



NM OIL CONSERVATION
ARTESIA DISTRICT

JAN 18 2019

RECEIVED

Tap Rock Operating, LLC

Eddy County, NM (NAD 83)

Pliny The Elder Fee

217H

30-015-45642

OH

Plan: Plan 1

Standard Survey Report

10 January, 2019





Pro Directional Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 217H
Wellbore: OH
Design: Plan 1

Local Co-ordinate Reference: Well 217H
TVD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
MD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Project	Eddy County, NM (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Pliny The Elder Fee				
Site Position:		Northing:	486,990.00 usft	Latitude:	32.338739
From:	Map	Easting:	581,705.00 usft	Longitude:	-104.202628
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.07 °

Well	217H					
Well Position	+N/-S	0.00 usft	Northing:	485,587.00 usft	Latitude:	32.334882
	+E/-W	0.00 usft	Easting:	581,951.00 usft	Longitude:	-104.201837
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	3,151.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	1/10/2019	7.27	60.03	47,936.10

Design	Plan 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	269.70

Survey Tool Program	Date 1/10/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	3,700.00	Plan 1 (OH)	MWD+HDGM	OWSG MWD + HRGM
3,700.00	8,500.00	Plan 1 (OH)	MWD+HDGM	OWSG MWD + HRGM
8,500.00	19,427.13	Plan 1 (OH)	MWD+HDGM	OWSG MWD + HRGM

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
567.00	0.00	0.00	567.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler Anhydrite									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00



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700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
900.00	2.00	270.74	899.98	0.02	-1.75	1.74	2.00	2.00	0.00
1,000.00	4.00	270.74	999.84	0.09	-6.98	6.98	2.00	2.00	0.00
1,100.00	6.00	270.74	1,099.45	0.20	-15.69	15.69	2.00	2.00	0.00
1,132.75	6.65	270.74	1,132.00	0.25	-19.30	19.30	2.00	2.00	0.00
Top Salt									
1,150.22	7.00	270.74	1,149.34	0.28	-21.38	21.38	2.00	2.00	0.00
Start 2224.92 hold at 1150.22 MD									
1,200.00	7.00	270.74	1,198.76	0.35	-27.45	27.45	0.00	0.00	0.00
1,300.00	7.00	270.74	1,298.01	0.51	-39.64	39.64	0.00	0.00	0.00
1,400.00	7.00	270.74	1,397.26	0.67	-51.84	51.83	0.00	0.00	0.00
1,500.00	7.00	270.74	1,496.52	0.82	-64.03	64.02	0.00	0.00	0.00
1,600.00	7.00	270.74	1,595.77	0.98	-76.22	76.22	0.00	0.00	0.00
1,700.00	7.00	270.74	1,695.03	1.14	-88.42	88.41	0.00	0.00	0.00
1,800.00	7.00	270.74	1,794.28	1.29	-100.61	100.60	0.00	0.00	0.00
1,843.04	7.00	270.74	1,837.00	1.36	-105.86	105.85	0.00	0.00	0.00
Base Salt									
1,900.00	7.00	270.74	1,893.53	1.45	-112.80	112.79	0.00	0.00	0.00
1,994.17	7.00	270.74	1,987.00	1.60	-124.29	124.28	0.00	0.00	0.00
Delaware Mountain Gp									
2,000.00	7.00	270.74	1,992.79	1.61	-125.00	124.99	0.00	0.00	0.00
2,100.00	7.00	270.74	2,092.04	1.76	-137.19	137.18	0.00	0.00	0.00
2,145.30	7.00	270.74	2,137.00	1.84	-142.71	142.70	0.00	0.00	0.00
Bell Canyon									
2,150.34	7.00	270.74	2,142.00	1.84	-143.33	143.32	0.00	0.00	0.00
Lamar									
2,170.49	7.00	270.74	2,162.00	1.88	-145.78	145.77	0.00	0.00	0.00
Ramsey Sand									
2,200.00	7.00	270.74	2,191.29	1.92	-149.38	149.37	0.00	0.00	0.00
2,300.00	7.00	270.74	2,290.55	2.08	-161.58	161.56	0.00	0.00	0.00
2,400.00	7.00	270.74	2,389.80	2.24	-173.77	173.76	0.00	0.00	0.00
2,500.00	7.00	270.74	2,489.05	2.39	-185.96	185.95	0.00	0.00	0.00
2,600.00	7.00	270.74	2,588.31	2.55	-198.16	198.14	0.00	0.00	0.00
2,700.00	7.00	270.74	2,687.56	2.71	-210.35	210.33	0.00	0.00	0.00
2,800.00	7.00	270.74	2,786.82	2.86	-222.54	222.53	0.00	0.00	0.00
2,900.00	7.00	270.74	2,886.07	3.02	-234.74	234.72	0.00	0.00	0.00
2,991.61	7.00	270.74	2,977.00	3.16	-245.91	245.89	0.00	0.00	0.00
Cherry Canyon									
3,000.00	7.00	270.74	2,985.32	3.18	-246.93	246.91	0.00	0.00	0.00
3,100.00	7.00	270.74	3,084.58	3.33	-259.12	259.10	0.00	0.00	0.00
3,200.00	7.00	270.74	3,183.83	3.49	-271.32	271.30	0.00	0.00	0.00
3,300.00	7.00	270.74	3,283.08	3.65	-283.51	283.49	0.00	0.00	0.00
3,375.13	7.00	270.74	3,357.66	3.76	-292.67	292.65	0.00	0.00	0.00



