

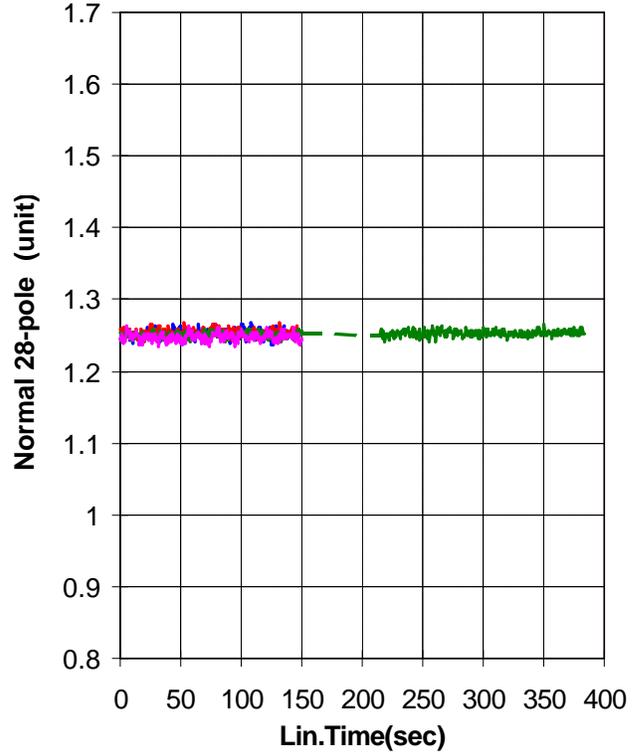
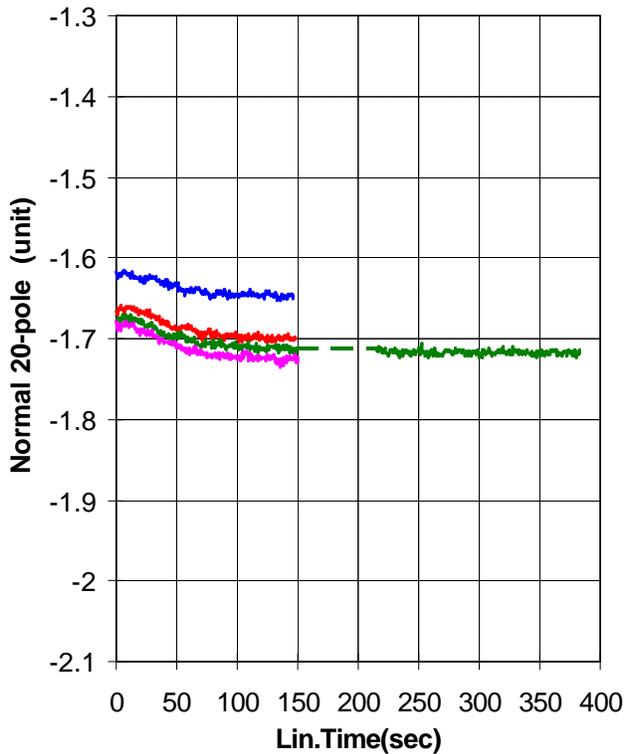
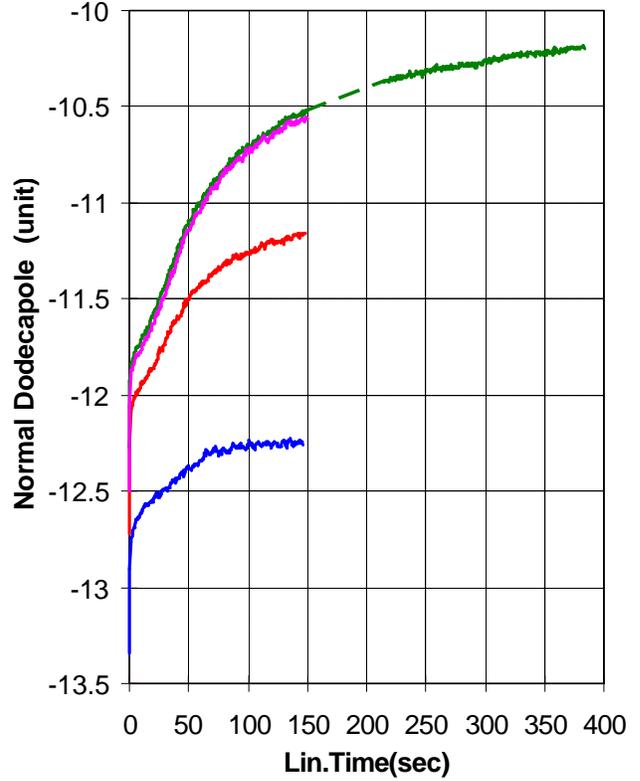
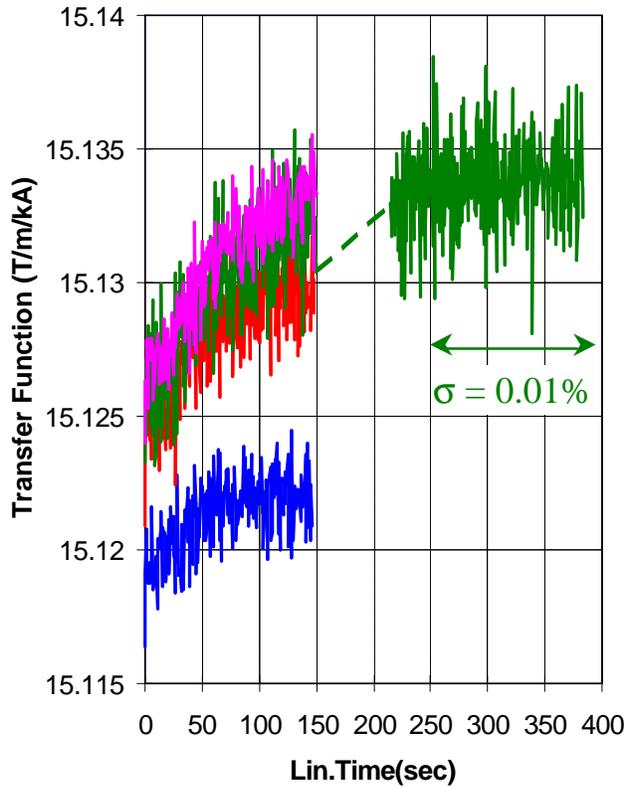
## **Time Decay at 470A (15% below Injection) in QR7109 After Cycles to Various Currents**

