



5D Survey Report

Apache Corporation

Field Name: *Apache NM (Nad 83 NMEZ)*
Site Name: *Ghost Rider Pad 2S*
Well Name: *Ghost Rider 22-15 FED COM 203H*
File number: *13746106*
Survey: *Definitive survey*

26 June 2019

30-025-45770

O 22-24S-32E 431 FSL + 2151 FEL (Surf.)
J 15-24S-32E 2584 FSL + 1640 FEL (BH)



Weatherford®

5D Survey Report

Apache



Ghost Rider 22-15 FED COM 203H

Field Name: Apache NM (Nad 83 NMEZ)	Map Units: US ft		Company Name: Apache Corporation	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)			
	Comment:			
Site: Ghost Rider Pad 2S	Units: US ft	North Reference: Grid	Convergence Angle: 0.36	
	Position:	Northing: 435972.30 US ft	Latitude: 32.196781772	
		Easting: 749076.20 US ft	Longitude: -103.661751089	
	Elevation above MSL: 3597.00 US ft			
Comment: Lea Co., NM				
Slot: Ghost Rider 22- 15 FED COM 203H	Position (Relative to Site Centre)			
	+N/-S: 77.10 US ft	Northing: 436049.40 US ft	Latitude: 32.196989341	
	+E/-W: 253.70 US ft	Easting: 749329.90 US ft	Longitude: -103.660929412	
	Slot TVD Reference: Ground Elevation			
Elevation above MSL: 3597.00 US ft				
Comment:				
Well: Ghost Rider 22- 15 FED COM 203H	Type: Main well		UWI:	
	File Number: 13746106	Comment: H&P 482		
	Closure Distance: 7453.51 US ft		Closure Azimuth: 3.60°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
+N/-S: -0.00 US ft		+E/-W: 0.00 US ft		Az: 0.00°

Drill floor: Survey Name: Definitive Survey

Rig Height (Drill Floor): 26.00 US ft **Elevation above MSL:** 3623.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00°

Survey Name: Definitive Survey

Date: 28/Jun/2018

Survey Tool: See Survey
Tool Ranges below.

Comment:
Company:
Magnetic Model:
Model Name: Surcon
IFR

Date: 06/Jun/2019

Field Strength:
47872.0 nT

Declination: 6.79° **Dip:** 59.88°

Tie Point:
MD: 0.00 US ft

Inclination:
0.00°

Azimuth: 0.00°

TVD: -0.00
US ft

North Offset: -0.00
US ft

East Offset: 0.00
US ft

5D Survey Report

Survey Tool Ranges:			
Name	Start MD(USFt)	End MD(USFt)	Source Survey
VES GyroFlex V3	0.00	9950.00	VES Gyro
MWD + IFR + MS	9950.00	10845.00	WFT MWD 03
MWD + IFR + Sag Corr + MS	10845.00	11499.00	WFT MWD 04
MWD + IFR + Sag Corr + MS	11499.00	18079.00	WFT MWD 05