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Start Drop -2.00									
3,400.00	6.51	270.74	3,382.35	3.80	-295.60	295.57	2.00	-2.00	0.00
3,500.00	4.51	270.74	3,481.88	3.93	-305.19	305.17	2.00	-2.00	0.00
3,600.00	2.51	270.74	3,581.69	4.00	-311.31	311.28	2.00	-2.00	0.00
3,700.00	0.51	270.74	3,681.65	4.04	-313.94	313.91	2.00	-2.00	0.00
3,725.35	0.00	0.00	3,707.00	4.04	-314.05	314.02	2.00	-2.00	0.00
Start 4820.13 hold at 3725.35 MD									
3,800.00	0.00	0.00	3,781.65	4.04	-314.05	314.02	0.00	0.00	0.00
3,900.00	0.00	0.00	3,881.65	4.04	-314.05	314.02	0.00	0.00	0.00
3,945.35	0.00	0.00	3,927.00	4.04	-314.05	314.02	0.00	0.00	0.00
Brushy Canyon									
4,000.00	0.00	0.00	3,981.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,100.00	0.00	0.00	4,081.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,200.00	0.00	0.00	4,181.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,300.00	0.00	0.00	4,281.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,400.00	0.00	0.00	4,381.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,500.00	0.00	0.00	4,481.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,600.00	0.00	0.00	4,581.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,700.00	0.00	0.00	4,681.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,800.00	0.00	0.00	4,781.65	4.04	-314.05	314.02	0.00	0.00	0.00
4,900.00	0.00	0.00	4,881.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,000.00	0.00	0.00	4,981.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,100.00	0.00	0.00	5,081.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,200.00	0.00	0.00	5,181.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,300.00	0.00	0.00	5,281.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,400.00	0.00	0.00	5,381.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,500.00	0.00	0.00	5,481.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,505.35	0.00	0.00	5,487.00	4.04	-314.05	314.02	0.00	0.00	0.00
Bone Spring Lime									
5,600.00	0.00	0.00	5,581.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,700.00	0.00	0.00	5,681.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,800.00	0.00	0.00	5,781.65	4.04	-314.05	314.02	0.00	0.00	0.00
5,900.00	0.00	0.00	5,881.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,000.00	0.00	0.00	5,981.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,100.00	0.00	0.00	6,081.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,200.00	0.00	0.00	6,181.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,300.00	0.00	0.00	6,281.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,400.00	0.00	0.00	6,381.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,470.35	0.00	0.00	6,452.00	4.04	-314.05	314.02	0.00	0.00	0.00
1st Bone Spring Sand									
6,500.00	0.00	0.00	6,481.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,600.00	0.00	0.00	6,581.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,700.00	0.00	0.00	6,681.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,800.00	0.00	0.00	6,781.65	4.04	-314.05	314.02	0.00	0.00	0.00



