



Operator: TapRock Resources LLC
Well Name: Pliny The Elder #201H
County: Eddy
State: New Mexico
Rig Name: H&P 388
API Number: 30-015-44998

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: 157' MD – 19,132' MD
Projection to Bit: 19,220' MD
Dates Performed: 07/04/2019 – 07/20/2019
Type of Survey: MWD

Sincerely,

A handwritten signature in black ink, appearing to read "J. Burleson", with a stylized flourish at the end.

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 #201H

OWB

Design: AWB

Standard Survey Report

19 July, 2019





Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder #201H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3176.5usft
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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:		Northing:	485,612.00 usft	Latitude:	32° 20' 5.822 N
From:	Map	Easting:	581,950.00 usft	Longitude:	104° 12' 6.624 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.07 °

Well	Pliny The Elder #201H					
Well Position	+N/-S	0.0 usft	Northing:	487,015.00 usft	Latitude:	32° 20' 19.709 N
	+E/-W	0.0 usft	Easting:	581,704.00 usft	Longitude:	104° 12' 9.471 W
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,150.0 usft	

Wellbore	OWB				
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	06/28/19	7.04	60.04	47,732.26330272

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	269.64

Survey Program	Date:	07/19/19		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
157.0	569.0	MWD (OWB)	MWD	OWSG MWD - Standard
679.0	19,220.0	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
157.0	0.60	63.10	157.0	0.4	0.7	-0.7	0.38	0.38	0.00
247.0	0.70	92.60	247.0	0.6	1.7	-1.7	0.38	0.11	32.78
339.0	1.00	354.70	339.0	1.3	2.2	-2.2	1.41	0.33	-106.41
428.0	1.20	30.10	428.0	2.9	2.6	-2.6	0.78	0.22	39.78
518.0	1.90	12.60	517.9	5.2	3.4	-3.4	0.93	0.78	-19.44
569.0	1.80	344.30	568.9	6.8	3.4	-3.4	1.78	-0.20	-55.49
679.0	2.46	326.19	678.8	10.4	1.6	-1.6	0.85	0.60	-16.46
772.0	2.95	322.94	771.7	14.0	-1.0	0.9	0.55	0.53	-3.49
864.0	3.47	328.21	863.6	18.2	-3.9	3.8	0.65	0.57	5.73