Wellpath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	N. Offset (US ft)	E. Offset (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
9950.00	0.56	322.53	9917.14	-272.64	-272.64	449.01	0.31	435776.76	749778.91	VES Gyro Tieon
10122.00	3.43	8.95	10089.02	-266.89	-266.89	449.30	1.79	435782.51	749779.20	First WFT MWD Svy
10169.00	8.73	9.76	10135.74	-261.98	-261.98	450.13	11.28	435787.42	749780.03	
10216.00	14.34	4.21	10181.78	-252.65	-252.65	451.16	12.15	435796.75	749781.06	
10263.00	19.91	1.56	10226.67	-238.84	-238.84	451.81	11.96	435810.56	749781.71	
10310.00	26.26	0.92	10269.89	-220.42	-220.42	452.19	13.52	435828.98	749782.09	
10358.00	32.32	0.60	10311.73	-196.95	-196.95	452.50	12.63	435852.45	749782.40	
10405.00	39.89	0.46	10349.68	-169.28	-169.28	452.75	16.11	435880.12	749782.65	
10452.00	45.87	0.45	10384.10	-137.31	-137.31	453.00	12.72	435912.09	749782.90	
10499.00	50.50	1.56	10415.43	-102.30	-102.30	453.63	10.01	435947.10	749783.53	
10547.00	54.80	3.15	10444.55	-64.18	-64.18	455.21	9.34	435985.22	749785.11	
10594.00	59.22	2.26	10470.13	-24.82	-24.82	457.06	9.54	436024.58	749786.96	
10641.00	62.59	1.45	10492.98	16.23	16.23	458.39	7.33	436065.63	749788.29	
10688.00	65.47	1.63	10513.56	58.46	58.46	459.53	6.14	436107.86	749789.43	
10736.00	69.86	1.04	10531.80	102.84	102.84	460.56	9.22	436152.24	749790.46	
10783.00	73.47	0.05	10546.58	147.44	147.44	460.98	7.94	436196.84	749790.88	
10830.00	77.08	359.84	10558.53	192.89	192.89	460.93	7.69	436242.29	749790.83	
10845.00	78.44	0.03	10561.71	207.55	207.55	460.92	9.15	436256.95	749790.82	
10887.00	80.79	0.54	10569.28	248.86	248.86	461.12	5.72	436298.26	749791.02	
10934.00	83.19	359.93	10575.83	295.39	295.39	461.31	5.27	436344.79	749791.21	
10981.00	85.58	0.35	10580.42	342.16	342.16	461.43	5.16	436391.56	749791.33	
11028.00	89.02	0.26	10582.64	389.10	389.10	461.68	7.32	436438.50	749791.58	
11123.00	90.21	359.94	10583.28	484.10	484.10	461.84	1.30	436533.50	749791.74	
11217.00	89.72	0.27	10583.33	578.10	578.10	462.01	0.63	436627.50	749791.91	
11311.00	89.09	0.69	10584.31	672.09	672.09	462.80	0.81	436721.49	749792.70	
11405.00	89.30	1.06	10585.63	766.07	766.07	464.24	0.45	436815.47	749794.14	
11499.00	90.07	0.88	10586.15	860.05	860.05	465.83	0.84	436909.45	749795.73	
11593.00	90.63	0.70	10585.57	954.04	954.04	467.12	0.63	437003.44	749797.02	
11687.00	90.84	0.74	10584.37	1048.03	1048.03	468.31	0.23	437097.43	749798.21	
11781.00	90.56	0.11	10583.22	1142.02	1142.02	469.00	0.73	437191.42	749798.90	
11875.00	89.93	359.78	10582.82	1236.02	1236.02	468.91	0.76	437285.42	749798.81	
11970.00	88.18	357.84	10584.38	1330.98	1330.98	466.94	2.75	437380.38	749796.84	
12064.00	88.46	357.34	10587.14	1424.85	1424.85	462.99	0.61	437474.25	749792.89	
12158.00	89.51	357.22	10588.80	1518.73	1518.73	458.53	1.12	437568.13	749788.43	
12252.00	90.21	358.71	10589.03	1612.67	1612.67	455.19	1.75	437662.07	749785.09	
12347.00	90.98	359.31	10588.05	1707.65	1707.65	453.55	1.03	437757.05	749783.45	
12441.00	91.26	359.74	10586.21	1801.62	1801.62	452.77	0.55	437851.02	749782.67	
12535.00	90.56	359.98	10584.72	1895.61	1895.61	452.54	0.79	437945.01	749782.44	
12629.00	88.74	0.06	10585.29	1989.61	1989.61	452.57	1.94	438039.01	749782.47	
12723.00	88.67	359.37	10587.42	2083.58	2083.58	452.11	0.74	438132.98	749782.01	
12817.00	89.86	359.46	10588.62	2177.57	2177.57	451.15	1.27	438226.97	749781.05	
12911.00	90.49	359.59	10588.33	2271.56	2271.56	450.37	0.68	438320.96	749780.27	
13005.00	89.72	359.89	10588.16	2365.56	2365.56	449.94	0.88	438414.96	749779.84	
13099.00	90.56	359.48	10587.93	2459.56	2459.56	449.42	0.99	438508.96	749779.32	
13193.00	89.58	0.48	10587.82	2553.55	2553.55	449.39	1.49	438602.95	749779.29	
13287.00	90.21	359.90	10587.99	2647.55	2647.55	449.70	0.91	438696.95	749779.60	
13382.00	89.23	0.42	10588.45	2742.55	2742.55	449.97	1.17	438791.95	749779.87	
13477.00	90.00	0.29	10589.09	2837.55	2837.55	450.56	0.82	438886.95	749780.46	