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6,900.00	0.00	0.00	6,881.65	4.04	-314.05	314.02	0.00	0.00	0.00
6,960.35	0.00	0.00	6,942.00	4.04	-314.05	314.02	0.00	0.00	0.00
2nd Bone Spring Sand									
7,000.00	0.00	0.00	6,981.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,100.00	0.00	0.00	7,081.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,200.00	0.00	0.00	7,181.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,300.00	0.00	0.00	7,281.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,400.00	0.00	0.00	7,381.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,500.00	0.00	0.00	7,481.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,600.00	0.00	0.00	7,581.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,700.00	0.00	0.00	7,681.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,800.00	0.00	0.00	7,781.65	4.04	-314.05	314.02	0.00	0.00	0.00
7,900.00	0.00	0.00	7,881.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,000.00	0.00	0.00	7,981.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,100.00	0.00	0.00	8,081.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,200.00	0.00	0.00	8,181.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,300.00	0.00	0.00	8,281.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,400.00	0.00	0.00	8,381.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,500.00	0.00	0.00	8,481.65	4.04	-314.05	314.02	0.00	0.00	0.00
8,530.35	0.00	0.00	8,512.00	4.04	-314.05	314.02	0.00	0.00	0.00
3rd Bone Spring Sand									
8,545.48	0.00	0.00	8,527.13	4.04	-314.05	314.02	0.00	0.00	0.00
KOP, Start DLS 10.00 TFO 269.70									
8,550.00	0.45	269.70	8,531.65	4.04	-314.07	314.04	10.00	10.00	0.00
8,600.00	5.45	269.70	8,581.57	4.03	-316.64	316.62	10.00	10.00	0.00
8,650.00	10.45	269.70	8,631.07	3.99	-323.56	323.53	10.00	10.00	0.00
8,700.00	15.45	269.70	8,679.79	3.93	-334.76	334.74	10.00	10.00	0.00
8,750.00	20.45	269.70	8,727.34	3.85	-350.17	350.14	10.00	10.00	0.00
8,800.00	25.45	269.70	8,773.36	3.75	-369.66	369.63	10.00	10.00	0.00
8,850.00	30.45	269.70	8,817.52	3.63	-393.09	393.06	10.00	10.00	0.00
8,896.99	35.15	269.70	8,857.00	3.50	-418.53	418.51	10.00	10.00	0.00
3rd Bone Spring W Sand									
8,900.00	35.45	269.70	8,859.46	3.49	-420.28	420.25	10.00	10.00	0.00
8,909.31	36.38	269.70	8,867.00	3.46	-425.74	425.71	10.00	10.00	0.00
Wolfcamp A									
8,950.00	40.45	269.70	8,898.87	3.33	-451.02	450.99	10.00	10.00	0.00
9,000.00	45.45	269.70	8,935.46	3.15	-485.07	485.05	10.00	10.00	0.00
9,031.61	48.61	269.70	8,957.00	3.03	-508.20	508.18	10.00	10.00	0.00
Wolfcamp A Y Sand									
9,050.00	50.45	269.70	8,968.93	2.95	-522.19	522.17	10.00	10.00	0.00
9,100.00	55.45	269.70	8,999.05	2.75	-562.08	562.06	10.00	10.00	0.00
9,150.00	60.45	269.70	9,025.57	2.53	-604.45	604.43	10.00	10.00	0.00
9,200.00	65.45	269.70	9,048.30	2.29	-648.97	648.95	10.00	10.00	0.00
9,209.06	66.36	269.70	9,052.00	2.25	-657.24	657.22	10.00	10.00	0.00



