

Central Tracker Test Beam Meeting at Brookhaven National Laboratory

June 14, 1993

Abstract;

Agenda, transparencies and notes from the Central Tracker Test Beam Meeting at Brookhaven National Laboratory on June 14, 1993.

TEST BEAM MEETING, JUNE 14th

AGENDA.

HARDWARE (NOT FROM SSCL)

Scope from Yale
P.S. from Los Alamos (30V)
Gas System from Los Alamos
Chambers from Yale Regulator from Yale
Silicon from Los Alamos
Electronics (Amp + ADC) from Indiana
Structure
Pulsar Bookhaven
TRIGGER LOGIC - Henschel

ONLINE - Dick

MISCELLANEOUS

Gas Basem, Dick, SSC Kate
Space Basem
Ethernet Ports Dick
Stores Account Kate
~~Structure~~ ~~Sumner/Kate~~ (Red for Sec?)
Beam Control Basem
Tables & Chairs & Cabinets Basem?
Radioactive Source Kate

MANPOWER FOR SOFTWARE.

Online Silicon

Dick, Melinda, Dave
Egan, John O'Neil

Offline Silicon

Alignment

Extrapolation @ IPC

} Egan & John

Offline IPC

Check HV for the chamber before putting in beam

Calibration

Resolution for edge regions

$\frac{H}{H} \frac{H}{H} \frac{H}{H}$

} Terry & ~~John~~

Angular function

Chamber uniformity

Function of pad position

Efficiency

Procedure

- $72 \times 2.5 = 18\text{cm}/\text{shot}$ 1 sweep / pad row

Gene / shot + 1 sweep / edge region

- Run offline analysis @ home as we proceed
Found to be very effective in determining steps.

MANPOWER FOR SHIFTS

First Week needs most people. 12-19th

- Kate
- Howard
- Rick
- One of Elliot or Bassem
- One of Dave or Melinda
- Dick
- Jim Morris
- Simon
- One of Bejan or John

Second Week

19-26th

- | | |
|---------------------|------------------------------------|
| • Online | Rick or Howard, Bryan, Horst |
| • Offline | Geoff or Jenny, Bryan |
| • Gas | Dick or Howard or Kate |
| • Ground | Bejan or John |
| • Silicon | Dave, Melinda, Geoff, John |
| • IPC | Bassem, or Elliot, Andrew, Ignatio |

Notes from BNL Central Tracker Test Beam Meeting 6/14/93

- 1) Power Supplies for Silicon, Melynda Brooks. Melynda says that LANL can supply the additional power supply for the Silicon set up.
- 2) Gas System, Dick Martin. Dick needs 2 days pre-beam set-up time. The set-up is now under test and the diagnostics look good. Charlie Baltay suggests that we need to reduce the initial pressure. It is now 10 Torr. We all agree that is too high. Dick says he can make adjustments and perhaps use the bypass to minimize the transient pressure. John Sennat wants to flow dry N₂ or CO₂ through any chambers while they are in storage. Yale will bring a regulator for this purpose and we can purchase extra bottles of gas from the BNL stores.
- 3) Chamber Status, Basem Barakat. Basem says that 5 chambers will be available. (See transparency.) He is skeptical about the gas tightness of the chambers and wants to do a single pass gas supply. No one disagrees.
- 4) Silicon from Los Alamos, Dave Lee. Of the 6 planes which have been wire bonded, 4 appear to work and 2 have problems which may still be resolved. The detectors are 2.5 X 6 cm. Dave and Melynda will take care of getting them to the test beam on time. Rick Shypit will go to LANL to finish incorporating the silicon into the readout. He will be there beginning sometime next weekend.
- 5) Electronics from Indiana, all. Right now there are 12 channels at SSCL, 12 at Yale and the rest is at Indiana. Chuck Bower will deliver the rest at the end of June. Indiana will supply everything including the cables. Rick is uncomfortable with the delivery date. Charlie suggests that Chuck deliver the modules 3 days early and plan to be present to help with their integration into the system. Rick agrees this is a good idea and Jenny says she will speak with Chuck about it. Basem says that there is no calibration device incorporated into the chambers. At Yale they put a capacitor at the input of the preamp and they pulse it. Bo Yu is building a device to help with calibration. It is a jumper that sits between the electronics and the chamber and has several pins for a pulser connection. We will record pulse height and ADC value for each preamp and send a pulse through a known capacitor for calibration. The device will be available early next week. We will need a pulse generator. Basem says that the preamps are linear but that they have a kink between two linear regions. Bo Yu says he has a DAC we can use but someone has to write the soft.
- 6) Mechanical Structure, Simon Blumberg. The support will hold three IPC, two at 90° to the incoming beam and one which can rotate $\pm 10^\circ$. The motion across the beam is 65 inches. The silicon can slide to within 1/4 inch of the center IPC, but the IPC cannot be moved across the beam with the Silicon inside the support structure. There is an additional set of holes in the support frame that is 5 cm above the first set. This is to allow a 5cm vertical step in data taking positions. The length of this year's chambers is 184 cm. John Sennat wants to use the support frame to transport the IPC prototypes from Yale to Brookhaven. There follows a lengthy and somewhat pointless discussion about who should build what crates to ship what pieces of the apparatus. The conclusion is that if the SSCL finishes the support frame in time for it to be useful to Yale, then it will be shipped to Yale. Otherwise it will go directly to BNL and Yale will construct, find, borrow or otherwise procure containers for transporting the chambers to BNL. In any case the crate from shipping the support system will be used to store the chambers when they are not in use. Simon says that he will need some assistance with wiring the remote controls.

