

# Engineering Evaluation Criteria

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NCSX Project Meeting

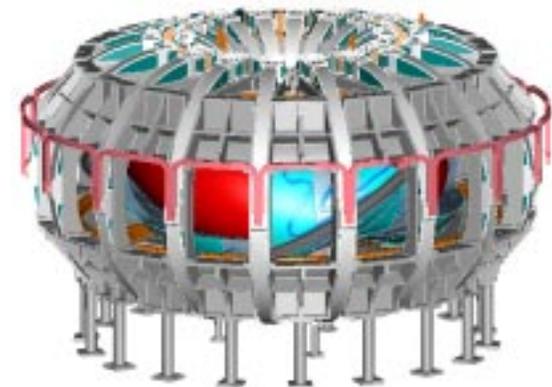
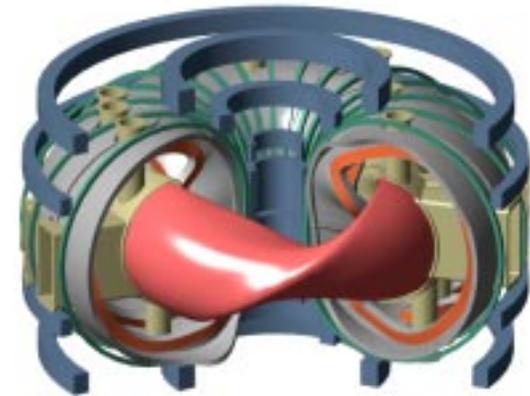
September 26-27, 2000

# Evaluation criteria defined for comparing saddle and modular options

- Provide coil currents in reference scenario
- Satisfy configuration requirements
  - Fabrication
  - Assembly
  - Access (NBI, HHFW, diagnostics, personnel access)
  - Structural adequacy
- *Coil currents for compulsory flexibility requirements not defined or considered*

# Configuration development in full swing

- Remarkable progress recently in modular configuration
  - Reflects latest modular coil design
  - VV, inter-coil structure, and TF/PF coils added
  - Access study just started
- Saddle configuration much improved from c82 in PBX
  - Simple, robust design for new TF/PF coils and support structure
  - Convincing scheme for final assembly
  - Much improved access



# Substantial progress made evaluating criteria

- Filamentary coil definition provided by coil group
- Initial set of coil currents generated for reference scenario with free-boundary optimizer
- Winding pack envelopes generated
- Temperature rises calculated
- Coil inductances calculated

# Much more work required to demonstrate meeting even compulsory criteria

- Scenario refinement for *simultaneously* providing...
  - Good surfaces
  - Stability
  - Confinement
  - Consistency with simulations
  - Volt-second accounting
  - Latest coil improvements
- Access
- Structural adequacy
- Power requirements
- Cost

# Progress reports...

- Machine configuration and assembly
  - Saddle coil option (Brown)
  - Modular coil option (Williamson)
- Access (Cole)
- Fabrication (Heitzenroeder)
- Reference scenario (Reiersen)
- Conductor design (Nelson)
  - Winding cross-sections and copper area
  - Temperature rise
- Inductance calculations (Brooks)