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Wolfcamp A Fat									
9,250.00	70.45	269.70	9,067.06	2.05	-695.29	695.27	10.00	10.00	0.00
9,300.00	75.45	269.70	9,081.72	1.80	-743.08	743.06	10.00	10.00	0.00
9,350.00	80.45	269.70	9,092.15	1.55	-791.96	791.95	10.00	10.00	0.00
9,400.00	85.45	269.70	9,098.28	1.29	-841.57	841.55	10.00	10.00	0.00
9,450.00	90.45	269.70	9,100.07	1.03	-891.52	891.50	10.00	10.00	0.00
9,455.48	91.00	269.70	9,100.00	1.00	-897.00	896.98	10.00	10.00	0.00
Landing PT.									
9,500.00	91.00	269.70	9,099.22	0.77	-941.51	941.50	0.00	0.00	0.00
9,600.00	91.00	269.70	9,097.48	0.25	-1,041.50	1,041.48	0.00	0.00	0.00
9,700.00	91.00	269.70	9,095.73	-0.28	-1,141.48	1,141.47	0.00	0.00	0.00
9,800.00	91.00	269.70	9,093.99	-0.80	-1,241.46	1,241.45	0.00	0.00	0.00
9,900.00	91.00	269.70	9,092.24	-1.32	-1,341.45	1,341.44	0.00	0.00	0.00
10,000.00	91.00	269.70	9,090.50	-1.84	-1,441.43	1,441.42	0.00	0.00	0.00
10,100.00	91.00	269.70	9,088.75	-2.36	-1,541.41	1,541.41	0.00	0.00	0.00
10,200.00	91.00	269.70	9,087.01	-2.88	-1,641.40	1,641.39	0.00	0.00	0.00
10,300.00	91.00	269.70	9,085.26	-3.40	-1,741.38	1,741.38	0.00	0.00	0.00
10,400.00	91.00	269.70	9,083.52	-3.93	-1,841.36	1,841.36	0.00	0.00	0.00
10,500.00	91.00	269.70	9,081.77	-4.45	-1,941.35	1,941.34	0.00	0.00	0.00
10,600.00	91.00	269.70	9,080.03	-4.97	-2,041.33	2,041.33	0.00	0.00	0.00
10,700.00	91.00	269.70	9,078.28	-5.49	-2,141.31	2,141.31	0.00	0.00	0.00
10,800.00	91.00	269.70	9,076.54	-6.01	-2,241.30	2,241.30	0.00	0.00	0.00
10,900.00	91.00	269.70	9,074.79	-6.53	-2,341.28	2,341.28	0.00	0.00	0.00
11,000.00	91.00	269.70	9,073.05	-7.05	-2,441.27	2,441.27	0.00	0.00	0.00
11,100.00	91.00	269.70	9,071.30	-7.58	-2,541.25	2,541.25	0.00	0.00	0.00
11,200.00	91.00	269.70	9,069.56	-8.10	-2,641.23	2,641.24	0.00	0.00	0.00
11,300.00	91.00	269.70	9,067.81	-8.62	-2,741.22	2,741.22	0.00	0.00	0.00
11,400.00	91.00	269.70	9,066.07	-9.14	-2,841.20	2,841.21	0.00	0.00	0.00
11,500.00	91.00	269.70	9,064.32	-9.66	-2,941.18	2,941.19	0.00	0.00	0.00
11,600.00	91.00	269.70	9,062.58	-10.18	-3,041.17	3,041.18	0.00	0.00	0.00
11,700.00	91.00	269.70	9,060.83	-10.71	-3,141.15	3,141.16	0.00	0.00	0.00
11,800.00	91.00	269.70	9,059.09	-11.23	-3,241.13	3,241.15	0.00	0.00	0.00
11,900.00	91.00	269.70	9,057.35	-11.75	-3,341.12	3,341.13	0.00	0.00	0.00
12,000.00	91.00	269.70	9,055.60	-12.27	-3,441.10	3,441.12	0.00	0.00	0.00
12,100.00	91.00	269.70	9,053.86	-12.79	-3,541.08	3,541.10	0.00	0.00	0.00
12,200.00	91.00	269.70	9,052.11	-13.31	-3,641.07	3,641.09	0.00	0.00	0.00
12,300.00	91.00	269.70	9,050.37	-13.83	-3,741.05	3,741.07	0.00	0.00	0.00
12,400.00	91.00	269.70	9,048.62	-14.36	-3,841.03	3,841.06	0.00	0.00	0.00
12,500.00	91.00	269.70	9,046.88	-14.88	-3,941.02	3,941.04	0.00	0.00	0.00
12,600.00	91.00	269.70	9,045.13	-15.40	-4,041.00	4,041.03	0.00	0.00	0.00
12,700.00	91.00	269.70	9,043.39	-15.92	-4,140.98	4,141.01	0.00	0.00	0.00
12,800.00	91.00	269.70	9,041.64	-16.44	-4,240.97	4,240.99	0.00	0.00	0.00
12,900.00	91.00	269.70	9,039.90	-16.96	-4,340.95	4,340.98	0.00	0.00	0.00
13,000.00	91.00	269.70	9,038.15	-17.48	-4,440.93	4,440.96	0.00	0.00	0.00



