20 | ENHANCED MISSION DELIVERY INITIATIVE | 24

PANTEX

CNS | consolidated nuclear security, llc

Y-12

EXECUTIVE SUMMARY

The National Nuclear Security Administration (NNSA) Enhanced Mission Delivery Initiative (EMDI) propels improved efficiency and collaboration across the Nuclear Security Enterprise (NSE). Consolidated Nuclear Security (CNS) leadership fully supports EMDI through four avenues:

1. **CNS workforce-driven:** Championing thousands of Pantex Plant (Pantex) and Y-12 National Security Complex (Y-12) bottom-up improvements.

2. **CNS leadership-driven:** Spearheading strategic Pantex and Y-12 improvements.

3. **CNS—NNSA Field Office partnering:** Partnering with Pantex and Y-12 Field Offices (PFO and YFO) executives to lead EMDI initiatives for the NSE.

4. **CNS—NSE support:** Collaborating on NNSA headquarters EMDI initiatives.

This report features noteworthy completed and in-progress initiatives in the above categories achieved from February 2023 through October 2024 at both Pantex and Y-12. Future CNS EMDI reports will cover Y-12 only.

CNS will provide ongoing Y-12 EMDI updates via this twice-yearly publication, monthly YFO updates, regular NNSA *Accelerator* input, and additional publications as requested.

INTRODUCTION

Pantex and Y-12 continually meet remarkable increases in mission scope, increased staffing needs, and expanding operational demands. Changes in the breadth and depth of responsibility are a call to innovate, recapitalize, eliminate waste, and refine processes. To accomplish these needs, CNS is pushing boundaries, embracing change, and fostering collaboration through EMDI.

PURPOSE

The purpose of the CNS EMDI publication is to share a noteworthy collection of CNS-completed and in-process initiatives that reduce red tape and remove barriers in support of the mission. This collection of successful achievements demonstrates that improvement is possible and vital to mission success. The CNS EMDI improvement projects within this publication are categorized as:

- CNS Workforce-Driven,
- CNS Leadership-Driven,
- CNS-NNSA Field Office Partnering, and
- CNS NSE Support.

CNS Workforce-Driven Improvement Projects

Y-12

Assembly/Disassembly Operations Real-Time Radiography Acceptance Rate Improvements

Assembly/Disassembly Operations (ADO) has historically observed a less than 50% acceptance rate of ST-90 boxes of boundary control station waste through the site's X-ray machine. Approximately 80% of those rejections were caused by batteries, containerized liquids, spent bullet casings, and e-waste, all of which are detectable by the X-ray. To correct a failed box, containers are sent to a third party that removes prohibited items through their sort and segregation area—at a significant cost to CNS. The ADO Materials Disposition team worked closely with the area waste engineers, environmental officers, Production personnel, and waste package certifiers to determine failure modes and implement countermeasures to prevent recurrence.

A biweekly meeting was established to review X-ray data and status actions, and to problem-solve surfacing issues. As a result of the collective teams' efforts, the ADO X-ray acceptance rate is 88% for boxes generated in FY 2024. This resulted in significantly lower costs.

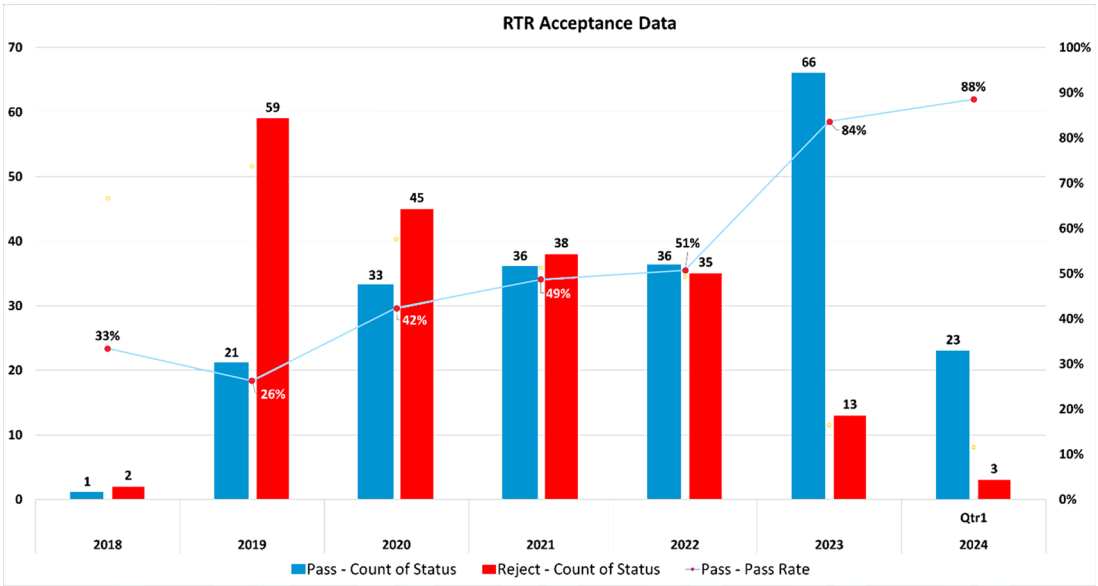


Figure 1: Assembly/Disassembly Operations Real-Time Radiography Acceptance Rate by Year

Special Material Operations Laboratory Improvement

The wet chemistry lab helps to meet the yearly mission goal of producing lithium metal by supporting production sample analysis for the electrolytic cell. A cross-functional team from Production, Operations, Waste Engineering, Process Engineering, and Environment, Safety, and Health shortened execution time by properly disposing of excess resources, redistributing essential materials to improve workflow, reevaluating supply replenishment practices using prior campaign data, and updating the sampling procedure to include sustainment efforts. The team improved conduct of operations by using continuous improvement principles and tools.

Figure 2: Special Material Operations Laboratory Before

Figure 3: Special Material Operations Laboratory After

ADO Electropolisher Process Improvements

The electropolishing operation was a suspected contributor to a 60% failure rate in downstream operations. ADO Process Engineering initiated enhanced operational oversight, which included assembly process engineers, welding engineering, dimensional inspection, and floor crew operations. The oversight process identified various areas for improvement, including addressing proper lighting for an operation process. Additional low-cost improvements are shown in Figures 4 and 5, demonstrating that significant results are often achieved through simple improvements. The team identified and implemented best practices through procedure changes, training, and continued subject matter expert oversight. As a result of these improvements, the failure rate has dropped from 60% to less than 5% and less rework as well as less post-electropolish cleaning work is performed.

