



# BIT RUN REPORT

## 4-5/8" PLUGBUSTER

**LOCATION:** WESTERN PENNSYLVANIA  
(MARCELLUS SHALE)  
**DATE:** JULY 12 - 16, 2011  
**MUD MOTOR:** TTS TITAN MOTOR  
**CONVEYANCE:** JOINTED PIPE  
**PLUG TYPE:** COMPOSITE  
**CASING SIZE:** 5-1/2" - 20 #  
**PIPE SIZE:** 2-7/8" - 7.9 #

**July 12, 2011 - July 16, 2011**

Circulate and rotate down to **Plug #1 of 51**. Tag 1<sup>st</sup> plug @ **8,415'** (Jt 268)  
**Drill through plug #1 in 20 minutes.** Pump pressure @ 2800 psi at 2.5 BPM.  
Return pressure @ 1900 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #2 of 51**. Tag 2nd plug @ **8,540'** (Jt 272).  
**Drill through plug #2 in 20 minutes.** Pump pressure @ 2300 psi at 2.5 BPM.  
Return pressure @ 1400 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #3 of 51**. Tag 3rd plug @ **8,697'** (Jt. 277).  
**Drill through plug #3 in 18 minutes.** Pump pressure @ 2700 psi at 2.5 BPM.  
Return pressure @ 1500 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #4 of 51**. Tag 4th plug @ **8855'** (Jt. 282).  
**Drill through plug #4 in 23 minutes.** Pump pressure @ 2600 psi at 2.5 BPM.  
Return pressure @ 1300 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #5 of 51**. Tag 5th plug @ **8955'** (Jt. 287).  
**Drill through plug #5 in 22 minutes.** Pump pressure @ 2500 psi at 2.5 BPM.  
Return pressure @ 1500 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #6 of 51**. Tag 6th plug @ **9168'** (Jt. 292).  
**Drill through plug #6 in 22 minutes**. Pump pressure @ 2600 psi at 2.5 BPM.  
Return pressure @ 1300 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #7 of 51**. Tag 7th plug @ **9294'** (Jt. 296).  
**Drill through plug #7 in 22 minutes**. Pump pressure @ 2500 psi at 2.5 BPM.  
Return pressure @ 1400 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #8 of 51**. Tag 8th plug @ **9451'** (Jt. 301).  
**Drill through plug #8 in 27 minutes**. Pump pressure @ 2600 psi at 2.5 BPM.  
Return pressure @ 1500 psi. Pumped 10bbl gel sweep & circulate.

Circulate and rotate down to **Plug #9 of 51**. Tag 9th plug @ **9608'** (Jt. 306).  
**Drill through plug #9 in 34 minutes**. Pump pressure @ 2900 psi at 2.5 BPM.  
Return pressure @ 1600psi. Pumped 10bbl gel sweep & circulate.

Circulate and rotate down to **Plug #10 of 51**. Tag 10<sup>th</sup> plug @ **9765'** (Jt. 311).  
**Drill through plug #10 in 22 minutes**. Pump pressure @ 3100 psi at 2.5 BPM.  
Return pressure @ 1500 psi. Pumped 10bbl gel sweep & circulate.

Circulate and rotate down to **Plug #11 of 51**. Tag 11<sup>th</sup> plug @ **9922'** (Jt. 316).  
**Drill through plug #11 in 20 minutes**. Pump pressure @ 3100 psi at 2.5 BPM.  
Return pressure @ 1500 psi. Pumped 10 bbl gel sweep.

Circulate down and rotate to **Plug # 12 of 51**. Tag 12<sup>th</sup> plug @ **10048'** (Jt. 320).  
**Drill through plug #12 in 20 minutes**. Pump pressure @ 3100 psi at 2.5 BPM.  
Return pressure @ 1750psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #13 of 51**. Tag 13<sup>th</sup> plug @ **10205'** (Jt. 325).  
**Drilled through plug #13 in 22 minutes**. Pump pressure @ 3400psi at 2.5 BPM.  
Return pressure @ 1700 psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #14 of 51**. Tag 14<sup>th</sup> plug @ **10362'** (Jt. 330).  
**Drilled through plug #14 in 32 minutes**. Pump pressure @ 3200psi at 2.5 BPM.  
Return pressure @ 1700 psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #15 of 51**. Tag 15<sup>th</sup> plug @ **10519'** (Jt. 335).  
**Drilled through plug #15 in 26 minutes**. Pump pressure @ 3100psi @ 2.5 BPM.  
Return pressure @ 1300psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #16 of 51**. Tag 16<sup>th</sup> plug @ **10676'** (Jt. 340).  
**Drilled through plug #16 in 31 minutes**. Pump pressure at 3200psi at 2.5 BPM.  
Return pressure @ 1600 psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #17 of 51**. Tag 17<sup>th</sup> plug @ **10833'** (Jt. 345).  
**Drilled through plug #17 in 10minutes**. Pump pressure at 1800psi @ 2.5 BPM.  
Return pressure @ 1600 psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #18 of 51**. Tag 18<sup>th</sup> plug @ **10958'** (Jt. 349).  
**Drilled through plug #18 in 22 minutes**. Pump pressure at 1800psi at 2.5 BPM.  
Return pressure @ 1400 psi. Pumped 10bbl gel sweep.