- Measurements are in the straight section with a 9 inch long coil.
- Measurements are with a time resolution of ~0.66 second.
- AC cycles done from 25 Amps to X Amps and back at 60 A/s, where X = 1000 A, 2500 A, 3500 A, or 5000 A. The magnet was quenched before the 1000 A AC cycle.
- Current ramped from 25A to 470A at 40 A/s and then held constant.
- Smooth current ramp profile with quadratic time dependence at the beginning and the end of the ramp.
- Measurements made during the ramp (40 A/s) from 25 A to 470 A, as well as for about 150 seconds at the 470 A flat top. For the 3500 A cycle, the measurements at flat top were extended to a total of 380 seconds, with a “dead period” of about 64 seconds.
- Time  $t = 0$  is defined as the time when the magnet current has reached approx. 450 A.
- For each value of maximum current, the time decay was measured at least 3 times. Data reproducibility was good (within measurement noise,  $\sigma \sim 0.01\%$  in Transfer Function).
- Transfer function values for 1000 A cycle are significantly different from those for 2500 A, 3500 A and 5000 A cycles.

# Time Decay at 470 A in QR7109: Allowed Terms

— QR7109B9.101 470A AFTER 1000A CYCLE  
 — QR7109F1.101 470A AFTER 3500A CYCLE

— QR7109D5.101 470A AFTER 2500A CYCLE  
 — QR710996.101 470A AFTER 5000A CYCLE



# Time Decay at 470 A in QR7109: Unallowed Terms

— QR7109B9.101 470A AFTER 1000A CYCLE

— QR7109D5.101 470A AFTER 2500A CYCLE

— QR7109F1.101 470A AFTER 3500A CYCLE

— QR710996.101 470A AFTER 5000A CYCLE

