



NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 18 2018

RECEIVED

Tap Rock Operating, LLC

Eddy County, NM (NAD 83)

Pliny The Elder Fee

215H

30.015.45558

OH

Plan: Plan 2

Standard Survey Report

07 December, 2018





Pro Directional Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 215H
Wellbore: OH
Design: Plan 2

Local Co-ordinate Reference: Well 215H
TVD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
MD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
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
From:	Map	Easting:	581,705.00 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32.338739
		Longitude:	-104.202628
		Grid Convergence:	0.07 °

Well	215H		
Well Position	+N/-S	0.00 usft	Northing: 486,990.00 usft
	+E/-W	0.00 usft	Easting: 581,705.00 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	usft
		Latitude:	32.338739
		Longitude:	-104.202628
		Ground Level:	3,150.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	12/7/2018	7.28
		Dip Angle (°)	60.05
		Field Strength (nT)	47,940.70

Design	Plan 2		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
		Direction (°)	269.83

Survey Tool Program	Date 12/7/2018		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
0.00	18,424.55	Plan 2 (OH)	MWD+HDGM
			Description
			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	
556.00	0.00	0.00	556.00	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
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,000.00	2.00	217.10	999.98	-1.39	-1.05	1.06	2.00	2.00	0.00
1,033.45	2.67	217.10	1,033.40	-2.48	-1.87	1.88	2.00	2.00	0.00
Start 2611.03 hold at 1033.45 MD									
1,100.00	2.67	217.10	1,099.88	-4.95	-3.74	3.76	0.00	0.00	0.00
1,121.14	2.67	217.10	1,121.00	-5.74	-4.34	4.35	0.00	0.00	0.00
Top Salt									
1,200.00	2.67	217.10	1,199.77	-8.66	-6.55	6.58	0.00	0.00	0.00
1,300.00	2.67	217.10	1,299.66	-12.38	-9.36	9.40	0.00	0.00	0.00
1,400.00	2.67	217.10	1,399.55	-16.09	-12.17	12.22	0.00	0.00	0.00
1,500.00	2.67	217.10	1,499.45	-19.81	-14.98	15.04	0.00	0.00	0.00
1,600.00	2.67	217.10	1,599.34	-23.52	-17.79	17.86	0.00	0.00	0.00
1,700.00	2.67	217.10	1,699.23	-27.23	-20.60	20.68	0.00	0.00	0.00
1,800.00	2.67	217.10	1,799.12	-30.95	-23.41	23.50	0.00	0.00	0.00
1,826.91	2.67	217.10	1,826.00	-31.95	-24.16	24.26	0.00	0.00	0.00
Base Salt									
1,900.00	2.67	217.10	1,899.01	-34.66	-26.21	26.32	0.00	0.00	0.00
1,977.07	2.67	217.10	1,976.00	-37.52	-28.38	28.49	0.00	0.00	0.00
Delaware Mountain Gp									
2,000.00	2.67	217.10	1,998.90	-38.38	-29.02	29.14	0.00	0.00	0.00
2,100.00	2.67	217.10	2,098.79	-42.09	-31.83	31.96	0.00	0.00	0.00
2,127.23	2.67	217.10	2,126.00	-43.10	-32.60	32.73	0.00	0.00	0.00
Bell Canyon									
2,132.24	2.67	217.10	2,131.00	-43.29	-32.74	32.87	0.00	0.00	0.00
Lamar									
2,152.26	2.67	217.10	2,151.00	-44.03	-33.30	33.43	0.00	0.00	0.00
Ramsey Sand									
2,200.00	2.67	217.10	2,198.69	-45.80	-34.64	34.78	0.00	0.00	0.00
2,300.00	2.67	217.10	2,298.58	-49.52	-37.45	37.60	0.00	0.00	0.00
2,400.00	2.67	217.10	2,398.47	-53.23	-40.26	40.42	0.00	0.00	0.00
2,500.00	2.67	217.10	2,498.36	-56.95	-43.07	43.24	0.00	0.00	0.00
2,600.00	2.67	217.10	2,598.25	-60.66	-45.88	46.06	0.00	0.00	0.00
2,700.00	2.67	217.10	2,698.14	-64.37	-48.69	48.88	0.00	0.00	0.00
2,800.00	2.67	217.10	2,798.04	-68.09	-51.49	51.70	0.00	0.00	0.00
2,900.00	2.67	217.10	2,897.93	-71.80	-54.30	54.52	0.00	0.00	0.00
2,968.15	2.67	217.10	2,966.00	-74.33	-56.22	56.44	0.00	0.00	0.00
Cherry Canyon									
3,000.00	2.67	217.10	2,997.82	-75.52	-57.11	57.34	0.00	0.00	0.00
3,100.00	2.67	217.10	3,097.71	-79.23	-59.92	60.16	0.00	0.00	0.00
3,200.00	2.67	217.10	3,197.60	-82.94	-62.73	62.88	0.00	0.00	0.00



