Program Manager for Ammunition
Marine Corps Systems Command

Ammunition Quarterly

Supporting the Warfight
A Marine Corps Tradition
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Ammunition Quarterly

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From the Program Manager

Mr. Jerry Mazza
Program Manager for Ammunition

Welcome to the Spring edition of **OUR** Ammunition Quarterly. As we continue our extraordinary efforts in management of Class V (W) across the Corps, I foresee new and continuing challenges that we must collectively grasp, and tackle, and overcome. Key to some of those challenges is constant dialogue ..."what are we doing right, and what are we doing wrong." Lessons learned is one vehicle that can help.

In the December edition of the Ammunition Quarterly, I commented on the importance of capturing the perspectives and lessons learned from the Operating Forces. It is rare that we have the opportunity to leverage off real world logistical complexities with ammunition and explosives. I, and our community, was fortunate to receive an excellent overview from Captain Ralph Harris who was attached to the 26th MEU and served as the Senior Ammunition Officer during that deployment.

While not directive in nature, I feel that publishing Ralph's article coupled with his "Ammo Lessons Learned" on Page 12 will serve to educate as well as to close some of the gaps in our mission of supporting our Marine Forces with Class V (W). I truly hope this information is useful to the ammo community.

Complimenting Capt. Harris's article is a unique contribution by Captain Billy Short of the 9th Engineer Support Battalion, 3rd FSSG with respect to Expeditionary Ammunition Storage and the role of our engineers in support of our mission. I think the reader will see that the challenges faced by the engineers are equally as complex as our own and truly represents a teaming philosophy within our respective disciplines.

In addition, you will note an extremely enlightening and educational article on an often mis-understood area, Quality Assurance (QA) as well as an update on our efforts to increase the reliability/serviceability of our AT-4 stocks.

A quality ammunition product is not something I take lightly. The QA article and its message will remain at the forefront of my focus.

Finally, you will find an article on something we should all be cognizant of….our Mission of Emergency Destruction of Ammunition Supply Points, one of our Individual Training Standards.

Overall, the information found in this edition represents just a small part of the numerous roles and responsibilities we execute. I hope that this edition bridges some of those gaps in our community and our knowledge. A personal thanks to all who contributed to this publication.

Semper Fi,

Jerry

Quality Assurance

Mr. Gary Smith
Marine Corps Programs Department

We hear a lot about the quality of goods and services. Quality has become an advertising slogan on TV, on posters, in newspapers, etc. Many of us have personally experienced bad quality: when our hard drive crashes, our alternator dies, or our M16 jams. But what is good quality and how do we get it? Even the quality gurus don't agree on a standard definition of quality. Dr. Joseph Juran defines it as "fitness for use." Dr. Philip Crosby as "conformance to requirements." The American Society for Quality defines it as "the totality of features and characteristics that bear upon its ability to satisfy a given need."

In other words, quality differs depending on the item and its applications. For example, would you want to buy a new car that had smeared paint or stained seat coverings? Of course not, but we don't hold ammunition like mortar cartridges or hand grenades to that same visual standard of workmanship. The primary purpose of the paint to is protect the metal from rust and corrosion. With cars we've come to expect a perfect, visually appealing, high gloss finish. With ammunition we tolerate touch-up paint, over spray, and slightly smeared, (but still legible) markings. Our main concern is that the rounds are protected from corrosion and clearly identified as to their model number and nomenclature.

A024 Cartridge gauging line at MCB Camp Lejeune
(all photo's for this article provided by PMAM)

We also determine the quality of ammunition by evaluating whether the rounds function as designed without duds, misfires, or hang-fires. We want the ammunition to be adequately packaged and marked, be safe to handle until we fire it, to go where we aim it, and to function properly. We achieve this proper functioning when quality is maintained throughout production and post-production activities.

We've all seen the recent news articles concerning millions of defective brand-name tires. A Wall Street Journal article quotes retired quality control inspectors as saying they were required to inspect 60 tires a minute. Without knowing anything about what this inspection consisted of, we can be fairly confident few people can adequately inspect one item the size of a tire every second.

How do we get good quality? Dr. Edwards Deming, perhaps the most famous of all the Quality gurus, said, "quality control does not mean achieving perfection. It means the efficient production of quality at a level the market expects." Satisfying that expectation is costing that tire company tens of millions of dollars in tire replacement costs, logistic costs, and service costs. The cost in customer confidence may be even greater.

