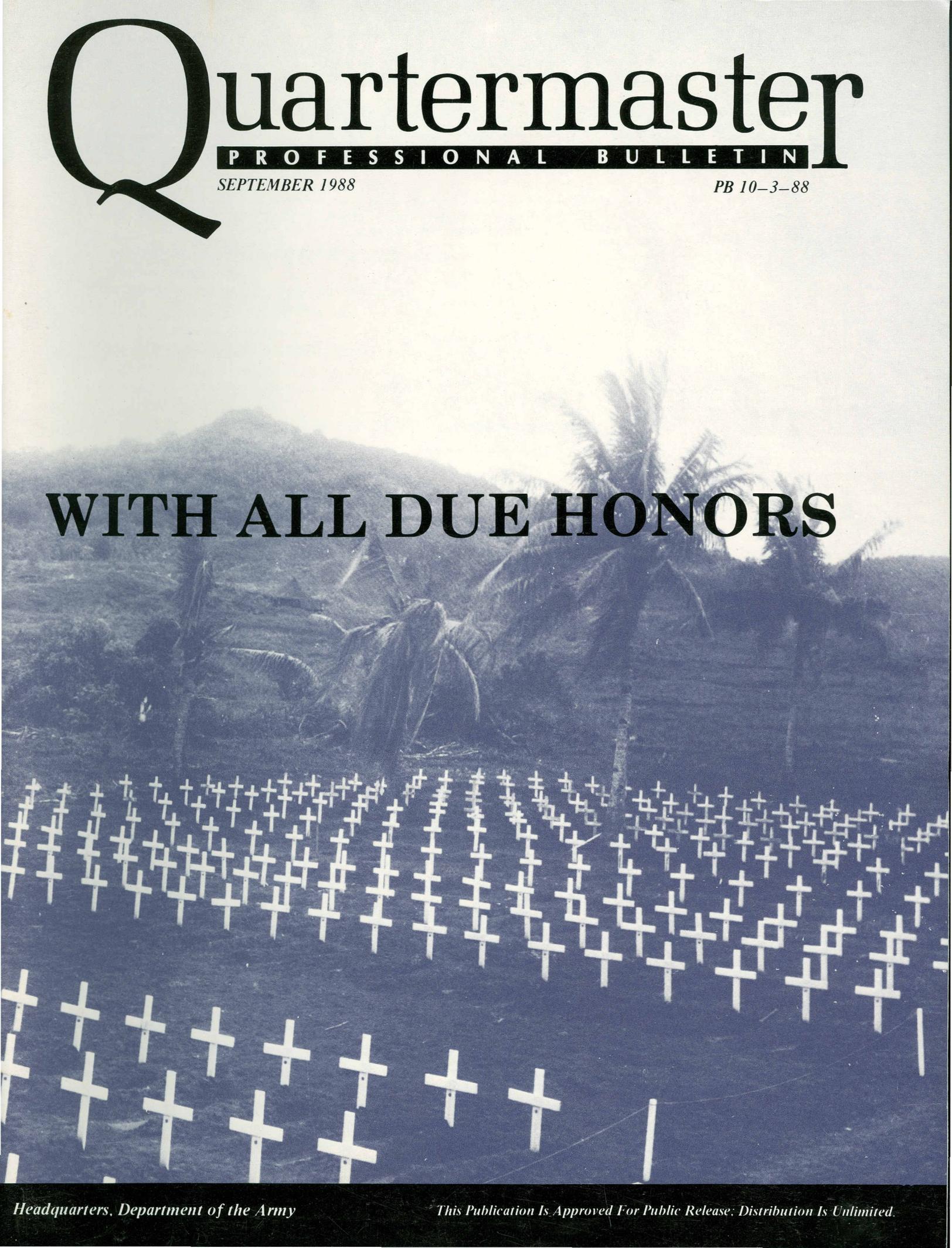


# Quartermaster

PROFESSIONAL BULLETIN

SEPTEMBER 1988

PB 10-3-88



WITH ALL DUE HONORS



# U.S. ARMY QUARTERMASTER CORPS



## *Key to Logistics*

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# GRAVES REGISTRATION, Past, Present, Future.

TOMMY D. BOURLIER

Historically, **Graves Registration (GRREG)** is a field that has changed very little. Doctrine is much the same as during Vietnam, the Korean Conflict, and World War II. Little change has taken place because there has been little interest in graves registration during periods of peace. GRREG has been a box put on the shelf until needed; then taken down, dusted off, and expected to still work and fit whatever situation facing us. Many times in the past we have found that the box was empty or almost empty when we opened it: force structure has been pilfered, training has deteriorated, and equipment has become obsolete.

GRREG has not been ready in the past - we weren't ready to support the Korean Conflict when it started, but had to quickly build a workable program and put it in place. We weren't ready to support Vietnam. Again we had to build a system; luckily, we had some time. Will we be ready the next time, will the next war find us ready, or will we have to make do again?

What are we doing to promote GRREG readiness? -Thanks primarily to a few dedicated people within the Army, something is being done to prepare our graves registration force. The process began very humbly, by just getting people to talk about it, by just getting people to agree that whenever there is war, people *usually die*. Since history has no record of a war where this isn't the case, it seems logical that we should make provisions for caring for the dead during logistical planning.

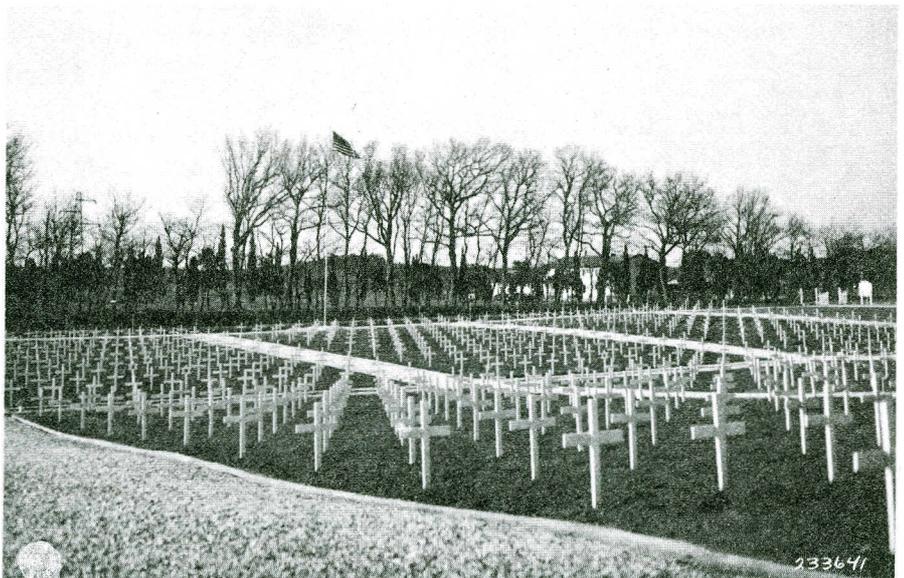
With the transfer of GRREG responsibilities from the Adjutant General (TAG), to the Department of the Army, Deputy Chief of

Staff for Logistics (DCSLOG) in December of 1979, the DCSLOG directed that special emphasis be placed on the GRREG program. This directive has carried us a long way toward ensuring that we are prepared to care for military dead in the manner they deserve.

William P. Gladstone, a former Prime Minister of Great Britain once said, "show me the manner in which a nation or community cares for its dead and I will measure exactly the sympathies of its people, their respect for the laws of land, and their loyalty to high ideals." The manner in which America cares for its dead says a lot about its people; the manner in which an Army cares for its dead says a lot about Army leadership. With this in mind, our national policy is and has been to return the remains of our fallen service members to CONUS for permanent disposition according to the wishes of the next-of-kin. Only when this is impossible has an interment policy been implemented. Even then, the ultimate objective is to recover those tem-

porarily interred remains, and return them to CONUS as soon as is possible.

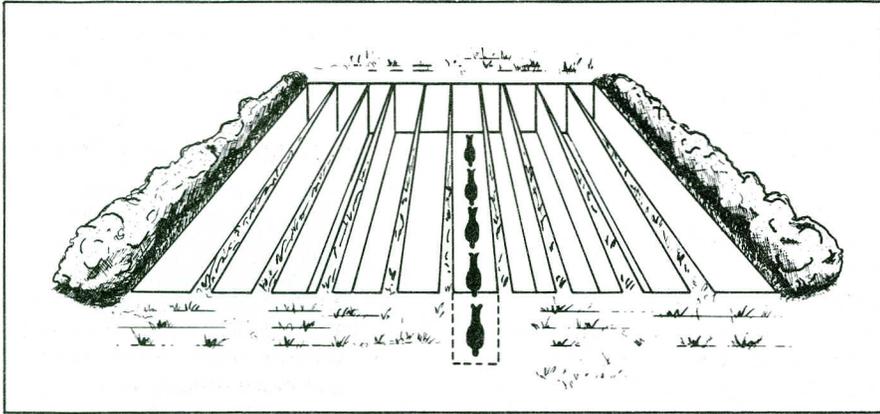
The United States military has been forced to resort to temporary burial in World War I and II, as well as during the early stages of the Korean conflict. Still, most Americans only remember Vietnam, and that those remains were returned in 7 to 10 days. Marines who lost their lives in the Beirut bombing were also returned expeditiously to CONUS; soldiers who died in Grenada were quickly returned for stateside burial. The speed with which these situations were resolved must not be allowed to lull us into a sense of complacency; temporary burial is still considered a distinct possibility in future conflicts. That consideration reflects the fact that intelligence sources, and projected wartime scenarios indicate that during future wars the number of remains anticipated will exceed our capability to immediately return the dead from the field of battle. This realization is driving the development of new doctrine, concepts, and force structure. In



WWII U.S. military cemetery at Vada, Italy

order to meet these changing needs, we simply cannot continue to do things as in the past.

**Modified temporary cemetery -**  
Should temporary burial become necessary in future wars, our



*Figure 1 Temporary burial site.*

**What doctrinal changes?** Past Graves Registration operations have used many structured temporary cemeteries placed at multiple sites. Graves were dug by hand, usually using prisoner labor. Identification was a laborious time consuming task; often remains were buried without being identified. Records and reports were compiled manually, using paper forms with multiple copies, then mailed or hand-carried to the next point.

Present doctrine calls for temporary cemetery interment if or when burial in an overseas theater becomes necessary. Twelve rows of twelve individual graves per plot, each grave 6 1/2' x 2 1/2' x 3 1/2', each grave numbered, each plot lettered, flag pole centered at the front of the cemetery, grave markers centered at the head of each grave. Doctrine of the future must look less at structure and ceremony and more at operational efficiency. The following proposals are among the changes being considered. It must be emphasized that these are not yet doctrine, and may change somewhat by the time they become a reality.

emphasis must be to recover remains and inter them as expeditiously as possible, while not sacrificing the dignity and respect due them. With this in mind, the modified temporary cemetery approach, where remains are placed head-to-toe in trenches which run from the front to the rear of a plot is being considered. (Figure 1.) This method makes the best use of available excavation equipment and facilitates subsequent disinterment and identification efforts. It also makes maximum use of available cemetery space.

**One time personal effects inventory -** Analysis of the flow of remains in traditional temporary interment situations has shown that processing backlogs occur at collection points. This is the outcome of a situation that involves too few people, too many remains, and repetitive, time consuming tasks. One of these tasks is the inventory of personal effects. Present doctrine requires a 100 percent joint inventory of personal effects each time they change custody. Since this might happen four or five times between the point of death and the temporary burial

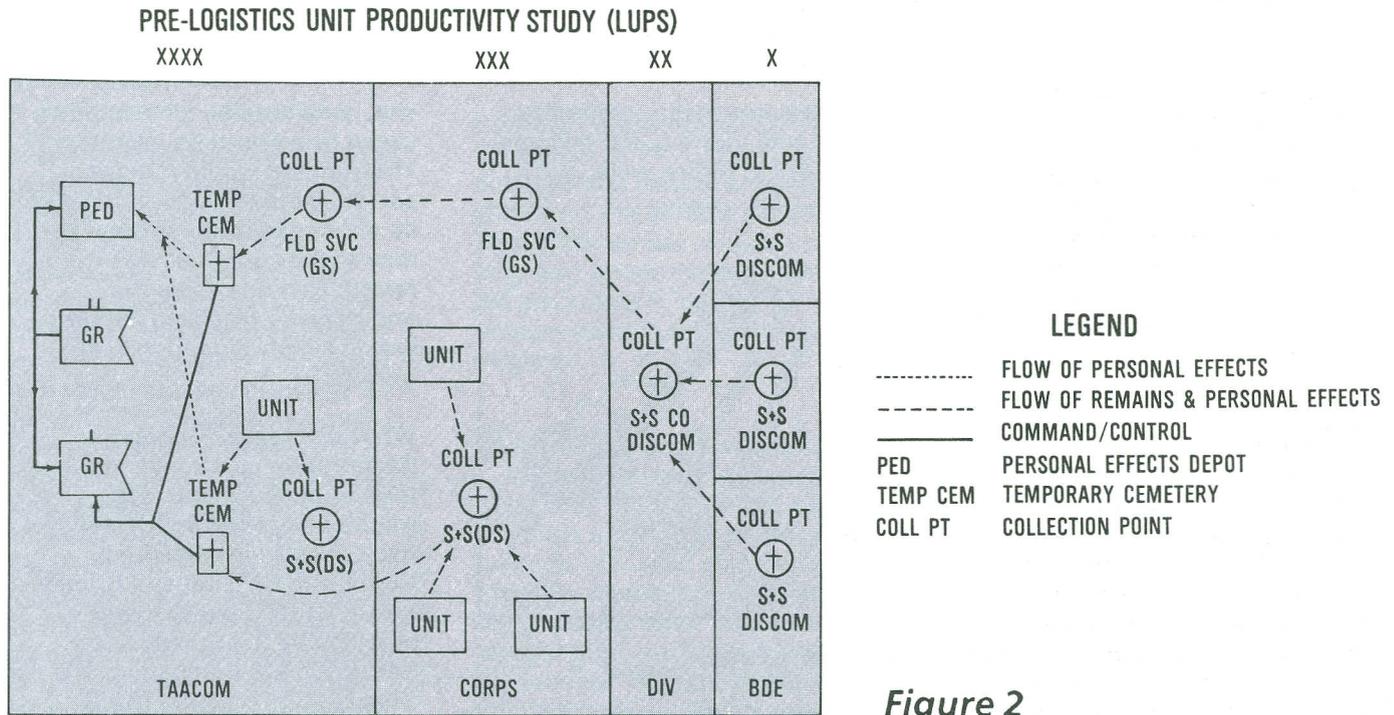
site, considerable time could be saved by a one-time inventory. This method would require a sealed container which could not be opened in route. When custody of the container was transferred from one escort to another, the receiving person would simply sign for a seal number.

**What concepts?** Graves Registration operations in a theater of operations has traditionally been conducted by five GRREG type activities. Within the Division and Brigade areas, GRREG support was provided by the Supply and Service (S&S) Company of the Supply and Transport (S&T) Battalion of the Division Support Command (DISCOM). Within the Corps area, Supply and Service (S&S) Companies (DS) provided direct support to non-divisional forces on an area support basis. Field Service Companies (GS) furnished general support to divisional and non-divisional forces. The basic GRREG mission of these activities was to set up and operate GRREG collection points which received, processed, and evacuated remains to temporary military cemeteries or mortuaries.

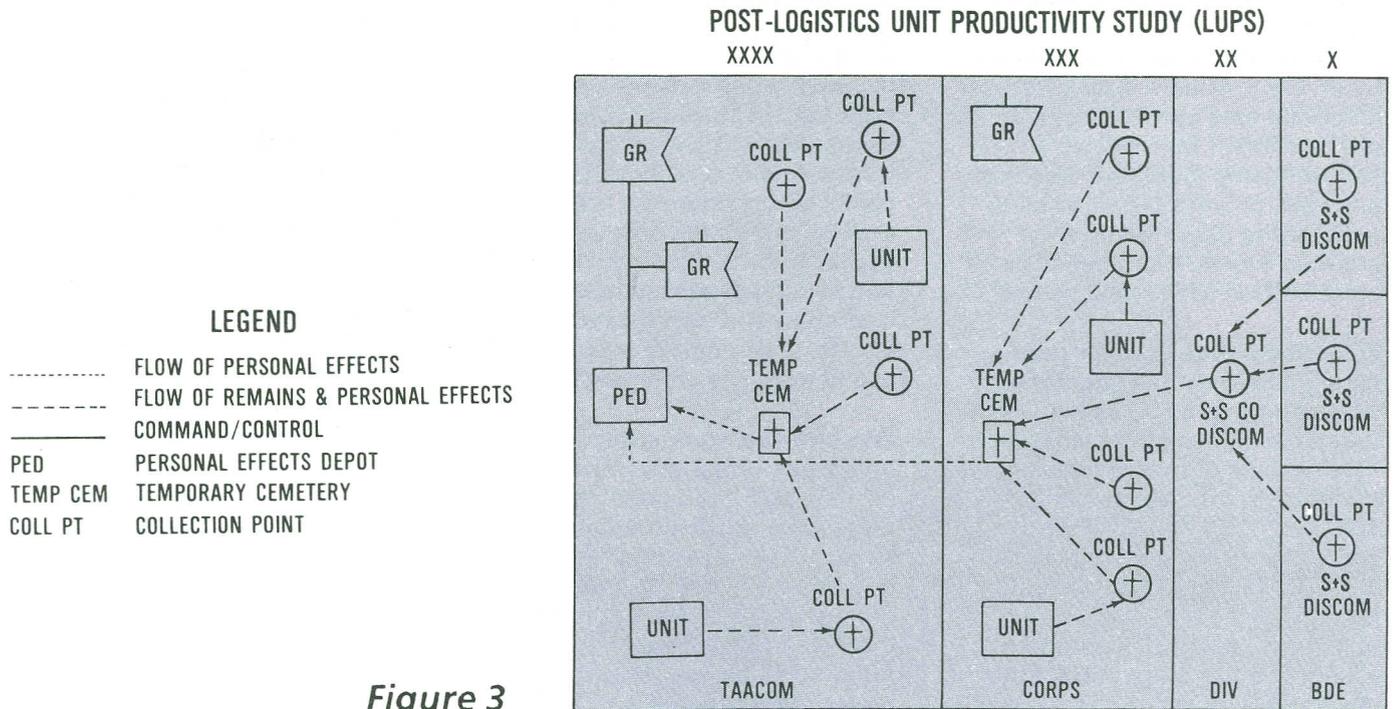
Within the Theater Army Area Command (TAACOM), S&S Companies (DS) and Field Service Companies (GS), GRREG support paralleled those in the Corps area. Graves Registration Companies operating within TAACOM were responsible for temporary cemetery support. Graves Registration Companies were commanded by a Graves Registration Battalion, whose mission also included operating a Personal Effects Depot (PED). (See Figure 2.)

In an effort to streamline GRREG operations while increasing

# GRAVES REGISTRATION SUPPORT THEATER OF OPERATIONS



*Figure 2*



*Figure 3*

capabilities in some areas, the **Logistics Units Productivity Study (LUPS)**, June 1984, recommended that GRREG Companies take over the GRREG

mission of S&S (DS) and Field Service (GS) companies in Corps and TAACOM areas. This concept does not change graves registration support in divisions which

continues to be provided by organic GRREG forces in the DISCOM. Previously, GRREG Companies only operated in the TAACOM. By bringing them to

the Corps, temporary cemeteries can be employed as far forward as possible. (See Figure 3.) This will reduce the length of evacuation channels, and greatly assist in the overall processing of remains. Further, the chances of identification will be enhanced with a more timely processing of remains.

**Automation Concept** -The process of graves registration requires the collection of large amounts of detailed information concerning each remains processed. Additionally, this information must be forwarded to subsequent processing points and eventually to CONUS; extensive reporting requirements exist at all program levels. Presently, this information is recorded manually, transmitted by handcarry or mail. In a situation where efficiency is paramount, and time of the essence, we cannot continue to operate manually.

Automated technology can capture, use, store, and transmit data in a highly efficient manner. The Quartermaster School is exploring a concept where each GRREG activity would be equipped with an automated system which would then be linked together in a common network. Each activity would have the capability of transmitting to and receiving from other GRREG activities. The system would also be linked with the personnel community in order to enhance casualty reporting. The intent is not to create additional hardware requirements, but to utilize existing Army automated systems. Of course, as with any concept, many changes may occur before fielding.

Use of an automated identification base is another possibility being explored. Most identifications made after a traumatic

death (as most war deaths are) require that health and dental records be used to ensure that file data matches postmortem data derived from the remains of person being identified.

*"The level of respect and care that Americans demand for their dead remains the standard which must be upheld by GRREG personnel Armywide."*

Performed manually, this could involve examining several hundred records until a match was found. **Computer Assisted Postmortem Identification (CAPMI)**, which operates from a previously established data base, will search that base until it finds a record which matches the data entered concerning the remains. It will provide the names of those persons in the data base whose medical and dental files match those of the remains. Usually this will only be one person, but on occasion two or three may be retrieved. The obvious benefit of CAPMI is that the identification expert will only have to examine a few records to establish identification.

CAPMI was used with much success during a recent disaster situation, and is presently being utilized at the Central Identification Laboratory, in Honolulu, Hawaii. Adoption of the system on an Armywide basis is expected to take place in the near future.

**What Force Structure?** An Active Duty GRREG Company was activated this year at Fort Lee, Virginia; by 1990, two more active duty GRREG companies are to be activated. One will be based in Europe, the other in the Pacific. Exact locations have not been confirmed yet.

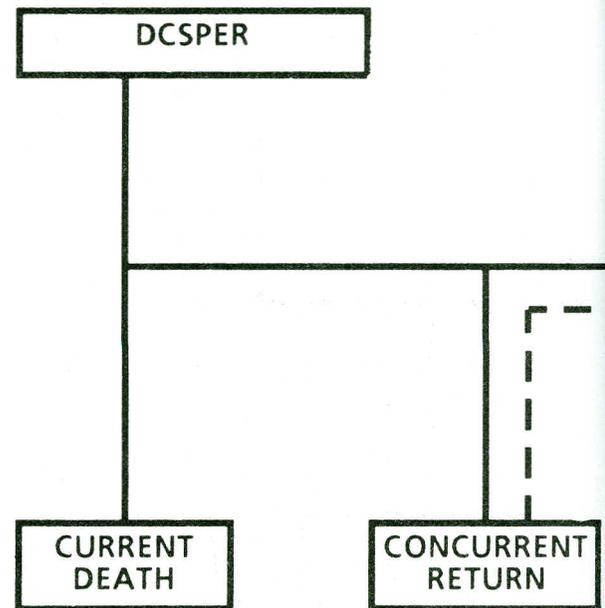
In addition to the four companies and one battalion presently in place, there are plans to add three more companies, and two more battalions to the Reserve Component force structure. The TOTAL ARMY FORCE will then number 10 Companies and 3 Battalion Headquarters. When this structure is in place, the U.S. Army will be better prepared than ever in its history to care for its war dead.

