Subject: UED and ATFII


The committee met to discuss conceptual design issues for the UED and a few items for ATFII. The UED will be an exempt accelerator that will be incorporated into the ATFII effort. It is expected to begin operations this fall, well before the ATFII is complete.

The shielding for the UED does not have a detailed design. Simple shielding analysis has been provided in a memorandum\(^1\) that will be used as the basis of the detailed design. For the unshielded accelerator the dose rates are expected to be less than 500 mrad/hr at a foot. The detailed shielding close to the accelerator will be designed to reduce the dose rate for routine operations to 0.05-0.1 mrad/hr at a foot for most locations. The intent is to have the room be a Controlled Area without requiring a TLD.

Typically the users would only spend a few hours a week inside the UED room. RCD will be consulted on the posting for the room for initial operations. Until there is operational experience with the UED, the area will initially be posted Controlled Area—TLD required.

(ATS-ATFII-UED-Nov. 1, 2015- P. Bergh & D. Beavis) UED area posted as Controlled Area-TLD required.

Minor changes to the machine design may be made before installation and after. Two changes being considered is to reduce the dark current via a reduction of the duration of the RF wave at the cathode. A second change under consideration is to add a small diameter beam tube (approx. 5mm diameter) between the collimator (0.4 mm diameter) and the sample box to reduce the vacuum in the gun. These changes may improve the performance of the gun.


Access into the machine shield via designed ports will incorporate a Kirk key system which will be tied to the modulator so that if a key is removed the klystron cannot provide RF to the gun.


Infrequent access to some locations of the machine may require the use of tools to remove shielding. C-AD OPM 8.13 will be followed for such access.

\(^1\) [http://www.c-ad.bnl.gov/esfd/RSC/Memos/7_17_15_UED.pdf](http://www.c-ad.bnl.gov/esfd/RSC/Memos/7_17_15_UED.pdf)
The users are not typical C-AD users. A specialized training program will need to be developed to educate them with the potential hazards in Bldg. 912. 


A set of controls and limitations will be established for the following devices to prevent potential increases to the machine performance without review:

- Laser power to cathode
- RF Power to cathode
- Changes to the Cathode

Warning tags will be placed on the devices indicating that a review is required before the devices can be modified.

(ATS-ATFII-UED-Nov. 1, 2015-M. Fedurin & D. Beavis) System to warn that device changes to the laser, cathode, and RF must be reviewed.

(ATS-ATFII-UED-Dec. 1, 2015-P. Bergh & D. Beavis) A set of beam fault studies will be performed and reviewed to verify the shielding design.


There will be monitor TLDs placed in the area to provide data on the integrated dose inside the area.


A chipmunk with an alarm level but no interlock will provide protection for possible fault conditions producing increased radiation levels.


**ATFII**

The committee briefly discussed the issue of designing the areas around ATFII to low levels such as 50-100 micro-rem/hr especially near penetrations. The committee thought that some areas and their associated penetrations such as near the Klystrons should be posted as TLD required. These areas are of little interest to the users. All adjacent areas around the ATFII will be posted as TLD required pending sufficient review of beam fault studies and an established dose rate history.


(ATS-ATFII-UED-Oct 15, 2015-P. Bergh & D. Beavis) Establish monitor TLDs for the facility

**CC:**

- Present
- RSC
- RSC Minutes File
- P. Cirnigliaro
- J. Maraviglia
- T. Blydenburgh
- D. Passarello
- J. Citro
- J. Skaritka