



Mallard Exploration

Weld Co., CO

Sec.19-T08N-R60W

Hunt Fed 8-60 19-24-1

API #05-123-46713

Original Hole

Survey: Renovare MWD Survey

Standard Survey Report

01 August, 2022



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Renovare Energy

Survey Report



Company:	Mallard Exploration	Local Co-ordinate Reference:	Well Hunt Fed 8-60 19-24-1
Project:	Weld Co., CO	TVD Reference:	KB 15' @ 4948.00usft (Cartel 11)
Site:	Sec.19-T08N-R60W	MD Reference:	KB 15' @ 4948.00usft (Cartel 11)
Well:	Hunt Fed 8-60 19-24-1	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	RE0729221-1	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 19-24-1, SENE 19 8N60W					
Well Position	+N/-S	0.00 usft	Northing:	1,482,695.84 usft	Latitude:	40° 39' 1.08348 N
	+E/-W	0.00 usft	Easting:	3,380,926.54 usft	Longitude:	104° 7' 37.73280 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	4,948.00 usft	Ground Level:	4,933.00 usft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2020	07/30/22	7.41	66.89	52,029

Design	RE0729221-1				
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	277.72	

Survey Program	Date	08/01/22			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
111.00	1,932.00	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	0.40	293.30	111.00	0.15	-0.36	0.37	0.36	0.36	0.00
First Renovare Survey									
202.00	0.50	302.00	202.00	0.49	-0.98	1.04	0.13	0.11	9.56
294.00	0.50	312.90	293.99	0.98	-1.62	1.74	0.10	0.00	11.85
368.00	0.30	55.80	367.99	1.30	-1.70	1.85	0.86	-0.27	139.05
455.00	0.30	68.20	454.99	1.52	-1.30	1.49	0.07	0.00	14.25
542.00	0.70	19.10	541.99	2.10	-0.91	1.18	0.63	0.46	-56.44
629.00	0.90	38.00	628.98	3.14	-0.32	0.73	0.38	0.23	21.72

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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	1.00	32.20	716.97	4.34	0.52	0.07	0.16	0.11	-6.59	
804.00	1.40	25.30	803.95	5.94	1.38	-0.57	0.49	0.46	-7.93	
891.00	1.90	16.60	890.91	8.28	2.24	-1.11	0.64	0.57	-10.00	
978.00	3.90	20.30	977.80	12.44	3.68	-1.98	2.31	2.30	4.25	
1,065.00	6.30	23.70	1,064.45	19.59	6.63	-3.94	2.78	2.76	3.91	
1,153.00	8.70	34.60	1,151.69	29.49	12.35	-8.28	3.16	2.73	12.39	
1,240.00	10.20	35.10	1,237.51	41.21	20.52	-14.79	1.73	1.72	0.57	
1,327.00	9.60	33.20	1,323.21	53.58	28.92	-21.46	0.79	-0.69	-2.18	
1,414.00	10.50	36.20	1,408.88	66.05	37.57	-28.36	1.20	1.03	3.45	
1,501.00	12.70	39.20	1,494.09	79.86	48.30	-37.13	2.62	2.53	3.45	
1,589.00	15.40	35.00	1,579.46	96.93	61.12	-47.54	3.28	3.07	-4.77	
1,676.00	17.10	29.70	1,662.98	117.51	74.08	-57.63	2.59	1.95	-6.09	
1,763.00	19.60	30.00	1,745.55	141.26	87.72	-67.95	2.88	2.87	0.34	
1,850.00	21.00	30.40	1,827.15	167.34	102.90	-79.49	1.62	1.61	0.46	
1,882.00	22.60	31.30	1,856.86	177.54	109.00	-84.16	5.11	5.00	2.81	
Last Renovare Survey										
1,932.00	22.60	31.30	1,903.02	193.96	118.98	-91.85	0.00	0.00	0.00	
Proj to BHL/TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
0.00	0.00	0.00	0.00	Surface	
111.00	111.00	0.15	-0.36	First Renovare Survey	
1,882.00	1,856.86	177.54	109.00	Last Renovare Survey	
1,932.00	1,903.02	193.96	118.98	Proj to BHL/TD	

Checked By: _____	Approved By: _____	Date: _____
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