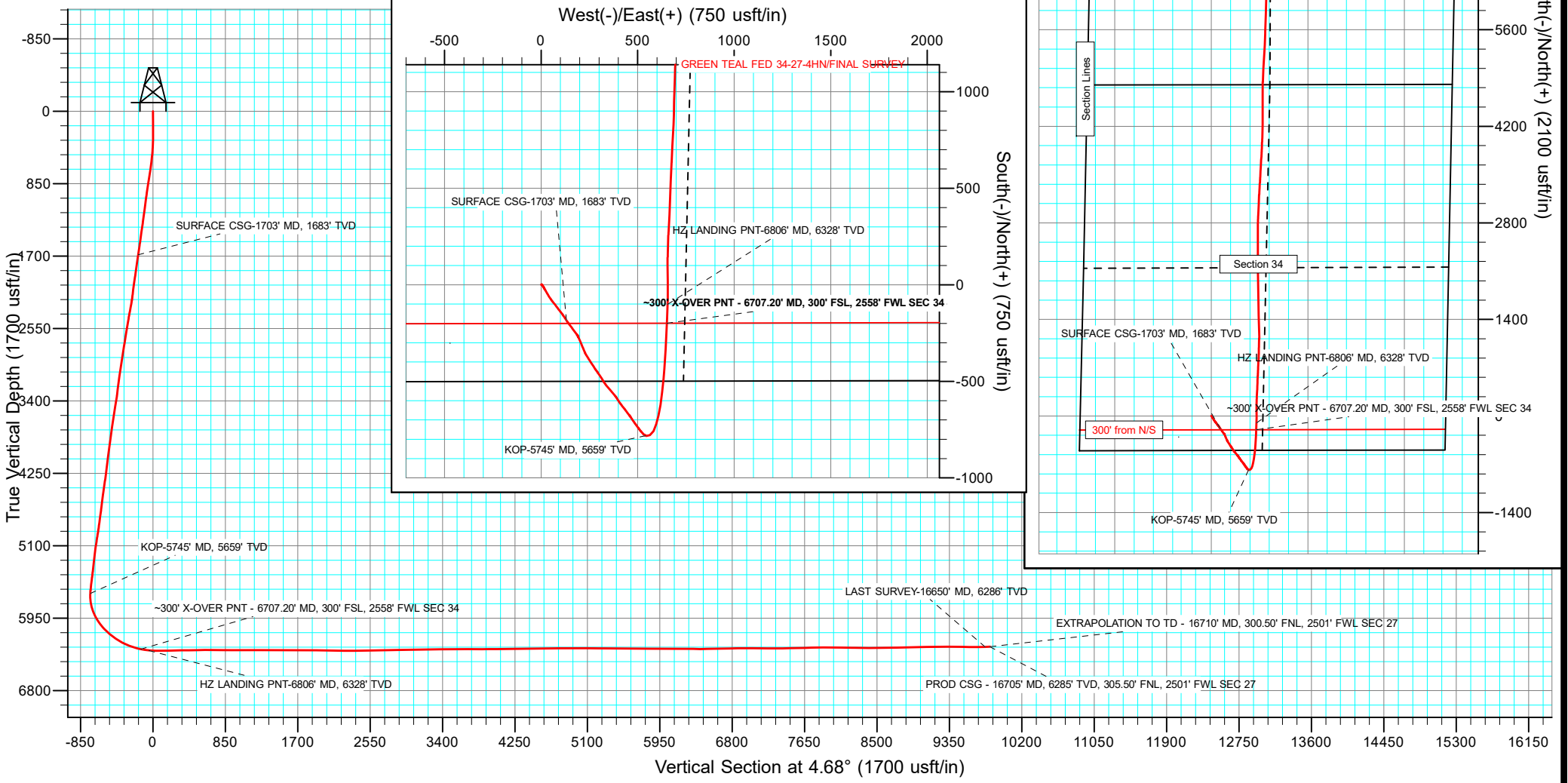
MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
1703.00	10.78	145.64	1683.25	-183.63	130.82	-172.35	230.95	SURFACE CSG-1703' MD, 1683' TVD
5745.00	9.29	112.99	5658.70	-781.12	540.65	-734.42	959.63	KOP-5745' MD, 5659' TVD
6707.20	77.63	2.49	6313.67	-198.53	651.27	-144.74	1579.41	~300' X-OVER PNT - 6707.20' MD, 300' FSL, 2558' FWL SEC 34
6806.00	85.93	1.46	6328.00	-100.93	654.97	-47.16	1676.90	HZ LANDING PNT-6806' MD, 6328' TVD
16650.00	91.20	357.88	6285.90	9736.45	804.04	9769.591	1519.66	LAST SURVEY-16650' MD, 6286' TVD
16705.00	91.20	357.88	6284.75	9791.40	802.00	9824.191	1574.65	PROD CSG - 16705' MD, 6285' TVD, 305.50' FNL, 2501' FWL SEC 27
16710.00	91.20	357.88	6284.65	9796.40	801.82	9829.161	1579.65	EXTRAPOLATION TO TD - 16710' MD, 300.50' FNL, 2501' FWL SEC 27

