

**EP WELLS DAILY OPERATIONS REPORT**

Report 12

11/15/2017

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	12.00
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	1,476,863/5,029,301.00	Current MW / BH EMW(ppg)	/
Actual divided by AFE	0.29	LOT/FIT EMW(ppg)	
Daily Cost	268,863	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:  
 12 JSA's  
 8 safework permits.  
 44 EE's

**HSE Drills**

Drills/Tests	Date	Days Since Last	JSA's/Toolbox Talks	Days Since Last Drill
Last Derrick Inspection				12
Last BOP function test				11
Last BOP Test				
Next BOP Test				

**Operations Summary**

24 Hour Summary  
 Frac stages 15,16,17 and 18  
 Update Since Report Time  
 completed stage 18  
 24 Hour Forecast  
 Continue perf and frac operatuion.

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
0:00	0.10	FRAC	WLF			0		Prime and pressure test frac from pump maintenace. 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 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 MAZ 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

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								Perforate as follows: 18454' - 18455' 18409' - 18410' 18364' - 18365' 18319' - 18320' Stabilized pressure after perforating: 4860 psi Pump down volume: 133 bbls
3:44	0.90	FRAC	WLT			0		POOH with Wireline.
4:38	0.28	FRAC	WLT			0		Shut in well with 4300 psi. Bleed off. Break lubricator. All shots fired. MU night cap. Secure crown valve. Grease 7" hydraulic and 3" wing valves.
4:55	0.50	FRAC	WLF			0		Wait on other pad ops.
5:25	0.58	FRAC	FRT			0		Equalize and open well with 4260 psi. Begin Stage 15 frac. Safety meeting, go over jsa's and permits, discuss 12 LSR's, L&H, ERP's, good communication and LFI,UNCAAP(7steps) and expecations. Break out into groups dicuss detailed station hazards. HO with with night shift.
6:00	1.27	FRAC	FRT			0		Stage 15 Summary University 19 PW Unit 1404H Interval 18319 - 18455 Open Well Pressure 4,260 psi Max Treating Pressure 9,319 psi Max Slurry Rate 43.6 bpm Average Treating Pressure 8,656 psi Average Slurry Rate 60.0 bpm Breakdown Pressure 6,046 psi Breakdown Rate 7.0 bpm Breakdown Volume 336 gal Avg HHP 12,729 hp Final ISIP 5,295 psi Frac Gradient 0.888 psi/ft Pad Volume 840 gal Main Body Volume 168,924 gal Flush Volume 28,266 gal 100 MAZ Sand Pumped 154,660 lbs 100 M Brown Sand Pumped 49,560 lbs 100 M Sand Pumped 216,580 lbs Proppant in Formation 420,800 lbs Avg Proppant Concentration 3.14 lb/gal Max Proppant Concentration 3.50 lb/gal Load to Recover (incl. pumpdown) 4,155 bbls Load to Recover w/o Acid 4,155 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,942 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 133 bbls pump down rate 10.0 bpm Max pump down pressure 5,678 psi Fluid Temp 72.0 ?F Total Pump Time 1:50 hr:min Pumps Lost During Job 1 Treatment Start Time 5:26 0:00 0:00 Treatment End Time 7:16 0:00 0:00 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then a 3.5 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. - Lost pump 10087 due to packing.  Time for Prop on Perfs 19.0 minutes Time between Stages (TBF) 1:16 Hours/min

