

## EP WELLS DAILY OPERATIONS REPORT

Report 11

11/14/2017

Company	PERMIAN
Well Type	Development
Well	UNIVERSITY 19 PW UNIT 1404H
Wellbore	UNIVERSITY 19 PW UNIT 1404H
WBS No/API No	30266568 / 4230133215.00

## Event Summary

Event Type	Completion only	Event Start Date	10/31/2017	Days on Location	11.00
Objective	Install Completion	Original Spud Date	06/17/2017		
Est. Days	65.00	Contractor	PERMIAN WELL SVC		
Work Unit	PERMIAN COMPLETIONS	Days To Release			
		Rig Phone/FAX No.			

## Well Status

Supervisor	John Bevans	Measured Depth(ft)	
Engineer	Bobby Ramos	TVD(ft)	
Other Supervisor	WW Horton	24 Hr Progress(ft)	
Depth Ref/Grd Elev/Water Depth(ft)	DFE: 2,800.10 / 2,772.10	Hole size(in)	
THF Datum			
Daily NPT(hr/%)	0/0	Last Casing MD	
Days Ahd(-) Bhnd(+)(50/50)		Next Casing MD	
Actual cost to date/AFE	1,208,139/5,029,301.00	Current MW / BH EMW(ppg)	/
Actual divided by AFE	0.24	LOT/FIT EMW(ppg)	
Daily Cost	222,578	Lithology	
		Formation/MD Top	

## HSE Summary

Last Incident	Date	Days	Last Incident	Date	Days	KPI's	
LWC RWC MTC FAC Last casing pressure test			PSI NII HPI <b>GOAL ZERO DAYS</b> <b>PS BARRIER EVENT</b> <b>PS barrier bowtie review</b>			TRCF LWCF Safety Cards - Safe Safety Card - Unsafe SSE% Last casing pressure(psi)	
Safety Comments:							
Personal - 88							
Man Hrs - 898							

## HSE Drills

Drills/Tests	Date	Days Since Last		
Last Derrick Inspection Last BOP function test Last BOP Test Next BOP Test			JSA's/Toolbox Talks Days Since Last Drill	10

