NCSX Preliminary Baseline Review (PBR) Scope Item #7: Status Summary

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7. Hazards Analysis .

Item Description: Evaluate the quality of the Hazard Analysis and assess whether all scope, schedule, and costs necessary for safety are incorporated into the baseline. Review the classification of SSCs as safety class or safety significant. Assess the Hazards Analysis process, including the use of internal and external safety reviews. Review any Defense Nuclear Facilities Safety Board and/or Nuclear Regulatory Commission interface and discuss the status of their involvement.

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STATUS:

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1. *Evaluate the quality of the Hazard Analysis and assess whether all scope, schedule, and costs necessary for safety are incorporated into the baseline*. The existing preliminary hazards analysis (PHA) and the analysis in the Environmental Assessment (EA) are appropriate at the current stage of project development, and safety activities and costs associated with NCSX have been incorporated into the baseline.

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2. *Review the classification of SSCs as safety class or safety significant* .Safety class and safety significant are terms usually (but not necessarily exclusively) applied to certain structures, systems and components (SSCs) associated with nuclear facilities. Safety class SSCs are systems, structures, or components whose failure could adversely affect the environment or safety and health of the public as identified by safety analyses. Safety significant SSCs are structures, systems, and components which are not

designated as safety-class SSCs but whose preventive or mitigative function is a major contributor to defense in depth (i.e., prevention of uncontrolled releases to the public) and/or worker safety as determined from safety analyses. As a general rule of thumb, safety-significant SSC designations based on worker safety are limited to those systems, structures, or components whose failure is estimated to result in a prompt worker fatality or serious injuries or significant radiological or chemical exposures to workers. The term serious injuries, as used in this definition, refers to medical treatment for immediately life-threatening or permanently disabling injuries (e.g., loss of eye, loss of limb). NCSX is not expected have any safety class or safety significant SSCs. The potential threat to workers from a large loss of nitrogen from the cryostat will be evaluated as designs progress to see if there is a need to designate any safety significant systems (e.g., low oxygen alarms).

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3. *Assess the Hazards Analysis process, including the use of internal and external safety reviews*. The process has included reviews of the PHA as part of the CDR, and reviews by DOE and NJDEP of the EA. In the future, hazards analyses will be part of the PDR & FDR efforts. It is anticipated that, similar to NSTX, an Activity Certification Committee, including PPPL and PAO membership, will be formed to review an NCSX Safety Assessment Document (SAD) and the safety aspects of planned operations. The SAD, which would be approved prior to first plasma, will provide descriptions of relevant NCSX structures, systems and components, identification of hazards associated with NCSX operation, and design features and administrative controls to mitigate these hazards). In addition, there would likely be a DOE Operational Readiness Assessment (ORA) that would review the hazards analyses.

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4. *Review any Defense Nuclear Facilities Safety Board and/or Nuclear Regulatory Commission interface and discuss the status of*

their involvement. The DNFSB has never been involved in any PPPL facilities, and is unlikely to become involved. Their mandate under the Atomic Energy Act is to provide safety oversight of the nuclear weapons complex. PPPL does not currently fall under NRC jurisdiction, although that may change in the radiation safety area before NCSX starts operating. Based on recent discussions with NRC, they would likely issue a "broad scope license" to PPPL to operate under certain limits on radionuclide inventories. It is not currently known if or when NRC will license PPPL and other DOE science labs.

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