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
7:16	0.30	FRAC	FWL			0		Shut in well w/ 4952 psi. Handover from Frac to WL. Wait on other pad ops.
7:34	0.10	FRAC	FWL			0		Remove night cap. PU tools. Stab lubricator. Fill lubricator.
7:40	0.10	FRAC	FWL			0		Pressure test lubricator to 8000 psi. Good test
7:46	0.82	FRAC	WLT			0		WL Start perf University 1404H Stage 16 Tie into liner top at 10966 ft Initial WHP 4800 psi  Pumpdown Pressures 3bpm 4800 6bpm 5000 psi 9bpm 5600 psi 9bpm 6000 psi 9bpm psi  Max Pressure 6200 psi Total Fluid to recover 132 bbls  Plug set @ 18299 ft Boss Hog Composite Frac Plug/ Ball in place plug Plug OD 3.65 in Pre-set Tension 2365 lbs Post-set Tension 1960 lbs  Pre-Perf Pressure 4822 psi  Perforation Summary: (4 count) 1' Keane Guns: 2.75" OD HSC at 6 spf @ 60 deg phasing  18274' - 18275' 6 shots 18229' - 18230' 6 shots 18184' - 18185' 6 shots 18139' - 18140' 6 shots  Post-Perf Pressure 4691 psi WL POOH 8:35
8:35	0.90	FRAC	WLT			0		POOH with Wireline.
9:29	0.05	FRAC	WLF			0		Bump up. Grease UM valve. Shut in well with 4200 psi. Bleed off. Break lubricator. All shots fired. MU night cap. Secure crown and wing valves. Grease LM valve
9:32	0.43	FRAC	WLF			0		Handover from WL to frac. Wait on other pad ops.
9:58	0.28	FRAC	FRT			0		Prime and pressure test frac.
10:15	1.73	FRAC	FRT			0		Stage 16 Summary University 19 PW Unit 1404H Interval 18139 - 18275 Open Well Pressure 4,327 psi Max Treating Pressure 9,371 psi Max Slurry Rate 52.5 bpm Average Treating Pressure 8,652 psi Average Slurry Rate 43.0 bpm Breakdown Pressure 7,488 psi Breakdown Rate 9.7 bpm Breakdown Volume 462 gal Avg HHP 9,119 hp Final ISIP 5,086 psi Frac Gradient 0.870 psi/ft Pad Volume 1,134 gal Main Body Volume 162,750 gal Flush Volume 28,182 gal 100 MAZ Sand Pumped 290,920 lbs 100 M Brown Sand Pumped 128,680 lbs 100 M Sand Pumped 0 lbs

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								Proppant in Formation 419,600 lbs Avg Proppant Concentration 3.31 lb/gal Max Proppant Concentration 4.00 lb/gal Load to Recover (incl. pumpdown) 4,007 bbls Load to Recover w/o Acid 4,007 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,795 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 132 bbls pump down rate 9.0 bpm Max pump down pressure 6,200 psi Fluid Temp 72.0 ?F Total Pump Time 1:44 hr:min Pumps Lost During Job 0 Treatment Start Time 10:14 0:00 0:00 Treatment End Time 11:58 0:00 0:00 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then a 3.5 PPA 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.  Time for Prop on Perfs 17.0 minutes Time between Stages (TBF) 0:44 Hours/min
11:59	0.12	FRAC	FWL			0		Shut in well w/ 4893 psi. Handover from Frac to WL. Wait on other pad ops.
12:06	0.28	FRAC	FWL			0		Remove night cap. PU tools. Stab lubricator. Fill lubricator.
12:23	0.05	FRAC	FWL			0		Pressure test lubricator to 8000 psi. Good test
12:26	0.82	FRAC	WLT			0		WL Start perf University 1404H Stage 17 Tie into liner top at 10966 ft Initial WHP 4500 psi  Pumpdown Pressures 3bpm 4200 6bpm 4700 psi 9bpm 5300 psi 9bpm 5500 psi 9bpm psi  Max Pressure 5600 psi Total Fluid to recover 123 bbls  Plug set @ 18119 ft Boss Hog Composite Frac Plug/ Ball in place plug Plug OD 3.65 in Pre-set Tension 2035 lbs Post-set Tension 1695 lbs  Pre-Perf Pressure 4690 psi  Perforation Summary: (4 count) 1' Keane Guns: 2.75" OD HSC at 6 spf @ 60 deg phasing  18094' - 18095' 6 shots 18049' - 18050' 6 shots 18002' - 18003' 6 shots 17961' - 17962' 6 shots  Post-Perf Pressure 4766 psi WL POOH 13:15
13:15	0.67	FRAC	WLT			0		POOH with Wireline.