We see similar things in ammunition production. One contractor had two quality control inspectors visually inspecting 90 fuzes per minute for eight separate major characteristics. It is unlikely two people can adequately inspect 720 separate characteristics every minute. This is not quality control. Achieving good quality requires identifying critical process parameters, monitoring those parameters to ensure they remain in control, and properly inspecting to identify defective product. Achieving poor quality can be as simple as not controlling processes and trying to inspect 60 tires or 90 fuzes per minute.

For the past 15 years, technical committees from more than 172 countries, including the US, have coordinated a series of quality program requirements aimed at defining a minimum standard of quality for participating manufacturers. These are known as the ISO (Greek for "equal") 9000 Quality Standards. The Department of Defense has adopted the ISO standards, replacing old military quality standards such as Mil-I-45208 and Mil-Q-9858.

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Ammo QA…continued from page 2

The ISO standards are a tool that dedicated companies can use to improve quality and lower costs, but being ISO 9000 certified does not prevent a lack of quality consciousness or poor quality products. Managers and employees have to believe in and enforce a serious desire to maintain a well-controlled process. That tire plant was ISO 9000 as was that ammunition plant that produced the fuzes. Simply having standards for quality does not prevent some companies from cutting corners or inspecting too many characteristics in too little time. This is why customer oversight is also necessary to ensure adequate quality**.**

Acceptable A024 Cartridge in gauging fixture

Oversight is not unique to the military. The five largest fast food companies in this country all provide oversight of their critical suppliers through "quality audit programs." If the supplier does not meet the quality standards, he can be given time to improve or simply removed from the approved supplier list. One fast food company even makes a supplier who has failed a quality audit pay for all subsequent audits until that supplier is again on the approved list.

PMAM is providing the Marine Corps customer oversight. Our quality assurance personnel and engineers perform quality audits on our major ammunition suppliers. These audits review the quality programs and look for evidence of inadequate inspection operations. Our audits have resulted in a few contractors no longer providing ammunition to the

Rejected A024 Cartridge in gauging fixture

Marine Corps. However, most of the contractors we deal with recognize the benefits of having their customers review their operations. They consider our visits as an opportunity to identify problems and improve quality. These dedicated manufacturers understand "quality" and they understand their "market." PMAM is equally dedicated to providing the oversight necessary to ensure product quality. **O**

Mr. Smith is the Lead Quality Assurance Specialist for the Marine Corps Programs Department, Fallbrook, and may be reached at DSN 873-3568, commercial (760) 731-3568, or e-mail smithge@mcpd.navy.mil.

"Neca eos omnes. Deus suos agnoscet."

Visit enough Tee-shirt shops, or biker bars, and sooner or later you will see/hear the phrase, "Kill them all and let God sort them out." Ever wonder where it came from? Arnold? Bruce? Clint? Not even close.

During the Albigensian crusade in the 14th century, at the siege of Beziers, after the city surrendered, Amal Ulric commander of the Crusaders ordered that all the heretics in the city be put to death.

Several of his officers pointed out the obvious. It was going to be impossible to tell Catholics from heretics, since as soon as they became aware of the order everyone would claim to be a good Christian.

Whereupon Ulric solved the problem replying, **"Kill them all. God will know his own."**

G.E.M

AT-4 Update

Ron Riley, Marine Corps Ammunition Branch
NSWC Crane, IN

This article is meant to answer questions about the AT4 rocket and restore confidence in the weapon degraded by its history of misfires and incidents. The AT4 is the eighty-four millimeter M136, Launcher and Cartridge. It is a self-contained, man-portable, shoulder-fired anti-armor weapon.

Incidents of misfires and inoperable firing mechanisms are being reported involving weapons nearing or past ten years of age. Marines are experiencing difficulty placing the firing mechanism in the armed position. In some cases, the level of difficulty is so high that charging handles are bending and/or the plastic guard between the safe and armed position is breaking off when attempting to arm or safe the weapon. These are not rare occurrences. In some cases, the internal corrosion is not severe enough to prevent arming the weapon but the firing mechanism would not function when the trigger is pulled. In these cases, the challenge of rendering the weapon safe is presented.