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3,300.00	2.67	217.10	3,297.49	-86.66	-65.54	65.80	0.00	0.00	0.00
3,400.00	2.67	217.10	3,397.38	-90.37	-68.35	68.62	0.00	0.00	0.00
3,500.00	2.67	217.10	3,497.28	-94.09	-71.16	71.44	0.00	0.00	0.00
3,600.00	2.67	217.10	3,597.17	-97.80	-73.97	74.26	0.00	0.00	0.00
3,644.48	2.67	217.10	3,641.60	-99.45	-75.22	75.51	0.00	0.00	0.00
Start Drop -2.00									
3,700.00	1.56	217.10	3,697.08	-101.08	-76.45	76.75	2.00	-2.00	0.00
3,777.93	0.00	0.00	3,775.00	-101.93	-77.09	77.39	2.00	-2.00	0.00
Start 4773.23 hold at 3777.93 MD									
3,800.00	0.00	0.00	3,797.07	-101.93	-77.09	77.39	0.00	0.00	0.00
3,900.00	0.00	0.00	3,897.07	-101.93	-77.09	77.39	0.00	0.00	0.00
3,928.93	0.00	0.00	3,926.00	-101.93	-77.09	77.39	0.00	0.00	0.00
Brushy Canyon									
4,000.00	0.00	0.00	3,997.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,100.00	0.00	0.00	4,097.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,200.00	0.00	0.00	4,197.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,300.00	0.00	0.00	4,297.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,400.00	0.00	0.00	4,397.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,500.00	0.00	0.00	4,497.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,600.00	0.00	0.00	4,597.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,700.00	0.00	0.00	4,697.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,800.00	0.00	0.00	4,797.07	-101.93	-77.09	77.39	0.00	0.00	0.00
4,900.00	0.00	0.00	4,897.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,000.00	0.00	0.00	4,997.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,100.00	0.00	0.00	5,097.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,200.00	0.00	0.00	5,197.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,300.00	0.00	0.00	5,297.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,400.00	0.00	0.00	5,397.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,483.93	0.00	0.00	5,481.00	-101.93	-77.09	77.39	0.00	0.00	0.00
Bone Spring Lime									
5,500.00	0.00	0.00	5,497.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,600.00	0.00	0.00	5,597.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,700.00	0.00	0.00	5,697.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,800.00	0.00	0.00	5,797.07	-101.93	-77.09	77.39	0.00	0.00	0.00
5,900.00	0.00	0.00	5,897.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,000.00	0.00	0.00	5,997.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,100.00	0.00	0.00	6,097.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,200.00	0.00	0.00	6,197.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,300.00	0.00	0.00	6,297.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,400.00	0.00	0.00	6,397.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,453.93	0.00	0.00	6,451.00	-101.93	-77.09	77.39	0.00	0.00	0.00
1st Bone Spring Sand									
6,500.00	0.00	0.00	6,497.07	-101.93	-77.09	77.39	0.00	0.00	0.00