Circulate down and rotate to **Plug #19 of 51**. Tag 19<sup>th</sup> plug @ **11,115'** (Jt. 354).  
**Drilled through plug #19 in 30 minutes.** Pump pressure at 2200psi @ 2.5 BPM.  
Return pressure @ 1400 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #20 of 51**. Tag 20<sup>th</sup> plug @ **11272'** (Jt. 359).  
**Drilled through plug #20 in 20 minutes.** Pump pressure at 2700 psi @ 2.5 BPM.  
Return pressure @ 1500. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #21 of 51**. Tag 21<sup>st</sup> plug @ **11429'** (Jt. 364).  
**Drilled through plug #21 in 23 minutes.** Pump pressure at 2700 psi @ 2.5 BPM.  
Return pressure @ 1500. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #22 of 51**. Tag 22<sup>nd</sup> plug @ **11510'** (Jt. 369).  
**Drilled through plug #22 in 26 minutes.** Pump pressure at 2400 psi @ 2.5 BPM.  
Return pressure @ 1300 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #23 of 51**. Tag 23<sup>rd</sup> plug @ **11743'** (Jt. 374).  
**Drilled through plug #23 in 30 minutes.** Pump pressure at 2700 psi @ 2.5 BPM.  
Return pressure @ 1250 psi. Pumped 10 bbl gel sweep.

Circulate and rotate down to **Plug #24 of 51**. Tag 24<sup>th</sup> plug @ **11869'** (Jt. 378).  
**Drilled through plug #24 in 20 minutes.** Pump pressure at 2900 psi @ 3.0 BPM.  
Return pressure @ 1,800 psi. Pumped 10 bbl gel sweep.

Circulate and rotate down to **Plug #25 of 51**. Tag 25<sup>th</sup> plug @ **12026'** (Jt. 383).  
**Drilled through plug #25 in 27minutes.** Pump pressure at 3200 psi @ 2.5 BPM.  
Return pressure @ 2,050 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #26 of 51**. Tag 26<sup>th</sup> plug @ **12183'** (Jt. 388).  
**Drilled through plug #26 in 26 minutes.** Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #27 of 51**. Tag 27<sup>th</sup> plug @ **12340'** (Jt. 393).  
**Drilled through plug #27 in 28 minutes.** Pump pressure at 3200 psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #28 of 51**. Tag 28<sup>th</sup> plug @ **12497'** (Jt. 398).  
**Drilled through plug #28 in 31 minutes.** Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #29 of 51**. Tag 29<sup>th</sup> plug @ **12622'** (Jt. 402).  
**Drilled through plug #29 in 40 minutes.** Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #30 of 51**. Tag 30<sup>th</sup> plug @ **12779'** (Jt. 407).  
**Drilled through plug #30 in 26 minutes.** Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #31 of 51**. Tag 31<sup>st</sup> plug @ **12936'** (Jt. 412 ).  
**Drilled through plug #31 in 25 minutes**. Pump pressure at 3300psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #32 of 51**. Tag 32<sup>nd</sup> plug @ **13093'** (Jt. 417).  
**Drilled through plug #32 in 28 minutes**. Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #33 of 51**. Tag 33<sup>rd</sup> plug @ **13250'** (Jt. 422).  
**Drilled through plug #33 in 27 minutes**. Pump pressure at 3500psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #34 of 51**. Tag 34<sup>th</sup> plug @ **13407'** (Jt. 427).  
**Drilled through plug #34 in 16 minutes**. Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #35 of 51**. Tag 35<sup>th</sup> plug @ **13564'** (Jt. 432).  
**Drilled through plug #35 in 30 minutes**. Pump pressure at 3300psi @ 2.5 BPM.  
Return pressure at 1800 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #36 of 51**. Tag 36<sup>th</sup> plug @ **13690'** (Jt. 436).  
**Drilled through plug #36 in 29 minutes**. Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 1700 psi. Pumped 10bbl gel sweep & circulated.

