

# **MALLARD EXPLORATION**

**WELD COUNTY**

**SEC 21-T8N-R60W**

**GOLDENEYE FED 21-16-3HN**

**OWB**

**Design: FINAL SURVEY**

## **Standard Survey Report**

**24 March, 2021**



**Project: WELD COUNTY**  
**Site: SEC 21-T8N-R60W**  
**Well: GOLDENEYE FED 21-16-3HN**  
**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: 7.55°  
 Magnetic Field  
 Strength: 52187.9nT  
 Dip Angle: 66.96°  
 Date: 2/3/2021  
 Model: IGRF2020

**WELL DETAILS: GOLDENEYE FED 21-16-3HN**

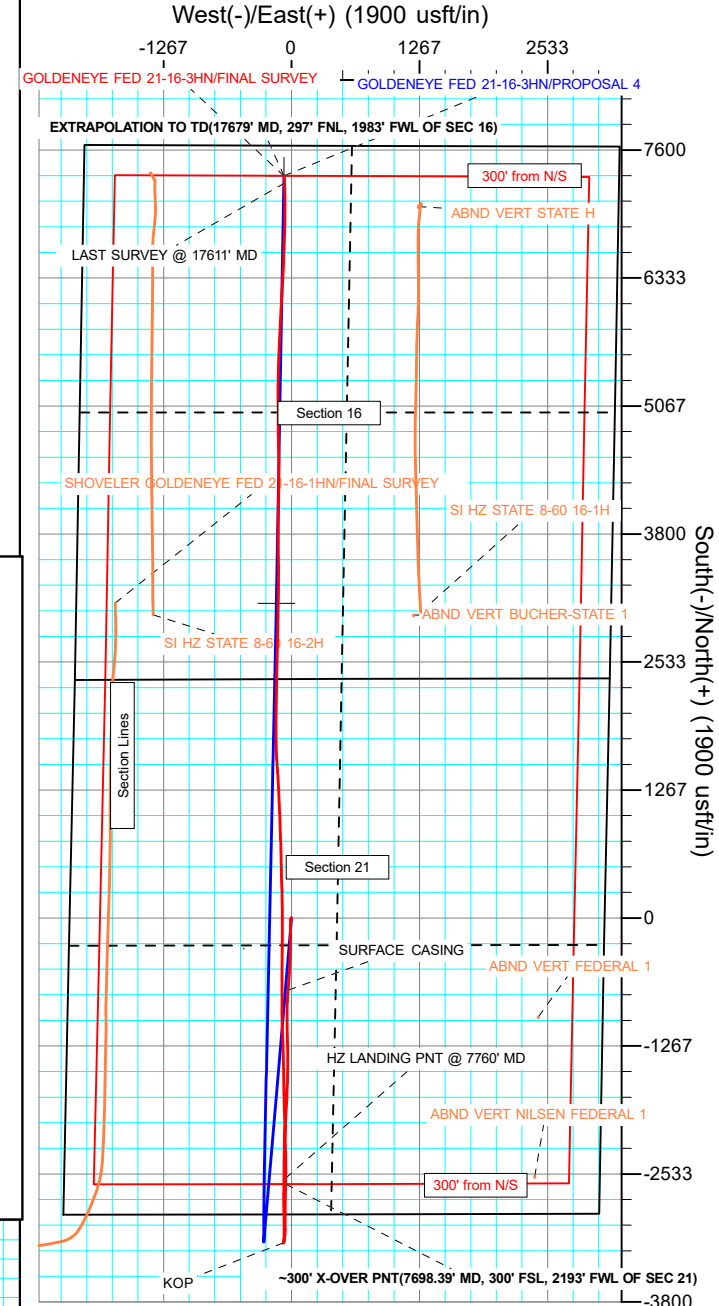
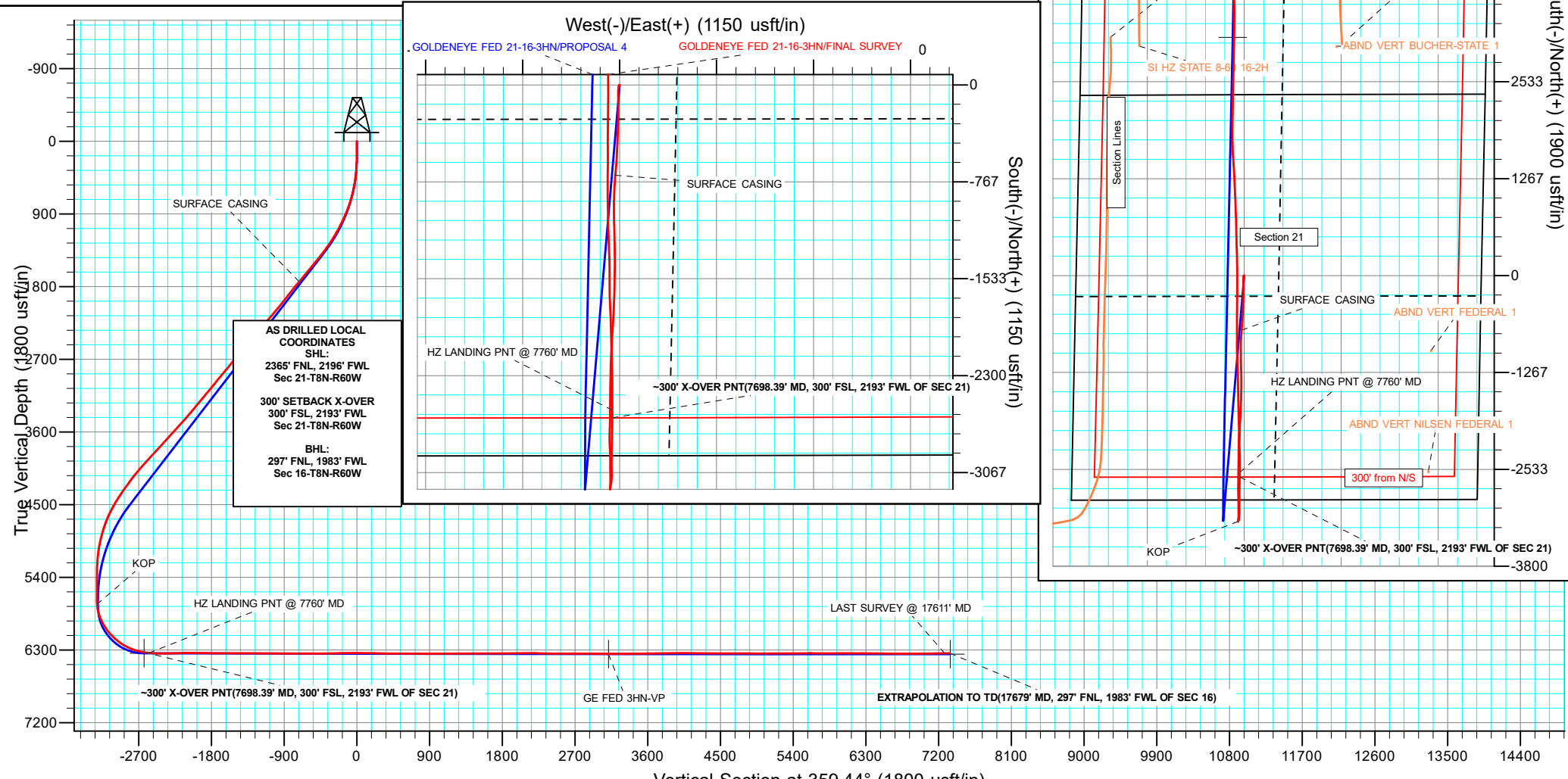
+N/-S	+E/-W	Northing	Easting	4935.00	Latitude	Longitude	Slot
0.00	0.00	1482198.25	3388969.91		40.648590°N	104.098193°W	