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6,600.00	0.00	0.00	6,597.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,700.00	0.00	0.00	6,697.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,800.00	0.00	0.00	6,797.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,900.00	0.00	0.00	6,897.07	-101.93	-77.09	77.39	0.00	0.00	0.00
6,988.93	0.00	0.00	6,986.00	-101.93	-77.09	77.39	0.00	0.00	0.00
2nd Bone Spring Sand									
7,000.00	0.00	0.00	6,997.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,100.00	0.00	0.00	7,097.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,200.00	0.00	0.00	7,197.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,300.00	0.00	0.00	7,297.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,400.00	0.00	0.00	7,397.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,500.00	0.00	0.00	7,497.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,600.00	0.00	0.00	7,597.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,700.00	0.00	0.00	7,697.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,800.00	0.00	0.00	7,797.07	-101.93	-77.09	77.39	0.00	0.00	0.00
7,900.00	0.00	0.00	7,897.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,000.00	0.00	0.00	7,997.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,100.00	0.00	0.00	8,097.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,200.00	0.00	0.00	8,197.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,300.00	0.00	0.00	8,297.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,400.00	0.00	0.00	8,397.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,500.00	0.00	0.00	8,497.07	-101.93	-77.09	77.39	0.00	0.00	0.00
8,503.93	0.00	0.00	8,501.00	-101.93	-77.09	77.39	0.00	0.00	0.00
3rd Bone Spring Sand									
8,551.16	0.00	0.00	8,548.23	-101.93	-77.09	77.39	0.00	0.00	0.00
KOP, Start DLS 10.00 TFO 269.83									
8,600.00	4.88	269.83	8,597.01	-101.94	-79.17	79.47	10.00	10.00	0.00
8,650.00	9.88	269.83	8,646.58	-101.96	-85.59	85.90	10.00	10.00	0.00
8,700.00	14.88	269.83	8,695.40	-101.99	-96.31	96.62	10.00	10.00	0.00
8,750.00	19.88	269.83	8,743.10	-102.03	-111.25	111.55	10.00	10.00	0.00
8,785.40	23.42	269.83	8,776.00	-102.07	-124.31	124.61	10.00	10.00	0.00
3rd BS W Sand									
8,800.00	24.88	269.83	8,789.32	-102.09	-130.28	130.59	10.00	10.00	0.00
8,850.00	29.88	269.83	8,833.70	-102.15	-153.27	153.58	10.00	10.00	0.00
8,870.16	31.90	269.83	8,851.00	-102.18	-163.62	163.92	10.00	10.00	0.00
Wolfcamp A									
8,900.00	34.88	269.83	8,875.92	-102.23	-180.04	180.35	10.00	10.00	0.00
8,950.00	39.88	269.83	8,915.63	-102.32	-210.39	210.69	10.00	10.00	0.00
8,977.09	42.59	269.83	8,936.00	-102.38	-228.25	228.55	10.00	10.00	0.00
Wolfcamp A Y Sand									
9,000.00	44.88	269.83	8,952.55	-102.42	-244.09	244.39	10.00	10.00	0.00
9,050.00	49.88	269.83	8,986.40	-102.53	-280.87	281.17	10.00	10.00	0.00



