



Tap Rock Resources, LLC

Lea County, NM (NAD 83 NME)
(Black Marlin) Sec-18_T-25-S_R-36-E
Black Marlin Fed Com #204H
API# 30-025-46976
OWB

Design: AWB

Standard Survey Report

05 September, 2020





Operator: Tap Rock Resources, LLC.
Well Name: Black Marlin Fed Com #204H
County: Lea
State: New Mexico
Rig Name: H&P 376
Job Number: 30-025-46976

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: 176' MD – 21,888' MD
Projection to Bit: 21,953' MD
Dates Performed: 08/16/2020 – 09/03/2020
Type of Survey: MWD

Sincerely,

A handwritten signature in blue ink, appearing to read "Jim", written over a light blue rectangular background.

James Burleson
Vice President of MWD Operations
Intrepid Directional Drilling Specialists





Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Black Marlin Fed Com #204H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB @ 3209.0usft (H&P 376)
Site:	(Black Marlin) Sec-18_T-25-S_R-36-E	MD Reference:	KB @ 3209.0usft (H&P 376)
Well:	Black Marlin Fed Com #204H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

Project	Lea 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	(Black Marlin) Sec-18_T-25-S_R-36-E				
Site Position:		Northing:	415,156.00 usft	Latitude:	32° 8' 13.653 N
From:	Map	Easting:	861,141.00 usft	Longitude:	103° 18' 0.552 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well	Black Marlin Fed Com #204H					
Well Position	+N/-S	0.0 usft	Northing:	415,156.00 usft	Latitude:	32° 8' 13.653 N
	+E/-W	0.0 usft	Easting:	861,141.00 usft	Longitude:	103° 18' 0.552 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	3,183.0 usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	08/24/20	6.46	59.72	47,663.51834598

Design	AWB				
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	179.43	

Survey Program	Date	09/05/20			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
176.0	21,953.0	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	
176.0	0.70	165.08	176.0	-1.0	0.3	1.0	0.40	0.40	0.00	
237.0	0.79	179.49	237.0	-1.8	0.4	1.8	0.34	0.15	23.62	
328.0	1.10	186.53	328.0	-3.3	0.3	3.3	0.36	0.34	7.74	
421.0	1.41	216.58	421.0	-5.1	-0.5	5.1	0.77	0.33	32.31	
513.0	1.54	216.50	512.9	-7.0	-1.9	7.0	0.14	0.14	-0.09	
605.0	1.93	216.14	604.9	-9.3	-3.6	9.2	0.42	0.42	-0.39	
700.0	1.10	214.30	699.8	-11.3	-5.0	11.3	0.88	-0.87	-1.94	
794.0	0.44	169.91	793.8	-12.4	-5.5	12.4	0.90	-0.70	-47.22	
889.0	0.75	186.17	888.8	-13.4	-5.5	13.3	0.37	0.33	17.12	