The U.S. Army has traditionally provided a level of support and caring for its dead unequalled by any other nation's military forces. The level of respect and care that Americans demand for their dead remains the standard which must be upheld by GRREG personnel Armywide. That standard is not one which can be sustained through the sheer force of will of those soldiers dedicated to the demanding duties of their field. GRREG capabilities must reflect the reality projected by present doctrine. The integration of new doctrine and methodology, as well as the modification and additions to the force structure of the Graves Registration functional area are all designed to provide that foundation, obviating the "empty box" that has faced the Army in the past.

*Tommy D. Bourlier is the Deputy Director, Graves Registration Center, U.S. Army Quartermaster School, Fort Lee, Virginia.*

## THE ARMY MORTUARY AFFAIRS PROGRAM

The Army Mortuary Affairs Program, which involves the care and handling of deceased personnel for whom the Army is or becomes responsible, is divided into four distinct programs which are listed below.

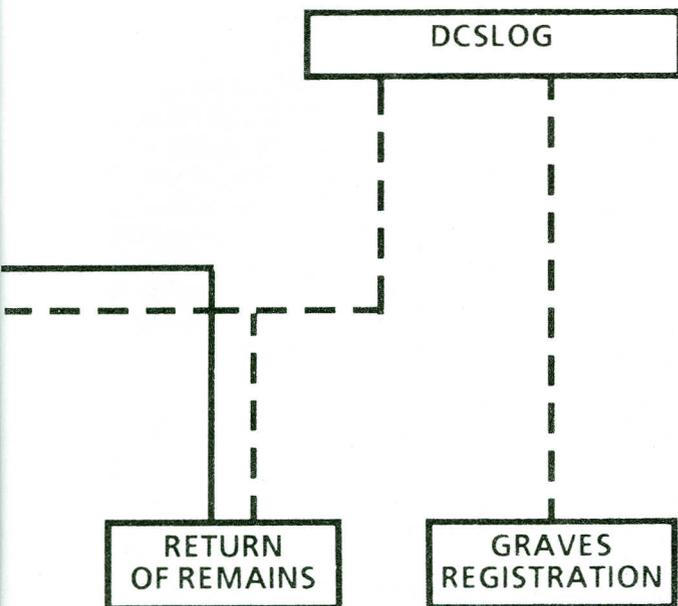


### CURRENT DEATH

The Current Death Program provides for professional mortuary supplies and related services incident to the disposition of remains and personal effects of persons for whom the Army is or becomes responsible. Under this program, remains are shipped to a place designated by the next-of-kin for permanent disposition and the personal effects are shipped to the legal recipient. This program is operational worldwide during peacetime and may continue in areas of conflict depending on the logistical and tactical situation.

### GRAVES REGISTRATION

The Graves Registration Program provides for search, recovery, identification, and evacuation of remains to a mortuary, or temporary burial of deceased personnel in temporary cemeteries. It also provides for the care and maintenance of those temporary cemeteries, as well as care, handling, and disposition of personal effects.



## CONCURRENT RETURN

The Concurrent Return Program is a combination of the Current Death and Graves Registration programs. It may be activated during emergencies or major military operations when conditions and capabilities permit. It begins with the initial phase of Graves Registration providing search, recovery, evacuation to a mortuary, and ends with Current Death providing for identification and preparation of remains in a mortuary and shipment as directed by the next-of-kin for permanent disposition.

## RETURN OF REMAINS

The Return of Remains Program would be initiated only on enactment of special legislation. It provides permanent disposition of remains of persons buried in temporary cemeteries if the remains cannot be evacuated under the Concurrent Return Program. This special legislation could authorize establishment of permanent American cemeteries in an overseas area, and give the next-of-kin the option of having the remains buried in these cemeteries or shipped to another place of the next-of-kin's choosing.

# QM GRAVES REGISTRATION CENTER

LTC THOMAS O. REXRODE

The U.S. Army Graves Registration Center was established on 1 September, 1987 within the U.S. Army Quartermaster (QM) School, Fort Lee, Va. The Center concept was developed based on guidance from the Vice Chief of Staff Army (VCSA) issue in late 1986, directing the establishment of an organization of graves registration (GRREG) world class experts. In July 1987, HQ TRADOC approved the concept to establish the Center, and in August 1987 the implementation plan was designed and approved.

The mission of the Center is unique in that through a DA DCSLOG and HQ TRADOC Memorandum of Understanding (MOU) addressing the assignment of GRREG Program responsibilities, the Center performs both DA ODCSLOG staff, and TRADOC Service School functions. The major missions and functions of the Center reflect that delineation as follows:

#### Army Staff/DA ODCSLOG-

- Serve as the central focal point for GRREG functions and issues in the Army Department of Defense.
- Serve as the Department of the Army coordinating agency and on all DOD generated GRREG matters.
- Act as the manager for coordinating DOD GRREG matters worldwide.
- Provide guidance and interpretation for policy and doctrine and develop procedures to support new or changing doctrine.
- Develop an integrated

improvement program through active interface with AGR TOE/TDA units and appropriate agencies.

- Develop, update and recommend to DA DCSLOG GRREG Program policy/guidance.

#### TRADOC/QM School-

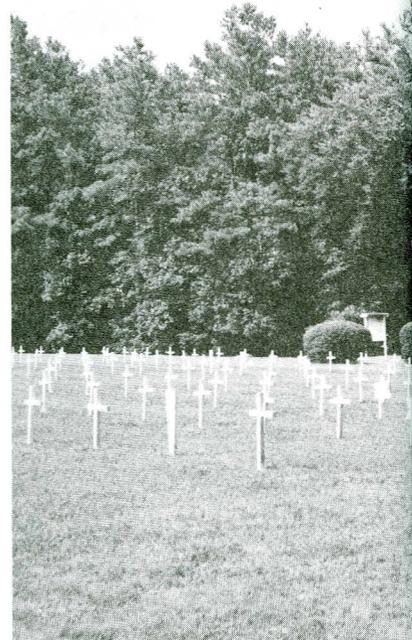
- Develop and conduct instructional programs and testing materials for individual and unit training requirements for resident and extension training and SQT.
- Develop, update, and review all GRREG Training and doctrinal publications.
- Assist as subject matter experts in GRREG force structure development and review process.
- Participate with research, development, and engineering agencies for projects, systems and equipment used within the GRREG Program.
- Serve as Army proponent for GRREG specialists.
- Develop and manage a GRREG Reserve Component Improvement Plan.

A model cemetery is one of the many training aids available for teaching students attending GRREG courses at Ft. Lee, Virginia.

The organizational structure of the GRREG center consists of three departments: Individual Training, Doctrine Division Unit Training and Support, and Office of the Director. The GR center

currently is authorized 20 personnel on the QM School TDA for FY 89. The initial resourcing of the Center has come from within the existing QM School authorizations. As the Center develops we are hopeful additional resources will be authorized to permit work to be accomplished in all mission and functional areas.

A significant portion of the Center's efforts since September 1987 have been devoted to developing the organization and conducting resident training. A priority effort is underway to improve resident training and instructional techniques so as to maximize performance oriented training in the field environment. Simultaneously, Center personnel are reviewing the entire Army GRREG Program to identify its needs and deficiencies with an eye towards initiating corrective actions.



To augment the Center's small staff and large workload, four Reserve Component Officers who have GRREG technical knowledge and actual experience were identified by the Army Reserve Personnel Center, and served two to three week tours at Fort Lee during the summer of 1987. Their individual skills and talents were assets in the Center's effort to revitalize the GRREG program. Additionally, it afforded reserve personnel the opportunity to remain current in the varied aspects of graves registration support.

The Center has also established an informal advisory committee comprised of select representatives from the Army, Air Force, and Navy who are world class experts, highly experienced in the care and handling of deceased personnel. This committee reviews and recommends joint



Maximizing performance oriented training in a field environment is a major part of the effort to improve GR training. Here, students practice search and recovery procedures.

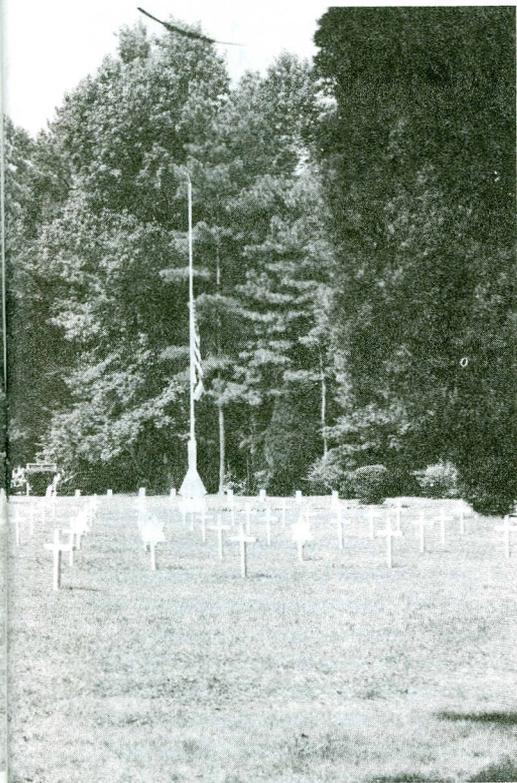
service policy and procedures. It is also a forum for exchange of information regarding new technologies from DOD or civilian industries that may be incorporated within the GRREG Program.

Another part of the Center's role as the Army and DOD focal point for GRREG concerns is that of improving response to disasters involving a large number of deaths. Army GRREG personnel have been called upon to assist in past incidents such as the Jonestown, Guyana mass suicides, the Beirut bombing and the Gander, Newfoundland, air crash. The Center has developed, and maintains the capability to identify trained and experienced GRREG personnel on a worldwide basis to support future disasters. After the scheduled activation of the 54th QM Company (GRREG) at Fort Lee in September 1988, the Center will assist the company in developing and training its personnel to

react to calls for GRREG disaster teams. We also envision that the 54th will assist in training Reserve Component GRREG unit personnel who are at Fort Lee for annual training.

The establishment of the GRREG Center has been a step forward in revitalizing the program of caring for and handling the dead in the theater of operations. The Center will report its progress in future editions of this bulletin.

*LTC Thomas O. Rexrode is the Director, Graves Registration Center, U.S. Army Quartermaster School, Fort Lee, Virginia.*



# MASS CASUALTY OPERATIONS: *Graves Registration in Peacetime*

LTC LAWRENCE J. GOMEZ

Sunday, May 17th, 1987. The Naval Frigate, USS Stark falls under attack by an Iraqi plane. Thirty seven American sailors aboard the Stark die, setting into motion the peacetime Graves Registration apparatus.

The European Command (EUCOM) Directive 66-7, "Mortuary Services/Decedent Affairs (Peacetime)" gives (the Commander in Chief, U.S. Air Force, Europe) CINCUSAFE geographic responsibility for providing Mortuary Services/Decedent Affairs to North Africa, the area in which the Stark was attacked. Mortuary affairs as they pertain to Europe include: removing remains from the place of death, preparation of remains, wrapping and placing remains in transfer cases, and shipping them to CONUS for final preparation at the Dover Air Force Mortuary.

Despite the fact that EUCOM designated CINCUSAFE the executive agent, giving the Air Force command and control of the recovery, preparation and shipment of deceased personnel from the USS Stark, the preponderance of the operational mission was tasked to the Chief of Staff, United States Army Europe (USAREUR). USAREUR units involved included the 21st Support Command (SUPCOM), the 7th Medical Command (MEDCOM), V Corps, 4th Transportation Command and 5th Signal Command (SIGCOM).

Their responsibility was to provide postmortem pathology, identification, and mortuary support. Those duties were broken down as follows. 7th MEDCOM provided dental, xray and pathology support, V Corps litter bearers, physical security and BASEOPS. 4th Transportation

Command furnished ground transportation support and 5th SIGCOM the necessary communication support.

Beginning on the day of the attack, USS Stark personnel began the recovery of the remains of the deceased personnel. Recovered remains were stored temporarily in the ship's reefer. USAMAAE, the United States Army Memorial Affairs Activity, Europe, located in Frankfurt, Germany, sent remains pouches and transfer cases to Bahrain. The remains were placed in them and flown to Rhein Main Air Force Base, where they arrived on the evening of May 20th.

On May 19th, prior to the arrival of the remains, the 21st SUPCOM and 7th MEDCOM Operation Centers had been established at the Frankfurt Mortuary. Phone lines had been added, physical security established, billeting and messing arrangements coordinated. 21st SUPCOM officials held a planning meeting where the processing flow was developed and a concept of operation agreed upon. A total assessment of the facility to determine additional equipment requirements took place during several brainstorming sessions, all before the arrival of the Executive Agent (EA).

A convoy of four stake and platform (S&P) trucks brought the 37 transfer cases from Rhein-Main Air Force Base to Frankfurt. They were first staged at Gibb's Kaserne, 2 1/2 blocks away from the mortuary, then escorted one-by-one by military police to the mortuary. Camouflage nets placed above the mortuary prep room door blocked the overhead view of the off-loading from the high-rise apartments next door.

Next — remains were categorized according to the degree of identification difficulty. USAMAAE personnel took postmortem fingerprints and made postmortem anatomical charts. 7th MEDCOM personnel shot full body and partial xrays to further assist the ID process. Federal Bureau of Investigation (FBI) fingerprint specialists compared post and antimortem fingerprints and furnished positive identifications on 23 sailors as a result. Identification for the remaining victims was made by personnel from the Central Identifications Lab, Hawaii (CILHI). Medical personnel aboard the USS Stark had maintained up-to-date medical records which helped speed the identification process. In all 36 positive identifications were made; remains of one missing sailor were not recovered.

After identification was confirmed, 7th MEDCOM pathologists performed complete autopsies, then USAMAAE personnel cleaned, embalmed and prepared remains for shipment. When this was finished, the transfer cases containing the remains were placed in the chapel and a detailed customs process was undertaken. Personnel checked and rechecked all documents in each packet. This stage, no less than any others, required extensive quality control to ensure accuracy.

Finally, on May 25th, eight days after the attack on the Stark, the departure phase took place. Once again four S&P trucks were staged at Gibb's Kaserne, moved to the mortuary one-by-one, loaded, returned to the Kaserne and then convoyed to Rhein Main Air Force Base. Early on the morning of the 26th, the 36 remains were flown to Dover Air Force Base, Delaware.

In the final analysis, accomplishment of this difficult and trying mission occurred as a result of a joint effort by extremely dedicated Army, Air Force, Navy and civilian personnel. The intensity of their experiences throughout the processing period was almost overwhelming. Over the course of those days and nights, many of the personnel devoted to the operation volunteered to stay and augment the efforts of their relief shifts. The magnitude of the demands of the situation was only exceeded by the actions of the personnel who faced them, giving themselves totally to the task at hand. Even so, individual traumas after exhaustive all day efforts and the realization of one's contribution required that members of the operation stop, take a walk, find a peaceful place and take a moment of silence alone.

Still, in spite of the overall success of this difficult mission, and the laudatory comments that followed, many factors could have been changed or improved. As mentioned previously, the Executive Agent was unavailable for the preplanning phase and did not arrive in Frankfurt until May 20th, the same day as the remains. By this time, 21st SUPCOM officials, responsible for command and control of USAREUR elements had assessed the situation and had task organized accordingly. Perhaps the most difficult portion of the preplanning phase was attempting to understand the numerous and varied levels of authority, and determine the roles that personnel walking into the operation brought with them.

This situation was a consequence of the decision making process executed by the USAREUR Crisis Action Team (CAT) or the Executive Agent.

Having assigned tasks on an Army level, the CAT or EA then augmented the operation with specialists. Personnel from the FBI, CILHI, and New York State Police Forensics arrived in this capacity as the operation progressed. However officials from the MEDCOM and 21st SUPCOM, who had previously been tasked with the Army mission, and who had organized accordingly were not notified. As a result, the first two or three days saw many walk-ins who then announced their membership to the operation, and the span of their control. Administrative requirements grew from nine hotel rooms in the

*The importance of a consistent framework of organization and communication cannot be denied in the peacetime Graves Registration mission.*

supporting Military Command (MILCOM) hotel to an excess of 17 rooms, in three different locations. Initial feelings of not being wanted, of not being given VIP treatment, of discontent over ill planned accommodations had to be quickly resolved. In the end, the mission was accomplished, successfully so through the efforts of a diverse staff, but not without unnecessary trials in a situation which was already difficult. The importance of a consistent framework of organization and communication cannot not be denied in the peacetime Graves Registration mission, any more than it could be understated in times of conflict.

The valuable lessons, learned and subsequent recommendations have now been published by the 21st SUPCOM and forwarded to CINCUSAREUR, CINCEUCOM J4 for review and appropriate action. Of particular note is the fact that the recommendations published in the USS Stark after action report (AAR) mirror previous recommendations made in the historical account of the Beirut, Lebanon mass casualty operation; i.e., DOD had not acted on those. While the overall operation was extremely successful, prior planning and coordination can streamline the next mass fatality operation. Several experiences encountered during the USS Stark operation might have been avoided if previous mass fatality lessons had been disseminated throughout DOD and applied.

Existing Outside Continental United States (OCONUS) facilities remain inadequate to handle the magnitude of a mass casualty operation; medical, dental, and mortuary forms are dissimilar; often professional physicians work must be reaccomplished on required mortuary forms prior to validation. The concept of establishing a "warm base", on-site mass casualty mortuary or portable morgue facility should not be dismissed out of hand. It is imperative that what has been learned be incorporated into a USAREUR plan, as well as into joint forces policy.

*LTC Lawrence J. Gomez is the Chief, Supply and Services Division, ASCLOG, 21st Support Command, Kaiserslautern, Germany. He was the Operations Officer for the joint task force of 131 personnel that handled the USS Stark mass fatality operation.*

# HE'S DEAD, NOW WHAT?

LTC THOMAS O. REXRODE

The attack is over for the time being- you, as one of the survivors look around and discover someone you believe to be one of your unit members lying on the ground motionless. You rush to his side and upon closer examination discover he has been killed. He's Dead- now what?

This scenario has happened time and time again on battlefields where American soldiers have served. As a leader in your unit, you must know what to do in this situation. You must also be prepared to do it. ...*"But I always thought the Graves Registration (GRREG) guys would come in to take the dead away."* Not so most of the time. First off, graves registration personnel are located in the Brigade Support Area and are operating a Collecting Point in support of the entire Brigade. Generally, only eight soldiers are responsible for running this operation and they are going to be busy processing remains and preparing them for evacuation to the rear. ...*"Well then, who has the responsibility of moving the dead out of our area to the GRREG Collection Point?"* Unit Leadership has that responsibility at unit level, plus as well as that of the initial search and recovery action.

The process of caring for our dead on the battlefield starts at the place of death. When the tactical situation permits, you should organize a search and recovery team. Your search team should know how many remains they are expected to recover and the area they are located in



*Unit leaders in the Pacific Theater remove the dead from the battlefield during WWII.*

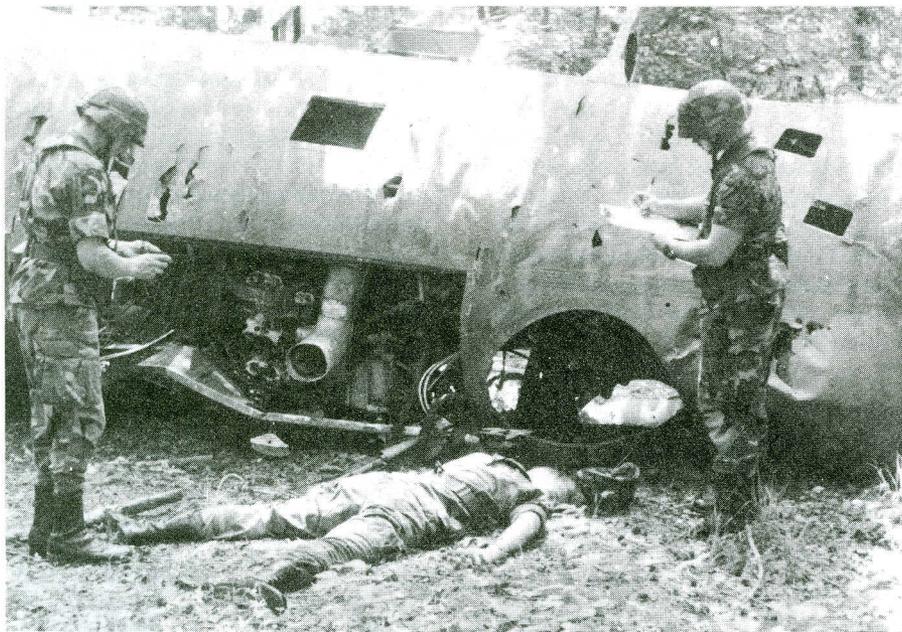
based on casualty reports. Depending on the tactical situation at the time you may need a security force and Explosive Ordnance Disposal (EOD) personnel. Your search team may vary in size depending on the number of remains you expect to recover and the terrain. You should be sure to take maps of the area, compasses, litters and remains pouches. Upon arrival at the area of search you should methodically search all areas, especially those affording concealment. It will probably be necessary to improvise both equipment and paperwork when actually on the battlefield. If you don't have time to complete the proper paperwork then at least report as much information as possible to your commander by courier or radio.

Upon finding a remains be care-

ful to preserve all items that may be used for identification. This includes all pocket contents, as well as clothing and equipment. Weapon serial numbers may also be a clue to identity. If identification tags are found on the remains they should not be removed. Record your findings in as much detail as possible, including the location of the remains, and lastly sign the records. Next, you prepare the remains for evacuation by placing them into a remains pouch. Use anything available to shroud the remains if a pouch is unavailable. Be sure to protect all personal effects and records from becoming soiled and to keep them with the remains. For personal safety during evacuation, remove any explosives before placing the remains in the remains pouch. Affix a tag to the remains, the remains pouch or

shroud, listing the name, rank and service number of the deceased if known. Prior to evacuating the remains to the GRREG Collection Point, try to obtain a signed and verified statement of recognition from one or two soldiers in the unit if conditions permit

Your final responsibility is to arrange for immediate evacuation using available ground or air transportation. Remains should be guarded at all times and an escort assigned to ensure their safe arrival at the Collection Point.



*GR specialists at Fort Lee, Virginia train in search and recovery procedures.*

...*"But when do I ask for search and recovery support by GRREG personnel?"* You should request this support whenever you know you need recovery at a site where multiple deaths have occurred in a specific location, such as an air crash. Graves Registration specialists are trained in search and recovery procedures and will be able to carefully recover and document the findings at the recovery site on special forms he

is trained to use. As there are only a few trained GRREG personnel in the Division you should be prepared to support him or his team upon arrival.

...*"When or how do I bury my deceased personnel?"* If you have no way to evacuate your dead or you are in a Nuclear, Biological, Chemical (NBC) contaminated area, you should perform the emergency burial procedures as follows.

