



U. S. Department of Energy  
National Nuclear Security Administration  
Pantex Site Office  
P. O. Box 30030  
Amarillo, TX 79120-0030



JAN 10 2005

The Honorable John T. Conway, Chairman  
625 Indiana Ave., N.W.  
Suite 700  
Washington, D.C. 20004-2901

The special tooling program at Pantex has not demonstrated the level of rigor the National Nuclear Security Administration (NNSA) expects from a program directly supporting nuclear explosive operations. The NNSA Headquarters (HQ) lead assessment along with previous reviews including those performed by members of your staff and mine indicate lingering, unresolved issues. Although no operational safety impacts or near misses have resulted due to these program deficiencies, Pantex Plant is taking significant actions (both compensatory and longer term) that should bring the special tooling program to a level of rigor commensurate to its importance in supporting nuclear explosive operations. NNSA Pantex Site Office (PXSO) and NNSA HQ have been and continue to be involved in these actions.

In response to concerns expressed in your December 15, 2004, letter to Ambassador Brooks, I have attached a BWXT prepared tooling program report and the BWXT tooling improvement plan. As you know, several of the BWXT self-imposed compensatory measures address the recent discovery that special tooling fasteners may not have been torqued to design specifications. Not only are fasteners in the tooling load-path being checked, but a complete review of all tools that have features that perform a safety function credited within the authorization basis is also being performed. While these short-term actions are prudent and necessary to support resumption of all weapon operations, more comprehensive actions are also being taken to enhance the overall program with the goal of satisfying all of the criteria in the suspended NNSA special tooling review. Upon BWXT declaration of readiness, the NNSA intends on re-performing the special tooling program assessment under the same team leadership, utilizing the same criteria.

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Honorable John T. Conway

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In the next couple weeks I will also conduct a management review to convince myself that actions taken, as well as those planned to improve the program are reasonable and sufficient. This review will involve several members of my senior staff as well as, HQ members of the special tooling assessment team. I would like to provide a briefing to the Board in the near future to more thoroughly cover the actions taken by the NNSA and the Pantex contractor and to answer any questions you may have. I will have my staff work with yours to make the necessary arrangements.

Sincerely,

A handwritten signature in cursive script that reads "Daniel E. Glenn".

Daniel E. Glenn  
Manager

Attachment

cc w/attachment:

Everet Beckner, NA-10, FORS

Jim McConnell, NA-1, FORS

Marty Schoenbauer, NA-12, FORS

Mark B. Whitaker, Jr., DNFSB



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JAN - 7 2005

Mr. Daniel E. Glenn, Manager  
U. S. Department of Energy  
National Nuclear Security Administration  
Pantex Site Office  
P. O. Box 30030  
Amarillo, Texas 79120-0030

Subj: Pantex Tooling Program Report, Revision 1

Ref: Memo from Waltzer to Mallory, *Defense Nuclear Facilities Safety Board (DNFSB)*  
*Request for Report on the Pantex Tooling Program*, dated December 16, 2004

Dear Mr. Glenn:

Per your request of December 16, 2004, this letter provides a report on the Pantex special tooling program. BWXT Pantex management concurs that special tooling represents a vital element in achieving and maintaining safe nuclear explosive operations. Execution of the special tooling program to date has not resulted in the desired level of rigor and documentation to provide assurance of effective tooling configuration control. Deficiency impacts have resulted in production delays but have not resulted in nuclear explosive operational safety issues. Significant compensatory actions have been initiated to improve the special tooling program execution and assure continued safe tooling performance.

Although the formal root cause analysis will not be completed until January 14, 2005, it is clear that program ownership was divided and operational discipline was inadequate to meet performance expectations. Status of tooling backlog, deviations, and pending work requests did not have sufficient visibility. In retrospect, past causal analysis of identified deficiencies did not take a sufficiently critical look at the complete special tooling program and failed to drive a rebaselining of the entire program (procedures, forms, training, staffing) that would resolve cumbersome, unclear, and inefficient processes. Preparation for the November 2004 NNSA audit of the special tooling program included an assessment of Tooling Improvement Program accomplishments. Although improvements identified within the Tooling Improvement Plan had been initiated, the adequacy and effectiveness of those actions were over-estimated. The review was internally performed by the staff supporting the tooling program by conducting a table-top self-assessment rather than a formal readiness assessment.

