

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 6, 2019

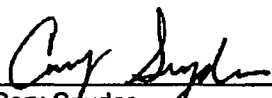
Attention: Taylor Thelford

Re: Apache Corporation
Well: Ghost Rider 22-15 FED COM 202H
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:

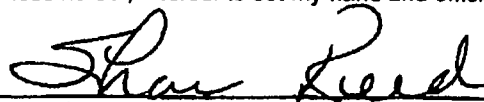
<u>Name & Title Of Surveyor</u>	<u>Well Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Cory Snyder	202H	10,420 MD	7/28/2019	Measurement
MWD Ops. Coordinator		18,524 MD	8/5/2019	While Drilling

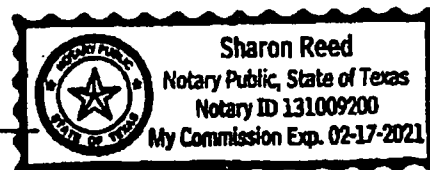
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Cory Snyder
MWD Ops. Coordinator

On this, the 6 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

Apache Corporation

Field Name: *Apache NM (Nad 83 NMEZ)*
Site Name: *Ghost Rider Pad 1S*
Well Name: *Ghost Rider 22-15 FED COM 202H*
File number: *13841018*
Survey: *Definitive survey*

6 August 2019



Weatherford®

5D Survey Report



Weatherford

Ghost Rider 22-15 FED COM 202H

Field Name: Apache NM (Mad S3 H4E2)	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 22-15	Units: US ft	North Reference: Grid	Convergence Angle: 0.36	
	Position:	Northing: 436032.90 US ft	Latitude: 32.196918551	
		Easting: 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 202H	Position (Relative to Site Centre)			
	+N/-S: -0.60 US ft	Northing: 436032.30 US ft	Latitude: 32.196917940	
	+E/-W: -60.00 US ft	Easting: 750744.50 US ft	Longitude: -103.656356873	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3590.00 US ft			
Well: Ghost Rider 22-15 FED COM 202H	Type: Main well	UWI:		
	File Number: 13841018	Comment: H&P 605		
	Closure Distance: 7467.28 US ft	Closure Azimuth: 357.72°		
	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: 3616.00 US ft Inclination: 0.00° Azimuth: 0.00°

Survey Name: Definitive Survey

Date: 28/Jun/2018 Survey Tool: See Survey Comment: Company:
 Tool Ranges below.

Magnetic Model:

Model Name: MagVar Date: 19/Jul/2019 Field Strength: Declination: 6.77° Dip: 59.88°
 IFR 47862.0nT

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

Survey Tool Ranges:

Name	Start MD (US ft)	End MD (US ft)	Source Survey
GYRO: GC: WIR: DPIPE: GYD	0.00	10351.33	GyroData Gyro

SD Survey Report

Survey Tool Ranges:			
Name	Start MD(US ft)	End MD(US ft)	Source Survey
MWD +/- IFR +/- MS	10351.33	11234.00	WFT MWD 04
MWD +/- IFR +/- Seg Corr +/- MS	11234.00	15400.00	WFT MWD 06
MWD +/- IFR +/- Seg Corr +/- MS	15400.00	18595.00	WFT MWD 07

Casing Points: (Relative to Slot centre)(TVD relative to Drill Floor)

Name	MD (US ft)	Incl (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)
13 3/8 in	1090.00	0.89	190.45	1089.94	-4.44	6.91	436027.86	750751.41
9 5/8 in	6950.00	8.48	207.25	6941.12	-146.67	-70.17	435885.63	750674.33

Wellbath created using minimum curvature.

