

HOBBS OCD

DEC 05 2019

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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: August 27, 2019

Attention: Taylor Thelford

Re: Apache Corporation
Well: Ghost Rider 22-15 FED COM 201H
Lea County, New Mexico

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:

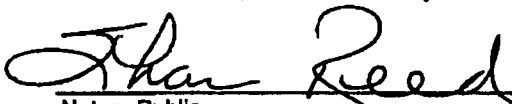
<u>Name & Title Of Surveyor</u>	<u>Well Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Cory Snyder MWD Ops. Coordinator	201H	10,016 MD 18,136 MD	8/18/2019 8/26/2019	Measurement While Drilling

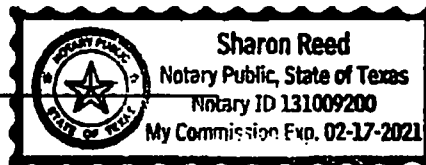
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Cory Snyder
MWD Ops. Coordinator

On this, the 27 day of August, 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



5D Survey Report



5D Survey Report

Apache Corporation

Field Name: *Apache NM (Nad 83 NMEZ)*

Site Name: *Ghost Rider Pad 1S*

Well Name: *Ghost Rider 22-15 FED COM 201H*

File number: *13841032*

Survey: *Definitive survey*

27 August 2019



5D Survey Report



Weatherford

Ghost Rider 22-15 FED COM 201H

Field Name: Apache NM (Mad 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 15	Units: US ft	North Reference: Grid	Convergence Angle: 0.36	
	Position:	Northing: 436032.90 US ft	Latitude: 32.196918551	
		Eastings: 750804.50 US ft	Longitude: -103.656162903	
	Elevation above MSL: 3590.00 US ft			
Comment: Lea Co., NM				
Slot: Ghost Rider 22- 15 FED COM 201H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 436032.90 US ft	Latitude: 32.196918551	
	+E/-W: 0.00 US ft	Eastings: 750804.50 US ft	Longitude: -103.656162903	
	Slot TVD Reference: Ground Elevation			
Elevation above MSL: 3590.00 US ft				
Comment:				
Well: Ghost Rider 22- 15 FED COM 201H	Type: Main well	UWI:		
	File Number: 13841032	Comment: H&P 605		
	Closure Distance: 7471.94 US ft	Closure Azimuth: 2.29°		
	Vertical Section: Position of Origin (Relative to Slot centre)			
+N/-S: -0.00 US ft		+E/-W: 0.00 US ft	Az: 2.34°	

Drill floor: Survey Name: Definitive Survey

Rig Height (Drill Floor): 26.00 US ft Elevation above MSL: 3616.00 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: IFR

Date: 15/Aug/2019

Field Strength:
47854.0 nT

Declination: 6.76°

Dip: 59.87°

Tie Point:

MD: 0.00 US ft

Inclination:
0.00°

Azimuth: 0.00°

TVD: 0.00 US
ftNorth Offset: -0.00
US ftEast Offset: 0.00
US ft

Survey Tool Ranges:

Name	Start MD (US ft)	End MD (US ft)	Source Survey
GYRO/GC WTR+DPIPE/GYD	0.00	9924.00	GyroData Gyros

SD Survey Report

Survey Tool Ranges:			
Name	Start MD(usft)	End MD(usft)	Source Survey
MWD + IFR + MS	9924.00	10863.00	WFT MWD 04
MWD + IFR + Sag Corr + MS	10863.00	17571.00	WFT MWD 05
MWD + IFR + Sag Corr + MS	17571.00	18207.00	WFT MWD 06

Casing Points: (Relative to Slot centre)(TVD relative to Drill Floor)								
Flow	TVD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)
13 3/8 in	1094.00	1.45	208.72	1093.88	-13.00	-1.73	436019.90	750802.77
9 5/8 in	4820.00	0.25	30.79	4819.71	-17.64	11.16	436015.26	750815.66