- Dig a grave approximately 2 1/2 feet deep.
- Wrap the remains in a poncho or whatever is available.

- Place the remains in the grave face up.
- Refill the grave and erect a marker.
- Carefully record azimuths and land marks from grave and provide all data to your supervisor. Remember, do not remove any personal effects or identification (ID) tags as they will be used after recovery for identification.

...*"What if a large number of*

*deaths occur as result of an NBC attack?"* Currently our procedures require contaminated remains and personal effects to be buried as soon as possible if they cannot be decontaminated prior to evacuation from the contaminated area. Mass burial procedures are contained in Chapter 6 of FM 10-63, Handling of Deceased Personnel in a Theater of Operations. Operationally, we envision GRREG and NBC personnel will move to the contaminated area when it is safe, and then provide GRREG support.

The Quartermaster School recently completed a training support package for use at the unit level describing graves registration procedures for non-Graves Registration trained personnel. A limited number of advance copies are available from the Graves Registration Center until official printing and distribution.

Remember, caring for our dead on the battlefield is a process started at the place of death, by those who have lived battle. A basic knowledge of that process should be part of every soldier's vocabulary; the next casualty could be the person by your side.

**TO REQUEST DA PAMPHLET  
10-2-C002 TSP PERFORM UNIT  
GRAVES REGISTRATION  
FUNCTION**

Please write to:

**QM SCHOOL, ATTN:ATSM-GR,  
FORT LEE, VA 23801-5000**

*LTC Thomas O. Rexrode is the Director,  
Graves Registration Center, U.S. Army  
Quartermaster School, Fort Lee, Virginia.*

# 57F: TRAINING AND CAREER FOR THE GRAVES REGISTRATION SOLDIER

SGM DAVID E. KELLY, JR

The United States Army Quartermaster School, Graves Registration (GRREG) Center located at Fort Lee, Virginia, is responsible for training the Graves Registration Specialist, MOSC 57F. The Advanced Individual Training (AIT) level soldier is provided an eight week course which is complex, informative, and challenging. The AIT student is introduced to such subjects as Search and Recovery, Map Reading, Evacuation Operations, Central Identification Laboratory Operations, Mortuary Operations, Skeletal Anatomy, Dental Identification, Finger Printing, Collecting Point Operations, Temporary Cemetery Operations, Mass Casualty Burial Operations, and Handling of Personal Effects.

In addition to training the AIT soldier, the GRREG Center also has courses designed for the basic level NCO, and the Advanced NCO. In the near future, an officer course will be available to qualify officer personnel to hold the Additional Skill Identifier (ASI) 4V (Graves Registration.)

Resident training at the GRREG Center is complemented by numerous nonresident courses, which can be exported to students unable to attend in person. Mobile Training Teams are available on request to train unit personnel; the Quartermaster School strives to provide training wherever there is a need.

Upon completion of AIT from the GRREG Specialist Course 57Fs find that they are limited to the types of units to which they will be assigned, and that duty positions will be limited.

- As an E-1 thru E-4, the 57F will be assigned to a field service

company, supply and service company, graves registration company or a mortuary. The duties for E-1 thru E-4's in a field service company or supply and service company are those of an identification and effects specialist. In this capacity, they will receive remains, personal effects and records. They will question personnel who deliver remains to the collection point, about the type and location of recovery or the location of the unit from which the remains were received. They examine recovery reports for accuracy and completeness. They ask a person who knew the deceased well to view the remains and obtain a statement of recognition from this person. They search the remains for effects that will aid in identification; the neck for identification tags, the clothing, boots and military equipment for identification value. After this, they examine and record all personal effects found. They prepare remains, effects, and reports of

evacuation to another collection point, temporary cemetery or mortuary. They can also be called upon to perform search and recovery operations that include questioning local inhabitants, conducting systematic search of the recovery area. After determining the location of remains, the 57F plots this data on maps and then arranges remains in anatomical order.

- An E-1 thru E-4 in a GRREG Company would perform all of the above duties, but could also be assigned as an interment specialist who receives remains at a temporary cemetery and processes them for interment and/or disinterment.
- An E-1 thru E-4 assigned to a mortuary will receive remains, do finger printing, dental, anatomical or skeletal charts of remains, assist embalmers and prepare remains for shipment. E-1 thru E-4's could also be assigned to a personal effects depot where they would process effects for shipment to a CONUS effects



Students practicing search and recovery techniques during resident training systematically gather data at the recovery area.

depot or shipment directly to the person authorized to receive effects.

- An 57F E-5 is the Section Chief in a Supply and Service company or Field Service company, Mortuary or Personal Effects depot, and is responsible for supervision of personnel and mission for the graves registration section. He normally supervises 6-14 personnel.
- An E-6 may be Section Chief in a GRREG unit supervising 15-24 personnel. They could also be assigned as a casualty data analyst or search and recovery team member at the Central Identification Laboratory or Section Chief in a mortuary. They can be assigned as a GRREG NCO in a GRREG battalion or instructor/writer at the Quartermaster School. E-5's, E-6's and E-7's are assigned the duty of escorting deceased Army personnel from port of entry to a place of interment designated by the next-of-kin.
- An E-7 may be assigned as Platoon Sergeant in a GRREG unit supervising 30 or more personnel, a GRREG Sergeant in the services section Theater Army, or comparable level headquarters. They are Senior Casualty Data Analysts, or team sergeants in Central Identification Laboratories, operations sergeants in mortuaries, or instructors/writers at the Quartermaster School.
- E-8's may serve as a First Sergeant in a GRREG company, Central Identification Laboratory and Mortuary. They may also be operations sergeants in the Central Identification Laboratory and GRREG battalion, POWMIA Branch, TAPA; Commander of Escort Detachment; Senior Instructor/Writer at a Service School; or Project NCO for Combat Developments. Upon promotion to E-9, a 57F becomes

During training, students establish a collection point where they practice processing remains and effects. Remains must be searched for items with identification value, recovery reports checked for accuracy and completeness, careful records must be made on all findings.



a 76Z, Senior Supply Service Sergeant. There they may serve as Logistics Service Sergeant, Material Management Sergeant, Supply Supervisor, or GRREG Supervisor.

Now that I've informed you of where a 57F might work, I must also tell you that the majority of 57F's are utilized outside of their MOS and do not receive the proper training to maintain their skills and readiness. Many 57F's never come into a direct contact with actual remains during either their training or career cycle.

- As with many other MOSs in the Combat Service Support field, too many commanders use these personnel as clerks, duty soldiers, training NCO's, etc.

While stationed as a Platoon Sergeant at Fort Bragg, North Carolina, I addressed a group of Battalion/Brigade Commanders. One colonel asked me, "What can GRREG do during peacetime?" I answered, "What does your brigade of paratroopers do during peacetime?" He

answered "TRAIN, TRAIN, TRAIN to be combat proficient for the next war or disaster." The same holds for GRREG Specialists.

The peacetime role of the 57F needs to be one of training and maintaining proficiency in the event of war. This can be accomplished in Unit Training Exercises, and in major training exercises like REFORGER, Bright Star, and Team Spirit. In this year of Training let us train our Graves Registration Specialist to be highly proficient, to provide the knowledge, skill and dedication to ensure that we give our best to those who gave their all.

*SGM David E. Kelly, Jr. is the Sergeant Major, Graves Registration Center, U.S. Quartermaster School, Fort Lee, Virginia.*

# IDENTIFICATION METHODOLOGY

BOB LONG

Recent multiple death incidents involving military personnel such as the aircraft disaster that occurred at Gander, Newfoundland, in December of 1985 have underscored the need for a reliable base of antemortem records (records established for a living individual) to aid in the timely identification of victims. Too often overlooked during the relative calm of peacetime, the critical nature of an accurate, and easily accessed identification base could not be denied during any future conflict.

All victims of the Gander incident were identified, but not without some difficulty. The circumstances of the disaster posed particular problems; the medical and dental records of the personnel aboard the aircraft were also aboard, and many of the records were destroyed in the crash and ensuing fire. The vast majority of the remains were mutilated and dismembered and suffered thermal injuries which severely hampered efforts to associate dismembered portions with the principle remains. Although the Canadian authorities did a tremendous job of recovering and documenting the recovery of remains and personal effects, the recovery effort was cut short by a heavy snowfall. A research of the crash site in January 1986 produced two principle remains, numerous body portions, and many medical and dental records which were helpful in the identification process. Lastly, families of the victims were asked to provide civilian medical and dental records and other information which might be entered into the identification data base.

These factors disallowed the use of any single means of identification. Of the 248 military aboard the aircraft only 182 had record fingerprints on file with the FBI. Of the identifications made, 64

percent involved dental comparison, 46 percent involved fingerprint comparison, and 70 percent involved some use of personal effects (to include ID tags.) The total of these percentages reflects an overlap of methodology, and illustrates the fact that we cannot currently rely on a single method to identify all remains.

How is identification accomplished? In simple terms, identification of deceased persons is accomplished by comparing postmortem (after death) findings with antemortem records. As illustrated by the Gander incident, no single method can be applied to the identification of all remains, at least at this time. Circumstances often determine methodology, and factors that influence that choice include:

- the presence (or absence) of specific postmortem anatomy
- the condition of the remains
- the nature of the incident causing death
- the availability and quality of antemortem records.

Other factors influencing the identification process involve the use of accepted identification techniques and the credentials of the person examining the remains. It is important that evidence presented as part of the ID process is prepared to a standard accepted by the forensic community by a qualified individual, if that identification were to be challenged. Emotional issues also come into play; even though identification may be established by uncontested scientific means, the survivor(s) of a victim will sometimes not accept the fact that an individual is deceased.

What are the primary methods used to establish identification? Fingerprint comparison is the most recognized means of identification for the living or the dead, and is infallible. Unfortunately, fingerprint comparison cannot be used in all cases. If a victim's

hands are missing, or in such a condition that fingerprints cannot be obtained, or if record fingerprints don't exist or can't be located, this technique can't be used. Within a military framework, another factor must also be considered. The Services do not currently maintain a file of fingerprints for service members, and since 1974, ID cards have not



*A Royal Canadian Mounted of identification value at the*

had fingerprints recorded on them. Instead, the Services rely solely on the FBI for record prints. Only 73 percent of the military personnel involved in the Gander incident had record prints on file at the FBI.

Dental comparison is used for identification, but as with fingerprints, can't be used in all situations. One of the advantages of this method is that dental anatomy is more permanent than fingerprints. Still, while teeth themselves don't decompose as do fingertips, they may become separated from the dental arch as

tissue around them does. Teeth can also be destroyed by trauma or fire. Once again the availability of a record base is also important.

Comparison of physical characteristics is often used in the identification process. This method is less conclusive than either of the first two methods described.



Police searches for items  
crash site in Gander.

Physical characteristics as noted in antemortem records are not necessarily accurate and postmortem determination is often subjective. As an example, recorded height for any individual might vary several inches, not due to growth, and postmortem height determination is dependent upon the anatomy present. The skill of the examining anthropologist is also critical when determining such factors as age, race, and build.

Physical characteristics have a higher value in some instances than in others. Gender is an

example. If a group of people contains one member whose sex is unique, that is to say, if there are four males and only one female in that group, the sex characteristic is a viable support in the identification of the female. If all the group members were male, that sex characteristic would be of little value in identifying any individual. The same analogy applies to other physical characteristics. Positive comparison of several characteristics and negative comparison of others may establish an identification.

Visual identification is probably the most widely used and least scientific method of identification. Once again, numerous factors influence its usefulness and validity. The acid test of visual identification occurs when a family is able to see, recognize and accept the remains presented to them as those of their loved one. If for any reason the family cannot see and recognize the remains, whether or not those remains were recognizable when a visual identification was made, that identification may be challenged, and difficult, if not impossible to defend. Other means of ID less widely used, involve: foot print comparison; the use of clothing, equipment, personal effects and ID tags; clothing markings; a record of diseases, abnormalities, and body marks; body x-rays, particularly those including the spine and pelvis or others taken for diagnostic and treatment purposes for such things as broken limbs. Forensic serology can also be a valuable aid to confirming identification, due to individual and racial characteristics in the various blood groups. Some blood can often be obtained even from severely mutilated remains. As with the more common methods of identification, whether or not these techniques can be used is predicated on the presence of an antemortem record.

What records should be included in an antemortem data base? Conceptually, there is almost no limit to what types of information could be helpful in the identification process. Practically, antemortem information must be based on data that can be easily obtained and stored, at minimal expense. That data must also have high utility in identifying victims in peace, war, or disasters. There are no absolute standards for identification, as there are no absolute standards for proving the guilt or innocence of an individual accused of a crime. Every situation is unique, and the quality of available evidence and its acceptance is the key to all identification. Currently, only identification tags, and duplicate Panorex x-rays are generated specifically for the identification of deceased military personnel. All other records mentioned in this article are established and maintained primarily for another purpose and utilized for identification of the dead only as required.

A commonly proposed device to assist in, or establish identification is the "tooth tag", or wafer. This tag would contain pertinent information such as the service member's name and service number, which would be cemented to or implanted in a tooth. Such a device would assist in establishing an initial identification (as would ID tags on a chain around the neck, or an ID card in a pants pocket.) Just as there is no guarantee that ID tags or cards would be present with remains, there is no certainty that the mouth device would be there. No matter which of these three articles are used to establish initial identification, additional evidence and documentation would be required to establish positive identification.

The Computer Assisted Postmortem Identification (CAPMI) System has been designed to assist

in the identification process by selecting the most likely antemortem record(s) for comparison with postmortem findings. Originally, CAPMI was based solely on dental characteristics. As the system was developed, physical characteristics data was added to compensate the fact that in the present and projected younger members of the population, distinct dental characteristics such as missing teeth or restorations were diminishing. CAPMI was not originally intended to be an antemortem record, but its data elements constitute one. CAPMI is not a free standing identification system; it only assists in the identification process.

What emerging technology may assist the identification process? Deoxyribonucleic Acid (DNA) matching holds the greatest promise for future identification of remains. DNA exists in all tissue, soft or hard and DNA typing would allow association of portions, or placement of severed portions with the principle remains. It would also allow separation of commingled remains and substantiate the non-recovery of individual remains.

Still, several concerns need to be resolved before the military could use DNA matching for identification of the dead. First, DNA of living individuals must be gathered and stored. The technology now available for this and the matching process is expensive, time consuming, and sensitive to differences in equipment, conditions or operators. The most logical source of DNA containing material is human blood. The shelf life of samples of blood taken for this purpose needs to be considered, as does the actual methodology for storage. Suggested storage methods include freeze-drying, refrigeration, and dry storage on filter paper. Whether or not DNA samples from remains exposed to destructive conditions or contaminants

will be useful to the identification process has not been resolved. It must be determined if exposure to fire, immersion and burial, contamination by fuels, nuclear, biological or chemical agents affects or alters DNA.

Currently, the science of DNA matching is well accepted, and research is being conducted in hopes that many of the questions voiced above will be answered. Within the next three to five years a workable system might be developed.

**There are no absolute standards for identification as there are no absolute standards for proving the guilt or innocence of an individual accused of a crime. Every situation is unique and the quality of available evidence and its acceptance is the key to all identification.**

The positive identification of difficult cases, where remains are commingled, missing heads or hands, severely mutilated or consist of minimal recovered anatomy will continue to present the greatest challenge although they represent only a small percent of the total. With few exceptions, even those remains have been successfully identified utilizing current methodologies. Exceptions to this have primarily consisted of remains recovered from southeast Asia which present their own unique problems. Whatever new methodology is adopted by the military as part of the identification process in the future, it must have a high utility factor.

It is reasonable to assume that when visual identification is not used or is inappropriate, dental and/or fingerprint comparison will continue to be utilized for identification of the vast majority

of remains. Health and dental records maintained by the military medical community and fingerprint files maintained by the FBI are the source of virtually all antemortem records currently utilized for identification. of the vast majority of remains. Health and dental records maintained by the military medical community and fingerprint files maintained by the FBI are the source of virtually all antemortem records currently utilized for identification. Whether these records are

maintained as paper files or converted to digital storage, it is reasonable to assume that they will continue to provide a prime source of information needed in the identification process. Second to these methods, the agreement of ante and postmortem physical characteristics as supported by other evidence such as ID tags, clothing and personal effects found on remains will continue to serve as a viable means of identification. These methods have a successful record because of their reliability, relative ease of use, cost effectiveness, and general public acceptability.

*Bob Long is a Mortuary Affairs Specialist, Total Army Personnel Agency, Alexandria, Virginia.*

# *Not to be Forgotten - The Central Identification Laboratory, Hawaii*

LTC JOHNIE E. WEBB, JR

## **MISSION AND ORGANIZATION**

The U.S. Army Central Identification Laboratory, Hawaii (CILHI), is the only organization in the U.S. military that is solely responsible for the search for, recovery, and identification of servicemembers killed or listed as missing.

The mission of the CILHI is to:

- Conduct search and recovery operations in the Pacific for World War II, Korean War and Vietnam War dead;
- Process remains and establish identities through the use of anthropological, odontological and other sophisticated scientific techniques;
- Accumulate and catalogue information on American and allied personnel listed as missing in action, or declared dead, but body not recovered;
- Provide worldwide emergency support to the Army Mortuary Affairs Program and, as required, to the Departments of the Navy and Air Force, for search, recovery and identification of remains of servicemembers killed or missing in current operations;
- Perform humanitarian missions as directed.

CILHI is a field operating element of the Casualty and Memorial Affairs Operations Center of the U.S. Total Army Personnel Agency (TAPA), Alexandria, Virginia.

The laboratory employs more than 40 military and Department of the Army civilians who are organized into three sections: Search and Recovery, Casualty Data Analysis and the Laboratory. The military and civilian staff represents a wide range of training, education and experience. The majority of the military personnel are experienced Graves Registration (GRREG) Specialists with extensive additional training in map reading, search and recovery operations, archeological excavation techniques, records management and data processing. The majority of the scientific staff

have advanced degrees. Some staff members are board-certified in their forensic specialty. Many staff members have years of experience in Southeast Asia and have participated in the recovery and identification of thousands of casualties of aircraft crashes, multiple-death incidents and major battles such as the Tet Offensive and Khe Sanh.

## **HISTORY**

During the war in Southeast Asia, the two U.S. Army mortuaries in Vietnam identified all servicemembers. The immediate predecessor of CILHI was the U.S. Army Central Identification Laboratory, Thailand (CIL-THAI). Working with the South Vietnamese government until its fall in 1975, CIL-THAI was responsible for the search for, recovery and identification of remains of U.S. servicemembers killed in Southeast Asia only.

In May 1976, CIL-THAI was relocated to Honolulu, Hawaii and renamed CILHI. The organization's mission was expanded to include identification of servicemembers killed in Korea and World War II and those killed in current operations. Since 1976, the CILHI staff has assisted in the identification of casualties from several recent incidents to include the bombing of the Marine Corps barracks in Beirut, Lebanon in 1983; the Arrow Air crash in Gander, Newfoundland in 1985; and the USS Stark missile attack in the Persian Gulf in 1987.

## **SEARCH AND RECOVERY SECTION**

Before the identification process can begin, the remains of servicemembers must be returned to the U.S. government. From Southeast Asia, remains have been received primarily through official repatriations, whereby a foreign government recovers the remains and returns them to U.S. custody. Remains are also returned through other sources such as refugees or

recovery operations conducted by U.S. military organizations in allied countries. Additionally, CILHI conducts search and recovery operations with the cooperation of foreign governments.

CILHI has three fully qualified search and recovery (S&R) teams which conduct thorough area searches and excavations of crash and burial sites to recover remains and personal effects. In order to collect the information needed to assist the scientific staff in establishing the identity of the recovered remains, the S&R teams employ standard archeological field techniques to accomplish the recovery. The S&R teams are staffed with Graves Registration Specialists (MOS 57F) who receive their training at Fort Lee, Virginia. Each team consist of one E-7 and four E-6's or E-5's. After being assigned to CILHI, they receive additional training in the advanced recovery techniques used by the teams. These techniques include the use of transits to accurately grid and map the site and document the exact locations where remains and personal effects are recovered. The training also includes instructions on archeological techniques to be used for excavation of remains located below the surface. It requires approximately six months for new personnel to become proficient in the advanced techniques employed by the S&R teams.

Most recently, search and recovery operations have been conducted in cooperation with the governments of the Socialist Republic of Vietnam, the Lao People's Democratic Republic, Papua New Guinea, the Republic of Korea, the Republic of the Philippines, the Solomon Islands, Malaysia, Okinawa and the Palau Islands.

During one mission to Papua New Guinea, a CILHI team located and identified a World War II aircraft which had crashed

in 1944. The search team worked for a week in the dense jungle to recover remains and personal effects from the crash site. Specialists in the laboratory later were able to establish the identities of all personnel aboard the aircraft and return their remains to the next-of-kin nearly 40 years after their loss.

### LABORATORY SECTION

After CILHI receives the remains, the physical anthropologists and the forensic odontologist attempt to establish individual identities, using standard, recognized, forensic techniques and procedures.

Since remains received at the CILHI are often commingled, the first task of the laboratory staff is to segregate them into separate individuals. After segregating the remains, the anthropologists and odontologist examine them to determine all dental and anthropological data that can be obtained and then document their findings onto a series of charts, forms and special narratives. The skilled scientific staff can determine numerous characteristics of an individual through examination of skeletal remains: age, race, sex, muscularity, handedness, height, dental patterns and indications of injuries the person may have sustained or abnormalities that may have existed while the person was alive.

If dentition is received with the remains, the forensic odontologist examines it to document restorations or unusual characteristics. The odontologist's findings are entered into the Computer Assisted Postmortem Identification (CAPMI) system, a computer program that has stored within its data base, the antemortem dental records of the U.S. servicemen whose remains are listed as unrecovered. The CAPMI system compares the characteristics of the recovered dentition against the data base and generates a list of the most likely candidates for a match. The odontologist physically checks the dental records of the individuals listed by the CAPMI system with the actual remains and the postmortem X-rays to try to establish an identity.

Even with all the technology available and their many years of experience, the scientific staff is not without limitations. They can estimate the physical characteristics of a person and establish scientific probabilities, but they must have a probable population against which they can compare the physical data to establish an identification.

### CASUALTY DATA ANALYSIS SECTION

The casualty data analysis section has the responsibility to conduct research to determine the individuals still unaccounted for from the geographical area where the remains were recovered. In order to accomplish this job, the casualty data analysts collect and maintain personnel, medical and dental files on U.S. servicemembers whose remains have not been recovered. The number of unrecovered servicemembers from all three wars make this a monumental task. For instance, the casualty analysts maintain records on the approximately 2,400 who have not been recovered from Southeast Asia, as well as the 58,000 who died and were recovered in the Vietnam War. The section also collects records and information on the more than 8,000 personnel from the Korean War and the nearly 79,000 from World War II whose remains have not been recovered.

