Status of Barrel 4

Steve Blusk
University of Rochester
July 28, 1999

Outline

- Motivation/Overview
- Schedule/Tasks
  - Mechanical
  - Electrical/DAQ4

Motivation/Overview

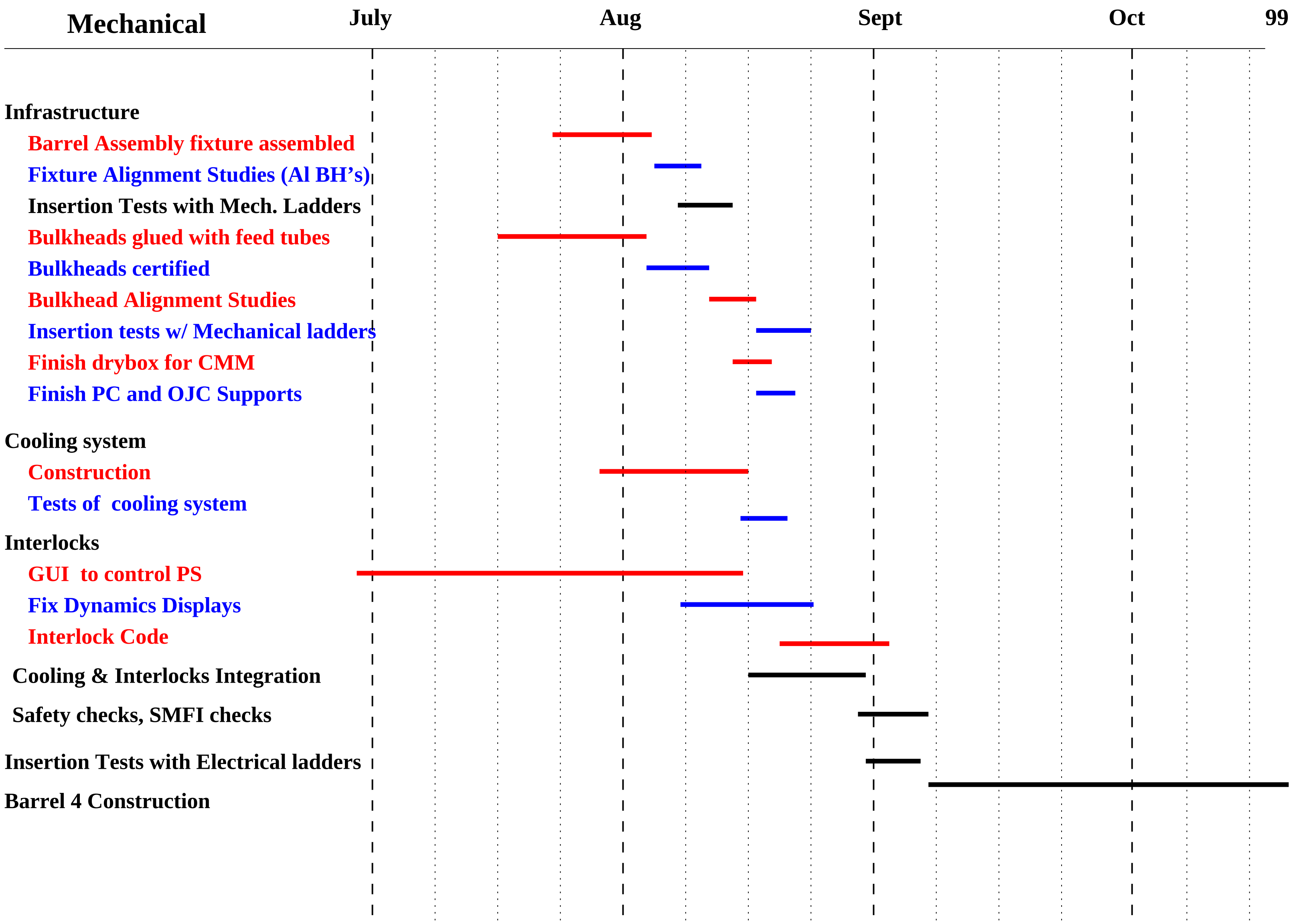
- Barrel 4 consists of 2 wedges with electrical ladders, balanced by 2 wedges with mechanical ladders diametrically across from them.
- We are planning that Barrel 4 will be used in a cosmic run this winter, and then for an engineering run next spring.
- This will give us valuable experience with operating a barrel.