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9,100.00	54.88	269.83	9,016.90	-102.65	-320.46	320.77	10.00	10.00	0.00
9,150.00	59.88	269.83	9,043.85	-102.77	-362.56	362.87	10.00	10.00	0.00
9,200.00	64.88	269.83	9,067.02	-102.90	-406.85	407.16	10.00	10.00	0.00
9,222.08	67.09	269.83	9,076.00	-102.96	-427.02	427.33	10.00	10.00	0.00
Wolfcamp A Fat									
9,250.00	69.88	269.83	9,086.24	-103.04	-452.99	453.30	10.00	10.00	0.00
9,300.00	74.88	269.83	9,101.36	-103.18	-500.63	500.94	10.00	10.00	0.00
9,350.00	79.88	269.83	9,112.28	-103.32	-549.41	549.72	10.00	10.00	0.00
9,400.00	84.88	269.83	9,118.91	-103.47	-598.95	599.26	10.00	10.00	0.00
9,450.00	89.88	269.83	9,121.19	-103.61	-648.89	649.19	10.00	10.00	0.00
9,461.11	91.00	269.83	9,121.10	-103.65	-660.00	660.30	10.00	10.00	0.00
Landing PT. Start 9963.55 hold at 9461.11 MD									
9,500.00	91.00	269.83	9,120.43	-103.76	-698.88	699.18	0.00	0.00	0.00
9,600.00	91.00	269.83	9,118.69	-104.06	-798.86	799.17	0.00	0.00	0.00
9,700.00	91.00	269.83	9,116.95	-104.35	-898.85	899.15	0.00	0.00	0.00
9,800.00	91.00	269.83	9,115.21	-104.65	-998.83	999.14	0.00	0.00	0.00
9,900.00	91.00	269.83	9,113.48	-104.94	-1,098.82	1,099.12	0.00	0.00	0.00
10,000.00	91.00	269.83	9,111.74	-105.24	-1,198.80	1,199.11	0.00	0.00	0.00
10,100.00	91.00	269.83	9,110.00	-105.53	-1,298.79	1,299.09	0.00	0.00	0.00
10,200.00	91.00	269.83	9,108.26	-105.82	-1,398.77	1,399.08	0.00	0.00	0.00
10,300.00	91.00	269.83	9,106.53	-106.12	-1,498.76	1,499.06	0.00	0.00	0.00
10,400.00	91.00	269.83	9,104.79	-106.41	-1,598.74	1,599.05	0.00	0.00	0.00
10,500.00	91.00	269.83	9,103.05	-106.71	-1,698.72	1,699.03	0.00	0.00	0.00
10,600.00	91.00	269.83	9,101.32	-107.00	-1,798.71	1,799.02	0.00	0.00	0.00
10,700.00	91.00	269.83	9,099.58	-107.30	-1,898.69	1,899.00	0.00	0.00	0.00
10,800.00	91.00	269.83	9,097.84	-107.59	-1,998.68	1,998.99	0.00	0.00	0.00
10,900.00	91.00	269.83	9,096.10	-107.89	-2,098.66	2,098.97	0.00	0.00	0.00
11,000.00	91.00	269.83	9,094.37	-108.18	-2,198.65	2,198.96	0.00	0.00	0.00
11,100.00	91.00	269.83	9,092.63	-108.48	-2,298.63	2,298.94	0.00	0.00	0.00
11,200.00	91.00	269.83	9,090.89	-108.77	-2,398.62	2,398.93	0.00	0.00	0.00
11,300.00	91.00	269.83	9,089.15	-109.06	-2,498.60	2,498.91	0.00	0.00	0.00
11,400.00	91.00	269.83	9,087.42	-109.36	-2,598.58	2,598.90	0.00	0.00	0.00
11,500.00	91.00	269.83	9,085.68	-109.65	-2,698.57	2,698.88	0.00	0.00	0.00
11,600.00	91.00	269.83	9,083.94	-109.95	-2,798.55	2,798.87	0.00	0.00	0.00
11,700.00	91.00	269.83	9,082.20	-110.24	-2,898.54	2,898.85	0.00	0.00	0.00
11,800.00	91.00	269.83	9,080.47	-110.54	-2,998.52	2,998.84	0.00	0.00	0.00
11,900.00	91.00	269.83	9,078.73	-110.83	-3,098.51	3,098.82	0.00	0.00	0.00
12,000.00	91.00	269.83	9,076.99	-111.13	-3,198.49	3,198.81	0.00	0.00	0.00
12,100.00	91.00	269.83	9,075.25	-111.42	-3,298.48	3,298.79	0.00	0.00	0.00
12,200.00	91.00	269.83	9,073.52	-111.72	-3,398.46	3,398.78	0.00	0.00	0.00
12,300.00	91.00	269.83	9,071.78	-112.01	-3,498.45	3,498.76	0.00	0.00	0.00
12,400.00	91.00	269.83	9,070.04	-112.31	-3,598.43	3,598.75	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: 215H
Wellbore: OH
Design: Plan 2