**ANNOTATIONS**

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSec	Departure	Annotation
1941.00	40.19	184.86	1738.51	-713.90	-33.79	-713.54	718.43	SURFACE CASING
6803.00	3.33	22.50	5734.02	-3215.83	-79.43	-3214.90	3229.98	KOP
7698.39	80.43	0.23	6327.37	-2634.02	-58.20	-2633.33	3812.21	~300' X-OVER PNT(7698.39' MD, 300' FSL, 2193' FWL OF SEC 21)
7760.00	84.29	359.99	6335.71	-2572.99	-58.11	-2572.30	3873.25	HZ LANDING PNT @ 7760' MD
17611.00	90.46	357.80	6340.78	7273.10	-69.27	7273.43	13723.18	LAST SURVEY @ 17611' MD
17679.00	90.46	357.80	6340.24	7341.05	-71.88	7341.40	13791.18	EXTRAPOLATION TO TD(17679' MD, 297' FNL, 1983' FWL OF SEC 16)

**DESIGN TARGET DETAILS**

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
GE FED 3HN-LP	6340.00	-2634.02	-76.97	1479563.34	3388934.58	40.641360°N	104.098470°W
GE FED 3HN-PBHL	6350.00	7343.64	-75.18	1489539.78	3388778.65	40.668747°N	104.098464°W
GE FED 3HN-VP	6350.00	3113.50	-149.83	1485308.99	3388770.88	40.657136°N	104.098733°W



## Survey Report

<b>Company:</b> MALLARD EXPLORATION	<b>Local Co-ordinate Reference:</b> Well GOLDENEYE FED 21-16-3HN
<b>Project:</b> WELD COUNTY	<b>TVD Reference:</b> KB 27' @ 4962.00usft
<b>Site:</b> SEC 21-T8N-R60W	<b>MD Reference:</b> KB 27' @ 4962.00usft
<b>Well:</b> GOLDENEYE FED 21-16-3HN	<b>North Reference:</b> True
<b>Wellbore:</b> OWB	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL SURVEY	<b>Database:</b> EDM 5000.16 Single User Db