7) BNL news from Dave Dayton. The run goes through July 31. Dave doesn't know when nor where we can unpack our stuff, but he does know that BNL has beam and Waxahachie does not. We can ship our stuff addressed to: BNL, B2 Test Beam AGS, Bldg. 912, Roll-up Door 9, contact Dave Dayton, Upton, LI, NY 11973. Dave can be reached at BNL DAG::Dayton. The rules are that we work out space considerations with the other users. We can store crates in a 10 X 20 ft. garden shed outside. One crate can remain indoors to store the chambers. We have 9 ft. along the beam line, just after the Cherenkov counter. We can vent our gas directly into the building. The Rich Counters will be in the area during the week of July 5 to July 12. The crane is available on Monday to Friday from 8:00 am to 4:30 PM. Cable trays can be installed at a fixed height. There are shop facilities that we can use in Building 922 and welders are available. Tap water is available for the gas set up at about 55°F. Clean power can be available; if we buy the transformers, they will install them. Rick will contact John Gould for assignment of IP numbers. The MCR needs to train several of us to have control of the interlock system.

8) Trigger Logic, Howard Fenker. See copy of transparency. Dave Lee suggests adding a Si busy signal and a beam gate bar. Basem can provide an anode signal, grounded through a capacitor for Camac TDC. Howard also showed his logic for the trigger for multiple particles. Dave Lee asks how many spares we have and Howard says he will try to have a spare of everything. We can add a unit to receive an electron ID.

9) Online, Rick Shypit. The DAQ will travel to LANL next week and then there will be one week left to sort out calibration questions with Chuck Bower. Someone needs to think of the calibration procedures. Bo Yu says its fairly standard, but Rick wants details and set up time. Bo Yu will provide the pulser he has at BNL with an external trigger and external reference point. Rick says we must purchase Fortran compiler and a C compiler.

10) Software manpower, all. Software for the Silicon must be ported to the Sun. Bijan is responsible for the offline. Online diagnostics to be coordinated from Melynda to Rick. Rick will have to rewrite. The front-end of the offline may be usable for the online. Alignment has been looked at with the existing software. Bijan will have looked at it with the new software by the time he goes to LANL. He will also have the noise and cluster finding in place by then. See Jenny's transparencies for manpower for the software. Charlie wants the highest priority to the demonstration of 50 μ m resolution before any other studies are done. Testing 3 chambers is not as high a priority as a careful study of 1 chamber. We should be able to use the IPC's alone if there is anything wrong with the Silicon. Some documentation of routines exists at SSCL.

11) Manpower for shifts, all. See Jenny's transparency. The first week is critical. All people responsible for any piece of the apparatus should plan to be in residence then. We need a minimum of 2 people on shift all the time. The gas system must be checked out before running with chambers. We should add an alarm to the chamber HV so that a trip is noticed. Howard will do this and will connect it to the trigger. More scopes are needed. We have 1 from the SSCL and 1 from Yale.

