



Operator: TapRock Resources LLC
Well Name: Pliny The Elder #202H
County: Eddy
State: New Mexico
Rig Name: H&P 245
API Number: 30-015-45641

Intrepid Directional Drilling Specialists certifies that the surveys performed on the above referenced well are true and correct MWD surveys, data provided as follows:

Surveyor: Intrepid Directional Drilling Specialists
Survey Depths: 53.1' MD – 19,133' MD
Projection to Bit: 19,218' MD
Dates Performed: 07/29/2019 – 08/14/2019
Type of Survey: MWD

Sincerely,

A handwritten signature in black ink, appearing to read "James Burleson".

James Burleson
Vice President of MWD Operations
Intrepid Directional Drilling Specialists





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Tap Rock Resources, LLC

Eddy County, NM (NAD 83 NME)

(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E

Pliny The Elder Fee #202H

OWB

Design: AWB

Standard Survey Report

13 August, 2019





Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder Fee #202H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3177.5usft (H&P 245)
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3177.5usft (H&P 245)
Well:	Pliny The Elder Fee #202H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

Project	Eddy County, NM (NAD 83 NME)		
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) Sec-4_T-23-S_R-27-E		
Site Position:	Map	Northing:	485,612.00 usft
From:		Easting:	581,950.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 20' 5.822 N
		Longitude:	104° 12' 6.624 W
		Grid Convergence:	0.07 °

Well	Pliny The Elder Fee #202H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 20' 5.822 N
		Longitude:	104° 12' 6.624 W
		Ground Level:	3,151.0 usft

Wellbore	OWB		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2019/07/24	7.03	60.04	47,722.76949530

Design	AWB		
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Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	269.82

Survey Program	Date	2019/08/13		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
53.1	2,012.0	VES Gyro (OWB)	GYRO-NS	OWSG Gyrocompass Gyro
2,196.0	19,218.0	Intrepid MWD (OWB)	MWD	OWSG MWD - Standard

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
53.1	0.18	351.76	53.1	0.1	0.0	0.0	0.34	0.34	0.00
146.4	0.25	349.08	146.4	0.4	-0.1	0.1	0.08	0.08	-2.87
239.7	0.39	2.87	239.7	0.9	-0.1	0.1	0.17	0.15	14.78
333.0	0.31	84.29	333.0	1.3	0.2	-0.2	0.49	-0.09	87.29
426.2	0.34	137.34	426.2	1.1	0.6	-0.6	0.31	0.03	56.87
519.5	0.76	201.70	519.5	0.3	0.6	-0.6	0.73	0.45	69.00
612.8	1.43	234.58	612.8	-0.9	-0.6	0.6	0.96	0.72	35.25
706.1	1.10	273.62	706.0	-1.5	-2.4	2.5	0.97	-0.35	41.85
799.4	0.69	254.26	799.3	-1.6	-3.9	3.9	0.54	-0.44	-20.75



Intrepid
Survey Report



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Well:	Pliny The Elder Fee #202H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

