UITF PSS BCM discussion 8/16/16

Omar Garza, Keith Cole, Trent Allison, John Musson, Jim Kortze, Vashek Vylet, Henry Robertson, Hari Areti, Matt Poelker

Henry recommends the PSS BCM review focus on configuration and not technical details of components involved.

UITF PSS BCM configuration review: State the problem – “how to limit the radiation dose outside the enclosure?” We have a **Passive solution** that includes concrete shielding and signage that limits access to certain areas, and an **Active solution** that involves using the tried-and-tested CEBAF PSS BCM with DC10 downconverter.

When I&C group upgrades the CEBAF BLA system, UITF can have the old un-used DC10 downconverters. Jim Kortze thinks this could happen ~ December 2016

The DC10 downconverter system is sensitive to 1uA. It cannot easily be “turned down” because of signal to noise issues.

We don’t anticipate controlling the temperature of the cavity, so trip level will drift on the order of 0.9 to 1.1 uA

Vashek will re-evaluate the dose limits for UITF: on top of Cave1, on top of Cave2 and at the floor level of the Test Lab high Bay. In general, we limit dose to < 100 mRem per year. He will consider the shielding at each UITF/Test Lab location and calculate the maximum allowed beam current, assuming the PSS BCM trips beam OFF in X seconds when current exceeds nominal 1uA level (see bullet below). Perhaps access to the rooftops will be prohibited while running beam, but thanks to relatively thick concrete walls of UITF, the 1uA sensitivity limit of the DC10 downconverter will likely not pose a problem for us.

I see from the PSS BCM technote, that the beam shutdown time is 1msec for PSS BCM hardware. Let’s agree to use this Turn OFF time for our dose considerations? Poelker to distribute the PSS BCM technote from Jerry.

Possible reviewers for “UITF PSS BCM review”: Paul Vasilauski, Harry Fanning, Chris Cuevas, Curt Hovater, Sarin Philips, Steve Benson

Mid-October is a sensible time for this mini-review, Poelker to schedule it

Action Items:

1. Vashek: calculate the dose someone would receive on top of Cave1 and Cave2, and at the Test Lab floor level if beam current was limited to < 1uA. Assume some duration of operation at current below 1uA (e.g., three 3-week periods of operation each year)
2. John and Trent and Henry and Jerry: can you agree on the “trip OFF” time that we will use when calculating the allowed maximum current? 1 msec as specified in technote? I think we need to agree on a time, it will certainly be discussed at the review
3. John, Trent, Jim: test the DC10 downconverter and evaluate sensitivity. Can things be adjusted to improve sensitivity at current less than 1uA?
4. Jim: keep us posted on when the DC10s become available

Other items:

The PSS BCM cavity that John Musson found appears to be “good”, but can it be tested to ensure it is “good”?

Trent and Omar wondered if there were available BCMs at Hall C, money savings? E.g., they have tuners. They suspect Hall C will never give them up….

In FY17, need to purchase tuners and electronics. I’ve got an estimate from Henry for his stuff, I need an estimate from Jim Kortze