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

<b>Site</b> SEC 21-T8N-R60W			
<b>Site Position:</b>	<b>Northing:</b> 1,484,518.79 usft	<b>Latitude:</b>	40.655053°N
<b>From:</b> Lat/Long	<b>Easting:</b> 3,386,789.83 usft	<b>Longitude:</b>	104.105917°W
<b>Position Uncertainty:</b> 0.00 usft	<b>Slot Radius:</b> 13.200 in		

<b>Well</b> GOLDENEYE FED 21-16-3HN					
<b>Well Position</b>	<b>+N/-S</b> 0.00 usft	<b>Northing:</b> 1,482,198.25 usft	<b>Latitude:</b>	40.648590°N	
	<b>+E/-W</b> 0.00 usft	<b>Easting:</b> 3,388,969.90 usft	<b>Longitude:</b>	104.098193°W	
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	usft	<b>Ground Level:</b>	4,935.00 usft
<b>Grid Convergence:</b>	0.91 °				

<b>Wellbore</b> OWB					
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination</b>	<b>Dip Angle</b>	<b>Field Strength</b>
			(°)	(°)	(nT)
	IGRF2020	2/3/2021	7.55	66.96	52,187.93186260

<b>Design</b> FINAL SURVEY					
<b>Audit Notes:</b>					
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b>	0.00		
<b>Vertical Section:</b>	<b>Depth From (TVD)</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Direction</b>	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00		359.44

<b>Survey Program</b>		<b>Date</b> 3/24/2021
<b>From</b>	<b>To</b>	<b>Survey (Wellbore)</b>
(usft)	(usft)	
126.00	17,679.00	SURFACE SURVEY (OWB)
		<b>Tool Name</b> MWD
		<b>Description</b> OWSG MWD - Standard

<b>Survey</b>										
<b>Measured</b>	<b>Inclination</b>	<b>Azimuth</b>	<b>Vertical</b>	<b>+N/-S</b>	<b>+E/-W</b>	<b>Vertical</b>	<b>Dogleg</b>	<b>Build</b>	<b>Turn</b>	
<b>Depth</b>	(°)	(°)	<b>Depth</b>	<b>(usft)</b>	<b>(usft)</b>	<b>Section</b>	<b>Rate</b>	<b>Rate</b>	<b>Rate</b>	
(usft)			(usft)			(usft)	(°/100ft)	(°/100ft)	(°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	0.62	304.34	126.00	0.38	-0.56	0.39	0.49	0.49	0.00	
220.00	1.19	240.14	219.99	0.19	-1.83	0.20	1.14	0.61	-68.30	
313.00	3.89	202.64	312.89	-3.21	-3.88	-3.17	3.26	2.90	-40.32	
407.00	5.74	193.25	406.56	-10.73	-6.19	-10.67	2.13	1.97	-9.99	
502.00	9.10	188.36	500.75	-22.79	-8.37	-22.70	3.60	3.54	-5.15	
595.00	11.93	184.61	592.18	-39.65	-10.21	-39.55	3.13	3.04	-4.03	
689.00	14.94	181.22	683.60	-61.45	-11.25	-61.34	3.31	3.20	-3.61	
783.00	19.09	178.88	773.46	-88.95	-11.21	-88.83	4.47	4.41	-2.49	
878.00	22.89	178.88	862.14	-122.96	-10.54	-122.85	4.00	4.00	0.00	

