



# PLUGBUSTER

*The Ultimate Completion Bit*  
Made in Pennsylvania

## BIT RUN REPORT

### 4-5/8" PLUGBUSTER

LOCATION: Western Pennsylvania  
DATE: November 20, 2010

MUD MOTOR APPLICATION: TTS TITAN MOTOR

Hold detailed safety meeting prior to start snubbing in hole. Complete LEL sweep. Check pressure. SICP @ 3000psi. Rig up Heat waves & heat water to 200°F. Open well on 8/64" & bleed down to 2200psi. Close choke. Pump 30bbls hot water down casing. Pressure build back to 3000psi from hole fill. SD HW & RO. Bleed well back down to 2200psi. Test motor on surface @ 0.25BPM. Place BHA in stack and equalize. Start snubbing at **08:30hrs** with drilling BHA as follows: **New** (new style) **4 5/8" PDC PLUGBUSTER bit**, TTS rotary sub, **TTS Titan motor**, Rotary sub, 2 x TTS BPV's, 1jt 2 7/8" 8.7lb PH-6 tbg, "RN" profile w/ 1.937" I.D., 2 7/8" 8.7lb PH-6 tbg to surface. Fill after 10 joints pumping 3 BBLs over to test floats and every 30 jts thereafter to flush and pump out any scale to avoid floats plugging. Floats good. Install 2.125" "R" profile every 5000'. Circulate BU sweep with 10bbl gel @ 6600' KOP prior to entering lateral. Perform P/U & S/O every 30jts. Rig up power swivel @ 8150' (24' above top shot, no tags to this point) pump 10bbl gel sweep. Rotate down to plug #1 of 27. Tag plug #1 @ **17:20hrs**, wellhead 2100psi on a 8/64 choke.

Circulate and rotate down to **Plug #1 of 27**. No sand bridges through perf's. **Drill through plug #1 in 20 mins**. Pump pressure @ 3,000 psi at 2.5 BPM w/ 3.0 BPM return. Return pressure @ 2100psi, string weight up 55,000lbs w/ 2,000 on plug while drilling. Slack off weight 44,000 lbs. Pumped 10bbl gel sweep & Circulate for another 15mins after drill out. Light sand in returns.

Circulate and rotate down to **Plug #2 of 27**. Light sand bridges through perf's. **Drill through plug #2 in 20 mins**. Pump pressure @ 3000 at 2.5BPM w/ 3.0 BPM return. Return pressure @ 2070 psi, string weight up 55,000lbs w/ 2,000 on plug while drilling. Pumped 10bbl gel sweep. Circulate for 15mins after drill out w/med sand in returns.

Circulate and rotate down to **Plug #3 of 27**. Light sand bridges through perf's & chasing plug parts. **Drill through plug #3 in 20 mins**. Pump pressure @ 3200 psi at 2.5BPM w/ 3.0 BPM return. Return pressure @ 2050psi, string weight up 55,000lbs w/ 2,000 on plug while drilling. Pumped 10bbl gel sweep. Circulate for 15mins after drill out w/ light to med sand.

Circulate and rotate down to **Plug #4 of 27**. Heavy to Medium sand bridges through perf's. **Drill through plug #4 in 20mins**. Pump pressure @ 3000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 2000psi, string weight up 58,000lbs w/ 2,000lbs on plug while drilling. Pumped 10bbl gel sweep. Circulate for 15mins after drill out w/ heavy to medium sand in returns and small plug parts.

While circulating down to **Plug # 5**, WFT low line plugged off with sand slug. Switch to auxiliary line, SD pump, rack back swivel & start to POOH while cleaning out flow line. Pull 2 stands & flow lines unplugged. Pump 10bbls gel & full BU sweep. Hook up swivel and continue to RIH to resume drilling operations. Heavy sand & small plug parts in returns while pumping BU sweep.

Circulate and rotate down to **Plug #5 of 27**. Med. sand bridges through perf's. **Drill through plug #5 in 20mins**. Pump pressure @ 3000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1930psi, string weight up 62,000lbs w/ 2,000lbs on plug while drilling. Pumped 10bbl gel sweep. Circulate for 15mins after drill out w/ medium sand in returns.

Circulate and rotate down to **Plug #6 of 27**. Medium sand bridges through perf's. **Drill through plug #6 in 20mins**. Pump pressure @ 3000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1980psi, string weight up 62,000lbs w/ 2,000lbs on plug while drilling. Circulate for 15mins after drill out w/ medium sand in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #7 of 27**. Heavy sand bridges through perf's. **Drill through plug #7 in 10mins**. Pump pressure @ 3000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1800psi, string weight up 62,000lbs w/ 3,000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small to med plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #8 of 27**. Heavy sand bridges through perf's. **Drill through plug #8 in 16mins**. Pump pressure @ 3000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1900psi, string weight up 62,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep. WFT flow lines & sand trap plugged off a few times but were able to flush lines on the fly.

Circulate and rotate down to **Plug #9 of 27**. Heavy sand bridges through perf's. **Drill through plug #9 in 14mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.5BPM return. Return pressure @ 2030psi, string weight up 66,000lbs w/ 2000lbs on plug while drilling. Circulate for 45mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #10 of 27**. Heavy sand bridges through perf's. **Drill through plug #10 in 16mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1800psi, string weight up 82,000lbs w/ 3000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #11 of 27**. Heavy sand bridges through perf's. **Drill through plug #11 in 9mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 2000psi, string weight up 67,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #12 of 27**. Heavy sand bridges through perf's. **Drill through plug #12 in 10mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1800psi, string weight up 82,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate & rotate down to top of **Plug #13**. Pick up 10' & pump BU sweep before proceeding to drill ahead. Pump 10bbls gel, 10bbls water, 5bbls gel, 250bbls water. Returns semi-clean after BU complete. While drilling plugs 10-12, had a few tbq stalls & lost rotation on swivel due to flow lines plugging. Were able to get back on the fly.