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Incl (°)	Az (°)	TVD (US ft)	VS (US ft)	N. Offset (US ft)	E. Offset (US ft)	OLS (%/100US ft)	Northing (US ft)	Easting (US ft)	Comment
10351.33	0.61	214.19	10325.30	-352.57	-352.57	-186.77	0.21	435679.73	750557.73	Tlean GyroData Gyro
10420.00	0.65	223.32	10393.96	-353.15	-353.15	-187.25	0.16	435679.15	750557.25	First WFT MWD Svy
10483.00	0.82	235.92	10456.96	-353.66	-353.66	-187.87	0.37	435678.64	750556.63	
10577.00	8.68	340.96	10550.60	-347.32	-347.32	-190.74	9.50	435684.98	750553.76	
10624.00	15.07	344.53	10596.57	-338.07	-338.07	-193.53	13.68	435694.23	750550.97	
10670.00	20.88	347.42	10640.31	-324.30	-324.30	-196.92	12.77	435708.00	750547.58	
10717.00	27.27	347.88	10683.20	-305.58	-305.58	-201.01	13.60	435726.72	750543.49	
10764.00	33.14	349.31	10723.80	-282.40	-282.40	-205.65	12.58	435749.90	750538.85	
10811.00	36.77	352.45	10762.32	-255.82	-255.82	-209.89	8.62	435776.48	750534.61	
10858.00	39.49	354.10	10799.29	-227.01	-227.01	-213.27	6.18	435805.29	750531.23	
10905.00	46.16	354.13	10833.74	-195.24	-195.24	-216.54	14.19	435837.06	750527.96	
10952.00	52.91	354.71	10864.22	-159.68	-159.68	-220.01	14.39	435872.62	750524.49	
10999.00	60.92	355.99	10889.86	-120.46	-120.46	-223.18	17.19	435911.84	750521.32	
11046.00	68.66	357.03	10909.87	-78.05	-78.05	-225.75	16.59	435954.25	750518.75	
11093.00	72.67	358.27	10925.42	-33.74	-33.74	-227.57	8.89	435998.56	750516.93	
11140.00	75.65	358.38	10938.25	11.45	11.45	-228.89	6.34	436043.75	750515.61	
11187.00	79.45	357.66	10948.38	57.31	57.31	-230.48	8.22	436089.61	750514.02	
11234.00	83.06	357.63	10955.53	103.71	103.71	-232.38	7.68	436136.01	750512.12	
11258.00	84.10	357.67	10958.21	127.54	127.54	-233.36	4.34	436159.84	750511.14	
11352.00	85.16	359.24	10967.01	221.09	221.09	-235.88	2.01	436253.39	750508.62	
11447.00	88.94	359.79	10971.90	315.94	315.94	-236.69	4.02	436348.24	750507.81	
11541.00	90.34	359.95	10972.49	409.94	409.94	-236.90	1.50	436442.24	750507.60	
11635.00	91.67	0.17	10970.84	503.92	503.92	-236.80	1.43	436536.22	750507.70	
11729.00	89.22	359.46	10970.11	597.91	597.91	-237.10	2.71	436630.21	750507.40	
11823.00	89.92	359.35	10970.81	691.90	691.90	-238.08	0.75	436724.20	750506.42	
11917.00	90.27	359.16	10970.66	785.90	785.90	-239.30	0.42	436818.20	750505.20	
12011.00	90.34	358.81	10970.16	879.88	879.88	-240.97	0.38	436912.18	750503.53	
12105.00	92.02	359.58	10968.22	973.85	973.85	-242.29	1.97	437006.15	750502.21	
12199.00	89.36	359.15	10967.09	1067.82	1067.82	-243.33	2.87	437100.12	750501.17	
12293.00	89.78	358.22	10967.80	1161.80	1161.80	-245.49	1.09	437194.10	750499.01	
12387.00	89.71	356.72	10968.21	1255.70	1255.70	-249.64	1.60	437288.00	750494.86	
12482.00	89.36	355.34	10968.98	1350.47	1350.47	-256.21	1.50	437382.77	750488.29	
12576.00	90.13	355.75	10969.40	1444.18	1444.18	-263.51	0.93	437476.48	750480.99	
12670.00	91.74	359.77	10967.87	1538.07	1538.07	-267.19	4.61	437570.37	750477.31	
12764.00	92.79	0.08	10964.15	1632.00	1632.00	-267.31	1.16	437664.30	750477.19	
12859.00	91.46	0.38	10960.63	1726.93	1726.93	-266.93	1.44	437759.23	750477.57	
12953.00	90.83	0.21	10958.75	1820.91	1820.91	-266.45	0.69	437853.21	750478.05	
13047.00	90.48	0.48	10957.68	1914.90	1914.90	-265.88	0.47	437947.20	750478.62	
13141.00	90.90	0.61	10956.55	2008.89	2008.89	-264.99	0.47	438041.19	750479.51	
13235.00	90.34	0.61	10955.53	2102.88	2102.88	-263.99	0.60	438135.18	750480.51	
13329.00	90.27	0.65	10955.03	2196.87	2196.87	-262.95	0.09	438229.17	750481.55	
13424.00	91.04	1.19	10953.94	2291.85	2291.85	-261.43	0.99	438324.15	750483.07	
13518.00	91.18	1.42	10952.12	2385.81	2385.81	-259.29	0.29	438418.11	750485.21	