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<b>Project:</b>	WELD COUNTY	<b>TVD Reference:</b>	KB 27' @ 4962.00usft
<b>Site:</b>	SEC 21-T8N-R60W	<b>MD Reference:</b>	KB 27' @ 4962.00usft
<b>Well:</b>	GOLDENEYE FED 21-16-3HN	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	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)
972.00	23.82	179.06	948.44	-160.22	-9.87	-160.12	0.99	0.99	0.19
1,066.00	26.96	180.07	1,033.35	-200.52	-9.59	-200.42	3.37	3.34	1.07
1,161.00	28.90	181.48	1,117.28	-245.01	-10.21	-244.90	2.16	2.04	1.48
1,255.00	32.17	182.28	1,198.24	-292.73	-11.79	-292.60	3.51	3.48	0.85
1,349.00	34.34	181.97	1,276.84	-344.24	-13.70	-344.09	2.32	2.31	-0.33
1,444.00	37.38	181.92	1,353.82	-399.85	-15.58	-399.68	3.20	3.20	-0.05
1,538.00	38.75	182.10	1,427.83	-457.77	-17.62	-457.58	1.46	1.46	0.19
1,632.00	39.55	182.72	1,500.72	-517.07	-20.12	-516.84	0.95	0.85	0.66
1,726.00	39.51	183.42	1,573.23	-576.81	-23.32	-576.55	0.48	-0.04	0.74
1,821.00	39.68	184.44	1,646.43	-637.21	-27.47	-636.91	0.71	0.18	1.07
1,887.00	39.86	184.79	1,697.16	-679.30	-30.87	-678.96	0.44	0.27	0.53
1,941.00	40.19	184.86	1,738.51	-713.90	-33.79	-713.54	0.62	0.62	0.14
<b>SURFACE CASING</b>									
1,952.00	40.26	184.88	1,746.91	-720.98	-34.40	-720.61	0.62	0.62	0.14
2,046.00	38.80	183.82	1,819.41	-780.63	-38.94	-780.21	1.71	-1.55	-1.13
2,140.00	38.22	181.97	1,892.97	-839.08	-41.90	-838.63	1.37	-0.62	-1.97
2,234.00	37.96	181.44	1,966.95	-897.04	-43.63	-896.57	0.44	-0.28	-0.56
2,329.00	39.86	180.38	2,040.87	-956.70	-44.57	-956.22	2.12	2.00	-1.12
2,423.00	39.24	179.72	2,113.35	-1,016.55	-44.62	-1,016.07	0.80	-0.66	-0.70
2,517.00	41.27	179.02	2,185.08	-1,077.29	-43.94	-1,076.81	2.21	2.16	-0.74
2,611.00	40.79	178.71	2,255.99	-1,138.98	-42.72	-1,138.51	0.55	-0.51	-0.33
2,705.00	40.70	178.36	2,327.21	-1,200.32	-41.15	-1,199.86	0.26	-0.10	-0.37
2,799.00	39.99	178.13	2,398.85	-1,261.14	-39.29	-1,260.70	0.77	-0.76	-0.24
2,893.00	39.33	177.96	2,471.22	-1,321.10	-37.25	-1,320.67	0.71	-0.70	-0.18
2,987.00	40.34	181.26	2,543.41	-1,381.29	-36.85	-1,380.87	2.49	1.07	3.51
3,106.00	39.90	181.04	2,634.41	-1,457.96	-38.39	-1,457.52	0.39	-0.37	-0.18
3,200.00	39.59	180.73	2,706.68	-1,518.05	-39.32	-1,517.60	0.39	-0.33	-0.33
3,294.00	39.06	180.21	2,779.40	-1,577.62	-39.81	-1,577.16	0.66	-0.56	-0.55
3,387.00	40.12	182.67	2,851.07	-1,636.86	-41.32	-1,636.38	2.03	1.14	2.65
3,482.00	39.33	182.14	2,924.14	-1,697.52	-43.87	-1,697.01	0.90	-0.83	-0.56
3,575.00	38.53	181.48	2,996.48	-1,755.93	-45.72	-1,755.40	0.97	-0.86	-0.71
3,670.00	40.48	183.42	3,069.78	-1,816.30	-48.32	-1,815.74	2.43	2.05	2.04
3,764.00	39.33	183.33	3,141.89	-1,876.49	-51.87	-1,875.90	1.22	-1.22	-0.10
3,858.00	40.57	183.91	3,213.95	-1,936.73	-55.68	-1,936.09	1.38	1.32	0.62
3,952.00	38.71	183.42	3,286.33	-1,996.57	-59.52	-1,995.89	2.01	-1.98	-0.52
4,047.00	40.12	182.94	3,359.72	-2,056.80	-62.87	-2,056.08	1.52	1.48	-0.51
4,141.00	42.02	182.67	3,430.59	-2,118.48	-65.88	-2,117.73	2.03	2.02	-0.29
4,235.00	42.07	182.28	3,500.39	-2,181.37	-68.60	-2,180.59	0.28	0.05	-0.41
4,329.00	42.11	181.66	3,570.15	-2,244.34	-70.77	-2,243.54	0.44	0.04	-0.66
4,423.00	42.02	180.96	3,639.93	-2,307.30	-72.21	-2,306.48	0.51	-0.10	-0.74
4,517.00	42.16	180.69	3,709.69	-2,370.30	-73.12	-2,369.47	0.24	0.15	-0.29
4,611.00	42.38	180.21	3,779.25	-2,433.53	-73.61	-2,432.69	0.42	0.23	-0.51
4,705.00	42.95	180.43	3,848.37	-2,497.23	-73.97	-2,496.39	0.63	0.61	0.23