Pro Directional Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 217H
Wellbore: OH
Design: Plan 1

Local Co-ordinate Reference: Well 217H
TVD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
MD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,100.00	91.00	269.70	9,036.41	-18.01	-4,540.92	4,540.95	0.00	0.00	0.00
13,200.00	91.00	269.70	9,034.66	-18.53	-4,640.90	4,640.93	0.00	0.00	0.00
13,300.00	91.00	269.70	9,032.92	-19.05	-4,740.88	4,740.92	0.00	0.00	0.00
13,400.00	91.00	269.70	9,031.17	-19.57	-4,840.87	4,840.90	0.00	0.00	0.00
13,500.00	91.00	269.70	9,029.43	-20.09	-4,940.85	4,940.89	0.00	0.00	0.00
13,600.00	91.00	269.70	9,027.68	-20.61	-5,040.83	5,040.87	0.00	0.00	0.00
13,700.00	91.00	269.70	9,025.94	-21.13	-5,140.82	5,140.86	0.00	0.00	0.00
13,800.00	91.00	269.70	9,024.19	-21.66	-5,240.80	5,240.84	0.00	0.00	0.00
13,900.00	91.00	269.70	9,022.45	-22.18	-5,340.78	5,340.83	0.00	0.00	0.00
14,000.00	91.00	269.70	9,020.70	-22.70	-5,440.77	5,440.81	0.00	0.00	0.00
14,100.00	91.00	269.70	9,018.96	-23.22	-5,540.75	5,540.80	0.00	0.00	0.00
14,200.00	91.00	269.70	9,017.21	-23.74	-5,640.73	5,640.78	0.00	0.00	0.00
14,300.00	91.00	269.70	9,015.47	-24.26	-5,740.72	5,740.77	0.00	0.00	0.00
14,400.00	91.00	269.70	9,013.72	-24.78	-5,840.70	5,840.75	0.00	0.00	0.00
14,500.00	91.00	269.70	9,011.98	-25.31	-5,940.68	5,940.74	0.00	0.00	0.00
14,600.00	91.00	269.70	9,010.23	-25.83	-6,040.67	6,040.72	0.00	0.00	0.00
14,700.00	91.00	269.70	9,008.49	-26.35	-6,140.65	6,140.71	0.00	0.00	0.00
14,800.00	91.00	269.70	9,006.74	-26.87	-6,240.64	6,240.69	0.00	0.00	0.00
14,900.00	91.00	269.70	9,005.00	-27.39	-6,340.62	6,340.67	0.00	0.00	0.00
15,000.00	91.00	269.70	9,003.25	-27.91	-6,440.60	6,440.66	0.00	0.00	0.00
15,100.00	91.00	269.70	9,001.51	-28.44	-6,540.59	6,540.64	0.00	0.00	0.00
15,200.00	91.00	269.70	8,999.76	-28.96	-6,640.57	6,640.63	0.00	0.00	0.00
15,300.00	91.00	269.70	8,998.02	-29.48	-6,740.55	6,740.61	0.00	0.00	0.00
15,400.00	91.00	269.70	8,996.27	-30.00	-6,840.54	6,840.60	0.00	0.00	0.00
15,500.00	91.00	269.70	8,994.53	-30.52	-6,940.52	6,940.58	0.00	0.00	0.00
15,600.00	91.00	269.70	8,992.78	-31.04	-7,040.50	7,040.57	0.00	0.00	0.00
15,700.00	91.00	269.70	8,991.04	-31.56	-7,140.49	7,140.55	0.00	0.00	0.00
15,800.00	91.00	269.70	8,989.29	-32.09	-7,240.47	7,240.54	0.00	0.00	0.00
15,900.00	91.00	269.70	8,987.55	-32.61	-7,340.45	7,340.52	0.00	0.00	0.00
16,000.00	91.00	269.70	8,985.80	-33.13	-7,440.44	7,440.51	0.00	0.00	0.00
16,100.00	91.00	269.70	8,984.06	-33.65	-7,540.42	7,540.49	0.00	0.00	0.00
16,200.00	91.00	269.70	8,982.31	-34.17	-7,640.40	7,640.48	0.00	0.00	0.00
16,300.00	91.00	269.70	8,980.57	-34.69	-7,740.39	7,740.46	0.00	0.00	0.00
16,400.00	91.00	269.70	8,978.82	-35.21	-7,840.37	7,840.45	0.00	0.00	0.00
16,500.00	91.00	269.70	8,977.08	-35.74	-7,940.35	7,940.43	0.00	0.00	0.00
16,600.00	91.00	269.70	8,975.33	-36.26	-8,040.34	8,040.42	0.00	0.00	0.00
16,700.00	91.00	269.70	8,973.59	-36.78	-8,140.32	8,140.40	0.00	0.00	0.00
16,800.00	91.00	269.70	8,971.84	-37.30	-8,240.30	8,240.39	0.00	0.00	0.00
16,900.00	91.00	269.70	8,970.10	-37.82	-8,340.29	8,340.37	0.00	0.00	0.00
17,000.00	91.00	269.70	8,968.35	-38.34	-8,440.27	8,440.36	0.00	0.00	0.00
17,100.00	91.00	269.70	8,966.61	-38.86	-8,540.25	8,540.34	0.00	0.00	0.00
17,200.00	91.00	269.70	8,964.86	-39.39	-8,640.24	8,640.32	0.00	0.00	0.00
17,300.00	91.00	269.70	8,963.12	-39.91	-8,740.22	8,740.31	0.00	0.00	0.00