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)
892.6	0.54	164.68	892.6	-2.2	-4.3	4.3	0.94	-0.16	-96.03
985.9	0.15	115.99	985.9	-2.7	-4.1	4.1	0.49	-0.42	-52.20
1,079.2	0.37	146.10	1,079.1	-3.0	-3.8	3.8	0.27	0.24	32.28
1,172.5	0.79	97.27	1,172.4	-3.3	-3.0	3.0	0.66	0.45	-52.35
1,265.8	1.20	65.75	1,265.7	-3.0	-1.5	1.5	0.72	0.44	-33.79
1,359.0	1.37	54.69	1,358.9	-2.0	0.3	-0.3	0.32	0.18	-11.86
1,452.3	0.73	91.37	1,452.2	-1.3	1.8	-1.8	0.96	-0.69	39.32
1,545.6	0.64	77.42	1,545.5	-1.2	2.9	-2.9	0.20	-0.10	-14.95
1,638.9	1.40	47.86	1,638.7	-0.3	4.3	-4.3	0.97	0.81	-31.69
1,732.2	1.46	82.09	1,732.0	0.6	6.3	-6.3	0.90	0.06	36.70
1,825.4	1.20	113.57	1,825.2	0.4	8.4	-8.4	0.82	-0.28	33.75
1,918.7	0.81	126.83	1,918.5	-0.4	9.8	-9.8	0.48	-0.42	14.22
2,012.0	0.95	153.12	2,011.8	-1.5	10.7	-10.7	0.45	0.15	28.18
2,196.0	1.93	9.51	2,195.8	0.2	11.9	-11.9	1.50	0.53	-78.05
2,289.0	4.88	330.49	2,288.6	5.2	10.2	-10.2	3.86	3.17	-41.96
2,383.0	6.95	328.29	2,382.1	13.5	5.2	-5.3	2.21	2.20	-2.34
2,476.0	9.10	314.58	2,474.2	23.4	-3.0	2.9	3.08	2.31	-14.74
2,569.0	11.08	304.03	2,565.7	33.6	-15.6	15.5	2.90	2.13	-11.34
2,661.0	11.30	291.99	2,656.0	41.9	-31.3	31.2	2.55	0.24	-13.09
2,754.0	12.09	289.62	2,747.1	48.6	-48.9	48.8	0.99	0.85	-2.55
2,847.0	10.55	296.91	2,838.3	55.7	-65.7	65.5	2.26	-1.66	7.84
2,940.0	10.64	295.59	2,929.7	63.3	-81.0	80.8	0.28	0.10	-1.42
3,034.0	10.81	295.15	3,022.0	70.8	-96.8	96.6	0.20	0.18	-0.47
3,128.0	11.12	296.38	3,114.3	78.6	-112.9	112.7	0.41	0.33	1.31
3,221.0	11.38	296.56	3,205.5	86.6	-129.2	128.9	0.28	0.28	0.19
3,315.0	11.52	295.15	3,297.7	94.8	-146.0	145.7	0.33	0.15	-1.50
3,408.0	11.47	290.76	3,388.8	102.0	-163.0	162.7	0.94	-0.05	-4.72
3,502.0	11.69	291.20	3,480.9	108.8	-180.6	180.3	0.25	0.23	0.47
3,596.0	11.91	288.74	3,572.9	115.3	-198.7	198.3	0.58	0.23	-2.62
3,689.0	11.30	297.97	3,664.0	122.7	-215.8	215.4	2.10	-0.66	9.92
3,783.0	11.82	297.88	3,756.1	131.5	-232.5	232.1	0.55	0.55	-0.10
3,876.0	11.56	296.82	3,847.2	140.2	-249.2	248.8	0.36	-0.28	-1.14
3,969.0	11.65	296.82	3,938.3	148.6	-265.9	265.4	0.10	0.10	0.00
4,063.0	10.81	295.77	4,030.5	156.7	-282.3	281.8	0.92	-0.89	-1.12
4,156.0	10.15	289.53	4,121.9	163.2	-297.9	297.4	1.41	-0.71	-6.71
4,250.0	10.46	297.61	4,214.4	170.0	-313.3	312.7	1.57	0.33	8.60
4,343.0	10.37	297.44	4,305.9	177.7	-328.2	327.6	0.10	-0.10	-0.18
4,437.0	9.49	297.53	4,398.5	185.2	-342.5	342.0	0.94	-0.94	0.10
4,529.0	9.76	297.35	4,489.2	192.3	-356.2	355.6	0.30	0.29	-0.20
4,622.0	10.51	297.53	4,580.7	199.9	-370.7	370.1	0.81	0.81	0.19
4,715.0	9.93	296.30	4,672.2	207.3	-385.4	384.8	0.67	-0.62	-1.32
4,809.0	9.45	290.67	4,764.9	213.6	-399.9	399.2	1.13	-0.51	-5.99
4,902.0	9.23	282.94	4,856.7	218.0	-414.3	413.6	1.37	-0.24	-8.31