## Survey Report

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<b>Project:</b>	WELD COUNTY	<b>TVD Reference:</b>	KB 27' @ 4962.00usft
<b>Site:</b>	SEC 21-T8N-R60W	<b>MD Reference:</b>	KB 27' @ 4962.00usft
<b>Well:</b>	GOLDENEYE FED 21-16-3HN	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	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)	
4,799.00	42.69	180.60	3,917.32	-2,561.12	-74.54	-2,560.27	0.30	-0.28	0.18	
4,893.00	41.76	180.91	3,986.93	-2,624.28	-75.37	-2,623.42	1.01	-0.99	0.33	
4,987.00	40.83	181.44	4,057.55	-2,686.30	-76.64	-2,685.42	1.06	-0.99	0.56	
5,081.00	39.20	181.62	4,129.54	-2,746.72	-78.25	-2,745.82	1.74	-1.73	0.19	
5,175.00	35.71	179.50	4,204.15	-2,803.87	-78.86	-2,802.96	3.96	-3.71	-2.26	
5,269.00	35.88	177.87	4,280.40	-2,858.83	-77.59	-2,857.93	1.03	0.18	-1.73	
5,363.00	34.64	176.64	4,357.15	-2,913.03	-75.00	-2,912.15	1.52	-1.32	-1.31	
5,457.00	31.99	180.34	4,435.71	-2,964.61	-73.58	-2,963.75	3.55	-2.82	3.94	
5,551.00	29.08	180.73	4,516.66	-3,012.36	-74.02	-3,011.49	3.10	-3.10	0.41	
5,645.00	26.20	177.12	4,599.93	-3,055.94	-73.27	-3,055.08	3.54	-3.06	-3.84	
5,740.00	22.14	179.85	4,686.59	-3,094.80	-72.17	-3,093.95	4.43	-4.27	2.87	
5,834.00	18.43	180.25	4,774.74	-3,127.39	-72.19	-3,126.53	3.95	-3.95	0.43	
5,928.00	15.47	183.73	4,864.65	-3,154.76	-73.07	-3,153.89	3.33	-3.15	3.70	
6,022.00	12.24	183.11	4,955.90	-3,177.23	-74.43	-3,176.35	3.44	-3.44	-0.66	
6,117.00	9.06	186.99	5,049.26	-3,194.71	-75.88	-3,193.82	3.43	-3.35	4.08	
6,211.00	6.10	198.32	5,142.43	-3,206.80	-78.35	-3,205.88	3.51	-3.15	12.05	
6,305.00	3.18	208.19	5,236.11	-3,213.84	-81.16	-3,212.89	3.21	-3.11	10.50	
6,400.00	0.35	188.71	5,331.06	-3,216.45	-82.44	-3,215.49	3.00	-2.98	-20.51	
<b>KOP</b>										
6,493.00	0.44	162.67	5,424.06	-3,217.07	-82.38	-3,216.11	0.21	0.10	-28.00	
6,588.00	0.35	82.86	5,519.05	-3,217.39	-81.98	-3,216.43	0.54	-0.09	-84.01	
6,683.00	0.75	61.27	5,614.05	-3,217.05	-81.15	-3,216.10	0.47	0.42	-22.73	
6,777.00	0.88	75.77	5,708.04	-3,216.58	-79.91	-3,215.64	0.26	0.14	15.43	
6,803.00	3.33	22.50	5,734.02	-3,215.83	-79.43	-3,214.90	11.13	9.43	-204.88	
<b>-300' X-OVER PNT(7698.39' MD, 300' FSL, 2193' FWL OF SEC 21)</b>										
7,719.00	81.44	0.09	6,330.62	-2,613.67	-58.14	-2,612.98	4.93	4.88	-0.69	
7,760.00	84.29	359.99	6,335.71	-2,572.99	-58.11	-2,572.30	6.96	6.96	-0.24	
<b>HZ LANDING PNT @ 7760' MD</b>										
7,813.00	87.98	359.87	6,339.28	-2,520.12	-58.18	-2,519.43	6.96	6.96	-0.23	
7,907.00	89.97	359.96	6,340.96	-2,426.14	-58.32	-2,425.46	2.12	2.12	0.10	
8,002.00	90.28	359.43	6,340.75	-2,331.14	-58.82	-2,330.46	0.65	0.33	-0.56	
8,096.00	90.54	358.46	6,340.08	-2,237.16	-60.55	-2,236.46	1.07	0.28	-1.03	
8,191.00	90.85	358.06	6,338.93	-2,142.22	-63.44	-2,141.49	0.53	0.33	-0.42	
8,285.00	90.15	358.94	6,338.11	-2,048.25	-65.90	-2,047.51	1.20	-0.74	0.94	