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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)
984.0	0.75	185.65	983.8	-14.6	-5.6	14.6	0.01	0.00	-0.55
1,079.0	0.84	192.59	1,078.8	-15.9	-5.8	15.9	0.14	0.09	7.31
1,173.0	0.66	220.98	1,172.8	-17.0	-6.3	16.9	0.43	-0.19	30.20
1,200.2	0.77	229.62	1,200.0	-17.2	-6.6	17.2	0.57	0.41	31.76
Rustler Anhydrite									
1,268.0	1.10	242.60	1,267.8	-17.8	-7.5	17.8	0.57	0.48	19.15
1,306.0	1.32	237.06	1,305.8	-18.2	-8.2	18.2	0.66	0.58	-14.58
1,438.0	0.92	209.38	1,437.8	-20.0	-10.0	19.9	0.50	-0.30	-20.97
1,533.0	0.84	151.37	1,532.8	-21.3	-10.0	21.2	0.90	-0.08	-61.06
1,629.0	0.35	92.31	1,628.8	-21.9	-9.4	21.8	0.76	-0.51	-61.52
1,724.0	0.26	38.08	1,723.8	-21.7	-9.0	21.7	0.30	-0.09	-57.08
1,730.2	0.25	38.48	1,730.0	-21.7	-8.9	21.6	0.14	-0.14	6.41
Top Salt									
1,819.0	0.13	49.94	1,818.8	-21.5	-8.7	21.4	0.14	-0.14	12.91
1,914.0	0.31	70.51	1,913.8	-21.3	-8.4	21.3	0.20	0.19	21.65
2,009.0	0.13	39.84	2,008.7	-21.2	-8.1	21.1	0.22	-0.19	-32.28
2,105.0	0.35	12.85	2,104.7	-20.8	-8.0	20.7	0.25	0.23	-28.11
2,199.0	0.26	3.54	2,198.7	-20.3	-7.9	20.2	0.11	-0.10	-9.90
2,294.0	0.44	16.46	2,293.7	-19.8	-7.8	19.7	0.21	0.19	13.60
2,388.0	0.57	46.78	2,387.7	-19.1	-7.3	19.0	0.31	0.14	32.26
2,483.0	0.75	44.67	2,482.7	-18.3	-6.5	18.3	0.19	0.19	-2.22
2,578.0	1.67	43.18	2,577.7	-16.9	-5.2	16.8	0.97	0.97	-1.57
2,672.0	2.42	53.72	2,671.7	-14.7	-2.6	14.7	0.89	0.80	11.21
2,766.0	3.96	64.80	2,765.5	-12.1	1.9	12.2	1.76	1.64	11.79
2,860.0	5.27	74.64	2,859.2	-9.6	9.0	9.7	1.62	1.39	10.47
2,955.0	6.33	73.32	2,953.7	-7.0	18.2	7.1	1.12	1.12	-1.39
3,050.0	7.21	72.79	3,048.0	-3.7	28.9	4.0	0.93	0.93	-0.56
3,144.0	7.03	75.34	3,141.3	-0.5	40.1	0.9	0.39	-0.19	2.71
3,239.0	6.55	78.07	3,235.7	2.1	51.1	-1.6	0.61	-0.51	2.87
3,333.0	6.07	80.53	3,329.1	4.0	61.2	-3.4	0.59	-0.51	2.62
3,389.2	5.91	80.17	3,385.0	5.0	67.0	-4.3	0.29	-0.28	-0.64
Base Salt									
3,428.0	5.80	79.91	3,423.6	5.7	70.9	-5.0	0.29	-0.28	-0.67
3,523.0	6.11	79.83	3,518.1	7.4	80.6	-6.6	0.33	0.33	-0.08
3,618.0	6.55	82.99	3,612.5	9.0	91.0	-8.1	0.59	0.46	3.33
3,712.0	6.46	87.21	3,705.9	9.9	101.6	-8.9	0.52	-0.10	4.49
3,806.0	6.29	85.54	3,799.3	10.6	112.0	-9.4	0.27	-0.18	-1.78
3,901.0	6.29	83.61	3,893.7	11.5	122.3	-10.3	0.22	0.00	-2.03
3,996.0	7.03	82.29	3,988.1	12.9	133.3	-11.6	0.80	0.78	-1.39
4,090.0	7.03	82.37	4,081.4	14.4	144.7	-13.0	0.01	0.00	0.09
4,184.0	7.56	79.65	4,174.6	16.3	156.5	-14.8	0.67	0.56	-2.89
4,279.0	8.04	77.01	4,268.7	18.9	169.1	-17.2	0.63	0.51	-2.78
4,373.0	7.65	76.75	4,361.9	21.8	181.6	-20.0	0.42	-0.41	-0.28
4,469.0	7.03	76.75	4,457.1	24.6	193.5	-22.7	0.65	-0.65	0.00



