AFSBn-NEA revamps APS-4 TM Library

By Lt. Col. John M. Ruths
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Interior of the revamped Army Prepositioned Stock-4 Technical Manual Library at Camp Carroll, South Korea. (Photo by Galen Putnam, ASC Public Affairs)

The storage and maintenance of technical manuals (TMs) for unit sets within an Army Pre-positioned Stock (APS) set is a challenge. Go into nearly any unit motor pool and you may find a lack of TMs and/or "version-ology" (TMs for the same equipment with multiple variations). As we all know, TMs are subject to changes. Keeping all the TMs in a unit fully up-to-date with all changes takes some time and energy.

While the TMs in a unit can be thought of as being interactive given that they are used as an element of the unit's command maintenance program, the TMs at an APS site spend most of their time in storage waiting to be issued. So they don't get a lot of regular use, but they need the same updates as those well-used TMs in regular units. When Soldiers from a drawing unit show up to draw equipment, they reasonably expect manuals that are up-to-date. The TMs for the Armored Brigade Combat Team (ABCT) set at Camp Carroll, Korea, recently saw some positive changes leading to improvements in storage, usability, and readiness. This was the result of work done by a team of professionals who used Lean Six Sigma (L6S) processes.

How TMs were previously stored

At the APS issue site on Camp Carroll, TMs for the ABCT were stored in 40-foot metal shipping containers on the same draw grid that equipment is issued on. They were typically brand new TMs wrapped in plastic and stored on shelves marked by unit UIC. While a new TM still wrapped might sound great, it is not configured in a very user friendly way. They were typically not in binders and there was no system in place for posting changes. Issuing new TMs is fine, but without the binder it is just not as useable by equipment operators. No binders also made posting TM changes very tough. This would cause operators to have to post them on their own, which is not very effective.

Members of the Army Field Support Battalion-Northeast Asia (AFSBn-NEA) Quality Assurance/Continuous Improvement (QA/CI) Division set out to find a better way. The team was very diverse and made up of both U.S. and Korean personnel. Finding an executable plan meant developing multiple solutions within the L6S process. L6S techniques have been used for many years at AFSBn-NEA. In each instance, L6S principles were applied to a problem, generating processes that is both effective and efficient.

Unit sets within APS-4 must be issued in a very short time period and one of AFSBn-NEA's goals is to be able to issue the entire set in a 96 to 120-hour period. In order to do this, improvement efforts must look for any potential internal process to optimize efficiency. Even a solution that could save as little as 15 minutes per unit can save roughly nine work hours when applied to the entire ABCT.

To make matters worse, the containers that TMs were stored in were in pretty rough shape. This was an ongoing issue and the last three years had seen significant loss due to water damaged TMs. This was wasteful and lowered readiness. Clay Taylor, chief of the QA/CI Division, said the time "Whatever method find, it will definitely have to address protecting manuals from expensive damage."

LSS and Building a Solutions Team

Lean Six Sigma is a team-based method to improve performance by removing waste and delivering value. It is a combination of both Lean and Six Sigma processes. Lean delivers value by eliminating waste and goes back as far as the automobile assembly lines developed by Henry Ford in the early 20th century. Six Sigma is a method consisting of multiple tools and techniques aimed at improving processes. It goes back to 1980 when it was initially used by the Motorola, Inc. taking the best from both, and they are combined to form L6S. L6S has been used in U.S. Army units before and apply particularly well to APS operations.

Like the military decision making process (MDMP), L6S is the process through which a group may frame a problem, develop multiple courses of action, determine the attributes of each, and then facilitate the selection of the best overall solution. One of the primary attributes of MDMP is that it enables a unit to seek an answer to a very difficult and/or unknown problem set. When a unit gets a mission somewhat outside of its normal mission parameters, you will likely see them execute deliberate MDMP.

Compared to this, L6S is somewhat similar to the abbreviated MDMP that units all over the Army use each day where many steps are reduced. They do this to quickly root out how to perform a mission where they generally have the

capability to perform, but need to find the best way to get it done. L6S is very well suited for an organization that is already familiar with a particular function or task; things they do each day. Compared to even abbreviated MDMP, L6S is a process that is generally faster so enables implementing the best solution in less time. This is why it matches particularly well with an APS site. That intimate mission familiarity is already there. L6S enables taking a close look at a particular part of a mission, shaking it out, and finding a better way.

Within the L6S paradigm is a very well described function called a Rapid Improvement Event (RIE). The RIE is well-named, highlighting that it can be executed quickly. Conducting an RIE, requires planning, leaders have already given approval that a change is needed, and it is not completed until the specific course of action is chosen.

Because the CI in AFSBn-NEA's QA/CI division stands for continuous improvement, the QA/CI division make it a point to apply L6S processes to any problem set they can. A walk around various unit areas highlights the fruits of past L6S efforts and projects. Taylor put together a diverse team of nine AFSBn-NEA employees made up of DA civilians, Korean government workers, and contractors. While most of the team hailed from the QA/CI division, it also included members of AFSBn-NEA's two other divisions in Korea: Maintenance and Supply.

Together, this team worked together and develop four different courses of action, each with its own merits and drawbacks. Selected team members also used this project in their goal of obtaining green belt qualification within the L6S belt level system made up of white belt, yellow belt, green belt, black belt, master black belt, and champion levels.