Intrepid Survey Report



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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)
4,994.0	8.92	284.25	4,947.5	221.4	-428.4	427.7	0.40	-0.34	1.42
5,087.0	8.18	286.01	5,039.5	225.0	-441.8	441.1	0.84	-0.80	1.89
5,181.0	5.93	307.46	5,132.8	229.8	-452.1	451.3	3.65	-2.39	22.82
5,275.0	4.18	322.58	5,226.4	235.5	-458.0	457.3	2.32	-1.86	16.09
5,369.0	3.52	324.25	5,320.2	240.6	-461.8	461.0	0.71	-0.70	1.78
5,463.0	3.52	315.54	5,414.0	245.0	-465.5	464.7	0.57	0.00	-9.27
5,556.0	2.07	287.42	5,506.9	247.5	-469.1	468.3	2.10	-1.56	-30.24
5,650.0	1.41	239.43	5,600.9	247.4	-471.7	470.9	1.64	-0.70	-51.05
5,743.0	1.19	253.76	5,693.9	246.6	-473.6	472.8	0.42	-0.24	15.41
5,836.0	0.97	246.20	5,786.8	246.0	-475.3	474.5	0.28	-0.24	-8.13
5,930.0	1.71	10.39	5,880.8	247.0	-475.7	475.0	2.55	0.79	132.12
6,023.0	2.46	6.70	5,973.8	250.4	-475.3	474.5	0.82	0.81	-3.97
6,117.0	2.37	0.28	6,067.7	254.3	-475.0	474.2	0.30	-0.10	-6.83
6,211.0	2.11	336.99	6,161.6	257.9	-475.7	474.9	1.00	-0.28	-24.78
6,304.0	1.67	350.88	6,254.6	260.8	-476.6	475.7	0.68	-0.47	14.94
6,397.0	1.67	2.48	6,347.5	263.5	-476.7	475.9	0.36	0.00	12.47
6,490.0	1.93	347.71	6,440.5	266.4	-477.0	476.1	0.57	0.28	-15.88
6,583.0	2.02	1.33	6,533.4	269.5	-477.3	476.4	0.51	0.10	14.65
6,676.0	1.58	25.86	6,626.4	272.3	-476.7	475.8	0.94	-0.47	26.38
6,769.0	0.84	14.25	6,719.4	274.1	-476.0	475.1	0.83	-0.80	-12.48
6,862.0	1.23	320.99	6,812.3	275.6	-476.4	475.6	1.07	0.42	-57.27
6,956.0	1.36	334.18	6,906.3	277.4	-477.5	476.7	0.34	0.14	14.03
7,049.0	1.14	354.22	6,999.3	279.3	-478.1	477.2	0.52	-0.24	21.55
7,142.0	0.62	303.94	7,092.3	280.5	-478.6	477.7	0.95	-0.56	-54.06
7,236.0	0.88	298.58	7,186.3	281.1	-479.7	478.8	0.29	0.28	-5.70
7,329.0	1.23	293.92	7,279.3	281.8	-481.2	480.3	0.39	0.38	-5.01
7,423.0	1.36	300.95	7,373.2	282.8	-483.1	482.2	0.22	0.14	7.48
7,517.0	1.01	35.61	7,467.2	284.1	-483.6	482.7	1.87	-0.37	100.70
7,611.0	1.10	37.11	7,561.2	285.5	-482.5	481.6	0.10	0.10	1.60
7,704.0	1.19	85.62	7,654.2	286.3	-481.0	480.1	1.02	0.10	52.16
7,797.0	0.97	128.16	7,747.2	285.8	-479.5	478.6	0.87	-0.24	45.74
7,890.0	1.36	151.54	7,840.2	284.4	-478.3	477.4	0.65	0.42	25.14
7,984.0	1.14	168.06	7,934.1	282.5	-477.6	476.7	0.45	-0.23	17.57
8,078.0	1.27	172.37	8,028.1	280.5	-477.3	476.4	0.17	0.14	4.59
8,172.0	1.63	192.94	8,122.1	278.2	-477.4	476.5	0.67	0.38	21.88
8,300.0	1.41	199.00	8,250.0	274.9	-478.3	477.5	0.21	-0.17	4.73
8,386.0	0.84	212.80	8,336.0	273.4	-479.0	478.2	0.73	-0.66	16.05
8,479.0	1.27	204.01	8,429.0	271.9	-479.8	479.0	0.49	0.46	-9.45
8,526.0	9.93	276.34	8,475.8	271.9	-484.1	483.2	20.47	18.43	153.89
8,573.0	16.40	278.72	8,521.5	273.3	-494.7	493.8	13.81	13.77	5.06
8,620.0	20.57	279.95	8,566.1	275.8	-509.4	508.5	8.91	8.87	2.62
8,666.0	22.51	280.56	8,608.9	278.8	-526.0	525.1	4.25	4.22	1.33
8,713.0	24.53	280.04	8,651.9	282.1	-544.4	543.5	4.32	4.30	-1.11