Intrepid
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Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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)
959.0	4.48	330.14	958.4	23.9	-7.2	7.1	1.07	1.06	2.03
1,054.0	4.70	327.16	1,053.1	30.4	-11.2	11.0	0.34	0.23	-3.14
1,148.0	4.88	324.78	1,146.7	36.9	-15.6	15.4	0.29	0.19	-2.53
1,243.0	4.22	330.85	1,241.4	43.2	-19.6	19.4	0.86	-0.69	6.39
1,338.0	3.91	333.57	1,336.2	49.2	-22.8	22.5	0.38	-0.33	2.86
1,432.0	3.16	332.08	1,430.0	54.3	-25.4	25.1	0.80	-0.80	-1.59
1,622.0	3.52	1.08	1,619.7	64.8	-27.7	27.3	0.90	0.19	15.26
1,716.0	5.36	2.14	1,713.4	72.1	-27.5	27.1	1.96	1.96	1.13
1,811.0	4.92	0.91	1,808.0	80.6	-27.3	26.8	0.48	-0.46	-1.29
1,906.0	4.13	3.89	1,902.7	88.1	-27.0	26.5	0.87	-0.83	3.14
2,000.0	3.65	2.93	1,996.5	94.4	-26.6	26.0	0.52	-0.51	-1.02
2,084.0	3.16	8.11	2,080.4	99.4	-26.2	25.5	0.69	-0.58	6.17
2,198.0	2.51	9.78	2,194.2	105.0	-25.3	24.6	0.57	-0.57	1.46
2,292.0	3.91	355.98	2,288.1	110.2	-25.2	24.5	1.69	1.49	-14.68
2,384.0	5.98	347.99	2,379.7	118.0	-26.4	25.6	2.37	2.25	-8.68
2,477.0	8.09	340.60	2,472.0	128.9	-29.6	28.8	2.46	2.27	-7.95
2,570.0	8.97	337.79	2,564.0	141.8	-34.5	33.6	1.05	0.95	-3.02
2,663.0	8.70	338.49	2,655.9	155.1	-39.8	38.8	0.31	-0.29	0.75
2,756.0	9.19	334.19	2,747.8	168.3	-45.6	44.6	0.89	0.53	-4.62
2,850.0	9.19	332.25	2,840.6	181.7	-52.4	51.2	0.33	0.00	-2.06
2,942.0	9.05	330.85	2,931.4	194.5	-59.3	58.1	0.29	-0.15	-1.52
3,036.0	9.23	330.41	3,024.2	207.5	-66.6	65.3	0.21	0.19	-0.47
3,129.0	9.32	330.67	3,116.0	220.6	-74.0	72.6	0.11	0.10	0.28
3,223.0	9.19	330.32	3,208.8	233.7	-81.5	80.0	0.15	-0.14	-0.37
3,317.0	9.05	331.20	3,301.6	246.7	-88.7	87.2	0.21	-0.15	0.94
3,411.0	8.75	331.64	3,394.4	259.5	-95.7	94.1	0.33	-0.32	0.47
3,503.0	8.92	330.06	3,485.4	271.8	-102.6	100.9	0.32	0.18	-1.72
3,596.0	8.97	330.76	3,577.2	284.4	-109.7	107.9	0.13	0.05	0.75
3,689.0	9.05	330.06	3,669.1	297.1	-116.9	115.0	0.15	0.09	-0.75
3,782.0	9.14	330.41	3,760.9	309.8	-124.2	122.3	0.11	0.10	0.38
3,874.0	9.05	330.06	3,851.7	322.5	-131.4	129.4	0.11	-0.10	-0.38
3,967.0	9.14	329.09	3,943.6	335.1	-138.9	136.8	0.19	0.10	-1.04
4,060.0	8.13	326.72	4,035.5	347.0	-146.3	144.1	1.15	-1.09	-2.55
4,154.0	7.82	326.19	4,128.6	357.9	-153.5	151.2	0.34	-0.33	-0.56
4,247.0	8.22	330.32	4,220.7	368.9	-160.3	158.0	0.75	0.43	4.44
4,341.0	8.09	330.23	4,313.8	380.5	-166.9	164.5	0.14	-0.14	-0.10
4,435.0	7.25	328.91	4,406.9	391.3	-173.3	170.8	0.91	-0.89	-1.40
4,529.0	7.34	330.58	4,500.2	401.6	-179.3	176.7	0.25	0.10	1.78
4,623.0	8.18	337.61	4,593.3	413.0	-184.8	182.2	1.35	0.89	7.48
4,717.0	7.78	334.01	4,686.4	424.9	-190.1	187.4	0.68	-0.43	-3.83
4,811.0	7.08	332.43	4,779.6	435.8	-195.6	192.8	0.78	-0.74	-1.68
4,905.0	7.08	330.76	4,872.9	446.0	-201.1	198.3	0.22	0.00	-1.78
4,999.0	7.91	332.52	4,966.1	456.8	-206.9	204.0	0.92	0.88	1.87



