D R A F T rev. 6
March 29, 2016

Electrical Quality Assurance

QXF Coil Fabrication

Test parameters:

- Coil inductance (L&Q) measurements at 20 Hz, 100 Hz and 1000 Hz
- Coil resistance (R) measurements at 1 A
- Impulse tests at 500 V, 1000 V, 1500 V, 2000 V and then with 100 V steps up to 2500 V, 2 test pulses applied at each step
- Impulse tests with reversed polarity at 500 V, 1000 V, 1500 V, 2000 V and then with 100 V steps up to 2500 V, 2 test pulses applied at each step

Pre-Fabrication Tests:

1. Trace Hipot before making holes — 3000 V
2. Trace Hipot after making holes — 3000 V

Coil Fabrication Tests:

3. Coil winding: — Real-time monitoring of continuity between coil and parts and mandrel

   // In coils #1 and #2 we may need to open coating on the metal parts for the continuity check

4. After curing, coil in curing mandrel: — Coil RLQ
Continuity check: coil to metal parts

5. Before reaction, fixture open, w/o mold blocks and SS shell, coil midplane down — Coil RLQ
Continuity checks: coil to metal parts

6. After close and flip, fixture open, coil midplane up: — Coil RLQ
Continuity checks: coil to metal parts

7. After reaction, fixture open, coil midplane down: — Coil RLQ
Continuity checks: coil to metal parts

8. After splicing, OL trace installed, short wires attached: — Coil RLQ
Voltage tap & heater resistances

9. After fixture bolted closed: — Continuity checks:

coil-to-saddles,
coil-to-heaters,
saddle-to-saddle,
heaters-to-saddles

// Do we need a Coil to Gnd (mold-blocks) continuity check ?

10. After flip, fixure open, coil midplane up:

Coil RLQ
Continuity checks:
coil to metal parts

11. After IL trace installed, short wires attached:

Coil RLQ
Voltage tap & heater resistances

12. Before impregnation, fixture bolted closed:

Coil RLQ
Continuity checks:
coil-to-saddles,
coil-to-heaters,
saddle-to-saddle,
heaters-to-saddles

13. After impregnation, fixture open, Wires extended, Coil midplane up:

Coil RLQ
Continuity checks:
coil-to-saddles,
coil-to-heaters,
saddle-to-saddle,
heaters-to-saddles,
coil to pole,
pole segment to segment,
coil to end spacers
Voltage tap & heater resistances

14. After close and flip, fixture open, coil midplane down:

Continuity checks:
coil-to-OL spacers
Hipots:

Coil-to-Heaters	2500 V
(2000 V in previous draft)	
Coil-to-Endshoe	1000 V
(instead of 1200 V)	
Coil-to-Central Island	500 V *
Heater-to-Endshoe	2500 V
(instead of 1000 V)	
Endshoe-to-Endshoe	600 V

Impulse test at 2500 V
Before shipping

// Hipots can be done after step #13 instead

15. Final, after final connectors installed, coil on shipping tool:

Coil RLQ
Voltage tap & heater resistances,

Impulse test at 2500 V

After shipping

Hipots:

Coil-to-Heaters	2500 V
(2000 V in previous draft)	
Coil-to-Endshoe	1000 V
(instead of 1200 V)	
Coil-to-Centr. Island	500 V *
Heater-to-Endshoe	2500 V
(instead of 1000 V)	
Endshoe-to-Endshoe	600 V

*Comment: To be verified