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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)
4,564.0	7.08	76.49	4,551.4	27.3	204.9	-25.3	0.06	0.05	-0.27
4,659.0	6.99	75.08	4,645.6	30.2	216.1	-28.1	0.20	-0.09	-1.48
4,754.0	7.03	76.05	4,739.9	33.1	227.4	-30.8	0.13	0.04	1.02
4,850.0	6.90	75.52	4,835.2	36.0	238.6	-33.6	0.15	-0.14	-0.55
4,945.0	6.77	74.99	4,929.5	38.8	249.6	-36.3	0.15	-0.14	-0.56
5,040.0	6.81	76.13	5,023.9	41.6	260.5	-39.0	0.15	0.04	1.20
5,135.0	6.64	75.96	5,118.2	44.3	271.3	-41.6	0.18	-0.18	-0.18
5,151.9	6.60	76.04	5,135.0	44.8	273.1	-42.1	0.24	-0.23	0.45
Delaware Mountain									
5,182.1	6.53	76.17	5,165.0	45.6	276.5	-42.9	0.24	-0.23	0.46
Lamar									
5,197.2	6.50	76.24	5,180.0	46.0	278.2	-43.2	0.24	-0.23	0.47
Bell Canyon									
5,212.3	6.46	76.32	5,195.0	46.4	279.8	-43.6	0.24	-0.23	0.47
Ramsey Sand									
5,230.0	6.42	76.40	5,212.6	46.9	281.7	-44.1	0.24	-0.23	0.48
5,262.0	6.29	74.99	5,244.4	47.8	285.2	-44.9	0.63	-0.41	-4.41
5,413.0	5.63	76.49	5,394.6	51.6	300.4	-48.6	0.45	-0.44	0.99
5,509.0	5.93	76.57	5,490.1	53.9	309.8	-50.8	0.31	0.31	0.08
5,604.0	6.99	73.15	5,584.5	56.7	320.1	-53.5	1.19	1.12	-3.60
5,698.0	7.30	72.88	5,677.8	60.1	331.3	-56.8	0.33	0.33	-0.29
5,793.0	6.64	72.97	5,772.1	63.5	342.3	-60.1	0.69	-0.69	0.09
5,887.0	6.77	73.59	5,865.4	66.7	352.8	-63.2	0.16	0.14	0.66
5,983.0	7.08	75.96	5,960.7	69.7	364.0	-66.1	0.44	0.32	2.47
6,078.0	6.59	74.73	6,055.1	72.6	374.9	-68.8	0.54	-0.52	-1.29
6,133.3	6.88	74.94	6,110.0	74.3	381.2	-70.5	0.52	0.52	0.38
Cherry Canyon									
6,173.0	7.08	75.08	6,149.4	75.5	385.8	-71.7	0.52	0.52	0.35
6,268.0	8.09	71.56	6,243.5	79.1	397.8	-75.2	1.17	1.06	-3.71
6,362.0	8.09	71.04	6,336.6	83.4	410.3	-79.3	0.08	0.00	-0.55
6,456.0	7.74	70.16	6,429.7	87.7	422.6	-83.5	0.39	-0.37	-0.94
6,551.0	7.25	71.30	6,523.9	91.8	434.2	-87.4	0.54	-0.52	1.20
6,645.0	6.73	71.39	6,617.2	95.4	445.1	-91.0	0.55	-0.55	0.10
6,740.0	6.86	70.77	6,711.5	99.1	455.7	-94.5	0.16	0.14	-0.65
6,834.0	6.90	76.66	6,804.9	102.2	466.5	-97.6	0.75	0.04	6.27
6,929.0	6.42	73.32	6,899.2	105.0	477.2	-100.3	0.65	-0.51	-3.52
7,023.0	6.77	79.83	6,992.6	107.5	487.6	-102.7	0.88	0.37	6.93
7,118.0	6.37	82.99	7,087.0	109.2	498.4	-104.2	0.57	-0.42	3.33
7,201.6	6.65	83.15	7,170.0	110.3	507.8	-105.3	0.33	0.33	0.19
Brushy Canyon									
7,211.0	6.68	83.17	7,179.4	110.4	508.9	-105.4	0.33	0.33	0.19
7,305.0	6.64	83.87	7,272.7	111.7	519.7	-106.5	0.10	-0.04	0.74
7,399.0	6.95	86.15	7,366.1	112.6	530.8	-107.3	0.44	0.33	2.43
7,494.0	6.99	88.70	7,460.4	113.2	542.3	-107.7	0.33	0.04	2.68
7,588.0	6.33	90.72	7,553.7	113.2	553.2	-107.7	0.74	-0.70	2.15