Figure 4: ADO Electropolisher Process Improvements After and Before

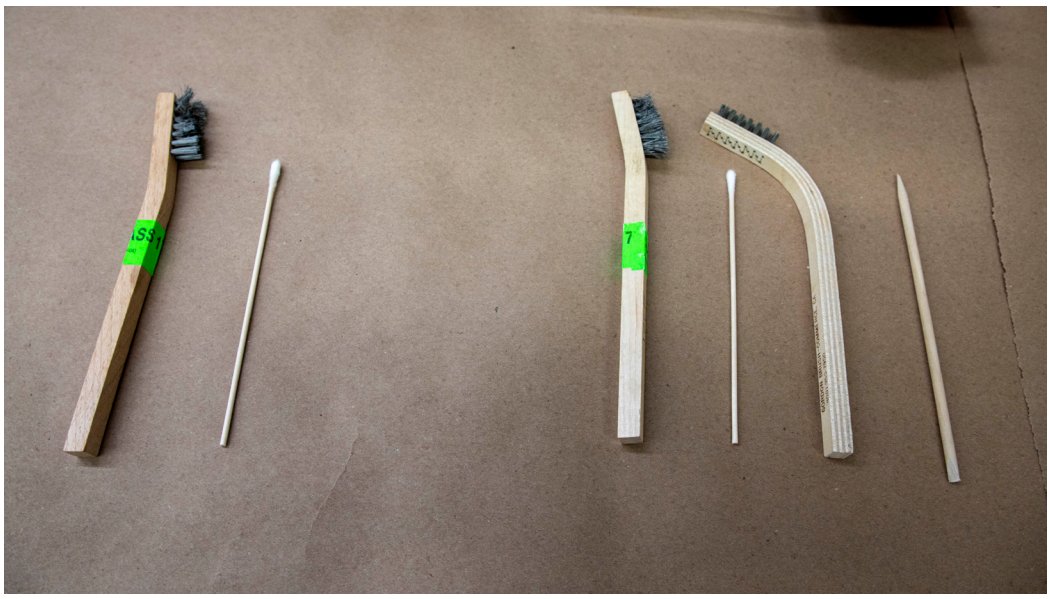


Figure 5: ADO Electropolisher Process Improvements Before and After

Pantex

Leak Test Cart Improvement

A Leak Test Cart was at the end of its life and its leak detector was no longer available, resulting in excessive setup time for each use. All other operations cease during leak detection, monopolizing a bay which could be used for other processes. The team developed a new procedure using existing tooling (a purge and backfill cart and alternate leak detector), that allows the program to efficiently process more units in one shift. Using existing tooling eliminates design and development of a replacement backfill system. Process setup time improved from 3.75 hours/shift for three production technicians (11.25 hours/shift) to 0.5 hours/shift for two production technicians (1.0 hour/shift). Improvements were completed, with a return on investment of $1,833.78/shift.

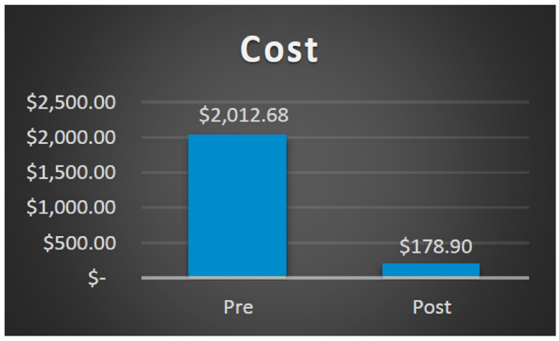


Figure 6: Leak Test Cart Cost Savings per Process Setup

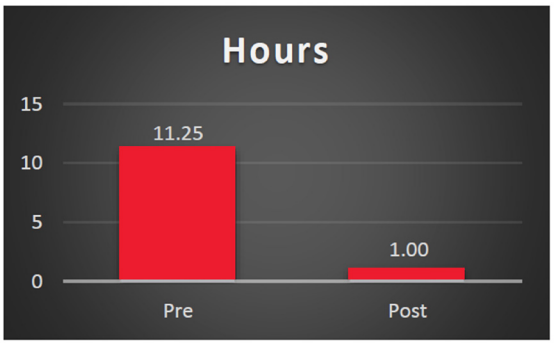


Figure 7: Leak Test Cart Time per Process Setup

Develop Safety Policy for Unmanned Aircraft Systems (UAS) Activities

Pantex Safeguards and Security developed a comprehensive aviation safety policy to support UAS activities. This policy provides the necessary platform for Counter-Unmanned Aerial System (CUAS) testing; supports emergency response with real-time tactical information and accurate after-action data; and provides effective site support capabilities such as videography, inspections for rooftops, and maintenance. The CNS aviation policy provided the following improvements:

- Streamlined and established flight plans for CUAS testing, maintenance, and plant support
- Increased the number of UAS Federal Aviation Administration-certified pilots to ensure availability when needed
- Procured three UASs to be used for CUAS testing, emergency response support, and plant support

Pantex Weapon Program Value Stream Element Team (VSET) Support

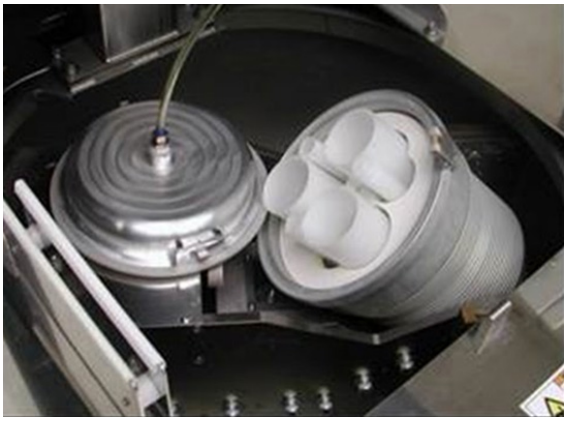
Redundant meetings resulted in approximately 7,860 labor hours during the past 18 months. To increase efficiency while supporting ongoing, continuous improvements, the team developed and deployed a new structure for supporting the Weapon Program VSETs at Pantex. Part of this change modified the champion reporting cadence from a monthly meeting that reported on all program VSETs to an agenda item every Thursday morning at the Program Integration standup meeting, attended by all program managers under Pantex Stockpile Programs. These changes eliminated the need for:

- A standing VSET team meeting (~10 attendees x 10 VSETs x 1 hour per week x 50 weeks = 5,000 labor hours saved annually)
- The need for the standing monthly meeting (~20 expected attendees x 1 hour = 20 labor hours saved per month = 240 labor hours saved annually)

Reimagining Equipment Usage

An inefficient bell jar vacuum process caused significant downtime. To improve efficiency and working conditions, the team leveraged an existing asset to enhance cartridge production, resulting in a 1,000% increase in throughput.

Additionally, the coordinated effort from everyone in the program led to on-time completion of quality approvals and reviews from both on- and off-site departments.



Figures 8 and 9: Existing Equipment Reimagined

Tooling Fabrication Equipment Status Tracking

The Production Tooling Machine Shop did not have metrics to evaluate machine downtime and usage (demand needs), resulting in inefficiencies and poor production planning. To address the issue, the team improved the process by:

- enhancing capacity planning,
- developing metrics, and
- creating a database to load critical data to evaluate the overall equipment status.

This data-driven approach enabled the Production Tooling Machine Shop to improve both capacity and production planning to meet demand.