Intrepid Survey Report



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Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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)	
5,093.0	7.38	332.78	5,059.2	467.9	-212.6	209.7	0.57	-0.56	0.28	
5,187.0	6.51	331.02	5,152.5	477.9	-218.0	215.0	0.95	-0.93	-1.87	
5,281.0	5.85	329.97	5,246.0	486.7	-223.0	219.9	0.71	-0.70	-1.12	
5,376.0	5.49	328.12	5,340.5	494.7	-227.8	224.7	0.42	-0.38	-1.95	
5,470.0	5.05	329.62	5,434.1	502.1	-232.3	229.1	0.49	-0.47	1.60	
5,563.0	3.47	325.75	5,526.9	508.0	-235.9	232.7	1.73	-1.70	-4.16	
5,657.0	3.38	335.77	5,620.7	512.9	-238.6	235.4	0.64	-0.10	10.66	
5,750.0	2.29	344.82	5,713.6	517.2	-240.3	237.0	1.26	-1.17	9.73	
5,843.0	2.11	341.39	5,806.5	520.6	-241.3	238.0	0.24	-0.19	-3.69	
5,937.0	1.67	338.93	5,900.5	523.5	-242.3	239.0	0.48	-0.47	-2.62	
6,030.0	1.49	347.02	5,993.4	525.9	-243.1	239.8	0.31	-0.19	8.70	
6,124.0	1.67	351.06	6,087.4	528.5	-243.6	240.3	0.23	0.19	4.30	
6,218.0	1.10	28.06	6,181.4	530.6	-243.4	240.0	1.10	-0.61	39.36	
6,312.0	0.75	62.43	6,275.4	531.7	-242.4	239.1	0.68	-0.37	36.56	
6,405.0	0.79	56.01	6,368.4	532.4	-241.3	238.0	0.10	0.04	-6.90	
6,498.0	1.36	61.11	6,461.3	533.2	-239.8	236.5	0.62	0.61	5.48	
6,592.0	1.14	59.35	6,555.3	534.3	-238.0	234.7	0.24	-0.23	-1.87	
6,686.0	0.70	57.07	6,649.3	535.1	-236.8	233.4	0.47	-0.47	-2.43	
6,779.0	1.67	52.32	6,742.3	536.2	-235.2	231.8	1.05	1.04	-5.11	
6,873.0	2.51	51.62	6,836.2	538.3	-232.5	229.1	0.89	0.89	-0.74	
6,966.0	1.41	50.56	6,929.2	540.3	-230.0	226.6	1.18	-1.18	-1.14	
7,060.0	1.41	28.15	7,023.1	542.0	-228.6	225.2	0.58	0.00	-23.84	
7,153.0	1.32	24.90	7,116.1	544.0	-227.6	224.2	0.13	-0.10	-3.49	
7,246.0	1.45	24.55	7,209.1	546.1	-226.7	223.2	0.14	0.14	-0.38	
7,340.0	0.13	142.50	7,303.1	547.1	-226.1	222.7	1.61	-1.40	125.48	
7,434.0	0.22	215.71	7,397.1	546.8	-226.1	222.7	0.23	0.10	77.88	
7,527.0	0.53	156.38	7,490.1	546.3	-226.1	222.6	0.49	0.33	-63.80	
7,621.0	1.14	130.81	7,584.1	545.3	-225.2	221.8	0.75	0.65	-27.20	
7,714.0	1.36	164.73	7,677.0	543.6	-224.2	220.8	0.82	0.24	36.47	
7,808.0	1.19	135.64	7,771.0	541.8	-223.2	219.8	0.70	-0.18	-30.95	
7,902.0	1.05	73.15	7,865.0	541.4	-221.7	218.3	1.24	-0.15	-66.48	
7,995.0	1.23	349.39	7,958.0	542.6	-221.1	217.7	1.64	0.19	-90.06	
8,089.0	2.33	0.73	8,051.9	545.5	-221.3	217.8	1.22	1.17	12.06	
8,182.0	0.79	263.52	8,144.9	547.3	-221.9	218.4	2.74	-1.66	-104.53	
8,276.0	0.88	219.23	8,238.9	546.7	-223.0	219.5	0.68	0.10	-47.12	
8,397.0	0.70	170.80	8,359.9	545.3	-223.4	220.0	0.55	-0.15	-40.02	
8,490.0	6.07	257.37	8,452.7	543.6	-228.1	224.7	6.53	5.77	93.09	
8,537.0	13.80	271.26	8,499.0	543.2	-236.2	232.8	17.10	16.45	29.55	
8,584.0	16.84	272.05	8,544.3	543.6	-248.6	245.2	6.48	6.47	1.68	
8,631.0	19.69	270.29	8,588.9	543.9	-263.3	259.9	6.18	6.06	-3.74	
8,677.0	22.68	268.09	8,631.8	543.6	-279.9	276.5	6.72	6.50	-4.78	
8,724.0	27.12	265.10	8,674.4	542.4	-299.7	296.3	9.82	9.45	-6.36	
8,771.0	31.12	261.59	8,715.5	539.7	-322.4	319.0	9.25	8.51	-7.47	