## Operations Summary

24 Hour Summary
Frac stages 11, 12, 13
Update Since Report Time
24 Hour Forecast
Continue Frac ops

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## Time Summary

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
0:00	0.80	FRAC	FRT			0		Complete Stage 10 frac. See 11/13/17 for details.
0:48	0.43	FRAC	FWL			0		Shut in well w/ 5111 psi. Handover to Wireline. Stand by for other pad ops
1:14	0.07	FRAC	FWL			0		Remove night cap. PU tools.
1:18	0.10	FRAC	FWL			0		Stab lubricator. Fill lubricator.
1:24	0.15	FRAC	FWL			0		Pressure test lubricator to 8000 psi. Good test.
1:33	1.12	FRAC	WLT			0		<p>Stage #11 Plug and Perf</p> <p>Open well with 4474 psi and RIH with (4) 2' Keane guns: 2.75" OD HSC at 6SPF with 60* phased perforating guns and Downhole Technology Boss Hog composite "Ball in Place" frac plug. Tie into liner top @ 10996. Bring on pumps at 11700". Pump down as follows:</p> <p>3 bpm @ 4339 psi at 11700'</p> <p>6 bpm @ 4733 psi at 11800'</p> <p>9 bpm @ 5208 psi at 11900'</p> <p>10 bpm @ 5560 psi at 13350'</p> <p>Max rate: 10 bpm. Max pressure: 5822 psi</p> <p>Set plug @ 19199 ft w/ 2 bpm pumping</p> <p>Perforate as follows:</p> <p>19174' - 19175'</p> <p>19129' - 19130'</p> <p>19084' - 19085'</p> <p>19040' - 19041'</p> <p>Stabilized pressure after perforating: 5000 psi</p> <p>Pump down volume: 149 bbls</p>
2:40	1.00	FRAC	WLT			0		POOH with Wireline.
3:40	0.30	FRAC	WLT			0		Grease UM valve. Shut in well with 4300 psi. Bleed off. Break lubricator. All shots fired. MU night cap. Secure crown and wing valves. Grease LM valve.
3:58	0.45	FRAC	WLF			0		Wait on other pad ops.
4:25	1.93	FRAC	FRT			0		<p>Equalize and open well w/ 4080 psi. Begin Stage 11 frac.</p> <p>Stage 11 Summary University 19 PW Unit 1404H</p> <p>Interval 19039 - 19175</p> <p>Open Well Pressure 4,099 psi</p> <p>Max Treating Pressure 9,196 psi</p> <p>Max Slurry Rate 48.7 bpm</p> <p>Average Treating Pressure 8,604 psi</p> <p>Average Slurry Rate 40.2 bpm</p> <p>Breakdown Pressure 5,753 psi</p> <p>Breakdown Rate 5.0 bpm</p> <p>Breakdown Volume 252 gal</p> <p>Avg HHP 8,477 hp</p> <p>Final ISIP 5,642 psi</p> <p>Frac Gradient 0.918 psi/ft</p> <p>Pad Volume 1,260 gal</p> <p>Main Body Volume 156,912 gal</p> <p>Flush Volume 28,728 gal</p> <p>100 M AZ Sand Pumped 0 lbs</p> <p>100 M Brown Sand Pumped 373,540 lbs</p> <p>100 M Sand Pumped 48,260 lbs</p> <p>Proppant in Formation 421,800 lbs</p> <p>Avg Proppant Concentration 3.48 lb/gal</p> <p>Max Proppant Concentration 4.00 lb/gal</p> <p>Load to Recover (incl. pumpdown) 3,885 bbls</p> <p>Load to Recover w/o Acid 3,885 bbls</p> <p>15% HCL Spearhead 0 gal</p> <p>Slickwater Fluid Pumped 3,656 bbls</p> <p>20# Linear Fluid Pumped 80 bbls</p> <p>20# Crosslink Fluid Pumped 0 bbls</p> <p>Pump down volume 149 bbls</p>

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								<p>pump down rate 10.0 bpm Max pump down pressure 5,822 psi Fluid Temp 72.0 ?F Total Pump Time 1:53 hr:min Pumps Lost During Job 0 Treatment Start Time 4:25 0:00 0:00 Treatment End Time 6:18 0:00 0:00 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then 3.5PPA hold and a 4.0 PPA step. - Ran two 40 bbl shots of gel with a 20 bbl spacer. - Ran NO 15% HCl this stage - This stage utilized a ball in seat plug.</p> <p>Time for Prop on Perfs 21.0 minutes Time between Stages (TBF) :48 Hours/min</p>
6:21	0.62	FRAC	FWL			0		Waiting on other pad Opps.
6:58	0.70	FRAC	FWL			0		<p>Line out valves, WL PU lube and PCE plus new guns and plug. Swing over. WL stab on University 19 PW 1403H and fill lube. Start PT, low 1K, high 8k. Test good. Bleed back to equalizing pressure. Valve team open UMW @ 4500 psi</p>
7:40	1.95	FRAC	FWL			0		<p>WL Start perf University 1404H Stage 12 Tie into liner top at 10966 ft Initial WHP 4500 psi</p> <p>Pumpdown Pressures 3bpm 4500 6bpm 4700 psi 9bpm 5200 psi 9bpm 5700 psi 9bpm 5900 psi</p> <p>Max Pressure 6000 psi Total Fluid to recover 186 bbls</p> <p>Plug set @ 19019 ft Boss Hog Composite Frac Plug/ Ball in place plug Plug OD 3.65 in Pre-set Tension 2255 lbs Post-set Tension 1850 lbs</p> <p>Pre-Perf Pressure 5400 psi</p> <p>Perforation Summary: (4 count) 1' Keane Guns: 2.75" OD HSC at 6 spf @ 60 deg phasing</p> <p>18944' - 189945' 6 shots 18949' - 18950' 6 shots 18904' - 18905' 6 shots 18859' - 18860' 6 shots</p> <p>Post-Perf Pressure 5250 psi WL POOH 8:38</p>
9:37	0.15	FRAC	WLF			0		<p>WL at surface, valve team shut UMW @ 4500 psi, End WL Perf University 1404H Stage 12 Oil StatesGrease LMV Bleed off pressure. WL break off lube and PCE, swing back. Drop out and check fire. All shots fired Stab night cap. WL lay down spent tools. Rack back lube and PCE.</p>