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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)
7,682.0	5.23	92.57	7,647.3	113.0	562.7	-107.4	1.19	-1.17	1.97
7,773.0	5.45	84.57	7,737.9	113.2	571.1	-107.5	0.85	0.24	-8.79
7,867.0	5.67	77.10	7,831.4	114.6	580.1	-108.9	0.80	0.23	-7.95
7,962.0	3.96	74.03	7,926.1	116.6	587.8	-110.7	1.82	-1.80	-3.23
8,056.0	3.82	74.99	8,019.9	118.3	594.0	-112.4	0.16	-0.15	1.02
8,152.0	3.21	74.82	8,115.7	119.8	599.6	-113.9	0.64	-0.64	-0.18
8,244.0	2.64	68.66	8,207.6	121.3	604.1	-115.3	0.71	-0.62	-6.70
8,339.0	2.81	74.90	8,302.5	122.7	608.4	-116.6	0.36	0.18	6.57
8,433.0	1.01	90.20	8,396.4	123.3	611.4	-117.2	1.97	-1.91	16.28
8,461.6	1.26	94.34	8,425.0	123.2	612.0	-117.2	0.92	0.88	14.47
Bone Spring Lime									
8,481.6	1.44	96.37	8,445.0	123.2	612.5	-117.1	0.92	0.89	10.14
Upper Avalon									
8,527.0	1.85	99.51	8,490.4	123.0	613.8	-116.9	0.92	0.90	6.92
8,620.0	1.93	93.80	8,583.3	122.7	616.8	-116.5	0.22	0.09	-6.14
8,715.0	1.67	78.42	8,678.3	122.8	619.8	-116.7	0.57	-0.27	-16.19
8,751.7	1.75	85.56	8,715.0	123.0	620.8	-116.8	0.62	0.23	19.43
Middle Avalon									
8,809.0	1.93	95.21	8,772.2	123.0	622.7	-116.8	0.62	0.31	16.85
8,903.0	1.14	135.29	8,866.2	122.2	624.9	-115.9	1.37	-0.84	42.64
8,997.0	1.10	129.31	8,960.2	120.9	626.3	-114.7	0.13	-0.04	-6.36
9,090.0	0.97	121.75	9,053.2	119.9	627.6	-113.7	0.20	-0.14	-8.13
9,181.8	0.92	117.09	9,145.0	119.2	628.9	-112.9	0.10	-0.05	-5.08
Lower Avalon									
9,185.0	0.92	116.92	9,148.2	119.2	629.0	-112.9	0.10	-0.05	-5.34
9,279.0	0.79	125.53	9,242.1	118.5	630.2	-112.2	0.19	-0.14	9.16
9,374.0	0.88	321.44	9,337.1	118.6	630.3	-112.4	1.74	0.09	-172.73
9,469.0	1.41	297.97	9,432.1	119.8	628.8	-113.5	0.73	0.56	-24.71
9,563.0	1.01	298.15	9,526.1	120.7	627.0	-114.5	0.43	-0.43	0.19
9,657.0	0.88	302.72	9,620.1	121.5	625.7	-115.3	0.16	-0.14	4.86
9,711.9	0.98	302.88	9,675.0	122.0	624.9	-115.7	0.18	0.18	0.29
1st Bone Spring Sand									
9,752.0	1.05	302.98	9,715.1	122.3	624.3	-116.1	0.18	0.18	0.25
9,781.9	1.04	301.50	9,745.0	122.6	623.9	-116.4	0.10	-0.04	-4.95
2nd Bone Spring Carb									
9,847.0	1.01	298.15	9,810.1	123.2	622.9	-117.0	0.10	-0.04	-5.15
9,941.0	0.44	270.20	9,904.1	123.6	621.8	-117.4	0.70	-0.61	-29.73
10,036.0	0.57	260.97	9,999.1	123.5	621.0	-117.4	0.16	0.14	-9.72
10,130.0	0.44	252.53	10,093.0	123.4	620.1	-117.2	0.16	-0.14	-8.98
10,225.0	0.09	109.09	10,188.0	123.2	619.9	-117.0	0.54	-0.37	-150.99
10,262.0	0.36	103.64	10,225.0	123.2	620.0	-117.0	0.75	0.74	-14.75
2nd Bone Spring Sand									
10,319.0	0.79	102.68	10,282.0	123.1	620.6	-116.9	0.75	0.75	-1.68
10,413.0	1.63	120.96	10,376.0	122.2	622.3	-116.0	0.97	0.89	19.45