5D Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
ID (US ft)	Inc (°)	Az (°)	TVD (US ft)	VS (US ft)	H.Offset (US ft)	E.Offset (US ft)	DLS (°/100US ft)	Northing (US ft)	Easting (US ft)	Comment
13571.00	90.84	0.96	10588.40	2931.54	2931.54	451.58	1.14	438980.94	749781.48	
13666.00	89.72	0.88	10587.94	3026.52	3026.52	453.11	1.18	439075.92	749783.01	
13760.00	89.93	0.38	10588.23	3120.51	3120.51	454.14	0.58	439169.91	749784.04	
13855.00	89.65	0.86	10588.57	3215.51	3215.51	455.17	0.58	439264.91	749785.07	
13949.00	89.79	0.92	10589.03	3309.50	3309.50	456.63	0.16	439358.90	749786.53	
14044.00	90.77	1.02	10588.57	3404.48	3404.48	458.24	1.04	439453.88	749788.14	
14138.00	90.56	0.68	10587.48	3498.46	3498.46	459.63	0.43	439547.86	749789.53	
14233.00	90.91	0.92	10586.26	3593.45	3593.45	460.96	0.45	439642.85	749790.86	
14328.00	89.02	1.02	10586.32	3688.43	3688.43	462.57	1.99	439737.83	749792.47	
14422.00	89.09	0.83	10587.87	3782.40	3782.40	464.08	0.22	439831.80	749793.98	
14517.00	89.93	0.70	10588.68	3877.39	3877.39	465.35	0.89	439926.79	749795.25	
14611.00	90.21	0.93	10588.57	3971.38	3971.38	466.69	0.39	440020.78	749796.59	
14706.00	90.00	1.63	10588.39	4066.36	4066.36	468.81	0.77	440115.76	749798.71	
14800.00	89.65	359.73	10588.68	4160.34	4160.34	469.93	2.06	440209.74	749799.83	
14895.00	90.00	359.42	10588.97	4255.34	4255.34	469.22	0.49	440304.74	749799.12	
14989.00	89.37	358.95	10589.49	4349.33	4349.33	467.89	0.84	440398.73	749797.79	
15084.00	90.28	358.65	10589.78	4444.31	4444.31	465.90	1.01	440493.71	749795.80	
15179.00	89.65	359.70	10589.83	4539.29	4539.29	464.53	1.29	440588.69	749794.43	
15273.00	90.91	0.13	10589.37	4633.29	4633.29	464.39	1.42	440682.69	749794.29	
15368.00	90.42	0.13	10588.27	4728.28	4728.28	464.60	0.52	440777.68	749794.50	
15462.00	89.72	359.75	10588.16	4822.28	4822.28	464.51	0.85	440871.68	749794.41	
15557.00	89.72	358.92	10588.62	4917.28	4917.28	463.40	0.87	440966.68	749793.30	
15651.00	90.14	359.36	10588.74	5011.26	5011.26	461.99	0.65	441060.66	749791.89	
15746.00	90.42	0.12	10588.27	5106.26	5106.26	461.56	0.85	441155.66	749791.46	
15840.00	90.98	0.64	10587.12	5200.25	5200.25	462.18	0.81	441249.65	749792.08	
15935.00	90.28	0.20	10586.08	5295.24	5295.24	462.88	0.87	441344.64	749792.78	
16030.00	88.88	359.69	10586.78	5390.24	5390.24	462.79	1.57	441439.64	749792.69	
16124.00	88.81	359.80	10588.67	5484.22	5484.22	462.37	0.14	441533.62	749792.27	
16219.00	89.44	359.77	10590.12	5579.20	5579.20	462.01	0.66	441628.60	749791.91	
16314.00	90.35	0.19	10590.30	5674.20	5674.20	461.98	1.05	441723.60	749791.88	
16408.00	90.77	0.15	10589.38	5768.20	5768.20	462.26	0.45	441817.60	749792.16	
16503.00	90.21	359.83	10588.56	5863.19	5863.19	462.24	0.68	441912.59	749792.14	
16597.00	90.49	0.27	10587.99	5957.19	5957.19	462.33	0.55	442006.59	749792.23	
16692.00	91.26	0.79	10586.54	6052.18	6052.18	463.20	0.98	442101.58	749793.10	
16786.00	90.28	1.53	10585.28	6146.15	6146.15	465.11	1.31	442195.55	749795.01	
16881.00	90.14	1.50	10584.93	6241.11	6241.11	467.62	0.15	442290.51	749797.52	
16976.00	90.07	1.55	10584.75	6336.08	6336.08	470.15	0.09	442385.48	749800.05	
17070.00	89.23	1.37	10585.33	6430.05	6430.05	472.54	0.91	442479.45	749802.44	
17165.00	89.65	0.58	10586.26	6525.03	6525.03	474.16	0.94	442574.43	749804.06	
17259.00	90.28	0.07	10586.31	6619.02	6619.02	474.69	0.86	442668.42	749804.59	
17354.00	91.40	0.14	10584.92	6714.01	6714.01	474.87	1.18	442763.41	749804.77	
17448.00	90.70	0.41	10583.20	6807.99	6807.99	475.32	0.80	442857.39	749805.22	
17543.00	89.51	359.45	10583.02	6902.99	6902.99	475.20	1.61	442952.39	749805.10	
17637.00	90.00	358.67	10583.43	6996.98	6996.98	473.66	0.98	443046.38	749803.56	
17732.00	90.49	359.29	10583.02	7091.96	7091.96	471.97	0.83	443141.36	749801.87	
17826.00	91.05	359.39	10581.76	7185.95	7185.95	470.88	0.61	443235.35	749800.78	
17921.00	91.33	359.03	10579.78	7280.92	7280.92	469.58	0.48	443330.32	749799.48	
18007.00	92.10	359.44	10577.21	7366.87	7366.87	468.43	1.01	443416.27	749798.33	Last WFT MWD Svy
18079.00	92.10	359.44	10574.57	7438.82	7438.82	467.72	0.00	443488.22	749797.62	TD@18079' MD / PTB

