

HOBBS OCD
DEC 16 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 Thetford

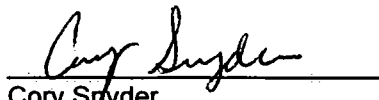
Re: Apache Corporation
Well: Ghost Rider 22-15 FED COM 201H
Lea County, New Mexico
30-025-45645

P-22-245-32E 400' FSL + 676' FEL (Surface)
I-15-245-32E 2583' FSL + 334' 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	201H	10,016 MD	8/18/2019	Measurement
MWD Ops. Coordinator		18,136 MD	8/26/2019	While Drilling

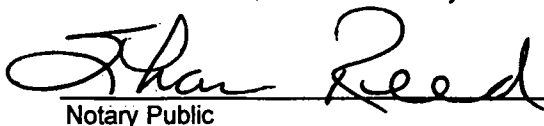
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

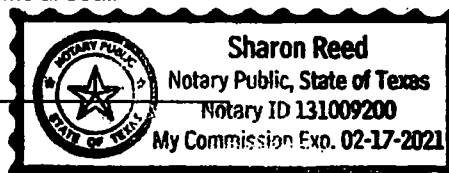


Cory Snyder
MWD Ops. Coordinator

On this, the 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**

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

30-025-45645
P-22-245-32E 400' FSL + 676' FEL (SURFACE)
I-15-245-32E 2583' FSL + 334' FEL (BH)

**Weatherford®**



Ghost Rider 22-15 FED COM 201H

Field Name:	Map Units: US ft			Company Name: Apache Corporation		
Apache NM (Nad 83 NMEZ)	Vertical Reference Datum (VRD): Mean Sea Level					
	Projected Coordinate System: NAD83 / New Mexico East (ftUS)					
	Comment:					
Site:	Units: US ft	North Reference: Grid	Convergence Angle: 0.36			
Ghost Rider Pad 1S	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:	Position (Relative to Site Centre)					
Ghost Rider 22-15 FED COM 201H	+N/-S: 0.00 US ft	Northing: 436032.90 US ft	Latitude: 32.196918551			
	+E/-W: 0.00 US ft	Easting: 750804.50 US ft	Longitude: -103.656162903			
	Slot TVD Reference: Ground Elevation					
	Elevation above MSL: 3590.00 US ft					
Comment:						
Well:	Type: Main well		UWI:			
Ghost Rider 22-15 FED COM 201H	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 **Comment:** **Company:**
 Tool Ranges below.

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 ft **North Offset:** -0.00 US ft **East Offset:** 0.00 US ft

Survey Tool Ranges:

Name	Start MD(usft)	End MD(usft)	Source Survey
GYRO_GC_WIR+DPIPE_GYD	0.00	9924.00	GyroData Gyros

5D 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)

Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	H.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)	H.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
10016.00	0.71	314.34	9979.76	-335.42	-348.99	325.03	1.39	435683.91	751129.53	First WFT MWD Svy
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)										
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
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

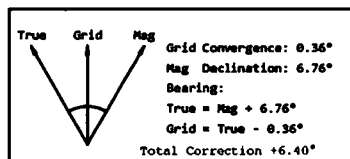
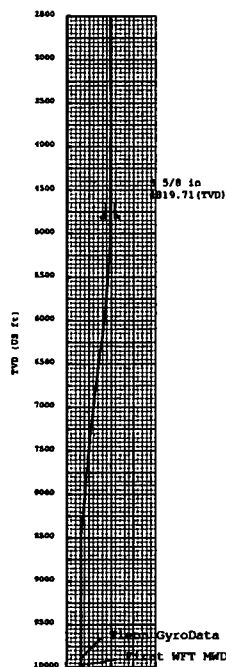


Ghost Rider 22-15 FED COM 201H
Lea Co., New Mexico
H&P 605

Plan vs Actual



KB: 3616.00
GL: 3590.00



Grid Convergence: 0.36°
Mag Declination: 6.76°
Bearing:
True = Mag + 6.76°
Grid = True - 0.36°
Total Correction +6.40°

Plan Data for Ghost Rider 22-15 FED COM 201H

Target Set Information:
Name: GR 22-15 FC 201H
Position offsets from Slot centre
Name TVD Elevation +N/-S +E/-W Northing Easting
(USft) (USft) (USft) (USft) (USft) (USft)
S Tgt 201H 10092.34 -6476.34 -346.57 347.73 435686.33 751152.29
T1 10612.68 -6996.68 3189.29 327.51 439222.19 751132.01
PBHL 201H 10567.76 -6951.76 7472.90 303.01 443505.80 751107.51

Plan Data for Ghost Rider 22-15 FED COM 201H
Field: Apache NM (Mad 83 NWEZ)
Map Unit: USFt Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (ftUS)
Site: Ghost Rider Pad 15
Unit: USFet TVD Reference:
Company Name: Apache Corporation
Position: Northing: 436032.90USft Latitude: 32.196919°
Easting: 750804.50USft Longitude: -103.656163°
North Reference: Grid Grid Convergence: 0.36°
Elevation Above VRD: 3590.00USft
Comment: Lea Co., NM
Slot: Ghost Rider 22-15 FED COM 201H
Position:
Offset in from Site centre
+N/-S: 0.00USft Northing: 436032.90USft Latitude: 32.196919°
+E/-W: 0.00USft Easting: 750804.50USft Longitude: -103.656163°
Elevation Above VRD: 3590.00USft
Well: Ghost Rider 22-15 FED COM 201H
Type: Main-Well
File Number: 13841032
Plan Folder: P2 Plan: P2:V1
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 2.34°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
IFR 47854(nT) 6.76° 59.87° 2019-08-15
Comment: H&P 605

Plan Data for Ghost Rider 22-15 FED COM 201H

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)
9924.00 1.54 258.81 9887.77 -349.14 326.65 435683.76 751131.15 -335.52 0.65 Tieon GyroData Gyro
10115.00 1.54 258.81 10078.70 -350.14 321.62 435682.76 751126.12 -336.72 0.00 PTB/Hold
10125.50 1.54 258.81 10089.20 -350.19 321.34 435682.71 751125.84 -336.78 0.00 KOP
10072.11 89.20 3.58 10569.73 120.45 338.44 436153.35 751142.94 134.16 12.00 Landing Pt/Turn
11067.51 89.20 359.67 10572.46 315.71 345.98 436348.61 751148.48 329.50 2.00 Hold
13941.42 89.20 359.67 10612.68 3189.29 327.51 439222.19 751132.01 3200.00 0.00 TI/Build
14012.13 90.61 359.67 10612.80 3260.00 327.11 439292.90 751131.61 3270.64 2.00 Hold
18125.34 90.61 359.67 10567.76 7472.90 303.01 443505.80 751107.51 7479.04 0.00 PBHL 201H

Plan Data for Ghost Rider 22-15 FED COM 201H

Formation Point Information:
Name TVD Elevation MD
(USft) (USft) (USft)
3rd BSC 10976.00 -7360.00 -1.00
Rustler 1076.00 2540.00 1076.11
Salado 2296.00 1320.00 2296.21
Castile 3386.00 230.00 3386.24
Delaware 4886.00 -1270.00 4886.29
Avalon 8736.00 -5120.00 8772.07
1st BSC 9656.00 -6040.00 9692.14
1st BSS 9896.00 -6280.00 9932.23
2nd BSC 10056.00 -6440.00 10092.29
2nd BSS 10476.00 -6860.00 10574.34