The Marine Corps stockpile of AT4s began with weapons procured from Swedish manufacturer Saab Bofors. The ammunition lot numbers for weapons produced by Saab Bofors begin with the manufacturer's designation of 'FFV'. These lots were produced between 1987 and 1990. Around 1990, CONUS based Alliant Tech and Honeywell began producing weapons to the same technical data package. The ammunition lot numbers of these weapons begin with the manufacturer's designations of ATK and HJA respectively. There is no reported difference in quality relative to the manufacturer.

The packaging configuration of these weapons provides adequate short-term protection from environmental elements. Weapons were expected to last ten years in storage, (this according to the manufacturer). Beyond that time frame, metal parts within the firing mechanism assembly begin to corrode. Corrosion inhibits the relationship between plastic and metal parts resulting in a nonfunctional firing mechanism. This condition has occurred to some extent in all FFV lots and some older weapons manufactured by Alliant Tech and Honeywell. The only common factor is packaging.

The Marine Corps has initiated a maintenance project to perform corrosion control on all 0T cog AT4s and package them in a new configuration. The firing mechanisms are being removed, cleaned, lubricated and reinstalled. Cleaning consist of submerging them in an ultra-sonic cleaner where corrosion and other foreign matter is removed. The assembly is then placed in a dryer to facilitate evaporation of the cleaning solvent. The firing mechanism assembly is then lubricated with a commercial lubricant prior to being affixed to an inert launch tube where it is functionally checked. The cleaned and lubricated mechanism is then returned to the live rocket assembly. The new packaging configuration requires placement of the weapon in a vacuum-sealed barrier bag along with a two (2)-unit bag of desiccant. This packaging configuration will provide an airtight and moisture free seal that will allow for long-term storage. The reconditioned units are assigned NSN 1315-01-486-2293. This will be the Marine Corps' preferred configuration and replaced in service accordingly.

At the time of this article's publication, approximately 4,000 weapons have been reconditioned at Naval Surface Warfare Center Crane. Reconditioning of the entire stockpile is expected to be complete in three years. Efforts to get the reconditioned weapons to fleet activities and position inventory packaged in the old configuration to a reconditioning site will begin during the third quarter of fiscal year 2002.

Until this action is complete, Marines should be especially watchful for firing mechanisms that are difficult to operate. Internal corrosion is hard to detect. Usually the first indication is trouble moving the charging handle to the 'Armed' position. When this condition is noticed, the user must make a decision to continue with the attempt to arm the weapon or render it safe, return it to the ASP, and report the occurrence as a malfunction. This is the safe choice when attempting to fire weapons more than eight years old. When the choice is made to continue in the attempt to fire and the weapon misfires, it may require local destruction if the charging handle cannot be returned to the safe position. Those choices are left in the hands of the gunner and applicable range personnel.

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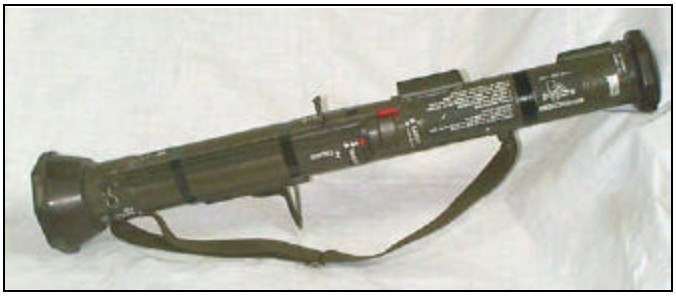
AT-4 ……continued from page 4

Using units and issuing activities will not be capable of reestablishing the new packaging configuration on field returned weapons. Placing the weapon in a vacuum-sealed barrier bag provides long-term protection for the weapon only until the integrity of the package is broken. To provide the highest level of protection available to field returns, using units should endeavor to retain the barrier bag and desiccant. Weapons marked for turn-in should be placed in the barrier bag along with the desiccant. The bag should be collapsed around the weapon to reduce the number of air pockets. The end of the bag should then be secured using waterproof tape. Further guidance in this area can be obtained from the issuing ammunition supply point. In cases when repackaging guidelines cannot be followed, the configuration should be either upgraded at the ASP or The weapon placed in condition code C and expended accordingly.



In summary, the fix for the AT4 is in place. Users will again enjoy a high level of confidence in the weapons system as soon as the reconditioned weapons reach the fleet. Lessons learned will be applied to future procurements and this condition should never reoccur. User concerns related to this weapon system may be addressed to the In-service Engineering Agent at Naval Surface Warfare Center Crane, Indiana. The technical point of contact is Mr. Gary Martin at (812) 854-1321, DSN 482. **O**

Mr. Riley is currently assigned as Manager, In-Service Engineering Agent, NSWC Crane, IN and may be reached at (812) 854-6889, DSN 482. Photo provided by author.