Pro Directional Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 217H
Wellbore: OH
Design: Plan 1

Local Co-ordinate Reference: Well 217H
TVD Reference: Well @ 3177.50usft (GL:3151' + KB:28.5')
MD Reference: Well @ 3177.50usft (GL:3151' + KB:28.5')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
17,400.00	91.00	269.70	8,961.37	-40.43	-8,840.20	8,840.29	0.00	0.00	0.00
17,500.00	91.00	269.70	8,959.63	-40.95	-8,940.19	8,940.28	0.00	0.00	0.00
17,600.00	91.00	269.70	8,957.88	-41.47	-9,040.17	9,040.26	0.00	0.00	0.00
17,700.00	91.00	269.70	8,956.14	-41.99	-9,140.15	9,140.25	0.00	0.00	0.00
17,800.00	91.00	269.70	8,954.39	-42.51	-9,240.14	9,240.23	0.00	0.00	0.00
17,900.00	91.00	269.70	8,952.65	-43.04	-9,340.12	9,340.22	0.00	0.00	0.00
18,000.00	91.00	269.70	8,950.90	-43.56	-9,440.10	9,440.20	0.00	0.00	0.00
18,100.00	91.00	269.70	8,949.16	-44.08	-9,540.09	9,540.19	0.00	0.00	0.00
18,200.00	91.00	269.70	8,947.41	-44.60	-9,640.07	9,640.17	0.00	0.00	0.00
18,300.00	91.00	269.70	8,945.67	-45.12	-9,740.05	9,740.16	0.00	0.00	0.00
18,400.00	91.00	269.70	8,943.92	-45.64	-9,840.04	9,840.14	0.00	0.00	0.00
18,500.00	91.00	269.70	8,942.18	-46.17	-9,940.02	9,940.13	0.00	0.00	0.00
18,600.00	91.00	269.70	8,940.43	-46.69	-10,040.00	10,040.11	0.00	0.00	0.00
18,700.00	91.00	269.70	8,938.69	-47.21	-10,139.99	10,140.10	0.00	0.00	0.00
18,800.00	91.00	269.70	8,936.94	-47.73	-10,239.97	10,240.08	0.00	0.00	0.00
18,900.00	91.00	269.70	8,935.20	-48.25	-10,339.96	10,340.07	0.00	0.00	0.00
19,000.00	91.00	269.70	8,933.45	-48.77	-10,439.94	10,440.05	0.00	0.00	0.00
19,100.00	91.00	269.70	8,931.71	-49.29	-10,539.92	10,540.04	0.00	0.00	0.00
19,200.00	91.00	269.70	8,929.96	-49.82	-10,639.91	10,640.02	0.00	0.00	0.00
19,300.00	91.00	269.70	8,928.22	-50.34	-10,739.89	10,740.01	0.00	0.00	0.00
19,400.00	91.00	269.70	8,926.47	-50.86	-10,839.87	10,839.99	0.00	0.00	0.00
19,427.13	91.00	269.70	8,926.00	-51.00	-10,867.00	10,867.12	0.00	0.00	0.00

TD at 19427.13

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