<u>Things we will learn in building Barrel 4:</u>

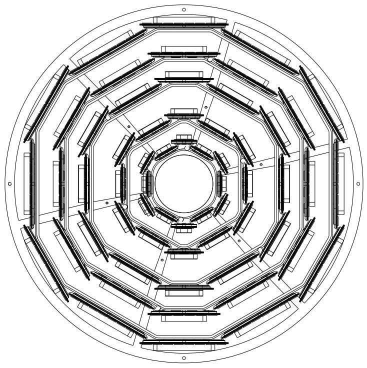
- Alignment issues
- Cabling issues (mechanical)
- Grounding, Shielding and Cross-Talk Issues
- Electrical operation of multi-wedge system
- Shakedown of Cooling/Interlock protection system
- ...

<u>Things we will learn in Barrel 4 cosmic run:</u>

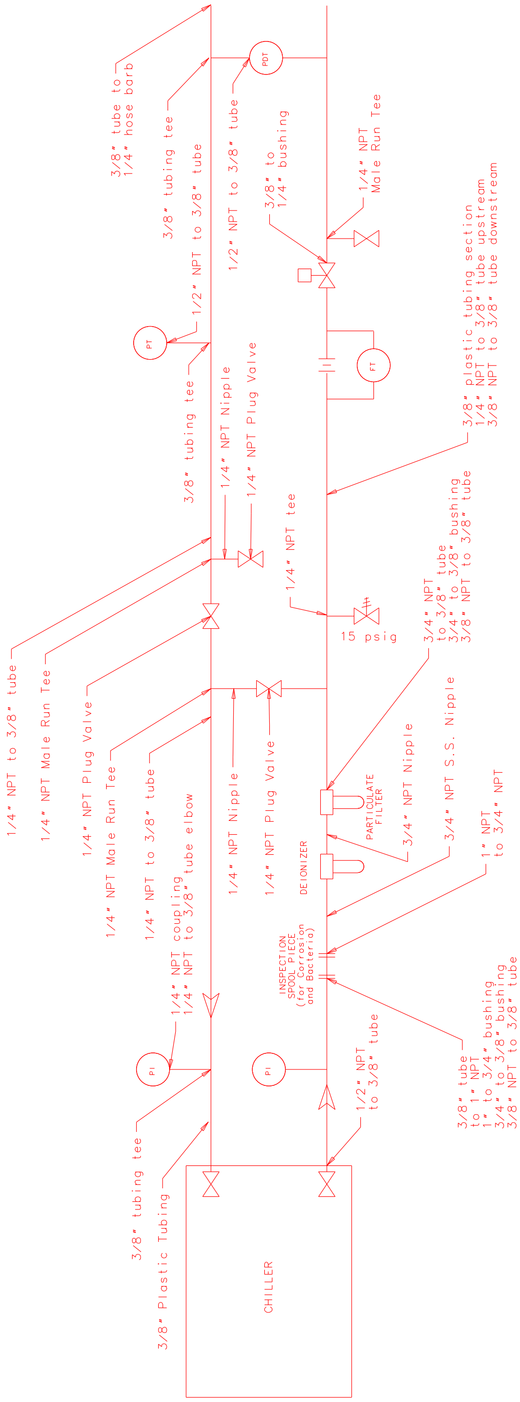
- Optimal settings of chip parameters
- Noise performance
- Hit resolution
- ...