Engineering Expeditionary Ammunition Storage

Captain Billy J. Short
9th Engineer Support Battalion, 3rd FSSG

9th Engineer Support Battalion recently sponsored Exercise Tayoreru (Credible) Partner on Ie Jima Prefecture, Japan, which is a 30-minute ferry ride from Motubu Port on Okinawa's west coast. On Ie Jima, 9th ESB practiced mission-essential skills in support of combat service support operations for a notional Maritime Prepositioning Force – Marine Expeditionary Brigade (MPF-MEB). One mission-essential task they practiced was the construction of earth berms to safely store ammunition during the notional MPF offloads. This article will address some of the lessons-learned concerning planning challenges and with the intense engineering effort involved.

At some point during the offload, it may be required to transition from open or break-bulk storage of the ammunition to storage in earthen berms, if suitable covered storage is not available. The construction of earthen berms for ammunition storage can potentially offer several advantages; namely increased protection from enemy fire and the ability to reduce the distance between cells due to the added protection afforded by the berms. The layout and construction of the berms proved to be more challenging than anticipated, due to the equipment and time required.

There are two basic methods to construct earthen storage cells using heavy equipment: cutting or filling. Cutting involves pushing the earth up to form the berms and filling involves bringing in soil from another location. During Tayoreru Partner, we constructed ASP cells using D-7G bulldozers to push up the soil to a height of 12 feet. Lighter equipment, like the Case 1150E medium dozer or M9 Armored Combat

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Bermed ASP cells constructed using the cut method by 9th ESB on Ie Jima. Photo's provided by author.

Earthmover (ACE) is also suited for this task but construction times are longer. After action reports from DESERT SHIELD/STORM indicated that in a sandy environment, it takes an estimated three hours and 20 minutes for one dozer to construct an average ASP cell. However, in the clay rich soil of Japan, this process took in excess of four and a half hours. Aside from proving to be very time intensive, the layout of the cells using this method actually reduced the storage capacity of the ASP. To obtain the desired berm height, the width of the berm at its base was approximately 40 feet. To gather enough soil for both cells, 80 feet of cut was required between cells. The inside of the cell remains untouched. Cutting within the interior of the cell would cause severe drainage problems. According to regulations, a cell 40 feet wide or deep can store 250,000 net pounds of explosives with 70 feet between cells; however, we found this to be impracticable for this construction method. Not only would ASP personnel be hard pressed to store that quantity of explosives in such a small space, it was impossible to construct the cells using the cut method with less than 160 feet between lateral cells. Although theoretically we could store munitions closer together in bermed cells, the large construction distance between cells eliminated this possibility, and greater quantities could be stored using an open storage method. However, the bermed cells would still offer more protection from enemy fire and observation. Road requirements throughout the ASP will further reduce the overall storage capacity of the ASP because the cut area used for construction is unusable.

The ideal method for constructing ASP berms is filling, which involves using heavy equipment to transplant soil from a fill site to the cell. This method would allow the ASP to be designed to optimally store munitions at the minimum safe separation between cells. A scraper, which has a large compartment for carrying soil, is best suited for this task. Using the fill method, scrapers will make multiple passes down a long row, which will form a common back wall of the ASP cells. With each pass, the scrapers will deposit up to 18 cubic yards of soil until the desired height of around 12 feet is achieved, depending on the height on the stack. After the common back wall is constructed, dump trucks and scoop loaders can carry in the required soil to form the sidewalls. There are two major difficulties using this method. The first challenge is that there are fewer scrapers than bulldozers to employ in general engineering tasks so the process will inherently be slower. Moreover, D-7G bulldozers usually have to assist the scrapers load its belly full of soil in a process known as push-loading, which further reduces heavy equipment availability for other engineering requirements, such as critical road improvements. The second challenge is that the soil for the fill must come from a large fill site (a location were large amounts of soil can be easily excavated) in close proximity to the ASP. The closer the fill site is to the actual construction site the better because it will improve the rate of construction. While finding a suitable fill site is considerably easier in a desert environment, it can be very difficult to impossible in other environments.

