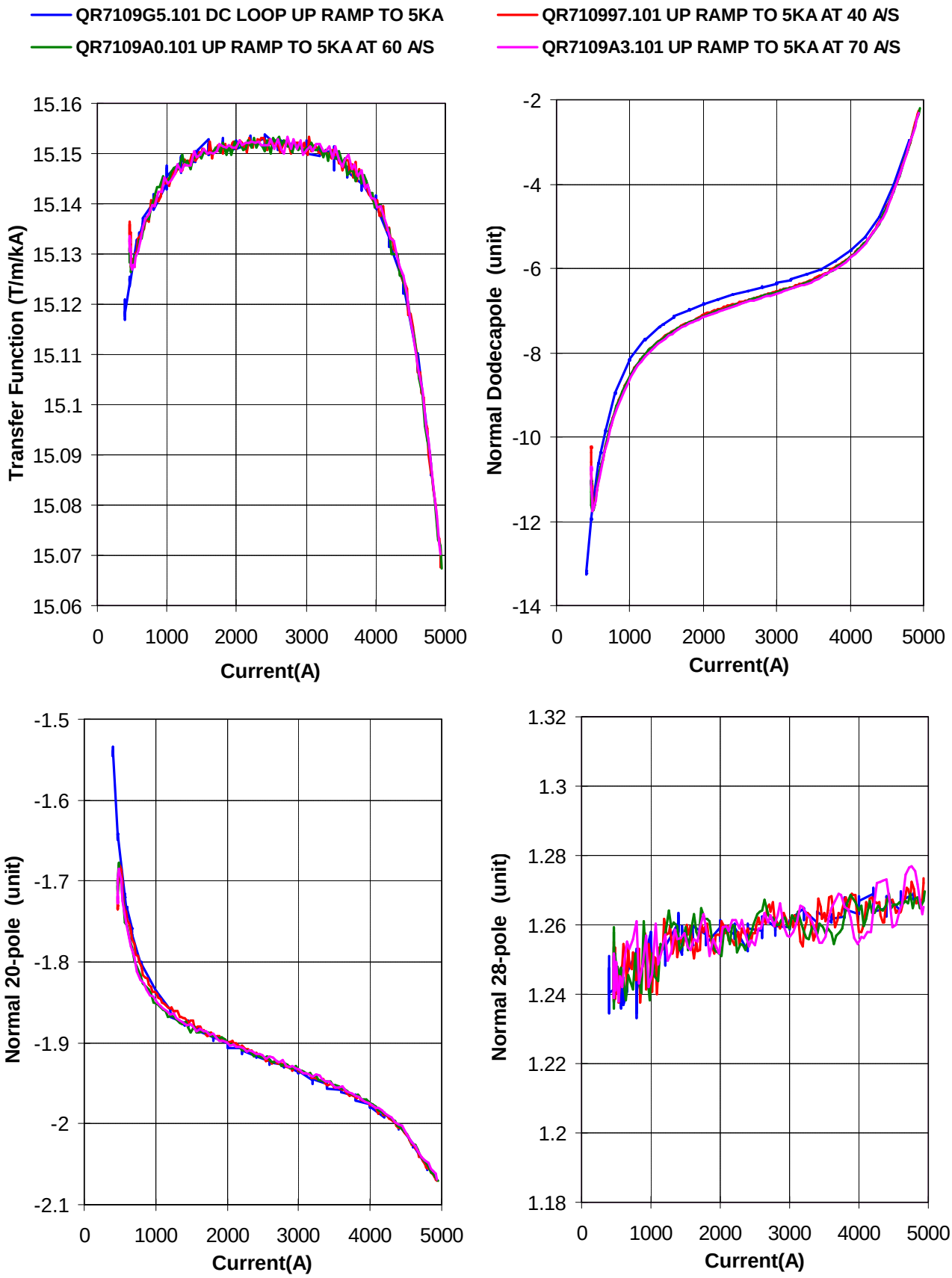
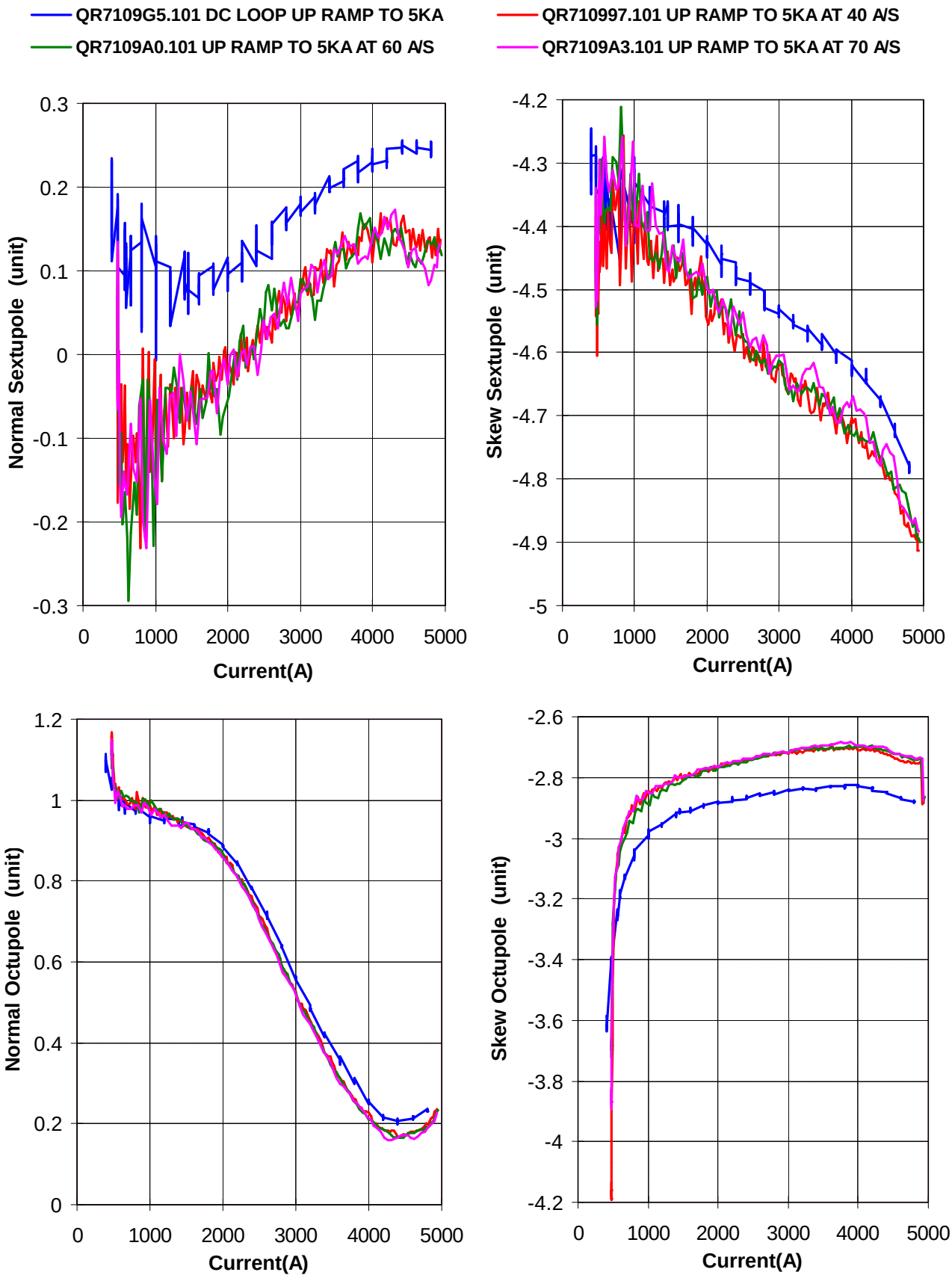
Ramp Rate Effects (Up Ramp) in QR7109
After Cycles to Various Currents

- Measurements are in the straight section with a 9 inch long coil.
- 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 once before the first AC cycle to 1000 A.
- Current ramped from 25A to 470A at 40 A/s and then held constant.
- "AC Loop" measurements were made while the current was ramped up from 470 A to X Amps at 40 A/s, 60 A/s and 70 A/s (X = 1000 A, 2500 A, 3500 A, or 5000 A). For X = 1000 A and 2500 A, measurements were also made at 20 A/s. Downward ramps from X Amps to 25 A were also measured.