Mechanical
July
Aug
Sept
Oct
99
Infrastructure
Barrel Assembly fixture assembled
Fixture Alignment Studies (Al BH’s)
Insertion Tests with Mech. Ladders
Bulkheads glued with feed tubes
Bulkheads certified
Bulkhead Alignment Studies
Insertion tests w/ Mechanical ladders
Finish drybox for CMM
Finish PC and OJC Supports
Cooling system
Construction
Tests of cooling system
Interlocks
GUI to control PS
Fix Dynamics Displays
Interlock Code
Cooling & Interlocks Integration
Safety checks, SMFI checks
Insertion Tests with Electrical ladders
Barrel 4 Construction

Bulkhead Certification



1. Dimensional inspection #1 on CMM
2. Slot inspection with gauge pins
3. Vacuum leak test #1
4. Pressure test at 25 PSI
5. Vacuum leak test #2
6. Thermal cycling
7. Vacuum leak test #3
8. Pressure Drop vs Flow Measurement
9. Vacuum leak test #4
10. Dimensional Inspection #2 on CMM
11. Photographs


3/8" tube to
1/4" hose barb
3/8" tubing tee
1/2" NPT to 3/8" tube
1/2" NPT to 3/8" tube
PDT
3/8" to
1/4" bushing
1/4" NPT
Male Run Tee
PT
3/8" tubing tee
1/4" NPT Nipple
1/4" NPT Plug Valve
FT
3/8" plastic tubing section
1/4" NPT to 3/8" tube upstream
3/8" NPT to 3/8" tube downstream
1/4" NPT tee
15 psig
3/4" NPT
to 3/8" tube
3/4" to 3/8" bushing
3/8" NPT to 3/8" tube
1/4" NPT to 3/8" tube
1/4" NPT Male Run Tee
1/4" NPT Plug Valve
1/4" NPT Male Run Tee
1/4" NPT to 3/8" tube
1/4" NPT coupling
1/4" NPT to 3/8" tube elbow
1/4" NPT Nipple
1/4" NPT Plug Valve
3/4" NPT S.S. Nipple
PARTICULATE
FILTER
3/4" NPT Nipple
DEIONIZER
1" NPT
to 3/4" NPT
INSPECTION
SPOOL PIECE
(for Corrosion
and Bacteria)
3/8" tube
to 1" NPT
1" to 3/4" bushing
3/4" to 3/8" bushing
3/8" NPT to 3/8" tube
PI
PI
1/2" NPT
to 3/8" tube
3/8" tubing tee
3/8" Plastic Tubing
CHILLER