A final means to construct the cells would be the use of geotextile fabric storage containers, like Concertainer. This system unfolds to reveal a metal rectangular cage lined with geotextile fabric to retain soil. After the container is unfolded and placed in its desired location, a scoop loader or excavator fills the container with soil. These containers can be stacked to achieve the desired height. The major drawback in the use of this system is that it is too highly priced to be of use in large-scale construction.

Combat engineers must be ready to assist in the construction of berms to improve ASPs if the need arises. Marine engineers, in close coordination with the ammunition community, must practice these skills. As

Expeditionary Storage ….continued from page 6

demonstrated in Exercise Tayoreru Partner, an effort to increase the protection of cells by adding earthen berms may actually decrease the storage capacity of the ASP if the cut method of construction is used. The 80 feet of cut area required to construct the cells exceeded the allowable minimum distance between cells. While the most desired means of constructing the cells is using scrapers to fill, it may also be the most impracticable due to the need for large quantities of fill and the limited number of scrapers available. If bulldozers alone are used to construct the ASP, plan for an unusable area of 80 feet between the berms of the cells, with added space for roads as required. Clearly the best option is an immediate transition to covered storage, but if suitable storage is not available, the lessons-learned in Tayoreru Partner should be considered carefully when designing bermed ASP cells.

The Author wishes to thank WO Jessica Donnell, MSgt Ojeda, and GySgt McIntosh for their technical advice and for highlighting the challenges of storing ammunition in expeditionary operations. Our discussions concerning the differences between open storage, covered storage, and storage in berms has enlightened the engineer community. **O**

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We are currently developing an electronic distribution list for the Ammunition Quarterly. If you would like to be on the list, please send me an email requesting inclusion. The file will be PDF. Format, so Adobe Acrobat is required. *GEM.*

Ammo Supply Point:
Protecting nation's ground troops, one shell at a time

Reprinted from a two year old article by:
Pfc. Iain A. Schnaible, Combat Correspondent

What happens when an enemy force threatens a field ammunition supply point (FASP)? Do the Marines operating it just flee and leave the enemy a cache of ammunition?

NO, the ammunition technicians must destroy all of the ammunition so that the opposition can't use it against us.

The Marines of the MCB Hawaii, Kaneohe Bay Ammunition Supply Point (ASP) honed their skills at this indispensable task with Emergency Destruct Training Oct. 4 at the grenade range aboard K-Bay. The EDT is required training for ammunition technicians and is conducted twice a year. However, it is not required for aviation ordnance technicians and aviation ordnance men, many of whom work at the ASP through the Fleet Assistance Program.

"It (EDT) was fun," said Cpl. Albert A. Alonzo, an ammo tech with the ASP. "This is required training for ammo techs, and a good way for other personnel to get familiar with it."

The first steps in the training process are to get permission from Headquarters Marine Corps and to conform to Environmental Protection Agency regulations. This HQMC permission is required in order to clear the use of ordnance assets for validated demolition and training purposes. ASP personnel are trained in the destruction of explosives and small arms ammunition.

To safely destroy explosive ammunition, the Marines dug a hole, placed the ammunition in it, placed C-4 explosive on top of it, shaped the charge so that the force of the explosion would be directed downward, buried the stockpile and detonated the explosive with a

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non-electric firing system operated by a six-minute fuze. The marines then policed the area to ensure that all of the ammunition had been destroyed. For small arms ammunition destruction, the ammunition was placed into ammo cans along with incendiary grenades. The grenades were then ignited, "cooking off" the ammunition. The Marines then waited 24 hours, for safety purposes, and once again policed the area to ensure the destruction of all of the rounds.
"It was the loudest popcorn popper I'd ever heard in my life," said Sgt. John J. Butler, an ammo tech at the ASP.

"The Marines performance was outstanding," said Capt. Jeff G. Young, the ASP officer-in-charge. "The Marines here get the best training available when it comes to EDT. Emergency Destruct Training is also an opportunity for the Marines to see the items they handle day in and day out, out of the package," said Young.

