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OAK RIDGE 25URC TANDEM ACCELERATOR

1993 SNEAP LAB REPORT

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Operation

The 25URC tandem accelerator has been maintained in a shut-down mode since July 1992 while the facility is being reconfigured to produce radioactive ion beams (RIBs). It has been operated minimally (approximately 200 hours) for development activities related to the production of radioactive ions. Three tank openings occurred during this period; one for routine maintenance and the other two to fix problems (one bad 400-Hz alternator belt and one CAMAC problem).

Operation of the accelerator continues to be reliable except for the inevitable problems associated with startup after long periods of remaining idle. Fortunately, these problems have been limited to equipment outside the tank. We have instituted a biweekly accelerator exercise program to try to alleviate any problems inside the tank. In particular, the shafts and chains are run and the ion pumps inside the tank are on during the exercise period. Vacuum in the tubes has been maintained with ion pumps outside the tank. We have been very pleased with the lack of deconditioning of the machine and typically run at 21 MV for development activities. There is no activity at this level, but we have not tried to go higher so the limit without further conditioning is not known.

Development and Discoveries

There has been no time for development of the 25URC accelerator this year since we have been reconfiguring the facility to produce RIBs. It is possible that some development projects for the accelerator will be undertaken in the next year.

One interesting discovery was made this year concerning possible chain failures. While doing a routine inspection of the chains, it was noted that one of the links was cocked. A closer inspection revealed that one of the nylon bushings was missing, presumably having broken and fallen off. We believe this might have eventually caused a failure of the chain since the chain link would go through the sheaves crooked.

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RIB Project Development

Substantial progress has been made on the RIB project in the last year. The high-voltage-platform contract was awarded to NEC and the high-voltage-platform system will be delivered and installed at our facility in early October. Design of the equipment for the platform is virtually complete and in some cases equipment orders have been placed. Preparation of the room to house the platform is proceeding and is expected to be complete by the NEC delivery date. The Mark I target ion source has been installed in our modified ion source test facility and characterization studies will begin shortly. Work has begun on designing the beam line from the platform to the tandem accelerator, which will include a second-stage mass separator.

A new control system, purchased from Vista Control Systems, will be used for all new controls for the project. This system has been installed and is being used for a few controls on existing beam lines. Plans for the control system include incorporation of the existing controls for both the cyclotron and the tandem accelerators as time permits. The next year will be a very busy but hopefully productive one for us at the Holifield Facility.

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