### Confidence in Safe Operations

The recent NNSA special tooling program assessment identified issues of documentation errors, procedural weaknesses, and control of material. None-the-less, BWXT is confident that special tooling issued for use in weapon assembly and disassembly actions meet form, fit, and function requirements to ensure safe nuclear explosive operations. This confidence is based upon:

- The level of integrated design reviews, analysis, approvals, acceptance testing, and tryout afforded special design tooling prior to implementation for production operations.
- Large design margins and redundancy in load paths.
- Multiple inspections performed before tools issued to line.
- Training and qualification of production technicians.
- Use of Nuclear Explosive Operating Procedures to control special design tooling application and use.

In addition, it should be recognized that special tooling is not required to activate/initiate safety functions in the event of off-normal conditions. Special tooling is not designed to operate in post-accident environments or to actively provide safety class functions to mitigate the consequences of an accident.

Project teams with broad based expertise are involved in the tooling development and deployment process. Integrated design reviews assure adequacy and margin in performing safely and within critical design parameters. Repeated demonstrations of the production process prior to production use of the tools assure proper performance per design intent. Inspections, load testing, and tooling tryout ensure acceptable performance of the tools. Project team approved Nuclear Explosive Operating Procedures formally document application and use of the tooling in assembly/disassembly operations. Deviations from these procedures require formal analysis and approval actions by both BWXT and Design Laboratories. Production technicians are trained on procedures and proper tooling use. Using that expertise while engaged in assembly/disassembly operations, tooling anomalies are easy to visually detect and, therefore, stop work. When changes or deviations to special tools are required, a formal Unreviewed Safety Question Evaluation is required. Tooling modifications, whether driven by design changes or maintenance requirements, re-engage acceptance analysis efforts validating performance features.

Although current Pantex special tooling was designed, fabricated, and deployed over an approximate 25-year period, BWXT believes the previously described factors provide a prudent basis for continued use of the special tooling currently in inventory. Additional compensatory actions and long-term improvements provide NNSA assurance that all credited safety features are functional and that process efficiencies are being pursued.

### Compensatory Measures

Although special tooling will provide safety features as designed, the discipline required for managing and controlling tooling operations must be improved. Significant levels of facility restructuring, personnel alignment, and process simplification have been initiated to rebaseline the special tooling program. These changes represent major shifts in our approach to developing, procuring, accepting, and controlling production tooling. Compensatory measures implemented in response to the NNSA tooling program assessment conducted in November 2004 and recent fastener torque issue are listed in Attachment A. They include elevation of special tooling program management responsibility to a senior management position reporting to the General Manager's office; staff augmentation in critical tooling areas; evaluation of tooling analysis and inspection records for tools with AB credited features; process improvement for establishing flow down of those critical requirements into the inspection processes; and senior management engagement in daily operational oversight walk-downs.

### Path Forward

The path forward to restore confidence in the special tooling program is to complete a senior management led root cause analysis of special tooling deficiencies. The current tooling improvement plan (Attachment B) will be cross-walked with the root cause analysis and then finalized. Line management will declare "readiness for operations" via a formal verification process. This readiness declaration will then be subjected to a contractor led readiness assessment using criteria review and assessment documents. This is targeted to start on January 24, 2005. The intent is to assure the effectiveness of all corrective actions identified in Attachment A and B and all of the CRAD requirements identified in DOE Pantex Plant Tooling Program Assessment Draft Report, dated November 15-19, 2004 are met. BWXT will only go forward if all requirements are met. After completing the final root cause analysis and the readiness assessment, BWXT will finalize/update the Tooling Improvement Plan if needed.

### Conclusion

BWXT Pantex is confident the tooling used for nuclear weapon production is functionally safe, but we are not satisfied with the support processes and have initiated significant changes in organizations, facilities, processes, and performance expectations. Although the formal root cause analysis will not be complete until January 14, 2005, BWXT believes an effective path forward has been initiated to address the weaknesses of the tooling program. This path forward requires additional resource commitments to the tooling process to ensure corrective actions are fully implemented and effective.

Mr. Daniel E. Glenn  
Pantex Tooling Program Report

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If you have any questions please contact me at extension 7723 or Carl Durham at extension 7724.