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
13:55	0.23	FRAC	WLF			0		Bump up. Grease UM valve. Shut in well with 4068 psi. Bleed off. Break lubricator. All shots fired. MU night cap. Secure crown and wing valves. Grease LM valve
14:09	0.28	FRAC	WLF			0		Handover from WL to frac. Wait on other pad ops.
14:26	0.30	FRAC	WLF			0		Prime and pressure test frac.
14:44	1.70	FRAC	FRT			0		<p>Stage 17 Summary University 19 PW Unit 1404H Interval 17959 - 18095</p> <p>Open Well Pressure 4,068 psi Max Treating Pressure 9,543 psi Max Slurry Rate 52.1 bpm Average Treating Pressure 8,388 psi Average Slurry Rate 44.2 bpm Breakdown Pressure 8,229 psi Breakdown Rate 8.7 bpm Breakdown Volume 420 gal Avg HHP 9,087 hp Final ISIP 5,434 psi Frac Gradient 0.900 psi/ft Pad Volume 630 gal Main Body Volume 161,112 gal Flush Volume 28,014 gal 100 MAZ Sand Pumped 387,100 lbs 100 M Brown Sand Pumped 0 lbs 100 M Sand Pumped 33,040 lbs Proppant in Formation 420,140 lbs Avg Proppant Concentration 3.31 lb/gal Max Proppant Concentration 4.00 lb/gal Load to Recover (incl. pumpdown) 3,959 bbls Load to Recover w/o Acid 3,959 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,756 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 123 bbls pump down rate 9.0 bpm Max pump down pressure 5,600 psi Fluid Temp 72.0 ?F Total Pump Time 1:40 hr:min Pumps Lost During Job 0 Treatment Start Time 14:45 0:00 0:00 Treatment End Time 16:25 0:00 0:00 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then a 3.5 PPA 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. -Lost pump 7 to packing issues.</p> <p>Time for Prop on Perfs 16.0 minutes Time between Stages (TBF) 0:50 Hours/min</p>
16:26	0.87	FRAC	FRT			0		<p>Shut in well w/ 5199 psi. Handover from Frac to WL. Wait on other pad ops. Safety meeting, go over jsa's and permits, discuss 12 LSR's, L&amp;H, ERP's, good communication and LFI,UNCAAP(7steps) and expecations. Break out into groups dicuss detailed station hazards. HO with with night shift. While Wireline rehead</p>
17:18	0.23	FRAC	FRT			0		<p>1626 Handover from frac to WL. 1718 Pick up lubricator. Remove night cap. PU tools. 1725 Stab lubricator. Fill lubricator. 1728 PT lubricator to 8000psi 1732 Open well with 4700psi.</p>

