

Photon Sciences Directorate, Brookhaven National Laboratory			
Doc No. PS-C-ESH-PRC-002	Author: L. Hill	Effective Date: 27Jun2014 Review Frequency: 3 yrs	Version 4
Title: Unreviewed Safety Issue Determination Procedure		Administrative	

Attachment B

USI Screening Checklist

A) USI Screening Purpose: <input checked="" type="checkbox"/> Proposed Activity <input type="checkbox"/> Existing Condition	B) Description of Proposed Activity/Discovered Condition and Sponsor/Condition Owner: BMM Top-Off Safety Tracking Analysis / Y. Li and R. Filler [Technical Note No. 247]
C) USI Screening Outcome: <input checked="" type="checkbox"/> No potential USI <input type="checkbox"/> Potential USI	USI Screening Performed by/Date: Steve Moss / July 7, 2017 

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

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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?

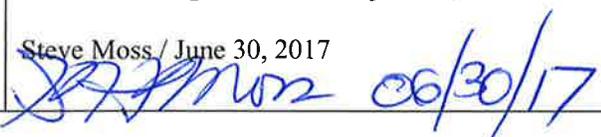
Examples: Maximum current, beam energy, pulse rate.

Y or N

Forward the completed form to the Authorization Basis Manager

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C) USI Screening Outcome: <input checked="" type="checkbox"/> No potential USI <input type="checkbox"/> Potential USI	USI Screening Performed by/Date: Steve Moss / June 30, 2017 

Qualified Screener answers the following questions; if:

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Y or N

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Examples: Safety shutters, dipole magnets, top-off apertures.

Y or N

7) PS operating organization?

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Y or N

8) Operational safety limits described in the Authorization Basis Documents?

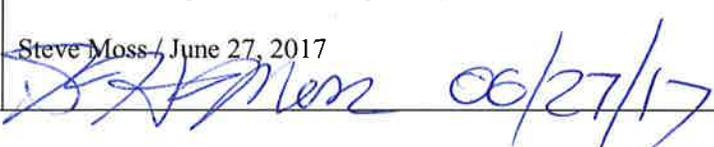
Examples: Maximum current, beam energy, pulse rate.

Y or N

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USI Screening Checklist

A) USI Screening Purpose: <input checked="" type="checkbox"/> Proposed Activity <input type="checkbox"/> Existing Condition	B) Description of Proposed Activity/Discovered Condition and Sponsor/Condition Owner: NSLSII-6BM-PRC-001, Rev. 1; Beamline BMM (06-BM) Radiation Survey Procedure / M. Benmerrouche
C) USI Screening Outcome: <input checked="" type="checkbox"/> No potential USI <input type="checkbox"/> Potential USI	USI Screening Performed by/Date: Steve Moss / June 27, 2017 

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Y or N

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Attachment B USI Screening Checklist

A) USI Screening Purpose: <input checked="" type="checkbox"/> Proposed Activity <input type="checkbox"/> Existing Condition	B) Description of Proposed Activity/Discovered Condition and Sponsor/Condition Owner: Top-Off Radiological Safety Analysis for BMM (06-BM) / M. Benmerrouche [NLSII-TOS-RPT-012]
C) USI Screening Outcome: <input checked="" type="checkbox"/> No potential USI <input type="checkbox"/> Potential USI	USI Screening Performed by/Date: Steve Moss / April 27, 2017

Qualified Screener answers the following questions; if:

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- 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)?

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Y or N

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Y or N

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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

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6) Critical devices

Examples: Safety shutters, dipole magnets, top-off apertures.

Y or N

7) PS operating organization?

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Y or N

8) Operational safety limits described in the Authorization Basis Documents?

Examples: Maximum current, beam energy, pulse rate.