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8,760.0	27.74	280.30	8,694.1	285.8	-564.8	563.9	6.83	6.83	0.55	
8,807.0	33.01	276.34	8,734.7	289.1	-588.3	587.4	11.99	11.21	-8.43	
8,853.0	39.38	273.18	8,771.8	291.3	-615.4	614.4	14.43	13.85	-6.87	
8,900.0	46.24	271.34	8,806.2	292.6	-647.3	646.3	14.83	14.60	-3.91	
8,946.0	50.15	270.10	8,836.9	293.0	-681.5	680.6	8.73	8.50	-2.70	
8,993.0	53.49	269.93	8,866.0	293.0	-718.5	717.6	7.11	7.11	-0.36	
9,040.0	55.60	269.75	8,893.2	292.9	-756.8	755.8	4.50	4.49	-0.38	
9,087.0	60.22	270.37	8,918.2	292.9	-796.6	795.6	9.89	9.83	1.32	
9,133.0	64.70	271.07	8,939.4	293.5	-837.3	836.4	9.83	9.74	1.52	
9,180.0	69.01	271.25	8,957.9	294.3	-880.5	879.6	9.18	9.17	0.38	
9,199.0	70.66	271.07	8,964.5	294.7	-898.4	897.4	8.74	8.69	-0.97	
FTP @ 9199'MD, 649.6'FSL & 330'FEL										
9,226.0	73.01	270.81	8,972.9	295.1	-924.0	923.1	8.74	8.70	-0.95	
9,273.0	77.63	270.54	8,984.8	295.6	-969.5	968.5	9.85	9.83	-0.57	
9,320.0	83.34	269.58	8,992.5	295.7	-1,015.8	1,014.9	12.31	12.15	-2.04	
9,412.0	91.65	270.98	8,996.6	296.1	-1,107.6	1,106.7	9.16	9.03	1.52	
9,505.0	92.18	269.84	8,993.5	296.8	-1,200.6	1,199.6	1.35	0.57	-1.23	
9,599.0	89.41	267.56	8,992.2	294.7	-1,294.5	1,293.6	3.82	-2.95	-2.43	
9,692.0	89.98	267.20	8,992.6	290.4	-1,387.4	1,386.5	0.72	0.61	-0.39	
9,785.0	91.74	267.12	8,991.3	285.8	-1,480.3	1,479.4	1.89	1.89	-0.09	
9,879.0	90.42	266.59	8,989.5	280.7	-1,574.1	1,573.3	1.51	-1.40	-0.56	
9,972.0	90.11	266.76	8,989.0	275.3	-1,667.0	1,666.1	0.38	-0.33	0.18	
10,065.0	92.22	268.61	8,987.2	271.5	-1,759.9	1,759.0	3.02	2.27	1.99	
10,159.0	89.76	268.43	8,985.5	269.1	-1,853.8	1,853.0	2.62	-2.62	-0.19	
10,252.0	90.51	266.94	8,985.3	265.3	-1,946.7	1,945.9	1.79	0.81	-1.60	
10,346.0	91.03	266.94	8,984.1	260.3	-2,040.6	2,039.8	0.55	0.55	0.00	
10,439.0	88.26	267.38	8,984.6	255.7	-2,133.5	2,132.7	3.02	-2.98	0.47	
10,533.0	89.76	269.31	8,986.3	253.0	-2,227.4	2,226.6	2.60	1.60	2.05	
10,626.0	90.59	272.74	8,986.0	254.6	-2,320.4	2,319.6	3.79	0.89	3.69	
10,719.0	90.77	275.64	8,984.9	261.4	-2,413.1	2,412.3	3.12	0.19	3.12	
10,812.0	93.27	275.64	8,981.6	270.6	-2,505.6	2,504.7	2.69	2.69	0.00	
10,906.0	95.08	276.96	8,974.7	280.9	-2,598.8	2,597.9	2.38	1.93	1.40	
10,999.0	92.18	274.32	8,968.9	290.0	-2,691.1	2,690.2	4.21	-3.12	-2.84	
11,093.0	92.35	272.57	8,965.1	295.6	-2,784.9	2,783.9	1.87	0.18	-1.86	
11,186.0	92.92	272.65	8,960.9	299.9	-2,877.7	2,876.7	0.62	0.61	0.09	
11,280.0	94.64	272.92	8,954.7	304.4	-2,971.4	2,970.4	1.85	1.83	0.29	
11,374.0	92.92	273.62	8,948.5	309.8	-3,065.0	3,064.0	1.97	-1.83	0.74	
11,468.0	93.14	273.27	8,943.5	315.4	-3,158.7	3,157.7	0.44	0.23	-0.37	
11,561.0	91.60	271.69	8,939.7	319.4	-3,251.5	3,250.5	2.37	-1.66	-1.70	
11,654.0	87.74	267.64	8,940.2	318.9	-3,344.5	3,343.5	6.02	-4.15	-4.35	
11,747.0	85.41	265.62	8,945.7	313.4	-3,437.2	3,436.2	3.31	-2.51	-2.17	
11,841.0	88.18	265.71	8,951.0	306.3	-3,530.7	3,529.8	2.95	2.95	0.10	
11,934.0	88.92	265.27	8,953.4	299.0	-3,623.4	3,622.5	0.93	0.80	-0.47	
12,027.0	89.58	267.12	8,954.6	292.8	-3,716.2	3,715.3	2.11	0.71	1.99	