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8,864.0	38.07	261.50	8,792.0	531.9	-374.6	371.2	7.47	7.47	-0.10
8,911.0	45.14	261.68	8,827.1	527.4	-405.4	402.1	15.04	15.04	0.38
8,957.0	50.51	263.43	8,858.0	523.0	-439.2	435.9	12.01	11.67	3.80
9,004.0	53.45	262.82	8,887.0	518.5	-476.0	472.7	6.34	6.26	-1.30
9,051.0	58.29	262.91	8,913.3	513.7	-514.6	511.3	10.30	10.30	0.19
9,098.0	65.49	264.75	8,935.4	509.3	-555.8	552.5	15.70	15.32	3.91
9,144.0	72.31	266.07	8,952.0	505.9	-598.5	595.3	15.07	14.83	2.87
9,191.0	76.79	265.46	8,964.5	502.5	-643.7	640.5	9.61	9.53	-1.30
9,210.9	78.34	265.27	8,968.8	500.9	-663.0	659.9	7.82	7.77	-0.94
FTP @ 9210.9'MD, 361.4'FNL & 330'FEL									
9,238.0	80.44	265.02	8,973.8	498.7	-689.6	686.4	7.82	7.77	-0.93
9,331.0	88.57	266.60	8,982.7	491.9	-781.8	778.7	8.90	8.74	1.70
9,425.0	90.90	267.39	8,983.1	487.0	-875.7	872.6	2.62	2.48	0.84
9,519.0	90.68	267.92	8,981.8	483.2	-969.6	966.5	0.61	-0.23	0.56
9,612.0	90.99	267.65	8,980.5	479.6	-1,062.5	1,059.5	0.44	0.33	-0.29
9,706.0	92.97	270.64	8,977.2	478.2	-1,156.4	1,153.4	3.81	2.11	3.18
9,799.0	90.29	272.14	8,974.6	480.4	-1,249.4	1,246.3	3.30	-2.88	1.61
9,892.0	87.34	273.81	8,976.5	485.2	-1,342.2	1,339.1	3.64	-3.17	1.80
9,986.0	87.60	273.10	8,980.7	490.9	-1,435.9	1,432.8	0.80	0.28	-0.76
10,080.0	88.22	272.66	8,984.1	495.6	-1,529.8	1,526.6	0.81	0.66	-0.47
10,173.0	91.56	272.05	8,984.3	499.4	-1,622.7	1,619.5	3.65	3.59	-0.66
10,266.0	91.82	273.81	8,981.5	504.2	-1,715.5	1,712.3	1.91	0.28	1.89
10,360.0	91.03	273.45	8,979.2	510.2	-1,809.3	1,806.0	0.92	-0.84	-0.38
10,453.0	91.69	273.28	8,977.0	515.6	-1,902.1	1,898.8	0.73	0.71	-0.18
10,547.0	91.69	271.52	8,974.2	519.5	-1,996.0	1,992.7	1.87	0.00	-1.87
10,640.0	91.03	271.08	8,972.0	521.7	-2,088.9	2,085.6	0.85	-0.71	-0.47
10,733.0	90.90	270.64	8,970.4	523.0	-2,181.9	2,178.6	0.49	-0.14	-0.47
10,827.0	92.35	270.91	8,967.8	524.3	-2,275.8	2,272.5	1.57	1.54	0.29
10,921.0	92.84	268.80	8,963.5	524.1	-2,369.7	2,366.4	2.30	0.52	-2.24
11,014.0	93.71	267.57	8,958.2	521.1	-2,462.5	2,459.2	1.62	0.94	-1.32
11,108.0	94.64	266.86	8,951.3	516.6	-2,556.2	2,552.9	1.24	0.99	-0.76
11,202.0	88.35	267.92	8,948.9	512.3	-2,650.0	2,646.7	6.79	-6.69	1.13
11,296.0	91.08	268.97	8,949.4	509.8	-2,744.0	2,740.7	3.11	2.90	1.12
11,390.0	90.42	269.94	8,948.1	508.9	-2,837.9	2,834.7	1.25	-0.70	1.03
11,484.0	92.26	270.03	8,945.9	508.8	-2,931.9	2,928.7	1.96	1.96	0.10
11,578.0	89.05	269.85	8,944.9	508.7	-3,025.9	3,022.6	3.42	-3.41	-0.19
11,671.0	89.01	269.15	8,946.4	507.9	-3,118.9	3,115.6	0.75	-0.04	-0.75
11,765.0	90.81	270.47	8,946.6	507.6	-3,212.9	3,209.6	2.37	1.91	1.40
11,858.0	91.60	270.99	8,944.6	508.8	-3,305.8	3,302.6	1.02	0.85	0.56
11,952.0	88.62	269.24	8,944.4	509.0	-3,399.8	3,396.6	3.68	-3.17	-1.86
11,981.0	89.10	269.15	8,945.0	508.6	-3,428.8	3,425.6	1.68	1.66	-0.31
12,074.0	91.38	269.15	8,944.6	507.2	-3,521.8	3,518.5	2.45	2.45	0.00
12,167.0	89.27	269.41	8,944.1	506.0	-3,614.8	3,611.5	2.29	-2.27	0.28
12,260.0	89.76	269.24	8,944.9	504.9	-3,707.8	3,704.5	0.56	0.53	-0.18



