Installation & Commissioning

same basic idea as CTB
   TOF trays are significantly heavier than CTB though
due to heavy for two people
   need rail holder on the scissor lift or
   rail holder on spreader bar, hanging from hook

slide-in both trays at specific phi-position from East side

all on tray cabling must be installed beforehand, and “short”
   LV bus
   Canbus
   Data cables
   Water in/out

   HV (2) and Gas in/out attached after tray installed

need special fixture to support TPC for trays behind support arms
Installing TOF Trays behind TPC Support Arms

Requires support of TPC at 6 o’clock
Removal of TPC east support arms
During BEMC installation, hydraulic jack on TPC support endring used to support TPC. Thus know TPC support endrings can support weight of TPC.
Pre-installation Testing
done onsite after trays shipped to BNL

requires
Freon-only gas system
HV
spare TCPU and one LV supply
laptop with pcan dongle
simple water flow system would be very helpful
~100 sq.ft. of floor space somewhere close to WAH

Test Suite:
HV stability
   must hold +/-7125 V for >24 hours
HV currents
   must be <40 nA/side after HV on for 24 hours
LV currents
   must be to final specification w/in ~0.5A
R/O
   all 8 TDIG boards must respond to pcanloop/pc commands over actual data path cabling
Noise rates
   must be <40 Hz in all channels
Dead channels
   must be <6/tray
Leak Test
   must hold initial pressure for 6 hours
Post-installation Testing

done after trays are on rails and fully cabled up.

requires
actual gas system (freon-only)
HV via CAENs
TCPV connection to THUB
STAR water system

Test Suite:

- **HV stability**
  - must still hold +/-7125 V for >24 hours

- **HV currents**
  - must still be <40 nA/side after HV on for 24 hours

- **LV currents**
  - must still be to final specification w/in ~0.5A

- **R/O**
  - all 8 TDIG boards must respond to pcanloop/pc commands over actual data path cabling

- **Noise rates**
  - must still be <40 Hz in all channels

- **Dead channels**
  - must still be <6/tray
Installation Manpower

Tray pre-install testing: Collaboration

Tray mechanical installation: STSG Techs

Tray post-install work:
   water system: STSG Techs
   data cables: TOF Group
   LV cables: TOF Group & STSG
   HV cables: TOF Group & STSG

action item: identify space for tray testing and storage during runs

Installation Schedule

we install however many trays we have available in each long shutdown

tray arrival at BNL and successful pre-installation testing meets deliverable requirement

TOF participates in annual Shutdown Planning exercise
   we quote # trays to be installed
   estimates of time and manpower required