



Mallard Exploration

Weld Co., CO

Sec.19-T08N-R60W

Hunt Fed 8-60 19-24-5

API #05-123-46711

Original Hole

Survey: Renovare MWD Surface

Standard Survey Report

01 August, 2022



WWW.RENOVAREENERGY.COM

Company:	Mallard Exploration	Local Co-ordinate Reference:	Well Hunt Fed 8-60 19-24-5
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 19-24-5	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	RE0729221-4	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
From:	Lat/Long	Easting:	3,380,986.48 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
		Latitude:	40° 39' 1.07280 N
		Longitude:	104° 7' 36.95520 W
		Grid Convergence:	0.89 °

Well	Hunt Fed 8-60 19-24-5, SENE 19 8N60W		
Well Position	+N/-S	0.00 usft	Northing: 1,482,695.62 usft
	+E/-W	0.00 usft	Easting: 3,381,006.47 usft
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	08/01/22	7.41	66.89	52,028

Design	RE0729221-4				
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	264.98	

Survey Program	Date	08/01/22			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
111.00	1,957.00	Renovare MWD Surface (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	20.10	111.00	0.27	0.10	-0.12	0.27	0.27	0.00
First Renovare Survey									
202.00	0.30	76.90	202.00	0.55	0.41	-0.46	0.31	0.00	62.42
294.00	0.40	22.50	294.00	0.90	0.77	-0.85	0.36	0.11	-59.13
367.00	0.60	24.70	366.99	1.48	1.03	-1.15	0.28	0.27	3.01
454.00	1.50	116.40	453.98	1.39	2.24	-2.35	1.88	1.03	105.40
542.00	3.20	130.60	541.91	-0.72	5.14	-5.05	2.03	1.93	16.14
629.00	5.40	142.90	628.66	-5.56	9.45	-8.93	2.73	2.53	14.14

Company:	Mallard Exploration	Local Co-ordinate Reference:	Well Hunt Fed 8-60 19-24-5
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 19-24-5	North Reference:	True
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	RE0729221-4	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)
716.00	6.60	131.80	715.18	-12.16	15.65	-14.52	1.91	1.38	-12.76
803.00	8.50	137.60	801.43	-20.24	23.71	-21.85	2.35	2.18	6.67
890.00	11.30	136.10	887.12	-31.14	33.96	-31.10	3.23	3.22	-1.72
978.00	12.70	137.80	973.20	-44.52	46.43	-42.36	1.64	1.59	1.93
1,065.00	14.40	138.50	1,057.77	-59.70	60.03	-54.57	1.96	1.95	0.80
1,152.00	13.90	138.50	1,142.13	-75.63	74.12	-67.22	0.57	-0.57	0.00
1,239.00	12.50	135.20	1,226.83	-90.14	87.68	-79.46	1.83	-1.61	-3.79
1,327.00	10.80	136.40	1,313.02	-102.87	100.08	-90.69	1.95	-1.93	1.36
1,414.00	11.10	137.90	1,398.43	-114.99	111.31	-100.82	0.48	0.34	1.72
1,501.00	12.50	140.70	1,483.59	-128.49	122.89	-111.18	1.74	1.61	3.22
1,588.00	14.00	142.90	1,568.28	-144.17	135.20	-122.07	1.82	1.72	2.53
1,675.00	15.40	146.50	1,652.43	-162.19	147.93	-133.17	1.92	1.61	4.14
1,763.00	15.20	147.60	1,737.31	-181.68	160.56	-144.05	0.40	-0.23	1.25
1,850.00	15.30	140.80	1,821.25	-200.20	173.93	-155.74	2.06	0.11	-7.82
1,907.00	15.60	140.80	1,876.19	-211.97	183.52	-164.27	0.53	0.53	0.00
Last Renovare Survey									
1,957.00	15.60	140.80	1,924.35	-222.39	192.02	-171.82	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	0.27	0.10	First Renovare Survey
1,907.00	1,876.19	-211.97	183.52	Last Renovare Survey
1,957.00	1,924.35	-222.39	192.02	Proj to BHL/TD

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------