Getting ahead of the threat

A Patriot battalion’s journey to modernization

By Capt. Peter Williams

After six months of tireless work and instruction, the 3rd Battalion, 2nd Air Defense Artillery Regiment became the first battalion in the Air Defense Branch to simultaneously complete their forward sustainment maintenance program (FSMP) and post development build (PDB) 8.0 modernization of all Patriot systems within organic facilities during the third quarter of fiscal year 2019. This monumental achievement is a testament to the dedication of the Soldiers of the 3-2nd ADA BN and the supporting civilian agencies.

Planning for this operation began in early November of 2018, before 3-2nd ADA returned from their successful strategic deployment to the U.S. Central Command area of responsibility (AOR). The FSMP process was funded by the Lower Tier Project Office (LTPO) and allotted five Patriot batteries (one Headquarters and Headquarters Battery and four Patriot firing batteries) seven weeks to ensure critical equipment is at -10/-20 standards in an effort to extend the equipment’s operational life. Although separate, FSMP and PDB 8.0 modernization are sequential and connected, requiring the successful completion

Soldiers from A Battery, 3rd Battalion, 2nd Air Defense Artillery received a class by Raytheon instructors on the operational hardware upgrades of their radar sets prior to a practical exercise. (Capt. Peter Williams/U.S. Army)
of FSMP prior to the commencement of PDB 8.0 modernization. During the FSMP process, five Patriot batteries consisting of a combination of Raytheon civilian contractors, unit level operators and the battalion’s intermediate support element committed over 8,000 man hours and executed deep maintenance on major Patriot end items, including radar sets, engagement control stations (ECS), antenna mast groups, and communications relay groups (CRG). Additionally, in support of FSMP operations, the 3-2nd ADA BN’s supply support activity managed the reception, turn-in and shipment of over 2,000 parts estimated in value at over $1.5 million. FSMP was executed on schedule and on budget, setting the ground work for the PDB 8.0 upgrades.

Upon the five Patriot batteries’ staggered completion of the FSMP, unit equipment was immediately inducted into an intensive 10 week PDB 8.0 Patriot modernization upgrade operation. PDB 8.0 upgrades provided the 3-2nd ADA BN with the most modernized Patriot missile system equipment configuration C3+ operating software and hardware. In summary, these upgrades included the replacement of legacy digital processors in the radar, modern man station upgrades in the ECS and Information Coordination Central (ICC), and Combined Cryptographic Modernization Phase-1 communications hardware upgrades for the ICC/ECS and CRG systems. The execution of the PDB 8.0 upgrades was executed in concert with the TRADOC Capabilities Manager, LTPO, Raytheon and unit-level operators, committing over 7,000 man hours.

Simultaneously occurring during the modernization process, was an eight-week operations and organizational maintenance-focused New Equipment Training (NET) program, managed by both LTPO and Aviation and Missile Command (AMCOM) which was administered by Raytheon instructors. Third-2nd ADA’s Patriot equipment operators, communication specialists and logisticians received daily classroom and hands-on instruction with practical exercises confirming Soldiers’ understanding of the upgrades and ability to operate and sustain the battalion’s newly upgraded equipment.

The lead planner for the operation was the battalion readiness coordinator for 3-2nd ADA BN, Chief
Warrant Officer 3 Lewis Heck of HHB/3-2nd ADA BN, said “This was the first time both FSMP and modernization were performed simultaneously, and the very first time at home station,” highlighting the difficulty of the innovative process. “Despite the complexity, we got it done.”

Moreover, while committing 90 percent of the battalion's maintenance facility to FSMP and PDB 8.0 upgrades, the battalion's readiness and maintenance officers developed and executed a dynamic maintenance plan to sustain and maintain the remaining equipment in the battalion. These efforts resulted in successful reception of conventional equipment from deployment and a sustained operational readiness rate of 97 percent.

Another integral component to the completion of the battalion's equipment upgrades was the five-week reset and modernization of its early warning and command and control systems. During this upgrade, battery command posts and tactical control stations received upgraded computer software and hardware, further enhancing battery and battalion early warning capabilities. The 3-2nd ADA BN’s own Command, Control, Communication, Computers and Intelligence (C4I) Systems Integrator, Chief Warrant Officer 2 Joseph Frey of HHB, played an invaluable role in this process by single-handedly planning and leading the deep maintenance required to prepare the battalion’s battery command posts and tactical control stations for upgrades.

“It had to get done,” said Frey. “Our C4I equipment needed to be reset before we started any upgrades, and we were working with limited time.” Thanks to the combined efforts of internal and external resources, the 3-2nd ADA BN finished their equipment upgrades in time to test them in a field-training exercise, designed to build confidence in the Soldiers’ proficiency with their assigned systems.

The 3-2nd ADA BN achieved yet another first as they tested the functionality of their modernized equipment with a capstone exercise. The objective of capstone was to establish communications and
data transfer between all four Patriot fire units and the battalion fire direction center through both Patriot and C4I systems. The C4I portion of the exercise, led by Capt. Mario Solis (BN S6), Frey and supported by Raytheon specialists, resulted in the first-ever establishment of V-Lan 10 and Joint Range Extension Application Protocol links using the very high frequency backbone between the ICC and ECS. This capability enabled the passing of the air picture, Mardam-Bey’s Internet Relay Chat, Microsoft Outlook data, and other means of data exchange from the battalion tactical operation center to the battery command post. This capability will prove to be an invaluable addition for redundant and expedient mode of transferring data and increasing command and control capabilities throughout the battalion. Overall, the successful execution of the capstone exercise demonstrated the battalion’s understanding and ability to operate newly upgraded Patriot equipment.

The home station execution of FSMP and PDB 8.0 modernization on the 3-2nd ADA BN’s Patriot equipment enabled its Soldiers to train and fight on the most advanced Patriot equipment available. After a successful validation of the equipment, the battalion has since incorporated the new operating procedures into their training for future certifications.

While the execution of the FSMP and PDB 8.0 was the battalion’s decisive operation, several shaping operations were occurring in concert, from individual and crew serve weapons ranges, to warrior tasks and battle drills, to sustain and build individual and crew readiness. The battalion effectively built relationships with civilian stakeholders and developed and communicated a comprehensive Patriot modernization plan to the lowest level. The successful execution of the battalion's FSMP and PDB 8.0 modernization is a testament to the dedication of supporting civilian agencies and the Soldiers of the 3-2nd ADA BN.

Capt. Peter Williams graduated from the United States Military Academy and commissioned through the same school in the Air Defense Artillery branch. Williams holds a bachelor’s in Computer Science. He deployed for Operation Spartan Shield, United Arab Emirates in 2016, and Operation Inherent Resolve, United Arab Emirates/Southeast Asia in 2018.