Preliminary Guidelines for Grounding and Power Distribution

- All Detector Systems Isolated
  - No Connection to Ground other than Safety Network
  - No Connection Between Different Detector Systems
- Low Voltage Power Supplies Floating
  - Double Shielding of Transformer Coils
  - Diode or "Saturable Inductor" to Gnd
- HV Power Supplies Floating
  - Resistor from Power Return to Gnd
- Data Transmission and Clock, Trigger Distribution
  - Optical
  - Shielded Twisted Pair
- Each Detector in Faraday Cage
  - Strongly Encouraged

Liquid Argon

- Carefully Designed Faraday Cage
- Mechanical Support Insulating
- LAr Cryo lines & Cooling Insulating
- Solenoid Line Insulated, Power Supply floating
- LV, HV Supplies Floating (with Safety connection)
- Separate Power Return for every voltage in each crate
- Clock, Trigger, Data - Optical
- LVL1 Sums - Differential, Transformer coupled
- Slow Controls - Optical or transformer coupled
- Sensors - isolated by one of above techniques

MDT System

- Carefully Designed Faraday Cage
- Are Chambers Isolated from Steel? From Support Structure?
- Gas lines & Cooling Insulating?
- What Isolation, filtering planned for Toroid Supply?
- LV, HV Supplies Floating (with Safety connection)
- Separate Power Return for each chamber (4-5V)
- Clock, Trigger, Data - LVDS or similar
- Slow Controls - LVDS, addressable JTAG
- Precision Calibration System - LVDS?
- Sensors - isolated by one of above techniques

Silicon System

- NO Faraday Cage (not believed needed)
- Each Module Isolated from Support Structure & Each Other
- Cooling Lines Insulating
- LV, Bias Supplies Floating (with Safety connection)
- Separate Power & Return for each Module (4000)
- Clock, Trigger, Data - Optical or LVDS
- Slow Controls - Combined with Clock
- Sensors - Isolated by one of above techniques

TRT System

- Faraday Cage (needs to be designed)
- Barrels & Wheels Isolated from Support Structure
- Gas & Cooling Lines Insulating
- LV, HV Supplies Floating (with Safety connection)
- Separate Power & Return for each 1/32 Wheel (proposal)
- Clock, Trigger, Data - Optical or LVDS
- Slow Controls - LVDS or similar
- Sensors - Isolated by one of above techniques

Tile Calorimeter System

- Faraday Cage- Drawer in Steel Girder
- Drawers Isolated from Calorimeter Steel
- Cooling Lines Insulating (if required)
- LV, HV Supplies Floating (with Safety connection)
- Separate Power & Return for each Quadrant of Detector
- Clock, Trigger, Data - Optical
- LVL1 Trigger Sums - Differential + Transformer?
- Slow Controls - ?
- Sensors - Isolated by one of above techniques