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<b>Project:</b>	WELD COUNTY	<b>TVD Reference:</b>	KB 27' @ 4962.00usft
<b>Site:</b>	SEC 21-T8N-R60W	<b>MD Reference:</b>	KB 27' @ 4962.00usft
<b>Well:</b>	GOLDENEYE FED 21-16-3HN	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	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)	
8,379.00	90.23	358.46	6,337.79	-1,954.28	-68.03	-1,953.52	0.52	0.09	-0.51	
8,473.00	89.70	358.15	6,337.85	-1,860.32	-70.81	-1,859.54	0.65	-0.56	-0.33	
8,568.00	88.91	357.14	6,339.00	-1,765.41	-74.71	-1,764.59	1.35	-0.83	-1.06	
8,662.00	91.30	359.16	6,338.83	-1,671.47	-77.75	-1,670.63	3.33	2.54	2.15	
8,757.00	89.40	359.65	6,338.25	-1,576.48	-78.73	-1,575.63	2.07	-2.00	0.52	
8,851.00	89.44	359.69	6,339.20	-1,482.49	-79.28	-1,481.64	0.06	0.04	0.04	
8,945.00	88.78	358.59	6,340.66	-1,388.51	-80.69	-1,387.65	1.36	-0.70	-1.17	
9,039.00	90.06	357.93	6,341.62	-1,294.56	-83.54	-1,293.68	1.53	1.36	-0.70	
9,134.00	90.23	358.24	6,341.37	-1,199.61	-86.71	-1,198.71	0.37	0.18	0.33	
9,228.00	90.01	358.02	6,341.18	-1,105.67	-89.78	-1,104.73	0.33	-0.23	-0.23	
9,322.00	89.00	358.02	6,341.99	-1,011.73	-93.03	-1,010.77	1.07	-1.07	0.00	
9,416.00	89.04	359.91	6,343.60	-917.76	-94.73	-916.79	2.01	0.04	2.01	
9,510.00	90.90	0.66	6,343.65	-823.77	-94.26	-822.80	2.13	1.98	0.80	
9,605.00	90.54	0.18	6,342.45	-728.78	-93.56	-727.82	0.63	-0.38	-0.51	
9,699.00	90.37	0.09	6,341.71	-634.78	-93.34	-633.83	0.20	-0.18	-0.10	
9,794.00	89.48	359.91	6,341.83	-539.78	-93.34	-538.84	0.96	-0.94	-0.19	
9,888.00	89.17	359.74	6,342.94	-445.79	-93.63	-444.85	0.38	-0.33	-0.18	
9,982.00	91.25	0.88	6,342.59	-351.80	-93.12	-350.87	2.52	2.21	1.21	
10,077.00	91.69	0.88	6,340.16	-256.84	-91.66	-255.93	0.46	0.46	0.00	
10,171.00	89.97	0.66	6,338.80	-162.86	-90.40	-161.97	1.84	-1.83	-0.23	
10,265.00	90.50	0.04	6,338.41	-68.86	-89.82	-67.98	0.87	0.56	-0.66	
10,359.00	90.15	359.38	6,337.88	25.13	-90.30	26.02	0.79	-0.37	-0.70	
10,454.00	89.66	358.90	6,338.03	120.12	-91.73	121.01	0.72	-0.52	-0.51	
10,548.00	88.91	358.68	6,339.21	214.09	-93.71	215.00	0.83	-0.80	-0.23	
10,642.00	88.25	358.11	6,341.54	308.03	-96.34	308.95	0.93	-0.70	-0.61	
10,736.00	89.22	358.55	6,343.61	401.96	-99.08	402.91	1.13	1.03	0.47	
10,831.00	89.48	358.68	6,344.69	496.93	-101.38	497.90	0.31	0.27	0.14	
10,924.00	90.81	358.86	6,344.45	589.90	-103.37	590.89	1.44	1.43	0.19	
11,020.00	90.32	358.37	6,343.51	685.87	-105.69	686.87	0.72	-0.51	-0.51	
11,114.00	89.48	358.24	6,343.67	779.83	-108.47	780.85	0.90	-0.89	-0.14	
11,208.00	88.82	357.84	6,345.07	873.76	-111.69	874.81	0.82	-0.70	-0.43	
11,303.00	90.06	358.15	6,345.99	968.70	-115.01	969.78	1.35	1.31	0.33	
11,397.00	89.17	357.53	6,346.63	1,062.63	-118.56	1,063.74	1.15	-0.95	-0.66	
11,491.00	92.58	357.40	6,345.19	1,156.51	-122.71	1,157.66	3.63	3.63	-0.14	
11,586.00	90.01	357.40	6,343.04	1,251.38	-127.02	1,252.56	2.71	-2.71	0.00	
11,680.00	90.06	356.78	6,342.99	1,345.26	-131.79	1,346.48	0.66	0.05	-0.66	
11,774.00	89.84	356.12	6,343.07	1,439.08	-137.61	1,440.36	0.74	-0.23	-0.70	
11,869.00	90.41	355.68	6,342.86	1,533.83	-144.40	1,535.17	0.76	0.60	-0.46	
11,964.00	90.32	358.33	6,342.26	1,628.69	-149.37	1,630.08	2.79	-0.09	2.79	
12,058.00	90.54	357.89	6,341.55	1,722.64	-152.47	1,724.05	0.52	0.23	-0.47	
12,151.00	89.79	0.49	6,341.28	1,815.62	-153.78	1,817.04	2.91	-0.81	2.80	
12,245.00	91.30	0.71	6,340.39	1,909.61	-152.80	1,911.01	1.62	1.61	0.23	
12,339.00	89.79	0.13	6,339.49	2,003.60	-152.11	2,004.99	1.72	-1.61	-0.62	