Y or N

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<p>A) USI Screening Purpose:</p> <p><input type="checkbox"/> Proposed Activity</p> <p><input checked="" type="checkbox"/> Existing Condition</p>	<p>B) Description of Proposed Activity/Discovered Condition and Sponsor/Condition Owner:</p> <p>DR-1700, BMM Pink Beam Stop Assembly. Due to a transcription error the bottom edge of the Secondary BS Shield #2 was assumed to extend 96.5 mm below the centerline which resulted in the shielding analysis not conforming to the as-built condition Also, the vertical aperture of the PBS is larger than specified in the ray tracing. Re-analysis was completed and determined that the item(s) may be used as is. USE-AS-IS - A. Broadbent</p>
<p>C) USI Screening Outcome:</p> <p><input checked="" type="checkbox"/> No potential USI</p> <p><input type="checkbox"/> Potential USI</p>	<p>USI Screening Performed by/Date:</p> <p>Steve Mogg / July 19, 2017</p> <p><i>[Signature]</i> 07/19/17</p>

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Y or N

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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

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DR System: SST/BMM**Discrepancy Report****Originator Input**

DR No.:1700
Origination Date:7/14/2017
Supplier:BNL
Purchase Order:
Traveler No.:
Traveler Rev.:
Traveler Operation No.:
Part No.:Various
Part Rev.:A
Part Name:BMM Pink Beam Stop Assembly
Serial/Lot No.:
Quantity:1

Problem Description:1) The bottom edge of the Secondary BS shield #2 was erroneously defined in a line-up and then modelled as extending too low compared to the design and ray tracing by the beamline supplier (who complied with our guidelines to design this). The supplier's ray tracing assumed this shield extends to 58.5mm below the orbit centerline and the component was manufactured extending 69.99mm below the orbit centerline (this was deliberately oversized following advice from BNL staff). Due to a transcription error, the line-up assumed this shield extends 96.5mm below the centerline. The result is that the shielding analysis does not conform to the as-built condition. See attached sketch, lower right hand corner.

2)The vertical aperture of the PBS is larger than specified in the ray tracing. Specified vertical aperture size is 20mm +/- .8mm. The actual measured aperture is 21.43 mm. After survey, we see that the top of the aperture is appropriately located within the allowed tolerances, however, the bottom of the aperture is at 109.76mm above the orbit centerline. The required minimum height in the ray tracing is 112.1mm. The net effects of this are as follows; The total possible height of the monochromatic beam after the DCM is 2.34mm larger than designed in the vertical – this is considered to be of no consequence since the beam can already pass through the shutter and hit the shielded beam transport pipe at a grazing angle (in the event of mirror removal). In the case the area of pipe potentially illuminated by the beam will expand. The pink beam hitting the PBS is now slightly closer to the aperture: the reduction in available clearance goes from 13.9mm to 11.5mm.

WBS No.:7.03.03
Cognizant Engineer:Andrew Broadbent [23781]
Originator:Andrew Broadbent [23781]

Attachment(s):**File Name:**

4594_001.pdf

Date Uploaded:

7/14/2017 3:37:51 PM

6BM BMM Beamline Rad Shielding Analysis Revised.pdf

7/18/2017 9:35:29 AM

CE/CS Input

	Parts Disposition				
	Rework	Repair	RTV	Scrap	Use As Is
This Item:					✓

Rework/Repair Steps:1)Use As Is. The radiation shielding calculations performed by Mo Benmerrouche indicate that the shielding as installed meets the shielding requirements for the beam line. See attached Tech note.

2)Use As Is. Shielding analysis has already included monochromatic beam hitting the shielded transport pipe at normal incidence, without exceeding radiation limits (the

implications of grazing incidence beam is significantly less due to the greater lead thickness "seen" by the beam). If this fragment of beam were to exit the pipe, it will be contained within the experimental hutch, which is itself designed to contain the monochromatic beam safely; this can only occur when the shutter is open (and the experimental hutch is secured). The enlarged aperture reduces the clearance to the pink beam but this will also pose no issue and is well outside the minimum (pink beam to stop edge) clearance of 3mm mandated at NSLS-II.

Root Cause Description:
Actions To Prevent
Future Occurrences:
Preventative Action
Owner:
Preventative Action Due
Date:
Originator Delegate:

QA Input

Report Type:Type II
Approved Date:7/18/2017
Approval List:

Zipper, Joseph [24115]	7/18/2017
Carlucci-Dayton, Mary [21745]	7/18/2017
Benmerrouche, Mo [25263]	7/18/2017
Zhong, Zhong [21561]	7/18/2017

Distribution:
Closed Date:7/18/2017