SD Survey Report

Survey Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
ID (US ft)	Inc (°)	At (°)	TVD (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	DLS (%/100US ft)	Wobbling (US ft)	Logging (US ft)	Comments
13612.00	90.06	1.59	10951.10	2479.77	2479.77	-256.82	1.21	438512.07	750487.68	
13706.00	89.99	0.18	10951.06	2573.76	2573.76	-255.37	1.50	438606.06	750489.13	
13800.00	91.46	0.09	10949.87	2667.75	2667.75	-255.14	1.57	438700.05	750489.36	
13894.00	89.43	359.67	10949.14	2761.74	2761.74	-255.34	2.21	438794.04	750489.16	
13988.00	89.50	0.06	10950.02	2855.74	2855.74	-255.56	0.42	438888.04	750488.94	
14082.00	89.71	0.21	10950.67	2949.73	2949.73	-255.34	0.27	438982.03	750489.16	
14176.00	92.02	359.47	10949.25	3043.72	3043.72	-255.60	2.58	439076.02	750488.90	
14270.00	91.88	359.21	10946.05	3137.65	3137.65	-256.69	0.31	439169.95	750487.81	
14364.00	91.25	359.33	10943.48	3231.61	3231.61	-257.88	0.68	439263.91	750486.62	
14458.00	91.95	359.93	10940.86	3325.57	3325.57	-258.49	0.98	439357.87	750486.01	
14553.00	92.86	0.35	10936.87	3420.49	3420.49	-258.26	1.05	439452.79	750486.24	
14647.00	92.44	0.14	10932.53	3514.38	3514.38	-257.86	0.50	439546.68	750486.64	
14741.00	91.95	0.48	10928.93	3608.31	3608.31	-257.35	0.63	439640.61	750487.15	
14835.00	91.32	0.80	10926.25	3702.27	3702.27	-256.30	0.75	439734.57	750488.20	
14929.00	90.76	0.25	10924.54	3796.25	3796.25	-255.44	0.83	439828.55	750489.06	
15024.00	89.71	358.62	10924.15	3891.24	3891.24	-256.37	2.04	439923.54	750488.13	
15118.00	90.20	357.97	10924.22	3985.20	3985.20	-259.17	0.87	440017.50	750485.33	
15213.00	89.71	358.54	10924.30	4080.15	4080.15	-262.06	0.79	440112.45	750482.44	
15307.00	88.45	359.19	10925.81	4174.12	4174.12	-263.93	1.51	440206.42	750480.57	
15400.00	89.01	359.33	10927.87	4267.09	4267.09	-265.13	0.62	440299.39	750479.37	
15495.00	89.57	0.15	10929.05	4362.08	4362.08	-265.56	1.05	440394.38	750478.94	
15589.00	89.99	0.15	10929.41	4456.08	4456.08	-265.31	0.45	440488.38	750479.19	
15683.00	90.41	359.98	10929.08	4550.08	4550.08	-265.20	0.48	440582.38	750479.30	
15777.00	90.34	359.77	10928.46	4644.07	4644.07	-265.41	0.24	440676.37	750479.09	
15871.00	91.32	359.93	10927.10	4738.06	4738.06	-265.66	1.06	440770.36	750478.84	
15965.00	90.48	358.88	10925.63	4832.04	4832.04	-266.63	1.43	440864.34	750477.87	