## Survey Report

<b>Company:</b>	MALLARD EXPLORATION	<b>Local Co-ordinate Reference:</b>	Well GOLDENEYE FED 21-16-3HN
<b>Project:</b>	WELD COUNTY	<b>TVD Reference:</b>	KB 27' @ 4962.00usft
<b>Site:</b>	SEC 21-T8N-R60W	<b>MD Reference:</b>	KB 27' @ 4962.00usft
<b>Well:</b>	GOLDENEYE FED 21-16-3HN	<b>North Reference:</b>	True
<b>Wellbore:</b>	OWB	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL SURVEY	<b>Database:</b>	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)	
12,434.00	90.90	0.79	6,338.92	2,098.59	-151.35	2,099.97	1.36	1.17	0.69	
12,528.00	89.48	1.72	6,338.61	2,192.57	-149.29	2,193.92	1.81	-1.51	0.99	
12,623.00	88.69	0.53	6,340.13	2,287.53	-147.42	2,288.87	1.50	-0.83	-1.25	
12,717.00	88.56	0.40	6,342.38	2,381.50	-146.66	2,382.82	0.20	-0.14	-0.14	
12,812.00	88.51	0.27	6,344.81	2,476.47	-146.11	2,477.78	0.15	-0.05	-0.14	
12,906.00	91.25	2.25	6,345.01	2,570.43	-144.04	2,571.72	3.60	2.91	2.11	
12,999.00	89.97	1.68	6,344.02	2,663.37	-140.85	2,664.62	1.51	-1.38	-0.61	
13,094.00	89.93	1.32	6,344.10	2,758.34	-138.36	2,759.56	0.38	-0.04	-0.38	
13,188.00	88.95	1.32	6,345.02	2,852.31	-136.20	2,853.50	1.04	-1.04	0.00	
13,282.00	89.75	1.63	6,346.09	2,946.27	-133.78	2,947.44	0.91	0.85	0.33	
13,376.00	89.75	1.06	6,346.50	3,040.24	-131.57	3,041.39	0.61	0.00	-0.61	
13,470.00	89.53	0.35	6,347.09	3,134.23	-130.42	3,135.36	0.79	-0.23	-0.76	
13,564.00	88.91	0.13	6,348.37	3,228.22	-130.02	3,229.34	0.70	-0.66	-0.23	
13,659.00	90.68	1.19	6,348.71	3,323.21	-128.93	3,324.31	2.17	1.86	1.12	
13,753.00	90.63	0.00	6,347.63	3,417.20	-127.95	3,418.29	1.27	-0.05	-1.27	
13,847.00	91.34	359.38	6,346.02	3,511.18	-128.46	3,512.27	1.00	0.76	-0.66	
13,941.00	91.87	358.59	6,343.38	3,605.13	-130.12	3,606.23	1.01	0.56	-0.84	
14,036.00	90.77	0.13	6,341.20	3,700.09	-131.18	3,701.20	1.99	-1.16	1.62	
14,130.00	91.16	359.52	6,339.61	3,794.08	-131.47	3,795.18	0.77	0.41	-0.65	
14,223.00	89.70	0.93	6,338.91	3,887.07	-131.11	3,888.17	2.18	-1.57	1.52	
14,317.00	90.59	1.10	6,338.68	3,981.05	-129.44	3,982.13	0.96	0.95	0.18	
14,410.00	89.13	0.71	6,338.90	4,074.04	-127.97	4,075.10	1.62	-1.57	-0.42	
14,505.00	89.35	0.18	6,340.16	4,169.03	-127.23	4,170.07	0.60	0.23	-0.56	
14,599.00	89.79	0.49	6,340.87	4,263.02	-126.68	4,264.06	0.57	0.47	0.33	
14,693.00	90.63	0.18	6,340.52	4,357.02	-126.14	4,358.05	0.95	0.89	-0.33	
14,787.00	89.09	0.09	6,340.75	4,451.02	-125.91	4,452.04	1.64	-1.64	-0.10	
14,882.00	89.75	359.43	6,341.72	4,546.01	-126.31	4,547.03	0.98	0.69	-0.69	
14,976.00	90.06	358.90	6,341.87	4,640.00	-127.68	4,641.03	0.65	0.33	-0.56	
15,070.00	90.63	358.50	6,341.31	4,733.97	-129.81	4,735.02	0.74	0.61	-0.43	
15,165.00	89.17	0.22	6,341.47	4,828.96	-130.88	4,830.01	2.37	-1.54	1.81	
15,258.00	89.40	359.78	6,342.63	4,921.95	-130.88	4,923.00	0.53	0.25	-0.47	
15,352.00	90.01	359.38	6,343.12	5,015.95	-131.56	5,017.00	0.78	0.65	-0.43	
15,446.00	90.59	358.94	6,342.62	5,109.94	-132.94	5,110.99	0.77	0.62	-0.47	
15,541.00	89.57	0.27	6,342.49	5,204.93	-133.60	5,205.99	1.76	-1.07	1.40	
15,634.00	90.37	0.44	6,342.54	5,297.93	-133.02	5,298.98	0.88	0.86	0.18	
15,728.00	91.60	0.49	6,340.92	5,391.91	-132.26	5,392.95	1.31	1.31	0.05	
15,822.00	89.97	2.56	6,339.64	5,485.86	-129.76	5,486.87	2.80	-1.73	2.20	
15,917.00	90.72	2.87	6,339.06	5,580.75	-125.26	5,581.71	0.85	0.79	0.33	
16,011.00	88.20	2.20	6,339.95	5,674.65	-121.10	5,675.56	2.77	-2.68	-0.71	
16,105.00	90.15	2.78	6,341.30	5,768.54	-117.02	5,769.41	2.16	2.07	0.62	
16,200.00	91.12	2.73	6,340.25	5,863.43	-112.45	5,864.25	1.02	1.02	-0.05	
16,294.00	89.26	3.26	6,339.94	5,957.29	-107.54	5,958.06	2.06	-1.98	0.56	
16,389.00	90.46	2.73	6,340.17	6,052.16	-102.58	6,052.88	1.38	1.26	-0.56	
16,482.00	89.79	3.26	6,339.97	6,145.03	-97.72	6,145.70	0.92	-0.72	0.57	