While the scientific staff examines the remains, the casualty data analysts research records to compile the names of the individuals that could be associated with the remains. If remains have been recovered from an identified crash site, the records of the people who were manifested on the specific aircraft are analyzed to extract physical data that could assist in the comparison.

If, however, the remains have been returned through a repatriation, the source, whether a government or an individual, often provides a presumed name, probable date of death, and general location of recovery. Using this information, the data analysts determine which

unaccounted for serviceman's loss scenario best matches the information provided by the source. That individual's last known location is plotted on a map and a circle with an established radius is drawn from that point. The files of all unaccounted for servicemen whose last known locations fall within the circle are screened by the analysts.

The medical, dental and biographical information compiled on each individual by the analysts is then compared by the anthropologists and odontologist with the biological data they obtained from the remains. If a favorable comparison is not possible, the records search is expanded until a match can be made. Only then is CILHI ready to make a recommendation for identification.

Since being activated in March of 1973, CILHI has identified the remains of 245 U.S. servicemen unaccounted for from Vietnam (this includes Laos) 65 from World War II and two from Korea. To many, these may seem like very small numbers; however, to the families of these men, this represents a great accomplishment. Everyone would like to see more progress, but the lack of cooperation from foreign governments makes the accounting a very difficult process. As long as there are servicemembers unaccounted for on foreign soil, the pledge of CILHI is, and will remain, they are "Not To Be Forgotten."

*LTC Johnnie E. Webb, Jr. is the Commander, U.S. Army Central Identification Laboratory, Hawaii, Kapalama Military Reservation, Honolulu, Hawaii.*

# WITH ALL DUE HONORS: A History of the Quartermaster Graves Registration Mission

DR. STEVEN E. ANDERS

*At 0515 on the morning of 12 December 1985, a chartered DC-8 crashed shortly after takeoff from an airport just outside Gander, Newfoundland. On board were 248 soldiers of the 101st Airborne Division returning home from a peace-keeping mission in the Sinai; none survived the crash. The plane's wreckage, along with the badly burned and dismembered bodies of its passengers and crew were strewn over a three-quarter mile area of frozen forest.*

*In less than 24 hours a special Graves Registration (GRREG) Search and Recovery Team for the Quartermaster (QM) Center at Fort Lee, Virginia, landed in Newfoundland and stood ready to assist Canadian officials already on the site. Joined by other military and civilian personnel during the weeks that followed, the GRREG team combed and sifted every square foot of the crash site searching for the victims' remains and personal effects. All recovered items were noted, sorted, categorized and reconciled to one another as appropriate. In the end, despite the severe damage incurred by the overwhelming violence of the place crash and fire, all of the deceased were positively identified and accorded a decent burial—with all due honors.*

*Although this tragic episode occurred during peacetime, its magnitude provided a graphic reminder of the essential role that Quartermasters have historically played in caring for the nation's war dead.*

As far back as the early 1800s, Quartermaster officers assigned to frontier outposts constructed cemetery plots, buried the dead in marked graves, and kept a

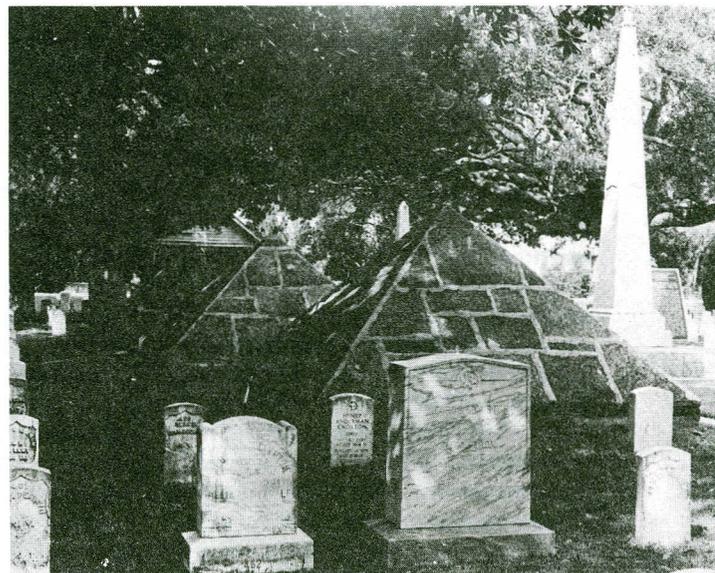
fairly uniform record of burials. Though commendable, these efforts hardly afforded the practical experience needed to handle combat fatalities resulting from a large scale conflict. No formal policy addressed that possibility either.

The Mexican War (1846-47) provided the first real test of the Army's ability to care for its war dead, but with results that were far from satisfactory. In one instance, General Zachary Taylor saw to it that the dead were properly collected and buried on the battlefield following his celebrated victory at Buena Vista. Unfortunately, he neglected to mark the site of the burial on the map accompanying his official report. Years later, when the U.S. government sought to erect a monument to honor the fallen heroes, no burial site could be found. A similar experience marked the campaign of General Winfield Scott, whose troops landed at Vera Cruz and marched overland to Mexico City. Of the hundreds who died and were buried along the way, only a fraction were located afterwards, and none have ever been identified.

The actual foundation of today's Graves Registration mission is more readily traced to the outbreak of the American Civil War. That tragic conflict elicited more sacrifice and accounted for more battle deaths than all of our other major wars combined. At the same time public sensibilities towards the treatment of dead soldiers appeared to be changing, possibly in response to the sight of so many citizen-soldiers donning the blue or grey. Still, this heightened concern for the war dead did not automatically translate into an improved battlefield scenario. There the old tried and true methods of burial remained the norm. Almost invariably, the dead were buried by details from the line, right at, or very near the scene of the battle. When the armies moved on, those burial grounds with their temporary markers were left to deteriorate, leaving little hope of locating or identifying the grave of any given decedent.

Another factor contributed to the problem of identifying and locating individual graves. Burial "squads" were frequently made up of POWs, or other less than

*Graves of unidentified soldiers from the Florida Indian Wars (1835-1842) are marked by pyramids in the St. Augustine National Cemetery.*





*Union soldiers began to bury the dead at Gettysburg battlefield as soon as General Lee abandoned his position on Seminary Ridge*

willing hands. Often illiterate or careless, the results of their actions were fairly predictable; the true identity of many of the dead was lost to error. During the action at the Wilderness and Spotsylvania Courthouse approximately 1,500 men died; only a fourth of those were ever identified. (Roughly 58% of all those who died during the Civil War were positively identified.) Countless notices appearing in the newspapers of the time, asking for information about those missing in action bore witness to this legacy of uncertainty.

Other examples of concern over the Army's failure to provide adequate graves registration, as well as of the negative effect this lack of support had on the troops abounded. When the Union Army of the Potomac crossed the Rapidan River and entered Virginia on 4 May 1864, those soldiers were horrified to discover the bleached bones of comrades who'd fallen the year before lying exposed on the ground. At this point many of the troops searched through the remains hoping to discover clues that would designate the remains as those of departed friends. They looked for identifying marks on clothing and equipment, evidence of fatal wounds, and peculiarities of tooth structure as part of their search. (It is interesting to note that these methods of establishing identification would become part of standard operating procedure for 20th century GRREG personnel.) Finally, before moving into the Wilder-

ness, those troops took time to bury the exposed remains.

The fear of being listed among the "unknowns" weighed upon the combat troops. Even though the War Department did not require or issue any sort of identifying tag, the rank and file often took steps to ensure that their identity would be known should they be killed on the battlefield. Identifying markers carved of wood were carried by many soldiers, as were medallions bearing their names and other information. Prior to attacking the entrenched Confederates at Mine Run during the winter of 1863, the men of the Union Fifth Corps wrote their names on small scraps of paper and pinned them to their uniforms.

Still, the military hierarchy of the day apparently failed to realize not only the importance of some type of permanent identification for combat soldiers, but also the obvious need for specially trained units and personnel who could properly care for the war dead. On only one occasion, after the Battle of Fort Stevens outside of Washington DC in the summer of 1864, did a group resembling a modern day GRREG unit come into play. A Captain James M. Moore, newly appointed head of the QM Cemeterial Division led a group of his personnel on to the battlefield after the fighting had ended. There they began a systematic search and recovery of remains and personal effects, eventually managing to identify all the remains. Their achieve-

ment of a perfect score was not to be matched within the U.S. Army for many decades. Unfortunately, that perfect score also failed to lead to the use of trained GR personnel on a routine basis. Despite this, the Civil War saw the QM Corps clearly established as the responsible agent for caring for the Army's dead. After the war, between 1865 and 1870, the Cemeterial Division disinterred the remains of nearly 300,000 war dead and laid them to rest in 73 newly created national cemeteries.

Conspicuous advances in the theory and practice of Army graves registration were not to take place until the turn of the century, during the Spanish-American War. As a result of experiences in Cuba, it was learned that successful identification of remains depended more than anything on shortening the time span between death, original burial, and registration of graves. Later, Chaplain Charles C. Pierce, who established the QM Office of Identification in the Philippines, outlined some of the principles and techniques needed to place care of war dead on a more scientific basis. He recommended inclusion of an "identity disc" in the combat field kit, and the establishment of central collection points or agencies where all pertinent mortuary records could be gathered, filed, checked, traced, and corrected. Positive identification, he reasoned, should admit little doubt and no discrepancies.

The Quartermaster Department was reorganized in 1912 and became the Quartermaster Corps, a fully militarized branch of the service, much as we know it today. Specialized troops took over most of the functions previously performed by civilians or detachments from the line. Thus on the eve of the United States entry into World War I, the way was cleared for the establishment of trained Quartermaster units which would care for the dead.

New regulations adopted in 1913 affirmed the Army's now strong commitment toward positive identification and proper burial of the dead. New techniques had made their way into procedure, particularly in regards to identification. Detailed maps and sketches showing exact locations of all temporary grave sites were to be filed at the time of initial burial. This would ease the process of disinterment at a later date. By 1917 the War Department moved a step further, amending Army Regulations so that all combat soldiers would be required to

lessons, and a desire to improve the level of care.

While readying the American Expeditionary Force for its trip to Europe during World War I, General Pershing requested the establishment of a Graves Registration Service assigned to the Western Front. Major Pierce, who had headed up the Office of Information in Manila two decades earlier, and since retired, was recalled to active service on behalf of the Quartermaster Corps. He began training GRREG troops and units at the Philadelphia QM Depot in the summer of 1917. By October his headquarters had moved to Tours, France. From this location, 19 Quartermaster GRREG companies were dispatched to every section of the combat zone during the next year and a half.

While the headquarters staff of the Graves Registration Service tended to the consolidation and preservation of mortuary records, and the maintenance of semipermanent cemeteries at the rear of the battlefield, the GRREG com-

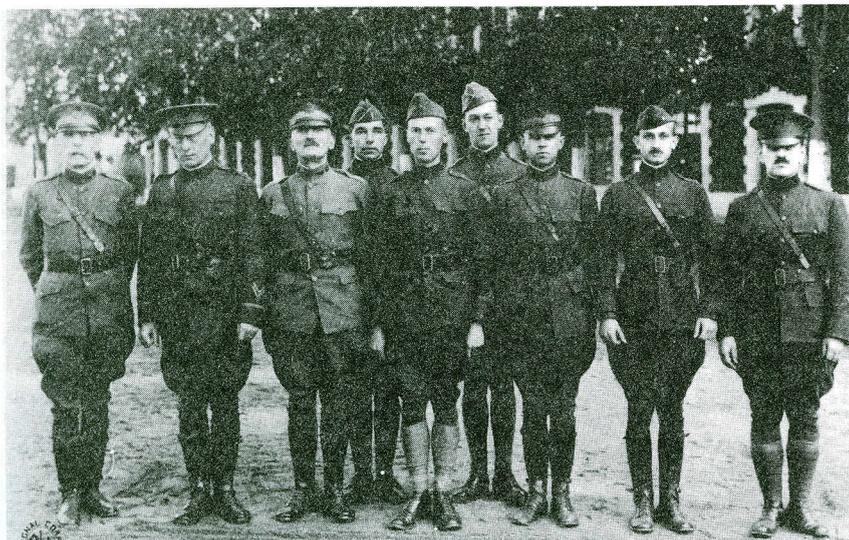
panies were often noteworthy to the point of extremes. No risk appeared too dangerous or effort too great if it promised identification of a "buddy's" remains. General Pershing wrote of one particular unit's activities in the spring of 1918:

*[They] began their work under heavy shell of fire and gas, and, although troops were in dugouts, these men immediately went to the cemetery and in order to preserve records and locations, repaired and erected new crosses as fast as old ones were blown down.*

*They also completed the extension to the cemetery, this work occupying a period of one and a half hours, during which time shells were falling continuously and they were subjected to mustard gas. They gathered many bodies which had been first in the hands of the Germans, and were later retaken by American counterattacks. Identification was especially difficult, all papers and tags having been removed, and most of the bodies being in a terrible condition and beyond recognition."*

During the Great War, as it was called, relatives of soldiers opted to have their kin remain in the country where they had fallen. Teddy Roosevelt added impetus to this movement by requesting that his own son, Lieutenant Quentin Roosevelt, be buried near the ground where he was killed. His expression — "Where the tree falls, let it lie" — echoed the sentiments of many. In all, eight permanent cemeteries were established in Europe by war's end (six in France, and one each in Belgium and England) wherein approximately 30,000 veterans were laid to rest. Another 47,000 bodies were returned to the United States.

During World War I, the Quartermaster Graves Registration Service reduced the percentage of unknowns to less than three



LTC. Charles C. Pierce (far left) organized the American Expeditionary Force's Graves Registration Service during World War I.

wear the familiar aluminum "dog tags" in the field. These changes reflected an awareness of past

companies themselves offered close support to the line. The dedication and esprit of member per-

bodies for every hundred recovered. While organizational and operational refinements helped reduce the time span between original burial and final disposition of remains, a new and more scientific approach aided immeasurably in the process of identification. World War I saw the coming of age of Army graves registration.

During World War II the task of graves registration proved far greater.

More than 250,000 Americans died and were buried in temporary cemeteries around the world. On the European continent alone, fighting had scattered dead U.S. forces over a million and a half square miles of territory, making the recovery process more difficult. Further, new weapons (including aerial bombardment and massive use of artillery) often rendered those killed in action unrecognizable.

The standard Graves Registration Company in World War II consisted of 260 men and five officers. It was intended to support three divisions, one platoon per division. Each platoon was divided into two sections — a collecting squad and an evacuation squad. GRREG companies collected, evacuated, identified, and supervised the burial of the dead. These field units also collected and disposed of personal effects and, subject to the approval of higher headquarters, selected sites for temporary cemeteries. As in World War I, work often had to be done under extremely hazardous conditions. The famed war correspondent, Ernie Pyle, reported on GRREG personnel seeking refuge in the freshly-dug graves during the heaviest fighting at Anzio.

Another example of heroic service can be found in the record of a Quartermaster Graves Registration Company which scrambled ashore on D-Day with the First Army. There they gathered

bodies from the beaches, in the water, and inland, actually cutting many from wrecked landing craft submerged in the shallow water. By the end of D-Plus-2, one platoon alone had buried 457 American dead; by working day and night, the three platoons had been able to clear the beaches of all remains.

Since graves registration units have been traditionally governed by regulations that denote them as a wartime service, most were quickly disbanded in the months following V-J Day. Within a few years the Quartermaster Graves Registration Service overseas was virtually eliminated. This created an enormous problem when suddenly and unexpectedly, the United States Army found itself locked in conflict with communist aggressors on the Korean peninsula in June of 1950. At that time only one small organization - the 108th QM Graves Registration Platoon, comprised of 30 men, stationed in Yokohama, Japan — was available for rapid deployment during the emergency buildup. To compound the difficulty only a handful of these men had combat experience. (The only other active GRREG unit in the entire Army establishment was the 565th QM Graves Registration Company at Fort Bragg, North Carolina.)

Five men from the 108th Platoon were attached to each of the three divisions initially chosen for combat — the 24th, 25th, and 1st Cavalry — and with these 15 men went the few graves registration supplies that could be rounded up. The fluid tactical situation, particularly during the first six months of fighting, aggravated by manpower and supply shortages, rendered GRREG support extremely difficult.

Because circumstances prevented establishing a large, centrally located Army cemetery, division-level cemeteries had to be used instead. Eleven separate

*A GRREG soldier tacks an identification tag on a grave marker at the Brookwood Cemetery in England in March of 1944.*



cemeteries were opened in the Eighth Army area during the first two months of fighting. In the wake of the renewed communist offensive in the fall of 1950, Allied units were forced to quickly close down these cemeteries and concentrate on evacuating the dead - to the relative security of rear areas, then to Japan for processing and eventual shipment to CONUS. By the end of January 1951, nearly 5,000 bodies had been removed from temporary cemeteries in Korea to the newly formed central identification unit (CIU) in Kokura, Japan. This was the first time in U.S. history that a mass evacuation of combat dead took place while hostilities were still in progress.

By the time battlelines stabilized in mid-1951, and additional GRREG units arrived in Korea, operating procedures had standardized. A 72-acre United Nations Military Cemetery was opened at Tanggok, as well as the Eighth Army's Central Identification Laboratory. During the final two years of the war, refrigerated railroad cars were used to ship remains from forward collecting points to Tanggok. A full scale search and recovery effort was instituted to reduce the number of personnel listed as missing in action. As armistice talks got underway, a pattern



evolved wherein the dead were recovered and shipped back to the U.S. within a period of 30 days. It is estimated that more than 97% of the recovered American dead were identified.

The Vietnam War, America's longest and most recent large-scale conflict abroad, saw more improvements in the Army's ability to care for its dead. The nature of that war, especially the use of high-mobility, small unit tactics lessened the numbers of unaccounted for dead. More impor-

tant, better methods of communications and transportation from the battlefield (particularly the use of helicopters) allowed for the speedy recovery of remains from the battlefield, often within minutes. Combat units themselves were responsible for initial, on-the-spot recovery in most instances. From that point, remains were brought to two fixed and well-equipped mortuaries in-country, located at Da Nang in the far north, and in Tan Son Nhut, just outside of Saigon. There positive identification was made. New laboratory procedures supplemented traditional identification methodology such as dental, and fingerprint comparison.

Ultimately, the remains of 96% of those who had fallen were recovered, as compared to a 78% recovery rate for both World War II and Korea. The four percent not accounted for translates to about 2,300 soldiers. Still, on average, only seven days elapsed from the time of death to receipt of remains by the next of kin. At the end of the war, only 28 of the

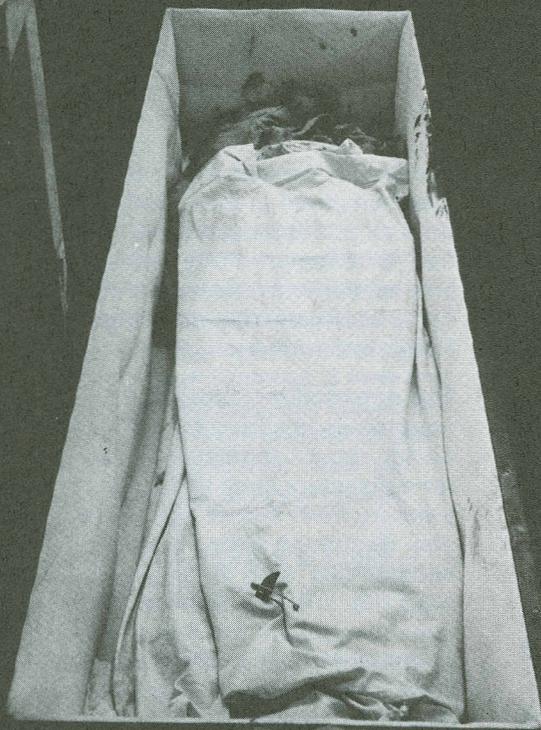
bodies of American soldiers recovered remained unidentified. In time all but one have been identified. On Memorial Day 1984, that one soldier was interred in the Tomb of Unknowns, in Arlington National Cemetery.

The outstanding record of GRREG companies in caring for our dead during recent conflicts or peacetime disasters such as Gander is a far cry from that of 150 years ago. Beginning with a change of sensibilities, with the consciousness that soldiers and their families did not want the fate or the identity of those who fell in battle to be unknown, there has been a continual effort to improve the techniques, equipment, doctrine and organizations designated to care for the Army's dead. The experiences of the Mexican War, where virtually none of the dead were ever identified, or their graves located and marked, are almost unimaginable to GR personnel today; a near perfect record of recovery, identification and disposition of remains has become the standard, carried out with all due honors.



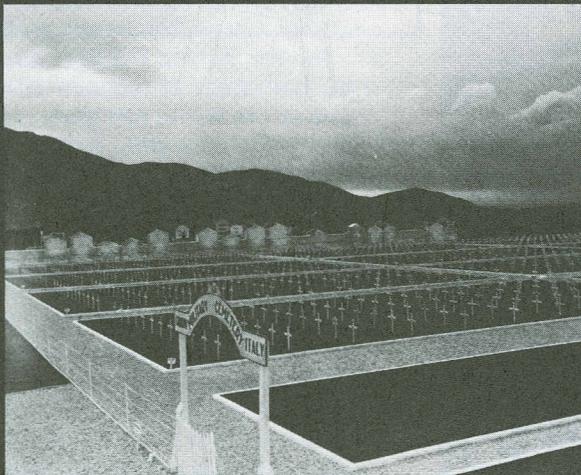
*During the Vietnam War, the use of helicopters (here on the Ia Drang battlefield in 1965) meant remains could be recovered quickly, often within minutes.*

*Dr. Steven E. Anders is the Quartermaster Corps Historian, U.S. Army Quartermaster Center and Fort Lee, Fort Lee, Virginia.*

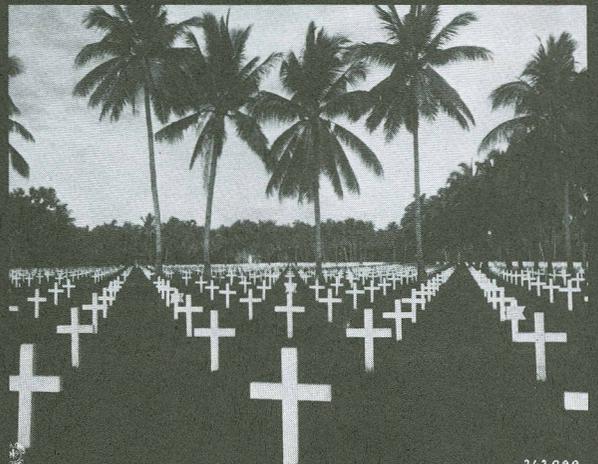


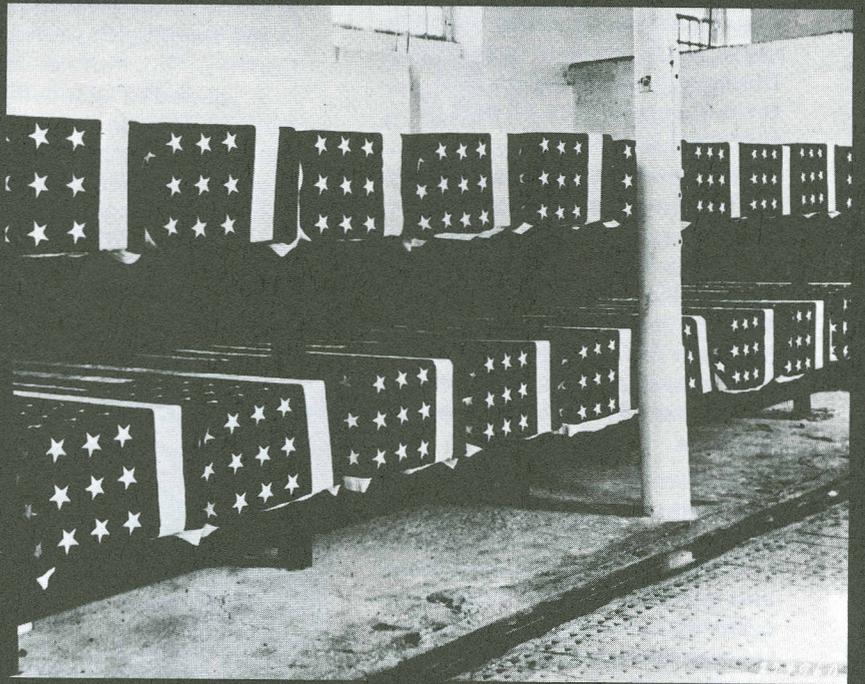
My comrade I wrapt  
in his blanket,  
envelop'd well his form,  
Folded the blanket well,  
tucking it  
carefully over head  
and carefully  
under feet. . .