AS DRILLED LOCAL COORDINATES
SHL:
500' FSL, 1902' FWL
Sec 34-T8N-R60W

300' SETBACK X-OVER
300' FSL, 2558' FWL
Sec 34-T8N-R60W

BHL:
300.50' FNL, 2501' FWL
Sec 27-T8N-R60W





Survey Report

Company:	MALLARD EXPLORATION	**Local Co-ordinate Reference:**	Well GREEN TEAL FED 34-27-4HN
Project:	WELD COUNTY	**TVD Reference:**	KB 17' @ 4940.00usft
Site:	SEC 34-T8N-R60W	**MD Reference:**	KB 17' @ 4940.00usft
Well:	GREEN TEAL FED 34-27-4HN	**North Reference:**	True
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

Project WELD COUNTY

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site SEC 34-T8N-R60W

Site Position:		**Northing:**	1,468,729.71 usft	**Latitude:**	40.611493°N
From:	Lat/Long	**Easting:**	3,392,010.97 usft	**Longitude:**	104.088008°W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.200 in		

Well GREEN TEAL FED 34-27-4HN

Well Position	**+N/-S**	0.00 usft	**Northing:**	1,469,264.39 usft	**Latitude:**	40.612877°N
	+E/-W	0.00 usft	**Easting:**	3,393,916.72 usft	**Longitude:**	104.081114°W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	4,923.00 usft
Grid Convergence:		0.92 °				

Wellbore OWB

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2020	9/16/2021	7.47	66.91	52,106.01387887

Design FINAL SURVEY

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	4.68

Survey Program **Date** 1/27/2022

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
131.00	1,685.00	SURFACE SURVEY (OWB)	MWD	OWSG MWD - Standard
1,763.00	16,710.00	FINAL SURVEY (OWB)	MWD	OWSG MWD - Standard

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
131.00	1.22	27.01	130.99	1.24	0.63	1.29	0.93	0.93	0.00
224.00	0.85	55.39	223.98	2.52	1.65	2.64	0.67	-0.40	30.52
316.00	1.78	125.71	315.95	2.07	3.37	2.34	1.84	1.01	76.43
405.00	3.51	147.57	404.86	-1.04	5.96	-0.55	2.22	1.94	24.56
494.00	6.10	150.02	493.54	-7.43	9.78	-6.61	2.92	2.91	2.75
582.00	8.29	149.58	580.84	-16.96	15.33	-15.65	2.49	2.49	-0.50
671.00	9.93	151.25	668.71	-29.22	22.27	-27.30	1.87	1.84	1.88
760.00	10.68	149.61	756.28	-43.06	30.13	-40.46	0.90	0.84	-1.84

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Site:	SEC 34-T8N-R60W	**MD Reference:**	KB 17' @ 4940.00usft
Well:	GREEN TEAL FED 34-27-4HN	**North Reference:**	True
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