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
9924.00	1.54	258.81	9887.77	-335.52	-349.14	326.65	0.65	435683.76	751131.15	Tleon GyroData Gyro First WFT MWD Svy
10016.00	0.71	314.34	9979.76	-335.42	-348.99	325.03	1.39	435683.91	751129.53	
10110.00	1.12	340.09	10073.74	-334.18	-347.71	324.30	0.61	435685.19	751128.80	
10157.00	4.99	8.99	10120.67	-331.73	-345.26	324.47	8.61	435687.64	751128.97	
10204.00	9.96	12.74	10167.26	-325.70	-339.28	325.68	10.62	435693.62	751130.18	
10251.00	15.04	8.56	10213.13	-315.63	-329.27	327.49	10.97	435703.63	751131.99	
10298.00	20.43	5.08	10257.88	-301.36	-315.06	329.12	11.68	435717.84	751133.62	
10345.00	26.85	2.19	10300.91	-282.53	-296.27	330.26	13.88	435736.63	751134.76	
10392.00	33.12	359.67	10341.60	-259.07	-272.79	330.59	13.60	435760.11	751135.09	
10439.00	39.94	357.63	10379.35	-231.17	-244.85	329.89	14.74	435788.05	751134.39	
10486.00	45.63	357.86	10413.83	-199.36	-212.96	328.64	12.11	435819.94	751133.14	
10533.00	51.05	356.65	10445.06	-164.40	-177.90	326.94	11.69	435855.00	751131.44	
10581.00	56.42	356.16	10473.44	-125.92	-139.29	324.51	11.22	435893.61	751129.01	
10628.00	63.00	357.14	10497.14	-85.56	-98.80	322.15	14.12	435934.10	751126.65	
10675.00	66.62	357.92	10517.14	-43.19	-56.31	320.32	7.85	435976.59	751124.82	
10722.00	70.46	358.45	10534.33	0.43	-12.60	318.94	8.24	436020.30	751123.44	
10769.00	74.56	358.75	10548.45	45.15	32.20	317.85	8.74	436065.10	751122.35	
10816.00	78.45	359.28	10559.42	90.77	77.89	317.06	8.35	436110.79	751121.56	
10863.00	82.21	0.15	10567.31	137.04	124.21	316.83	8.21	436157.11	751121.33	
10887.00	83.90	0.46	10570.21	160.85	148.03	316.96	7.16	436180.93	751121.46	
10982.00	87.41	0.54	10577.41	255.51	242.74	317.79	3.70	436275.64	751122.29	
11076.00	89.37	0.40	10580.05	349.42	336.70	318.56	2.09	436369.60	751123.06	
11170.00	90.77	0.25	10579.94	443.36	430.69	319.09	1.50	436463.59	751123.59	
11264.00	91.89	0.29	10577.75	537.27	524.67	319.53	1.19	436557.57	751124.03	
11358.00	89.23	0.88	10576.83	631.22	618.65	320.49	2.90	436651.55	751124.99	
11452.00	88.53	0.92	10578.67	725.17	712.62	321.97	0.75	436745.52	751126.47	
11546.00	87.76	0.82	10581.71	819.09	806.56	323.40	0.83	436839.46	751127.90	
11641.00	88.53	359.97	10584.79	913.98	901.50	324.05	1.21	436934.40	751128.55	
11735.00	88.81	359.87	10586.97	1007.87	995.48	323.92	0.32	437028.38	751128.42	
11829.00	89.51	359.82	10588.35	1101.77	1089.47	323.67	0.75	437122.37	751128.17	
11923.00	88.46	359.53	10590.02	1195.65	1183.45	323.13	1.16	437216.35	751127.63	
12017.00	88.32	359.37	10592.66	1289.50	1277.41	322.23	0.23	437310.31	751126.73	
12111.00	88.53	359.33	10595.24	1383.33	1371.36	321.17	0.23	437404.26	751125.67	
12205.00	89.51	359.58	10596.85	1477.20	1465.35	320.27	1.08	437498.25	751124.77	
12299.00	88.95	0.01	10598.11	1571.10	1559.34	319.93	0.75	437592.24	751124.43	
12393.00	89.16	0.00	10599.66	1665.01	1653.32	319.94	0.22	437686.22	751124.44	
12487.00	87.41	0.31	10602.47	1758.89	1747.28	320.20	1.89	437780.18	751124.70	
12582.00	87.62	0.34	10606.59	1853.75	1842.19	320.74	0.22	437875.09	751125.24	
12675.00	88.53	0.40	10609.72	1946.64	1935.13	321.34	0.98	437968.03	751125.84	
12770.00	88.04	359.46	10612.56	2041.51	2030.09	321.22	1.12	438062.99	751125.72	
12864.00	89.30	358.64	10614.74	2135.33	2124.05	319.66	1.60	438156.95	751124.16	
12958.00	90.56	359.00	10614.86	2229.15	2218.02	317.73	1.39	438250.92	751122.23	
13052.00	89.65	359.24	10614.68	2323.00	2312.01	316.28	1.00	438344.91	751120.78	