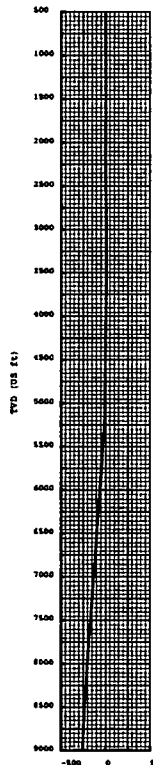
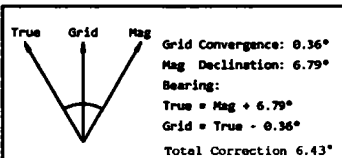


Ghost Rider 22-15 FED COM 203H
Lea Co., New Mexico
H&P 482

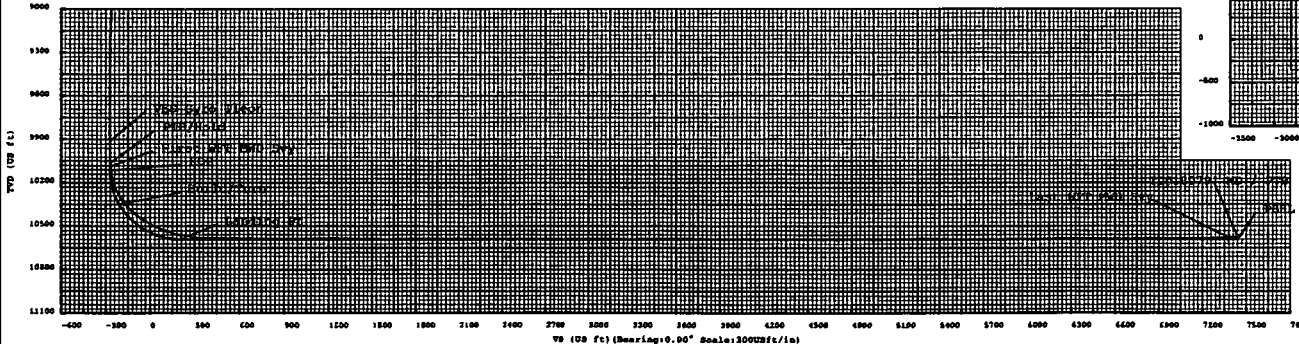
KB: 3623.00
GL: 3597.00



Plan vs Actual



TV (US ft) (Bearing: 0.00° Scale: 5000ft/in)



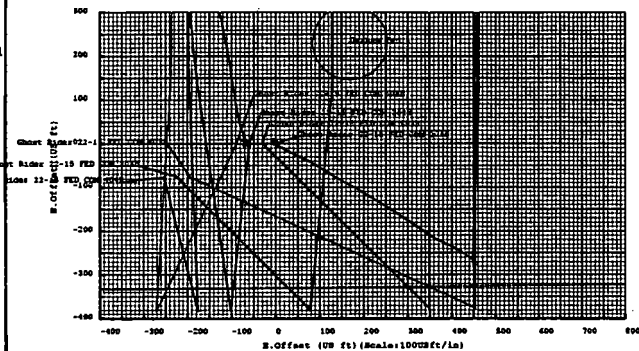
Plan Data for Ghost Rider 22-15 FED COM 203H

Field: Apache NM (Mad 83 NPEZ)
Map Unit: USFT
Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)

Site: Ghost Rider Pad 25
Unit: US Feet
TVD Reference:
Company Name: Apache Corporation
Position: Northing: 435972.38USft Easting: 749076.28USft
North Reference: Grid Grid Convergence: 0.36°
Elevation Above VRD: 3597.00USft
Comment: Lea Co., NM

Slot: Ghost Rider 22-15 FED COM 203H
Position:
Offset is from Site centre
+N/-S: 77.10USft Northing: 436049.40USft Easting: 749329.90USft
+E/-W: 253.70USft Easting: 749329.90USft Longitude: -103.661751°
Elevation Above VRD: 3597.00USft

Hall: Ghost Rider 22-15 FED COM 203H
Type: Main-Hall
