

## AP4-3-INV

### A Quench of an 800-MHz HTS Insert (H800)

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An 800-MHz HTS insert (H800), together with a 500-MHz LTS NMR magnet (L500), constitutes the MIT 1.3-GHz high-resolution LTS/HTS NMR magnet (1.3G). The H800, composed of 3-nested coils, each a stack of no-insulation REBCO double-pancake coils, was designed to generate at 4.2 K and 251.3 A a center field of 18.3 T (= 18.8 T - 0.5 T), where 0.5 T is an estimated field by screening current. In 2018, we operated H800 in a bath of liquid helium at 4.2 K: ~5 min after its power supply had reached 251.3 A, H800 quenched. When it quenched, its measured center field was 17.9 T, corresponding to a computed (from 18.3 T and 17.9 T) azimuthal (field-generating) current of 245.8 A. This talk begins with a brief history of the MIT 1.3G program that began in 2000, and then proceeds to focus on H800. Topics include: 1) the H800's charging history when it quenched; 2) a likely quench cause; 3) consequences seen in H800 after quench. The talk concludes with a brief description of key design features in H800N, a new 800-MHz insert, introduced in light of lessons learned from the H800.

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