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)
849.00	11.18	148.37	843.66	-57.52	38.83	-54.16	0.62	0.56	-1.39
938.00	10.82	145.52	931.03	-71.75	48.08	-67.59	0.73	-0.40	-3.20
1,027.00	9.96	142.45	1,018.57	-84.74	57.50	-79.77	1.15	-0.97	-3.45
1,115.00	10.57	140.44	1,105.16	-97.00	67.28	-91.18	0.80	0.69	-2.28
1,204.00	10.28	143.03	1,192.69	-109.64	77.26	-102.97	0.62	-0.33	2.91
1,292.00	11.01	143.36	1,279.18	-122.65	87.00	-115.15	0.83	0.83	0.37
1,381.00	10.23	142.11	1,366.65	-135.71	96.92	-127.35	0.91	-0.88	-1.40
1,470.00	10.94	141.97	1,454.14	-148.60	106.98	-139.38	0.80	0.80	-0.16
1,558.00	10.14	147.12	1,540.65	-161.68	116.33	-151.65	1.40	-0.91	5.85
1,647.00	10.54	146.67	1,628.21	-175.06	125.05	-164.28	0.46	0.45	-0.51
1,685.00	10.64	145.86	1,665.56	-180.87	128.93	-169.75	0.47	0.26	-2.13
1,703.00	10.78	145.64	1,683.25	-183.63	130.82	-172.35	0.83	0.79	-1.23
SURFACE CSG-1703' MD, 1683' TVD									
1,763.00	11.26	144.94	1,742.14	-193.06	137.35	-181.21	0.83	0.80	-1.16
1,852.00	10.38	142.98	1,829.56	-206.58	147.17	-193.88	1.07	-0.99	-2.20
1,941.00	10.69	142.95	1,917.06	-219.57	156.97	-206.03	0.35	0.35	-0.03
2,029.00	10.18	144.83	2,003.60	-232.44	166.37	-218.09	0.70	-0.58	2.14
2,117.00	10.16	143.72	2,090.22	-245.05	175.44	-229.92	0.22	-0.02	-1.26
2,204.00	9.81	141.05	2,175.90	-257.00	184.64	-241.08	0.67	-0.40	-3.07
2,292.00	11.76	156.26	2,262.36	-271.04	192.96	-254.40	3.90	2.22	17.28
2,380.00	11.66	157.02	2,348.53	-287.44	200.05	-270.16	0.21	-0.11	0.86
2,468.00	11.23	157.50	2,434.78	-303.54	206.80	-285.66	0.50	-0.49	0.55
2,557.00	10.74	156.16	2,522.15	-319.14	213.46	-300.66	0.62	-0.55	-1.51
2,645.00	10.36	157.77	2,608.66	-333.96	219.77	-314.92	0.55	-0.43	1.83
2,734.00	10.24	157.28	2,696.23	-348.67	225.86	-329.08	0.17	-0.13	-0.55
2,823.00	11.24	148.75	2,783.67	-363.38	233.41	-343.13	2.11	1.12	-9.58
2,911.00	11.20	147.78	2,869.99	-377.94	242.42	-356.91	0.22	-0.05	-1.10
3,000.00	10.78	147.24	2,957.36	-392.25	251.53	-370.43	0.49	-0.47	-0.61
3,089.00	10.45	146.95	3,044.83	-406.02	260.43	-383.42	0.38	-0.37	-0.33
3,178.00	10.09	146.36	3,132.41	-419.27	269.16	-395.92	0.42	-0.40	-0.66
3,267.00	9.55	147.09	3,220.10	-431.96	277.49	-407.89	0.62	-0.61	0.82
3,356.00	8.87	143.44	3,307.96	-443.67	285.58	-418.90	1.01	-0.76	-4.10
3,445.00	10.93	145.46	3,395.63	-456.14	294.46	-430.60	2.35	2.31	2.27
3,534.00	11.08	146.33	3,482.99	-470.20	303.98	-443.84	0.25	0.17	0.98
3,622.00	11.27	147.19	3,569.32	-484.47	313.33	-457.29	0.29	0.22	0.98
3,711.00	11.48	149.63	3,656.57	-499.42	322.52	-471.44	0.59	0.24	2.74
3,800.00	11.60	144.25	3,743.78	-514.32	332.23	-485.51	1.22	0.13	-6.04
3,889.00	10.65	138.40	3,831.11	-527.74	342.91	-498.00	1.66	-1.07	-6.57
3,978.00	10.17	139.76	3,918.64	-539.88	353.45	-509.25	0.61	-0.54	1.53
4,066.00	9.93	139.39	4,005.29	-551.57	363.41	-520.09	0.28	-0.27	-0.42
4,154.00	9.67	140.75	4,092.01	-563.06	373.02	-530.75	0.40	-0.30	1.55
4,242.00	9.05	139.40	4,178.84	-574.04	382.20	-540.94	0.75	-0.70	-1.53
4,331.00	9.96	147.55	4,266.62	-585.85	390.89	-552.01	1.82	1.02	9.16