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder #201H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3176.5usft
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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)	
12,354.0	89.76	268.18	8,945.3	502.8	-3,801.8	3,798.5	1.13	0.00	-1.13	
12,448.0	89.10	267.04	8,946.2	498.9	-3,895.7	3,892.5	1.40	-0.70	-1.21	
12,541.0	91.12	266.69	8,946.0	493.8	-3,988.5	3,985.3	2.20	2.17	-0.38	
12,634.0	89.05	265.28	8,945.9	487.3	-4,081.3	4,078.1	2.69	-2.23	-1.52	
12,727.0	89.98	265.98	8,946.7	480.2	-4,174.0	4,170.9	1.25	1.00	0.75	
12,821.0	88.75	266.95	8,947.7	474.4	-4,267.8	4,264.8	1.67	-1.31	1.03	
12,913.0	93.01	269.50	8,946.3	471.6	-4,359.7	4,356.7	5.40	4.63	2.77	
13,006.0	93.80	269.76	8,940.8	471.0	-4,452.6	4,449.5	0.89	0.85	0.28	
13,099.0	92.31	268.80	8,935.8	469.8	-4,545.4	4,542.4	1.91	-1.60	-1.03	
13,193.0	92.00	268.71	8,932.3	467.8	-4,639.3	4,636.3	0.34	-0.33	-0.10	
13,286.0	88.48	266.60	8,931.9	464.0	-4,732.2	4,729.2	4.41	-3.78	-2.27	
13,379.0	87.34	265.98	8,935.3	458.0	-4,825.0	4,822.0	1.40	-1.23	-0.67	
13,472.0	87.47	266.69	8,939.5	452.0	-4,917.7	4,914.8	0.78	0.14	0.76	
13,565.0	89.49	267.65	8,942.0	447.4	-5,010.5	5,007.6	2.40	2.17	1.03	
13,659.0	88.35	268.36	8,943.8	444.2	-5,104.5	5,101.6	1.43	-1.21	0.76	
13,753.0	88.53	269.94	8,946.3	442.8	-5,198.4	5,195.5	1.69	0.19	1.68	
13,846.0	88.84	269.59	8,948.5	442.4	-5,291.4	5,288.5	0.50	0.33	-0.38	
13,940.0	88.48	270.91	8,950.7	442.8	-5,385.4	5,382.5	1.46	-0.38	1.40	
14,033.0	87.56	270.11	8,953.9	443.6	-5,478.3	5,475.4	1.31	-0.99	-0.86	
14,126.0	92.66	269.85	8,953.7	443.6	-5,571.3	5,568.4	5.49	5.48	-0.28	
14,219.0	92.48	269.06	8,949.5	442.7	-5,664.2	5,661.3	0.87	-0.19	-0.85	
14,313.0	93.10	268.44	8,944.9	440.7	-5,758.0	5,755.2	0.93	0.66	-0.66	
14,406.0	93.71	267.48	8,939.4	437.3	-5,850.8	5,848.0	1.22	0.66	-1.03	
14,500.0	92.00	266.77	8,934.7	432.6	-5,944.6	5,941.7	1.97	-1.82	-0.76	
14,593.0	89.80	266.69	8,933.3	427.3	-6,037.4	6,034.6	2.37	-2.37	-0.09	
14,687.0	89.67	266.07	8,933.7	421.4	-6,131.2	6,128.5	0.67	-0.14	-0.66	
14,781.0	88.57	265.37	8,935.2	414.4	-6,224.9	6,222.2	1.39	-1.17	-0.74	
14,875.0	92.57	266.16	8,934.2	407.4	-6,318.7	6,316.0	4.34	4.26	0.84	
14,969.0	95.47	271.61	8,927.6	405.6	-6,412.4	6,409.7	6.55	3.09	5.80	
15,062.0	96.66	275.48	8,917.8	411.3	-6,504.7	6,501.9	4.33	1.28	4.16	
15,156.0	96.79	275.12	8,906.8	419.9	-6,597.6	6,594.8	0.40	0.14	-0.38	
15,249.0	92.70	273.98	8,899.1	427.3	-6,690.0	6,687.2	4.56	-4.40	-1.23	
15,343.0	92.09	274.60	8,895.2	434.3	-6,783.6	6,780.8	0.92	-0.65	0.66	
15,436.0	94.33	274.16	8,890.0	441.4	-6,876.2	6,873.3	2.45	2.41	-0.47	
15,530.0	90.33	275.48	8,886.1	449.3	-6,969.8	6,966.8	4.48	-4.26	1.40	
15,624.0	92.57	271.96	8,883.8	455.4	-7,063.5	7,060.5	4.44	2.38	-3.74	
15,718.0	92.18	271.43	8,879.9	458.2	-7,157.4	7,154.4	0.70	-0.41	-0.56	
15,812.0	91.12	270.55	8,877.2	459.8	-7,251.3	7,248.3	1.47	-1.13	-0.94	
15,907.0	93.67	270.47	8,873.2	460.6	-7,346.3	7,343.2	2.69	2.68	-0.08	
16,001.0	90.68	269.24	8,869.6	460.4	-7,440.2	7,437.1	3.44	-3.18	-1.31	
16,095.0	91.12	269.50	8,868.1	459.4	-7,534.2	7,531.1	0.54	0.47	0.28	
16,189.0	90.07	268.80	8,867.2	458.0	-7,628.1	7,625.1	1.34	-1.12	-0.74	
16,282.0	91.69	267.98	8,865.7	455.4	-7,721.1	7,718.1	1.95	1.74	-0.88	



