

DATE: March 1, 2002

TO: RHIC E-Coolers

FROM: Ady Hershcovitch

SUBJECT: **Minutes of the March 1, 2002 Meeting**

Memo

Present: Ilan Ben-Zvi, Ady Hershcovitch, Michael Iarocci, Jorg Kewisch, William MacKay, Stephen Peggs, Triveni Srinivasan-Rao, Thomas Roser, Vitaly Yakimenko.

Topics discussed: 939 Setup, Simulation & Calculations, RF Cavities.

939 Setup: Mike described the cryogenic system needed for the test setup to cool the AES SCRF gun below the Lambda point. First the required components were described followed by presentations of cost estimate and schedule. The total estimated cost is \$136 k, of which a total (burdened) of \$73 k is for helium recovery. Cost of piping, from 939 to 902 is \$27 k, and \$46 k is needed to upgrade the 902 helium recovery system. Mike showed a schedule that started on February 13th, 2002 with an estimated completion date of June 18th, 2002.

Based on the estimated schedule, concern was raised regarding the May target date for the start of the SCRF gun operation. Therefore, priority will be given to tasks that are needed to enable gun operation. The schedule is based on the use of two technicians. With additional people, the schedule can be reduced. The high price for helium recovery raised questions regarding its worth. The upgrade of the recovery system in 902 is needed to enable continuous operation with reduced personnel. Originally, the 902 helium recovery system was operated by a large number of technicians. When personnel was reduced, the system was plagued by many interruptions. In an answer to Ilan's question, the upgraded system will handle continuous operation.

To increase operation time, Mike is working on a trickle feed liquid helium system. It would save an hour (needed for refilling) every three hours. However, Thomas pointed that batch filling is very efficient.

In addition to cryogenics, the issues of safety review and beam stop for the SCRF gun setup were also discussed. Mike will perform the ODH calculation, and Triveni will give a set of drawings to design for a system description. Triveni answered Ilan's question to Ady regarding a beam stop: AES will provide a low current beam stop.

Simulation & Calculations: before Mike's presentation, there was a discussion about simulation. Complete end-to-end simulations are needed before engineering design can be finalized. Ilan suggested iterating engineering design with simulation.

Jorg reported that the latest lattice calculations reveal that a design that incorporates flexibility would not fit in physically. Using off-the-shelf electromagnets will result in a more compact design that fits in very well, and might be cheaper. The reason is that the available permanent magnets have a field of 1.4 KG while it is easy to fabricate 8 KG electromagnets (it's possible to make them as high as 15 KG).

RF Cavities: in a previous meeting Satoshi was given parameters of the RF Cavities, which are basically the same as those covered in the January 18th, 2002 meeting, for the purpose of starting the ordering process from DESY. After this meeting, Ilan e-mailed Satoshi, that during the EIC Accelerator Workshop he got some new information that affected one of the numbers. The coupling probe should be of a strength to match a 2.5 kW RF drive at 20 MV/m gradient (not the 1 kW number provided earlier).