Now, if ever faced with the unfortunate and undesirable situation of an ASP being threatened by hostile forces, the Marines of the K-Bay ASP will be fully qualified and properly trained in the destruction of the vital ammo cache and the possible preservation of Marine lives. **O**

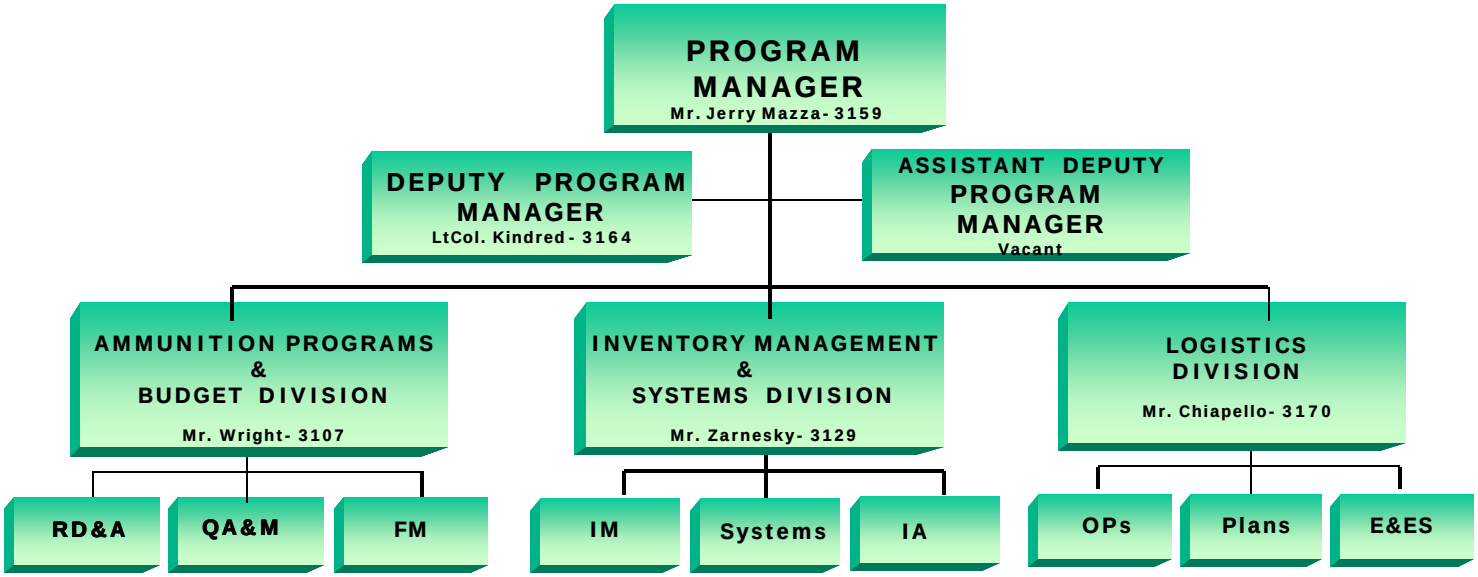
MARCORSYSCOM-PMAM Relocates

George E. Morrison, MARCORSYSCOM/PMAM-EES

On 11 March 02, PMAM moved from our former offices in building 3088, MCB Quantico, to our new location in building 2204 at Hospital Point, MCB Quantico. Hospital Point, as the name implies, is the former MCB Quantico Hospital complex separated from the main base by the town of Quantico.

MARCORSYSCOM "took over" the vacant hospital complex to consolidate the various command organizations, spread over MCB Quantico, into one synergistic location. Significant renovation has converted the former medical complex into office space for Headquarters, MARCORSYSCOM and all subordinate organizations in a campus-like setting.

As with all moves, changes have been made in our organization and "vital statistics". These are provided below for your information and use. **O**



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26 Marine Expeditionary Unit (MEU) Class V Support For Operation Enduring Freedom

Capt. Ralph P. Harris, 2nd Marine Division

Operation enduring Freedom ammo support presented unique challenges for the Marine Corps Ammo Techs. The first challenge was the distance from our support base (Amphibious Ships) to our Forward Operating Base (FOB) was in excess of 400 miles. This vast distance made resupply challenging and prior planning a must. Command relationships were also unique for the units involved. We had a I MEF Command with I & II MEF forces in unison with various other U. S. and coalition units requiring support. Though the system wasn't without challenges, we did prove that the Navy and Marine Corps symbiotic team was able to overcome all obstacles. The following text describes some of the challenges that faced 26 MEU.

(All photos provided by the author)

The 26 MEU Ammo Chief had two sources of support to ensure that the Battalion Landing Team (BLT) 3/6 had enough ammunition to complete it's mission, Landing Force Operational Reserve Material (LFORM) and Marine Training Ammunition (MTA). Both sources were required to ensure that the BLT was able to combat load each Marine prior to departing the Amphibious Ships.

