FIELDMAPPER PROGRESS – WEEK ENDING 05/15/98

1 Magnet Meeting

Adam, Miguel, Gene and Rich met Wednesday and discussed fieldmapper progress:

- Adam has nearly finished installing the z cable handler. Some repositioning of the bolts for the brackets which grip the ends of the caterpillar is needed to complete the mechanical portion of the installation. The caterpillar is temporarily attached to the new cable carriage (which we don't plan to use once the new hall probe carriage is finished).

  The system moves easily at phi = 0, but the caterpillar rubs on the trough which is attached to the center beam rather substantially when phi = 90, 180, and 270. This is a serious matter and Miguel suggests lining the trough with the teflon tape we have on hand. Adam will try this, as well as load the caterpillar with cables to fully test the system. (We agreed there is no need to mount the "home" paddles on this temporary carriage. If computer-directed motion is needed Adam has a program which can be used which doesn't require homing.

  If the friction problem can be licked, it looks like the z-handler is a "done deal".

- Miguel continues to calibrate Greg Schellberg's fancy table in the vertical axis – he now has accuracy to 20 microns or better – enough for hall probe calibration work.

  He and Rich think we can install the device at the magnet without surveyor help. The large rotary table can make this task a bit easier perhaps.

  Miguel has asked Pat to draw up a mounting bracket for the small rotary table, plus a holder for the hall probe. Rich suggested he talk to Don Carpenter before having Pat design the probe holder. (Rich also suggested he defer working with Pat on this item until the fieldmapper carriage drawings are done).

  To read the hall probe automatically, a GPIB bus card is needed for Greg's PC, and some Labview programming.

- Adam has begun to estimate the weights and moments of inertia of all the rotating stuff in the fieldmapper. We want to check that the torque of the stepping motor is adequate for the task.

- Rich has gone over the carriage design with Pat to the point where all purchased parts are now specified and on order (spur gears, encoder shaft, shaft bushings, encoder rack, and aluminum T-rails). Rich has asked Pat to move the hall probe arm S in z on the carriage, (so its "reach" in the magnet is more symmetric N and S), to add dimensions to all items on the drawing, and to add the support bracket for the cable arm. Rich REALLY would like this system design to be finished by next week so the parts (the chassis plate, the encoder chassis, the encoder shaft bearing housing, the braces for the hall probe arm and the cable arm) can "go to shops" immediately thereafter.

- There has been no new hall probe work in IB4.

- Miguel and Rich have worked out a design for the hall probe "cube" which permits it to be rotated to +z and -z as Gene suggested. Final design of this cube should wait until Pat has finished the carriage.

- Gene and Rich met with Jim C. Monday to work out the schedule; Gene's "conservative" PERT chart shows the fieldmapper being installed in the magnet after July 23, and the muon iron closing up after Aug 13.

  1. The magnet will go into CC after June 24, and the chimney fit-up and installation begins July 8 after the muon A-layer PDT's on the east side are installed.
  2. The chimney closeout begins July 22 and system cooldown starts Aug 26; fieldmapping begins Oct 14.
  3. Jim noted the installation of the preshower should go faster than Gene assumed so that magnet installation could start before June 24. Evidently the installation of the Muon stuff would still pace the installation of the chimney and the eventual closing of the iron, thus the installation date for the fieldmapper. Slippage in the muon schedule is considered likely.
  4. Note Jim C. believes it is likely we will get to map for a month or so, then stop while the detector is opened for a time, then we resume mapping. This gives us a useful time to "stand down" and look at the data we have, perhaps coming back to redo some/all of it later. During the stand down time, the ICD iron would be installed.

- Gene asked Rich to prepare a schedule for the completion of the fieldmapper.

- Gene noted his student will arrive soon. Rich can have him/her work on field calculations (TOSCA, data fitting, etc.) if he/she is sufficiently mature.

- There was some discussion of the NIKHEF group's involvement. We will meet them at the end of the month to discuss specifics, but the schedule looks good for their installing fixed hall probes and taking data when we do.

2 Cable Handler Redesign

- Except for a concern about the friction between the cable trough on the center beam and the z caterpiller (see meeting notes above), the z-handler looks like it is complete.

3 Hall Probe Carriage

- Rich met with Pat twice to "push" the completion of the carriage design. She has got all purchased parts except the gear collar clamps, and the encoder chassis spring, ordered. The design of the T-rail supports and the base plate, is done; the carriage needs a good bit of final detailing which (hopefully) can be finished by the end of next week. (Pat is also working on muon chamber supports as well).

Rich ordered another teslameter from GMW (the new version, DTM-151, as the older version like we already have, the DTM-141, is no longer available). On Friday Rich got a quote from GMW which shows the DTM-141 still available (?). Rich left the order as is: the new model.

4 Hall Probe Arm

5 Hall Probe Calibration

6 Field Calculations

- Rich has set up and run a sample problem thru TOSCA on FNALU. He is now an expert(!).

7 NMR R & D

8 Schedule

9 Installation

10 New Collaborators