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Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

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)
4,420.00	11.20	147.77	4,354.10	-599.65	399.63	-565.05	1.39	1.39	0.25
4,509.00	10.72	142.39	4,441.48	-613.52	409.29	-578.09	1.27	-0.54	-6.04
4,598.00	9.81	142.62	4,529.06	-626.10	418.94	-589.84	1.02	-1.02	0.26
4,687.00	9.00	142.72	4,616.86	-637.67	427.76	-600.65	0.91	-0.91	0.11
4,776.00	10.53	142.99	4,704.57	-649.70	436.88	-611.90	1.72	1.72	0.30
4,865.00	10.41	142.88	4,792.09	-662.61	446.62	-623.97	0.14	-0.13	-0.12
4,953.00	10.09	141.06	4,878.68	-674.94	456.27	-635.47	0.52	-0.36	-2.07
5,042.00	12.19	147.28	4,966.00	-688.91	466.25	-648.58	2.72	2.36	6.99
5,131.00	11.18	145.69	5,053.16	-703.95	476.19	-662.76	1.19	-1.13	-1.79
5,220.00	10.03	143.75	5,140.64	-717.32	485.64	-675.32	1.35	-1.29	-2.18
5,309.00	8.82	144.19	5,228.43	-729.11	494.21	-686.36	1.36	-1.36	0.49
5,420.00	7.97	142.81	5,338.24	-742.14	503.84	-698.57	0.79	-0.77	-1.24
5,508.00	9.44	143.06	5,425.23	-752.77	511.87	-708.50	1.67	1.67	0.28
5,597.00	10.77	136.97	5,512.85	-764.68	521.93	-719.56	1.91	1.49	-6.84
5,685.00	9.45	134.64	5,599.48	-775.77	532.68	-729.73	1.57	-1.50	-2.65
5,745.00	9.29	112.99	5,658.70	-781.12	540.65	-734.42	5.85	-0.27	-36.09
KOP-5745' MD, 5659' TVD									
5,773.00	9.65	103.27	5,686.32	-782.54	545.01	-735.48	5.85	1.30	-34.70
5,862.00	16.46	60.50	5,773.15	-778.03	563.30	-729.49	12.79	7.65	-48.06
5,950.00	21.89	29.28	5,856.45	-757.52	582.24	-707.49	12.97	6.17	-35.48
6,039.00	28.65	15.24	5,936.96	-722.39	595.99	-671.36	10.10	7.60	-15.78
6,127.00	35.79	14.04	6,011.36	-677.01	607.79	-625.17	8.15	8.11	-1.36
6,215.00	44.27	7.44	6,078.71	-621.47	618.04	-568.98	10.77	9.64	-7.50
6,303.00	50.13	7.34	6,138.48	-557.46	626.34	-504.51	6.66	6.66	-0.11
6,391.00	55.96	5.14	6,191.36	-487.59	633.92	-434.25	6.92	6.62	-2.50
6,480.00	62.44	4.16	6,236.91	-411.43	640.10	-357.85	7.34	7.28	-1.10
6,569.00	69.23	3.01	6,273.32	-330.44	645.15	-276.71	7.72	7.63	-1.29
6,657.00	73.74	2.50	6,301.26	-247.11	649.15	-193.33	5.15	5.12	-0.58
6,707.20	77.63	2.49	6,313.67	-198.53	651.27	-144.74	7.75	7.75	-0.02
~300' X-OVER PNT - 6707.20' MD, 300' FSL, 2558' FWL SEC 34									
6,746.00	80.64	2.48	6,320.98	-160.46	652.92	-106.66	7.75	7.75	-0.02
6,806.00	85.93	1.46	6,328.00	-100.93	654.97	-47.16	8.97	8.81	-1.70
HZ LANDING PNT-6806' MD, 6328' TVD									
6,835.00	88.48	0.97	6,329.41	-71.97	655.58	-18.25	8.97	8.81	-1.68
6,923.00	88.06	358.79	6,332.07	15.98	655.40	69.39	2.52	-0.48	-2.48
7,011.00	91.82	0.42	6,332.16	103.96	654.79	157.03	4.66	4.27	1.85
7,101.00	91.64	1.89	6,329.45	193.90	656.60	246.81	1.64	-0.20	1.63
7,189.00	90.84	2.88	6,327.54	281.80	660.26	334.72	1.45	-0.91	1.12
7,278.00	91.02	2.82	6,326.10	370.68	664.69	423.66	0.21	0.20	-0.07
7,364.00	91.16	2.26	6,324.46	456.58	668.50	509.59	0.67	0.16	-0.65
7,453.00	91.27	1.93	6,322.57	545.50	671.75	598.48	0.39	0.12	-0.37
7,541.00	89.25	3.07	6,322.17	633.41	675.59	686.41	2.64	-2.30	1.30
7,629.00	89.29	2.56	6,323.29	721.29	679.91	774.35	0.58	0.05	-0.58
7,717.00	89.35	3.44	6,324.34	809.17	684.52	862.31	1.00	0.07	1.00

