

## **Session II: Requirements for 2G Wire in Practical Applications**

**Introduction (M. Gouge):** Table comparing requirements/metrics for 1997 versus 2006

**Cable Requirements (D. Lindsay):**

- 3.8 → 4.4 mm wide, 500+ meters continuous lengths, corrosion resistant, must withstand stranding and installation, 100 → 200 A/cm-w
- AC losses affect cooling requirements; operate at higher temperature
- allow for some tape-to-tape joining
- get as close to \$10/kAm as possible

**Transformer Requirements (T. Golner):**

- 1300 units built per year; 70 → 150 volts/turn
- 12.6 kA/cm<sup>2</sup>; talk contained requirements table

**FCL Requirements (A. Malozemoff):**

- fault currents can reach 60 kA; HTS an attractive solution
- >100 fault event lifetime; parameter tables included

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### Large Coil Requirements (C. Rey):

- showed cost/performance targets/metrics for a wide variety of magnets
- NMR, magnetic separations, and accelerator magnets are applications where HTS can compete; showed requirements table

### Motor/Generator/MVAR Requirements (A. Malozemoff):

- two MVAR systems ordered by TVA (based on successful testing)
- 36 MW motor to Navy by end of 2006
- f-f-f replacement for 1G; <\$50/kAm; 4 → 10 mm wide, 200 → 1000 m with a few splices;  $J_e$  (77 k, sf) >17 kA/cm<sup>2</sup>; T>35 K
- $J_e //ab = 2 J_e //c$ ; N>15.

### DOD Requirements (P. Barnes):

- moving towards all-HTS generator
- temperature 27 to 77 K (depends on many factors)
- AC losses—need striping
- 1 → 5 T; more amps, fewer turns
- 100+ m lengths