



Mallard Exploration

Weld Co., CO

Sec.19-T08N-R60W

Hunt Fed 8-60 19-24-4

API #05-123-46715

Original Hole

Survey: Renovare MWD Survey

Standard Survey Report

01 August, 2022



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Company:	Mallard Exploration	Local Co-ordinate Reference:	Well Hunt Fed 8-60 19-24-4
Project:	Weld Co., CO	TVD Reference:	KB 15' @ 4947.00usft (Cartel 11)
Site:	Sec.19-T08N-R60W	MD Reference:	KB 15' @ 4947.00usft (Cartel 11)
Well:	Hunt Fed 8-60 19-24-4	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	RE0719221-3	Database:	EDM 5000.1 Single User Db

Project	Weld Co., CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		Sec.19-T08N-R60W			
Site Position:		Northing:	1,482,695.68 usft	Latitude:	40° 39' 1.07280 N
From:	Lat/Long	Easting:	3,380,986.48 usft	Longitude:	104° 7' 36.95520 W
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in	Grid Convergence:	0.89 °

Well	Hunt Fed 8-60 19-24-4, SENE 19 8N60W					
Well Position	+N/-S	0.00 usft	Northing:	1,482,695.67 usft	Latitude:	40° 39' 1.07268 N
	+E/-W	0.00 usft	Easting:	3,380,986.48 usft	Longitude:	104° 7' 36.95520 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	4,947.00 usft	Ground Level:	4,932.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	07/31/22	7.41	66.89	52,029

Design	RE0719221-3				
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	268.82	

Survey Program	Date	08/01/22			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
111.00	1,937.00	Renovare MWD Survey (Original Hole)	MWD	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
Surface									
111.00	0.30	245.30	111.00	-0.12	-0.26	0.27	0.27	0.27	0.00
First Renovare Survey									
202.00	0.40	240.40	202.00	-0.38	-0.76	0.76	0.11	0.11	-5.38
294.00	0.70	242.30	293.99	-0.80	-1.53	1.55	0.33	0.33	2.07
368.00	0.90	229.70	367.99	-1.38	-2.38	2.40	0.36	0.27	-17.03
455.00	1.00	237.40	454.97	-2.23	-3.54	3.58	0.19	0.11	8.85
542.00	0.40	153.90	541.97	-2.92	-4.04	4.10	1.19	-0.69	-95.98
629.00	1.20	101.70	628.96	-3.37	-3.02	3.09	1.16	0.92	-60.00

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Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	RE0719221-3	Database:	EDM 5000.1 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)	
717.00	2.40	91.10	716.92	-3.60	-0.27	0.35	1.41	1.36	-12.05	
804.00	4.70	82.20	803.74	-3.15	5.08	-5.01	2.71	2.64	-10.23	
891.00	7.20	87.30	890.27	-2.41	14.06	-14.01	2.93	2.87	5.86	
978.00	9.80	95.80	976.31	-2.90	26.87	-26.81	3.31	2.99	9.77	
1,065.00	12.50	106.80	1,061.67	-6.37	43.26	-43.12	3.94	3.10	12.64	
1,153.00	11.40	108.80	1,147.76	-11.92	60.61	-60.35	1.34	-1.25	2.27	
1,240.00	11.30	107.10	1,233.06	-17.20	76.89	-76.52	0.40	-0.11	-1.95	
1,327.00	10.60	100.00	1,318.48	-21.10	92.92	-92.47	1.75	-0.80	-8.16	
1,414.00	11.30	97.40	1,403.89	-23.58	109.26	-108.75	0.98	0.80	-2.99	
1,501.00	13.20	98.50	1,488.91	-26.15	127.53	-126.97	2.20	2.18	1.26	
1,589.00	15.20	100.30	1,574.22	-29.70	148.82	-148.18	2.33	2.27	2.05	
1,676.00	14.40	100.10	1,658.33	-33.64	170.70	-169.97	0.92	-0.92	-0.23	
1,763.00	14.50	101.40	1,742.58	-37.69	192.02	-191.21	0.39	0.11	1.49	
1,850.00	15.30	100.90	1,826.65	-42.01	213.97	-213.06	0.93	0.92	-0.57	
1,887.00	15.60	102.50	1,862.32	-44.01	223.62	-222.67	1.41	0.81	4.32	
Last Renovare Survey										
1,937.00	15.60	102.50	1,910.47	-46.92	236.75	-235.73	0.00	0.00	0.00	
Proj to BHL/TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
0.00	0.00	0.00	0.00	Surface	
111.00	111.00	-0.12	-0.26	First Renovare Survey	
1,887.00	1,862.32	-44.01	223.62	Last Renovare Survey	
1,937.00	1,910.47	-46.92	236.75	Proj to BHL/TD	

Checked By: _____	Approved By: _____	Date: _____
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