6

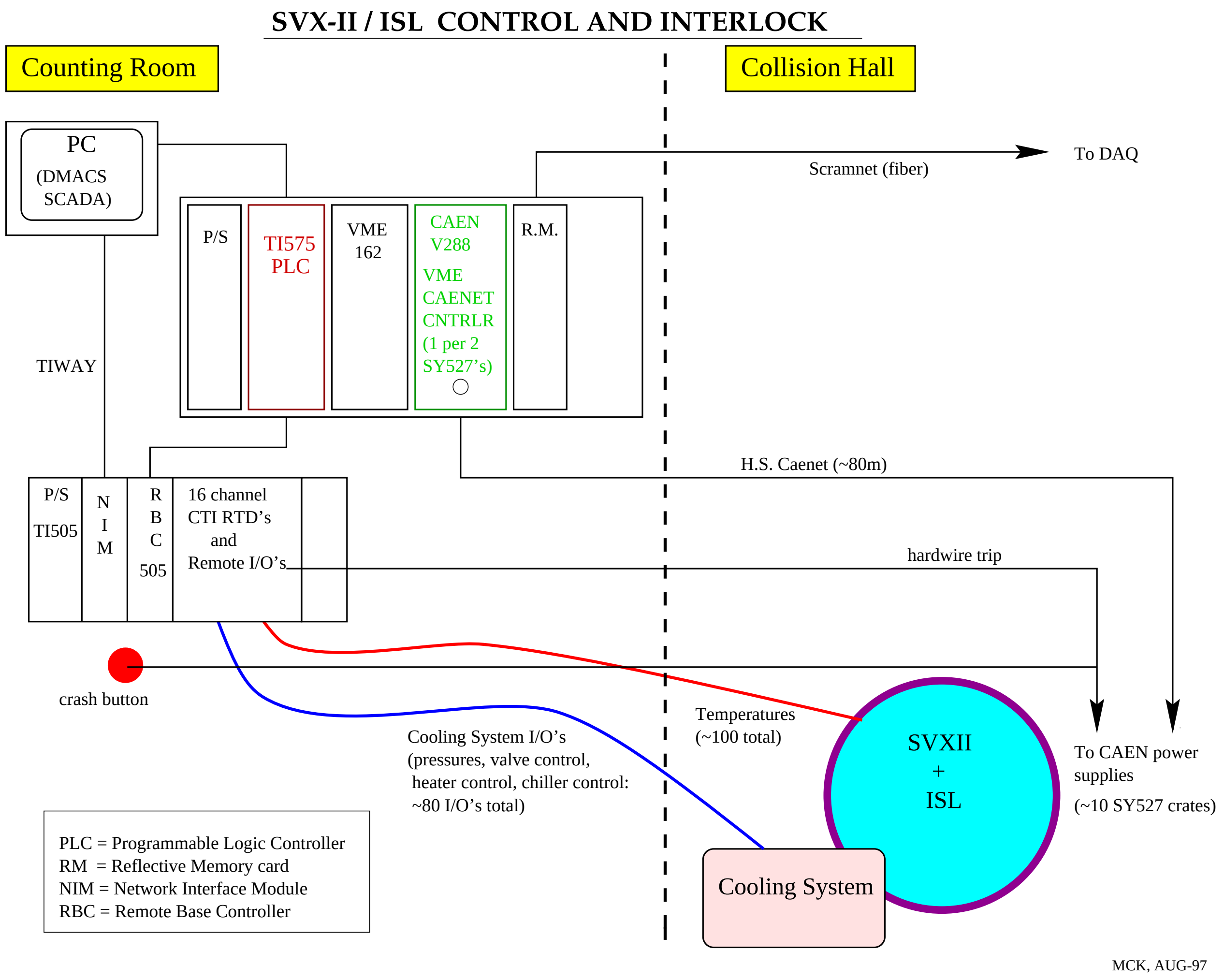