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7,806.00	90.01	1.05	6,324.84	898.09	688.00	951.22	2.79	0.74	-2.69
7,895.00	89.41	1.30	6,325.29	987.07	689.83	1,040.05	0.73	-0.67	0.28
7,983.00	89.58	2.33	6,326.06	1,075.02	692.61	1,127.94	1.19	0.19	1.17
8,071.00	90.37	0.27	6,326.10	1,162.99	694.61	1,215.78	2.51	0.90	-2.34
8,160.00	90.56	359.00	6,325.38	1,251.99	694.04	1,304.43	1.44	0.21	-1.43
8,249.00	90.63	357.57	6,324.45	1,340.94	691.38	1,392.87	1.61	0.08	-1.61
8,338.00	90.01	357.85	6,323.96	1,429.87	687.82	1,481.21	0.76	-0.70	0.31
8,427.00	89.67	358.33	6,324.21	1,518.82	684.86	1,569.62	0.66	-0.38	0.54
8,516.00	89.16	357.96	6,325.11	1,607.76	681.98	1,658.04	0.71	-0.57	-0.42
8,604.00	90.27	359.85	6,325.55	1,695.74	680.30	1,745.58	2.49	1.26	2.15
8,692.00	89.82	359.43	6,325.48	1,783.74	679.74	1,833.24	0.70	-0.51	-0.48
8,781.00	88.99	359.53	6,326.41	1,872.73	678.93	1,921.87	0.94	-0.93	0.11
8,869.00	88.34	359.38	6,328.46	1,960.70	678.10	2,009.48	0.76	-0.74	-0.17
8,958.00	89.51	359.27	6,330.13	2,049.68	677.05	2,098.08	1.32	1.31	-0.12
9,047.00	89.78	359.56	6,330.68	2,138.67	676.14	2,186.70	0.45	0.30	0.33
9,136.00	89.35	359.13	6,331.35	2,227.66	675.12	2,275.31	0.68	-0.48	-0.48
9,224.00	90.49	359.76	6,331.48	2,315.66	674.27	2,362.94	1.48	1.30	0.72
9,311.00	90.95	0.32	6,330.38	2,402.65	674.33	2,449.65	0.83	0.53	0.64
9,400.00	90.60	0.21	6,329.18	2,491.64	674.74	2,538.38	0.41	-0.39	-0.12
9,489.00	90.09	359.56	6,328.64	2,580.64	674.57	2,627.06	0.93	-0.57	-0.73
9,577.00	91.65	0.35	6,327.31	2,668.62	674.50	2,714.75	1.99	1.77	0.90
9,665.00	91.43	359.97	6,324.94	2,756.59	674.74	2,802.45	0.50	-0.25	-0.43
9,753.00	91.42	2.99	6,322.75	2,844.52	677.01	2,890.27	3.43	-0.01	3.43
9,842.00	91.24	2.70	6,320.69	2,933.39	681.43	2,979.20	0.38	-0.20	-0.33
9,931.00	91.38	2.48	6,318.65	3,022.28	685.45	3,068.12	0.29	0.16	-0.25
10,019.00	91.39	2.50	6,316.53	3,110.17	689.27	3,156.03	0.03	0.01	0.02
10,108.00	91.42	2.77	6,314.34	3,199.05	693.36	3,244.95	0.31	0.03	0.30
10,197.00	89.42	3.51	6,313.69	3,287.91	698.24	3,333.91	2.40	-2.25	0.83
10,285.00	89.02	3.78	6,314.89	3,375.72	703.83	3,421.88	0.55	-0.45	0.31
10,374.00	90.97	2.97	6,314.90	3,464.56	709.07	3,510.86	2.37	2.19	-0.91
10,462.00	90.55	3.07	6,313.73	3,552.43	713.71	3,598.81	0.49	-0.48	0.11
10,551.00	89.99	3.29	6,313.31	3,641.29	718.64	3,687.78	0.68	-0.63	0.25
10,639.00	90.33	3.31	6,313.07	3,729.14	723.71	3,775.75	0.39	0.39	0.02
10,727.00	90.19	3.74	6,312.67	3,816.98	729.12	3,863.73	0.51	-0.16	0.49
10,815.00	90.93	1.96	6,311.81	3,904.86	733.49	3,951.68	2.19	0.84	-2.02
10,904.00	90.58	2.33	6,310.63	3,993.79	736.83	4,040.59	0.57	-0.39	0.42
10,993.00	90.59	1.85	6,309.72	4,082.73	740.07	4,129.49	0.54	0.01	-0.54
11,079.00	90.61	1.47	6,308.82	4,168.68	742.56	4,215.37	0.44	0.02	-0.44
11,167.00	90.73	0.95	6,307.79	4,256.66	744.42	4,303.20	0.61	0.14	-0.59
11,255.00	90.71	359.92	6,306.69	4,344.65	745.09	4,390.95	1.17	-0.02	-1.17
11,343.00	90.18	359.59	6,306.01	4,432.64	744.71	4,478.62	0.71	-0.60	-0.37
11,431.00	89.88	359.02	6,305.96	4,520.64	743.64	4,566.23	0.73	-0.34	-0.65
11,519.00	90.89	1.05	6,305.37	4,608.63	743.70	4,653.94	2.58	1.15	2.31