- Smooth current ramp profile with quadratic time dependence at the beginning and the end of the ramp.
- Measurements were made with a time resolution of ~0.66 sec. Data analysis corrected for effects due to finite ramp rates and changing current during each rotation of the measuring coil.
- 5000 A cycle, 40 A/s ramp was measured three times to establish good reproducibility of data.
- "DC Loop" measurements were made by ramping the current from one level to the next at 16 A/s, waiting ~15 seconds, and then making a set of 8 measurements (~0.66 sec. apart) at a fixed current. Only one DC loop was measured, after AC cycle to 5000 A.
- No significant ramp rate effects on the transfer function were seen up to ramp rates of 70 A/s.
- Transfer functions after a 1000 A cycle were systematically different from other cycles, consistent with results of time decay measurements.

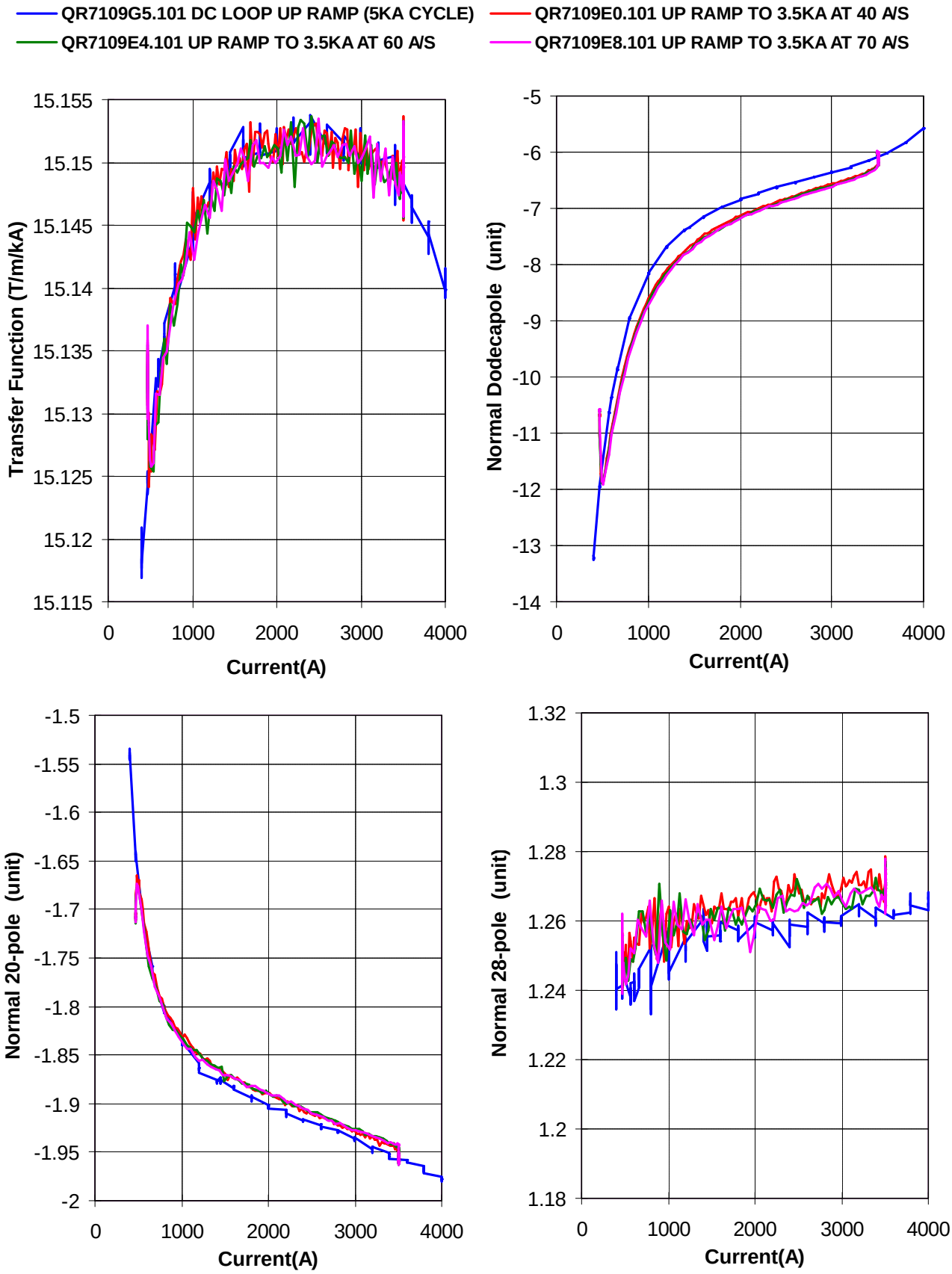
Ramp rate effects in QR7109 after 5000 A cycle: Allowed Terms



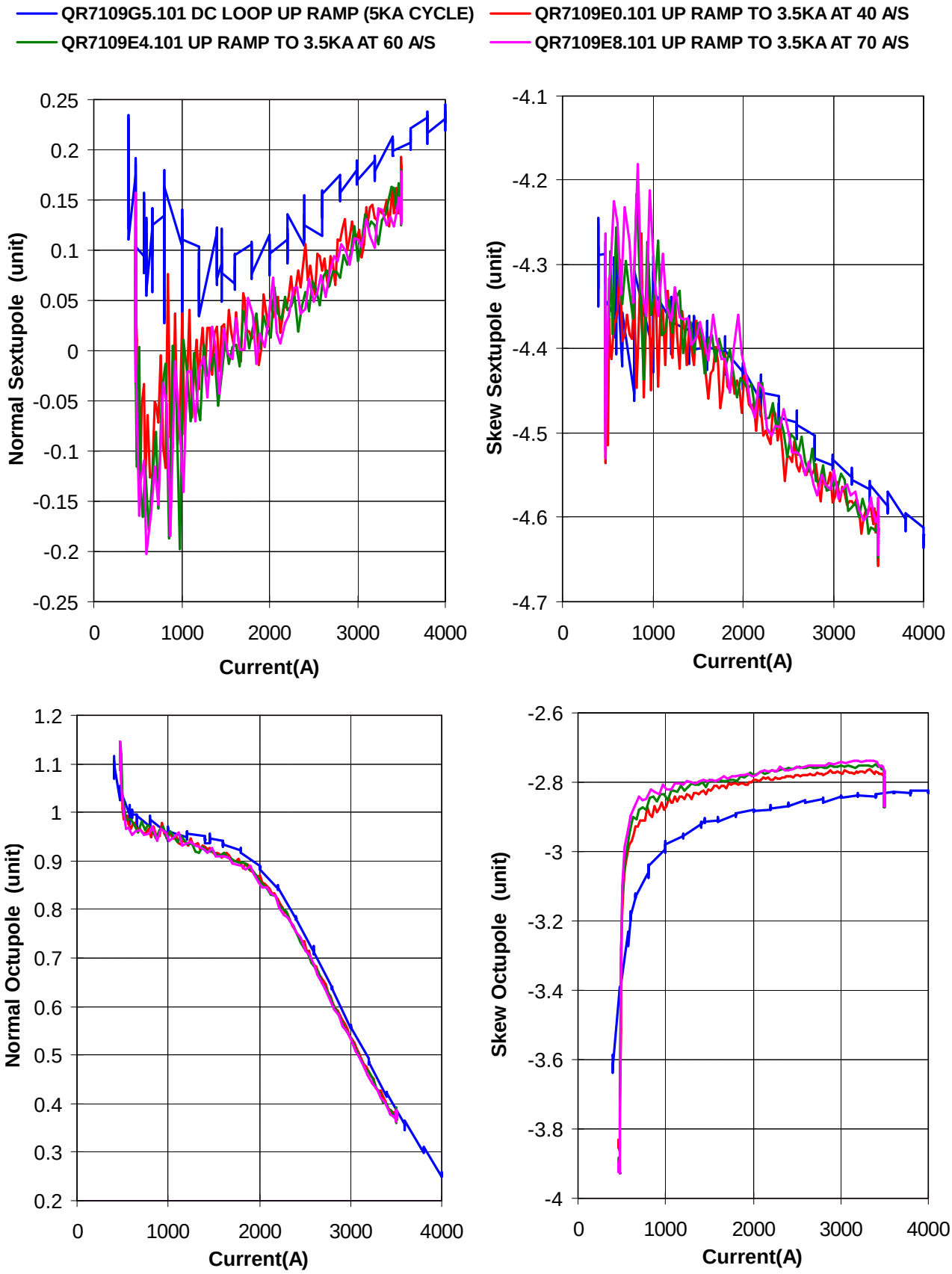
Ramp rate effects in QR7109 after 5000 A cycle: Unallowed Terms



