

Memo

date: February 5, 2010

to: RSC

from: D. Beavis 

subject: Radiation Protection for EBIS

My understanding is there may be some open items regarding the interlocks for EBIS. If this message does not provide the information you need please let me know and I can come over and discuss with you. Jim says he had a discussion with Jonathan the other day so maybe the issues have been resolved.

- 1) The Booster chipmunk NMON112 that monitors for potential radiation from the Booster through the EBIS penetration can be moved to accommodate a magnet that will be installed in its present location. Jim A. knows the locations we discussed and can work with Ray A. The can be moved at any time provide the paperwork is updated.
- 2) The beam stops are in not in place. There is a vacuum valve downstream of the beam stops so that these two stops are intended to be used only as critical devices and not vacuum. There will be a profile monitor in the front of the first beam stop. Lou S. and been working to ensure that the engineering reviews are completed on the stops. These devices will need orange tags and memos associated with them as well as the appropriate engineering acceptance form. Attention should be given to the air system that can generate common modes of failure. **(CK-FY2010-EBIS-673)**
- 3) The beam stops are required to have at least one reachback device it the beam stops do not close in a specified time. I would suggest 3 seconds unless someone thinks this is too short for the beam stops. Jim will decide on one of two vacuum valves upstream of the Linac. These will be used for vacuum isolation so I asked him to select one that would have the least potential interference between vacuum work and radiation protection. Any switches that put values into remote must have a lock mechanism over them so that the access controls system is not compromised. The issue of common mode failures with the beam stops must be considered and potentially another device used if the risk is too high. This valve will require orange tags and an associated memo. **(Ck-EBIS-FY2010-674)**
- 4) Three chipmunks should be placed near potential x-ray sources. They will be local area monitors with alarms in MCR. Interlocks are not required. Only if operation experience demonstrates that the risk is too large will interlocks be added. **(Ck-EBIS-FY2010-675)**
- 5) Deuteron operations will require an interlocking chipmunk or shielding near the beam stops but this is not required at this time. **(Ck-EBIS-FY2010-676)**
- 6) The interlocks should be implemented in relay logic. I will be happy to review the preliminary design when it is ready.

CC: EBIS file J. Alessi R. Atkins
K. Brown J. Reich J. Tuozzolo