File Number: 13746106
Plan Folder: P3
Plan: P3-V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
Surcon IFR 47872(nT) 6.79° 59.88° 2019-06-06
Comment: H&P 482



Plan Data for Ghost Rider 22-15 FED COM 203H

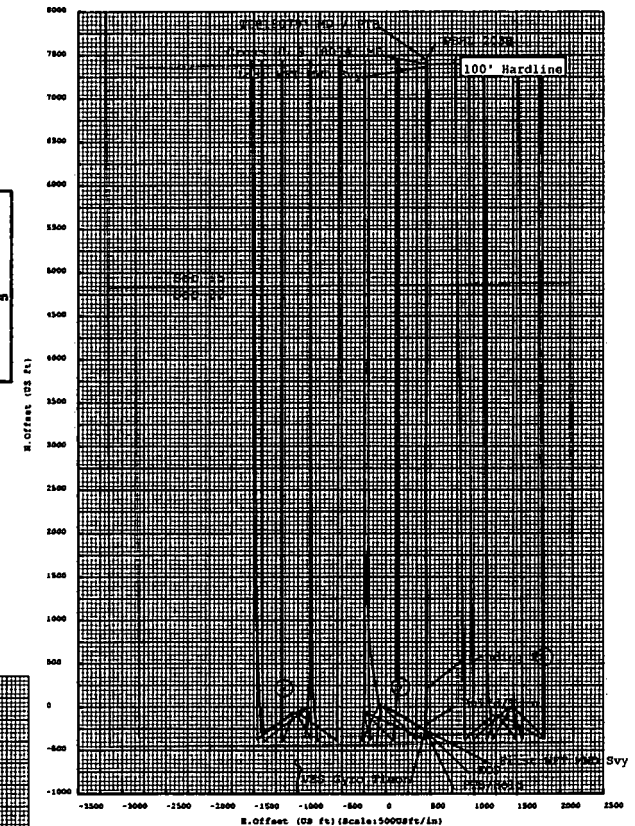
Plan Point Information:									
Dogleg Severity Unit: °/100.00ft Position offsets from Slot centre									
MD	Inc	Az	TVD	+N/-S	+E/-W	Northing	Easting	VSec	DLS Comments
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(DLSU)
9950.00	0.56	322.53	9917.14	-272.64	449.01	435776.76	749778.91	-272.64	0.31 VES Gyro Tieon
10100.00	0.56	322.53	10067.13	-271.47	448.12	435777.93	749778.02	-271.47	0.00 PTB/Hold
10150.71	0.56	322.53	10117.04	-271.08	447.82	435778.32	749777.72	-271.08	0.00 KOP
10397.18	30.00	3.06	10353.04	-207.17	450.44	435842.23	749780.34	-207.17	12.00 Build/Turn
10897.57	90.00	0.00	10592.00	206.52	457.82	436255.92	749787.72	206.52	12.00 Landing Pt
10135.95	90.00	0.00	10592.00	7444.90	458.20	443494.30	749788.10	7444.90	0.00 PBHL 203H

