Recommendations for DC0305 following Turn-to-turn Short in Keying Process

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January 29, 1991
TS-SSC 91- 020

Problem: A turn-to-turn short developed in the lower inner coil (coil number 17M-1007-R) of magnet DC0304 during keying. The short appeared at 6800 psi pump pressure. The short caused a drop in the lower coil resistance of 87 mOhm, which was large enough to trigger the alarm which sounds when the upper and lower coil resistances differ by more than 1%.

The pump pressure was maintained close to 6800 psi over a period of several hours, while voltage tape and coil resistance information was used to localize the short to the uninstrumented portion of the lower inner coil (between the 9A and 0A voltage tap positions.)

When the pump pressure was lowered, the short dissapeared between 1000 psi and 0 psi. The pressure was then raised to 350 psi, the minimum value for any contact between the press tooling and the coil, and then raised to 500 psi, at which pressure the short was still absent. At 550 and 600 psi, the lower inner coil resistance dropped somewhat, and at 650 psi the short returned.

More detailed information on this short will be published later.

Recommendations: For now, I would recommend the following procedure be carried out:

1) Remove DC0305 from the keying press, and remove the collar packs from the coil assembly.

2) Send the collar gage packs back to Ethel Gonzy for repair of the five know problematic gages.

3) Locate the short in the lower inner coil by pressing the coil inch by inch with the sizing fixture or some other appropriate device.

4) There are at least three assembly options:

i- Replace the inner coils in DC0305 with those intended for DC0306, and continue assembly as soon as possible.

ii- Replace the inner coils of DC0305 with some other available pair (spare coils?) and continue assembly as soon as possible.

iii- Push DC0306 ahead of DC0305, and continue DC0305 with spare coils. (Back-winding and recuring being out of the question at this point?)

Of course, we could always have a stroke of luck and find a repairable turn-to-turn short in the coil.

Conclusions of the PAC meeting, January 29, 1991: Choose option iii above.

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