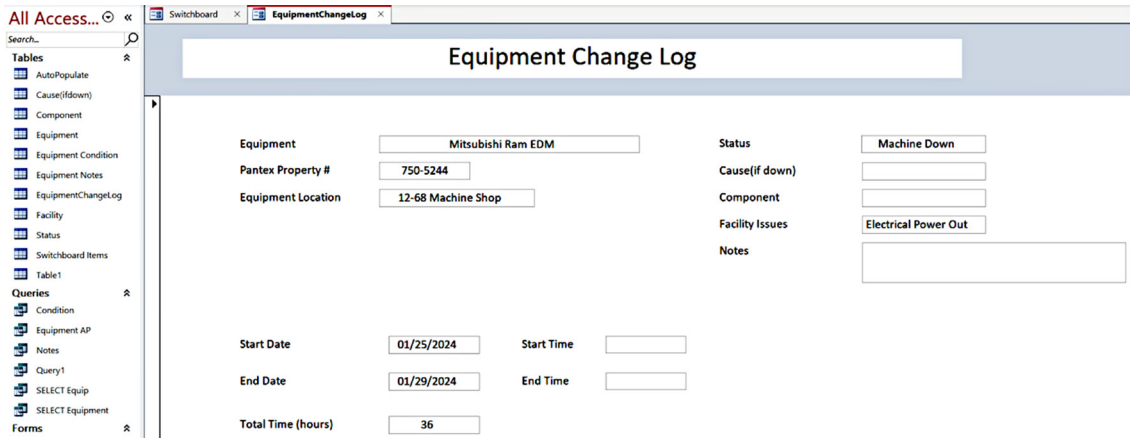


Figure 10: Production Tooling Machine Shop Database

Get Out and Look (GOAL) Vehicle Safety Training and Performance Demonstration

Protective Force (ProForce) continued to experience minor motor vehicle incidents (MVIs) due to poor situational awareness of existing road hazards. Signs, poles, and other obstructions create MVI hazards in areas that require ProForce support. Due to the size of ProForce vehicles, hazards in blind spots are not seen by motor vehicle operators when they pull into or away from parked positions. A multi-organizational team measured and calculated the actual blind spots associated with each ProForce vehicle in order to objectively demonstrate the hazards. As a result, ProForce has improved situational awareness by educating motor vehicle operators about the blind spots on vehicles they operate and demonstrating the actual size of each blind spot as it relates to specific vehicles. Additional lessons learned included:

- Low-lying obstacles at the sides of vehicles cause more MVIs than obstacles at the rear or front of the vehicles.
- There is a need for ProForce-wide training to challenge the false assumption that most accidents occur while backing. The use of backup cameras has mitigated these collisions.

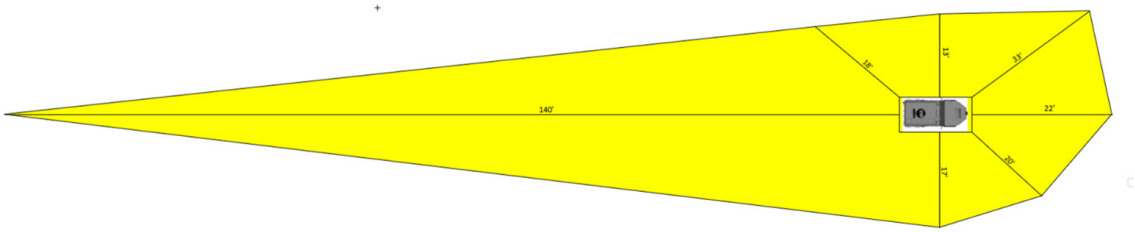


Figure 11: Bearcat Blind Zone Analysis

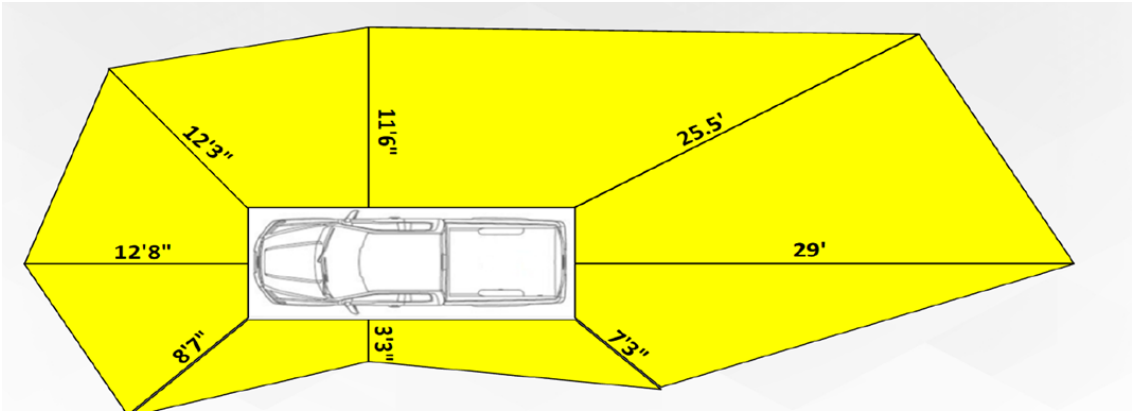


Figure 12: Pickup Truck Blind Zone Analysis

CNS Leadership-Driven Improvement Projects

Y-12

Hazardous Waste Inspection Project

Tennessee Department of Environment and Conservation (TDEC) requires hazardous waste areas to be inspected weekly. Y-12 meets the requirement by inspecting open 90-day accumulation areas and open satellite accumulation areas a minimum of once every 7 days and a minimum of once per calendar week, respectively. In the previous year, 48 hazardous waste area inspections were missed at the Y-12 site. Once an inspection is missed, each day that passes can result in a fine of $55K from TDEC. The team implemented the following improvements to reduce the number of missed inspections and prevent financial penalties:

- A standard form with detailed information to access waste areas, which includes explicit instructions that inspections are required as soon as the area opens
- An e-mail reminder to develop an absence coverage plan that is sent out before the start of a holiday week
- A search to identify a digital system to track inspections in real time

A surveillance assessment shows that zero inspections were missed after the improvements were implemented.

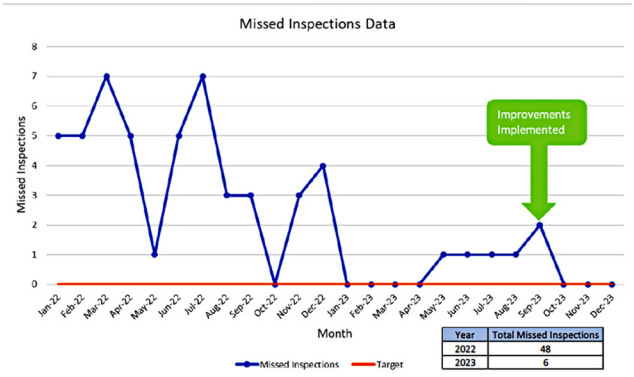


Figure 13: Hazardous Waste Inspections by Month

Tamper-indicating Device (TID) Application for Barcode Scanner

TID application and removal in material balance areas were previously documented manually and input into SAP. The improvement team piloted the use of barcode scanners to scan, automatically upload into SAP, and complete the clocking. Since the change, a continuous improvement project was initiated with Information Solutions and Services (IS&S) and ADO. IS&S redesigned the application to recognize the container type and size when a barcode on the birdcage is scanned. This visual indicator helps reduce the exceedance of loading limits for different styles of birdcages. Future improvements are being evaluated, including a capability for live scanning controls. For example, if a birdcage can only hold X number of parts and Y weight, the scanner will calculate the number of parts and weight to give a warning when the limit is reached.

The scanners demonstrate several improvements to the existing process, including:

- increased efficiency and accuracy,
- reduced rework from errors,
- reduced paperwork footprint and combustibles, and
- easier pulling of information for audits.