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
9:46	0.35	FRAC	WLF			0		Waiting on other pad opps.
10:07	1.83	FRAC	FRT			0		<p>Equalize and open well w/ 4080 psi. Begin Stage 12 frac</p> <p>Stage 12 Summary University 19 PW Unit 1404H</p> <p>Interval 18859 - 18995</p> <p>Open Well Pressure 4,407 psi</p> <p>Max Treating Pressure 9,276 psi</p> <p>Max Slurry Rate 52.8 bpm</p> <p>Average Treating Pressure 8,777 psi</p> <p>Average Slurry Rate 44.2 bpm</p> <p>Breakdown Pressure 7,277 psi</p> <p>Breakdown Rate 11.1 bpm</p> <p>Breakdown Volume 294 gal</p> <p>Avg HHP 9,508 hp</p> <p>Final ISIP 5,079 psi</p> <p>Frac Gradient 0.869 psi/ft</p> <p>Pad Volume 1,470 gal</p> <p>Main Body Volume 158,172 gal</p> <p>Flush Volume 28,602 gal</p> <p>100 MAZ Sand Pumped 0 lbs</p> <p>100 M Brown Sand Pumped 180,080 lbs</p> <p>100 M Sand Pumped 239,900 lbs</p> <p>Proppant in Formation 419,980 lbs</p> <p>Avg Proppant Concentration 3.45 lb/gal</p> <p>Max Proppant Concentration 4.00 lb/gal</p> <p>Load to Recover (incl. pumpdown) 3,952 bbls</p> <p>Load to Recover w/o Acid 3,952 bbls</p> <p>15% HCL Spearhead 0 gal</p> <p>Slickwater Fluid Pumped 3,686 bbls</p> <p>20# Linear Fluid Pumped 80 bbls</p> <p>20# Crosslink Fluid Pumped 0 bbls</p> <p>Pump down volume 186 bbls</p> <p>pump down rate 9.0 bpm</p> <p>Max pump down pressure 6,000 psi</p> <p>Fluid Temp 72.0 ?F</p> <p>Total Pump Time 1:39 hr:min</p> <p>Pumps Lost During Job 0</p> <p>Treatment Start Time 10:17 0:00 0:00</p> <p>Treatment End Time 11:56 0:00 0:00</p> <p>Diverter Slurry bbls</p> <p>-Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then 3.5PPA hold and a 4.0 PPA step.</p> <p>- Ran two 40 bbl shots of gel with a 20 bbl spacer.</p> <p>- Ran NO 15% HCl this stage</p> <p>- This stage utilized a ball in seat plug.</p> <p>- The inline denso wasn't working. The e-tech worked on it throughout the stage.</p> <p>Time for Prop on Perfs 21.0 minutes</p> <p>Time between Stages (TBF) :53 Hours/min</p>
11:57	0.55	FRAC	FWL			0		<p>Line out valves, WL PU lube and PCE plus new guns and plug. Swing over.</p> <p>WL stab on University 19 PW 1403H and fill lube.</p> <p>Start PT, low 1K, high 8k. Test good.</p> <p>Bleed back to equalizing pressure.</p> <p>Valve team open UMW @ 4400 psi</p>
12:30	1.60	FRAC	WLT			0		<p>WL Start perf University 1404H Stage 13</p> <p>Tie into liner top at 10966 ft</p> <p>Initial WHP 4600 psi</p> <p>Pumpdown Pressures</p> <p>3bpm 4400</p> <p>6bpm 4500 psi</p> <p>9bpm 5000 psi</p> <p>9bpm 5500 psi</p> <p>9bpm psi</p>

