DEFENSE NUCLEAR FACILITIES SAFETY BOARD

April 9, 2021

TO: Christopher J. Roscetti, Technical Director
FROM: Christopher Berg, Acting Resident Inspector
SUBJECT: Pantex Plant Activity Report for Week Ending April 9, 2021

Special Tooling Program: As part of Recommendation 2019-1, the DNFSB identified various deficiencies within the Pantex special tooling program that required action to ensure the design, procurement, manufacturing, and maintenance of special tooling is commensurate with its safety function. In its implementation plan, NNSA committed to a suite of actions to resolve these concerns. Last week, NPO approved—with three directed changes and no conditions of approval—a change package transmitted by CNS to revise the special tooling program described within the Pantex documented safety analysis (DSA). CNS revised the DSA to address the following implementation plan actions: (1) include standard safety factors for tooling design; (2) develop criteria for when tooling dynamic testing should be conducted during the design process; and (3) include nondestructive examination (NDE) requirements for tooling welds.

> *Standard Safety Factors*—CNS developed standard safety factors for special tooling design—including commercial components with and without a credited safety function—for normal and rare events (e.g., seismic or falling technician scenarios). The DSA change package codifies these safety factors as programmatic controls within the special tooling program. These safety factors are consistent with current tooling functional requirements specified in the Pantex technical safety requirements.
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> *Dynamic Testing*—the DSA revision with an NPO directed change establishes that when analytical methods are not feasible to demonstrate special tooling meet the standard safety factors, static and/or dynamic testing are acceptable methods to assure tooling is able to meet its safety design function and assess its failure modes.
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> *NDE Requirements*—for tooling with welds in the credited load path, the special tooling program as presented in the DSA change package—with incorporation of an NPO directed change—requires verification of those welds through load testing or enhanced NDE techniques beyond visual examination.

DSA Non-Compliance: CNS initiated a stop work event upon discovery of a DSA non-compliance for assembly operations on a warhead program. The nuclear explosive operating procedure did not implement a safety management program (SMP) Key Element requiring high explosive mats while removing explosives from a compartment of the process transfer cart. At the event investigation, participants acknowledged that this disconnect between the DSA requirements and the operating procedure first occurred in 2007. CNS published several revisions of the operating procedure since then but did not identify the issue. CNS identified the non-compliance during a human performance improvement activity as part of the development of a DSA change package, which aims to remove SMP Key Elements from the safety basis documentation for this weapon program. CNS is developing a path forward to allow resumption of all operations involving the assembly procedure and is pursuing a nuclear explosive engineering procedure to allow completion of a single unit.