Circulate and rotate down to **Plug #13 of 27**. Heavy sand bridges through perf's. **Drill through plug #13 in 24mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1700psi, string weight up 74,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #14 of 27**. Heavy sand bridges through perf's. **Drill through plug #14 in 18mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1825psi, string weight up 74,000lbs w/ 2000lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #15 of 27**. Heavy sand bridges through perf's. **Drill through plug #15 in 10mins**. Pump pressure @ 3,000psi at 2.5BPM w/ 3.0BPM return. Return pressure @ 1850psi, string weight up 76,000lbs w/ 2000lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #16 of 27**. Heavy sand bridges through perf's. **Drill through plug #16 in 25mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2160psi, string weight up 78,000lbs w/ 2500lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #17 of 27**. Heavy sand bridges through perf's. **Drill through plug #17 in 25mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 1980psi, string weight up 80,000lbs w/ 2500lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #18 of 27**. Heavy sand bridges through perf's. **Drill through plug #18 in 30mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 1750psi, string weight up 80,000lbs w/ 2500lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

**Swivel and motor stalled a few times when tagged plug #18. Could not get rotation back or motor to free. Pull 1 jt and lay out. Circulate & Work string vigorously with 20,000lbs of drag until free. String rotation back and motor now rotating. Pump 20bbl gel sweep and full BU before proceeding down hole.**

Circulate and rotate down to **Plug #19 of 27**. Heavy sand bridges through perf's. **Drill through plug #19 in 40mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 1840psi, string weight up 86,000lbs w/ 2000lbs on plug while drilling. Circulate for 45mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

**Lost rotation again after #19, increase torque on swivel and pump extra 10bbl gel sweep to clean hole. Excessive sand has been encountered on this job thus far across all perfs. Rotation back to normal & still good differential on motor.**

Circulate and rotate down to **Plug #20 of 27**. Heavy sand bridges through perf's. **Drill through plug #20 in 28mins**. Pump pressure @ 3,100psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 1760psi, string weight up 86,000lbs w/ 2000lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #21 of 27**. Heavy sand bridges through perf's. **Drill through plug #21 in 32mins**. Pump pressure @ 3,200psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2070psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #22 of 27**. Heavy sand bridges through perf's. **Drill through plug #22 in 22mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2000psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #23 of 27**. Heavy sand bridges through perf's. **Drill through plug #23 in 31mins**. Pump pressure @ 2500psi at 2.5BPM w/ 3.5BPM return. Return pressure @ 2240psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

**Turn well over to flare due to increasing amount of gas. Well flowing approx. 10mmcf/d.**

Circulate and rotate down to **Plug #24 of 27**. Heavy sand bridges through perf's. **Drill through plug #24 in 30mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2259psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #25 of 27**. Heavy sand bridges through perf's. **Drill through plug #25 in 14mins**. Pump pressure @ 2700psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2180psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #26 of 27**. Heavy sand bridges through perf's. **Drill through plug #26 in 16mins**. Pump pressure @ 3,000psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 1900psi, string weight up 78,000lbs w/ 2000lbs on plug while drilling. Circulate for 35mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #27 of 27**. Heavy sand bridges through perf's. **Drill through plug #27 in 20mins**. Pump pressure @ 3,100psi at 2.8BPM w/ 3.5BPM return. Return pressure @ 2365psi, string weight up 90,000lbs w/ 2000lbs on plug while drilling. Circulate for 25mins after drill out w/ heavy sand & small plug pieces in returns. Pumped 10bbl gel sweep.

Continue to circulate and rotate down to **16,275' MD**. Circulate 10bbl gel, 50bbls water 10bbls gel and 350bbls water. Repeat sweep. All flow back water treated with Biocide through Weatherford and Multi-Chem. before shipping to pit. Returns clean after sweeps. Before start POOH flush tubing with 100 bbls of fresh water, to eliminate any formation water dripping from pipe on the racks. Rig back swivel and POOH sideway's @ **01:00hrs** A.M using mud can. Well flowing at approx. 17-19mmcf/d. Cut choke and maintain 2500psi while POOH due to 3000psi annular limitation. 196jts (6103') OOH @ reports end with 324jts (Approx 10,090') left to pull.

Continue to POOH sideway's. Snub when pipe light. Well flowing back at 25mmcf/d BPH at 2500psi with gas increasing steadily. WFT FB needs valves & manifold replaced due to washing. **BHA on the bank @ 13:30Hrs**. **Bit in good shape. Some wear, with a few buttons minorly damaged**. Close and ensure bottom FV is holding. RD AWS WO rig and PPS snubbing unit & move off to side of location for maintenance (leaking seal on PTO/transmission on the rig). Rig FB lines back to manifold. Install top cap for flow back operations on flow cross . Repair WFT manifold & valves. Rig up WFT FB from manifold to flow cross on 590385 well. Install extra support beams inside cribbing on 590385 well to support rig beam. SDFN @ 19:00hrs. Will rig up rig, SU & pressure test in morning.

Total Drilling Time: 9.50 Hours  
Average Time Per Plug: 22 Minutes

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