I rose from the chill ground and  
folded my soldier well in his blanket  
And buried him where he fell.



*Walt Whitman*





# NATICK RESEARCH- Making Things Better for the Soldier

ART REARDON

All uniformed personnel of the U.S. Army have, unknowingly, one common denominator and one common benefactor -- the U.S. Army TROSCOM Natick Research, Development and Engineering Center, Natick, MA.

Why? Well, simply because Natick's primary mission is to sustain and protect the soldier in whatever environment he or she may be assigned. What they eat, wear, carry, sleep in or protect themselves with during their term of service, are all part of that total commitment.

More than 1100 military and civilian employees at Natick, a subordinate research facility of the Troop Support Command, St Louis, MO, share the task of finding new and better ways to increase the soldier's performance and, at the same time, assure he has the best protection possible.

This entails incorporating the latest state of the art techniques to provide improved uniforms, combat clothing, field equipment and shelters, combat feeding systems, food preparation and serving equipment and systems, and the rapid delivery of needed personnel and supplies by air.

The Center is located on 78 acres of land on the shores of Lake Cochituate in Natick, a town twenty miles west of Boston. Its neighbors are the most prestigious educational, medical, electronic, research and development and management communities anywhere in the world. Strategically located in nearby complexes they are served by the major turnpikes and arteries circumventing the Boston area.

Natick's reservoir of knowledge and expertise had not always been so centralized. Prior to 1954, its resources had been scattered at various sites

throughout the country, fulfilling World War II and Korean War requirements. Those war experiences demonstrated the need for a centralized modern program of research and development aimed at protecting and sustaining the soldier. After eight years of planning, ground was broken for the construction of the Center at Natick on 19 April 1952 -- 177 years to the day after the opening of the Revolutionary War in the neighboring town of Concord. Since the doors were first opened in October 1954, Natick has been recognized as the world's leading research and development (R&D) center serving the needs of the individual combat soldier.



The talents of this highly motivated team are divided into six major Directorates: **Aero-Mechanical Engineering; Individual Protection, Science and Advanced Technology and Food Engineering**, as well as an **Engineering Program Management and Advanced Systems Concept Directorate**. Two major tenant activities, the **Naval Clothing and Textile Research Facility** and the **Army Research Institute of**

**Environmental Medicine** work closely with Natick.

**The Aero-Mechanical Engineering Directorate's (AMED)** aeronautical and mechanical engineers and parachute equipment specialists develop the means for delivering personnel and supplies from aircraft in flight, while other engineers within the lab design and develop the organizational support equipment and shelters. Past achievements include the highly efficient canopy parachute and an anti-inversion net. Since adopting the net, the number of parachute inversion malfunctions has dropped to zero. Another AMED project, the CTU-2A, a torpedo-shaped pod container dropped from beneath wings of high speed aircraft, delivers up to 500 pounds of supplies to pinpoint locations.

*Boots, inner and outer garments, personnel armor protective vest and helmet, load carrying system, field items, sleeping gear, chemical protective overgarments, Woodland and Desert camouflage uniforms, are all designed and developed at Natick Research.*

Delivery techniques being developed include a static-line deployed two-stage parachute system for safely dropping personnel from aircraft flying at 250 knots per hour and 500 feet altitude. Another development, a new controlled exit system permits delivery of a full aircraft load of equipment with minimum dispersion of the load and minimizes the time the aircraft and crew are exposed to hostile fire.

Another two stage system delivers 2,000 pounds from altitudes up to 10,000 feet. Also in the development cycle is an ultra-high level container drop

What ever soldiers eat, wear, carry, sleep in or protect themselves with are products of NATICK's commitment to sustain and protect them during their term of service.

system for delivering 2,200 pounds from 25,000 feet. In this system, altitude sensors activate parachutes at 2,000 feet.

As part of an overall Department of Defense effort to minimize the size and types of shelters, AMED has designed the TEMPER Tent, an extendible modular tent, to replace four different standard items. One and two sided rigid walled expandable shelters are another AMED product. They meet International Standard Organizational Shipping requirements and also eliminate the need for several other forms of tentage.

in protective body armor, including the nylon vest used during the Korean War, the ceramic helicopter crew armor used in Vietnam, and the vastly improved personnel body armor system, consisting of a new helmet and protective vest introduced in 1978.

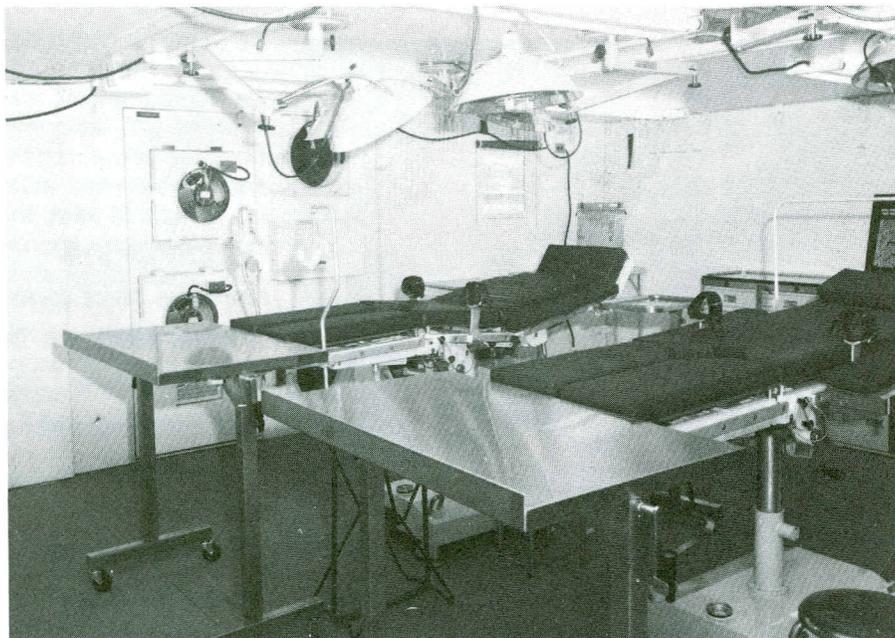
Made of high strength synthetic Kevlar fiber, the one-piece helmet provides 25 percent more ballistic protection than the M-1 steel pot while the vest, made of the same material, increases torso protection by 50 percent. Both items have already saved lives in Grenada and Lebanon.

operations. These are being hailed by military experts as the world's finest. The list goes on. Comfort, durability and protection, all keys to survival in the Arctic, are features of the new Extended Cold Weather Clothing System which protects soldiers in temperatures down to - 60 degrees fahrenheit.

Assigned the responsibility for all food research and development for the entire Department of Defense, the **Food Engineering Directorate (FED)** has developed new rations and food service systems for all branches of service. To sustain troops in Arctic assault conditions, FED refined the earlier freeze-dried dehydration techniques pioneered by its predecessor at Chicago so we now have a compressed field ration that provides 1500 calories per meal. Test results indicate high acceptance, regarding both taste as well as ease of preparation.

This new technique permits storage of larger amounts of food in considerably less space -- ideal for long range submarines or spacecraft. Natick has been designing meals for NASA since the beginning of manned space flight and, in fact, individually prepared and packed the first meal ever consumed on the surface of the moon -- that by astronauts Neal Armstrong and Ed Aldrin in July 1969.

Natick's Long Range Patrol Food packet was a success in Vietnam and unusually high acceptance is now being earned by the Meal, Ready to Eat, ration which replaced the Meal, Combat, Individual, or "C" ration, so well known by thousands of servicemen and veterans. With the flexible retort pouches for thermo-processed foods and the new flat, rectangular Tray Pack (T-Ration) served from Mobile Field Service units, combat troops can expect a wider variety



*Two-sided expandable rigid wall shelters accommodate field hospital surgical operating rooms, as well as a variety of other uses.*

The two directorates at Natick which have the most intimate impact on the soldier are the **Individual Protection Directorate (IPD)** and the **Food Engineering Directorate (FED)**. They provide the most basic necessities of life -- protective clothing and food.

In post war years, IPD has significantly improved the well being of the soldier. Major improvements have been made

New uniforms made of NOMEX, a flame resistant material, protect both Army aviators and combat vehicle crewmen against flame hazards. A new generation of chemical protective garment is also emerging from an accelerated R&D program in IPD. Other accomplishments include a new Woodland camouflage pattern for the battledress uniform used in temperate zones, and a similar pattern for desert



*New 30-day Light Weight Ration being tested in field. Entrees may be reconstituted with water heated using canteen cup stand.*

of hot, nutritious meals.

#### **The Advanced Systems**

**Concept Directorate** designed three promising combat feeding systems -- the Army's "heat on the move and serve" system; the Air Force Harvest Eagle Forward Field Feeding concept, successfully tested in Korea and first procured in 1983; and a redesign of the food service system aboard the Navy carrier USS Saratoga, so successful that it is being implemented aboard all carriers and major ships of the Fleet.

#### **The Science and Advanced Technology Directorate's**

research in physical, biological, behavioral and engineering sciences also provides the data base used by the other commodity laboratories seeking solutions to problems encountered in the development and procurement of materials and systems for upgrading support to the soldier. A number of unique facilities are available at Natick to assist the team of scientists and technologists in pursuing their projects. Within the climatic chambers, world-wide environments can be simulated, ranging from -70 degrees fahrenheit with winds up to 40 miles per hour in the Arctic Chamber to a humid and torrid 165 degrees fahrenheit in the tropical. A separate raincourt facility produces up to four inches of rain an hour, while in

yet another location, flame resistance of clothing and equipment is tested at an open fire pit.



A modern pilot plant containing the latest in baking, cooking, dehydrating, retort packaging and testing equipment is an integral part of the food research program. A sophisticated array of equipment, including a carbon dioxide laser, Roman spectro-

meter and a nuclear magnetic resonance spectrometer, are invaluable aids to the scientists while a third generation UNIVAC 1106 computer helps solve knotty technical and management problems.

The Center's total budget of more than \$81 million is being diligently applied by a concerned staff, dedicated to making things better for the American soldier and assuring he or she has the best protection during their term of service, no matter what the environment.

*This prototype water purification device developed by Natick weighs less than one pound and can purify contaminated fresh pick-up water for the soldier operating in a nuclear, biological or chemical environment at the rate of one pint a minute.*

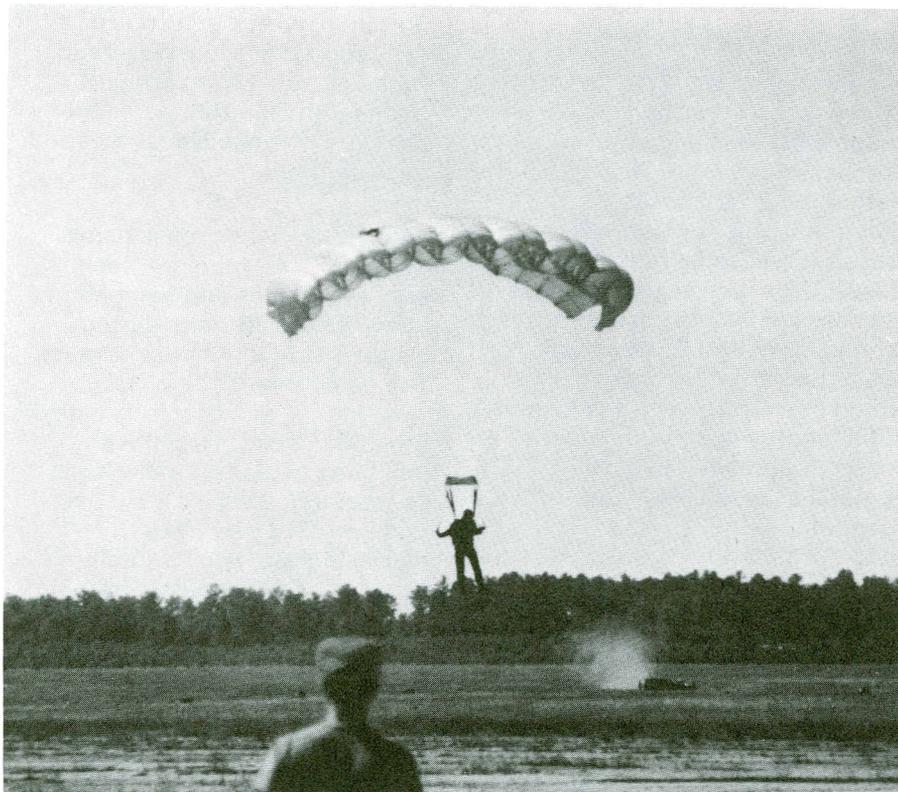
*Art Reardon is a Public Affairs Specialist, U.S. Army Natick Research, Development & Engineering Center, Natick, Massachusetts.*

# RAM AIR

MAJ JOHNNY D. MIXON

Natick Research Development and Engineering Center (NRDEC), U.S. Army Troop Support Command is in the process of developing a new free-fall parachute for the U.S. Army. The Ram Air Parachute System (RAPS) is a technically advanced, ripcord activated system with an adjustable harness. The RAPS is capable of deployment between 2,000 to 25,000 feet above Mean Sea Level and of providing maximum lateral traverse and a high degree of landing accuracy by the parachutist.

The RAPS is a high glide, parachute system incorporating dual ram air main and reserve canopies. The system is a tandem rear mounted system housing main and reserve canopies which are quite similar in design. Each canopy assembly consists of a rectangular parachute constructed of nonporous nylon cloth, with the reserve mounted above the main. The canopy is a seven cell, double surface, air inflated wing of 375 square feet. The main canopy is deployed by a pilot chute assisted deployment bag, initiated either by pulling the manual ripcord or upon activation of the FF-2 Automatic Opening Device. The reserve canopy is deployed by a pilot chute assisted free-bag, initiated either by pulling the ripcord or by cut-away of the main canopy with the Stevens cut-away system connected. Both canopies have a slider with grommets in each corner. The slider retains the canopy in a reefed condition during deployment and allows for a controlled opening, thereby reducing the opening forces. The main canopy is attached to the harness by the three-ring canopy release system that is activated by a single point in the event of a malfunction.



*Ram Air Parachute System being tested at Fort Pickett, Virginia.*

The U.S. Army Special Forces and other Special Operations Forces have a need for a high glide ratio RAPS system for clandestine infiltration by parachutists from altitudes up to 25,000 feet above Mean Sea Level. These maneuverable parachutes allow parachutists to land together as a unit prepared to execute its mission. This type of operation can be conducted in more severe weather conditions than conventional operations permit. The present system did not provide the landing accuracy that must be obtained in such situations and will be replaced by the RAPS. These parachutes may be used in both High Altitude Low Opening (HALO) and High Altitude High Opening (HAHO) operations. The RAPS will be fully logistically supported and will be utilized by Special Operations Command personnel.

It may be adopted by the U.S. Air Force, Marines, and Navy. Parachute Rigger personnel will be tasked to maintain these parachutes and will receive specialized training regarding this parachute. All RAPS jump training will be conducted at United States Army John F. Kennedy Special Warfare Center.

*MAJ Johnny D. Mixon was the Air Delivery Weapon Systems Management Officer, TROSCOM. He is presently a Logistics Officer with the Australian Army, Melbourne, Australia.*

# THE 5TH QM DETACHMENT- Providing Rigger Support to USAREUR

CPT KENNETH L. STATEN  
CW2 MARTIN J. NEISES

The mission of the 21st Support Command is to provide logistical support to the U.S. Army European Theater of Operation. Within the 21st Support Command, the 5th Quartermaster (QM) Detachment is USAREUR's only asset for providing aerial delivery support. This relatively small U.S. Army unit has a theater wide responsibility which in the past year has seen it fulfill lengthy support commitments to units in Italy and England as well as all stops in between.

Battalion, which in turn is part of the geographically widespread 29th Logistical Area Support Group, 5th Quartermaster soldiers are responsible for a varied mission menu.

The detachment's most visible mission is providing for the airdrop of supplies and equipment to all USAREUR units during training or in any future conflict. The detachment has a TOE capability of 50 short tons a day. 5th QM is also charged with providing personnel parachute support to Pathfinder Platoons and Special Operations Command, Europe, and maintaining the MJK-5 ejection seat parachute system for all OV-1 Mohawk reconnaissance aircraft in the theater.

Semiannually the detachment sends 15 personnel to Burtonwood Army Depot in England.

## *A member of the 5th QM*

### *detachment prepares a Martin*

### *Baker parachute system.*

There they perform in-storage inspections on some \$25 million worth of operational project stocks of aerial delivery equipment. Biannually, another team of 15 soldiers inspects Prepositioned Material Configured to Unit Sets (POMCUS) at Burtonwood. At several locations in the European theater, 5th QM soldiers are called on to prerig supplies for use in contingency and exercise operations by tactical units. This relatively new mission stretches

the abilities of the detachment and is a welcome challenge to the riggers.

In accomplishing its primary mission during fiscal year 1987, the detachment provided 77 Container Delivery System (CDS) airdrops, five Low Velocity Platform (LVP) airdrops, and four Low Altitude Parachute Extraction System (LAPES) airdrops to V and VII Corps units. These drops took place during major corps and division training exercises and battalion ARTEPS. These airdrops provided combat units vital supplies and equipment -- MREs, bulk fuel, water, repair parts, and chemical clothing -- literally at their tent opening.

REFORGER 87 provided the 5th Quartermaster opportunity to demonstrate its close working relationship with its Reserve Component sister units, the 421st Airdrop Supply Company (ASC), USAR, of Fort Valley, Georgia, and the 431st Airdrop Equipment Repair Company (AERC), USAR, of Lake Station, Indiana. The three units train together annually so that if required, the transition period to full combat capability would be minimal. During REFORGER 87, 5th Quartermaster provided 56 CDS and three LAPES airdrops of bulk fuel, MREs, and T-Rations to III Corps units operating in Germany's northern corridor. The airdrop of T-Rations was a first in the European theater.

Working out of 5th QM's Kaiserslautern location during REFORGER 87, a 10 member team from the 421st ASC received and serviced airdrop equipment, rigged CDS and performed joint inspections with Air Force load masters on most of the equipment dropped. The 431st ERC followed up with a 10 man team that received airdrop

Based in Kaiserslautern, Germany, riggers from the 5th QM are often deployed to five or six locations simultaneously while supporting requirements of the rest of the theater. TDY is their way of life. An integral part of the 66th Maintenance



. . . riggers from the 5th QM are often deployed to five or six locations simultaneously while supporting requirements of the rest of the theater. TDY is their way of life.

equipment from the drop zone, inventoried, assigned condition codes, cleaned and returned the equipment to depot packed configuration with the documentation to put the equipment in long term storage.

With a myriad of commitments across the continent, the 5th Quartermaster riggers have numerous opportunities to train with NATO airborne units. Jump wings of numerous European countries adorn the chests of these riggers, showing their willingness to increase their individual proficiency by meeting the standards of their NATO partners' airborne rating requirements. Various members of the unit have received German, Dutch, and Belgian jump wings during the past year, several qualifying for all three nations' badges.

The detachment deploys a self sufficient personnel parachute repack team to the Royal Dutch Military Academy in Breda, the Netherlands. There, they support the annual training requirements for the cadets at the academy. This past year, during an intense four days, the team repacked some 750 parachutes for the apprentice Dutch military leaders.

The unit can also participate in an annual training opportunity provided by attendance at the French Commando School in LaRousse, France. At the school, students participate in a course designed to build a soldier's self confidence and overcome fears of dangerous obstacles. 25 graduates of the Command School are currently on the unit roles and 15 are scheduled to attend training this year.

There are always challenges for the riggers from Kaiserslautern. The unit is now at work develop-



*Riggers from the 5th QM detachment take part in a jump in Europe.*

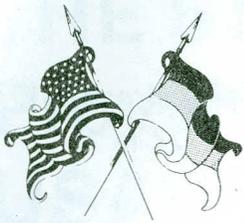
ing a training time line. This would support all major training exercises projected by V and VII Corps which would require air-drop support during a wartime scenario. The detachment is working to strengthen its working relationships with the units it will support, no matter the contingency, no matter the location on the European continent. Whatever the mission, with its airborne heritage punctuated with the names of combat jumps by the 509th Parachute Infantry Battalion in Algeria on 8 November 1942 to the 173d Airborne Brigade's 22 February

1967 jump at Katum, Vietnam, the 5th QM Detachment strives to be true to the last line of the Riggers Pledge:

I will be sure  
--Always.

*CPT Kenneth L. Staten is the Commander, 5th Quartermaster Detachment, Kaiserslautern, Germany.*

*CW2 Martin J. Neises is now assigned to Headquarters Command Victory Brigade, Hunter AAF, Georgia. He was formerly a Supply Airdrop Technician at the 5th Quartermaster Detachment.*



# GERMAN-AMERICAN QUARTERMASTER TRAINING LINK

MAJ ROBERT B. EAST

The city-state of Bremen, often referred to as the Hanseatic City of Bremen, (Hansestadt Bremen) is located on the Weser River in Northern Germany. Formerly, an influential member of the old Hanseatic League, Bremen is still a vibrant economic center although the once powerful alliance of trade centers no longer exists. Bremen also remains important militarily, serving as the home of the German Army's Supply and Transportation School (Nachschub und Transport Schule.) One of the least advertised, but most rewarding assignments for a Quartermaster Major is as Logistics Liaison Officer to that school. That position, representing both the U.S. Army Transportation and Quartermaster Schools has been in existence since 1977.

