Attachment B

USI Screening Checklist

A) USI Screening Purpose:	**B) Description of Proposed Activity/Discovered Condition and Sponsor/Condition Owner:**
☒ **Proposed Activity** ☐ **Existing Condition**	Review of Radiation Safety Configuration of New CSX Holography Endstation
C) USI Screening Outcome: ☒ **No potential USI** ☐ ***Potential USI***	**USI Screening Performed by/Date:** Steve Moss / September 20, 2018 09/20/19 The following answers are based on compliance with: 1) RSC Memorandum dated September 19, 2018 with subject: Review of the radiation safety configuration of the new CSX holography endstation at the CSX beamline (copy attached).

Qualified Screener answers the following questions; if:

- Any question is answered yes (i.e., "Y"), check "Potential USI" box in Part C, above.
- If all questions are answered no (i.e., "N"), check "No potential USI" box in Part C, above.

Does the proposed change or discovered condition impact or potentially impact:

1) The personnel protection system (PPS)?
   Examples: Access doors, fencing, hutches, accelerator enclosures, software change, hardware modifications that are not, "replacement-in-kind."

   ☐Y or ☒N

2) ODH Monitoring System?
   Examples: Hutch ODH monitors, filling station ODH monitors.

   ☐Y or ☒N

3) Radiation Safety Component?
   Examples: Shielding, earthen berms, hutches, concrete walls, beam shutters, scatter shields, burn-through devices, exclusion zones, labyrinths, beam stops, beam masks, collimators, hutch guillotine and beam transport pipes.

   ☐Y or ☒N

4) Area radiation monitoring system or components?
   Examples: Changing instrument position or use of a new type of instrument used for area radiation monitoring, alarms and controls.

   ☐Y or ☒N

5) Radiological source terms identified in the SAD?

Examples: New insertion devices, change to the maximum synchrotron energy or accelerated charge values, accelerator modifications that are not "replacement-in-kind."

☐Y or ☒N

6) Critical devices
Examples: Safety shutters, dipole magnets, top-off apertures.

☐Y or ☒N

7) PS operating organization?
Examples: Control room operators, support staff responsible for PPS, radiation monitoring or shielding configuration management.

☐Y or ☒N

8) Operational safety limits described in the Authorization Basis Documents?
Examples: Maximum current, beam energy, pulse rate.

☐Y or ☒N

Forward the completed form to the Authorization Basis Manager

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Memo

Date: September 19, 2018
To: Wen Hu, Stuart Wilkins, and Paul Zschack
From: Zhong Zhong (chair), Photon Science Radiation Safety Committee
Subject: Review of the radiation safety configuration of the new CSX holography endstation at the CSX beamline

Dear Wen, Stuart, and Paul

The Photon Science Radiation Safety Committee (RSC) reviewed the design of the new CSX holography endstation (to be installed at the CSX beamline) on July 17. Subjects reviewed include synchrotron radiation shielding analysis, design and configuration control of the new synchrotron beamstop.

Written documents

The following documents and drawings were reviewed:

1. Presentation "CSX- Holography Chamber", by Wen Hu, Claudio Mazzoli and D.M. Bacescu, dated July 17, 2018.
2. Memo from Mo. Benmerrouche dated July 17 to the RSC chair describing the shielding calculation of the holography chamber beamstop.

Oral Presentation

Attendance: Daniel Bacescu, Andi Barbour, Mo Benmerrouche, Sunil Chitra, Wen Hu, Steve Hulbert, Wah-Keat Lee, Chuck Schaefer, Chris Stelmach, Lutz Wiegart, Emil Zitvogel, and Joe Zipper

Wen Hu gave the presentation entitled "CSX- Holography Chamber ". Following the guideline from the memo by Paul Zschack to the RSC on May 29, 2014, the following were discussed:

1. CSX beamline has been reviewed by the RSC before in 2014. The beamline has been in safe operation for about 4 years. Currently the beamline terminates at the TARDIS chamber which receives synchrotron soft x-rays. Being a soft x-ray beamline, current beamstop is a 2.75-inch blank conflat flange.
2. The RSC recommended approval of the beamline as a soft x-ray beamline. Thus, adding an extra experimental end chamber into the existing monochromatic section on the experimental floor is largely covered by our prior review.

3. The new Holography chamber will be attached to the end of the TARDIS chamber. The chamber wall thickness is sufficient for shielding against scattered soft x-rays.
4. The beamstop for the holography chamber can be either a FCCD detector or a blank flange (when the FCCD is not installed). Both are adequate for shielding the direct synchrotron soft x-rays entering the chamber, as demonstrated by Mo's memo.
5. The holography chamber will have dual vacuum switches that turns off the beam when the chamber is vented. These will be integrated into the existing PPS system at the CSX beamline.
6. Configuration control of the FCCD detector is discussed.

Notes

1. In a follow-up meeting, the RSC chair met with the CSX holography team, the safety team, and NSLS-II management to further discuss strategy for configuration control of the beamstop.
2. Since the risk of radiation exposure is extremely low, we note that the commissioning survey of the chamber can be performed at normal ring current.

Recommendations

There are no recommendations from the RSC at this time.

Conclusions

Based on our assessment of the CSX chamber configuration, and simulation results, the RSC finds that the new CSX holography chamber design meets the NSLS-II shielding policy. Subject to experimental verification by radiation survey, we believe the installed chamber and beamstop will provide adequate personnel protection for normal operation and against failures of synchrotron orbit.

Radiation Safety Committee

Name	*Expertise*	*Directorate*
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
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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