# MERIT Magnet Testing Status
## Wednesday April 12 2006 VRVS

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15T shot

7200 amps was programmed into the power supply. Based on Bob Weggels (and P.Titus) calculations, this should be 15T

~7500 amps was reached by the power supply as reported by the power supply instrumentation. Based on the calculated magnet constant this would be 15.625T

Based on gauss meter and small power supply current shunt, the magnet constant is:
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0.16T/79A = 0.0020253 T/A
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7200amps would be 14.58T
7500amps would be 15.19T

>I went through the data for run 1060330008 to find peak current and >field for the "15 T" pulse.
>
>There are two possible measurements for the magnet current. The first  is the shunt resistor mounted in the bus work, the second is the sum of zero flux transducer measurements from the six magnet convertors.
>
>At 15.5s into the run the peak reading from the bus shunt was 7555A, while the peak reading from the sum of individual convertor measurements was 7495 A. The corresponding field at 15.1T.
>
>Dividing the measured peak field by shunt current yields a magnet constant value of 0.001999 T/A, while is close to the value that I cited in my earlier message today.  There is a slight mismatch in values due to the data smoothing procedure, however, based on measured
>results this error is reasonable small.
>                                    - Phil
>
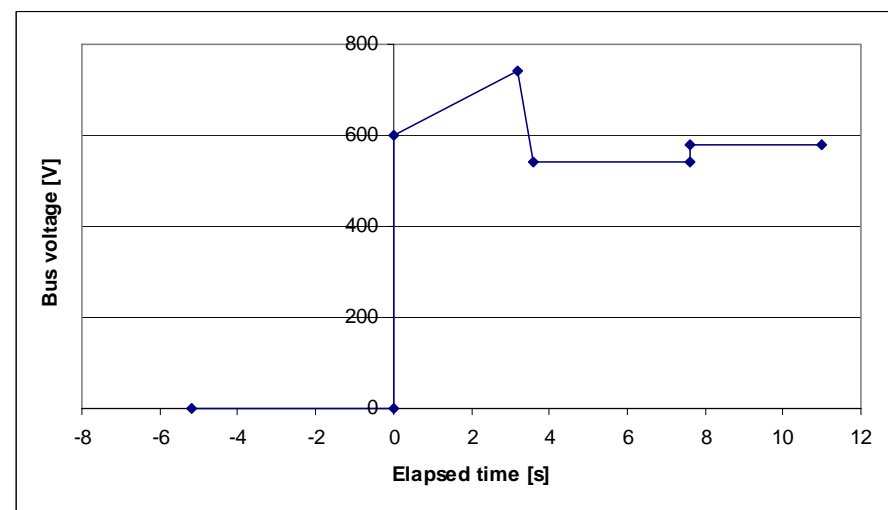


Voltage trace from 15T shot

At 7555 Amps, and using the calculated magnet constant of 15T/7200amps the field reached, in this pulse, would be 15.74T

At 01:29 PM 4/6/2006, you wrote:
>Thanks. I guess no one can claim we didn't get to 15T. What was the >voltage? If I run my simulation with 695v and an 80K start,  I can get to 7500 amps and 15.7 T with a 150K end temp. It is supposed to be 120 to 130K. I don't have the rampdown modeled, so it could be higher. Chen-Yu measured 190K on the CERNOX after the 15T shot and I thought we >had damaged the CERNOX, but Chen-Yu checked them this morning and they appear to have survived.
-Peter