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder Fee #202H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3177.5usft (H&P 245)
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3177.5usft (H&P 245)
Well:	Pliny The Elder Fee #202H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

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)	
12,121.0	88.97	267.69	8,955.8	288.6	-3,810.1	3,809.2	0.89	-0.65	0.61	
12,215.0	91.38	269.75	8,955.5	286.5	-3,904.1	3,903.1	3.37	2.56	2.19	
12,308.0	89.19	268.08	8,955.0	284.7	-3,997.0	3,996.1	2.96	-2.35	-1.80	
12,402.0	91.82	268.79	8,954.2	282.2	-4,091.0	4,090.1	2.90	2.80	0.76	
12,530.0	91.12	267.64	8,950.9	278.2	-4,218.9	4,218.0	1.05	-0.55	-0.90	
12,624.0	91.43	267.73	8,948.8	274.4	-4,312.8	4,311.9	0.34	0.33	0.10	
12,717.0	90.81	266.85	8,947.0	270.0	-4,405.7	4,404.8	1.16	-0.67	-0.95	
12,810.0	90.68	266.59	8,945.8	264.7	-4,498.5	4,497.6	0.31	-0.14	-0.28	
12,904.0	90.02	268.26	8,945.2	260.4	-4,592.4	4,591.6	1.91	-0.70	1.78	
12,997.0	91.74	269.40	8,943.8	258.5	-4,685.4	4,684.5	2.22	1.85	1.23	
13,091.0	89.54	267.82	8,942.7	256.3	-4,779.3	4,778.5	2.88	-2.34	-1.68	
13,184.0	89.89	268.00	8,943.2	252.9	-4,872.3	4,871.4	0.42	0.38	0.19	
13,278.0	92.62	270.19	8,941.1	251.4	-4,966.2	4,965.4	3.72	2.90	2.33	
13,372.0	94.59	269.23	8,935.2	250.9	-5,060.0	5,059.2	2.33	2.10	-1.02	
13,466.0	94.02	269.14	8,928.2	249.6	-5,153.7	5,152.9	0.61	-0.61	-0.10	
13,559.0	93.32	269.31	8,922.2	248.3	-5,246.5	5,245.7	0.77	-0.75	0.18	
13,652.0	93.98	269.84	8,916.3	247.6	-5,339.3	5,338.5	0.91	0.71	0.57	
13,746.0	92.09	268.70	8,911.3	246.4	-5,433.2	5,432.4	2.35	-2.01	-1.21	
13,839.0	90.02	268.87	8,909.6	244.5	-5,526.2	5,525.4	2.23	-2.23	0.18	