Figure 14: Barcode Scanner

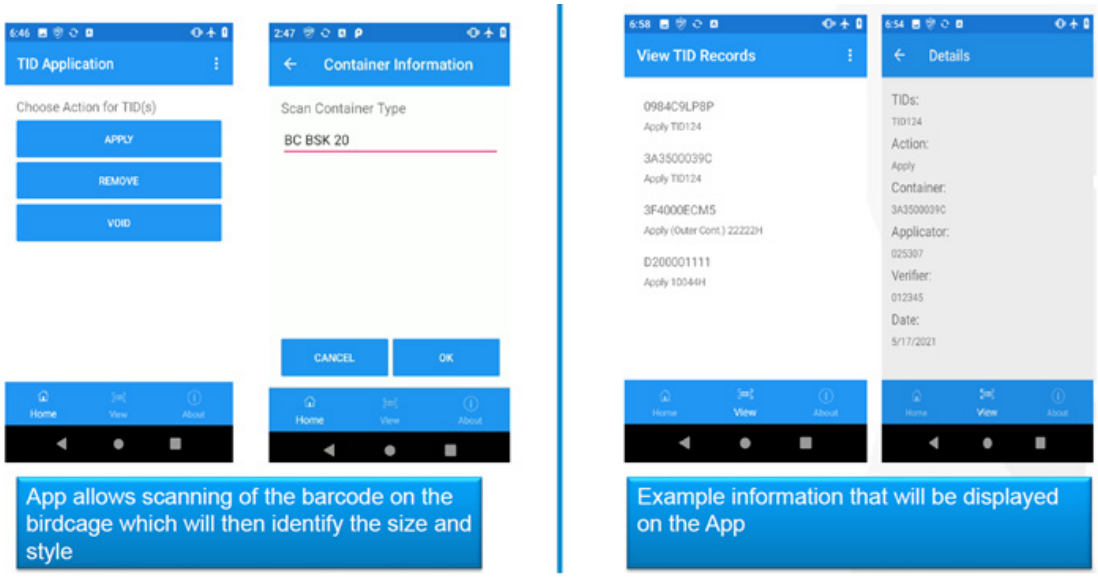


Figure 15: Application Viewing Screen

Property Accountability Tracking System (PATS) Scanning Capability

All machines in a supervisor's area are "assigned" to them as the custodian, requiring them to complete a manual, time-consuming inventory process in the PATS accounting system for each item. An initiative was undertaken to address an excessive administrative burden placed on supervisors and free them up to support employees, safety, quality, and productivity. A new process allows a supervisor's representative (production coordinator or other) to take a tablet/scanner to the machine and scan its barcode. When the device is docked, the PATS inventory system is automatically updated. The new process eradicates many manual and time-consuming steps in addition to eliminating errors such as transposed numbers and inconsistent descriptions.

In the previous year, inventory completed in a production facility using the manual system took 45 days. In 2024, scanning of the machines and uploading the data took 2 days. As a part of this process, some machines were found that did not have barcodes or had barcodes that had been damaged. These barcodes were replaced and prepares CNS us for success in 2025.

Automated Overtime Review and Approval Process

The old Infrastructure overtime request process was inconsistent, inefficient, and overly burdensome. There was no way to verify if a request was approved because there was no approval confirmation. The team developed and implemented a methodology utilizing Access software, which populates information automatically; created an automated process for overtime request submissions and routing; and auto-populated budget information to aid in the approval process. These improvements both standardize and formalize the overtime approval process and reduce the time expenditure to create and process overtime requests.

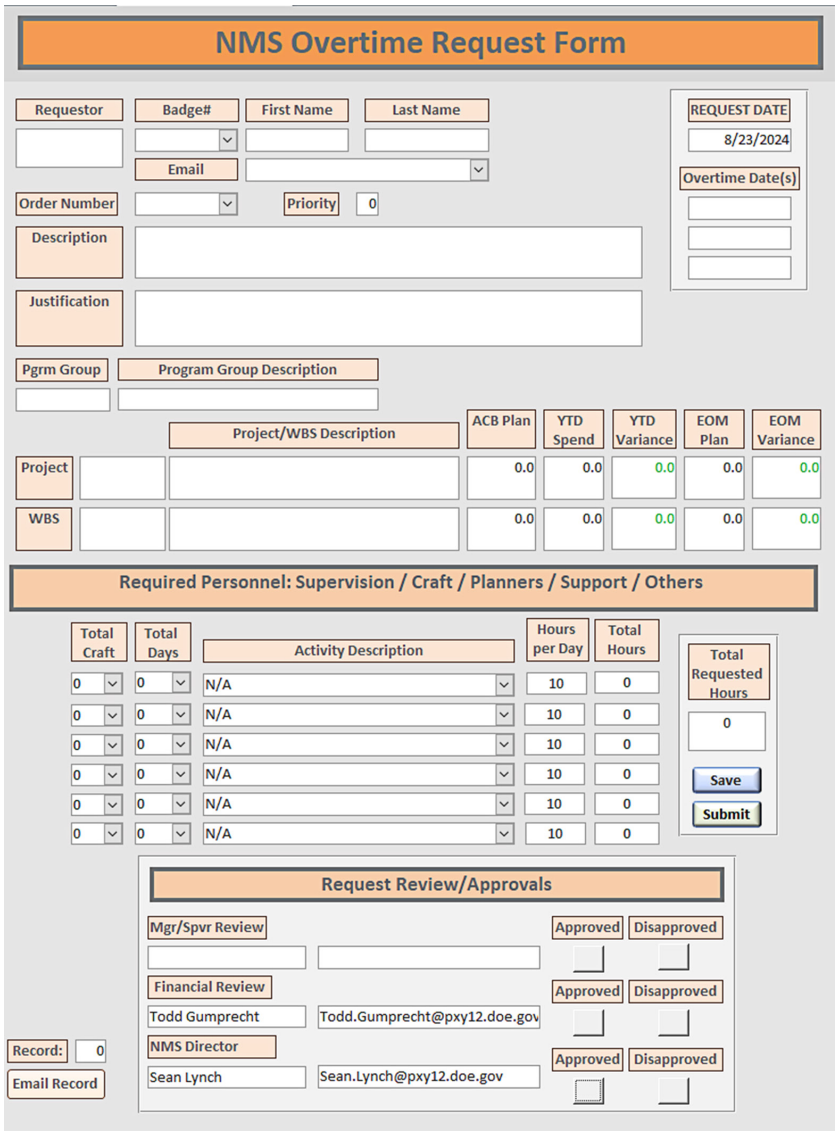


Figure 16: Automated Overtime Request Form

Electrical Safety Training Center

Sustained issues with training space availability limited the number of scheduled offerings of Qualified Electrical Worker (QEW) Safety Training, resulting in the loss of current training qualifications and new hire training. The shortage of qualified electricians affected the timeliness of mission-supporting projects. The absence of a dedicated space for training limited how much hands-on training occurred. To fix these problems, the team identified space for a dedicated training room; cleared the space using the Clean Sweep program; had electrical equipment installed (disconnects, lighting panels, and training equipment); and added tables and chairs for QEW training and other electrical training requirements. The result was a dedicated QEW training space with access to hands-on training equipment. Electrical training is no longer delayed due to lack of space, and frustration from waiting for qualification or losing current qualifications has been drastically reduced.

Figure 17: Electrical Safety Training Center Exterior

Figure 18: Electrical Safety Training Center Interior

Mill Process Improvement

Part production using existing, old technology mills took an average of 50 hours per part and sometimes presented quality issues. The Process Improvement team shifted production to an underutilized five-axis machine and modified numerical control programming styles. Productivity increased by 92% on part production, a reduction of 50 hours to 4 hours per part, and decreased tool handling, which lessens the potential for injury.

