Operations and scheduling

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1995 holds much promise for the futures of CLEO, CESR, CHESS and the CHESS user community. Despite an interruption of nearly 6 months of running due to scheduled upgrades, there is also great anticipation for what these upgrades will enable us to do during the next running period.

Both the storage ring (CESR) and the high energy physics detector (CLEO) are making major changes during this down period (see previous article) to provide more flexibility in storing higher beam currents with the goal of providing higher luminosity for CLEO and higher fluxes for CHESS. The past year has shown not only more consistent running but also increased beam currents made possible by running with crossing angle optics. Members of the CESR staff are completing many upgrades during this extended down period to allow for even larger particle beam currents in the storage ring. By upgrading the separators in CESR, preventative maintenance on the RF cavities, and modifications to many other components, the running should continue to be more productive than in the past. At the end of the down period, the machine should be able to run individual beam currents up to 300 mA.

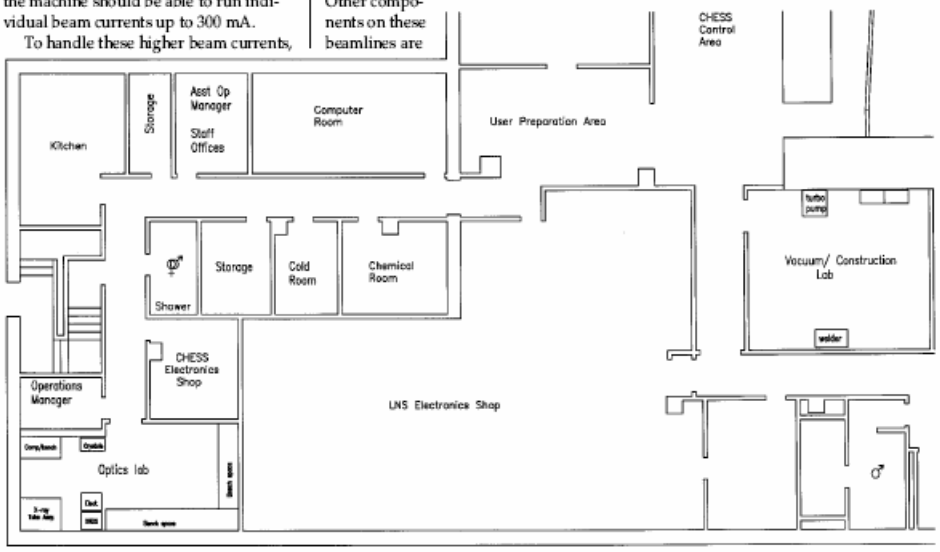
To handle these higher beam currents, CHESS is in the process of upgrading most of the F-line vacuum components (see page 57). Looking forward to a future upgrade, CHESS has adopted the uniform design goal of handling a full 500 mA beam. Work is underway to make all of the beamlines capable of operating at these currents.

We are also making major changes elsewhere in the laboratory to prepare for the future. The optics group at CHESS is currently designing water cooled optics for the hard-bend beam lines which are also starting to show problems due to higher beam currents (see page 60). As is usually the case, as the currents in the machine go up the radiation in the tunnel area also rises. To be able to run safely, we are presently making major changes in the shielding walls that separates the tunnels from CHESS experimental areas (see page 59).

Along with wall changes is the demolition of some of our experimental stations. C-line and parts of B-line are being redesigned (see page 46) to make better use of the floor space available in the CHESS West area and to provide more experimental flexibility for the users. Other components on these beamlines are also being changed to provide more reliable operations.

In the past the instability of the x-ray beam position has sometimes been an experimental problem. A hardware feedback mechanism was used successfully during the undulator run in 1993; however, that scheme only works well under the circumstances of one particle beam. Unique among synchrotron light sources, CHESS needs a feedback solution that works simultaneously with two particle beams. We have tested a software bump-adjustment feedback system that works well with both particle beams in the machine, but in the process we found several inadequacies with some of the x-ray beam position monitors. During this shutdown we plan to install and upgrade most of the beamline monitoring equipment. The new monitors should have higher sensitivity and will be able to be calibrated on a routine basis to ensure their reliability in a feedback system. Although a lot of work remains to be done, we are optimistic for success.

To further improve conditions for both the users and staff, we have undertaken a reorganization of the CHESS



laboratory space (see opposite figure). We have modified several walls in order to change office space into much needed laboratory space. This has been made possible by rearranging the trailer space to provide offices for operations staff, a user office and a small conference room. The computer room will now contain most of the facilities used by outside users, including the MacCHESS computational center. The old scanner room has been converted to a vacuum laboratory to allow space for assembling beamline components and to aid users who have vacuum requirements of their own. We have also expanded and changed the old mechanical room into an optics laboratory, now equipped with a conventional x-ray generator. In addition, a cold room facility will be created from the previous darkroom to aide the preparation of samples that are temperature sensitive. It is our hope that by reorganizing the laboratory space and facilities we will provide a more supportive environment for the staff and the user community.

The operations staff has gone through some major personnel changes over the past year. I wish much success to Mark Keeffe and Gary Navrotski, both previously thought to be permanent residents at CHESS, who have gone to the APS to provide that laboratory with expertise and camaraderie. Long time coworkers John Quillinan and Mike Sloand have left CHESS , and Chris Staffa, whose design skills with CAD will be sorely missed, has moved on also. All is not lost, however, since we have hired Tammy Yee and Chris Payne (Applied and Engineering Physics, U. Saskatewan), Chris Conolly (M.S. in Optics, U. Rochester), and Bonnie Kiang (Applied and Engineering Physics, Cornell) to bring the operator pool to a full complement of eight individuals.

Tentative 1995 CHESS Operations Schedule

Jan - Mar	Normal Operations @4s (5.4 GeV)
April	Normal Operations thru April 10 Shutdown for Silicon Vertex Detector installation in CLEO
May - Aug	Shutdown for Silicon Vertex Detector installation in CLEO
June 20-21	CHESS User's Meeting
September	Shutdown for Silicon Vertex Detector installation in CLEO Machine start-up mid month (tentative)
October	Normal Operations mid month (tentative) **Proposal Submission Deadline**
November	Normal Operations
December	Normal Operations

No major shutdowns are scheduled for 1996, however there will be ~ three shutdowns of ~3 weeks in length for normal maintenance.

Comparison of the number of days that CHESS users were scheduled for beam versus the number of days received, by experimental station. The difference in time is due to unscheduled downtime due to repairs. Note that the beginning of the 1994 calendar year marked a time of dramatic operational change in CESR, to crossing angle optics, which caused significant difficulties. However as experience was gained the new running conditions resulted in historical records in terms of both beam currents and consistency.