

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 6, 2019

Attention: Taylor Thetford

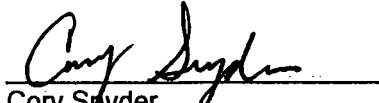
Re: Apache Corporation
Well: Ghost Rider 22-15 FED COM 202H
Lea County, New Mexico

30-025-45769
P-22-245-32E 400' FSL + 736' FEL (Surface)
I-15-245-32E 2584' FSL + 990' 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:

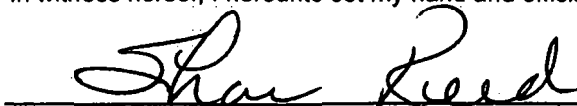
Name & Title Of Surveyor	Well Number	Surveyed Depths	Dates Performed	Type of Survey
Cory Snyder MWD Ops. Coordinator	202H	10,420 MD 18,524 MD	7/28/2019 8/5/2019	Measurement While Drilling

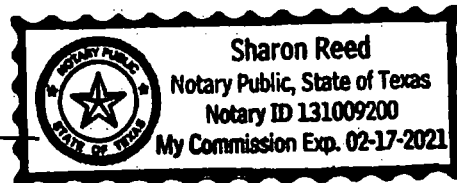
A notarized plan vs. actual is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.


Cory Snyder
MWD Ops. Coordinator

On this, the 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

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

30-025-45769
P-22-245-32E 400' FSL + 736' FEL (Surface)
I-15-245-32E 2584' FSL + 990' FEL (BH)

**Weatherford®**

5D Survey Report



Ghost Rider 22-15 FED COM 202H

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 1S	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			
	Comment:			
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 Tool Ranges below. **Comment:** **Company:**

Magnetic Model:

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

Survey Tool Ranges:

Name	Start MD(usft)	End MD(usft)	Source Survey
GYRO_GC_WIR+DPIPE_GYD	0.00	10351.33	GyroData Gyro

5D Survey Report

Survey Tool Ranges:

Name	Start MD(USFt)	End MD(USFt)	Source Survey
MWD + IFR + MS	10351.33	11234.00	WFT MWD 04
MWD + IFR + Sag Corr + MS	11234.00	15400.00	WFT MWD 06
MWD + IFR + Sag Corr + MS	15400.00	18595.00	WFT MWD 07

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	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

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
10351.33	0.61	214.19	10325.30	-352.57	-352.57	-186.77	0.21	435679.73	750557.73	Tieon 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	

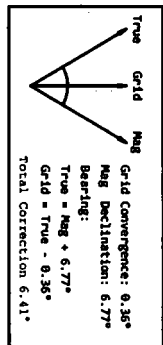
5D Survey Report

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



Ghost Rider 22-15 FED COM 202H
Lea Co., New Mexico
H&P 605

Plan vs Actual



Plan Data for Ghost Rider 22-15 FED COM 202H

Map Unit: USFT
Vertical Reference Datum (VTD): Mean Sea Level
Projected Coordinate System: NAD83 / New Mexico East (FIPS)

Site: Ghost Rider Pad 15
Unit: US Feet
Company Name: Apache Corporation
Position: Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
North Reference: Grid
Grid Convergence: 0.36°
Elevation Above VTD: 3590.00ft
Comment: Lea Co., NM

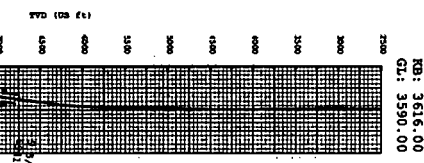
Slot: Ghost Rider 22-15 FED COM 202H
Position:
Offset: 15 from site centre
NW-S: -0.6005ft Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
Elevation Above VTD: 3590.00ft

Mail: Ghost Rider 22-15 FED COM 202H
Type: Main-Mail
File Number: 13041018
Plan Folder: P3
Vertical Section: Position offset of origin from Slot centre:
NW-S: 0.0005ft
E-W: 0.0005ft
Azimuth: 0.00°

Magnetic Parameters:
Field Strength: DLP: 59.88
Magnetar IFR 47862(NT)
Comment: H&P 605



Crooks Hill @ 18551' MSL



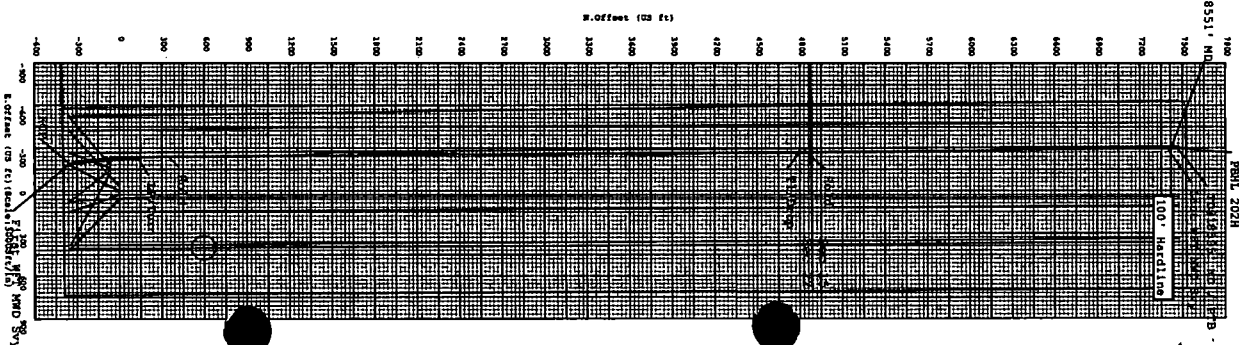
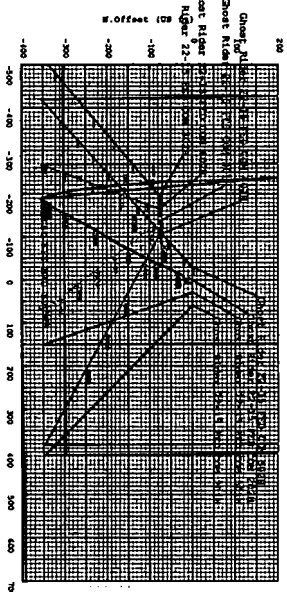
Plan Data for Ghost Rider 22-15 FED COM 202H

Target Set Information:
Name: GR 22-15 FC 202H
Type: GR 22-15 FC 202H
Position offsets from Slot centre:
NW-S: 0.0005ft Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
E-W: 0.0005ft
Azimuth: 0.00°

Dogleg Severity Unit: 1/100 ft
NW-S: 0.0005ft Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
E-W: 0.0005ft
Azimuth: 0.00°

Plan Data for Ghost Rider 22-15 FED COM 202H

Target Set Information:
Name: GR 22-15 FC 202H
Type: GR 22-15 FC 202H
Position offsets from Slot centre:
NW-S: 0.0005ft Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
E-W: 0.0005ft
Azimuth: 0.00°



Plan Data for Ghost Rider 22-15 FED COM 202H

Formation Point Information:
Name: GR 22-15 FC 202H
Type: GR 22-15 FC 202H
Position offsets from Slot centre:
NW-S: 0.0005ft Northing: 436832.5065ft, Easting: 750804.5065ft, Latitude: 32.196919°, Longitude: -103.555163°
E-W: 0.0005ft
Azimuth: 0.00°