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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)	
10,507.0	0.62	94.68	10,470.0	121.5	624.0	-115.3	1.18	-1.07	-27.96	
10,601.0	0.44	80.09	10,564.0	121.5	624.9	-115.3	0.24	-0.19	-15.52	
10,695.0	0.44	49.15	10,658.0	121.8	625.5	-115.6	0.25	0.00	-32.91	
10,789.0	1.14	264.92	10,752.0	122.0	624.8	-115.7	1.62	0.74	-153.44	
10,883.0	0.75	257.63	10,846.0	121.8	623.3	-115.5	0.43	-0.41	-7.76	
10,892.0	0.76	252.48	10,855.0	121.7	623.2	-115.5	0.75	0.06	-57.06	
3rd Bone Spring Carb										
10,977.0	1.05	215.35	10,940.0	120.9	622.2	-114.7	0.75	0.35	-43.70	
11,005.0	1.01	216.23	10,968.0	120.5	621.9	-114.3	0.15	-0.14	3.14	
11,101.0	1.19	262.20	11,063.9	119.7	620.4	-113.5	0.91	0.19	47.89	
11,195.0	3.65	171.32	11,157.9	116.6	619.9	-110.4	4.10	2.62	-96.68	
11,289.0	10.81	167.54	11,251.1	105.0	622.3	-98.8	7.63	7.62	-4.02	
11,362.2	19.09	165.70	11,321.7	86.7	626.7	-80.4	11.33	11.32	-2.51	
FTP @ 11362.2'MD, 100'FNL & 567'FWL										
11,383.0	21.45	165.43	11,341.2	79.7	628.5	-73.5	11.33	11.33	-1.29	
11,478.0	32.70	164.03	11,425.7	38.1	640.0	-31.7	11.86	11.84	-1.47	
11,544.3	37.33	165.76	11,480.0	1.4	649.9	5.1	7.14	6.98	2.61	
3rd Bone Spring Sand										
11,573.0	39.34	166.40	11,502.5	-15.9	654.1	22.4	7.14	7.01	2.23	
11,668.0	53.67	177.12	11,567.8	-83.9	663.2	90.4	17.12	15.08	11.28	
11,764.0	64.18	181.87	11,617.3	-165.9	663.7	172.5	11.73	10.95	4.95	
11,770.2	64.75	181.73	11,620.0	-171.6	663.6	178.1	9.41	9.20	-2.19	
3rd BS W Sand										
11,858.0	72.84	179.93	11,651.7	-253.3	662.4	259.9	9.41	9.21	-2.05	
11,869.6	74.35	179.99	11,655.0	-264.4	662.4	271.0	12.97	12.96	0.47	
Wolfcamp A X Sand										
11,955.0	85.41	180.37	11,670.0	-348.4	662.1	354.9	12.97	12.96	0.45	
12,049.0	87.82	180.99	11,675.5	-442.2	661.0	448.7	2.65	2.56	0.66	
12,143.0	88.53	179.93	11,678.5	-536.1	660.3	542.7	1.36	0.76	-1.13	
12,238.0	89.05	179.76	11,680.5	-631.1	660.5	637.6	0.58	0.55	-0.18	
12,332.0	89.93	180.72	11,681.4	-725.1	660.1	731.6	1.39	0.94	1.02	
12,425.0	91.69	180.81	11,680.1	-818.1	658.9	824.6	1.89	1.89	0.10	
12,519.0	92.35	181.08	11,676.7	-912.0	657.3	918.5	0.76	0.70	0.29	
12,613.0	92.18	181.69	11,673.0	-1,005.9	655.1	1,012.4	0.67	-0.18	0.65	
12,707.0	93.01	182.48	11,668.8	-1,099.7	651.7	1,106.2	1.22	0.88	0.84	
12,801.0	90.68	181.87	11,665.7	-1,193.6	648.1	1,200.0	2.56	-2.48	-0.65	
12,895.0	90.55	182.04	11,664.7	-1,287.6	644.9	1,293.9	0.23	-0.14	0.18	
12,989.0	87.96	182.39	11,666.0	-1,381.5	641.3	1,387.8	2.78	-2.76	0.37	
13,084.0	87.30	182.31	11,669.9	-1,476.3	637.4	1,482.6	0.70	-0.69	-0.08	
13,178.0	89.23	182.22	11,672.7	-1,570.2	633.7	1,576.4	2.06	2.05	-0.10	
13,273.0	91.47	185.65	11,672.1	-1,664.9	627.1	1,671.1	4.31	2.36	3.61	
13,366.0	90.73	186.00	11,670.4	-1,757.4	617.7	1,763.5	0.88	-0.80	0.38	
13,460.0	88.75	182.66	11,670.8	-1,851.2	610.6	1,857.1	4.13	-2.11	-3.55	
13,554.0	88.84	180.29	11,672.8	-1,945.1	608.2	1,951.1	2.52	0.10	-2.52	



Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Black Marlin Fed Com #204H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB @ 3209.0usft (H&P 376)
Site:	(Black Marlin) Sec-18_T-25-S_R-36-E	MD Reference:	KB @ 3209.0usft (H&P 376)
Well:	Black Marlin Fed Com #204H	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)	
13,648.0	88.62	178.97	11,674.9	-2,039.1	608.8	2,045.0	1.42	-0.23	-1.40	
13,742.0	88.92	178.18	11,676.9	-2,133.0	611.1	2,139.0	0.90	0.32	-0.84	
13,835.0	92.62	176.77	11,675.6	-2,225.9	615.2	2,231.9	4.26	3.98	-1.52	
13,929.0	92.79	176.95	11,671.2	-2,319.7	620.4	2,325.7	0.26	0.18	0.19	
14,024.0	91.87	176.24	11,667.3	-2,414.4	626.0	2,420.5	1.22	-0.97	-0.75	
14,118.0	92.79	177.12	11,663.5	-2,508.2	631.4	2,514.3	1.35	0.98	0.94	
14,212.0	93.05	177.65	11,658.7	-2,602.0	635.7	2,608.1	0.63	0.28	0.56	
14,307.0	90.55	178.44	11,655.7	-2,696.8	639.0	2,703.1	2.76	-2.63	0.83	
14,401.0	91.65	180.55	11,653.9	-2,790.8	639.8	2,797.0	2.53	1.17	2.24	
14,495.0	90.46	181.95	11,652.2	-2,884.8	637.7	2,891.0	1.95	-1.27	1.49	
14,588.0	89.85	181.87	11,651.9	-2,977.7	634.6	2,983.9	0.66	-0.66	-0.09	
14,682.0	88.48	181.69	11,653.3	-3,071.7	631.7	3,077.8	1.47	-1.46	-0.19	
14,776.0	90.11	179.05	11,654.5	-3,165.6	631.1	3,171.8	3.30	1.73	-2.81	
14,870.0	92.70	177.91	11,652.2	-3,259.6	633.6	3,265.7	3.01	2.76	-1.21	
14,965.0	91.78	176.42	11,648.4	-3,354.4	638.3	3,360.6	1.84	-0.97	-1.57	
15,059.0	90.95	176.33	11,646.2	-3,448.2	644.2	3,454.4	0.89	-0.88	-0.10	
15,153.0	90.81	175.36	11,644.8	-3,541.9	651.1	3,548.2	1.04	-0.15	-1.03	
15,247.0	90.81	177.30	11,643.4	-3,635.7	657.1	3,642.1	2.06	0.00	2.06	
15,342.0	90.02	176.15	11,642.7	-3,730.5	662.5	3,736.9	1.47	-0.83	-1.21	
15,435.0	91.96	178.09	11,641.1	-3,823.4	667.2	3,829.8	2.95	2.09	2.09	
15,529.0	94.42	179.67	11,635.9	-3,917.2	669.0	3,923.7	3.11	2.62	1.68	
15,623.0	94.15	179.67	11,628.9	-4,011.0	669.5	4,017.4	0.29	-0.29	0.00	
15,741.0	94.90	178.97	11,619.6	-4,128.6	670.9	4,135.1	0.87	0.64	-0.59	
15,837.0	92.79	179.05	11,613.1	-4,224.3	672.6	4,230.8	2.20	-2.20	0.08	
15,931.0	90.15	179.23	11,610.7	-4,318.3	674.0	4,324.8	2.82	-2.81	0.19	
16,025.0	90.33	179.14	11,610.3	-4,412.3	675.3	4,418.8	0.21	0.19	-0.10	
16,118.0	87.25	178.70	11,612.3	-4,505.2	677.1	4,511.8	3.35	-3.31	-0.47	
16,212.0	87.96	178.53	11,616.2	-4,599.1	679.4	4,605.7	0.78	0.76	-0.18	
16,307.0	89.80	180.02	11,618.1	-4,694.1	680.6	4,700.6	2.49	1.94	1.57	
16,401.0	88.79	178.70	11,619.2	-4,788.1	681.6	4,794.6	1.77	-1.07	-1.40	
16,496.0	89.98	179.67	11,620.3	-4,883.1	683.0	4,889.6	1.62	1.25	1.02	
16,590.0	89.80	180.11	11,620.4	-4,977.1	683.1	4,983.6	0.51	-0.19	0.47	
16,685.0	89.54	179.41	11,621.0	-5,072.1	683.5	5,078.6	0.79	-0.27	-0.74	
16,778.0	91.08	179.93	11,620.5	-5,165.1	684.1	5,171.6	1.75	1.66	0.56	
16,873.0	91.16	179.85	11,618.6	-5,260.0	684.3	5,266.6	0.12	0.08	-0.08	
16,968.0	91.08	180.02	11,616.8	-5,355.0	684.4	5,361.6	0.20	-0.08	0.18	
17,062.0	90.68	180.20	11,615.3	-5,449.0	684.2	5,455.5	0.47	-0.43	0.19	
17,156.0	91.30	180.64	11,613.7	-5,543.0	683.5	5,549.5	0.81	0.66	0.47	
17,250.0	89.27	178.53	11,613.2	-5,637.0	684.2	5,643.5	3.11	-2.16	-2.24	
17,344.0	89.05	177.74	11,614.6	-5,730.9	687.2	5,737.5	0.87	-0.23	-0.84	
17,439.0	89.32	177.74	11,616.0	-5,825.8	691.0	5,832.4	0.28	0.28	0.00	
17,532.0	88.57	177.56	11,617.7	-5,918.7	694.8	5,925.4	0.83	-0.81	-0.19	
17,626.0	90.55	178.35	11,618.4	-6,012.7	698.2	6,019.3	2.27	2.11	0.84	
17,721.0	90.11	178.44	11,617.9	-6,107.6	700.8	6,114.3	0.47	-0.46	0.09	