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder #201H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3176.5usft
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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)
16,376.0	92.13	268.09	8,862.6	452.1	-7,815.0	7,812.0	0.48	0.47	0.12
16,470.0	91.25	267.48	8,859.8	448.5	-7,908.9	7,905.9	1.14	-0.94	-0.65
16,563.0	91.65	268.01	8,857.5	444.9	-8,001.8	7,998.8	0.71	0.43	0.57
16,657.0	90.59	268.53	8,855.6	442.0	-8,095.7	8,092.8	1.26	-1.13	0.55
16,750.0	90.64	268.53	8,854.6	439.6	-8,188.7	8,185.7	0.05	0.05	0.00
16,843.0	94.37	268.09	8,850.6	436.9	-8,281.5	8,278.6	4.04	4.01	-0.47
16,937.0	93.93	268.09	8,843.8	433.8	-8,375.2	8,372.3	0.47	-0.47	0.00
17,031.0	92.00	268.71	8,838.9	431.2	-8,469.1	8,466.2	2.16	-2.05	0.66
17,125.0	92.97	269.06	8,834.8	429.3	-8,562.9	8,560.1	1.10	1.03	0.37
17,219.0	92.97	270.11	8,830.0	428.6	-8,656.8	8,654.0	1.12	0.00	1.12
17,312.0	93.58	269.94	8,824.7	428.7	-8,749.7	8,746.8	0.68	0.66	-0.18
17,406.0	95.47	270.20	8,817.2	428.8	-8,843.4	8,840.5	2.03	2.01	0.28
17,500.0	93.10	269.94	8,810.2	428.9	-8,937.1	8,934.2	2.54	-2.52	-0.28
17,593.0	92.44	269.50	8,805.7	428.5	-9,030.0	9,027.1	0.85	-0.71	-0.47
17,686.0	92.35	269.76	8,801.8	427.9	-9,122.9	9,120.0	0.30	-0.10	0.28
17,779.0	94.55	269.76	8,796.2	427.5	-9,215.7	9,212.9	2.37	2.37	0.00
17,873.0	94.02	269.41	8,789.2	426.8	-9,309.5	9,306.6	0.68	-0.56	-0.37
17,965.0	91.91	269.06	8,784.5	425.6	-9,401.3	9,398.5	2.32	-2.29	-0.38
18,058.0	92.75	270.11	8,780.7	424.9	-9,494.2	9,491.4	1.45	0.90	1.13
18,151.0	92.13	269.41	8,776.7	424.5	-9,587.2	9,584.3	1.00	-0.67	-0.75
18,245.0	92.75	269.15	8,772.7	423.3	-9,681.1	9,678.2	0.72	0.66	-0.28
18,338.0	92.57	268.27	8,768.4	421.2	-9,773.9	9,771.1	0.96	-0.19	-0.95
18,431.0	92.57	270.47	8,764.2	420.2	-9,866.8	9,864.0	2.36	0.00	2.37
18,525.0	93.36	267.04	8,759.4	418.2	-9,960.7	9,957.8	3.74	0.84	-3.65
18,617.0	93.32	267.39	8,754.0	413.7	-10,052.4	10,049.6	0.38	-0.04	0.38
18,710.0	90.86	267.57	8,750.6	409.6	-10,145.2	10,142.5	2.65	-2.65	0.19
18,803.0	90.81	267.04	8,749.3	405.2	-10,238.1	10,235.4	0.57	-0.05	-0.57
18,896.0	90.55	266.95	8,748.2	400.4	-10,331.0	10,328.3	0.30	-0.28	-0.10
18,990.0	89.63	266.16	8,748.0	394.7	-10,424.8	10,422.1	1.29	-0.98	-0.84
19,057.2	89.21	265.16	8,748.7	389.6	-10,491.8	10,489.2	1.61	-0.62	-1.49
LTP @ 19057.2'MD, 443'FNL & 330'FWL									
19,132.0	88.75	264.05	8,750.0	382.6	-10,566.3	10,563.7	1.61	-0.62	-1.49
LAST SVY									
19,220.0	88.75	264.05	8,751.9	373.5	-10,653.8	10,651.2	0.00	0.00	0.00
Projection to TD @ 19220'MD, 457'FNL & 168'FWL									



