

# PROJECT PROGRESS SUMMARY

April 9, 1991

## FET Operations

- Two shifts of operation were performed this period. The other days were devoted to RF and software checkout for the 8-seater in preparation for the cryomodule tests.
- In the first period, a repeat of running beam through the cryo unit was performed. Problems with RF regulation prevented the beam from exceeding 3.5 MeV. This was later traced to a control board problem and fixed. Beam was successfully transported through the recirculation chicane.
- Measurements of RF noise on the phase and amplitude circuits were performed during the second run. Both cavities were powered to 5 MeV/m without problem.

## WBS 1

- Replaced the end bearings on the electron-beam welder y-axis. Welded 8 elbows and 12 fundamental power coupler sections last week.
- There will be no cavity pairs assembled until all the planned fixes are implemented. Two pairs that were previously assembled have been checked and are leak tight. Another pair is ready for testing after the CTF is available.
- Four cryo units for cryomodule traveller #6 are in the cryomodule assembly area. The end cans from cryomodule traveller #1 will be used.
- Cryomodule traveller #5 is in the tunnel, cooled, and ready for commissioning tests Wednesday.
- Four heated HOM loads were delivered Friday with greater than or equal to 10 dB at 170 - 190 mW. Three more loads are ready for final inspection.
- Two RF windows with the solid flange have been electron-beam welded, leak tested, and coated, and are ready for RF testing.

## WBS 2

### Stands:

- The first of two batches of stands for the quadrupole girders throughout the arcs was received.
- Two sets of tops and bases for stands were installed in the east arc as a trial for the main installation and to act as a platform to validate the stand alignment fixtures.

### Alignment:

- The second skeleton traverse (sparse survey network in the horizontal plane) was completed for the entire accelerator enclosure to detect movement in the horizontal. The results indicate minimum random smooth movement throughout most of the tunnel of the order of 0.5 mm (.020 in.). The southwest corner of the accelerator showed a larger movement of the order of two millimeters (0.080 in.), possibly due to the recent construction.
- The densification of the horizontal monument network (except for the west arc) was completed. Error ellipses (calculated confidence regions) did not exceed design (0.2 mm) and met the theoretical analysis.

## WBS 3

### RF Systems/Front End Test:

- Work on 8-seater logic is continuing and has been partially tested (up to filament mode).
- Version 14 software installed on 8-seater.

### RF Power:

- Received an additional 30 directional couplers and transitions.
- Bids for 1/2" and 1/4" coax due this week.

### Fabrication:

- Buffer boards, midplanes, and backplanes were sent out for population. Assembly put on hold pending results of meeting with Tri-Circuits on 8 April.
- First crowbar has been completed at Blue Crab; work order for 42 more has been written.
- HOM brackets installed on first 8-seater.

Build and commission CEBAF safely, within cost and on schedule to meet performance objectives.

- Began assembly of engineering samples of module power supplies.

#### WBS 4

- Received first lot of trim regulator cards (100 units), tested 32, and installed 26 in the injector service building rack.
- Prepared change request for mounting cable tray independently of magnet stands in the arcs.
- Conduit runs for safety system (tunnel PA system) and telephones in progress.
- Generator relocated from EEL building to injector area for auxiliary power service.
- Ordered 277/480-V breaker locks (GE catalog items). "Beefed-up" prototype locks (Pete Belda design) for 208/120-V breakers are currently being fabricated.

#### WBS 5

##### Safety:

- Mounted key boxes in south linac access control room.
- Completed tunnel light control panel rewiring.
- Received all BLM tubes and tube bases for accelerator. BLM digital board sent for fabrication.

##### Diagnostics:

- Received north linac tunnel electronics boards from RMS. Delivered local oscillator and coherent detector boards to be stuffed.
- North linac BPM cable pulls started. Pulls will be complete by Friday, 12 April.
- Started north linac zone 1 cross-connect wiring.

##### Controls:

- Completed north linac cryo serial highway fibers. North linac controls fibers 75% complete. Fibers will be complete when RF racks are installed.

##### Software:

- Tests started on 8-seater software.
- New version of imbedded code tested.
- BPM monitor software for FET tested.

#### WBS 6

##### Recent accomplishments of the WBS 6 detector group:

- The 7-meter light-tight box at the EEL detector prototyping laboratory is finished. This device will be used to test long scintillators for the electromagnetic calorimeter of the CLAS and for scintillating fiber tests in a totally blacked out environment.
- Testing of different scintillating fibers for applications at CEBAF is progressing. Evaluations are based on light output, degree of attenuation, radiation hardness, and cost.
- The first batch of low-dose-rate irradiated scintillating fibers has been received from the University of Virginia Reactor Facility. Attenuation measurements have begun to study the degradation (and recovery) effects of radiation on these materials.
- The prototype of the Hall A polarimeter fiber tracker is undergoing cosmic ray tests. This project is done in collaboration with Prof. Charles Perdrisat and his group from the College of William and Mary.
- Evaluation of multi-anode photomultiplier tubes (PMTs) is finished and a publication is being prepared. These new devices contain numerous (over 60) channels/anodes per tube, and can potentially greatly reduce the number of units required.
- Feasibility studies of the application of small, inexpensive side-window PMTs for light guide or scintillator fiber readout is under way. Preliminary tests prove that these photo-detectors are appropriate for the Hall B photon tagger detector scintillator elements.

## WBS 7

- Operating at 2 K for FET.
- Received cold compressor operating equations; starting to analyze and will start programming ASAP.
- Fabrication of tunnel transfer lines and subassemblies in progress.
- Scheduled to update CTF computer system this week.
- All operations from CHL. Computer operates CHL unattended overnight.