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Time Summary

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
17:32	2.17	FRAC	FRT			0		1831 "Stage #18 Plug and Perf RIH with (4) 1' Keane guns: 2.75" OD HSC at 6SPF with 60* phased perforating guns and Boss Hog composite ball-drop frac plug. Tie into liner top @10966'. Pump down as follows: 3bpm @ 4737psi11500 6bpm @ 4900psi11600 9bpm @ 5100psi11700 10bpm @ 5400psi12400 bpm @ psi 10bpm @ 5731psi  Set plug @ 17939ft Perforate as follows: 17914' - 17915' 17868.5' - 17869.5' 17824' - 17825' 17779' - 17780' Stabilized pressure after perf: 5074psi Pump down volume: 119bbl" 1836 POOH 1942 Shut in well with 4827psi. Bleed off.
19:42	0.17	FRAC	FRT			0		1947 Break lubricator. All shots fired. Drop ball. MU night cap. LD tools and lub. Secure crown and wing valves. 1952 Handover from WL to frac.
19:52	0.70	FRAC	FRT			0		Wait on adjacent well ops.
20:34	2.43	FRAC	FRT			0		Frac stage 18 Stage 18 Summary University 19 PW Unit 1404H Interval 17779 - 17915 Open Well Pressure 4,494 psi Max Treating Pressure 9,327 psi Max Slurry Rate 51.0 bpm Average Treating Pressure 8,580 psi Average Slurry Rate 41.3 bpm Breakdown Pressure 7,378 psi Breakdown Rate 7.0 bpm Breakdown Volume 294 gal Avg HHP 8,685 hp Final ISIP 5,027 psi Frac Gradient 0.865 psi/ft Pad Volume 630 gal Main Body Volume 156,996 gal Flush Volume 29,946 gal 100 MAZ Sand Pumped 358,600 lbs 100 M Brown Sand Pumped 61,000 lbs 100 M Sand Pumped 0 lbs Proppant in Formation 419,600 lbs Avg Proppant Concentration 3.50 lb/gal Max Proppant Concentration 4.00 lb/gal Load to Recover (incl. pumpdown) 3,857 bbls Load to Recover w/o Acid 3,857 bbls 15% HCL Spearhead 0 gal Slickwater Fluid Pumped 3,658 bbls 20# Linear Fluid Pumped 80 bbls 20# Crosslink Fluid Pumped 0 bbls Pump down volume 119 bbls pump down rate 10.0 bpm Max pump down pressure 5,731 psi Fluid Temp 72.0 ?F Total Pump Time 1:48 hr:min Pumps Lost During Job 2 Treatment Start Time 21:07 0:00 0:00 Treatment End Time 22:55 0:00 0:00 Diverter Slurry bbls -Proppant was pumped as a ramp from 0.50 PPA to 3.5 PPA, then a 3.5 PPA, and a 4.0 PPA step. - Ran two 40 bbl shots of gel with a 20 bbl spacer.

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Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Rig Rate	Description
								- Ran NO 15% HCl this stage - This stage utilized a ball in seat plug. -Pumps 10075 and 10073 were taken out during the stage for mechanical issues
23:00	1.00	FRAC	FRT			0		Wait on adjacent well operations.
<b>Total</b>	<b>24.00</b>							

**06.00 Update**

Start	Hours	PH	OPN	Detail	Drilled Depth (ft)	NPT level	Description
0:00	0.25	FRAC	WLT			0	Shut in well break lubricator and hand over to frac.
0:15	2.83	FRAC	WLT			0	Perf.f stge 19 1626 Handover from frac to WL. 1215 Pick up lubricator. Remove night cap. PU tools. 1235 Stab lubricator. Fill lubricator. 1245 PT lubricator to 8000psi 1250 Open well with 4500psi. 145 "Stage #19 Plug and Perf RIH with (4) 1' Keane guns: 2.75" OD HSC at 6SPF with 60* phased perforating guns and Boss Hog composite ball-drop frac plug. Tie into liner top @10996'. Pump down as follows: 3bpm @ 4555psi11500 6bpm @ 4884psi11700 9bpm @ 5221psi11800 10bpm @ 6064psi12500 bpm @ psi 10bpm @ 5757psi  Set plug @ 17759ft Perforate as follows: 17734' - 17735' 17689' - 17690' 17644' - 17645' 17599' - 17600' Stabilized pressure after perf: 4550psi Pump down volume: 125bbl" 2114 POOH 0 Shut in well with 4400psi. Bleed off. 16 Break lubricator. All shots fired. Drop ball. MU night cap. LD tools and lub. Secure crown and wing valves. 20 Handover from WL to frac.
3:05		FRAC	WLT			0	Pressure test lines and frac stage 19