13,933.0	91.47	268.79	8,908.4	242.5	-5,620.1	5,619.3	1.54	1.54	-0.09	
14,026.0	92.00	268.35	8,905.6	240.2	-5,713.1	5,712.3	0.74	0.57	-0.47	
14,120.0	90.59	267.64	8,903.4	236.9	-5,807.0	5,806.2	1.68	-1.50	-0.76	
14,213.0	88.00	266.24	8,904.6	232.0	-5,899.8	5,899.1	3.17	-2.78	-1.51	
14,307.0	87.87	265.36	8,908.0	225.1	-5,993.5	5,992.8	0.95	-0.14	-0.94	
14,400.0	87.38	265.36	8,911.8	217.6	-6,086.1	6,085.4	0.53	-0.53	0.00	
14,494.0	86.77	267.91	8,916.6	212.1	-6,179.8	6,179.1	2.79	-0.65	2.71	
14,587.0	92.84	270.02	8,916.9	210.4	-6,272.8	6,272.1	6.91	6.53	2.27	
14,681.0	91.21	268.70	8,913.6	209.3	-6,366.7	6,366.0	2.23	-1.73	-1.40	
14,774.0	90.68	268.08	8,912.1	206.7	-6,459.6	6,459.0	0.88	-0.57	-0.67	
14,867.0	90.02	266.76	8,911.5	202.5	-6,552.5	6,551.9	1.59	-0.71	-1.42	
14,961.0	91.78	267.12	8,910.0	197.5	-6,646.4	6,645.7	1.91	1.87	0.38	
15,055.0	91.25	266.50	8,907.6	192.3	-6,740.2	6,739.6	0.87	-0.56	-0.66	
15,148.0	91.91	265.71	8,905.0	186.0	-6,833.0	6,832.3	1.11	0.71	-0.85	
15,242.0	92.84	265.71	8,901.1	179.0	-6,926.6	6,926.0	0.99	0.99	0.00	
15,336.0	92.09	265.18	8,897.1	171.5	-7,020.2	7,019.7	0.98	-0.80	-0.56	
15,430.0	92.04	266.76	8,893.7	164.9	-7,113.9	7,113.4	1.68	-0.05	1.68	
15,523.0	91.12	266.24	8,891.1	159.2	-7,206.7	7,206.2	1.14	-0.99	-0.56	
15,617.0	93.01	266.68	8,887.7	153.4	-7,300.5	7,300.0	2.06	2.01	0.47	
15,710.0	92.35	265.89	8,883.4	147.4	-7,393.2	7,392.7	1.11	-0.71	-0.85	
15,804.0	91.12	264.57	8,880.5	139.6	-7,486.8	7,486.3	1.92	-1.31	-1.40	
15,898.0	91.74	265.18	8,878.2	131.2	-7,580.4	7,580.0	0.93	0.66	0.65	
15,991.0	90.99	265.89	8,876.0	124.0	-7,673.1	7,672.7	1.11	-0.81	0.76	
16,084.0	92.22	266.94	8,873.4	118.1	-7,765.9	7,765.5	1.74	1.32	1.13	