15T Shot Simulation from Measured Voltage
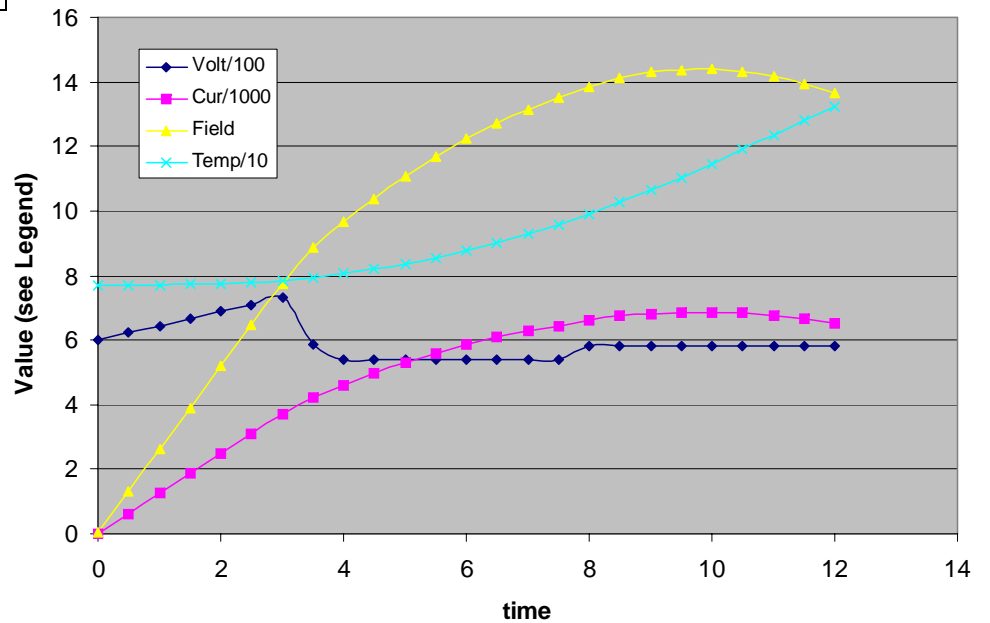
**Post-Pulse Temperatures argue for the higher current. Why doesn't the simulation with the actual voltage trace reproduce the higher current? – We are checking data**
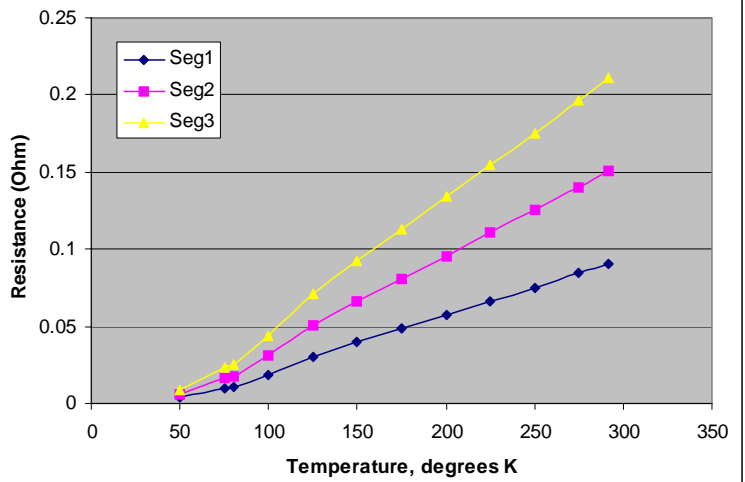
**Among other improvements, we need a better field measurement. We are investigating a flux loop and integrating the dB/dt as measured by the voltage. .**