The Supply and Transportation School is one of 17 in the German Federal Army Education System, and one of two under the command of the Combat Service Support branch of the General Army Office in Cologne. The other, Schule Technische Truppe 1 (Army Maintenance School) located in Aachen, is responsible for training and instruction in the fields of maintenance and repair. Now designated Technische Truppe 2, the Supply and Transportation School was established at Andernach in 1956 as the Quartermaster School of the German Federal Army (Bundeswehr). In 1959, it received additional missions which required a larger site, and in that same year, the school moved to Bremen where more space was available. In 1961, the school became known under its present name.

Between 1956-1986, over 200,000 students were trained at Schule Technische Truppe 2. The school has the capacity to train 9,400 students per year, and

offers approximately 70 different courses. An increase in both the number of courses and students is expected over the coming years due to the introduction of new procedures, equipment, missions, and civil laws which impact on the Supply Branch and the school. These factors, plus added training requirements for logistics personnel resulting from the reorganization of the German Army under "Army Structure 4" caused the establishment of a new TDA for the school in 1986, increasing its staffing by 24%. It is anticipated that the school's yearly enrollment may well rise to 11,000.

Schule Technische Truppe 2's mission is to instruct and train:

- Officers, officer candidates, NCOs, and NCO-candidates serving in supply and/or transportation battalions or units.
- NCOs and NCO-candidates serving in logistic support elements of all branches of the Army.
- Staff personal at the brigade, division or corps level who are specialists in the fields of logistic support, transportation, supply and field services.
- Driver's academy instructors, examiners, directors, and other automotive experts.

The school exists primarily as a "train the trainer" facility; the German equivalent of Advanced Individual Training (AIT) is carried out in training companies within the troop units.

The second mission of the Schule Technische Truppe 2 is to carry out combat and doctrine development related functions.

The need for expanded logistics training in the Bundeswehr has resulted in a parallel expansion of the Schule Technische Truppe 2. Today, the school is accommodated on four Kasernes (garrisons) in the Bremen area.

The school complex proper occupies three Kasernes: Roland, Tirpitz, and the Wilhelm-Kaisen. A fourth Kaserne, the Lettow-Vorbeck Kaserne, houses the 4th Company, 3rd Supply Battalion whose peacetime mission is to support the school and its training activities.

To accomplish its mission, the school is organized into four Training Departments: A, B, C, and D, each headed by a Colonel or a senior Lieutenant Colonel. Approximately 149 officers, 246 noncommissioned officers, 65 enlisted personnel, and 223 civilians form the Training Department staffs. Of this number, 265 of the military and 13 of the civilian personnel are engaged in actual platform instruction. In addition to the training departments the school organization includes the:

- School Staff
- Department for Specialized Instruction
- Special Staff ATV (Auswertung, Truppenversuche, und Vorschriften) - (Evaluation, Troop Testing and Regulations)

## THE TRAINING DEPARTMENTS

### TRAINING DEPARTMENT A

Also called the "Tactics/Command and Leadership Department", Training Department A mainly conducts Supply/Transport Branch officer, officer-candidate, NCO and NCO-candidate courses within its four divisions. It also instructs active duty and reserve officers and NCOs from all other branches in the performance of their duties in the broad field of supply support.

### TRAINING DEPARTMENT B

This department is responsible for training NCOs and NCO-candidates from all branches of the Bundeswehr who perform supply functions within their units. Within the Bundeswehr,

such personnel belong to their own branch (ex.: infantry or armor) rather than to the supply branch, up to the battalion level.

### **TRAINING DEPARTMENT C**

Training Department C has five training divisions and is highly diversified. It trains Supply Branch NCO and NCO candidates in materiel management and ration, ammunition, and POL supply procedures. It also trains Food Service NCOs and teaches the computer and data management skills necessary to NCOs working in automated Materiel Management Center. Finally, this branch also conducts courses for officers and NCOs of all Army branches who have S4/G4 responsibilities, as well as NCOs assigned to equipment holding units.

### **TRAINING DEPARTMENT D**

This department is the central training facility of the Bundeswehr for military drivers' academy instructors, directors, and examiners as well as wheeled and tracked vehicles inspectors/technical experts. Army, Air Force, and Navy Officers and NCOs who serve in these capacities are all trained here. These technical experts are state-certified, and their findings in matters within their area of expertise (e.g., during accident investigations) are recognized and accepted by civil authorities.

### **SCHOOL STAFF**

Assisting the Commandant of the School is a School Staff (S-1 to S-4) which manages and controls training activities, materials and equipment, as well as the instructional and support personnel. This staff's activities also include curriculum development.

### **DEPARTMENT FOR SPECIALIZED INSTRUCTION**

The specialized instructors within this department are a training resource that exists in addition to the instructors within the Training Department. Both military and civilian, they teach specific subjects, as well as the operational doctrines of the

various branches of the Army. They are most comparable to the departments of professional development in U.S. Army service schools.

The Department for Specialized Instruction is responsible for the following subject areas:

- General logistics subjects (peacetime, mobilization, and wartime)
- Supply and service activities
- Specialized Class III and V instruction, including environmental protection.
- Ordnance activities (i.e., maintenance and repair)
- Materiel management doctrine
- Tactics
- Training subjects
- Branch Specific subjects (i.e., Infantry, Engineer)
- Administration and military justice/law
- Physical Training and sports

### **THE SPECIAL STAFF ATV**

The Special Staff ATV can be considered a Combat and Doctrine Development Staff. Organized into four staff groups, it serves both the Supply and Transportation Branch and the Army as a whole. The Special Staff ATV conducts and evaluates field exercises, evaluates written material, as well as tests supply procedures and equipment. It also develops and prepares regulations, field and technical manuals and training directives. Their main goal is to develop tactical principles, supply procedures, and equipment in order to achieve adequate logistical support for the Army in combat.

The U.S. Army Logistics Liaison Officer serving with the German Supply and School is assigned to the Directorate of Combat Developments (DCD), U.S. Army Quartermaster School, with duty in Bremen. In Germany, he falls under the TRADOC liaison net, headquartered in Cologne and collocated in the German Army Office, the German equivalent of TRADOC. Commanded by an O-6, that net consists of 12 school-located Transportation liaison

officers serving throughout West Germany.

The mission of the Logistic Liaison Officer includes but is not limited to:

- representing the United States Army.
- representing the Commanding Generals and Staffs of the U.S. Army Quartermaster School and the U.S. Army Transportation School at the:
  - German Army Supply and Transportation School
  - German General Army Office (Heeresamt)
  - Other German Headquarters and Agencies as required
- Assisting in the coordination of interoperability projects, particularly the US/GE Supply and Transportation Working Group.
- Assisting in the translation of documents and the preparations for US/GE visitors.
- Maintaining contact with DCSLOG, HQ USAREUR and other Subordinate Logistics Organizations and providing assistance as required.
- Participating as a U.S. Army Representative in German military and civilian social, ceremonial and other public events.

Because of the diversity of duties for an American officer serving in a liaison capacity, language training is a must! Beyond the necessary technical and other professional qualifications language is needed to establish credibility, build a close working bond with the School and to develop strong personal relationships. A background or knowledge of combat developments is another useful tool for any officer serving in a liaison position due to the nature of many of the projects they will be involved in. Any officer interested in this type of assignments should keep these considerations in the forefront of their mind.

*MAJ Robert B. East is a Quartermaster officer serving as the Logistics Liaison Officer, German Army Supply and Transportation School, Bremen, Germany.*

# *JP-8 CONVERSION: The Move Towards a Single Fuel Battlefield*

MAJ RUSSELL K. GARRETT

The goal of having one fuel on the battlefield is by no means new, but up till now, the variety of equipment in the Army inventory has made the possibility of achieving that goal very slim. The adoption of JP-8, a fuel that can be used in place of JP-4 and diesel is changing that possibility into a reality. Over the years, many factors have influenced the decision to convert to JP-8 as the primary fuel for the Airland Battlefield; the latest impetus can be traced to the Vietnam era.

During the Vietnam War, JP-4 was the primary fuel used to power Air Force and Army aircraft. An aviation turbine fuel that consists of a blend of naphtha and gasoline, JP-4 is a volatile fuel, highly susceptible to ignition. Its flash point, the temperature at which its vapors in the presence of oxygen and a heat source will ignite, is approximately a negative 10 degrees Fahrenheit. In addition, the flammability range of JP-4 is from a negative 10 degrees to 100 degrees Fahrenheit. Since most military units work in areas where the temperatures fall into this range, this means that Army and Air Force units who handle JP-4 are constantly exposed to fuel vapor ignition, an extremely hazardous situation.

After Vietnam, the Air Force conducted an investigation of the combat losses of aircraft due to fires that started as a result of being hit by gunfire, as well as peacetime losses of aircraft due to fuel fires and explosions. The Air Force concluded that JP-4 volatility was unacceptable, and in 1976, the Air Force Tactical Air Command identified a requirement for a higher flash

point fuel which would be less susceptible to gunfire induced ignition. The Air Force Systems Command subsequently conducted studies on various fuels and determined that JP-8 was a safer fuel; its flash point normally ranges between 110-133 degrees Fahrenheit. As a result, gunfire induced ignitions were reduced by 31%, and damage potential in unsustained flash fires was reduced up to 250% because JP-8 produced fewer vapors which could be ignited by sparks. After this study, the Air Force concluded that JP-8 should become the primary fuel used in land based aircraft.

NATO also discussed the issue of converting from JP-4 to JP-8 during the mid-seventies, and agreed that JP-8 would become the primary fuel for land based aircraft in NATO. At this point despite the fact that they agreed in principle, each NATO nation had to seek its own national position. The U.S. decided to proceed with its conversion plans, beginning the actual process in 1979 with the U.S. Air Force based in the United Kingdom. While this was underway, several questions were raised as to the cost and the availability of JP-8. When the cost of the product proved to be higher, plans to convert to JP-8 by other NATO members slowed and the U.S. decided not to proceed with the conversion of its stocks on the European continent. For the next seven years the NATO nations studied, analyzed and vacillated on what to do.

Independent of these proceedings, the U.S. was working on fielding the next generation of heavy tank, the Abrams M-1

main battle tank. In 1981 this was accomplished. The M-1 has a turbine engine, and was designed to run on diesel fuel. In Europe, this meant operating on DF-2, the command diesel fuel within the NATO. It also meant that during the first winter following the introduction of the M-1, U.S. Armor units experienced problems in starting their tanks as the diesel fuel formed wax crystals at temperatures below 9 degrees Fahrenheit, which clogged fuel filters. Similar problems also plagued the diesel powered Patriot power generation units.

To overcome the M-1's cold weather starting problems, USAREUR units blended DF-2 with JP-5. In other commands, DF-2 was blended with DF-1, DFA, or other similar products. Blending procedures had to be used as far south as Fort Hood, Texas, and proved cumbersome as well as manpower intensive. They also demanded that yet another fuel be employed on the battlefield, a significant logistics concern. It was also felt that sufficient quantities of blended DF-2 could not be produced to sustain fighting forces in a wartime situation.

All of these factors added up to a definite need for a more efficient solution to the problem of diesel fuel waxing/blending; converting to JP-8 was proposed as an answer. The reason appeared natural: JP-8 is a turbine fuel and the M-1 turbine powered.

Beyond the elimination of cold weather start problems, the need for blending, and many safety hazards, other advantages to converting to JP-8 from JP-4 and DF-2 soon became apparent. The

... a tanker filled with JP-8 could be used to refuel tanks, helicopters or generators. As such, it could be diverted from one point to another if a critical need arose. The tactical advantage gained by this flexibility could be enormous.

most significant was the flexibility to be gained by the tactical commander on the battlefield. Currently, commanders need to be concerned about the supply of three fuels, each segregated from each other in order to avoid contamination. Each requires its own pipeline, or, in the case of multi-purpose pipelines such as the Army uses, care must be taken to sequence fuel to avoid contamination as well as to schedule and route fuel so that the correct product is supplied when and where it is needed. Conversion to JP-8 would mean that a pipeline could be dedicated to a single fuel. In addition, a tanker filled with JP-8 could be used to refuel tanks, helicopters or generators, and as such could be diverted from one point to another if a critical requirement arose. The tactical advantage gained from such flexibility could be enormous. Other advantages of a JP-4 to JP-8 conversion are:

- a 3 - 5 % increase in aircraft range
- improved crash survivability
- achievement of standardization NATO members nations
- promotion of NATO interoperability

Conversion from DF-2 to JP-8 will:

- simplify battlefield logistics
- enhance interoperability
- improve engine maintenance since JP-8 is a cleaner burning fuel.

Some disadvantages in converting to JP-8 were also discussed. One of the first to be addressed was the higher acquisition cost for JP-8, which was approximately three to five cents more per gallon than JP-4. To

preclude any severe impact on conversion efforts, the DOD stock fund price, what the services actually pay for the fuel, was adjusted based on the projected lowering of costs of JP-8 once production of the fuel was geared up. As a result, JP-4 and JP-8 received the same DOD stock fund price.

Product availability was another consideration. Since JP-8 is a kerosene based fuel, it is produced from the same portion of crude stocks from which commercial jet fuel and JP-5 are made, and those stocks are limited. This issue was addressed for the EUCOM, SOUTHCOM, and PACOM areas and the final analysis concluded that quantities of JP-8 sufficient to meet requirements could be obtained.

Another factor considered involved performance during initial laboratory dynamometer tests. There was an indication that there was a potential for a 10% power loss in the G.M. 6.2 liter engine that powers the HMMWVs and CUCVs if operating on JP-8. This concern was alleviated when operational testing conducted with three CUCVs: one operating on DF-2, one operating on JP-8 and one modified with an Arctic fuel kit operating on JP-8 showed no evidence of power loss. Moreover, the unmodified CUCV engine operating on JP-8 appeared to be in better condition after testing than those of the other CUCVs. Follow-on testing with a variety of vehicles is scheduled to occur prior to the end of FY 88.

The progress of force modernization is another factor which will impact on the attainment of a

single fuel on the battlefield, and another consideration in the conversion to JP-8. If monies are not obtained to procure diesel engine replacements for automotive gasoline powered equipment, the requirements for MOGAS on the battlefield will slow the process of achieving a single fuel status. Currently, there are some 480 items of equipment in the Army inventory which operate on MOGAS. Some of these will remain in the inventory until 2010 although most are scheduled to be replaced with diesel equipment before that time.

Still in all, the gains to be made by converting to JP-8 were seen to far outweigh the disadvantages. In 1986, the Army and Air Force reunited in their efforts to achieve a single-fuel battlefield. In the Army, FORSCOM, TRADOC, and AMC were questioned about converting from DF-2 and JP-4 to JP-8 and each command supported the initiative. In April of that year, the Army agreed to the conversion to JP-8 as the primary fuel for its land based aircraft and ground fuel for the U.S. Forces. In December of 1986, the first JP-8 was introduced through the U.S. Army's Donges-Metz pipeline system (DPMS) into central Europe.

Since those beginnings other issues have been raised. The most important concerns the fact that an Abrams M-1 tank fueled by JP-8 does not produce effective, persistent smoke with its on board vehicle exhaust system (VEESS). This is viewed as a significant degradation of the M-1's capabilities since the smoke functions as a major visual ob-

... wherever and whenever it occurs the U.S. will fight any future war on a single fuel battlefield.

scurant on the battlefield. The Belvoir Research, Development, and Engineering Center (BRDEC) is investigating whether or not a mechanical modification to the VEES will solve the problem. Another possible solution is being explored by the Chemical Research, Development and Engineering Center (CRDEC) and the PM, Smoke. This involves a design modification which will add a reservoir to the weapon system fuel tank which allows a smoke producing product to be mixed with JP-8 as it is introduced into the VEES. Despite this problem, conversion to JP-8 has continued while a method of generating smoke is being sought.

In January 1987, a Joint Army-Air Force briefing was presented to the conference of Logistics Directors proposing to convert to JP-8 in all overseas theaters where the Airland Battle was likely to take place. The conversion did not apply to naval and marine operations afloat where JP-5 is required. Following that conference, a working group of representatives from each of the Services, DLA, and JCS was formed to draft a DOD directive which would lead to a single fuel

policy. That directive, DOD Directive 4140.45, Fuel Standardization, was signed and published 11 March 1988.

The key provisions of this directive include guidance that:

- designates that JP-8 will be the primary fuel support for land based air and ground forces in overseas theaters,
- restricts the acquisition of new equipment designed to use gasoline-type fuels,
- sets a goal of eliminating the need to stock, store, and issue bulk motor gasoline in foreign countries by the year 2010.

With actions underway in EUCOM, CENTCOM, and SOUTHCOM, the Army is well on its way to converting in overseas theaters. In CENTCOM, conversion is not required because a JP-8 equivalent is currently being stocked. In EUCOM, conversion of the Central European Pipeline System (CEPS) is expected to be completed by FY 89. Conversion of U.S. stocks of DF-2 forward of the CEPS is expected to be completed by FY 91. In SOUTHCOM, where conversion to JP-5 is underway, a completion date is set for FY 90. In PACOM, discussions are ongoing with our Allies in Korea, Japan, and Okinawa.

With the restriction in the acquisition of gasoline consuming equipment, system developers will have to proceed with an awareness of the fuel requirements for new equipment. With the provision to eliminate the need to provide gasoline as a bulk fuel, more emphasis will have to be placed on the elimination of gasoline consuming equipment on the battlefield. It is envisioned that a HQDA-sponsored study on how to best eliminate gasoline equipment would aid the Army in accomplishing this goal.

The Army has come a long way since the concept of a single-fuel battlefield was first introduced. A clear picture of what still needs to be done to get where we want to be has been formed; the process of getting there is being taken step by step, with the knowledge that wherever and whenever it occurs, the U.S. will fight any future war with a single fuel as support.

*MAJ Russell Garrett is a Petroleum Logistics Staff Officer, DA DCSLOG, Washington, District of Columbia.*

# History and Heritage at the Quartermaster Museum

THURLOW V. CARGILL

Stepping into the Quartermaster Museum is like opening a three-dimensional picture book of U.S. military history. Located at Fort Lee, Virginia, and dedicated to the memory and future of the Corps, the museum continues to provide the most effective and impressive portrayal of the history and heritage of the Quartermaster (QM) Corps.

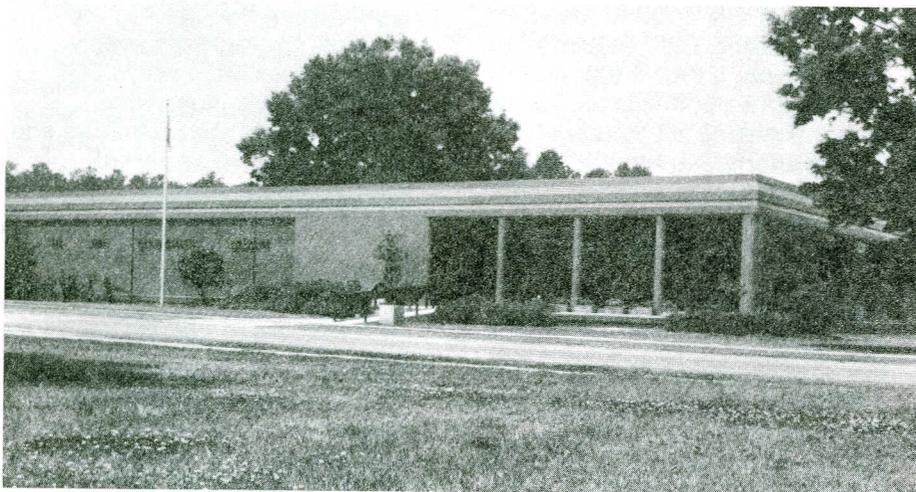
The museum had its beginnings in the early 50s as an outgrowth of the QM School's policy for teaching a block of instruction on the fitting and sizing of Army clothing and footgear. To support this instruction, the QM School acquired a large amount of military clothing, footwear, and other equipment. As instruction expanded, the evolution of the Army uniform, from 1775 to those contemporaneous, was incorporated into the curriculum. To support this addition, reproduction period uniforms were purchased from Van Horne & Company of Philadelphia, and subsequently displayed on mannequins in the classroom. The instruction became very popular, and as word of the reproduction uniforms spread, many persons came by just to see the display, referring to this

classroom as the "Museum." Following these beginnings, General Order 153, dated 20 November 1956, was issued and the establishment of the museum proper was assured.

During the next few years a collection process ensued; QM related artifacts of historical value, as well as monetary contributions towards erecting a permanent museum building were sought. Numerous prototype items were acquired from the QM Depots in Philadelphia, Pennsylvania and Jeffersonville, Indiana. Individual donations further enlarged the physical holdings of the collections, and reflected various QM missions and functional areas. Artifacts related to transportation, supply and services, subsistence, uniforms and personal equipment, and graves registration are all included in a collection that is unequalled throughout the armed forces. The present museum building was dedicated on 16 June 1963, its construction having been funded by interested persons from the private sector. At that time, the building was donated to the U.S. Government. The mission of the U.S. Army Quartermaster Corps Museum is

to educate military personnel as well as the general public by collecting, preserving, and exhibiting items significant to the history of the Corps. A library and archives of QM history in support of the collection, and extensive photographic records is also maintained by the staff and made available to military and civilian scholars. The museum contributes to the U.S. Army historical program, supplying information about the Corps and its activities in support of the Army since 1775. This information assists not only the Army historical programs, but also, writing projects developed by the Center for Military History, other Army museums, and civilian historians. Army research and development programs also benefit from data provided by the museum; the prototype items as well as drawings and specifications acquired from the Philadelphia and Jeffersonville QM Depots have been used extensively for this purpose. Newly proposed pieces of equipment and clothing, such as cargo saddles, headgear, and rain gear are among those items for which museum resources are being used as part of their developmental process. The QM Museum also provides a vital link between the past, present, and the future of the Corps; preserving the rich traditions of the Corps by providing a repository for artifacts and documents which foster a sense of pride and esprit de corps in its soldiers.

The present display galleries are arranged in various ways. Some displays present QM functional areas, others reflect a given time period. Life-size dioramas and group exhibits are the formats used in other ways. At the entrance, a QM story board illustrating all of the QM supply and support functions for the Army past and present lets



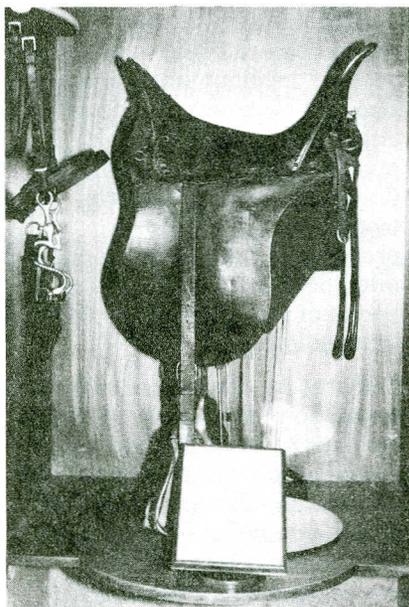
*U.S. Army Quartermaster Museum*

visitors know what a Quartermaster does. Also located at the entrance is the history of the U.S. flag, illustrated by examples that span the period from the Revolution to the present.