Figure 19: Process Improvement Team

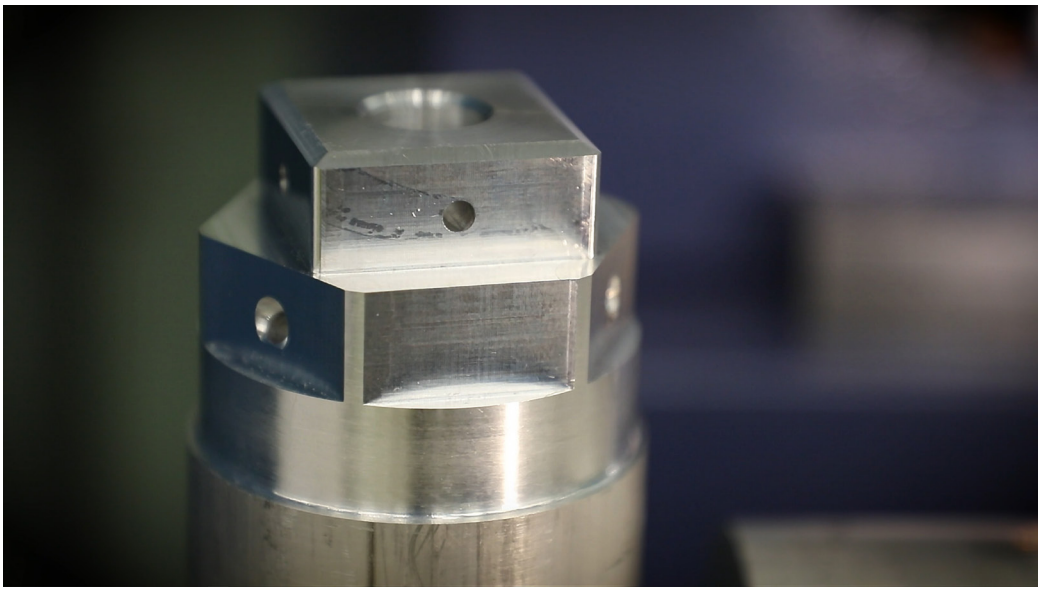


Figure 20: Final Product

Central Training Facility (CTF) Wireless Data

The CTF has a large transient population of trainees as well as regular visitors who have no/limited ability to connect to the wired CNS network. Due to the lack of wired terminals, training manuals must be printed for each attendee in every class. The team determined which locations and use cases could be enhanced by wireless data; coordinated with local resources for the installation of the necessary wiring and access points; and coordinated with and supported information technology personnel with the final connections and testing. Wireless connections have eliminated more than 500 printed pages per trainee and allow for duplicated access to National Training Center coursework and material. Wireless connection is now available for CTF visitors to access the network.

Production Containers Improvements and Metrics

Production containers were not being tracked, and there was also no consistent inventory flow for those containers. Two facilities lost production time due to lack of containers, while one facility had a very large number of containers filled with non-conforming material. The team implemented metrics to track containers with minimum and maximum levels, tracked where the containers were in the process, and used metrics to implement data-driven decisions to adjust levels. As a result of this initiative, these two facilities were able to empty 50 containers filled with non-conforming material. The Operations supervisor and the Disciplined Operations specialist identified specific area metrics to track to mitigate production loss. These metrics are now being used to identify and drive other improvements throughout the area.

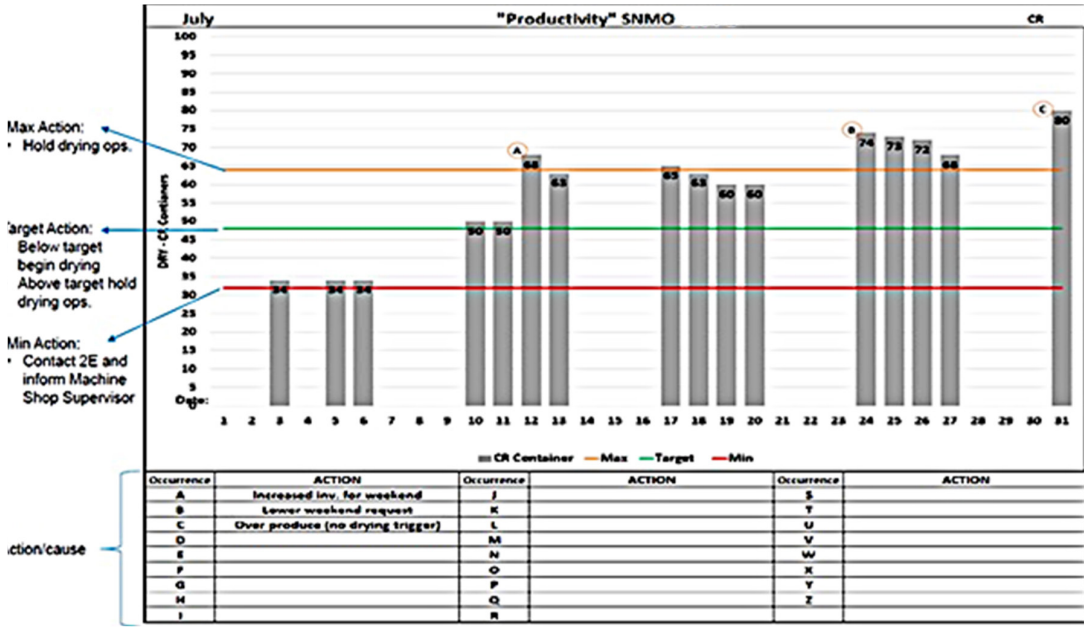


Figure 21: Production Containers Metrics Example

Modeling for Drum Lid

In response to two rapid oxidation events, the Mission Engineering team used modeling and field validation to ensure corrective actions were effective prior to resuming operations. This effort determined the application of argon in hospital cans was inadequate and oxygen levels could permit a spontaneous fire event. The engineering team designed an argon purge lid can, which effectively inerts the hospital can without spreading contamination or impairing operations. The argon purge lid was modeled and field validated to ensure effectiveness prior to resuming high hazard operations. The new lid, which began utilization in early CY 2024, ensures the argon purge works correctly. An additional benefit of this improvement was the creation of visual graphics that are now used as a training tool for both operators and engineers to support a better understanding of how argon flows and behaves.