BNL Magnet Cooldown History, 3/30/06
(after 15 T magnet shots)
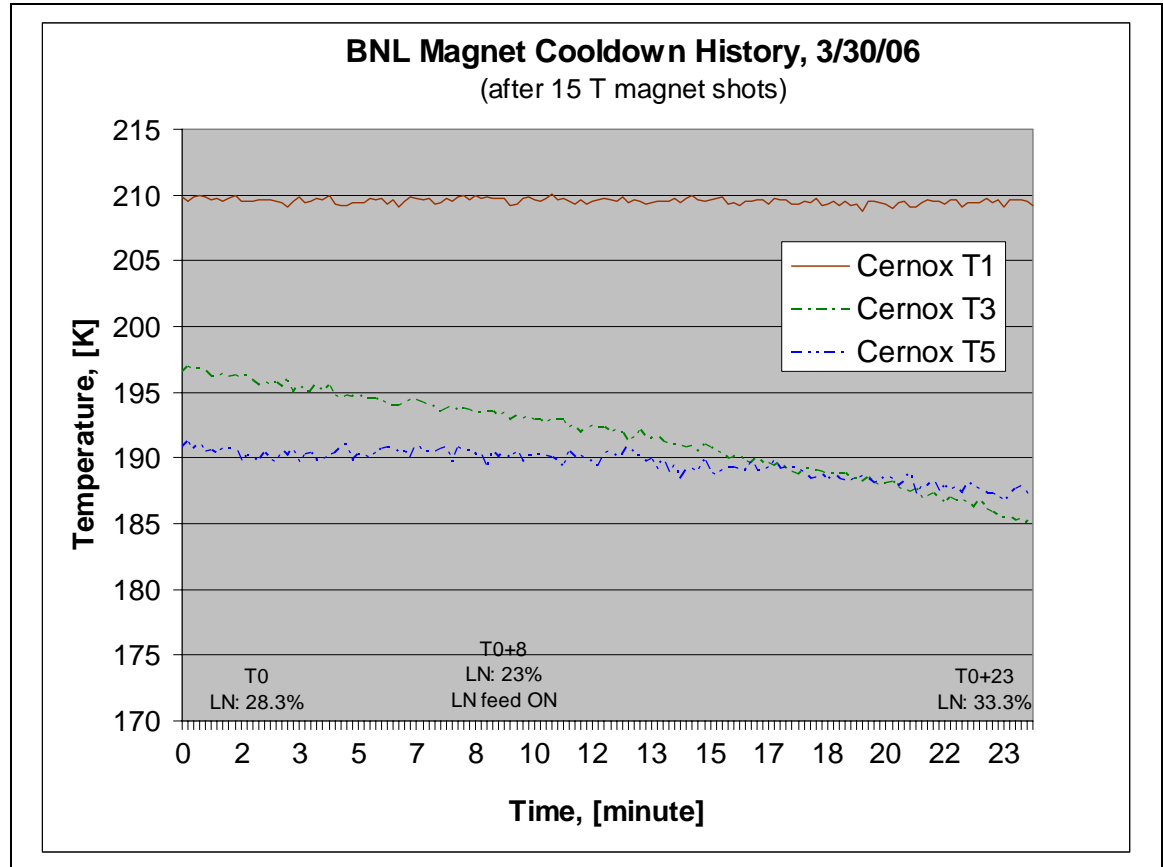
**BNL Magnet Cool-down History, 3/27/06 - 3/28/06**
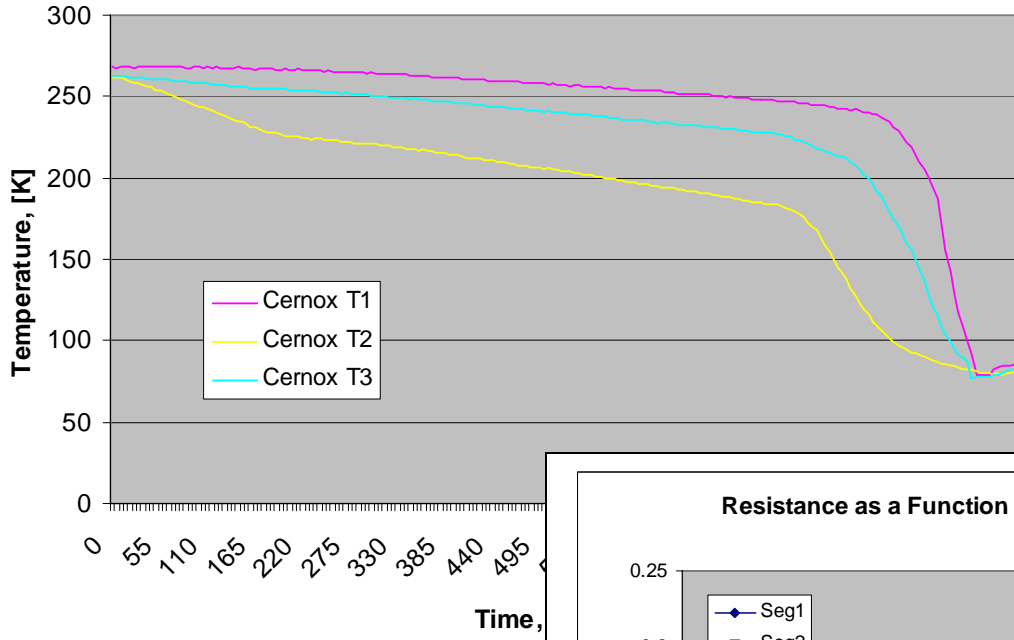
**Resistance as a Function of Temperature**

**BNL Magnet Cool-down History, 3/27/06 - 3/28/06**