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder Fee #202H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3177.5usft (H&P 245)
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3177.5usft (H&P 245)
Well:	Pliny The Elder Fee #202H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

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)
16,178.0	92.26	270.10	8,869.7	115.7	-7,859.8	7,859.4	3.36	0.04	3.36
16,272.0	91.74	269.23	8,866.4	115.2	-7,953.7	7,953.3	1.08	-0.55	-0.93
16,367.0	92.44	269.31	8,862.9	114.0	-8,048.6	8,048.2	0.74	0.74	0.08
16,461.0	90.42	269.05	8,860.6	112.6	-8,142.6	8,142.2	2.17	-2.15	-0.28
16,555.0	90.42	269.14	8,859.9	111.1	-8,236.6	8,236.2	0.10	0.00	0.10
16,648.0	91.43	271.42	8,858.4	111.6	-8,329.6	8,329.2	2.68	1.09	2.45
16,741.0	90.55	272.65	8,856.8	114.9	-8,422.5	8,422.1	1.63	-0.95	1.32
16,835.0	92.18	272.48	8,854.6	119.1	-8,516.4	8,515.9	1.74	1.73	-0.18
16,928.0	93.58	272.21	8,849.9	122.9	-8,609.2	8,608.7	1.53	1.51	-0.29
17,022.0	93.14	271.77	8,844.4	126.2	-8,702.9	8,702.5	0.66	-0.47	-0.47
17,116.0	91.69	271.34	8,840.4	128.7	-8,796.8	8,796.4	1.61	-1.54	-0.46
17,209.0	92.79	270.54	8,836.8	130.2	-8,889.7	8,889.3	1.46	1.18	-0.86
17,303.0	90.95	269.75	8,833.7	130.5	-8,983.7	8,983.2	2.13	-1.96	-0.84
17,396.0	92.48	270.10	8,830.9	130.3	-9,076.6	9,076.2	1.69	1.65	0.38
17,490.0	92.84	269.40	8,826.6	129.9	-9,170.5	9,170.1	0.84	0.38	-0.74
17,583.0	92.26	268.52	8,822.4	128.2	-9,263.4	9,263.0	1.13	-0.62	-0.95
17,677.0	90.99	268.17	8,819.8	125.5	-9,357.3	9,356.9	1.40	-1.35	-0.37
17,770.0	93.10	268.08	8,816.4	122.5	-9,450.2	9,449.8	2.27	2.27	-0.10
17,864.0	87.96	266.15	8,815.6	117.8	-9,544.1	9,543.6	5.84	-5.47	-2.05
17,957.0	88.57	266.68	8,818.4	111.9	-9,636.8	9,636.4	0.87	0.66	0.57
18,050.0	90.51	268.43	8,819.1	108.0	-9,729.7	9,729.4	2.81	2.09	1.88
18,143.0	92.44	268.96	8,816.7	105.9	-9,822.7	9,822.3	2.15	2.08	0.57
18,236.0	95.78	269.67	8,810.1	104.8	-9,915.4	9,915.0	3.67	3.59	0.76
18,328.0	94.07	268.17	8,802.2	103.0	-10,007.1	10,006.7	2.47	-1.86	-1.63
18,422.0	91.34	266.76	8,797.7	98.9	-10,100.9	10,100.5	3.27	-2.90	-1.50
18,515.0	90.33	265.53	8,796.4	92.6	-10,193.6	10,193.3	1.71	-1.09	-1.32
18,608.0	94.42	266.94	8,792.5	86.5	-10,286.3	10,286.0	4.65	4.40	1.52
18,702.0	91.52	265.53	8,787.7	80.4	-10,380.0	10,379.7	3.43	-3.09	-1.50
18,795.0	92.75	265.09	8,784.2	72.8	-10,472.6	10,472.3	1.40	1.32	-0.47
18,889.0	92.92	264.66	8,779.5	64.4	-10,566.1	10,565.9	0.49	0.18	-0.46
18,982.0	91.82	264.74	8,775.7	55.8	-10,658.6	10,658.4	1.19	-1.18	0.09
19,059.6	91.71	263.95	8,773.3	48.1	-10,735.8	10,735.6	1.03	-0.14	-1.02
LTP @ 19059.6'MD, 464.9'FSL & 330'FWL									
19,076.0	91.69	263.78	8,772.8	46.4	-10,752.1	10,751.9	1.03	-0.14	-1.02
19,133.0	91.12	263.42	8,771.4	40.0	-10,808.8	10,808.6	1.18	-1.00	-0.63
LAST SVY									
19,218.0	91.12	263.42	8,769.8	30.3	-10,893.2	10,893.0	0.00	0.00	0.00
Projection to TD @ 19218'MD, 447.4'FSL & 172.6'FWL									