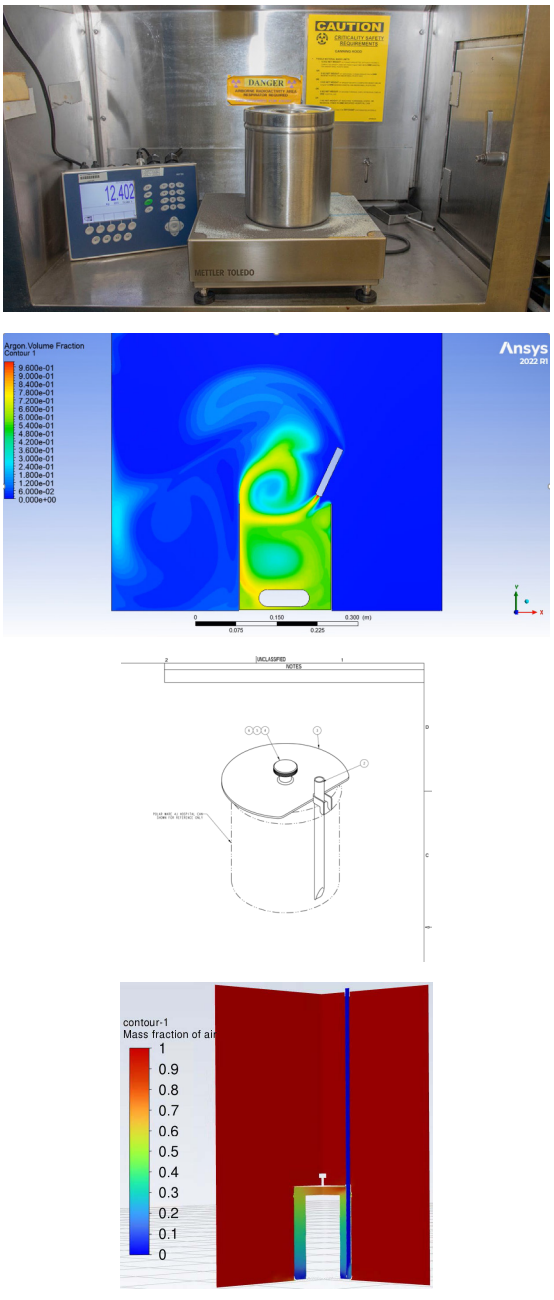


Figure 22: Argon Purge Lid Can Improvement

Pantex

Reduced Number of Overdue Calibration Failure Notifications

Measuring and test equipment (M&TE) found to be out of tolerance during calibration must be removed from service until recertification and completion of an impact analysis, which must occur within 30 days of receiving the nonconformance notification. Prior to this initiative, customer response times for impact analysis exceeded the 30-day threshold, resulting in many overdue calibration failure notifications (CFNs). The Pantex Metrology department set a goal to reduce the number of overdue notifications to 10 or less. The team reworked the software process to reflect accurate due dates, which were communicated to customers via automated e-mail; sent weekly follow-up reminder e-mails to customers that had upcoming calibration failure notifications and included detailed instructions on how to complete the CFN; began using TOPIC issues for CFNs that became past due; and had videoconference meetings with customers to walk them through the CFN process, emphasizing the importance of responding in a timely manner. The backlog of 52 nonconformance notices was brought down to zero.

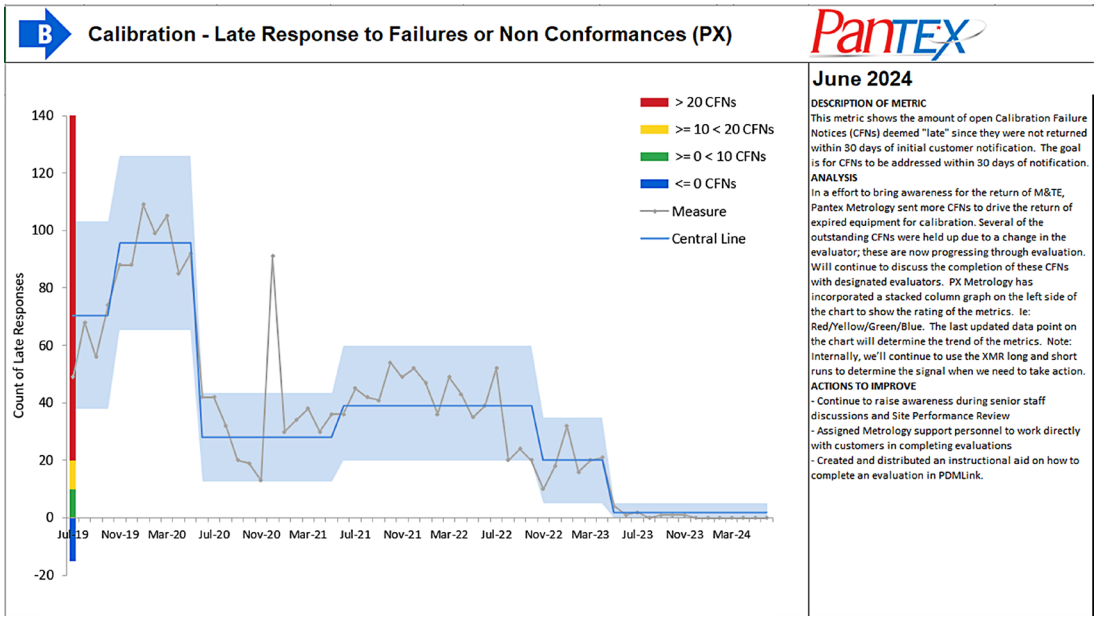


Figure 23: Overdue Calibration Failure Notifications by Month

Reducing Cycle Time for Supplier Quality Commercial Grade Dedication Item Acceptance

The Supplier Quality (SQ) group set a target to reduce the time required to accept items of commercial grade dedication (CGD) material. The improvement team focused on reducing the primary metric of cycle time from a median of 20 calendar days to 10 calendar days. As a secondary metric, CGD quality was also tracked to ensure changes did not have a negative impact on the process. The team completed the following improvements:

- Changed process flow to post-receipt, similar to tool work orders (at least pressure testing)
- Established a process for who and when to contact once a work order is ready with the SQ coordinator
- Included SQ in shop schedule meetings
- Designated single CGD shipping/receiving area in Infrastructure for parts storage
- Released quality hold of non-inventory items
- Added integration leads to receipt package workflow
- Increased priority of CGD work orders
- Created list of M&TE for each group, and separated CGD test work from plant prioritization scheme
- Established life extension testing program for batteries

The team successfully reduced the primary metric of cycle time to an average of 8 days. The reduction in cycle time is estimated to result in a decrease of 810 labor hours per year.

Enterprise

Smart Electronic Procedures

Both Pantex and Y-12 have been piloting special software in production processes to evaluate the use of digitally based dynamic instructions. Y-12 decided to move forward with purchasing the software in 2024. Several key benefits from the software have been realized:

- Safety – All information is readily available including training aids, videos, hazards, and photos at applicable steps
- Quality – Automated data integration and automated clocking
- Human Performance – Automated branching (if/then elimination), accountability, and comment collection
- Risk Reduction – Automated revision control, controls on place-keeping, and Oak Ridge Metrology Center integration

FY 2024 project accomplishments include:

- Successfully demonstrated multiple dynamic instructions including a container refurbishment procedure using a tablet and a prototype assembly procedure using a workstation.

- The container refurbishment procedure demonstrated many new capabilities such as linking reference documents, integrating SAP manufacturing execution attributes, applying tolerances to data entry, and many more.

- The assembly procedure incorporated services that demonstrated the ability to automatically clock parts.

The next steps forward are to pilot within a Y-12 production facility, build integration services for traceability and data sharing, enable use of tablets, and update policies and processes to enable dynamic instruction use in accordance with property protection area and U.S. Department of Energy guidelines. The examples below show how a weight attribute is pulled into the dynamic instruction based on the serial number. It allows for real-time data entry and tolerance verification opposed to a multi-day process that would result in a manual audit.

NOTE 1 The recorded weights for the Drum Body Weldment and the Top Plug Weldment will be compared against the reference weight prior to first use in the production control system.

NOTE 2 Notification by the Production Control Analyst that either weight (Drum Body Weldment or Top Plug Weldment) are out of specification, requires application of a UCN-11738, Nonconforming Material, tag on the Drum.

NOTE 3 The weight requirement for the empty Drum Body Weldment (without drum lid, pads, top plugs, nuts and washers) is +/- 10 lb from the reference weight.

NOTE The weight requirement for the Top Plug Weldment is +/- 2 lb from the reference weight prior to first use.

[14] Weigh **AND** record the weight of the Top Plug Weldment. <Y/LF-717> <SP-PKG-801940-A001>

Figure 24: SAP Weight Attribute Before

Figure 25: SAP Weight Attribute After

Tiered Escalation Deployment Standard Work Improvement

The Escalation program managers had a daunting checklist of 46 items to deploy tiered escalation within the various support organizations. While the key steps were important to the program managers for setting expectations, it was visually overwhelming and redundant. The team simplified the criteria into four key deployment steps, helping to ensure the deployment stayed on track without getting too detailed for the business areas. Because each business area had unique characteristics, the milestones were broadened to allow for agility in the deployment steps, which renewed the focus on desired capabilities, cultivating buy-in and allowing for a more hands-on approach. As a result of the changes, the Escalation program managers were able to bring awareness and lessons learned into subsequent deployment throughout the support areas. The creation of standard work assisted with communicating expectations and achieving milestones. Both key performance indicators and key behavior indicators were used, ensuring collaboration, buy-in, and metrics for success.