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Site:	(Black Marlin) Sec-18_T-25-S_R-36-E	MD Reference:	KB @ 3209.0usft (H&P 376)
Well:	Black Marlin Fed Com #204H	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)
17,815.0	88.79	178.09	11,618.8	-6,201.6	703.7	6,208.3	1.45	-1.40	-0.37
17,909.0	88.35	177.82	11,621.1	-6,295.5	707.0	6,302.2	0.55	-0.47	-0.29
18,004.0	89.10	176.68	11,623.2	-6,390.4	711.6	6,397.1	1.44	0.79	-1.20
18,098.0	90.42	177.82	11,623.6	-6,484.2	716.1	6,491.0	1.86	1.40	1.21
18,193.0	92.09	180.29	11,621.5	-6,579.2	717.6	6,586.0	3.14	1.76	2.60
18,287.0	92.00	180.99	11,618.2	-6,673.1	716.6	6,679.9	0.75	-0.10	0.74
18,381.0	92.22	180.81	11,614.7	-6,767.1	715.1	6,773.8	0.30	0.23	-0.19
18,476.0	92.00	180.02	11,611.2	-6,862.0	714.4	6,868.8	0.86	-0.23	-0.83
18,569.0	91.78	179.85	11,608.1	-6,954.9	714.5	6,961.7	0.30	-0.24	-0.18
18,663.0	89.80	178.44	11,606.8	-7,048.9	715.9	7,055.7	2.59	-2.11	-1.50
18,757.0	90.55	178.97	11,606.6	-7,142.9	718.1	7,149.7	0.98	0.80	0.56
18,851.0	89.89	179.32	11,606.2	-7,236.9	719.5	7,243.7	0.79	-0.70	0.37
18,945.0	89.71	180.20	11,606.5	-7,330.9	719.9	7,337.7	0.96	-0.19	0.94
19,039.0	89.45	179.85	11,607.2	-7,424.9	719.8	7,431.7	0.46	-0.28	-0.37
19,133.0	91.74	181.25	11,606.2	-7,518.8	718.9	7,525.6	2.86	2.44	1.49
19,228.0	90.07	179.58	11,604.7	-7,613.8	718.2	7,620.6	2.49	-1.76	-1.76
19,323.0	87.82	178.97	11,606.5	-7,708.8	719.4	7,715.6	2.45	-2.37	-0.64
19,418.0	86.59	178.09	11,611.1	-7,803.6	721.9	7,810.4	1.59	-1.29	-0.93
19,512.0	86.64	178.44	11,616.7	-7,897.4	724.7	7,904.3	0.38	0.05	0.37
19,606.0	89.71	180.72	11,619.7	-7,991.4	725.4	7,998.2	4.07	3.27	2.43
19,700.0	89.32	181.78	11,620.5	-8,085.3	723.3	8,092.1	1.20	-0.41	1.13
19,795.0	89.76	182.39	11,621.2	-8,180.3	719.9	8,187.0	0.79	0.46	0.64
19,889.0	89.36	182.13	11,621.9	-8,274.2	716.2	8,280.9	0.51	-0.43	-0.28
19,983.0	90.20	182.13	11,622.3	-8,368.1	712.7	8,374.8	0.89	0.89	0.00
20,078.0	86.95	181.52	11,624.7	-8,463.0	709.7	8,469.7	3.48	-3.42	-0.64
20,173.0	87.38	180.37	11,629.4	-8,557.9	708.1	8,564.5	1.29	0.45	-1.21
20,267.0	89.98	179.85	11,631.5	-8,651.9	707.9	8,658.5	2.82	2.77	-0.55
20,361.0	92.18	180.37	11,629.8	-8,745.9	707.7	8,752.5	2.40	2.34	0.55
20,455.0	92.31	180.55	11,626.1	-8,839.8	707.0	8,846.4	0.24	0.14	0.19
20,550.0	92.92	180.02	11,621.7	-8,934.7	706.5	8,941.3	0.85	0.64	-0.56
20,644.0	91.96	180.37	11,617.7	-9,028.6	706.2	9,035.2	1.09	-1.02	0.37
20,739.0	91.25	180.11	11,615.1	-9,123.6	705.8	9,130.1	0.80	-0.75	-0.27
20,833.0	89.80	179.67	11,614.2	-9,217.5	706.0	9,224.1	1.61	-1.54	-0.47
20,927.0	88.35	179.93	11,615.7	-9,311.5	706.3	9,318.1	1.57	-1.54	0.28
21,021.0	87.56	178.70	11,619.1	-9,405.5	707.4	9,412.0	1.55	-0.84	-1.31
21,116.0	86.90	177.91	11,623.7	-9,500.3	710.2	9,506.9	1.08	-0.69	-0.83
21,211.0	86.86	177.38	11,628.9	-9,595.1	714.1	9,601.7	0.56	-0.04	-0.56
21,306.0	87.91	176.51	11,633.2	-9,689.9	719.2	9,696.5	1.43	1.11	-0.92
21,402.0	86.95	175.54	11,637.5	-9,785.5	725.8	9,792.3	1.42	-1.00	-1.01
21,496.0	90.55	176.77	11,639.5	-9,879.3	732.1	9,886.1	4.05	3.83	1.31
21,592.0	88.88	176.59	11,640.0	-9,975.1	737.7	9,982.0	1.75	-1.74	-0.19
21,687.0	89.76	176.42	11,641.2	-10,069.9	743.5	10,076.8	0.94	0.93	-0.18
21,782.0	91.08	176.33	11,640.5	-10,164.7	749.5	10,171.7	1.39	1.39	-0.09

Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Black Marlin Fed Com #204H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB @ 3209.0usft (H&P 376)
Site:	(Black Marlin) Sec-18_T-25-S_R-36-E	MD Reference:	KB @ 3209.0usft (H&P 376)
Well:	Black Marlin Fed Com #204H	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)	
21,877.0	89.49	174.40	11,640.0	-10,259.4	757.2	10,266.4	2.63	-1.67	-2.03	
21,885.9	89.53	174.33	11,640.1	-10,268.3	758.0	10,275.3	0.94	0.45	-0.82	
LTP @ 21885.9'MD, 100'FSL & 595.3'FWL										
21,888.0	89.54	174.31	11,640.1	-10,270.4	758.3	10,277.4	0.94	0.45	-0.82	
LAST SVY										
21,953.0	89.54	174.31	11,640.6	-10,335.0	764.7	10,342.1	0.00	0.00	0.00	
Projection to TD @ 21953'MD, 33.2'FSL & 601.3'FWL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
7000°VS (Black Marlin - hit/miss target - Shape)	-0.30	179.43	11,617.0	-6,993.6	680.5	408,162.40	861,821.46	32° 7' 4.390 N	103° 17' 53.420 W	- actual wellpath misses target center by 35.7usft at 18607.0usft MD (11607.2 TVD, -6993.0 N, 714.8 E) - Rectangle (sides W100.0 H3,000.1 D15.0)
4000°VS (Black Marlin - actual wellpath misses target center by 19.1usft at 15605.4usft MD (11630.2 TVD, -3993.4 N, 669.4 E) - Rectangle (sides W100.0 H4,080.9 D15.0)	-0.70	179.43	11,633.0	-3,993.7	650.6	411,162.30	861,791.61	32° 7' 34.075 N	103° 17' 53.432 W	
PBHL (Black Marlin F - actual wellpath misses target center by 58.4usft at 21953.0usft MD (11640.6 TVD, -10335.0 N, 764.7 E) - Rectangle (sides W100.0 H3,370.7 D15.0)	0.41	179.43	11,641.0	-10,364.0	714.0	404,792.00	861,855.00	32° 6' 31.038 N	103° 17' 53.407 W	
LTP (Black Marlin Fec - actual wellpath misses target center by 44.9usft at 21882.2usft MD (11640.0 TVD, -10264.6 N, 757.7 E) - Point	0.00	0.00	11,641.0	-10,269.0	713.0	404,887.00	861,854.00	32° 6' 31.978 N	103° 17' 53.408 W	
FTP (Black Marlin Fec - actual wellpath misses target center by 199.6usft at 11614.8usft MD (11533.3 TVD, -43.6 N, 659.4 E) - Point	0.00	0.00	11,676.0	87.0	610.0	415,243.00	861,751.00	32° 8' 14.456 N	103° 17' 53.448 W	

Company:	Tap Rock Resources, LLC	Local Co-ordinate Reference:	Well Black Marlin Fed Com #204H
Project:	Lea County, NM (NAD 83 NME)	TVD Reference:	KB @ 3209.0usft (H&P 376)
Site:	(Black Marlin) Sec-18_T-25-S_R-36-E	MD Reference:	KB @ 3209.0usft (H&P 376)
Well:	Black Marlin Fed Com #204H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	AWB	Database:	EDM 5000.15 Single User Db

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,200.2	1,200.0	Rustler Anhydrite			
1,730.2	1,730.0	Top Salt			
3,389.2	3,385.0	Base Salt			
5,151.9	5,135.0	Delaware Mountain			
5,182.1	5,165.0	Lamar			
5,197.2	5,180.0	Bell Canyon			
5,212.3	5,195.0	Ramsey Sand			
6,133.3	6,110.0	Cherry Canyon			
7,201.6	7,170.0	Brushy Canyon			
8,461.6	8,425.0	Bone Spring Lime			
8,481.6	8,445.0	Upper Avalon			
8,751.7	8,715.0	Middle Avalon			
9,181.8	9,145.0	Lower Avalon			
9,711.9	9,675.0	1st Bone Spring Sand			
9,781.9	9,745.0	2nd Bone Spring Carb			
10,262.0	10,225.0	2nd Bone Spring Sand			
10,892.0	10,855.0	3rd Bone Spring Carb			
11,544.3	11,480.0	3rd Bone Spring Sand			
11,770.2	11,620.0	3rd BS W Sand			
11,869.6	11,655.0	Wolfcamp A X Sand			

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
11,362.2	11,321.7	86.7	626.7	FTP @ 11362.2'MD, 100'FNL & 567'FWL
21,885.9	11,640.1	-10,268.3	758.0	LTP @ 21885.9'MD, 100'FSL & 595.3'FWL
21,888.0	11,640.1	-10,270.4	758.3	LAST SVY
21,953.0	11,640.6	-10,335.0	764.7	Projection to TD @ 21953'MD, 33.2'FSL & 601.3'FWL

Checked By: _____	Approved By: _____	Date: _____
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