Eight-Pack Project Systems Review
February 22, 2002
RF Distribution
Primary Responsibilities

– Transmit the average power of 2 XP-3 Klystrons to thermal loads via a SLED II system.

– Provide a sufficient and maintainable vacuum system that will not grossly interfere with experiments involving the transmission of RF power.

– Integrate LLRF and Operational requirements into a manageable waveguide system.

– Design and plan for a successful transition to Phase II / DLDS
Phase I System Isometric
2 Klystron Isometric
SLED II Tuners
RF Distribution Specifications

• System Operating Parameters
  – Maximum Power 600MW @ 400n-sec
  – Thermal Load ~225 kW + 25% (8-Pack)
  – Vacuum
    • Lowest Operational Pressure 2 X 10⁻⁹ torr
    • Maximum Non-Operational Pressure 1 psig
    • Pressure Profile TBD
  – LLRF Coupling 45 dB
  – SLED II Waveguide WC 6.725
  – Insitu Bake Temperature 225 °C
  – Component Radiation Shielding TBD
  – RF Transmission Efficiency ~90%
  – Total System Efficiency ~66%
System Development

- **80 % Complete / Engineering Phase**
  - All component drawings complete less open issues, supports, and final top assembly. (97% Design, 55% Drawing, 12% Purchase) @ 2/15

- **We are active in Procurement**
  - Loads, Bellows, 10” Flanges, Gaskets, All Waveguide, WR 90 Pumpouts, WR 90 Magic Tees, WC 6.725 Tee cans, 1.6 MM Flanges, Weld Fixtures, Cooling Material, ect.

- **Open Issues**
  - WC 1.6 Coupler RF Geometry
  - RF Approval of Iris Fabrication Sequence
  - Cross Potent Short Configuration
  - WC 6.725 End Prep, Welding, and Post Process
  - 100 MW Load Testing
  - Dedicated Vacuum Equipment
Schedule & Manpower

- Revised Production Schedule to Scott Anderson last week.
- Resource Loading against Budget first version next week.
- Installation Schedule for Fall by July.

- Fabrication, Equipment, and Manpower
  - RF geometry from Tantawi & Nantista
  - Marnock, Rago, Jongewaard, Jobe, and 3.5 Designers
  - Issues
    - Summer ‘Down’ Priority in MFD
      - 3 Tier Plan
    - Cold Test and Post Process Resources
    - Dedicated Vacuum Equipment
    - Move to DLDS Layout
RF Interfaces

- Managed through ICD’s
  - Klystron / Average Power, Single Output, Physical Location, Vacuum Pump Control, Radiation Shielding.
  - Modulator / Gun Shielding, Klystron Shielding Supports.
  - Controls / Physical Layout, SLED Tuner Drive
  - Vacuum Control / Number of Pumps and Channels, Grouping, and Device Names.
  - LLRF / Coupling ratio, Coupling location, Coupler Electrical Connection
  - OPS & ES&H / Shielding, Access, Installation
- 5 of 7 Complete / None Signed