12) Sources, Kate Morgan. Kate has asked the BNL safety people for a 90Sr source for the Silicon and an 55Fe source for the canary chamber. They don't have either one, but suggested we talk to Asher Etkin (4006) who has 3 55Fe sources and is known to share them. The safety people may have a Ruthenium source. Vinnie Polychronakos has also offered to loan us any needed sources. This is apparently not a problem with the BNL safety people. (Try borrowing a source at the SSCL and see how far you get.)

FULL SCALE IPC PROTOTYPE

(Prototypy 3)

STATUS

June 14, 1993

PROTOTYPE	IPC1	IPC2	IPC3	IPC4
STATUS / STAGE IN	READY FOR CATHODE WINDOW (0.0005" Mylar + Cu)	Ready for cathode rails	Ready for Guard Wires	Ready for winding anode wires
DATE EXPECTED	June 30, 1993	June 30, 1993	July 9, 1993	July 9, 1993

+

One Small (1.0') IPC Module

(Ready for winding)

From: BNLDAG::CARROLL 10-JUN-1993 17:39:08.49
To: @B2,BROWN
CC:
Subj: B2 status update

- B2 Test Beam Users:

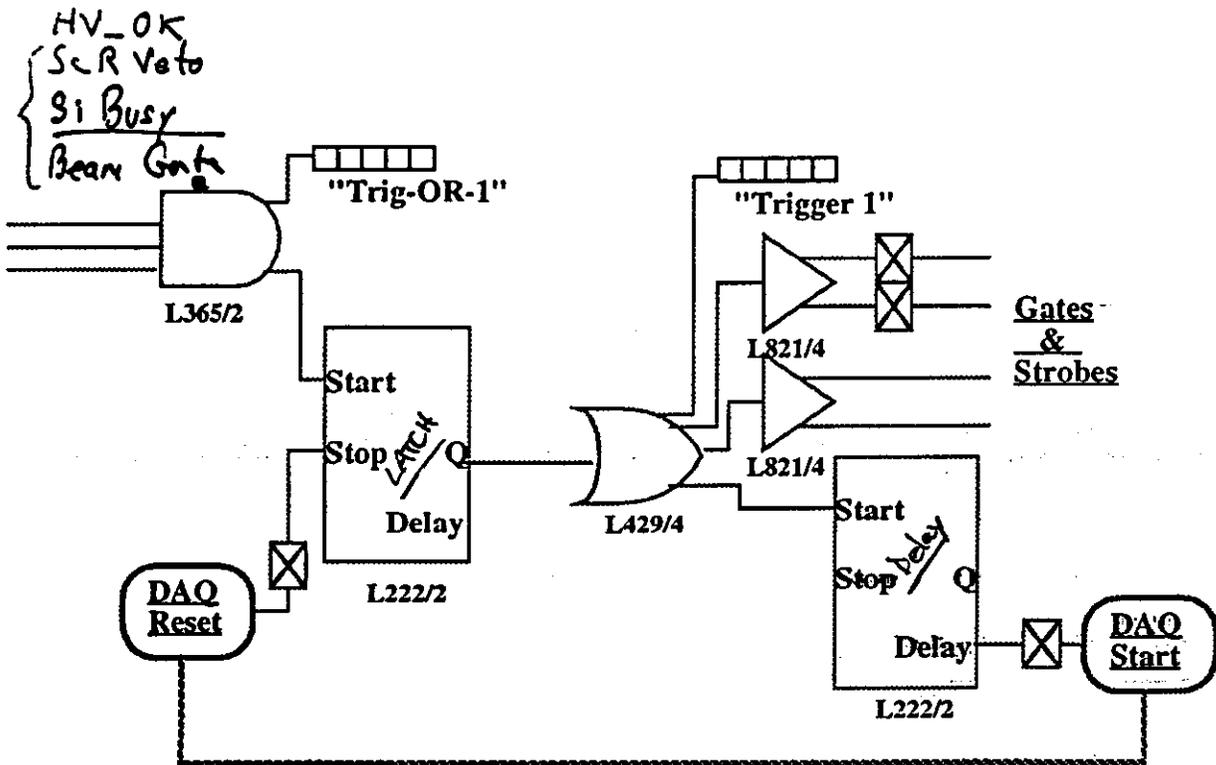
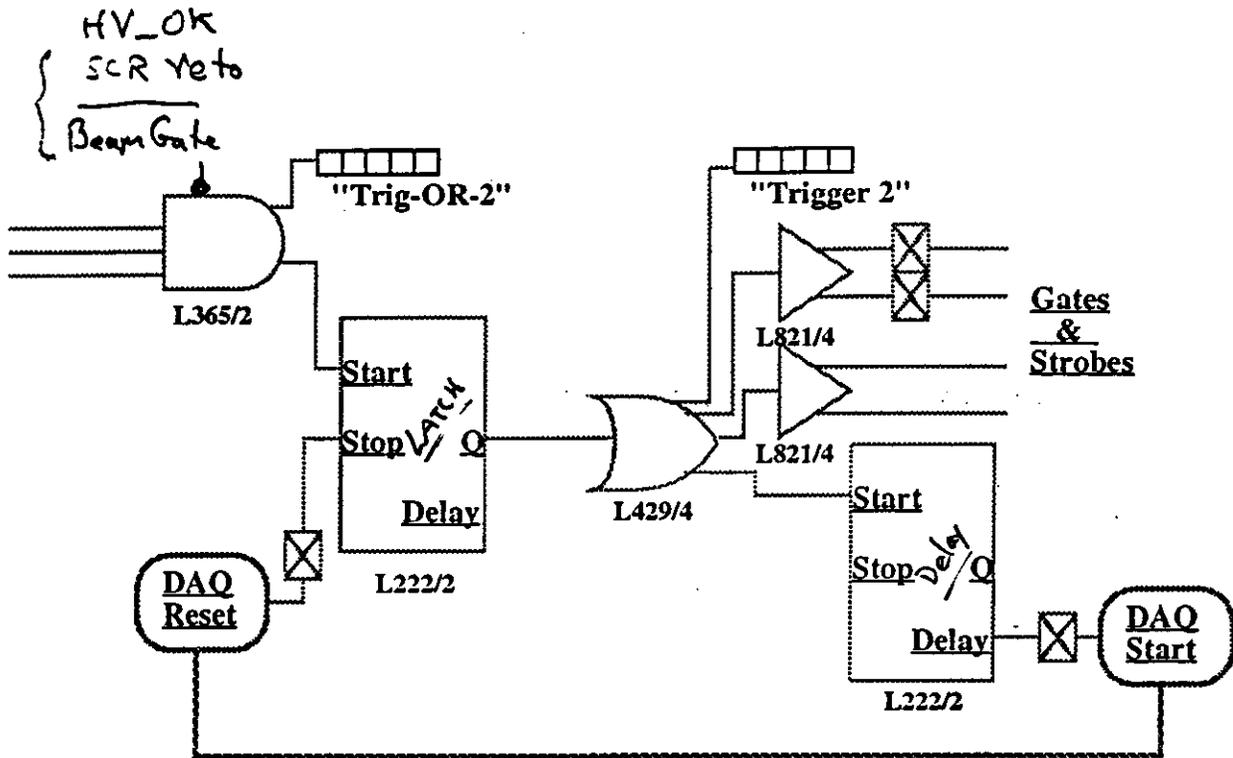
The B2 test beam has been up and running as of Saturday, June 5th. Already a number of PHENIX tests have done with interesting results. The tests seem to be able to stay on the one month schedule, but because of the late start, the PHENIX/E864 tests will not finish until about July 4th.

The last PHENIX test will be the muon ID test at the end of the test beam area, so one or two of the RICH tests could be set up before the lab holidays starting July 2 and running through July 5th. I suggest that RICH week users start to arrange some sort of schedule among themselves to see who will start first.