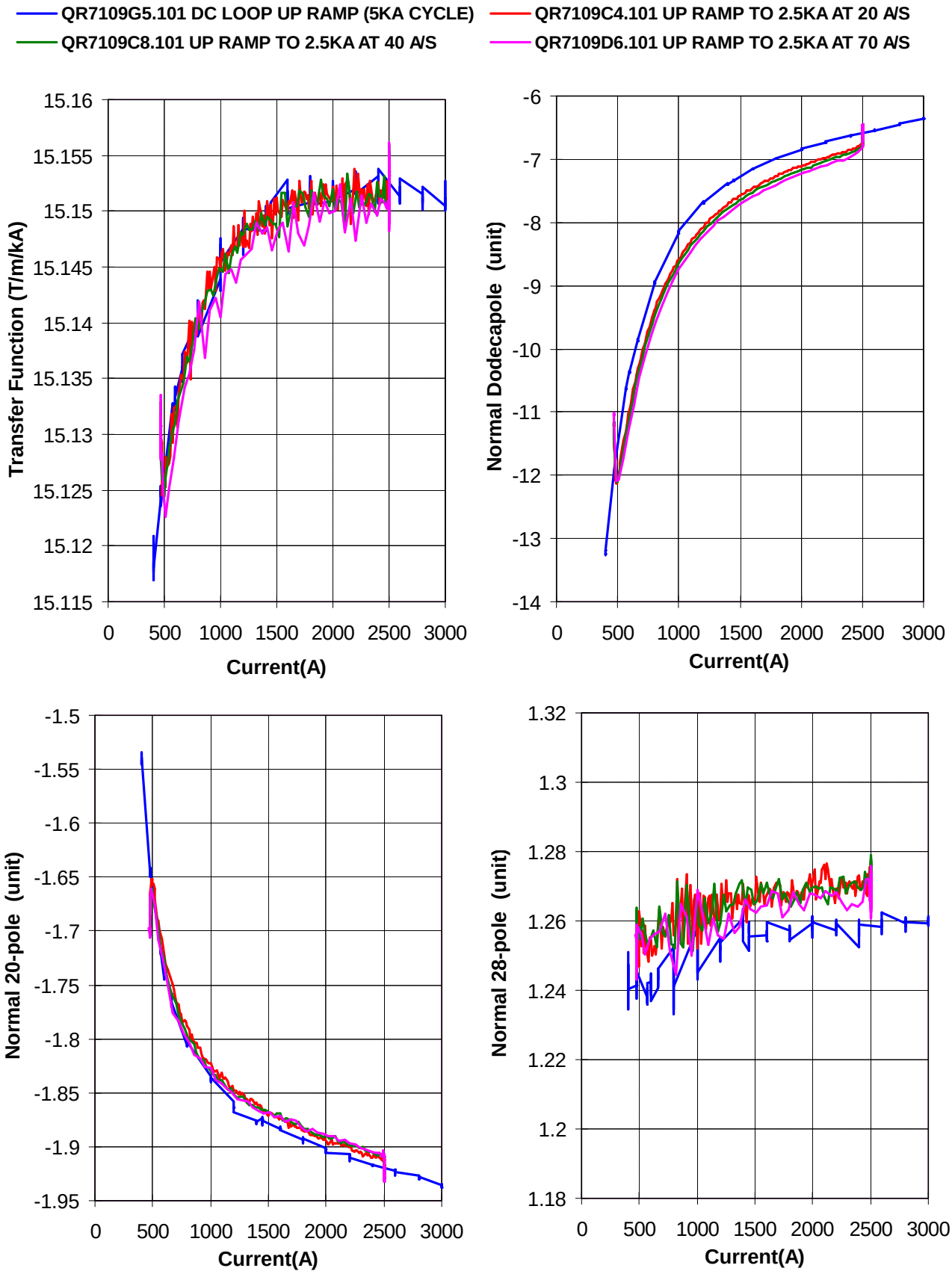
Ramp rate effects in QR7109 after 3500 A cycle: Allowed Terms



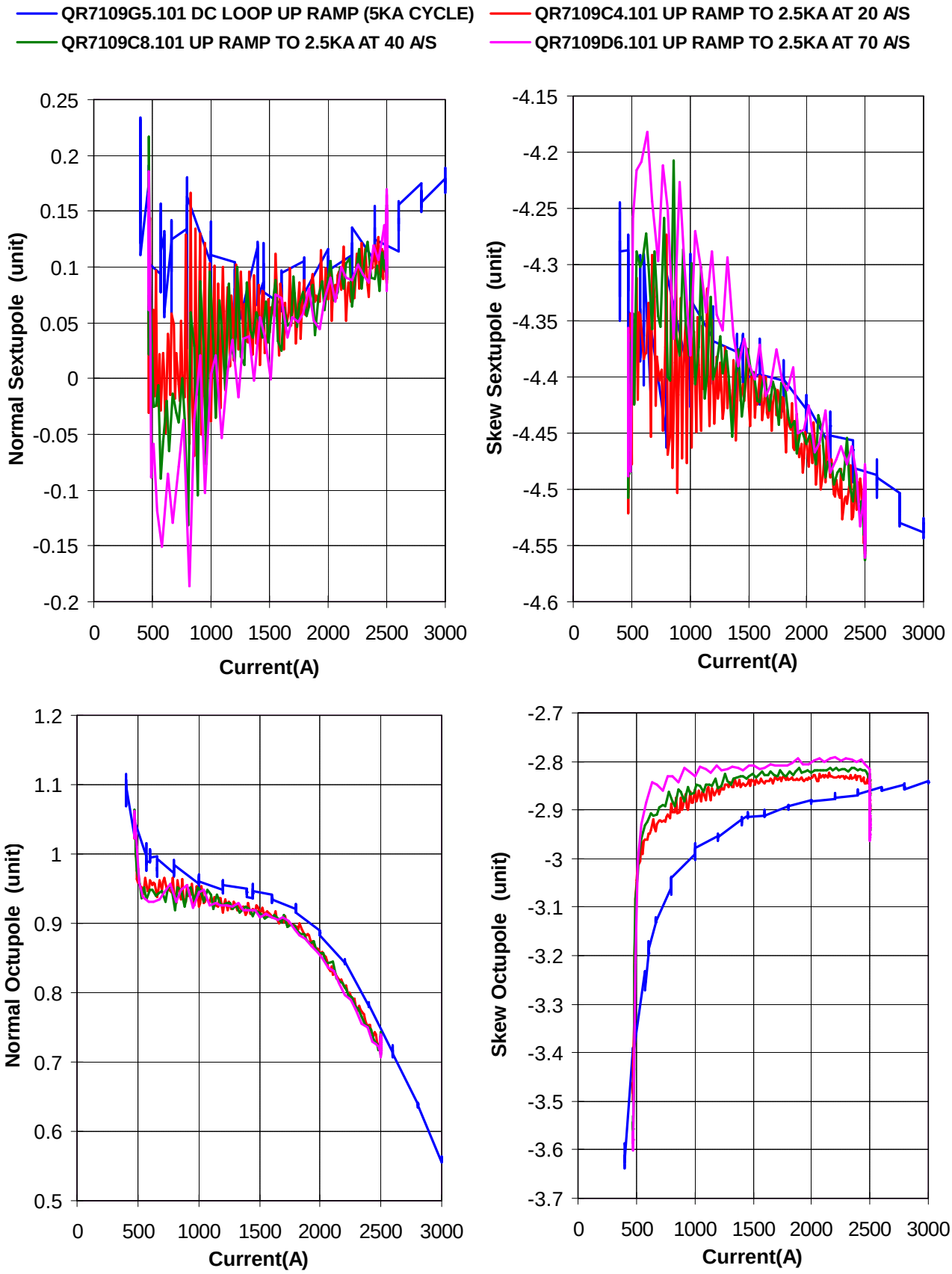
Ramp rate effects in QR7109 after 3500 A cycle: Unallowed Terms



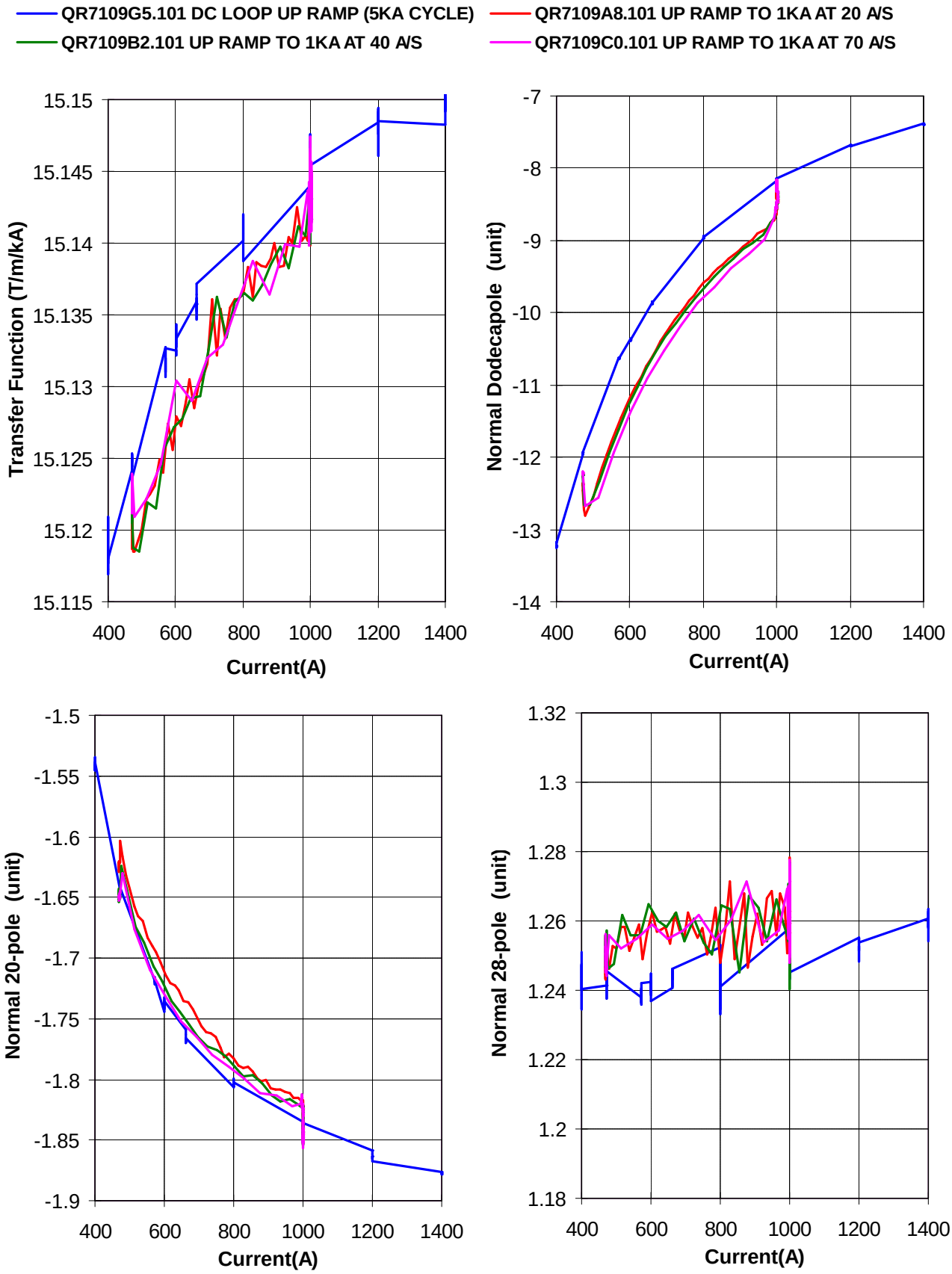
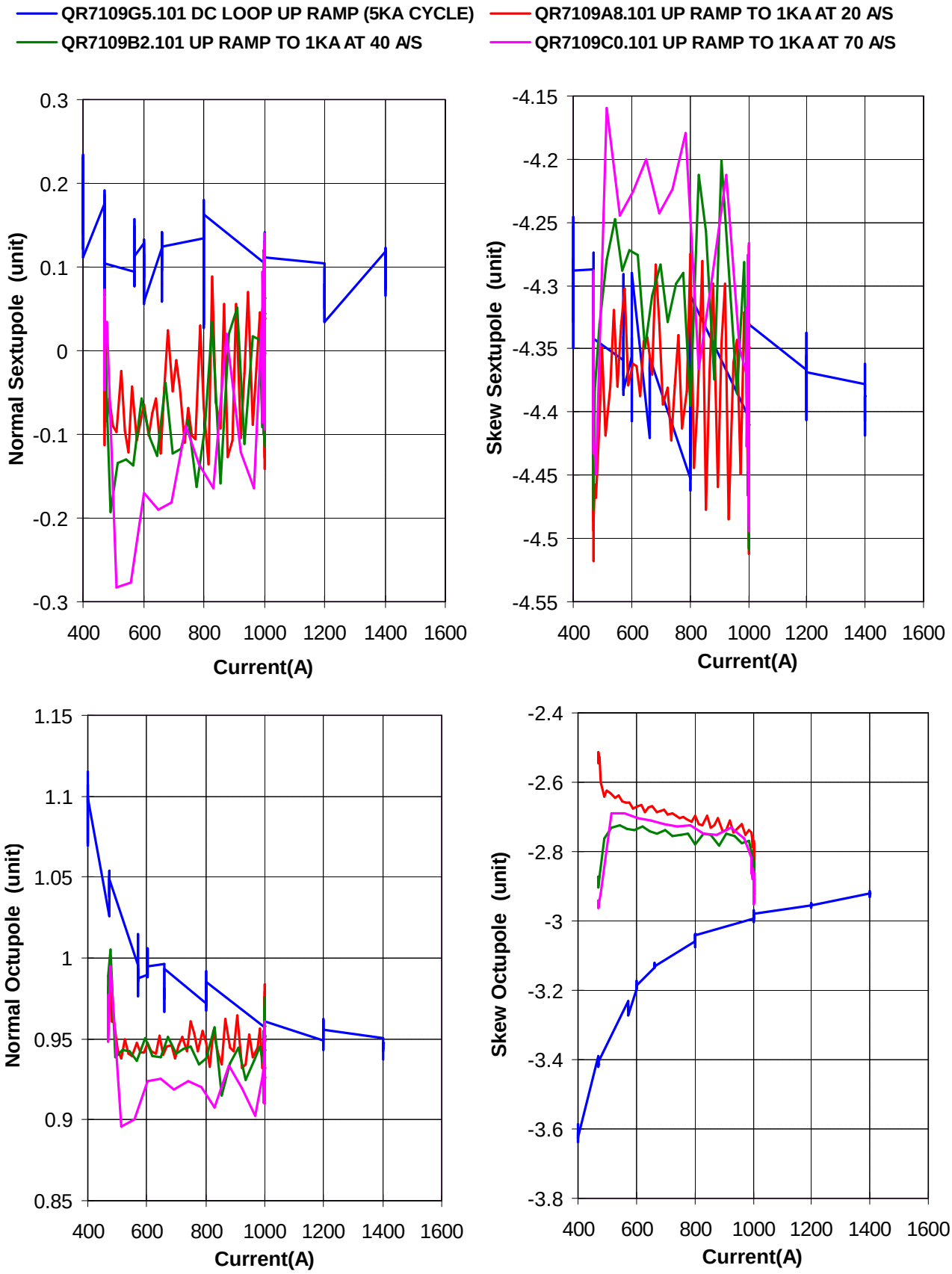
Ramp rate effects in QR7109 after 2500 A cycle: Allowed Terms



Ramp rate effects in QR7109 after 2500 A cycle: Unallowed Terms



Ramp rate effects in QR7109 after 1000 A cycle: Allowed Terms



Ramp rate effects in QR7109 after 1000 A cycle: Unallowed Terms