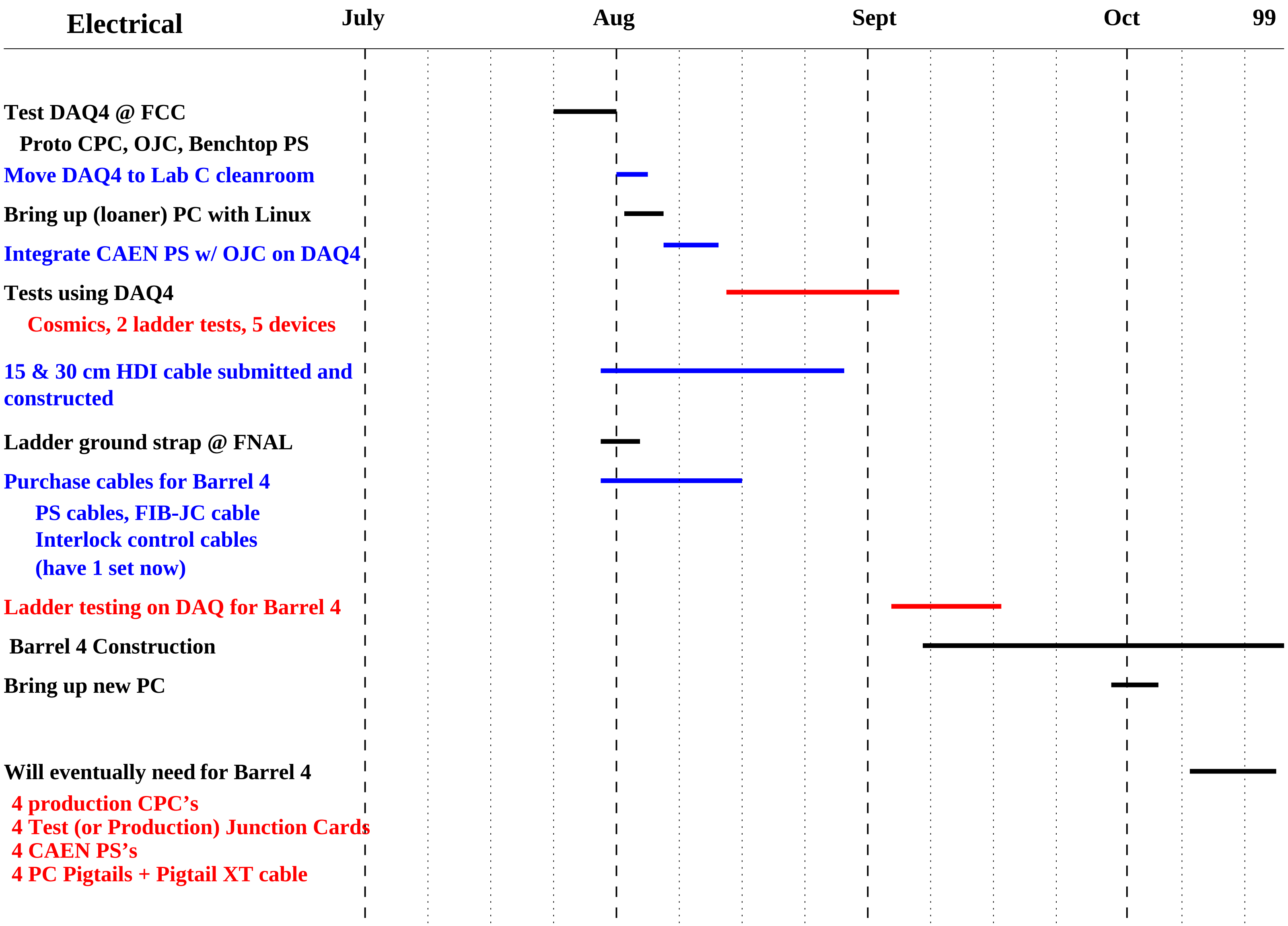