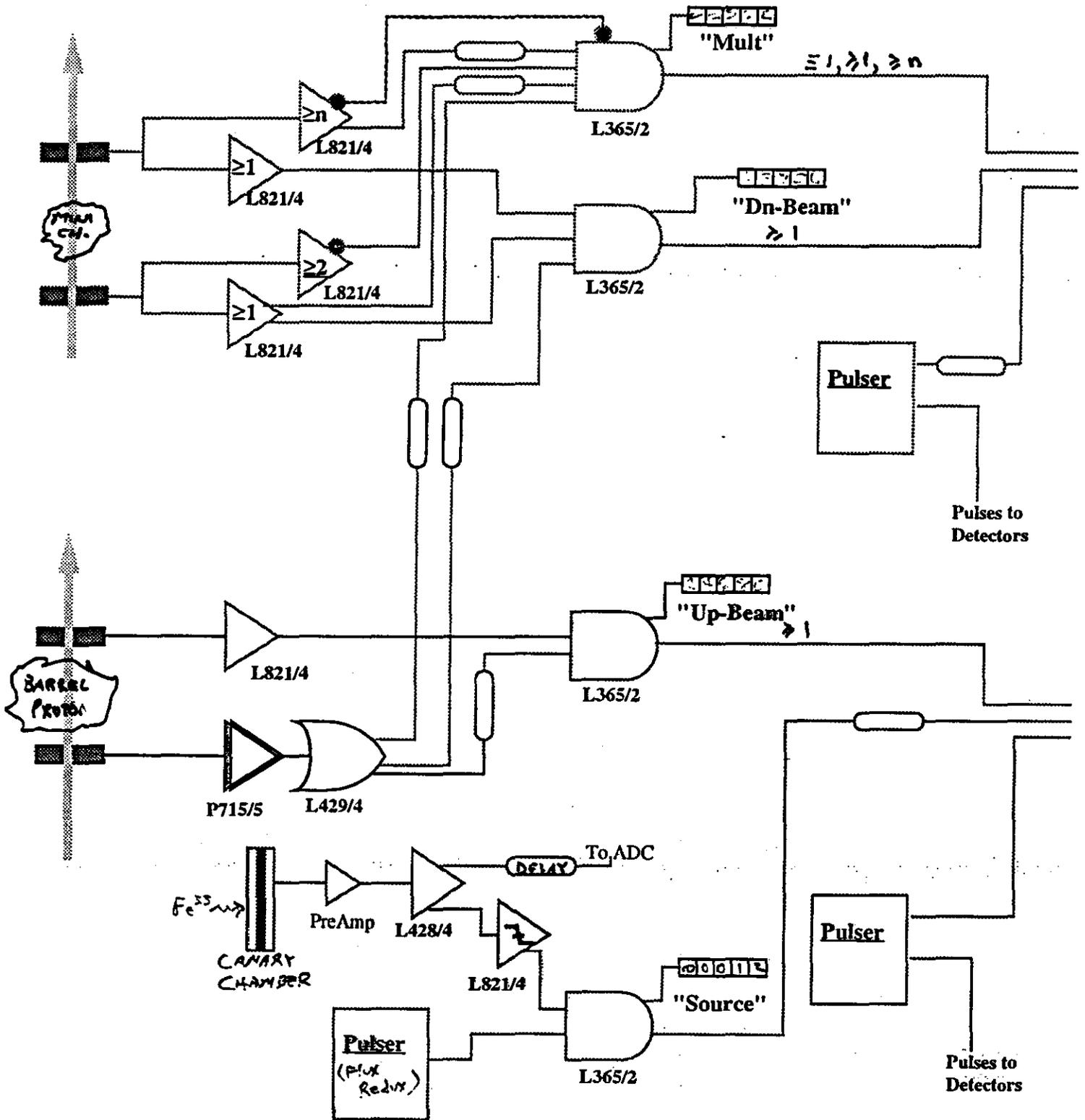
The final weeks with the large detectors will start about July 12th. These dates are approximate, and are subject to further revision. I'll try to keep you posted. I'll be away until June 16th. Hopefully this is enough information until then.

Alan Carroll

HV Alarm Module



⊗ = Level Translator = P726/16



/Equipment from SSCL/

Scintillator PS.
Scintillators + PM
Chamber HV 1 channel / chamber
LV for Silicon
(LV for Indiana Electronics?)
Pulser
Logic
Camac Crate
Nim Bias
VME portable crate
Mechanical support
HV cables
Rack
X-windows terminal
Scope
Tool Box