Intrepid
Survey Report



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Pliny The Elder #201H
Project:	Eddy County, NM (NAD 83 NME)	TVD Reference:	KB @ 3176.5usft
Site:	(Pliny The Elder Fee) Sec-4_T-23-S_R-27-E	MD Reference:	KB @ 3176.5usft
Well:	Pliny The Elder #201H	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)		
PBHL (Pliny The Elde	-2.21	269.94	8,759.0	448.0	-10,622.0	487,463.00	571,082.00	32° 20' 24.254 N	104° 14' 13.281 W
- actual wellpath misses target center by 71.3usft at 19180.8usft MD (8751.1 TVD, 377.6 N, -10614.8 E)									
- Rectangle (sides W100.0 H3,621.2 D30.0)									
LTP (Pliny The Elder ;	0.00	0.00	8,760.0	448.0	-10,492.0	487,463.00	571,212.00	32° 20' 24.252 N	104° 14' 11.766 W
- actual wellpath misses target center by 59.3usft at 19053.1usft MD (8748.6 TVD, 390.0 N, -10487.7 E)									
- Point									
7000'VS (Pliny The El	-0.90	269.64	8,898.0	470.5	-7,003.1	487,485.54	574,700.90	32° 20' 24.443 N	104° 13' 31.097 W
- actual wellpath misses target center by 22.1usft at 15564.3usft MD (8885.7 TVD, 452.2 N, -7004.0 E)									
- Rectangle (sides W100.0 H6,340.0 D30.0)									
FTP (Pliny The Elder ;	0.00	0.00	8,999.0	510.0	-663.0	487,525.00	581,041.00	32° 20' 24.764 N	104° 12' 17.192 W
- actual wellpath misses target center by 31.1usft at 9215.7usft MD (8969.7 TVD, 500.6 N, -667.7 E)									
- Point									

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
9,210.9	8,968.8	500.9	-663.0	FTP @ 9210.9'MD, 361.4'FNL & 330'FEL
19,057.2	8,748.7	389.6	-10,491.8	LTP @ 19057.2'MD, 443'FNL & 330'FWL
19,132.0	8,750.0	382.6	-10,566.3	LAST SVY
19,220.0	8,751.9	373.5	-10,653.8	Projection to TD @ 19220'MD, 457'FNL & 168'FWL

Checked By: _____ Approved By: _____ Date: _____