217H - LTP - plan misses target center by 8926.95usft at 19427.13usft MD (8926.00 TVD, -51.00 N, -10867.00 E) - Point	0.00	0.00	0.00	-51.00	-10,737.00	485,536.00	571,214.00	32.334773	-104.236601
217H - KOP - plan hits target center - Point	0.00	0.00	8,527.13	4.04	-314.05	485,591.04	581,636.95	32.334894	-104.202854
217H - PBHL - plan hits target center - Point	0.00	0.00	8,926.00	-51.00	-10,867.00	485,536.00	571,084.00	32.334773	-104.237022
217H - FTP/Landing PT. - plan hits target center - Point	0.00	0.00	9,100.00	1.00	-897.00	485,588.00	581,054.00	32.334888	-104.204741



Pro Directional
Survey Report



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Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 217H
Wellbore: OH
Design: Plan 1

Local Co-ordinate Reference: Well 217H
TVD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
MD Reference: Well @ 3177.50usft (GL:3151' + KB:26.5')
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
567.00	567.00	Rustler Anhydrite			
1,132.75	1,132.00	Top Salt			
1,843.04	1,837.00	Base Salt			
1,994.17	1,987.00	Delaware Mountain Gp			
2,145.30	2,137.00	Bell Canyon			
2,150.34	2,142.00	Lamar			
2,170.49	2,162.00	Ramsey Sand			
2,991.61	2,977.00	Cherry Canyon			
3,945.35	3,927.00	Brushy Canyon			
5,505.35	5,487.00	Bone Spring Lime			
6,470.35	6,452.00	1st Bone Spring Sand			
6,960.35	6,942.00	2nd Bone Spring Sand			
8,530.35	8,512.00	3rd Bone Spring Sand			
8,896.99	8,857.00	3rd Bone Spring W Sand			
8,909.31	8,867.00	Wolfcamp A			
9,031.61	8,957.00	Wolfcamp A Y Sand			
9,209.06	9,052.00	Wolfcamp A Fat			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
800	800	0	0	Start Build 2.00
1150	1149	0	-21	Start 2224.92 hold at 1150.22 MD
3375	3358	4	-293	Start Drop -2.00
3725	3707	4	-314	Start 4820.13 hold at 3725.35 MD
8545	8527	4	-314	KOP, Start DLS 10.00 TFO 269.70
9455	9100	1	-897	Landing PT.
19,427	8926	-51	-10,867	TD at 19427.13

Checked By: _____ Approved By: _____ Date: _____