## Survey Report

<b>Company:</b> MALLARD EXPLORATION	<b>Local Co-ordinate Reference:</b> Well GOLDENEYE FED 21-16-3HN
<b>Project:</b> WELD COUNTY	<b>TVD Reference:</b> KB 27' @ 4962.00usft
<b>Site:</b> SEC 21-T8N-R60W	<b>MD Reference:</b> KB 27' @ 4962.00usft
<b>Well:</b> GOLDENEYE FED 21-16-3HN	<b>North Reference:</b> True
<b>Wellbore:</b> OWB	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL SURVEY	<b>Database:</b> 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)
16,576.00	90.68	3.97	6,339.58	6,238.84	-91.79	6,239.44	1.21	0.95	0.76
16,670.00	88.47	3.00	6,340.28	6,332.66	-86.08	6,333.20	2.57	-2.35	-1.03
16,764.00	88.47	2.91	6,342.79	6,426.50	-81.23	6,426.99	0.10	0.00	-0.10
16,858.00	90.37	2.95	6,343.74	6,520.37	-76.43	6,520.81	2.02	2.02	0.04
16,953.00	89.00	1.63	6,344.26	6,615.29	-72.63	6,615.68	2.00	-1.44	-1.39
17,046.00	89.04	1.28	6,345.85	6,708.24	-70.27	6,708.61	0.38	0.04	-0.38
17,140.00	89.75	0.93	6,346.85	6,802.22	-68.46	6,802.57	0.84	0.76	-0.37
17,234.00	90.54	1.10	6,346.61	6,896.20	-66.79	6,896.53	0.86	0.84	0.18
17,328.00	90.85	0.18	6,345.47	6,990.19	-65.74	6,990.50	1.03	0.33	-0.98
17,423.00	91.16	359.96	6,343.80	7,085.18	-65.63	7,085.48	0.40	0.33	-0.23
17,517.00	91.03	358.90	6,342.01	7,179.15	-66.56	7,179.46	1.14	-0.14	-1.13
17,611.00	90.46	357.80	6,340.78	7,273.10	-69.27	7,273.43	1.32	-0.61	-1.17
<b>LAST SURVEY @ 17611' MD</b>									
17,679.00	90.46	357.80	6,340.24	7,341.05	-71.88	7,341.40	0.00	0.00	0.00
<b>EXTRAPOLATION TO TD(17679' MD, 297' FNL, 1983' FWL OF SEC 16)</b>									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,941.00	1,738.51	-713.90	-33.79	SURFACE CASING	
6,803.00	5,734.02	-3,215.83	-79.43	KOP	
7,698.39	6,327.37	-2,634.02	-58.20	~300' X-OVER PNT(7698.39' MD, 300' FSL, 2193' FWL OF SEC 21)	
7,760.00	6,335.71	-2,572.99	-58.11	HZ LANDING PNT @ 7760' MD	
17,611.00	6,340.78	7,273.10	-69.27	LAST SURVEY @ 17611' MD	
17,679.00	6,340.24	7,341.05	-71.88	EXTRAPOLATION TO TD(17679' MD, 297' FNL, 1983' FWL OF SEC 16)	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_