Company:	MALLARD EXPLORATION	**Local Co-ordinate Reference:**	Well GREEN TEAL FED 34-27-4HN
Project:	WELD COUNTY	**TVD Reference:**	KB 17' @ 4940.00usft
Site:	SEC 34-T8N-R60W	**MD Reference:**	KB 17' @ 4940.00usft
Well:	GREEN TEAL FED 34-27-4HN	**North Reference:**	True
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

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)
11,608.00	90.83	0.66	6,304.03	4,697.61	745.03	4,742.73	0.44	-0.07	-0.44
11,697.00	90.45	0.06	6,303.04	4,786.60	745.59	4,831.47	0.80	-0.43	-0.67
11,784.00	90.77	2.67	6,302.11	4,873.56	747.66	4,918.31	3.02	0.37	3.00
11,872.00	90.93	2.33	6,300.81	4,961.47	751.50	5,006.24	0.43	0.18	-0.39
11,960.00	89.41	3.81	6,300.55	5,049.34	756.21	5,094.20	2.41	-1.73	1.68
12,049.00	89.15	3.40	6,301.66	5,138.16	761.80	5,183.18	0.55	-0.29	-0.46
12,138.00	89.45	3.12	6,302.75	5,227.00	766.86	5,272.14	0.46	0.34	-0.31
12,226.00	89.25	2.68	6,303.75	5,314.89	771.32	5,360.09	0.55	-0.23	-0.50
12,315.00	89.32	2.57	6,304.86	5,403.79	775.39	5,449.03	0.15	0.08	-0.12
12,404.00	89.34	2.14	6,305.90	5,492.70	779.05	5,537.95	0.48	0.02	-0.48
12,493.00	89.80	1.87	6,306.57	5,581.65	782.16	5,626.85	0.60	0.52	-0.30
12,582.00	89.92	1.99	6,306.79	5,670.60	785.16	5,715.75	0.19	0.13	0.13
12,670.00	89.53	1.89	6,307.21	5,758.54	788.14	5,803.65	0.46	-0.44	-0.11
12,759.00	89.43	1.65	6,308.02	5,847.50	790.89	5,892.53	0.29	-0.11	-0.27
12,847.00	89.33	1.61	6,308.97	5,935.46	793.39	5,980.40	0.12	-0.11	-0.05
12,936.00	90.62	0.76	6,309.01	6,024.44	795.23	6,069.23	1.74	1.45	-0.96
13,025.00	90.00	0.01	6,308.53	6,113.43	795.83	6,157.98	1.09	-0.70	-0.84
13,114.00	89.51	359.77	6,308.91	6,202.43	795.66	6,246.66	0.61	-0.55	-0.27
13,202.00	88.62	359.23	6,310.34	6,290.41	794.89	6,334.29	1.18	-1.01	-0.61
13,291.00	91.02	359.32	6,310.62	6,379.40	793.77	6,422.89	2.70	2.70	0.10
13,380.00	90.89	358.28	6,309.14	6,468.37	791.90	6,511.41	1.18	-0.15	-1.17
13,469.00	90.75	357.49	6,307.86	6,557.30	788.62	6,599.77	0.90	-0.16	-0.89