Uniforms and the personal equipment of the soldier are displayed by time period, and range from those of the Virginia Infantryman of 1775 to present day BDUs and desert uniform. Included in that range are a large collection of women's uniforms that date from the founding of the Army Nurse Corps in the early 20th century to the present.

Lesser recognized QM functional areas, such as the production and supply of musical instruments also have their place. An assortment of instruments, including a Mexican War drum, horns and trumpets used during the Civil War, as well as more modern items are on display here.

Touring further, the now disbanded QM function of Remount, or Horse and Mule activities is brought to life by several dioramas. The famous "Buffalo Soldiers", black soldiers who formed the Ninth and Tenth Regiments, fighting throughout the West during the 1870s and



*General U.S. Grant's Grimley Saddle is part of the QM Museum's collection*

80s as part of the mounted cavalry are represented here. Dioramas of QM Blacksmithing, Saddlery, Horseshoeing, and Pack Trains are found in this gallery. The displays include all of the Army's saddles; pack, artillery and cavalry. Among these various types of saddles, President Franklin Pierce's saddle from the Mexican War of the 1840s and Ulysses S. Grant's Grimley Saddle from the Civil War are highlighted. Other activities interpreted for the museum visitor in this gallery include QM dog training equipment, and an explanation of the "Great Camel Equipment" of the 1850s, wherein dromedaries were used to transport supplies across the deserts between Texas and California before the railroad took precedence.

**Ships in the Army?** In the gallery area devoted to the Army Transport Service, operated by the Quartermaster Corps until 1943, are a ship model of the World War II era, the log of the USAT Sumner, the first Army Transport ship to circumnavigate the earth, and the insignia and uniforms of this too often forgotten branch. Many visitors, civilian and military alike do not realize that at one time, the U.S. Army had more ship under its jurisdiction than the Navy. Other transportation items are housed outside of the museum and include an Army wagon and team; General Eisenhower's personal van from World War II; a 1922 Model-T supply truck; a 1918 "Liberty" supply truck; a World War II DUKW, an amphibious craft used for transporting supplies from ship to shore; and fuel carrying tires, which when filled with jet fuel were attached to trailers and rolled behind transport vehicles.

The development of rations, as well as the preparation of food in the field as well as the garrison is outlined in the museum's Subsistence galleries. Examples of rations, as well as equipment and utensils from the Civil War to the present are displayed here, as are the products of the Army

cook's application of a wide range of technical and creative skills; entries from the Annual Culinary Arts Competition.

Heraldry, a former Quartermaster function is addressed in an exhibit area that contains the largest collection of Presidential flags in the nation, as well as the first U.S. Army flag, the first fifty star American flag, and the first American flag carried to the summit of Mount McKinley, Alaska, the highest point in America. A large collection of U.S. Army shoulder insignia, unit crests, and a large display of branch collar and cap insignia since the Civil War is also included as part of this gallery.

The Graves Registration mission, and memorial functions are not overlooked. The original model for the Tomb of the Unknown Soldier, and the plan for Arlington National Cemetery, both designed and planned by the QM Corps are here in the museum. Identification tag development is the subject of another exhibit, and the personal belongings from part of the crew of a B24 Liberator bomber, lost in the desert during World War II is preserved here, a reminder of just how significant any individual's personal effect may be.

The last functional area exhibit, a new one at the museum, is "Supply by Sky", which provides a glimpse of the QM Airdrop mission. Examples of supply loads airdropped since World War II; models illustrating airdrops of vehicles; clothing and equipment used as part of airdrop/airborne missions past and present, including a parachute used in Grenada during 1983; are all included.

Other exhibit areas take on a different form. In one gallery, the Civil War period is represented. Highlights in this section include a wagon used to transport the personal belongings and equipment of General Ulysses S. Grant. Exhibits of Northern and

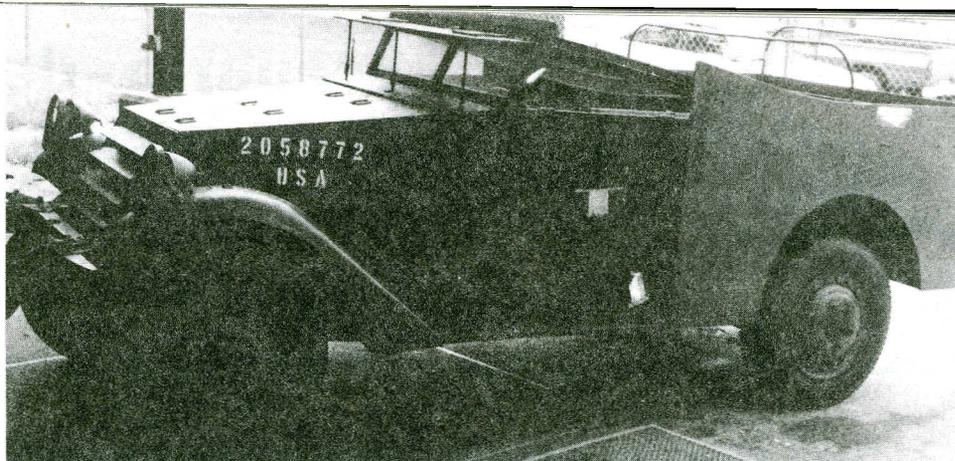
Southern forces are juxtaposed with an emphasis on QM related equipment and soldier personal gear.

World War I is represented by another period display. A balloon basket used by the 10th Balloon Company, with an accompanying uniform and photos of France during 1917 and 1918 is one of many items of interest. A World War I trench scene, and a guard post diorama accentuate the displays of Quartermaster equipment and the role of the Quartermaster in outfitting the soldier for combat so far from home. Included in this gallery are a mounted infantryman and a masked trench warrior of the period.

One more exhibit area, the General Officer's Gallery, is currently housed under the museum's roof. The personal jeep used by General George S. Patton, Jr, in Europe during World War II and specially, modified for him by the addition of a more comfortable seat from a Mercedes, cut down trombone horns fitted to an air compressor, and armor plating for protection, is of particular interest for many museum visitors. Uniforms belonging to General Eisenhower, and flags of general officers from each service branch are also part of the collection as is the desk used by the Quartermaster General from 1912 to 1963.

Army art rounds out the museum's collection. The museum houses the original drawings by renowned Army artist H. Charles McBarron, depicting clothing and equipment of the American fighting man from 1775 to the present. Drawing and paintings by Life Magazine artists from the World War II era, illustrating the lives of soldiers and the warfare of that time are also on display.

The Quartermaster Museum is one of the only Army museums with a Curator of Education.



*M3A1 Scout Car, 1941 is a recent acquisition in the Museum's Transportation Section*

When the museum education program was developed to support the QM Historian's block of instruction on QM history as mandated by QM School policy and TRADOC regulation, it was well received, to the extent that the need for a full-time staff member to coordinate the program soon became apparent. The Curator of Education currently is responsible for the coordination and development of programming which includes classes for AIT students, Basic and Advanced NCO course attendees, Students from Warrant Officer Course, and JROTC groups. Programs for the Basic and Advanced Quartermaster Officer Classes and Reserve and National Guard Units assigned to Fort Lee are another part of the educational agenda at the museum. The educational offerings have also been extended to include tours and presentations to schools and community organizations, and recently to include outreach programs, all aimed at defining what a Quartermaster is, and what he does. Requests for information regarding the implementation of educational programming have been received from other Army museums interested in expanding their scope.

Currently two new galleries are being assembled. One will be dedicated to the former Quartermaster function of construction, the other to Liquid Logistics and Field Services. These new galleries will be open to the public as this edition goes to press. In the future, the museum has plans to expand its gallery space, storage space, and

reference library. These efforts are being coordinated by the Quartermaster Foundation, a nonprofit organization which is currently engaged in raising funds for this project. The QM Foundation also operates the museum shop towards this end. As envisioned, the expanded museum would be reorganized to reflect the time line as well as functional areas. It would also have the space necessary to depict the most recent developments and contributions of the Corps; activities of the Corps since the Vietnam era are currently given only the most cursory representation due to space limitations.

The expanded space and new floor plan would also enable the museum to more fully explore Quartermaster contributions to the U.S. Army and the nation as a whole by expanding the scope of present gallery areas as well as allowing for changing exhibits. Through these efforts at more effective presentation and interpretation, the Quartermaster Museum hopes to ever illuminate the role of the Quartermaster as it educates the soldier of the future.

*Thurlow V. Cargill is the Museum Curator at the Quartermaster Museum, U.S. Army Quartermaster Center, Fort Lee, Virginia.*

*Luther D. Hanson is a History Specialist at the Quartermaster Museum, U.S. Army Quartermaster Center, Fort Lee, Virginia.*



# Scenario - determined Computer Assisted Logistics Planning

The U.S. Army Logistics Center SCALP Team has several software programs available in its Logistics Management Series. In the June issue of the QMPB, one of those programs, the POL RDT, a program designed to estimate bulk petroleum fuel consumption was described. In an effort to disseminate more information about this series to possible users in the field, two other programs that are part of the Logistics Management Series are described below.

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## TITLE: *CLASS / PLANNING*

**DESCRIPTION:** This logistics program assists the unit in planning ration requirements. It is tailored to allow the unit to choose various types of rations, determine a ration mix, specify climate and geographical area, and a summary of rations required including a printed ration request form, filled out. The program also provides information for air load planning purposes.

**HARDWARE REQUIREMENTS:** Any IBM compatible computer; a 640K RAM storage capability is recommended.

**SOFTWARE REQUIREMENTS:** MS-DOS 2.0 or higher operating system, and LOTUS 1-2-3 software, versions 1A and 2.01 are available.

**INTENDED USERS:** Division/Brigade/Battalion level G-4/S-4 planners who need immediate ration calculations.

### INPUTS:

Personnel to be fed.  
Climatic selection.  
Geographical selection.  
Days before resupply.  
Meals fed daily.  
Required date of delivery.  
Percent of rations by type.

### OUTPUTS

Total meal requirements by type.  
Meals troops will carry.  
Total cases, pallets and weight  
and cube figures. Includes  
quantity of aid stations, sundries  
packs, and survival packs.  
DA 2058-R ration request form,  
printed out.

**STATUS:** Operational.

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## TITLE: *SCALP DEMONSTRATION*

**DESCRIPTION:** This demonstration logistics program called Scenario-determined Computer Assisted Logistics Planning was developed for rapid unit deployment. The SCALP program itself will require the SCALP team to load the units TO&E and various lists into the program to initialize it. Once loaded, the program allows a unit to build a task force and provides the user with calculations for rations, water, POL, ammunition, CTA-50-900. equipment lists, and checklists for maintenance, medical, and Central America. The majority of the output is determined by the selection of climate, and geographical area of deployment. Operational planning factors are used by this program. For demonstration purposes, this disk uses the example of the 82nd ABN Division. A unit can request upload on the SCALP program after reviewing the demonstration disk.

**HARDWARE REQUIREMENTS:** Any IBM compatible computer, recommend 640K RAM memory storage capability. The actual unit SCALP program consists of approximately 20-40 disks.

**SOFTWARE REQUIREMENTS:** MS-DOS 2.0 or higher operating system and LOTUS 1-2-3 software package, both versions 1A and 2.01 are available.

**INTENDED USERS:** G-4/S-4 at Division or Brigade level that performs logistics planning on a perpetual basis for deployment, exercises, or daily operational planning.

**INPUTS**

Task force to deploy.  
Days before resupply for rations, POL and ammo.  
Types of rations.  
Percent of basic load.  
Climate and geographical area of deployment  
Equipment quantity adjustments.

**OUTPUTS**

Task Force structure.  
Class I requirements including including DA 2058-R.  
CTA-50-900 requirements.  
Ammunition requirements, including DA 581 request form.  
POL requirements.  
Water requirements.  
POL & Water storage needs.  
Equipment listing.  
Maintenance, Medical and Central America checklists.

**STATUS:** Operational.

This program is a DEMONSTRATION PROGRAM ONLY, and does not reflect the entire SCALP package provided to unit.

To request a copy of these programs send one floppy disc for each software program desired. Other software packages now available in the Logistics Management Program Series include:

**POL PROJECTIONS**  
**CONVOY PLANNER**  
**LOCALLY AVAILABLE MATERIAL**  
**AND SERVICES**  
**MOS SUBSTITUTION**

**AMMUNITION TRACKER**  
**SUPPLY AND SERVICE LOCATOR**  
**SUSPENSE TRACKER/ACTION TRACKER**  
**BRIGADE BUDGET TRACKER**

Other programs are currently under revision or being developed. For more information, or to request your copy of a software program, please contact:



**CDR, U.S. ARMY LOGISTICS CENTER**  
**ATTN: ATCL-OAI (SCALP TEAM)**  
**FT. LEE, VIRGINIA 23801-6000**  
**AUTOVON: 687-5202/4686**  
**COMMERCIAL: (804) 734-5202/4686**

## FIELD BAKERY PLANT

On 15 June 1988, The Required Operational Capability (ROC) for the new Field Bakery Plant (FBP) was approved by the Headquarters, U.S. Army Training and Doctrine Command. A ROC is the Army's definitive statement describing the material solution to a mission area deficiency identified through the Concept Based Requirements System (CBRS). When adopted, the new Field Bakery will replace the veteran M-1945 Mobile Bakery Plant, and will be used in the Corps area to provide 18,000 pounds of bread per day to approximately 55,000 troops.

## U.S. ARMY CULINARY ARTS TEAM (USACAT)

United States Army Culinary Arts Team (USACAT) competed in the National Restaurant Association Culinary Salon in May 1988. In a special Salon, "Springfield to Frankfurt II", preparing for the World Culinary Olympic Competition, USACAT gained three Gold and three Silver Medals, coming in second in that competition to the Western Region with the Walt Disney World Team coming in third. USACAT will compete throughout the five days of the Frankfurt Competition in October, with different static displays on each day at the USACAT booth.

## RESERVE COMPONENT FOOD SERVICE MANAGEMENT COURSE

Beginning about January 1989, USARF personnel will be able to attend the new TRADOC-approved Reserve Component Food Service Management Course. This course is designed for MOS 94B enlisted personnel, SFC and above, who are assigned or under orders for assignment to a food service supervisor position. It is also available for commissioned officers below the rank of lieutenant colonel holding AOC 92G, and warrant officers holding MOS 922A. The course is to be taught and managed by Continental U.S. Army personnel, but Quartermaster Certificates are awarded upon successful completion of the course. The purpose of the course is to prepare soldiers with the skills and knowledge necessary to manage a food service operation and to serve in the position of food advisor, emphasizing duties in a combat environment. Major subject areas covered are the Army Food Program, food service personnel functions, menu board activities, nutrition awareness, inspections, budgeting, sanitation, management theory, subsistence supply, Connelly Awards, subsistence accountability, and field feeding operations.

# SUBSISTENCE

## 94B TRAINING - NEW COURSE

A pilot 5-week course will be run at Fort Lee, VA, in Oct/Nov 88 to launch the proposed "Advanced Food Preparation and Nutrition Course." The course is aimed at improving the craft standards at the E4 level and encouraging reenlistment of well-motivated MOS 94Bs for a second terms. The course will concentrate on advanced cooking and baking techniques, special meals/buffets and breakfast bar. It will also include field and operational bread baking instruction.

## FOOD SERVICE SANITATION TRAINING FOR RESERVE COMPONENTS

Technical Bulletin 530, "OCCUPATIONAL AND ENVIRONMENTAL HEALTH, FOOD SERVICE SANITATION, requires food service managers to attain certification in food service sanitation through a nationally recognized program. The Quartermaster School (QM) offers sanitation classes through its resident program but has also developed an exportable training package to allow reserve component units unable to attend resident courses to meet the requirements of TB 530. The program is administered by utilizing adjunct instructors. Those adjunct instructors are Reserve Component personnel who have attended a one week course consisting of technical training about foodborne disease and food service sanitation and received a 90% or higher score on the final test. Training materials include Quartermaster School material as well as training aids obtained from other government and commercial sources. Much of the class work can be completed outside of the classroom leaving the adjunct instructor free to structure the training in the most effective way for his unit. Final tests are administered by the adjunct instructor, then sent to the QM School for grading; students obtaining at least a 75% score on that test receive QM School certification. In the first half of FY 88, 15 adjunct instructors trained 593 students at their units, many of whom would not *had the opportunity to receive other instruction.*

# FYI

## FORWARD LOGISTICS EXCHANGE (FLEX) PALLET

Although FLEX pallets are authorized by CTA 50-909, a standardization description requirement will delay fielding of FLEX pallets until 3rd Qtr FY 89. Action is currently being taken by Belvoir Research, Development, and Engineering Center to reverse engineer the Schaefer FLEX pallets to develop a technical data package/level 3 drawings. From this a standard purchase description will ensure supportability, standardization, and ultimately decrease the cost of FLEX pallets by encouraging local market competition.

## TRAINING ON THE STANDARD ARMY RETAIL SUPPLY SYSTEM (SARSS)

The Quartermaster School (QMS) is currently providing Standard Army Retail Supply System (SARSS) training to all Materiel Control and Accounting Specialists (MOS 76P10) in Advanced Individual Training (AIT) courses. Training will also be provided to Materiel Storage and Handling Specialists (MOS 76V10). This training is primarily devoted to SARSS procedures at Direct/General Support supply activities. Selected MOS 76P20/30/40 and Repair Parts Technicians (MOS 920B) will receive Division/Separate Brigade level (MMC) SARSS-2AD training. The projected training start date for SARSS-2AD training is 1st Qtr FY 90. In addition, training will be provided to selected MOSs 76P, 76V, 76Z, 77F, 92B, and AOC 92B/SARSS-2AC/2B/3 training will be provided in Basic and Advanced Courses. The Basic Course is expected to start in 2d Qtr FY 91 and the Advanced Course during FY 92.

## MK-19

The MK-19 is a self-powered, air cooled blowback 40MM grenade launcher capable of a cyclic rate of 325-375 rounds per minute. It will engage point targets up to 1500 meters and provide suppressive fires up to 2200 meters. The Quartermaster (QM) School was notified by the U.S. Army Armament, Munitions, and Chemical Command (AMCCOM) of the projected fieldings of the MK-19. The weapon will be fielded to the 9th ID and Johnson Island at Fort Lewis, WA, in 2d Qtr FY 89. It is also projected that the MK-19 will be available to the training base in FY 89. Unit Supply Specialists (MOS 76Y) will be trained at Fort Lee, VA and Fort Jackson, SC. Quartermaster Officer Advanced/Basic Course students will receive familiarization training on the MK-19 upon receipt of the training equipment.

## SUPPLY EXCELLENCE AWARD

On 19 May 1988, the Deputy Chief of Staff for Logistics announced the recipients of the third annual Chief of Staff, Army, Supply Excellence Awards. The awards program, administered by the Quartermaster General, recognizes individual and organizational excellence in supply operations Army-wide. The winners were presented their awards, at ceremonies held at the Pentagon, in August.

The winners and runners-up, by component and category, are --

### Active Army MTOE Units

- Company, Battery, or Troop

Winner - 21st Transportation Company, Yong San, Korea (EUSA)

Runner-up - 56th Aircraft Maintenance Company, Schofield Barracks, HI (WESTCOM)

- Battalion or Squadron

Winner - 3rd Battalion, 325th Infantry, Vicenza, Italy (USAREUR)

Runner-up - 3rd Military Intelligence Battalion, Pyong Taek, Korea (EUSA)

### Active Army TDA Organizations

- Company, Battery or Troop

Winner - A Company, U.S. Army Support Command Hawaii, Schofield Barracks, HI (WESTCOM)

Runner-up - Battery D (MLRS) 1st Battalion, 78th Artillery, Fort Sill, OK (TRADOC)

- Battalion or Squadron

Winner - U.S. Army Field Station, Kunia, HI (INSCOM)

Runner-up - US Army Medical Department Activity, Fort Lee, VA (HSC)

### Army National Guard Units

- Company, Battery, or Troop

Winner - Headquarters Company, 228th Signal Brigade, Spartanburg, SC (SCARNG)

Runner-up - 1137th Military Police Company, Kennett, MO (MOARNG)

- Battalion or Squadron

Winner - 1st Battalion, 129th Field Artillery, Richmond, MO (MOARNG)

Runner-up - 4th Battalion, 114th Field Artillery, Newton, MS (MSARNG)

### U.S. Army Reserve MTOE Units

- Company, Battery, or Troop

Winner - 883rd Maintenance Company, Honolulu, HI (WESTCOM)

Runner-up - Headquarters Company, 561st Support Group, Omaha, NE (Fifth Army)

- Battalion or Squadron

Winner - 980th Engineer Battalion, Wichita Falls, TX (Fifth Army)

Runner-up - 448th Engineer Battalion, Fort Buchanan, PR (Second Army)

## GRAVES REGISTRATION DOCTRINE

The primary graves registration doctrinal publication is FM 10-63, Handling of Deceased Personnel in Theaters of Operation. Rewrite of this publication will begin 4th Qtr FY 88 to incorporate recommendations from the field, and the DA DCSLOG sponsored Joint Working Group on Graves Registration. The new manual will include new or expanded procedures doctrine for collection point operations, handling contaminated remains, identification processing and temporary burials. Recommendations to improve the current FM 10-63 may be forwarded to the Quartermaster School, ATTN: ATSM-DPT, Fort Lee, VA 23801-5036 using DA Form 2028 (Recommended Changes to Publications and Blank Forms.)

## UNIT LEADER GRAVES REGISTRATION TRAINING

All unit level leaders (Officers & NCOs) should know how to care for/handle deceased personnel during periods of hostilities. In response to this need the Quartermaster School has recently developed a Graves Registration Training Support Package (TSP) and graphic aids supplement for use at the unit level. Company commanders are responsible for the search, recovery and evacuation of deceased personnel from their area of responsibility to a designated collection point or temporary burial whenever required by the operational situation. The TSP contains the necessary materials and doctrine to train NON-GRREG personnel to perform these tasks. The TSP has been forwarded to Army Schools for use in training at the BNCOC, ANCOC, SGM Academy, Advanced Officer Courses, Combined Arms Services Staff School, and Command and General Staff College. Until the distribution system for the Army is arranged with the Army Training Support Center limited number of copies are available from the Quartermaster School. Requestors should ask for DA Pamphlet 10-2-C002 TSP, Perform Unit Graves Registration (GRREG) Functions (NON-GRREG Personnel) by writing the Quartermaster School, ATTN: ATSM-GR, Fort Lee, VA 23801-5000 or calling AUTOVON 687-3831.