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## Time Summary

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								Max Pressure 5700 psi Total Fluid to recover 161 bbls  Plug set @ 18839 ft Boss Hog Composite Frac Plug/ Ball in place plug Plug OD 3.65 in Pre-set Tension 2250 lbs Post-set Tension 2030 lbs  Pre-Perf Pressure 5000 psi  Perforation Summary: (4 count) 1' Keane Guns: 2.75" OD HSC at 6 spf @ 60 deg phasing  18814' - 18815' 6 shots 18769' - 18770' 6 shots 18724' - 18725' 6 shots 18679' - 18680' 6 shots  Post-Perf Pressure 5000 psi WL POOH 13:22
14:06	0.27	FRAC	WLF			0		WL at surface, valve team shut UMV @ 4500 psi, End WL Perf University 1404H Stage 13 Oil States Grease UMV & Wing/Hydraulic Bleed off pressure. WL break off lube and PCE, swing back. Drop out and check fire. All shots fired Stab night cap. WL lay down spent tools. Rack back lube and PCE. Rehead Wline
14:22	3.53	FRAC	FRT			0		Equalize and open well w/ 4080 psi. Begin Stage 13 frac Stage 13 Summary Interval 18724 - 18815 Open Well Pressure 4,275 psi Max Treating Pressure 9,301 psi Max Slurry Rate 55.4 bpm Average Treating Pressure 8,749 psi Average Slurry Rate 41.9 bpm Breakdown Pressure 7,418 psi Breakdown Rate 14.2 bpm Breakdown Volume 210 gal Avg HHP 8,985 hp Final ISIP 5,003 psi Frac Gradient 0.863 psi/ft Pad Volume 546 gal Main Body Volume 164,640 gal Flush Volume 28,476 gal 100 MAZ Sand Pumped 337,020 lbs 100 M Brown Sand Pumped 11,220 lbs 100 M Sand Pumped 72,180 lbs Proppant in Formation 420,420 lbs Avg Proppant Concentration 3.24 lb/gal Max Proppant Concentration 3.50 lb/gal Load to Recover (incl. pumpdown) 4,081 bbls Load to Recover w/o Acid 4,081 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,840 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 161 bbls pump down rate 9.0 bpm Max pump down pressure 5,700 psi Fluid Temp 72.0 ?F Total Pump Time 1:52 hr:min

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## Time Summary

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								Pumps Lost During Job 0 Treatment Start Time 15:56 Treatment End Time 17:48 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 4.0 PPA, then a 4.0 PPA hold. - Ran two 40 bbl shots of gel with a 20 bbl spacer. - Ran NO 15% HCl this stage - This stage utilized a ball in seat plug.  Time for Prop on Perfs 16.0 minutes Time between Stages (TBF) 1:50 Hours/min
17:54	0.30	FRAC	FWL			0		Shut in well w/ 4004 psi. Handover from Frac to Wireline. Wait on other pad ops.
18:12	0.05	FRAC	FWL			0		Remove night cap. PU tools.
18:15	0.08	FRAC	FWL			0		Stab lubricator. Fill lubricator.
18:20	0.10	FRAC	FWL			0		Pressure test lubricator to 8000 psi. Good test.
18:26	1.23	FRAC	WLT			0		Stage #14 Plug and Perf Open well with 4603 psi and RIH with (4) 2' Keane guns: 2.75" OD HSC at 6SPF with 60* phased perforating guns and Downhole Technology Boss Hog composite Ball in Place frac plug. Tie into liner top @ 10966.  ***** Having trouble keeping seal on grease head. Run a slower than normal pump down to help keep seal. Will change flow tubes before next run. *****  Bring on pumps at 11550". Pump down as follows: 3 bpm @ 4956 psi at 11550' 6 bpm @ 5023 psi at 11650' 9 bpm @ 5052 psi at 11750' Max rate: 9 bpm. Max pressure: 5770 psi  Set plug @ 18659 ft w/ 2 bpm pumping Perforate as follows: 18634' - 18635' 18589' - 18590' 18544' - 18545' 18499' - 18500' Stabilized pressure after perforating: 5170 psi Pump down volume: 145 bbls
19:40	0.88	FRAC	WLT			0		POOH with Wireline.
20:33	0.45	FRAC	WLT			0		Bump up. Grease UM valve. Shut in well with 4465 psi. Bleed off. Break lubricator. All shots fired. Secure crown and wing valves. LD tools and lub. Grease LM valve. Handover to frac.
21:00	1.00	FRAC	WLF			0		Wait on other pad ops. Changing flow tubes from .293 to .287 in grease head. Re-head WL.
22:00	2.00	FRAC	WLF			0		Preform frac pump maintenance.
								Prime and pressure test frac from pump maintenance. Wait on WL re-head.
<b>Total</b>	<b>24.00</b>							