13,557.00	91.36	1.11	6,306.24	6,645.26	787.54	6,687.36	4.17	0.69	4.11
13,646.00	91.44	0.84	6,304.07	6,734.22	789.06	6,776.14	0.32	0.09	-0.30
13,735.00	90.52	2.20	6,302.55	6,823.17	791.42	6,864.99	1.84	-1.03	1.53
13,824.00	90.94	2.20	6,301.41	6,912.10	794.83	6,953.90	0.47	0.47	0.00
13,912.00	89.05	2.50	6,301.42	7,000.02	798.44	7,041.82	2.17	-2.15	0.34
14,001.00	89.36	2.85	6,302.66	7,088.92	802.59	7,130.76	0.53	0.35	0.39
14,089.00	89.78	3.31	6,303.32	7,176.79	807.32	7,218.72	0.71	0.48	0.52
14,178.00	90.09	3.57	6,303.42	7,265.63	812.66	7,307.70	0.45	0.35	0.29
14,266.00	91.02	2.64	6,302.56	7,353.49	817.43	7,395.66	1.49	1.06	-1.06
14,355.00	91.12	2.58	6,300.90	7,442.38	821.48	7,484.59	0.13	0.11	-0.07
14,444.00	90.94	2.23	6,299.30	7,531.29	825.22	7,573.51	0.44	-0.20	-0.39
14,533.00	91.38	1.89	6,297.50	7,620.21	828.41	7,662.39	0.62	0.49	-0.38
14,621.00	91.62	1.60	6,295.20	7,708.14	831.09	7,750.25	0.43	0.27	-0.33
14,709.00	90.62	1.08	6,293.48	7,796.10	833.15	7,838.08	1.28	-1.14	-0.59
14,798.00	89.55	0.76	6,293.35	7,885.09	834.58	7,926.89	1.25	-1.20	-0.36
14,886.00	89.58	0.31	6,294.01	7,973.08	835.40	8,014.66	0.51	0.03	-0.51
14,973.00	89.59	359.30	6,294.64	8,060.08	835.10	8,101.34	1.16	0.01	-1.16
15,061.00	89.26	358.25	6,295.53	8,148.05	833.22	8,188.86	1.25	-0.37	-1.19
15,149.00	88.25	357.99	6,297.44	8,235.98	830.34	8,276.27	1.19	-1.15	-0.30
15,238.00	90.67	358.65	6,298.28	8,324.93	827.73	8,364.71	2.82	2.72	0.74
15,326.00	90.15	358.19	6,297.65	8,412.90	825.30	8,452.18	0.79	-0.59	-0.52
15,414.00	90.39	359.42	6,297.23	8,500.87	823.47	8,539.72	1.42	0.27	1.40

Company:	MALLARD EXPLORATION	**Local Co-ordinate Reference:**	Well GREEN TEAL FED 34-27-4HN
Project:	WELD COUNTY	**TVD Reference:**	KB 17' @ 4940.00usft
Site:	SEC 34-T8N-R60W	**MD Reference:**	KB 17' @ 4940.00usft
Well:	GREEN TEAL FED 34-27-4HN	**North Reference:**	True
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