Local Co-ordinate Reference: Well 215H
TVD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
MD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
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)
12,500.00	91.00	269.83	9,068.31	-112.60	-3,698.41	3,698.73	0.00	0.00	0.00
12,600.00	91.00	269.83	9,066.57	-112.89	-3,798.40	3,798.72	0.00	0.00	0.00
12,700.00	91.00	269.83	9,064.83	-113.19	-3,898.38	3,898.70	0.00	0.00	0.00
12,800.00	91.00	269.83	9,063.09	-113.48	-3,998.37	3,998.69	0.00	0.00	0.00
12,900.00	91.00	269.83	9,061.36	-113.78	-4,098.35	4,098.67	0.00	0.00	0.00
13,000.00	91.00	269.83	9,059.62	-114.07	-4,198.34	4,198.66	0.00	0.00	0.00
13,100.00	91.00	269.83	9,057.88	-114.37	-4,298.32	4,298.64	0.00	0.00	0.00
13,200.00	91.00	269.83	9,056.14	-114.66	-4,398.31	4,398.63	0.00	0.00	0.00
13,300.00	91.00	269.83	9,054.41	-114.96	-4,498.29	4,498.61	0.00	0.00	0.00
13,400.00	91.00	269.83	9,052.67	-115.25	-4,598.27	4,598.60	0.00	0.00	0.00
13,500.00	91.00	269.83	9,050.93	-115.55	-4,698.26	4,698.58	0.00	0.00	0.00
13,600.00	91.00	269.83	9,049.19	-115.84	-4,798.24	4,798.57	0.00	0.00	0.00
13,700.00	91.00	269.83	9,047.46	-116.14	-4,898.23	4,898.55	0.00	0.00	0.00
13,800.00	91.00	269.83	9,045.72	-116.43	-4,998.21	4,998.54	0.00	0.00	0.00
13,900.00	91.00	269.83	9,043.98	-116.72	-5,098.20	5,098.52	0.00	0.00	0.00
14,000.00	91.00	269.83	9,042.25	-117.02	-5,198.18	5,198.51	0.00	0.00	0.00
14,100.00	91.00	269.83	9,040.51	-117.31	-5,298.17	5,298.49	0.00	0.00	0.00
14,200.00	91.00	269.83	9,038.77	-117.61	-5,398.15	5,398.48	0.00	0.00	0.00
14,300.00	91.00	269.83	9,037.03	-117.90	-5,498.13	5,498.46	0.00	0.00	0.00
14,400.00	91.00	269.83	9,035.30	-118.20	-5,598.12	5,598.45	0.00	0.00	0.00
14,500.00	91.00	269.83	9,033.56	-118.49	-5,698.10	5,698.43	0.00	0.00	0.00
14,600.00	91.00	269.83	9,031.82	-118.79	-5,798.09	5,798.42	0.00	0.00	0.00
14,700.00	91.00	269.83	9,030.08	-119.08	-5,898.07	5,898.40	0.00	0.00	0.00
14,800.00	91.00	269.83	9,028.35	-119.38	-5,998.06	5,998.38	0.00	0.00	0.00
14,900.00	91.00	269.83	9,026.61	-119.67	-6,098.04	6,098.37	0.00	0.00	0.00
15,000.00	91.00	269.83	9,024.87	-119.97	-6,198.03	6,198.35	0.00	0.00	0.00
15,100.00	91.00	269.83	9,023.13	-120.26	-6,298.01	6,298.34	0.00	0.00	0.00
15,200.00	91.00	269.83	9,021.40	-120.55	-6,397.99	6,398.32	0.00	0.00	0.00
15,300.00	91.00	269.83	9,019.66	-120.85	-6,497.98	6,498.31	0.00	0.00	0.00
15,400.00	91.00	269.83	9,017.92	-121.14	-6,597.96	6,598.29	0.00	0.00	0.00
15,500.00	91.00	269.83	9,016.19	-121.44	-6,697.95	6,698.28	0.00	0.00	0.00
15,600.00	91.00	269.83	9,014.45	-121.73	-6,797.93	6,798.26	0.00	0.00	0.00
15,700.00	91.00	269.83	9,012.71	-122.03	-6,897.92	6,898.25	0.00	0.00	0.00
15,800.00	91.00	269.83	9,010.97	-122.32	-6,997.90	6,998.23	0.00	0.00	0.00
15,900.00	91.00	269.83	9,009.24	-122.62	-7,097.89	7,098.22	0.00	0.00	0.00
16,000.00	91.00	269.83	9,007.50	-122.91	-7,197.87	7,198.20	0.00	0.00	0.00
16,100.00	91.00	269.83	9,005.76	-123.21	-7,297.86	7,298.19	0.00	0.00	0.00
16,200.00	91.00	269.83	9,004.02	-123.50	-7,397.84	7,398.17	0.00	0.00	0.00
16,300.00	91.00	269.83	9,002.29	-123.79	-7,497.82	7,498.16	0.00	0.00	0.00
16,400.00	91.00	269.83	9,000.55	-124.09	-7,597.81	7,598.14	0.00	0.00	0.00
16,500.00	91.00	269.83	8,998.81	-124.38	-7,697.79	7,698.13	0.00	0.00	0.00
16,600.00	91.00	269.83	8,997.07	-124.68	-7,797.78	7,798.11	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: 215H
Wellbore: OH
Design: Plan 2