Very truly yours,



Michael B. Mallory  
General Manager

Attachment: As stated

cc: Don Brunell, 12-36A  
Steve Erhart, 12-36A  
John Kirby, 12-36A  
Karl Waltzer, 12-36A  
Dan Swaim, 12-69A  
Carl Durham, 12-6F  
Dom Palamara, 12-69B  
Gary Pool, 12-69C  
John Woolery, 12-6D  
Jeff Yarbrough, 12-42U  
John Clayton, 12-6F  
Gerald Armentrout, 12-5D

## *Attachment A* *Compensatory Measures for Special Tooling*

- Initiated Senior Management oversight for all tooling functional areas (Tooling Review, Tooling tryout, Receiving and Inspection, etc.). The oversight will increase the visibility of all tooling functional areas and their respective issues.
- Mr. Armentrout, Deputy Engineering Manager, is responsible for ensuring the special tooling program meets requirements for safety, quality, and production and reports to the General Manager's office.
- Steve Young, a senior manager, has been assigned as Manager, Tooling & Machine Design, and will functionally report to Mr. Armentrout. Mr. Young will use his background in authorization basis and design to formalize the design process and safety requirement flow down.
- A complete review of all credited tools to demonstrate an AB requirement linkage to functional areas (tooling tryout, R&I, calibration, etc.) has been initiated. Doug Kaczmarek has been appointed manager of Tooling Analysis reporting to Mr. Young, will head up this task.
- Tooling Support Department reports programmatically to the Deputy Engineering Manager. A single point of contact for all tooling activities has been established to eliminate any division (Engineering, Manufacturing and Quality) communication issues.
- Assigned a Nuclear Safety Officer (NSO) to the Tooling Support Department to improve formality of operations and to conduct internal assessments.
- Revised reporting for tooling tryout activities from Engineering to Manufacturing. The purpose of this move is to increase the formality of the tryout activities.
- Bolstered the resources and formality of operations in the tooling tryout area by reassigning a supervisor from the tooling review team. Additionally, a previously qualified BWXT Pantex Facility Representative will be reassigned to this area effective 11/29/2004.
- Additional technicians have been assigned and will be trained to inspect special tooling. The additional resources will be utilized to inspect tools and identify all tooling issue at the front end of the process to reduce redundant operations.

- Billy Hoffman, Department Manager for Product Quality will be deployed full time to Receiving and Inspection for Special Tooling to provide direct oversight for an indeterminate timeframe. The added supervision will be used to improve conduct and formality of operations in the inspection area.
- Clayton Rose, Manager, Mechanical Metrology Laboratory will be assigned full-time to Receiving and Inspection for Special Tooling. Mr. Rose will have responsibility for providing training for new Receiving Inspection Special Tooling Inspectors.
- Ron Oberle, Quality Engineer will be assigned to provide quality-engineering oversight of all aspects of the Special Tooling Program. Mr. Oberle will be evaluating BWXT Pantex's effectiveness in meeting quality requirements

As a result of the improperly torqued threaded fasteners. The following compensatory measures are in place.

- To process units currently in stand, Production Manager and Engineering personnel will inventory required tooling per NEOP and perform a visual verification for workmanship and obvious problems.
- For resumption of production, fastener torque verification will be performed utilizing the following screening:
  - Production, engineering, program staff will screen NEOP for all tools that support the NE load.
  - For tools that generally carry load through compression/shear a drawing assessment will be performed
  - The drawing assessment will identify any threaded fasteners that actually carry load, i.e., not those that simply align structural members
  - Drawing will be marked up for field verification of torque
  - PT/Craft/Engineering will verify torque of accessible fasteners without disassembly and record results
  - Using Engineering judgment, any tools requiring further rework will be dispositioned for repair



**Attachment B**

**Tooling Improvement Plan**

**BWXT**  
**Pantex** January 7, 2005  
Commitment to Excellence

## **Tooling Improvement Plan**

The Tooling Improvement Plan was developed as a result of the findings/observations identified in the Pantex Plant Tooling Program Assessment Draft Report, dated November 15-19, 2004. It is noted the assessment process was stopped early because of the unsatisfactory results in meeting the acceptance criteria. BWXT Pantex is working to resolve the assessment findings/observations and identify any additional issues.

The current focus of the TIP is to formalize and rebaseline the special tooling program. A complete review and restructuring of the program will be carried out using the CRADS defined in the Pantex Plant Tooling Program Assessment Draft Report, dated November 15-19, 2004. This new process will correct the findings identified in past assessments.