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder Fee #202H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3177.5usft (H&P 245)
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3177.5usft (H&P 245)
Well:	Pliny The Elder Fee #202H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
LTP (Pliny The Elder I	-2.60	269.82	8,741.0	54.4	-10,735.8	485,666.40	571,214.16	32° 20' 6.474 N	104° 14' 11.759 W
- actual wellpath misses target center by 32.9usft at 19059.9usft MD (8773.3 TVD, 48.1 N, -10736.1 E)									
- Point									
PBHL (Pliny The Elde	-1.50	267.81	8,785.0	49.4	-10,865.4	485,661.45	571,084.64	32° 20' 6.426 N	104° 14' 13.269 W
- actual wellpath misses target center by 21.6usft at 19187.9usft MD (8770.4 TVD, 33.7 N, -10863.3 E)									
- Rectangle (sides W100.0 H1,347.3 D30.0)									
9000'VS (Pliny The EI	0.00	0.00	8,834.0	120.8	-9,000.4	485,732.82	572,949.60	32° 20' 7.115 N	104° 13' 51.530 W
- actual wellpath misses target center by 9.6usft at 17319.7usft MD (8833.4 TVD, 130.4 N, -9000.4 E)									
- Point									
FTP (Pliny The Elder I	0.00	0.00	9,004.0	285.0	-898.0	485,897.00	581,052.00	32° 20' 8.653 N	104° 12' 17.087 W
- actual wellpath misses target center by 38.8usft at 9210.8usft MD (8968.3 TVD, 294.9 N, -909.6 E)									
- Point									

Design Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
9,199.0	8,964.5	294.7	-898.4	FTP @ 9199'MD, 649.6'FSL & 330'FEL
19,059.6	8,773.3	48.1	-10,735.8	LTP @ 19059.6'MD, 464.9'FSL & 330'FWL
19,133.0	8,771.4	40.0	-10,808.8	LAST SVY
19,218.0	8,769.8	30.3	-10,893.2	Projection to TD @ 19218'MD, 447.4'FSL & 172.6'FWL

Checked By: _____ Approved By: _____ Date: _____