Local Co-ordinate Reference: Well 215H
TVD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
MD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
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)
16,700.00	91.00	269.83	8,995.34	-124.97	-7,897.76	7,898.10	0.00	0.00	0.00
16,800.00	91.00	269.83	8,993.60	-125.27	-7,997.75	7,998.08	0.00	0.00	0.00
16,900.00	91.00	269.83	8,991.86	-125.56	-8,097.73	8,098.07	0.00	0.00	0.00
17,000.00	91.00	269.83	8,990.12	-125.86	-8,197.72	8,198.05	0.00	0.00	0.00
17,100.00	91.00	269.83	8,988.39	-126.15	-8,297.70	8,298.04	0.00	0.00	0.00
17,200.00	91.00	269.83	8,986.65	-126.45	-8,397.68	8,398.02	0.00	0.00	0.00
17,300.00	91.00	269.83	8,984.91	-126.74	-8,497.67	8,498.01	0.00	0.00	0.00
17,400.00	91.00	269.83	8,983.18	-127.04	-8,597.65	8,597.99	0.00	0.00	0.00
17,500.00	91.00	269.83	8,981.44	-127.33	-8,697.64	8,697.98	0.00	0.00	0.00
17,600.00	91.00	269.83	8,979.70	-127.62	-8,797.62	8,797.96	0.00	0.00	0.00
17,700.00	91.00	269.83	8,977.96	-127.92	-8,897.61	8,897.95	0.00	0.00	0.00
17,800.00	91.00	269.83	8,976.23	-128.21	-8,997.59	8,997.93	0.00	0.00	0.00
17,900.00	91.00	269.83	8,974.49	-128.51	-9,097.58	9,097.92	0.00	0.00	0.00
18,000.00	91.00	269.83	8,972.75	-128.80	-9,197.56	9,197.90	0.00	0.00	0.00
18,100.00	91.00	269.83	8,971.01	-129.10	-9,297.54	9,297.89	0.00	0.00	0.00
18,200.00	91.00	269.83	8,969.28	-129.39	-9,397.53	9,397.87	0.00	0.00	0.00
18,300.00	91.00	269.83	8,967.54	-129.69	-9,497.51	9,497.86	0.00	0.00	0.00
18,400.00	91.00	269.83	8,965.80	-129.98	-9,597.50	9,597.84	0.00	0.00	0.00
18,500.00	91.00	269.83	8,964.06	-130.28	-9,697.48	9,697.83	0.00	0.00	0.00
18,600.00	91.00	269.83	8,962.33	-130.57	-9,797.47	9,797.81	0.00	0.00	0.00
18,700.00	91.00	269.83	8,960.59	-130.87	-9,897.45	9,897.80	0.00	0.00	0.00
18,800.00	91.00	269.83	8,958.85	-131.16	-9,997.44	9,997.78	0.00	0.00	0.00
18,900.00	91.00	269.83	8,957.12	-131.45	-10,097.42	10,097.77	0.00	0.00	0.00
19,000.00	91.00	269.83	8,955.38	-131.75	-10,197.41	10,197.75	0.00	0.00	0.00
19,100.00	91.00	269.83	8,953.64	-132.04	-10,297.39	10,297.74	0.00	0.00	0.00
19,200.00	91.00	269.83	8,951.90	-132.34	-10,397.37	10,397.72	0.00	0.00	0.00
19,300.00	91.00	269.83	8,950.17	-132.63	-10,497.36	10,497.71	0.00	0.00	0.00
19,400.00	91.00	269.83	8,948.43	-132.93	-10,597.34	10,597.69	0.00	0.00	0.00
19,424.66	91.00	269.83	8,948.00	-133.00	-10,622.00	10,622.35	0.00	0.00	0.00