## SINGLE TRAILER LAUNDRY UNIT SAFETY HAZARDS

Two safety hazards were found on the single trailer Laundry unit and are as follows:

- The 10 KW generator muffler system has a coupling, NSN 4730-00-491-0030 which disconnects the exhaust pipe from the muffler. A brass gasket is used to prevent the escape of exhaust fumes inside of the working tent. The gasket, NSN 5330-00-776-7568 that is presently in the supply system will not fit into the coupling. This will cause the emission of carbon monoxide into the working tent which could result in serious illness. An auxillary generator with equivalent power should be used outside of tent or muffler elbow and exhaust pipe should be connected with a threaded metal pipe until corrections are made on the brass gasket.
- Some of the commercial connector plugs that are used in lieu of connector plug, NSN 5935-00-981-6078 on 25 feet electrical cables for the eight shower head bath unit and the single trailer laundry unit are not waterproofed. To prevent seepage, use adhesive sealant, NSN 8040-00-225-4548 to waterproof the rear of connector plugs.

# LIQUID LOGISTICS & FIELD SERVICES

## BODY LOUSE TOXICANT (BLT) POWDER

A new BLT (pediculicide) powder is being tested by the Academy of Health Sciences in Fort Sam Houston, TX, as a replacement for lindane, which has been identified as a potential oncogen by the Environmental Protection Agency (EPA), and may be banned from further human use by the U.S. Food and Drug Administration (FDA). The Army has already restricted its use.

The BLT powder will provide protection against epidemic relapsing fever, and trench fever, all transmitted by the body louse, *Pediculus Humanus*. Resistance to lindane by body lice has been documented in at least 21 countries representing every militarily significant area of the world. The BLT powder is necessary to enable personal, unit or mass delousing of clothed individuals since body lice live and lay eggs in the clothing and move to the body only to feed.

The BLT powder will be packaged in 2 ounce and 25 pound containers suitable for long-range storage and transport by land, air and sea. The 2 ounce containers will be stocked within each deployable TO&E unit. Basis of Issue (BOI): one container per assigned individual. The 25 pound containers will be stocked in specific medical and quartermaster field units authorized powered mass delousing equipment. Both sized containers will be stocked in war reserves.

Initial Operational Capability (IOC): 2d Quarter FY 89.

## PETROLEUM AND WATER ADVANCED NONCOMMISSIONED OFFICER COURSE

The Petroleum and Water Advanced Noncommissioned Officer Course (P&WANCO) is part of the Noncommissioned/Commissioned Officer Development System. This course is attended by Noncommissioned Officers in the grade of E-6 and E-7. This course provided integrated training for Noncommissioned Officers having Petroleum Supply (77F), Petroleum Laboratory (77L) and Water Treatment (77W) MOSs. In the core phase of the course the students receive training in unit functions; map reading, nuclear, biological, and chemical (NBC); general military subjects; organizational effectiveness; training management; logistic staff operations and leadership. The technical phase of the course provides training in Class III and water supply and distribution point operations; waterfront and terminal operations; pipeline operations; aircraft refueling; petroleum laboratory operations and water treatment operations. Upon completion of the P&WANCO course the Noncommissioned Officer will possess the skills to perform petroleum management duties; water treatment management duties and petroleum laboratory management duties. All graduates of this course receive a Certificate of Qualification.

## ASSIGNMENT OPPORTUNITIES

Active Army rigger units/activities are located in several states including Florida, Georgia, Alabama, North Carolina, Virginia, Kentucky, New York, Arkansas, Pennsylvania, Arizona, Texas, Massachusetts, California, and Washington. OCONUS units/activities are located in Panama, Hawaii, Italy, Germany, Alaska, Japan, Okinawa, and Korea. The largest number of riggers are located on Fort Bragg, North Carolina (approximately 55 percent) where FORSCOM, TRADOC, and special operations units are based.

## RAISED ANGLE MARKERS

Air Force Combat Control Teams have recently been marking the points of impact (PI) on airdrops with raised angle markers (RAM) rather than the daytime block letter markings. The RAM is a one-third cone configurations of orange or red panels standing approximately 6 1/2 feet high and positioned on the PI. The use of the RAM enhances air crew identification of the PI, and its use will be fully implemented by 1 October 1988. Jumpmasters should pay particular attention to this item during the aircrew and jumpmaster troop briefings. Use of the RAM should be relayed to all jumpers so that it is not confused with unit assembly aids.

## SLING/EXTRACTION LINE PANEL (LINE BAG)

Effective 1 October 1988 all low velocity airdrops will require the use of the line bag. This was formally announced by MAC DOXT message 110830Z Feb 88, subject: Sling/Extraction Line Panel (Line Bag).

## AIRDROP SYSTEMS TECHNICIAN WORKING GROUP

The annual Working Group will be held at Fort Lee, Virginia on 21 October 1988 following the Quarterly Airdrop Review and Malfunction Analysis Board on 19-20 October 1988. The Working Group will focus on issues dealing with airdrop doctrine, force structure, new equipment and training.

## NEW AIRDROP CONCEPT(UPDATE)

In the March 1988 issue of the Professional Bulletin it was reported the QM School has been given the go ahead to develop an implementation schedule. The key events in the implementation schedule deal with the development of new TOEs to support the concept. The Light Airdrop Company, with a basis of allocation of one per Corps, will be entered into the consolidated TOE update (CTU) file in April 1989. This unit will be capable of approximately 120 tons of airdrop resupply per day utilizing primarily the A-22 cargo bag and the G-12E cargo parachute. The Heavy Airdrop Supply Company, with a basis of allocation of one per TAACOM, will also be entered in the CTU in April 1989. This company will be capable of approximately 200 tons of airdrop resupply per day utilizing platforms and containers. A new TOE is also being developed for an Airdrop Equipment Support Company for the Airborne Corps. This unit will be entered in the CTU in October 1989 and will be capable of deploying the airborne elements of the Airborne Corps -- similar to the Airborne Division's AES Company.

## MCI-1C PARACHUTE

TROSCOM has a procurement action working for 7,700 MC1-1C canopies. The FSN is 1670-01-262-2360 and the cost is \$352 each. Delivery to those units with valid requisitions will begin in August 1988 and will run at 500 per month. The MC1-1C canopy is made from a no porosity material which significantly reduces the jumper's rate of descent. TROSCOM also has a procurement action working for complete MC1-1C assemblies, but these will not be available for approximately a year. The NSN for the complete assembly is 1670-01-262-2359 at a cost of \$665 each. For additional information on availability contact the TROSCOM Air Delivery Liaison Officer at AUTOVON 236-9933.

## AIRDROP CAPABILITY -- C-130 AND C-141

The Military Airlift Command (MAC) has recently approved the airdrop of loads weighing up to 42,000 pounds from the C-130 aircraft. This will accommodate the recently type classified 42,000-pound Low Altitude Parachute Extraction (LAPE) System and the 42K Low Velocity Air drop (LVAD) System scheduled for type classification in the 4th quarter, FY 88. The 42,000 pound capability is limited to specified aircraft by tail number. The C-141 is still limited to a peacetime capability of 38,500 pounds.

# NCOLP

SGM Michael J. Dwyer

The Noncommissioned Officer Logistics Program (NCOLP) is part of the Army Logistics System. Its purpose is to identify, train, and professionally develop a pool of NCOs with broad logistics operational knowledge in the fields of supply, maintenance, transportation and facilities management. When identified and trained, NCOLP members are placed in key logistics positions worldwide in order to promote a continuous logistical mobilization base.

The NCOLP was established in 1955 when the Quartermaster Corps created a Noncommissioned Officer Career Development Program. It provided a central control point for enlisted soldiers who had become highly qualified in depot supply and maintenance activities through a combination of experience and training. These soldiers were designated to be professionally developed and utilized in key logistical positions and so form a nucleus for expansion of the logistics system. In 1961, the Deputy Chief of Staff for Logistics (DCSLOG), HQDA, having recognized the importance of such a program organized the Technical Service Career Development Program to extend that function by instituting similar programs in the other technical services. In 1962, the Office of Personnel Operations (later MILPERCEN, now TAPA), became the responsible agent as the Technical Service Program was placed into the DA framework. In recent years the program has undergone considerable review and revitalization; command emphasis has been placed on promoting it and the number of positions identified with the NCOLP has steadily increased.

DCSLOG is the HQDA staff proponent for the current NCOLP. TAPA conducts and supervises the NCOLP with intensive personnel management. The U.S. Army Logistics Center is the executive agent for NCOLP position review, and the Quartermaster School is the proponent for NCOLP resident and nonresident training courses. MACOM/Installation commanders, command sergeant majors, and staff NCOLP monitors are all involved in managing the assignments and utilization of program participants within the framework of the command. Currently, the program is under review and is being revised by the proponent offices with member MOSs in order to ensure that the program reflects current developments within

the Army. Section II, Chapter 7, of AR 614-200 provides current guidelines and responsibilities applicable to the active and reserve components.

NCOLP positions are enlisted positions where a high level of responsibility is demanded in the performance or supervision of technical functions in more than one logistics field. Other NCOLP positions require that the personnel filling them provide input, based on the depth of their knowledge, experience, and perspective of the logistics field, into the making of policy decisions. Based on these considerations, commanders may determine that certain positions require NCO logisticians and so recommend that they be so designated. Recommendations are forwarded through administrative channels to ODCSLOG. Once approved for inclusion in the NCOLP, these positions will then be identified within applicable TDAs/TOEs with a "K" Special Qualification Identifier (SQI) in the fifth position of the MOS code. Positions may include:

- Key logistics staff positions in major commands, corps, division G-4 offices and support commands.
- Positions in organizations with primary logistics missions in support of combat operations, such as materiel management centers.
- Staff positions in logistics departments of service schools and integrating centers.
- Positions in logistics operating agencies such as depots and inventory control points.

The Quartermaster Corps has approximately 1,314 positions authorized requiring senior NCOs who are NCOLP qualified. Total active Army authorized positions are over 2,000. Two thousand one hundred positions exist in the Army Reserve and National Guard. Soldiers in grades E-6(P) through E-8 (E-9 for Reserve Components) who have a primary MOS listed in table 7-1, AR 614-200, may apply for entry into the NCOLP. Quartermaster MOSs include: 76P, 76V, 76X, 76Y, 76Z, and 77F. At this point, the Corps is critically short of, and actively recruiting 76Ps, 76Xs and 76Zs. Application is made by submitting DA Form 4187 (Personnel Action) through administrative channels to TAPA. Only NCOs possessing the highest personal and professional abilities will be

selected and retained as members of the NCOLP. Eligibility criteria, responsibility, assignments and utilization of personnel are contained in AR 614-200.

Active duty NCOLP entrants as well as ARNG/USAR soldiers may use nonresident or resident training to qualify for an SQI "K" and membership certification. The resident NCOLP course is conducted at the U.S. Army Quartermaster School, Fort Lee, Virginia. It provides members with a broad but comprehensive knowledge of supply, maintenance, transportation, and facilities management functions from brigade to wholesale levels. The curriculum addresses the current and anticipated logistical spectrum, utilizing the most current doctrine coupled with state-of-the-art technology. Currently, the course is being reviewed to see if a reduction in course length from nine to six weeks is possible.

Soldiers are chosen for entry into and trained for the program as a result of superior job performance and a record which reflects an ability to perform Army logistics management functions worldwide. Careers of NCOLP members are developed by assignments that are increasingly challenging. This combination is the winning one for the NCOLP, and a winning one for the Corps. The NCOLP ensures that highly trained and experienced Quartermaster soldiers are there to fill those positions requiring a high but broadly based level of technical proficiency both in times of peace and on any future battlefield.

POCs for those interested in the NCOLP program are:

Authorizations/Proponent Office for NCOLP  
SGM Dwyer: ODCSLOG  
Coordinator for NCOLP  
ATTN: DALO-RMM  
Washington, DC 20310  
AUTOVON 224-6727

Applications, NCOLP Monitor,  
Personnel Actions  
MSG Sledge: Senior Career  
Advisor/NCOLP Monitor  
ATTN: DAPC-EPM-L  
U.S. Total Army Personnel Agency (TAPA)  
Alexandria, VA 22331-0454  
AUTOVON 221-6428

Information on Course Attendance  
SFC Rosenbaum: NCOLP Course  
Director  
ATTN: ATCM-LCD-C  
Fort Lee, VA 23801  
AUTOVON 687-5536

*SGM Michael J. Dwyer is the ODCSLOG  
Coordinator for NCOLP, Washington DC.*

# The Inscrutable ORB

MAJ Nancy S. Austin

Your Officer Record Brief (ORB) is a key part of your Official Military Personnel File maintained at the U.S. Total Army Personnel Agency (TAPA). It is the document that precedes you to your new duty assignment. Your official military personnel file is protected by the Privacy Act but the ORB was designed to permit gaining commands the opportunity to have the basic data needed to make initial assignments on an inbound officer. Additionally, ORBs provide incoming commanders and supervisors with timely information about the qualifications or lack thereof possessed by officers in their new area of responsibility. Just as important, promotion and schooling boards depend on the ORB to provide critical reference points.

Have you ever been to your local Military Personnel Office (MILPO) for an annual ORB update only to find that the changes made last year are not reflected? Are your duty descriptions unclear, incorrect, or incomprehensible? If so, do not despair —almost all officers struggle to keep this all important document accurate and complete. This article is designed as a "do-it-yourself" guide to ORB updating. Keeping the ORB straight is not as difficult as it seems.

The ORB is an officer's resume in an automated format. It is the document from which decisions are often made on initial duty assignments, schooling, and one of the easiest methods of sizing up a military career. Other than duty performance (which is the most important element of an officer's file), the ORB provides more information about an officer than any other single item in the file.

It is important to keep in mind that not all portions of the ORB are equally critical. If the Current PPN in Section III is incorrect it will probably not have any impact on your military career (no one knows what it means anyway). However, if your date of rank is wrong your file may not be pulled at the right time for selection boards. DA Pam 640-1 is the best guide to specifics on the ORB. Our experience has shown that some areas of the ORB should be closely monitored. These portions are highlighted below:

**SECTION 1 - ASSIGNMENT INFORMATION.** Most of the blocks are self explanatory but the Branch Area of Concentration (AOC), Control Career Management and Projected

Career Management Fields may be confusing. If you have completed an advanced course the AOC should not be A. AOC A applies to MEL 7 lieutenants (basic course graduates.) All Quartermaster Officers should have AOC B on their ORB as a minimum after attendance at an advanced course. Control and Projected Management Fields are used by TAPA and cannot be changed by a local MILPO. These fields represent how you are controlled by TAPA in your current assignment (Control Field) and the speciality you are expected to work in during your next assignment (Projected Field). For all intents and purposes 92Z is 92B — 92Z is a computer generated speciality which allows assignment managers to assign any Quartermaster (QM) officer, regardless of AOC, to that position. "Z" is not a valid AOC.

**SECTION II - SECURITY DATA.** Security Data is of obvious importance. The only agency which can change your security clearance is the Central Clearance Facility, Fort Meade, MD. If your security clearance was deleted from your ORB in 1986, the only way to get it reinstated is to send verification through a local security office to Fort Meade. The massive deletion of security clearances was an attempt to have many outdated clearances verified. Getting clearances back on ORBs has been a slow process and some are still not correct.

**SECTION IV - PERSONAL/FAMILY DATA.** The three portions of this section which are most important to an officer are the country of citizenship, height and weight data, and current address. An officer may not become Regular Army (RA) and/or may be denied certain security clearances if listed as having other than U.S. citizenship. Boards pay particular attention to an officer's height and weight information — make sure the data on your ORB, especially height, matches with your OERs. Finally, the address on your ORB is often used for a mailing address. Make sure it is current so that you receive welcome packets, assignment information and other DA directed mail.

**SECTION VI - MILITARY EDUCATION AND SECTION VII - CIVILIAN EDUCATION.** Military Education Level (MEL) and Civilian Education Level (CEL) are extremely important entries on the ORB. If you are in the zone for MAJ and are not a MEL N (CAS3 completion) or

in the zone for LTC and have not received a MEL 4 (CGSC completion) your changes for promotion will be greatly reduced. At the same time, decisions on functional area designation and some assignments may rely heavily on civilian educational background. Do not spend a lot of time worrying about short 40-hour courses appearing on the Military Education portion. Do concern yourself with the MEL and CEL as well as types of civilian degrees. Once again, DA Pam 640-1 is the best reference for these data elements.

**SECTION VIII - AWARDS AND DECORATIONS.** Only one item needs to be emphasized in regards to the Awards and Decorations Section. Be certain that every award shown on the ORB is substantiated by award orders on your Official Personnel File (microfiche.) If you recently received an award and are being looked at by a board, be ready to provide award orders to the board if it has not had time to be placed on the fiche. Centralized boards are looking very closely at awards and often call career branches to provide award/decoration verification.

**SECTION IX - ASSIGNMENT HISTORY.** Without a doubt the most difficult portion of an ORB to keep current is this section. Rather than try to describe this section, it is better to give

good examples of organizations and duty titles. A rule of thumb for duty titles is to make them clear, use few abbreviations, and use terms easily understandable by combat arms officers. The duty title should always agree with the duty description on your OER. It should reflect what you did and not the TOE/TDA duty description. The date of the last OER is not a crucial entry in terms of selection for actual promotion or job opportunities. It can only be changed by the OER Section at TAPA. Do not be concerned if this element is incorrect, simply wait for the next OER to generate an update.

**SECTION X - REMARKS.** This section contains important information such as assignment considerations, date of your last official photograph, and preference statement data. Make sure you have an up-to-date photo in your file, particularly if you are going before any type of board. By regulation your photo should be less than three years old, but it should always match your appearance and/or changes -i.e., awards, rank, etc. Also, keep an updated preference statement on file at TAPA to assist your assignment managers in considering your future assignments or training.

The assignment managers at TAPA literally manage thousands of officers. We are faced

(ORGANIZATIONS)	
GOOD	NOT SO GOOD
0002 S&T BN A CO 2D ID	0002 CS BN A MAIN SUPPL
0407 S&T BN E CO 82ABN	0407 CS BN E AERIAL DEL
0029 SUPPLY & SERVICE CO	0029 CS CO SUPPLY/SERV
0259 FIELD SERVICE CO	0259 CS CO FIELD SVC
0725 MAINT BN C CO 25 ID	0725 MT BN C FORWARD
DUTY TITLES	
GOOD	NOT SO GOOD
COMPANY COMMANDER	CDR
POL PLATOON LEADER	PLT LDR
SUPPLY PLATOON LEADER	PLT LDR
DISCOM S3	SPO
BATTALION S3	S3
LOGISTICS STAFF OFFICER	LOG STAFF OFF
DIV PROPERTY BOOK OFFICER	DPBO/PROPERTY ASSET
	MGMT OFF
BATTALION COMMANDER	BN CDR
SUPPORT OPERATIONS OFFICER	SPTOPNS
FORWARD AREA SUPPORT COORDR	FASCO
BATTALION S4	CMD LOG OFFICER
DIV REPAIR PARTS OFFICER	CLASS IX MGMT OFF
BATTALION S1	ADJUTANT

*Career Notes*

with the same manpower and budget cuts that you are in the field. This adds more importance to keeping a current and accurate ORB. Use your local MILPO to input corrections and make changes. They have a much smaller population of officers to manage and can make most of the changes we can make at TAPA.

The secret to keeping your ORB updated is to complete your annual birth month audits and follow-up on the actions taken. MILPOs only receive ORBs quarterly so your input won't be immediately viewable on a hard copy ORB. However, changes to an ORB made by a MILPO do generate a by name listing of automated

entry changes, normally within a week after the changes were input. It is advisable that you revisit your MILPO a couple of weeks after the annual audit. Take a look at the entries made to be sure that they were input and that they were complete and accurate. Remember, individual persistence is the key to success in the ORB update process.

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## Functional Areas

CPT LOU COCKER

By the seventh year of active Federal commissioned service, all commissioned officers will have the opportunity to indicate their functional area (FA) preference as part of the FA designation process. Functional areas are groupings of officers by career field (other than branch) requiring significant education, training, and experience. Functional area designation has replaced the additional speciality (ADSPEC) designation process. Under the revised Office Personnel Management System (OPMS), many commissioned officers will be designated with both a branch and a functional area. No longer are officers allowed to choose a second branch as their functional area.

Some officers will be allowed to single track in their branch in order to meet Army requirements. This option is available to Quartermaster (QM) officers as well as those in Engineer, Combat Support, and the other Combat Service Support branches. Whether the officer is allowed to single track or is designated a FA is

based upon Army needs and individual qualifications and desires. DA Pamphlet 600-3, Commissioned Officer Professional Development and Utilization, describes the FA qualification criteria.

The Total Army Personnel Agency (TAPA) determines designation requirements by using projected field grade strengths, average attrition rates, and desired utilization rates. These requirements are then adjusted based on the size of the year group, proponent preferences, and Deputy Chief of Staff for Personnel guidance. Functional Area designation objectives are unique to each Year Group (YG).

Currently, the Quartermaster proponent is recommending that 65% of a year group be single tracked Quartermaster. This is due to the fact that the Quartermaster Corps is experiencing a shortage of officers, especially in the field grade ranks, and does not have the inventory to support a large number of officers utilized in FA. The Quartermaster proponent preferences for YG82 FA designations are:

FA		%	# of Officers
41	Personnel Programs Management	2.7	5
45	Comptroller	2.2	4
46	Public Affairs	0	0
48	Foreign Area Officer	0	0
49	Operations Research/Systems Analysis	3.3	6
50	Force Development	1.	2
51	Research and Development	7.7	14
52	Nuclear Weapons	0	0
53	Systems Automation Officer	3.8	7
54	Operations, Plans, and Training	1.	2
97	Contracting and Industrial Management	13.	24
		34.7	64

Note: The remaining 119 (65.3%) are designated single track.

Eligible QM officers receive a functional area information package between their sixth and seventh year of active federal commissioned service. Officers must submit DAPC-OP Form 854, Officer Speciality Preference Form, through their Personnel Service Company/Center to the QM branch representative at Total Army Personnel Agency (TAPA). Four FAs, or three FAs and "single track - Quartermaster" may be listed, in order of preference.

TAPA career managers consider education, training, experience, job performance, and preferences to determine which functional area designation will best service the Army and the officer concerned. Once final designations are

approved, the Officer Corps is notified through and an announcement article in the Army Times. Individual officers in the affected YG will receive notification letters from their respective branches.

Assignments to FA are based on Army needs and individual qualifications and desires. Quartermaster officers may serve repetitive and progressive assignments within a functional area or serve alternately in branch and FA assignments. Utilization will vary, dependent on inventory size, availability, and requirements.

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## ***Coming up in QMPB-***

***December 1988: Combat Field Feeding***

***March 1989: Petroleum Distribution  
(Corps Forward)***

***June 1989: Petroleum Distribution  
(Echelons Above Corps)***

The QMPB welcomes comments, questions, and article submissions from its readers. To contact us, please address your mail to:

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