The processes will be streamlined to remove non-value and cumbersome activities. The new tooling process flow will be formally documented with defined roles and responsibilities for each functional area. The procedures and forms will be rebaselined to reflect the new tooling process flow and to ensure requirements are met. In addition to meeting the quality requirements, a review of safety requirement linkage will be completed. A clear and complete linkage from the authorization basis requirements to the tool design, fabrication, inspection and staging areas will be accomplished.

BWXT Pantex will make the necessary changes to tooling facilities to establish a professional work environment. Work areas will be cleaned and properly equipped to perform tooling activities. Special tooling and materials for fabrication of special tooling will be properly segregated and "in-process" staging areas will be identified. BWXT Pantex will begin the process to optimize workplace organization by implementing the 5 "S" Program (Sort, Sent to Order, Shine, Standardize, Sustain). The end effect will be an improvement in quality and productivity.

Special attention will be directed towards providing detailed evidence packages before the special purpose readiness assessment scheduled for January 24, 2005. Each requirement will be individually traced down to the specific section/sentence in a procedure that is responsible for meeting the requirement. Each evidence package will then be reviewed for work quality and completeness.

This Tooling Improvement Plan supercedes all previous plans. This plan is focused on providing a major rebaselining to the tooling program in a relatively short period of time. Completion of the actions as identified in this plan is a prerequisite for BWXT Pantex to start a special purpose readiness assessment scheduled for January 24, 2005. BWXT believes they have identified the major contributor to solve the Special Tooling Program problems. However, the causal analysis may bring forward additional action items that will need to be addressed before the special purpose readiness assessment. The Tooling Improvement Plan will be revised to reflect the additional actions by January 16, 2005. The Tooling Improvement Plan will be finalized January 30, 2005, after the BWXT assessment is underway.

# Tooling Improvement Plan

## Correct & Streamline High Level Process Flow

Action	Due Date	Status
Complete top-level process map for new tooling process.	1/03/05	Complete
Complete detail process mapping for each functional area	1/06/05	On Schedule
Streamline work order process to remove non-value steps	1/10/05	On Schedule
Document process flow, roles & responsibilities for functional areas	1/10/05	On Schedule

## Establish Professional Work Environment

Action	Due Date	Status
Realign all tooling facilities (warehouse, fabrication, TRT/TQA, calibrations, 1TO, & R&I) <ul style="list-style-type: none"> <li>• Paint and general clean up</li> <li>• Excess material/equipment</li> <li>• Identify tooling "in process" areas</li> <li>• Begin first phase of 5 "S"</li> <li>• Acquisition level 1 material fence to be installed</li> </ul>	1/03/05 1/03/05 1/03/05 1/03/05 1/08/05	Complete Ongoing Complete Complete On Schedule
Excess inactive tooling to connexes	1/03/05	Complete
Complete wall-to-wall inventory	1/24/05	On Schedule

## Rebaseline and Implement Key Processes, Procedures & Forms

Action	Due Date	Status
BWXT Corporate personnel assist visit	1/04/05-1/10/05	On Schedule
Deploy new procedures and forms to reflect the new process flow	1/10/05	On Schedule
Train personnel to new procedures, forms and process	1/12/05	On Schedule
Develop a categorical exclusion for tooling deviations and submit to NNSA for approval	1/15/05	On Schedule
Complete review of AB requirement linkage to tooling tryout, R&I, calibrations, etc.	1/24/05	On Schedule
Incorporate standing order #8 into procedures	1/24/05	On Schedule

## Assess & Demonstrate Readiness

Action	Due Date	Status
Develop of POA and CRADS	1/10/05	On Schedule
Begin special purpose RA after General Manager concurs	1/24/05	On Schedule
Demonstrate/Declare Readiness to NNSA	2/15/05	On Schedule
Eliminate Compensatory Actions (See Attachment 1) Where Appropriate	2/15/05	On Schedule

## Additional Actions

Action	Due Date	Status
Issue Root Cause Analysis Report	1/14/05	On Schedule
Revise Tooling Improvement Plan, if necessary	1/16/05	On Schedule
Complete additional Action Items	1/16-1/23/05	On Schedule
Complete Resolution for findings/observations from DOE evaluation	1/24/05	On Schedule
Update Tooling Improvement Plan	1/30/05	On Schedule
Finalize Integrated Organizational Structure & Allocate Resources	1/30/05	On Schedule