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)
15,503.00	89.86	359.26	6,297.04	8,589.87	822.44	8,628.33	0.62	-0.60	-0.18
15,592.00	91.47	359.21	6,296.01	8,678.85	821.25	8,716.92	1.81	1.81	-0.06
15,680.00	91.76	359.03	6,293.53	8,766.80	819.90	8,804.47	0.39	0.33	-0.20
15,769.00	92.22	358.47	6,290.44	8,855.73	817.96	8,892.94	0.81	0.52	-0.63
15,858.00	91.31	359.69	6,287.69	8,944.67	816.53	8,981.47	1.71	-1.02	1.37
15,947.00	90.55	0.22	6,286.25	9,033.66	816.46	9,070.16	1.04	-0.85	0.60
16,036.00	90.85	359.76	6,285.16	9,122.65	816.45	9,158.85	0.62	0.34	-0.52
16,124.00	90.88	359.17	6,283.83	9,210.64	815.63	9,246.48	0.67	0.03	-0.67
16,213.00	89.14	359.61	6,283.82	9,299.63	814.68	9,335.09	2.02	-1.96	0.49
16,302.00	88.98	359.05	6,285.28	9,388.61	813.64	9,423.69	0.65	-0.18	-0.63
16,391.00	89.40	358.66	6,286.54	9,477.58	811.86	9,512.23	0.64	0.47	-0.44
16,479.00	89.67	358.31	6,287.25	9,565.55	809.53	9,599.71	0.50	0.31	-0.40
16,568.00	90.50	358.21	6,287.12	9,654.51	806.83	9,688.15	0.94	0.93	-0.11
16,650.00	91.20	357.88	6,285.90	9,736.45	804.04	9,769.59	0.94	0.85	-0.40
LAST SURVEY-16650' MD, 6286' TVD									
16,705.00	91.20	357.88	6,284.75	9,791.40	802.00	9,824.19	0.00	0.00	0.00
PROD CSG - 16705' MD, 6285' TVD, 305.50' FNL, 2501' FWL SEC 27									
16,710.00	91.20	357.88	6,284.65	9,796.40	801.82	9,829.16	0.00	0.00	0.00
EXTRAPOLATION TO TD - 16710' MD, 300.50' FNL, 2501' FWL SEC 27									

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
GT FED 4HN- PBHL	0.00	0.00	6,315.00	9,796.90	840.35	1,479,073.48	3,394,600.20	40.639768°N	104.078086°W
- actual wellpath misses target center by 49.03usft at 16708.44usft MD (6284.68 TVD, 9794.84 N, 801.87 E)									
- Point									
GT FED 4HN- LP	0.00	0.00	6,330.00	-198.53	633.01	1,469,076.02	3,394,552.83	40.612332°N	104.078834°W
- actual wellpath misses target center by 24.35usft at 6709.49usft MD (6314.16 TVD, -196.29 N, 651.37 E)									
- Point									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,703.00	1,683.25	-183.63	130.82	SURFACE CSG-1703' MD, 1683' TVD
5,745.00	5,658.70	-781.12	540.65	KOP-5745' MD, 5659' TVD
6,707.20	6,313.67	-198.53	651.27	~300' X-OVER PNT - 6707.20' MD, 300' FSL, 2558' FWL SEC 34
6,806.00	6,328.00	-100.93	654.97	HZ LANDING PNT-6806' MD, 6328' TVD
16,650.00	6,285.90	9,736.45	804.04	LAST SURVEY-16650' MD, 6286' TVD
16,705.00	6,284.75	9,791.40	802.00	PROD CSG - 16705' MD, 6285' TVD, 305.50' FNL, 2501' FWL SEC 27
16,710.00	6,284.65	9,796.40	801.82	EXTRAPOLATION TO TD - 16710' MD, 300.50' FNL, 2501' FWL SEC 27

Company:	MALLARD EXPLORATION	**Local Co-ordinate Reference:**	Well GREEN TEAL FED 34-27-4HN
Project:	WELD COUNTY	**TVD Reference:**	KB 17' @ 4940.00usft
Site:	SEC 34-T8N-R60W	**MD Reference:**	KB 17' @ 4940.00usft
Well:	GREEN TEAL FED 34-27-4HN	**North Reference:**	True
Wellbore:	OWB	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL SURVEY	**Database:**	EDM 5000.16 Single User Db

Checked By: _____ Approved By: _____ Date: _____