Plan Data for Ghost Rider 22-15 FED COM 203H

Target Set Information:						
Name: GR 22-15 FC 203H						
Position offsets from Slot centre						
Name	TVD	Elevation	+N/-S	+E/-W	Northing	Easting
(USft)	(USft)	(USft)	(USft)	(USft)	(USft)	(USft)
S Tgt 203H	10114.54	-6491.54	-276.18	458.20	435773.22	749788.10
LP 10592.00	-6969.00	194.00	458.20	436243.40	749788.10	
PBHL 203H	10592.00	-6969.00	7444.90	458.20	443494.30	749788.10

Plan Data for Ghost Rider 22-15 FED COM 203H

Formation Point Information:			
Name	TVD	Elevation	MD
(USft)	(USft)	(USft)	(USft)
3rd BSC	10963.00	-7340.00	-1.00
Rustler	1063.00	2560.00	1063.02
Salado	2323.00	1300.00	2323.09
Castile	9413.00	210.00	9413.26
Delaware	4873.00	-1250.00	4873.53
Avalon	8773.00	-5150.00	8804.64
1st BSC	9643.00	-6820.00	9675.85
1st BSS	9883.00	-6260.00	9915.86
2nd BSC	10043.00	-6420.00	10075.87
2nd BSS	10463.00	-6840.00	10538.08





Weatherford

Drilling Services
10000 West County Rd. 116
P.O. Box 61028
Midland, TX USA 79711
Tel. (432) 561-8892 Fax (432) 561-8895

Apache Corporation
303 Veterans Airpark Lane
Midland, TX, 79705

Date: June 26, 2019

HOBBS OCD

DEC 30 2019

RECEIVED

Attention: John Vacek

Re: Apache Corporation
Well: Ghost Rider 22-15 FED COM 203H
Lea County, New Mexico
30-025-45770
O 22-245-32E 431 FSL + 2151 FEL (SURF)
J 15-245-32E 2584 FSL + 1640 FEL (BH)

Enclosed, please find the original survey performed on the referenced well by Precision Energy Services, Inc. (P-5 No. 676004), a Weatherford company. Other information required by your office is as follows:

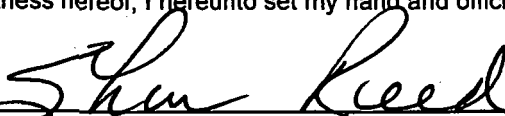
Name & Title Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Cory Snyder MWD Ops. Coordinator	203H	10,122 MD 18,007 MD	6/16/2019 6/25/2019	Measurement While Drilling

A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Cory Snyder
MWD Ops. Coordinator

On this, the 28 day of June, 2019, before me a notary public, the undersigned officer, personally appeared Cory Snyder, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof, I hereunto set my hand and official seal.


Notary Public

