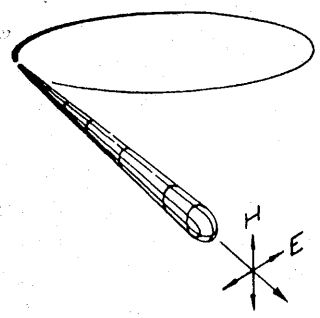

Synchrotron Radiation Center
University of Wisconsin-Madison

May 1, 1984

TO ALADDIN USERS AND OTHER INTERESTED PERSONS:

This is the second in what I hope will be a short series of letters on the current status of Aladdin. This letter has been delayed a bit, for I wanted to report progress on the beam itself, and now I can do so. Beam has been stacked successfully and accelerated to 800 MeV. Stacking has been done a number of times. Details and predictions are given below.

Since October, two shifts have been run each day. The day shift is concerned with improvements and changes in hardware. These include the completion of beam-position monitors, construction of a beam-current monitor, construction of a chopper for the injection line, construction of beam-steering magnets, and a survey of the positions of all magnets. The evening shift has been running Aladdin, studying both the injection process and the beam in Aladdin. There was a major shutdown in February, during which several changes in the vacuum tank were made and a new computer installed. Only after that shutdown was there a serious attempt to stack beam and accelerate. In late March the first successful attempt was made and about 0.1 mA was stored and accelerated to 730 MeV. Since then currents up to about 0.5mA have been stored and accelerated to 803 MeV. The principal obstacles to higher current operation are getting higher injection efficiency and overcoming any beam instabilities found as the current increases. Eventually, possibly in the late fall, we may need to close down Aladdin for a week or two in order to make changes in the injection system and to install cooling in the vacuum tank. From our previous shut down we learned that it was relatively easy to get Aladdin running again with the same operating conditions, so the shutdown need not be extensive.

We made a timetable for the period January-June, 1984, which ended with reliable operation at 10 mA by July. "Reliable" means injection times averaging under an hour, beam half-lives of several hours, and beams of 10 mA or more for at least half of the injections. We still think we can meet that schedule, and expect the first beam line, a PRT beam line, to be mounted in July. This beam line will be a bit of an experiment, for we must strike a balance between supplying photons and improving the beam in Aladdin. This beam line may serve as an additional monitor of the beam in Aladdin. Other PRT beam lines will follow in the fall, if all goes well, and the installation of SRC beam

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lines will begin then. In order to reduce the pressure for scheduling on Tantalus this year we have added one new beam line, a grasshopper line, on Tantalus. This was done essentially by users, and it has given us 10 four-week shifts in 1984 that we would not have had otherwise. A Seya owned by Jim Taylor will be mounted similarly in the next month or two. We are now scheduling Tantalus for all of 1985, but we have a plan for transferring monochromators from Tantalus to Aladdin smoothly during 1985, so some of the shifts scheduled for Tantalus will be carried out on Aladdin instead.

The staff has expanded considerably since last December. We have hired a secretary, a programmer, an electrical engineer, a mechanical engineer, and an optics specialist, not all of whom are here yet. We still have several engineers, specialists, and technicians on loan from the Physical Sciences Laboratory. We have interviewed and will continue to interview for a number of other positions. All of the hiring is causing a bit of a space problem, but we expect to be able to handle the influx of users from Tantalus and our new users by bringing in new, fully-furnished office trailers. Meanwhile, we are doing the groundwork for a request for a building expansion.

The first year of a three-year budget from NSF began in May. This budget will allow us to get Aladdin running with about 10 SRC-owned beam lines. There will be funds for one or more insertion devices. In general, then, we feel we are on the way to having a functioning synchrotron radiation laboratory at Aladdin. Another letter in June should tell you how well we were able to adhere to our schedule.

Sincerely,

David W. Lynch

David W. Lynch
Acting Associate Director

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