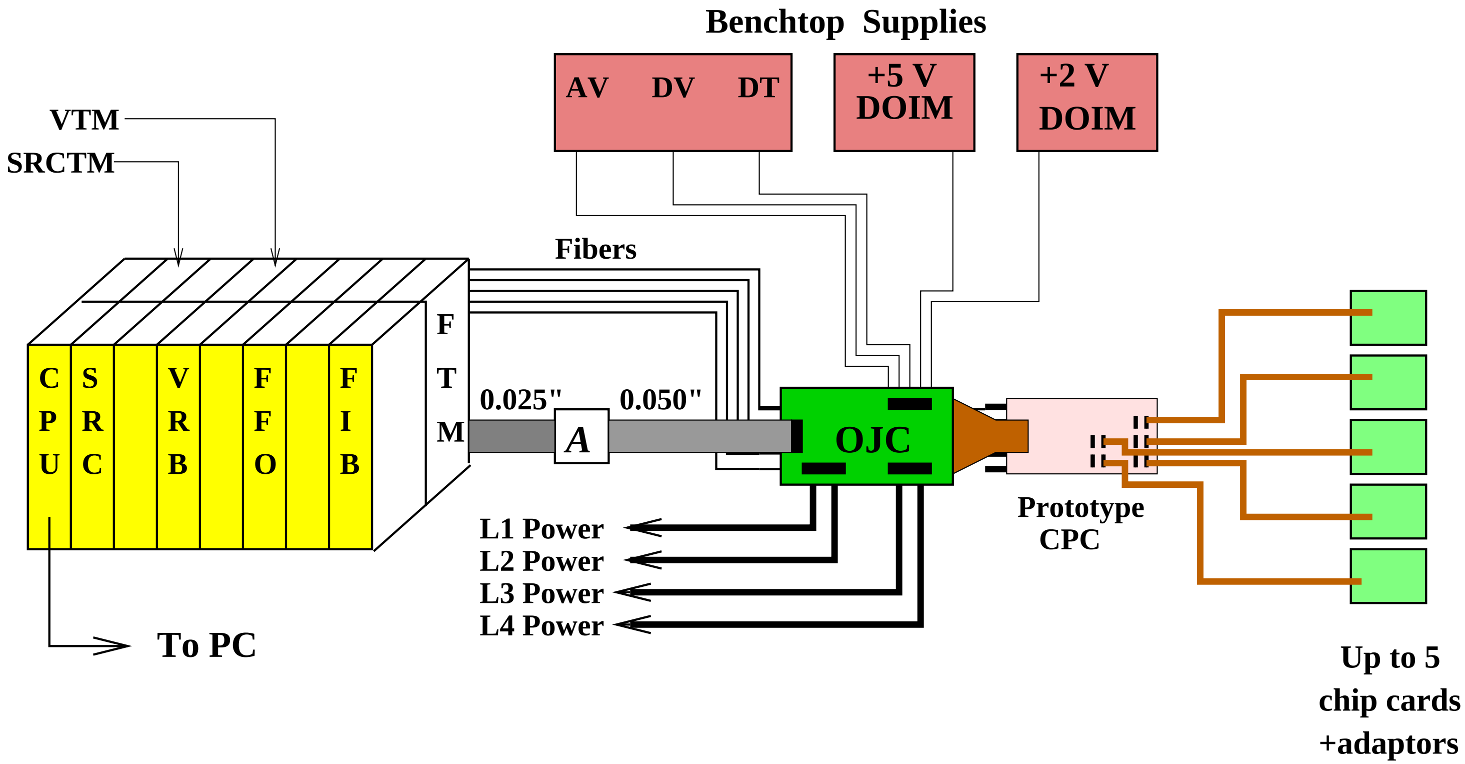