Figure 26: Tier Board Example

Added REVIEW Button for Timekeeping System

Individuals from specific organizations were having to input their name into the comment field of the timekeeping system to indicate they had reviewed their time card. This process can be confusing and cumbersome for both employees and supervisors. To improve the process, the team added the following:

- A REVIEW button for specified organizations
- Indicator that employees have reviewed their time card
- A REVIEW STATUS button for supervisors to see the review acknowledgement from the employees

The improvements simplified the process of acknowledging time card review, making it more efficient and effective. Acknowledgment of the timecard from the employee is now logged for future reference and review.

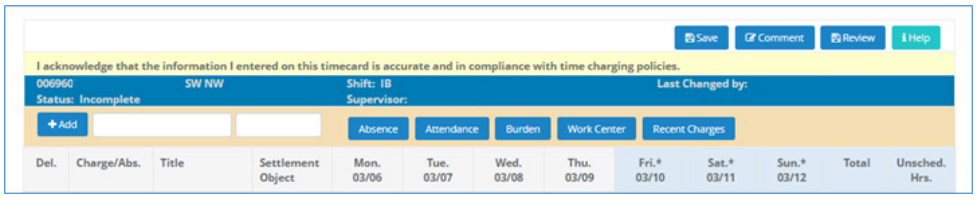


Figure 27: Employee Review Button

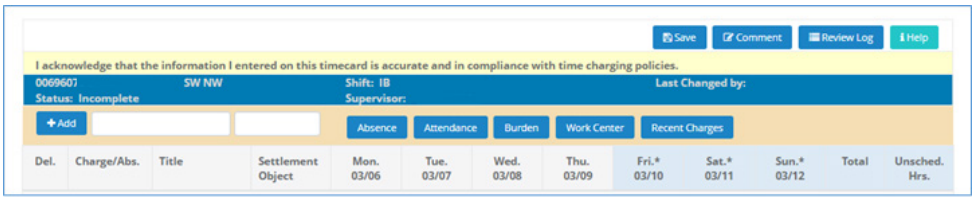


Figure 28: Supervisor Review Log Button

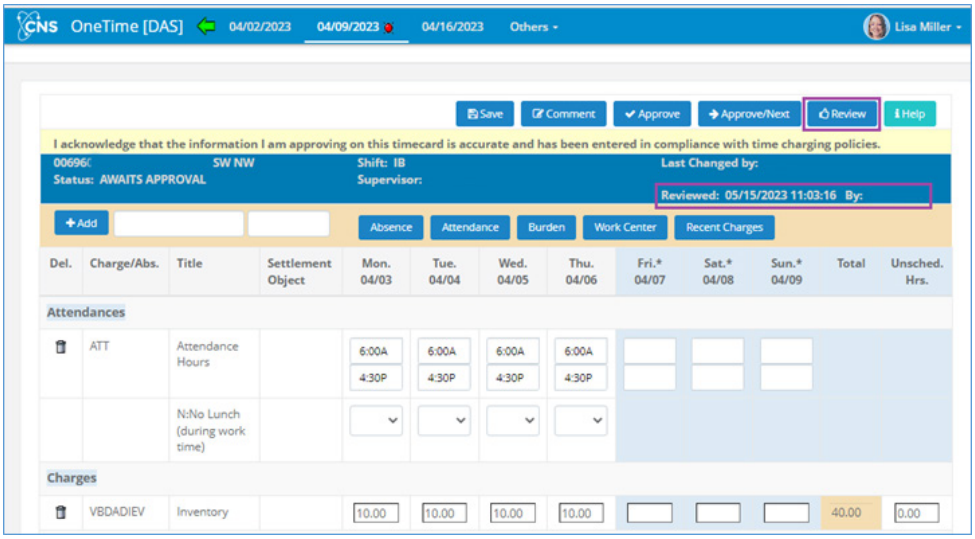


Figure 29: Last Reviewed Date/Time/By

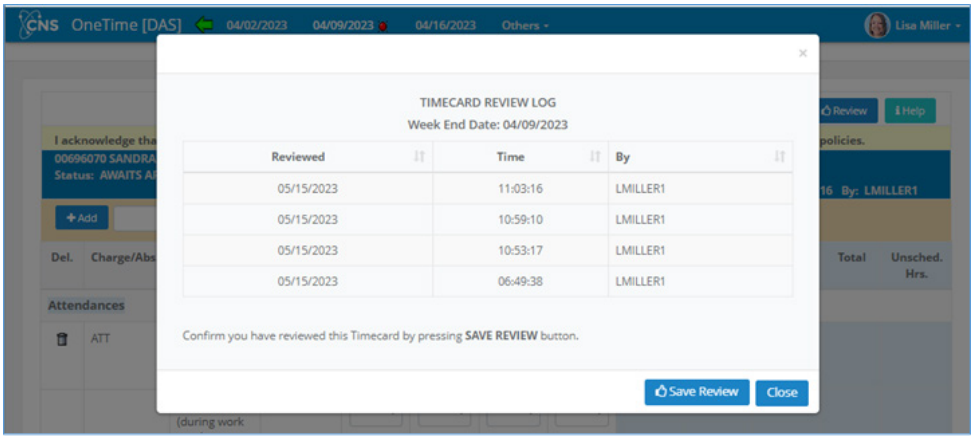


Figure 30: Review Log Pop-up View

CNS-NNSA Field Office Partnering Improvement Projects

Clean Sheet

The NNSA Office of Defense Programs (NA-10) tasked the EMDI Clean Sheet Team with exploring revolutionary changes to acquisition. The team includes members from NNSA and associated laboratories, plants, and sites, as well as consultants with U.S. Department of Defense and NSE site acquisition experience. The mission was to create an acquisition process that would achieve steady-state rate production at Pantex within 5 years of authorization by the Nuclear Weapons Council. This 5-year program process is broken into research and development (R&D) and four phases: concept, design, production engineering, and manufacture. With R&D as a foundation, this team built each phase of the weapon acquisition process with the activities necessary to deliver weapons in 5 years. The team set aside the limitations and constructs of the current enterprise and instead identified the fundamental building blocks necessary to conduct the mission. The team took an additive approach, evaluating items and activities that were physically necessary rather than building on established policies, requirements, or norms.