5D Survey Report

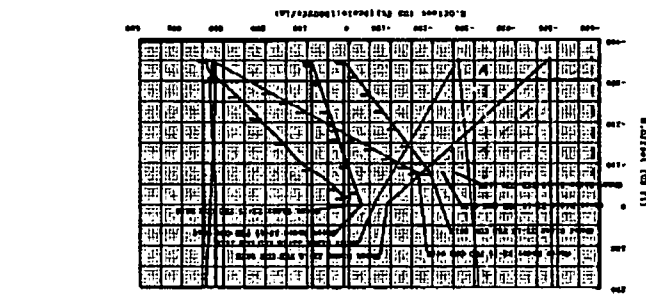
Survey Points: (Relative to Slot centre) (TVD relative to Drill Floor)										
TD (US ft)	Inc (°)	AP (°)	TVD (US ft)	VS (US ft)	H. Offset (US ft)	E. Offset (US ft)	OLG (%/100US ft)	Northing (US ft)	Easting (US ft)	Comment
13146.00	90.35	359.52	10614.68	2416.87	2406.01	315.26	0.80	438438.91	751119.76	
13241.00	90.21	0.55	10614.22	2511.79	2501.00	315.32	1.09	438533.90	751119.82	
13335.00	89.02	0.87	10614.85	2605.75	2594.99	316.49	1.31	438627.89	751120.99	
13430.00	89.37	1.84	10616.19	2700.73	2689.95	318.73	1.09	438722.85	751123.23	
13524.00	90.28	0.01	10616.47	2794.69	2783.94	320.25	2.17	438816.84	751124.75	
13617.00	90.42	359.54	10615.91	2887.60	2876.93	319.89	0.53	438909.83	751124.39	
13711.00	88.81	359.48	10616.54	2981.48	2970.93	319.08	1.71	439003.83	751123.58	
13806.00	90.98	0.15	10616.71	3076.38	3065.92	318.78	2.39	439098.82	751123.28	
13900.00	89.23	359.01	10616.54	3170.26	3159.91	318.09	2.22	439192.81	751122.59	
13993.00	88.60	359.48	10618.30	3263.11	3252.89	316.86	0.85	439285.79	751121.36	
14087.00	90.28	359.71	10619.22	3356.99	3346.87	316.20	1.80	439379.77	751120.70	
14181.00	91.19	359.83	10618.01	3450.89	3440.87	315.82	0.98	439473.77	751120.32	
14275.00	90.28	359.11	10616.81	3544.76	3534.85	314.95	1.23	439567.75	751119.45	
14369.00	91.05	358.56	10615.72	3638.58	3628.83	313.04	1.01	439661.73	751117.54	
14464.00	90.35	0.00	10614.56	3733.43	3723.81	311.85	1.69	439756.71	751116.35	
14558.00	90.14	0.29	10614.15	3827.36	3817.81	312.08	0.38	439850.71	751116.58	
14652.00	90.07	0.11	10613.98	3921.30	3911.81	312.41	0.21	439944.71	751116.91	
14746.00	90.70	359.91	10613.35	4015.22	4005.80	312.43	0.70	440038.70	751116.93	
14841.00	90.14	359.66	10612.65	4110.12	4100.80	312.07	0.65	440133.70	751116.57	
14934.00	90.98	0.36	10611.74	4203.04	4193.79	312.09	1.18	440226.69	751116.59	
15029.00	89.37	1.03	10611.45	4298.00	4288.78	313.24	1.84	440321.68	751117.74	
15123.00	88.88	359.61	10612.89	4391.92	4382.77	313.77	1.60	440415.67	751118.27	
15217.00	89.86	359.03	10613.92	4485.79	4476.75	312.65	1.21	440509.65	751117.15	
15311.00	90.14	359.38	10613.92	4579.64	4570.74	311.35	0.48	440603.64	751115.85	
15405.00	89.51	358.77	10614.21	4673.49	4664.73	309.83	0.93	440697.63	751114.33	
15499.00	91.54	358.56	10613.35	4767.29	4758.70	307.64	2.17	440791.60	751112.14	
15594.00	91.19	358.77	10611.09	4862.07	4853.64	305.43	0.43	440886.54	751109.93	
15688.00	89.37	359.46	10610.63	4955.91	4947.63	303.97	2.07	440980.53	751108.47	
