

# Report on the Hall D Photon Beam Commissioning Review, August 8, 2014

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## REVIEW COMMITTEE

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## Introduction

The review committee thanks the Hall D collaboration for a well-organized review. We appreciate all the hard work that went into preparing the review material, documentations and for high quality presentations. The review committee did not find any show stoppers. There were not any tasks that are on the critical path or any issues that cannot be resolved before run starts. While there are few things left to be completed or improved before beam can be delivered to Hall-D, we are confident that the Hall-D collaboration will be ready for beam commissioning on time and will execute the planned activities in a safe manner.

Below are findings/comments/recommendations for each of the review charge questions.

## Charge Questions:

- 1. Are the plans for commissioning the electron beam adequate to cleanly transport the electron beam to the tagger dump?*

**Findings:** In general plans for commissioning of the electron beam delivery to Hall-D are in place and adequate to meet the requirements. The plans for commissioning of some of the individual systems are not yet complete (e.g., fast feedback, nA BPMs (still in fabrication), wire harps, BCMs ...).

**Comments:** Consider using the last quad (just before the tagger magnet) to measure the beam emittance at the beam dump. Consider Hall participation in electron beam commissioning.

**Recommendations:** None

- 2. Is the documentation for commissioning the electron beam complete?*

**Findings:** All necessary documentation to send the beam to Hall-D tagger dump is in place. Only document that is not finalized is Radiation Safety Assessment Document (RSAD), although as it was presented at the review by Radiation Control Department, a proper analysis of radiological situation has been performed.

**Comments:** Final RSAD must in place before beam can be delivered to the hall.

**Recommendations:** Finalize the RSAD, this document must be out of draft form prior to commissioning.

- 3. Will the planned Hall D beam commissioning procedure and the machine protection system ensure acceptable radiation levels in the tagger hall and Hall D? Is any local shielding required to minimize the effects of radiation to equipment in the tagger hall and Hall D?*

**Findings:** The presented commissioning procedure and the machine protection system ensures acceptable radiation levels in the tagger hall and in Hall D. The shielding plan is adequate. However, there is room for improvements.

**Comments:** The BPMs work reliably at currents  $<1$   $\mu\text{A}$  and therefore beam tuning can be performed at much lower beam currents than presently are considered. Before installing the tagger electronics radiation data taken during the beam commissioning period should be studied to make sure that electronics do not need additional shielding. Consider not masking Ion chambers at the startup and adding BLMs in the tagger hall to be used in FSD. Consider larger diameter beam pipe downstream of the tagger to the shield wall.

**Recommendations:** Install planned shielding and assess the need for local shielding during commissioning period.

- 4. Is the planned instrumentation for monitoring the photon beam sufficient to ensure safe delivery?*

**Findings:** The planned instrumentation for monitoring the photon beam is sufficient to ensure safe delivery. But it requires moving the beam profiler to different locations which lowers efficiency of the beam time use.

**Comments:** Consider having more profilers at different locations.

**Recommendations:** Install Hall-B profiler from TPE experiment (so called “sparse” profiler) to continuously monitor photon beam at the tagger dump.

- 5. Are the plans for commissioning the Hall D photon beam adequate to cleanly transport the photon beam through Hall D to the photon dump?*

**Findings:** The presented commissioning plan is adequate to cleanly transport the photon beam through Hall D to the photon dump, but the plan needs to be finalized. The sequence of steps was still under discussion as well as the parts of the plan that should be completed before the electronics are installed in the Hall.

**Comments:** The plan for commissioning must be finalized.

**Recommendations:** None

- 6. Is the documentation for commissioning the photon beam complete?*

**Findings:** The only documentation that exists is on a wiki page and what has been shown at the review. What has been shown at the review was not exactly the same as what is on the wiki page.

**Comments:** The plan for commissioning must be finalized and properly documented.

**Recommendations:** Make wiki pages password protected that not every one can change commissioning plans or procedures.

7. *Based on the plans presented, will Hall D be ready to commission the photon beam by October?*

**Findings:** According to the presented plans, it is expected that Hall-D will be ready for photon beam commissioning in October.

**Comments:** In order to be ready for beam commissioning the shielding must be installed in time as well as nA BPMs must be fabricated and commissioned.

**Recommendations:** None

8. *Are the areas of responsibility between accelerator and Hall D clearly specified?*

**Findings:** The responsibilities between accelerator and Hall D are clearly specified.

**Comments:** While electron beam commissioning is the accelerator operations responsibility, we encourage Hall-D collaboration to take part in the commissioning.

**Recommendations:** None