Resupply for the BLT would prove to be the biggest challenge for the Marine Expeditionary Unit's logisticians because the FOB would be located over 400 miles from the ships. The BLT initially deployed to Camp Rhino and then relocated to Kandahar.

The MSSG Ammo Chief, with the assistance of the BLT Ammo Tech established the Field Ammunition Supply Point (FASP) within the perimeter established by BLT 3/6. Almost immediately after establishing the FASP, it was difficult to determine whether they were running an ASP or an ammunition packaging section. During a two-month period the FASP constructed over 140 pallets of ammunition in support of contingency or retrograde operations. They initially received the resupply packages from amphibious shipping and eventually the FASP received over 70 pallets of ammunition from 15 MEU. 15 MEU had received the orders to begin retrograde operations from the FOBs at Rhino and Kandahar. The Commanding Officer for 26 MEU made the decision to accept all Class V that 15 MEU had in theater in order to prevent the need to move ammo twice once resupply was required. Additionally, the FASP received requests to build contingency packages for two separate missions. These packages required the construction of approximately 30 warehouse pallets of small arms, smoke grenades, pyrotechnics, grenades,

mortars, and rockets. The packages were constructed while simultaneously issuing ammunition to the Marines, Soldiers, and armed forces of the 5 nations that made up the coalition forces.

The ammo left by 15 MEU ensured that enough assets were on hand to support all forces until the resupply chain could be established and operated safely.

MSSG 26 was responsible for receipt, issuing, and storing of 6.4 million dollars worth of ammunition in theater. Over 4.5 million dollars of ammunition was returned to serviceable condition for use by the MEU for possible future missions or sent to U.S. Naval Ships. The remainder was used in support of Operation Enduring Freedom.

Due to combat loading, a large portion of the ammunition received from 15 MEU was loose and had no packaging material. Priority of issue was established for loose ammunition first. This dramatically reduced the amount of loose ammunition at the FASP and ensured that the ammunition would not be relegated to an unserviceable condition.

When 26 MEU received the command to turn over operation of the Forward Operating Base to the Army, they began the retrograde/regeneration phase. The priority for Class V assets were (1) regenerate as much LFORM as possible from stocks in theater, (2) reconstitute MTA, (3) salvage as much Class V as possible for the Marine Corps to leave in theater for possible follow on operations. Supervisory guidance to the MSSG Ammo Techs allowed for the regeneration of over 95 percent of LFORM. The quantities not recouped were insignificant and could be filled during the amphibious ships maintenance cycle. Reconstitution of MTA was completed in 2 phases, the first started in Kandahar using available stocks and phase two took place at the Beach Operation Group area. Combat loaded ammo was repackaged and prepared for storage aboard the amphibious ships.

Any Class V stocks not needed for LFORM or MTA at Kandahar was prepared for storage in theater.

26 MEU S-4A coordinated with the Naval Ordnance Officer, MARCENT to store all remaining Class V for storage aboard U.S. Naval Shipping that was remaining in theater. Over 30 pallets of Class V (W) were prepared for storage aboard the US Naval Ship. All Class V in Kandahar was shipped to the BOG area for transportation to the AMPHIB SHIPS. Once in the BOG area all possible packaging material was scrounged in order to repack the combat loaded ammunition. Fortunately the BLT had kept most packaging materials on the ships, due to the quick thinking of the BLT 3/6 Gunner. This still fell short of the total requirement.

Anyone that has every completed the retrograde/regeneration phase of an amphibious operation is aware of the time constraints placed on the MEU. To assist in the retrograde process the MEU used its battle roster to request the augmentation of an Ammo Officer. They also requested a team to assist in the repackaging process at the BOG area. The team provided the needed experience and manpower to repackage the vast quantities of small arms, smoke grenades, pyrotechnics and 40mm ammo that was carried by the BLT. Their efforts saved the MSSG Ammo Techs at least one weeks worth of work, working in austere conditions and with limited resources ensuring that all retrograde timelines were met.

