

## **Introduction**

Tobyhanna Army Depot (TYAD), an integral component of the U.S. Army CECOM Life Cycle Management Command, has earned the distinction as the Defense Department's (DoD) premier depot by providing high quality, cost-effective organic maintenance for command, control, communications, computers, intelligence, surveillance and reconnaissance systems (C4ISR) for more than 58 years. TYAD is officially designated as the Army's Center of Industrial and Technical Excellence for C4ISR, electronics, avionics and missile guidance and control systems and the Air Force's Technology Repair Center for C3I systems.

## **Plant**

TYAD is a government-owned, government-operated facility located in Tobyhanna, PA.

- Size: 1,296 acres
- 157 buildings and 12 test ranges
  - Mission Space: 2.3M square feet
  - 61% under one roof
  - 15% Efficiency Factor
- The AN/MST-T1(V) Mini-MUTES production line is 17,250 square feet

## **Directorate of Intelligence, Surveillance and Reconnaissance**

The Directorate of Intelligence, Surveillance and Reconnaissance (D/MU) at TYAD provides depot level maintenance, repair and overhaul support for assigned commodities including signal intelligence and electronics warfare systems, electro-optic/night vision components and systems, surveillance radar systems and equipment.

## **Shingo Candidate**

TYAD's 2011 Shingo Prize candidate is the AN/MST-T1(V) Miniature Multiple Threat Emitter System (Mini-MUTES), which is overhauled in the Mini-MUTES Branch, Range Threat Systems Division, D/MU. The Mini-MUTES is an Identify Friend or Foe tracking and training simulator that provides realistic threat signals for pilots and aircrews. The system can replicate threats such as surface-to-air missiles, early warning radar systems, anti-aircraft artillery and airborne intercept systems.

TYAD applied Lean concepts to the Mini-MUTES production line to create a work balanced, streamlined, process generating value to enhance efforts to provide exceptional support to the Warfighter.

## **Cultural Enablers – People Development**

D/MU's skilled workforce epitomizes excellence in overhaul, repair, design, fabrication, and systems integration providing worldwide C4ISR support.

- ✓ D/MU workforce comprises approximately 642 personnel, which includes 41 contractors and 13 Student Career Experience Program/Student Temporary Employment Program (SCEP/STEP) participants.
  - 89% of those work in production areas and 11% are in support functions.
- ✓ Personnel receive introduction to Lean principles at new employee orientation.
- ✓ Evaluation of productivity and performance occurs monthly through a balanced scorecard process and annually in performance appraisal reviews.
- ✓ The AN/MST-T1(V) Mini-MUTES Value Stream includes 354 personnel across multiple directorates, to include 23 technicians in the Mini-MUTES Branch.

## **Continuous Improvement - Operations**

- ✓ In 2005, the Mini-MUTES Value Stream (VS) began its Lean journey to streamline processes and provide the best value to their customers.
- ✓ In 2006, the AN/MST-T1(V) worked with its customer and supplier to co-lead an event on Critical Air Force Managed Parts. This event decreased the flow of information by five weeks and allows for real-time data exchange between all parties.
- ✓ In 2007, the Mini-MUTES VS concentrated on eliminating waste in support organizations, including the Industrial Operations Facility and Building 9 Paint Operations.
- ✓ In 2008, the Mini-MUTES VS achieved an original goal and completed their first system below their target of 365 days.
- ✓ In 2009, the Mini-MUTES VS continued to drive down costs and Direct Labor Hours (DLHs) by documenting processes through implementing Standard Work.
- ✓ In 2010, the AN/MST-T1(V) Mini-MUTES VS re-evaluated its goals and completed a second pass VSA with a goal to incorporate the cost of fielding

the system into the UFC. Various continuous process improvement ideas implemented included:

- Work-In-Process Staging System – Provides a space for system components to be stored by system on vertical racks. Each container has a “mini” Production Control Board enabling team members to view status of the subcomponents contained inside.
  - Palletization Effort – Aids in the management of parts during inter-shop processing. The system groups like processes to allow for an entire pallet to go through the same support shops and includes a visual management component providing a standard picture of the contents and processing instructions.
- ✓ In 2011, the Mini-MUTES VS completed a third pass VSA to identify more ways to decrease costs and pass that value on to our Warfighter.

### **Enterprise Alignment**

TYAD’s organizational culture has evolved from a traditional to a performance based work environment with a common organizational focus.

- ✓ Corporate Philosophy is a systematic approach whereby every depot employee is focused on the business and its success. Senior management drives this philosophy down throughout the organization.
- ✓ Lean Six Sigma Strategy Deployment is directed by Policy Memorandum #12, which provides guidance on deployment of Lean throughout all processes.
- ✓ The senior leadership of D/MU establish an A3 strategy plan which outlines their goals for the deployment of Lean Six Sigma in their organization.
- ✓ The Mini-MUTES VS monitors metrics using a balanced scorecard.

### **Accomplishments and Results**

D/MU transforms business processes by combining Lean Six Sigma (LSS) principles to streamline operations, eliminate waste, improve quality and increase production in a Warfighter-centric environment. Savings achieved from implementing LSS methods in the Mini-MUTES Value Stream was \$2.8M in FY11 and a cost avoidance of 1.53M since FY05. This significant savings, coupled with decreased repair cycle times, directly results in Warfighters receiving critical C4ISR systems quicker at reduced cost.

### **Quality**

- ✓ Implemented an Alternate Test Procedure for the Rain Testing of the AN/MST-T1(V) to clarify obscure testing standards. This effort provided a 42% increase in first pass yield rates.

### **Cost/Productivity**

- ✓ Reduced the average actual cost of the AN/MST-T1(V) Mini-MUTES by nearly 30% since FY04.
- ✓ Actual costs per unit have decreased from their peak values by 27% for the B Pedestal, 7% for the C Pedestal and 23% for the K Pedestal.
- ✓ Average DLHs per system have been reduced by 30% since FY04.

### **Delivery**

- ✓ Reduced average Repair Cycle Time by 50% since FY04
- ✓ On Time delivery – increased to 100% from 0% in FY04

### **Customer Satisfaction**

- ✓ Uses a Customer Focus Team to monitor customer satisfaction via the “Ask-Toby” customer service desk, warranty inquiries, the TYAD web-based external customer satisfaction surveys and the Interactive Customer Evaluation.

### **Morale**

- ✓ Employee Payout Award implemented as a result of employee surveys, which allows employees to impact the amount of the award based on sustainment of depot performance over a variety of measures and not just the financial bottom line.
- ✓ Safety is reported on each cost center’s Communication Board and is tracked on Tobyhanna’s Balanced Scorecard.
  - The Mini-MUTES branch’s Total Case Incident rate is 66% better than the industry average and their Days Away/Restricted Time rate is 29% better than the industry average.

### **For more information contact:**

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