Finding the Best Way out of Many and Implementation

The assembled team quickly set to work during the summer of 2018. Working together, the team determined four different courses of action (COAs) for improvement:

1. TMs located in basic initial issue (BII) equipment boxes by vehicle.
2. TMs located on shelves in the same warehouses as equipment sets.
3. TMs stored with equipment, generally inside vehicles.
4. TMs stored in a single location, shelved by UIC in a TM library.

Each method had its own pros and cons. COAs #1 and #3 kept the TM either with equipment BII or inside the vehicle itself. This seems like a great readiness advantage, but posting updates would be very time consuming. COA #2 supported AFSBn-NEA's storage of ABCT equipment by company UIC. While a great speed-of-issue initiative compared to storing equipment by type, it would also make updating TMs time consuming. COA #4 consolidated storage which was one similarity to what was currently being done, but also saw TMs being stored in marked binders and placed on shelves which is well-suited for getting the maximum amount of manuals in a single area.

Some of what the team did was detail oriented work. The time it takes to perform tasks such as moving TMs, posting updates, and even marking binders were all timed. This was done to determine the total amount of work hours needed for each COA and figured significantly into the pros and cons the team found. The team also did some resource research, costing out how much

Army Field Support Battalion - Northeast Asia team members who served as planners to determine how to manage technical manuals stand in front of the new APS-4 TM Library at Camp Carroll, South Korea. From left are Kim Chong-Ho, administrative support assistant; Timothy J. Barabin, quality assurance specialist; Pak Chong-Min, supply technician; An Hui-Tok, quality inspection technician and Kim Song-Uk, quality inspection technician. (Photo by Chong Choe-Kyong)

shelving units would be along with the costs of binders and which binder type would provide the most functionality to an equipment operator.

In the end, the team prepared a set of briefing slides and recommended COA #4 to the battalion commander. This was the best overall choice as the advantages far outweighed the disadvantages. After COA #4 was selected, the team set to work purchasing necessary items such as shelving and binders and preparing the two-story containerized building that would serve as the TM Library. By the fall of 2018, shelves were being assembled.

Other Library Features and Use of Binders

Storing books requires an organizational filing system. Even bookstores use them; when you walk in you can quickly figure out what section to search for that book you're looking for. Libraries generally use the Dewey Decimal System and, again, this makes it easy to find the book you are searching for. The APS-4 TM Library at Camp Carroll uses what you could call the "UIC System." This is simply storing TMs first by UIC, then by equipment type. In this way, if a unit issue were to occur, AFSBn-NEA members can quickly and simply download the entire UIC, take the TMs out onto the draw grid, and link it up with each piece of equipment it is associated with. Operators on site to draw equipment need not do more than simply be at their assigned vehicle. A usable and up-to-date TM will be waiting for them along with the other equipment that might go with that vehicle.

Unlike how TMs were previously stored in containers, the TM Library is packed with the modular shelves chosen by the RIE team. This makes storage more efficient with less wasted space. APS facilities need enough open space to serve as a draw grid to issue equipment. A positive attribute of how things previously

were was locating TMs right at the edge of the draw grid and this is being maintained. The filing system and use of binders simply makes identifying them and downloading them much quicker.

It might seem like something as mundane as a binder is not that important, but that is not the case. The majority of all hard copy TMs are printed in a loose-leaf format. This unbound form of book needs a three-ring binder to function properly. The binders used by AFSBn-NEA was an important element of the rapid improvement team's work. While comparing costs, the team found the best binder available for the most reasonable price. The binder selected saved approximately $20,000 and this was an overall smarter choice budget-wise.

The team decided to ensure that binders were clearly marked as an output. This not only added to the functionality of the TM Library, but presents TMs in the most professional looking way possible for any unit set to draw equipment from APS-4. Finally, having TMs stored in a library format enabling updates means that AFSBn-NEA's publications personnel will spend roughly 800 less work hours annually.

"Improving the overall publication management process will allow for more efficient use of assets, manpower, and time to support the unit's mission," said Team Lead, Tim Barabin. It appears that the outcome and benefits are even better than expected.

Validating Readiness

In December 2018 and January 2019, two M1 Abrams company sets were issued from the APS-4 site at Camp Carroll and took part in live fire validation exercises. Even though the TM Library was still a work in progress at that point, it was functional and both of these exercises provided the chance test out the TM Library. Easily outperforming the previous storage method, it proved to be a keeper and the APS-4 site at Sagami Army Depot in Japan is replicating the technique.

Concerning the turn in of equipment, the effects of a TM in a marked binder had other positive effects. TMs came back in much better condition than what was seen in the past where as many of 75% of them were returned in an unusable condition. Further, the QA/CI team for this L6S project expects a cost avoidance of just under $80,000 over the next five years.

Eighth Army Commander, Lt. Gen. Michael Bills, had the opportunity to tour the TM Library during a visit to observe the equipment issue for one of the validation live fires.

He was genuinely impressed with this effort and when he was told that an article would be written about this effort to share it across the Army, he stated, "Yes, you need to!"

The AFSBn-NEA falls under the 403rd Army Field Support Brigade, headquartered at Camp Henry, Daegu, South Korea. The 403rd AFSB is a subordinate unit of the U.S. Army Sustainment Command headquartered at Rock Island Arsenal, Illinois. ASC, the control hub for global Army logistics, falls under the U.S. Army Materiel Command headquartered at Redstone Arsenal, Alabama. AMC, a 4-star command, delivers logistics, sustainment and materiel readiness from the installation to the forward tactical edge to ensure globally dominant land force capabilities.

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