Circulate and rotate down to **Plug #37 of 51**. Tag 37<sup>th</sup> plug @ **13847'** (Jt. 441 ).  
**Drilled through plug #37 in 30 minutes**. Pump pressure at 3100psi @ 2.5 BPM.  
Return pressure @ 1600 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #38 of 51**. Tag 38<sup>th</sup> plug @ **14004'** (Jt. 446 ).  
**Drilled through plug #38 in 30 minutes**. Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 1700 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #39 of 51**. Tag 39<sup>th</sup> plug @ **14161'** (Jt. 451).  
**Drilled through plug #38 in 40 minutes**. Pump pressure at 3200psi @ 2.5 BPM.  
Return pressure @ 2000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #40 of 51**. Tag 40<sup>th</sup> plug @ **14318'** (Jt.456).  
**Drilled through plug # 40 in 27 minutes**. Pump pressure at 3300 psi @ 2.5 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl gel sweep.

Circulate and rotate down to **Plug #41 of 51**. Tag 41<sup>st</sup> plug @ **14444'** (Jt. 460).  
Pump 20 BBL sweep. Pump bottoms up. Return rate 3.5 BPM.  
**Drilled through plug #41 in 20 minutes**. Pump pressure at 3200 psi @ 2.5 BPM.  
Return pressure @ 1800 psi. Pumped 10bbl sweep.

**Circulate and rotate down to Plug #42 of 51**. Tag 42<sup>nd</sup> plug @ **14601'** (Jt. 465).  
**Drilled through plug #42 in 20 minutes**. Pump pressure at 3200 psi @ 2.5 BPM.  
Return pressure @ 1,800 psi. Pumped 10bbl sweep.

**Circulate and rotate down to Plug #43 of 51.** Tag 43<sup>rd</sup> plug @ **14758'** (Jt. 470).  
**Drilled through plug #43 in 25 minutes.** Pump pressure at 3200 psi @ 2.5 BPM.  
Return pressure @ 1,900 psi. Pumped 10bbl sweep.

**Circulate and rotate down to Plug #44 of 51.** Tag 44<sup>th</sup> plug @ **14915'** (Jt. 475).  
**Drilled through plug #44 in 58 minutes.** Pump pressure at 3300 psi @ 2.5 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

**Circulate and rotate down to Plug #45 of 51.** Tag 45<sup>th</sup> plug @ **15072'** (Jt. 480).  
**Drilled through plug #45 in 30 minutes.** Pump pressure at 3,700 psi @ 3.0 BPM.  
Return pressure @ 1,800 psi. Pumped 10bbl sweep.

**Circulate and rotate down to Plug #46 of 51.** Tag 46<sup>th</sup> plug @ **15197'** (Jt. 484).  
**Drilled through plug #46 in 19 minutes.** Pump pressure at 3,500 psi @ 3.0 BPM.  
Return pressure @ 1,900 psi. Pumped 10bbl sweep.

Circulate and rotate down to **Plug#47 of 51.** Tag 47<sup>th</sup> plug @ **15,354'** (Jt. 489).  
**Drilled through plug #47 in 21 minutes.** Pump pressure at 3,700 psi @ 3.0 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

Circulate and rotate down to **Plug#48 of 51.** Tag 48<sup>th</sup> plug @ **15,511'** (Jt. 494).  
**Drilled through plug #48 in 19 minutes.** Pump pressure at 3,700 psi @ 3.0 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

Circulate and rotate down to **Plug #49 of 51.** Tag 49<sup>th</sup> plug @ **15,668'** (Jt. 499).  
**Drilled through plug #49 in 30 minutes.** Pump pressure at 3,700 psi @ 3.0 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

Circulate and rotate down to **Plug #50 of 51.** Tag 50<sup>th</sup> plug @ **15794'** (Jt. 503).  
**Drilled through plug #50 in 20 minutes.** Pump pressure at 3,600 psi @ 3.0 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

Circulate and rotate down to **Plug #51 of 51.** Tag 50<sup>th</sup> plug @ **15,951'** (Jt. 508).  
**Drilled through plug #51 in 25 minutes.** Pump pressure at 3,600 psi @ 3.0 BPM.  
Return pressure @ 2,000 psi. Pumped 10bbl sweep.

**TD 16,115'**

**Start circulating hole clean and POOH.**

**Total Drilling Time: 22.0 Hours**

**Average Drill Out Time Per Plug: 26 Minutes**

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