TD at 19424.66



Pro Directional Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 215H
Wellbore: OH
Design: Plan 2

Local Co-ordinate Reference: Well 215H
TVD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
MD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

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
215H - LTP - plan misses target center by 8948.94usft at 19424.66usft MD (8948.00 TVD, -133.00 N, -10622.00 E) - Point	0.00	0.00	0.00	-133.00	-10,492.00	486,857.00	571,213.00	32.338404	-104.236600
215H - KOP - plan hits target center - Point	0.00	0.00	8,548.23	-101.93	-77.09	486,888.07	581,627.91	32.338459	-104.202878
215H - PBHL - P2 - plan hits target center - Point	0.00	0.00	8,948.00	-133.00	-10,622.00	486,857.00	571,083.00	32.338405	-104.237021
215H - FTP/Landing - plan hits target center - Point	0.00	0.00	9,121.10	-103.65	-660.00	486,886.35	581,045.00	32.338457	-104.204765

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
556.00	556.00	Rustler Anhydrite			
1,121.14	1,121.00	Top Salt			
1,826.91	1,826.00	Base Salt			
1,977.07	1,976.00	Delaware Mountain Gp			
2,127.23	2,126.00	Bell Canyon			
2,132.24	2,131.00	Lamar			
2,152.26	2,151.00	Ramsey Sand			
2,968.15	2,966.00	Cherry Canyon			
3,928.93	3,926.00	Brushy Canyon			
5,483.93	5,481.00	Bone Spring Lime			
6,453.93	6,451.00	1st Bone Spring Sand			
6,988.93	6,986.00	2nd Bone Spring Sand			
8,503.93	8,501.00	3rd Bone Spring Sand			
8,785.40	8,776.00	3rd BS W Sand			
8,870.16	8,851.00	Wolfcamp A			
8,977.09	8,936.00	Wolfcamp A Y Sand			
9,222.08	9,076.00	Wolfcamp A Fat			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
900	900	0	0	Start Build 2.00
1033	1033	-2	-2	Start 2611.03 hold at 1033.45 MD
3644	3642	-99	-75	Start Drop -2.00
3778	3775	-102	-77	Start 4773.23 hold at 3777.93 MD
8551	8548	-102	-77	KOP, Start DLS 10.00 TFO 269.83
9461	9121	-104	-660	Landing PT. Start 9963.55 hold at 9461.11 MD
19,425	8948	-133	-10,622	TD at 19424.66



Pro Directional
Survey Report



Company: Tap Rock Operating, LLC
Project: Eddy County, NM (NAD 83)
Site: Pliny The Elder Fee
Well: 215H
Wellbore: OH
Design: Plan 2

Local Co-ordinate Reference: Well 215H
TVD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
MD Reference: Well @ 3176.50usft (GL:3150' + KB: 26.5' (H&P 422))
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: WellPlanner1

Checked By: _____	Approved By: _____	Date: _____
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