15782.00	90.00	359.68	10611.14	5049.80	5041.62	303.27	0.71	441074.52	751107.77	
15877.00	90.49	0.07	10610.74	5144.71	5136.62	303.06	0.66	441169.52	751107.56	
15971.00	91.33	0.43	10609.24	5238.64	5230.61	303.47	0.97	441263.51	751107.97	
16065.00	92.59	0.42	10606.03	5332.53	5324.55	304.17	1.34	441357.45	751108.67	
16160.00	91.82	0.57	10602.37	5427.41	5419.47	304.99	0.83	441452.37	751109.49	
16254.00	90.49	0.22	10600.48	5521.33	5513.45	305.64	1.46	441546.35	751110.14	
16348.00	89.51	359.29	10600.48	5615.23	5607.45	305.23	1.44	441640.35	751109.73	
16442.00	89.79	359.49	10601.05	5709.11	5701.44	304.23	0.37	441734.34	751108.73	
16536.00	90.21	359.43	10601.05	5802.99	5795.43	303.35	0.45	441828.33	751107.85	
16631.00	90.49	359.65	10600.47	5897.87	5890.43	302.58	0.37	441923.33	751107.08	
16725.00	91.26	359.78	10599.04	5991.76	5984.42	302.12	0.83	442017.32	751106.62	
16819.00	92.31	0.20	10596.11	6085.63	6078.37	302.10	1.20	442111.27	751106.60	
16913.00	92.94	359.79	10591.81	6179.46	6172.27	302.09	0.80	442205.17	751106.59	
17007.00	89.44	358.68	10589.85	6273.28	6266.22	300.84	3.91	442299.12	751105.34	
17101.00	90.14	359.26	10590.20	6367.12	6360.21	299.15	0.97	442393.11	751103.65	
17195.00	91.12	358.97	10589.16	6460.96	6454.19	297.70	1.09	442487.09	751102.20	
17289.00	92.03	359.05	10586.58	6554.77	6548.14	296.07	0.97	442581.04	751100.57	
17383.00	91.33	359.43	10583.82	6648.59	6642.09	294.83	0.85	442674.99	751099.33	
17477.00	91.33	359.54	10581.64	6742.45	6736.06	293.98	0.12	442768.96	751098.48	
17571.00	90.70	0.03	10579.98	6836.34	6830.04	293.63	0.85	442862.94	751098.13	
17666.00	90.69	0.53	10578.83	6931.27	6925.04	294.09	0.53	442957.94	751098.59	
17760.00	91.60	1.21	10576.95	7025.22	7019.00	295.52	1.21	443051.90	751100.02	
17854.00	89.57	0.43	10575.99	7119.17	7112.98	296.86	2.31	443145.88	751101.36	
17948.00	91.11	0.98	10575.43	7213.13	7206.97	298.02	1.74	443239.87	751102.52	
18042.00	90.55	0.44	10574.07	7307.08	7300.96	299.19	0.83	443333.86	751103.69	
18136.00	90.62	359.81	10573.11	7401.01	7394.95	299.39	0.67	443427.85	751103.89	
18207.00	90.62	359.81	10572.34	7471.93	7465.94	299.16	0.00	443498.84	751103.66	Last WFT MWD Svy TD@18207' MD / PTB

Ghost Rider 22-15 FED COM 201H
Lea Co., New Mexico
H&P 605

00'065E : 12
00'919E : 8M

[illegible]

Plan Data for Query Number 22-15-PC 201H	
Target Site Information:	
Name	Location Offsets from State Centre
US(1)	US(1)
US(2)	US(2)
US(3)	US(3)
US(4)	US(4)
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