## 06.00 Update

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Description
0:00	0.10	FRAC	WLF			0	Prime and pressure test frac from pump maintenance. Wait on WL re-head.
0:06	1.57	FRAC	FRT			0	Equalize and open well with 4345 psi. Begin Stage 14 frac. Stage 14 Summary University 19 PW Unit 1404H Interval 18499 - 18635 Open Well Pressure 4,340 psi

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## 06.00 Update

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Description
							Max Treating Pressure 9,226 psi Max Slurry Rate 55.3 bpm Average Treating Pressure 8,538 psi Average Slurry Rate 46.5 bpm Breakdown Pressure 7,101 psi Breakdown Rate 7.0 bpm Breakdown Volume 378 gal Avg HHP 9,731 hp Final ISIP 5,050 psi Frac Gradient 0.867 psi/ft Pad Volume 1,050 gal Main Body Volume 153,258 gal Flush Volume 28,308 gal 100 M AZ Sand Pumped 81,080 lbs 100 M Brown Sand Pumped 96,800 lbs 100 M Sand Pumped 240,040 lbs Proppant in Formation 417,920 lbs Avg Proppant Concentration 3.55 lb/gal Max Proppant Concentration 4.00 lb/gal Load to Recover (incl. pumpdown) 3,794 bbls Load to Recover w/o Acid 3,794 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,569 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 145 bbls pump down rate 9.0 bpm Max pump down pressure 5,770 psi Fluid Temp 72.0 ?F Total Pump Time 1:33 hr:min Pumps Lost During Job 0 Treatment Start Time 0:06 Treatment End Time 1:39 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.50 PPA, then a 3.50 PPA, and 4.0 PPA step. - Ran two 40 bbl shots of gel with a 20 bbl spacer. - Ran NO 15% HCl this stage - This stage utilized a ball in seat plug.  Time for Prop on Perfs 20.0 minutes Time between Stages (TBF) 3:51 Hours/min
1:40	0.67	FRAC	FWL			0	Shut in well with 4957 psi. Handover from Frac to WL. Wait on other pad ops.
2:20	0.17	FRAC	FWL			0	Remove night cap. PU tools. Stab lubricator. Fill lubricator.
2:30	0.17	FRAC	FWL			0	Pressure test lubricator to 8000 psi. Good test.
2:40	1.07	FRAC	WLT			0	Stage #15 Plug and Perf Open well with 4445 psi and RIH with (4) 2' Keane guns: 2.75" OD HSC at 6SPF with 60* phased perforating guns and Downhole Technology Boss Hog composite "Ball in Place" frac plug. Tie into liner top @ 10996. Bring on pumps at 11650'. Pump down as follows: 3 bpm @ 4417 psi at 11650 6 bpm @ 4624 psi at 11750' 9 bpm @ 4737 psi at 11850' 10 bpm @ 5387 psi at 12250' Max rate: 10 bpm. Max pressure: 5678 psi  Set plug @ 18479 ft w/ 2 bpm pumping Perforate as follows: 18454' - 18455' 18409' - 18410' 18364' - 18365' 18319' - 18320' Stabilized pressure after perforating: 4860 psi Pump down volume: 133 bbls

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06.00 Update

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Description
3:44		FRAC	WLT			0	POOH with Wireline.