## WBS 8

- A major milestone in the end station underground contract was reached last Friday with the completion of the walls in Hall A. These walls, which are nearly 60' high and contain over 2300 cubic yards of concrete and 190 tons of reinforcement steel, were completed in just over four months by the subcontractor, Robert Gay Construction.
- Completed the roof slab (all concrete work) for truck access tunnel A.
- Walls for truck access tunnel C are now 70% complete.
- Continued forming walls for Hall B.
- The dome subcontractor, Crom Corporation, brought a crane and a tractor trailer load of steel shoring down the truck access tunnel and into Hall A in preparation for constructing the concrete dome.
- Continued waterproofing and backfilling activities.

## Support Services

### Machine Shop:

- Fabrication of QB/BPM alignment and reference fixture master gauge assemblies in process for WBS 2.
- An optical comparator is operational.
- Fabrication of two 2.5-watt amplifier mounting and cooling plates in process for WBS 3.

### Backroom:

- Weekly withdrawal activity: \$13,292.75.

### External Fabrication:

- Evaluated the installation of the HOM filters on the new cryomodule. Installation was successful, and minor adjustments were made to protection plate braces (WBS 3).
- Prototype breaker lockout samples are being made for final fabrication recommendation (WBS 4).

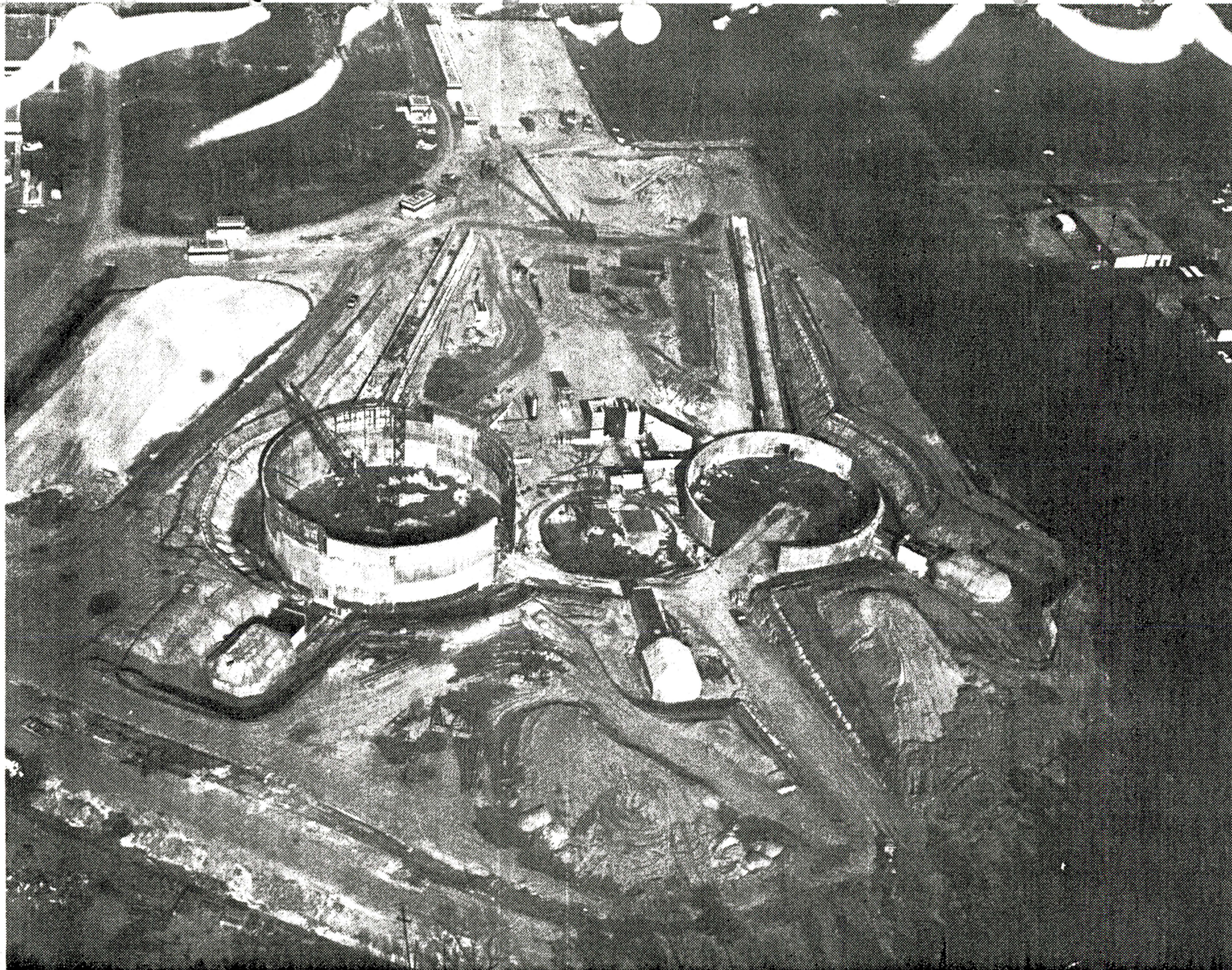
### Document Control:

- The new direct imaging plotter is to be received this week.
- Microfilm card reader/printer PR to be delivered 17 April.

## Training Opportunities

- Among the courses detailed in Personnel's current (blue cover) flyer on training opportunities are:
  - Radiation Worker Training, 8:30 - 11:30, 15 April (auditorium)
  - Forklift Certification Training, 8:30 - noon, 16 April (SRF conference room)
  - Incidental Crane Operator Training, 8:30 - noon, 18 April (SRF conference room) (to be repeated 23 May)
  - CEBAF Safety Orientation (4 courses), 8:30 - noon, 11 April (auditorium) (to be repeated 8 May and 19 June)





**CEBAF End Station Construction**  
March 25 1991