16059.00	90.90	358.44	10924.49	4926.01	4926.01	-268.83	0.65	440958.31	750475.67	
16153.00	90.48	359.41	10923.36	5019.99	5019.99	-270.59	1.12	441052.29	750473.91	
16247.00	88.52	359.50	10924.18	5113.97	5113.97	-271.49	2.09	441146.27	750473.01	
16342.00	89.08	359.49	10926.17	5208.95	5208.95	-272.32	0.59	441241.25	750472.18	
16436.00	89.78	359.42	10927.11	5302.94	5302.94	-273.22	0.75	441335.24	750471.28	
16530.00	90.69	359.74	10926.72	5396.94	5396.94	-273.91	1.03	441429.24	750470.59	
16624.00	88.73	359.26	10927.20	5490.93	5490.93	-274.73	2.15	441523.23	750469.77	
16718.00	89.78	359.26	10928.42	5584.91	5584.91	-275.94	1.12	441617.21	750468.56	
16812.00	90.41	359.33	10928.26	5678.90	5678.90	-277.10	0.67	441711.20	750467.40	
16906.00	88.45	359.30	10929.20	5772.88	5772.88	-278.22	2.09	441805.18	750466.28	
17000.00	89.57	359.26	10930.82	5866.86	5866.86	-279.40	1.19	441899.16	750465.10	
17095.00	90.55	359.40	10930.72	5961.85	5961.85	-280.51	1.04	441994.15	750463.99	
17189.00	90.76	358.91	10929.65	6055.84	6055.84	-281.90	0.57	442088.14	750462.60	
17283.00	89.36	357.80	10929.55	6149.79	6149.79	-284.60	1.90	442182.09	750459.90	
17377.00	90.34	358.13	10929.80	6243.73	6243.73	-287.94	1.10	442276.03	750456.56	
17471.00	90.20	358.30	10929.35	6337.69	6337.69	-290.86	0.23	442369.99	750453.64	
17566.00	89.92	358.18	10929.25	6432.64	6432.64	-293.78	0.32	442464.94	750450.72	
17660.00	88.66	358.32	10930.42	6526.59	6526.59	-296.65	1.35	442558.89	750447.85	
17755.00	88.66	358.44	10932.64	6621.53	6621.53	-299.34	0.13	442653.83	750445.16	
17849.00	89.22	358.50	10934.38	6715.48	6715.48	-301.85	0.60	442747.78	750442.65	
17943.00	90.20	359.94	10934.85	6809.46	6809.46	-303.13	1.85	442841.76	750441.37	
18038.00	90.90	0.43	10933.94	6904.46	6904.46	-302.82	0.90	442936.76	750441.68	
18132.00	91.32	0.66	10932.12	6998.43	6998.43	-301.93	0.51	443030.73	750442.57	
18226.00	88.80	0.77	10932.02	7092.42	7092.42	-300.75	2.68	443124.72	750443.75	
18320.00	89.08	0.68	10933.76	7186.40	7186.40	-299.56	0.31	443218.70	750444.94	
18414.00	89.71	0.52	10934.75	7280.38	7280.38	-298.58	0.69	443312.68	750445.92	
18508.00	90.27	0.63	10934.77	7374.38	7374.38	-297.64	0.61	443406.68	750446.86	
18524.00	90.34	0.42	10934.69	7390.38	7390.38	-297.49	1.38	443422.68	750447.01	
18595.00	90.34	0.42	10934.26	7461.37	7461.37	-296.97	0.00	443493.67	750447.53	Last WFT MWD Svy TD@18595' MD / PTB

