



Memo

Date: April 5, 2018
To: Daniel Fischer, Joseph Woicik, Chernobay, Conan Weiland, Andrew Broadbent, and Paul Zschack
From: Zhong Zhong (chair), Photon Science Radiation Safety Committee
Subject: Follow up meeting to discuss radiation shielding design of the 7-ID, SST, beamline

Dear Dan, Joe, Chernobay, Conan, Andy and Paul,

I would like to thank you for inviting the Photon Science Radiation Safety Committee (RSC) to discuss survey finding of the Bremsstrahlung collimator and actions the SST team took to address finding.

Conan Weiland presented the survey result showing that the Bremsstrahlung collimator (Lead BRS) could not be positioned laterally as originally designed due to adjacent beam-pipe. He then presented the radiation shielding simulations showing that with the Lead BRS at the as-built location, elevated radiation can be expected on the inboard side of the shielded transport pipe (for tender branch) on the experimental floor. Based on this simulation, the team designed a steel shielding of 1 mm thickness that is located at 200 mm away from the inboard side of the transport pipe. Simulation shows that this new shielding eliminates the unacceptable dose rate. Conan then discussed the design and fabrication method for the steel shielding. A few RSC members then proceeded to the SST beamline to inspect the installed new shielding. The mechanism of shielding, by attenuation and distance, was discussed. The discussion reveals that as long as the shielding is 1 mm thick and is approximately 200 mm from the beam-pipe, the exact dimensions of the new shielding is not important for achieving the shielding results. Thus the dimensional tolerance of the design can be as large as 10 mm.

The radiation safety component checklist and the SST beamline ray-tracing have been updated to reflect addition of the new shielding.

Andrew Ackerman, Andy Broadbent, Andy Barbour, Mo Benmerrouche, Sunil Chitra, Dan Fischer, Steve Hulbert, Bob Lee, Chernobay, Chuck Schaefer, Lutz Wiegart, Conan Weiland, Emil Zitvogel, Zhong Zhong, and Joe Zipper attended the meeting on March 20. Peet's coffee was not served due to the expected short meeting duration, which transpired to be about ½ hour.

As a result of this review, the RSC believes that the new shielding design meets the NSLS-II shielding requirements and recommends approval of the updated ray-tracing drawings

Radiation Safety Committee

<i>Name</i>	<i>Expertise</i>	<i>Directorate</i>
Andrew Ackerman	Deputy ESH Manager	PS
Andi Barbour	Beam Line Physicist	PS
Mohamed Benmerrouche	Nuclear and Radiation Physics	PS
Scott Buda	Personnel Protective Systems	PS
Ray Fliller	Accelerator Physicist	PS
Wah-Keat Lee	Beam Line Physicist	PS
Boris Podobedov	Accelerator Physics	PS
Chuck Schaefer	Accelerator SME	ESH
Lutz Wiegart	Beam Line Physicist	PS
Zhong Zhong	Beam Line Physicist	PS
Emil Zitvogel	Accelerator Operations	PS

Ashley Shoemaker-Skokov Administrative Support PS

Ray-tracing sub-committee

Andrew Ackerman	Deputy ESH Manager	PS
Steven Hulbert	Interim Beamline Engineering Group Leader	PS
Wah-Keat Lee	Beam Line Physicist	PS
Chuck Schaefer	Accelerator SME	ESH
Christopher Stelmach	Designer	PS
Lutz Wiegart	Beam Line Physicist	PS
Zhong Zhong	Beam Line Physicist	PS

PPS sub-committee

Mohamed Benmerrouche	Nuclear and Radiation Physics	PS
Scott Buda	Personnel Protective Systems	PS
Robert Lee	ESH manager	PS
Zhong Zhong	Beam Line Physicist	PS

RSC checklist sub-committee

Andi Barbour	Beam Line Physicist	PS
Mohamed Benmerrouche	Nuclear and Radiation Physics	PS
Ray Fliller	Accelerator Physicist	PS