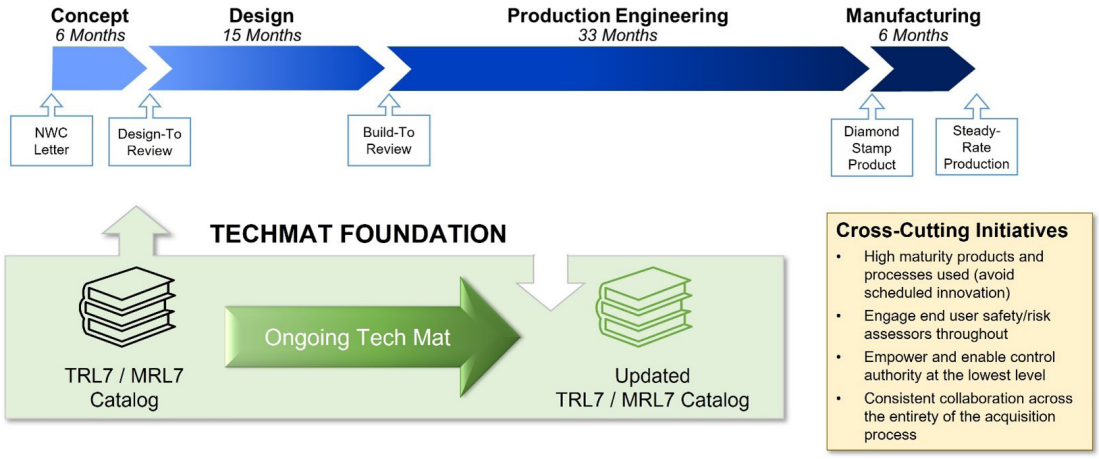


Figure 31: Improved Acquisition Process

CNS NSE Support Improvement Project

Pantex Safety Basis Redesign

The Pantex Safety Basis Redesign (PSBR) initiative was chartered by NNSA to identify challenges associated with the Pantex safety basis process and develop recommendations for simplifying its development and maintenance to improve execution. Phase 1 resulted in multiple recommendations that, if all implemented, will result in an improved safety basis process for nuclear explosive operations (NEO) that is robust and sustainable. The PSBR team consisted of senior managers and subject matter experts from PFO and YFO; the NNSA Office of Safety, Infrastructure, and Operations (NA-50); the NNSA Office of Defense Programs and Stockpile Management (NA-10); the NNSA Office of Nuclear Weapon Surety and Counterterrorism (NA-12); the Pantex management and operating contractor; and design agencies.

The PSBR team determined that the requirements for developing Documented Safety Analyses (DSAs) that cover NEO at Pantex are unnecessarily cumbersome; therefore, an alternate methodology for these DSAs is needed to support the sustained, efficient, and safe execution of the Pantex national security mission. To guide development of this alternate methodology, a core review team (CRT) comprised of NNSA Headquarters and NNSA Field Office safety basis experts was established. During the past two years, the PSBR team presented dozens of proposals to the CRT for inclusion in the alternate methodology scope. Each of these proposals was rigorously evaluated and debated by both the PSBR team and the CRT; formal comment resolution matrices and decision forms were developed to document the disposition of each and every proposal. The resulting alternate methodology was submitted to PFO on April 26, 2024, to initiate the federal review and approval process. NNSA Headquarters review of the Alternate Methodology is nearing completion, and approval is anticipated in the spring of 2025.

Digital Engineering

CNS was able to connect a local Creo session on the classified network to an Enterprise Secure Network–enabled Windchill instance for the first time this year. Enterprise connectivity enables viewing of models straight from the design agencies. Many organizations including Cyber Security, Information Technology, Production, Engineering, and others worked together to begin laying the foundation to support this initiative.

Project Updates/Recognition

In May 2024, CNS released its inaugural EMDI report. The following is a collection of updates for some of the projects highlighted in that report.

Project Updates/Recognition

Product Realization Process (PRP) Subgroup

The PRP subgroup works to pilot/replace documents. To support the PRP pilot intent, a selected weapons program split the budget data request into two separate reviews–Product Realization Team execution review and an integrated design review. The execution review is more component focused, while the design review centers on the overall design meet requirements. Pulling the system level design review data out of the more component-level review allows for more focus on component manufacturability and rate production readiness. Y-12 participated in this pilot effort by providing content and supporting both reviews.

Stockpile Modernization Working Group Clean Sheet Team

The Stockpile Modernization Working Group Clean Sheet team is comprised of subject matter experts from various labs, plants, and sites. Their primary focus is how the enterprise can deliver a weapon system in 5 years. CNS is actively participating in proposal development and final reporting to NA-10 leadership. Recommendations were submitted to the deputy administrator for Defense Programs in the first quarter of FY 2025. These recommendations identified specific areas of focus for the FY, including transitioning from ideas and concepts to actual programs. Moving forward, the team is focused on maximizing efficiencies during the current phase of weapons modernization. For their efforts, the team was recognized with an Unlocking Latent Capacity token by NNSA.

Figure 32: Acting Deputy Administrator of NNSA James McConnell (right) is pictured with Robert Townsend (left), the Y-12 lead for the Clean Sheet subteam under the EMDI working group. This team is looking at how the enterprise can accelerate weapon acquisition to go from Nuclear Weapons Council authorization to rate production at Pantex within 5 years.

Schedule Integration

NNSA and site representatives are partnering to analyze and understand schedule integration challenges, create a solution to meet schedule integration environment needs, and define and score various integration concepts. Y-12 team members are reviewing integration software that will support and convert each site's individual planning software of choice.

Y-12 Projects

Streamlining Quality Level Determinations (QLDs)

To reduce QLD cycle times, new training was created and revisions were made to the QLD form, moving it to Process Workflow Management software. This change reduced the average review time from 111 hours to 58 hours. Since the initial improvement effort, the team has continued to reduce waste in the process, eliminating unnecessary review steps. The results were a nearly three-fold increase in completed QLD reviews the subsequent fiscal year.

Criticality Safety Training

New criticality safety evaluation (CSE) training, briefings, and exams were developed at Y-12 to provide production operators and engineers the necessary background knowledge as well as an avenue to demonstrate proficiency. Since training was implemented, they developed 85 CSE modules, conducted 89 CSE classes, and trained 1,223 personnel. Customer feedback has been overwhelmingly positive, with a majority of comments highlighting the value in gaining more in-depth knowledge about controls.

Increasing Process Capacity

Maintaining an adequate supply of lithium is an essential component of the CNS mission. Numerous improvements were implemented in small-scale wet chemistry to decrease the processing time and increase throughput in anticipation of processing a new feedstock while still meeting the throughput demand required for the lithium electrolytic cell. These changes have reduced the time for a run through small-scale wet chemistry from nearly 1.5 weeks to approximately 3 days. Since the initial improvement cycle, the team has continued to refine the process, leading to a return on investment of $359K to date. For their efforts, the team was awarded an Unlocking Latent Capacity token by NNSA.

Figure 33: Y-12's Small Scale Wet Chemistry team was recognized for dramatically increasing the production throughput of a key lithium process.

Leveraging New Machines to Improve Tooling

The Depleted Uranium Machining Operations team purchased and implemented the use of a HAAS VF-1 computer numerical control vertical mill. The new machine executes several operations that previously had to be accomplished using two separate machines. The new process reduces the number of inserts needed, material travel time, and part handling, which reduces potential for operator injury, errors in setup, and damage to the part. An additional benefit is a reduction in production bottlenecks due to new availability of the machine that was previously used in this operation. For their efforts, the team was awarded an Unlocking Latent Capacity token by NNSA.

Figure 34: Members of the Y-12 machining team accept an Unlocking Latent Capacity token from former Y-12 Field Office Manager and current Acting Administrator of NNSA Teresa Robbins. The team's implementation of a new machine tool allowed the site to reduce cycle time.

Better Configuration Equals Less Downtime

In Building 9215 Third Mill, very large pieces of material are rolled and processed. Knowing the weight of the components being processed is essential for both the safety of the personnel handling the material as well as accurate accountability of the material itself. The Depleted Uranium Metal Cycle team determined that locating the scales closer to the rolling mill would eliminate the need to move the components more than 150 ft down a tight hallway. A new scale was purchased and located approximately 10 ft from the rolling mill. In addition to improving safety by reducing the travel distance of the large item on a forklift, 32 minutes per billet were saved in processing time.

Figure 35: Members of the Y-12 Depleted Uranium Metal Cycle team accept an Unlocking Latent Capacity token from former Y-12 Field Office Manager and current Acting Administrator of NNSA Teresa Robbins.

"This collection of successful achievements demonstrates that improvement is possible and vital to mission success."

PANTEX

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Y-12