Figure 2: Schematic of the SVXII/ISL Control and Interlock System


Electrical
July
Aug
Sept
Oct
99
Test DAQ4 @ FCC
Proto CPC, OJC, Benchtop PS
Move DAQ4 to Lab C cleanroom
Bring up (loaner) PC with Linux
Integrate CAEN PS w/ OJC on DAQ4
Tests using DAQ4
Cosmics, 2 ladder tests, 5 devices
15 & 30 cm HDI cable submitted and constructed
Ladder ground strap @ FNAL
Purchase cables for Barrel 4
PS cables, FIB-JC cable
Interlock control cables
(have 1 set now)
Ladder testing on DAQ for Barrel 4
Barrel 4 Construction
Bring up new PC
Will eventually need for Barrel 4
4 production CPC's
4 Test (or Production) Junction Cards
4 CAEN PS's
4 PC Pigtails + Pigtail XT cable

Initial Testing of DAQ4 at FCC and Lab C



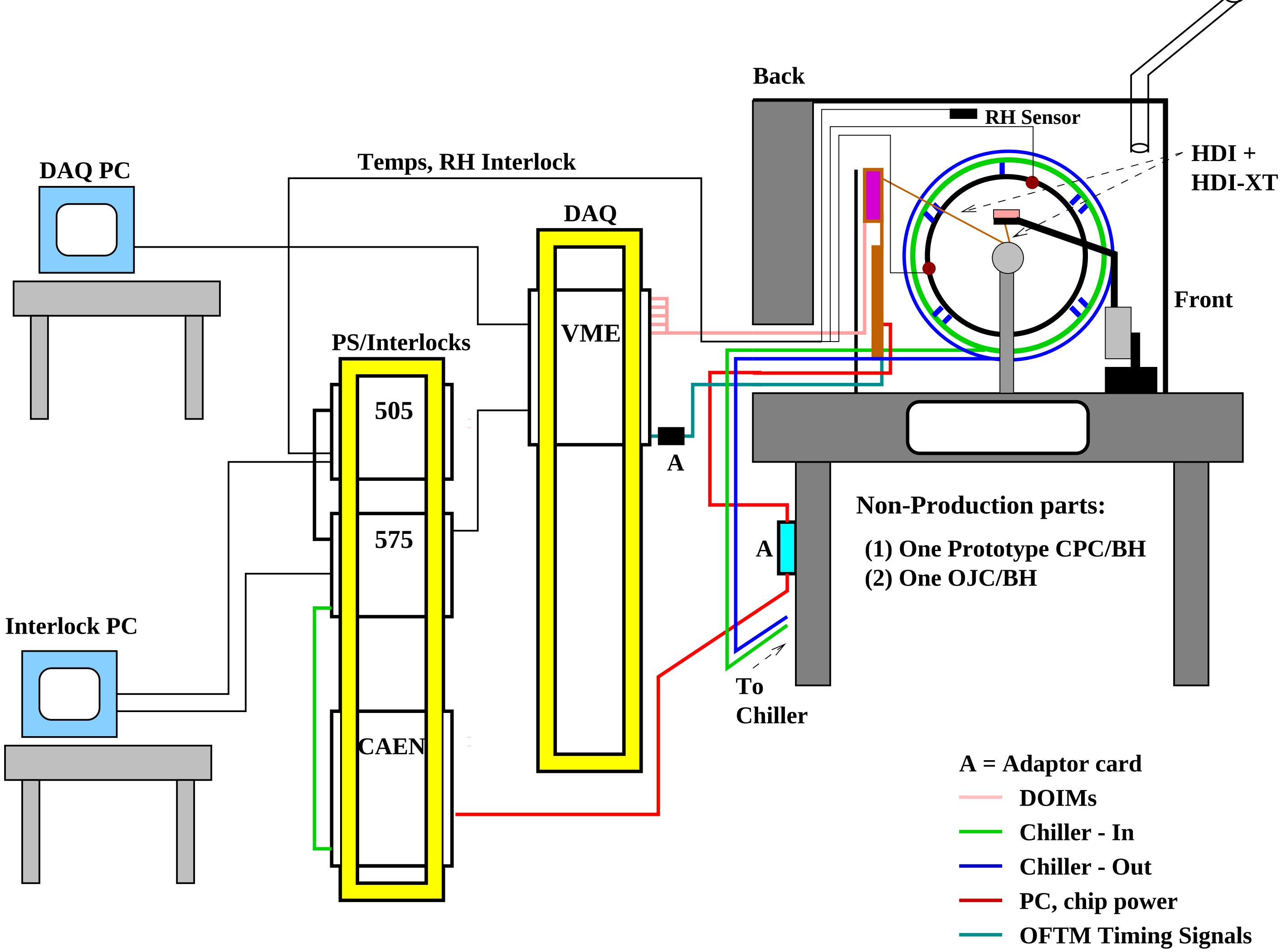
8

Non-production parts

(1) Prototype CPC + Elco-Conan Adaptors
(2) Old Junction Card (OJC)
(3) Power Supplies (Benchtop)
(4) 0.050" CL cabling, connectors, Adaptor "A"

Initial Testing of Barrel 4 in Lab C

(We will probably use this configuration for the next 1-2 months)



"Final" Testing of Barrel 4 in Lab C