The assignment of an Ammo Officer to the MEU's Battle Roster is also unique to II MEF. The Battle Roster allows the MEU to request predetermined expertise in the event that situations develop during the deployment, in which the existing staff would need assistance in a specific technical field (i.e. Ammo, Ordnance, Communications, Weather etc…). In this case, it was the receipt of large quantities of ammo from 15 MEU that triggered the need for an Ammo Officer. This allowed the S-4 and S-4A to focus on other logistical concerns. The Ammo Officer was given the responsibilities for the day-to-day ammo support and upcoming retrograde of Class V. As the Ammo Officer for the 26 MEU the S-4 officer provided Commanders intent for ammunition support and retrograde. Another requirement was to act as liaison with Coalition Forces and other U.S. Armed Forces, provide guidance to the MEU Commander, S-4, MEU Ammo Tech and MSSG Ammo Techs, and assist in the completion of required

correspondence and reports. The Ammo Officer also coordinated with higher headquarters on all ammo related issues. The Ammo Officer was able to provide assistance to the MEU and also gain valuable experience in the requirements necessary to interface with other branches of the Armed Forces and Coalition Forces during international operations.

This process had to be completed one more time when the last unit moved through the BOG area. Once all Class V was brought back aboard the AMPHIB Ships, all efforts were made to bring the ammunition as close to Military Standards as possible. The only procedure that could not be accomplished was sealing and stenciling due to a lack of materials. This process will aid in the turn in process at state side Ammunition Supply Points and Naval Weapons Stations.

As the exercise and amount of activity in the area grew, so did the amount of Class V in the FASP. Anyone that has to accomplish a similar mission in the future should be aware that requirements for establishing the FASP should provide adequate space for expansion as the operation grows. In this case, physical security dictated the original location. The area was easily capable of handling the amount of ammunition shipped in by 26 MEU but shortly after establishing the FASP in Kandahar the ammo from 15 MEU arrived. Large quantities of captured enemy munitions were also brought into the FASP. Then Coalition Forces and Army assets started arriving. During the transition from Marine forces to Army forces the perimeter was pushed out and the Army established a larger ASP that could safely accommodate the required growth.

MSSG 26 also set a precedent by transferring Javelin missiles with the Army. To avoid breaking out over 20 additional missiles the decision was made that the Army would inspect the rounds already opened and they would swap one for one for all serviceable missiles. During the inspection process all Ammo Techs on hand, received training in the inspection of Javelin missiles. This also allowed the 26 MEU to return with factory packed Javelins, which will cut down on the turn around time for reconstituting the next AMPHIB Ships onload.

The Logisticians and Ammo Techs of 26 MEU can be proud of their accomplishments in providing Class V support 10 times beyond the doctrinal distances normally supported during Amphibious Operations. "You can't survive with out class V"

AMMO LESSONS LEARNED

The following lessons in ammunition management/operations are presented, in no particular order of importance, for your consideration. They are representative of actual challenges presented during the current deployment.

- Marines must undergo a fundamental change in attitude relative to ammunition. Ammo is not an inexpensive commodity available in inexhaustible supply. Careful management of ammunition assets can enhance mission capability of initial and follow on forces

- Ammunition "left behind" by departing units, for the use of incoming units, must be repackaged to the maximum extent practicable. This facilitates accountability, reissue, and maximizes utilization of serviceable assets. "Factory pack" is also a requirement for ammunition entering the transportation system.

- Packaging material must be stored/retained for reuse in repackaging ammunition for retrograde shipment or storage following turn-in. MSSG's should consider adding additional packaging material, such as seals, spray paint, RFI tags, and fiber containers to their deployment package.

- Loose or unpackaged ammunition should be given priority of issue for training, local security, or transferred to Army or coalition forces if possible. This maximizes use of the asset, reduces the time and effort of repackaging, and reduces shipping requirements.

- Retail Ordnance Logistics Management System (ROLMS) is an effective accountability tool. This capability and use should be extended to MEU's and MSSG's. It reduces clerical errors and aids reconciliation among the MSSG, MEU, and Ship accounts.

- Repackaging, inspection, and retrograde operations require additional ammunition officers and technicians. These are labor-
- intensive operations where insufficient personnel can create unnecessary delays. There is also a safety factor to consider when personnel working with a dangerous commodity work long hours under time-sensitive conditions.

- Serviceable high dollar value items that have been exposed to field conditions and use by departing units should be exchanged among units/Services having packaged stocks. This minimizes stockpile degradation, reduces maintenance, and maximizes asset utilization.

- Close coordination and communication among MEU, MSSG, and Ship is required when planning and executing movement and retrograde of ammunition.

- EOD should re-evaluate Donor Material usage, establish requirements, and add this to MCO8010. **O**

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