SPECIAL MESSAGE from Brigadier General JACKSON

PACIFIC AREA SENIOR OFFICER LOGISTICS SEMINAR

OFFICE OF THE SECRETARIAT, U.S. PACIFIC COMMAND

Fellow Pacific Area Logisticians,

I will be leaving the United States Pacific Command in June 1997, to take command of the 19th Theater Army Area Command, Eighth United States Army in Korea. I am pleased to report that the United States Department of the Army announced that my replacement will be Colonel (Promotable) Philip M. Mattox. Colonel Mattox will be joining the United States Pacific Command from the United States Army, III Corps, where he served as the Assistant Chief of Staff for Logistics. He also completed a tour in Korea, three tours in Germany and a variety of tours in the United States. He served 14 years in the Armor Corps before transitioning to Logistics. I know that you will find him to be an outstanding professional addition to the PASOLS organization.

I would also like to take this opportunity to thank you for making this last year one of the best ever. As I move on, I take with me many happy memories which include working with senior defense logisticians across the Pacific. I am confident that Colonel Mattox will pick up my task of advancing logistics cooperation, which is vitally important to defense forces in the region. Best wishes for continued success.

Sincerely,

DENNIS K. JACKSON
Brigadier General, U.S. Army

PASOLS XXVI

Programme Highlights

Monday 4 August 1997

- PDC Meeting
- Welcome Reception

Tuesday 5 August 1997

- Opening
- Introduction of New Members
- Group Photo
- Inaugural Tea
- Presentations
    - Logistics Co-operation in Action - *Australia / Indonesia*
    - Technology Solutions - *Canada*
- Afternoon Sail on **HMCS HURON**
- Reception

Wednesday 6 August 1997

- Feedback Bangladesh Case Study
- Panel Presentations and Discussions
    - Internet Basics - *Canada*
    - PASOLS Home Page - *Australia*
    - PACALS Primer - *New Zealand*
    - Regional Maintenance Centre - *Thailand*
    - Emergency Expedited Support - *Korea*

Thursday 7 August 1997

- PDC Meeting
- Updates
    - PACS - *New Zealand/ Canada*
    - Quality Assurance - *Canada / Australia*
    - UN Training Centre - *Malaysia*
- Presentation "Technology Can Help" - *Japan*
- Case Study Results
- Special Address - *Commander of Maritime Forces Pacific Region*
- Presentation on Technology Solutions - *Bangladesh*
- LSG Meeting
- Visiting Nations Dinner

Friday 8 August 1997

Airshow Canada

- **Host Nation Dinner**

Saturday 9 August 1997

- LSG Report
- Closing Ceremony

Airshow Canada *will be held 6 - 10 August 1997 at Abbotsford, British Columbia. It is North America's only all-sector aerospace and aviation trade show. Five hundred exhibitors from twenty leading aerospace nations are coming to do business with senior government, defence and industry visitors from eighty countries. PASOLS delegates will be able to visit the exhibits and view the Abbotsford International Airshow, which shares the stage with Airshow Canada. This world-renowned flying event attracts up to 300,000 aviation enthusiasts.*

PASOLS
PROJECT DEVELOPMENT COMMITTEE

TONGA, April 1997

The twenty-sixth Pacific Area Senior Officer Logistics Seminar (PASOLS) Project Development Committee (PDC) meeting was held in Tonga, 23-25 April 1997. Attendees were: *Australia, Bangladesh, Brunei, Canada, Fiji, Kiribati, Korea, Malaysia, Papua New Guinea, New Zealand, Philippines, Solomon Islands, Sri Lanka, Thailand, Tonga and the United States.* The only nations unable to attend were *China and Singapore* .

The PDC reviewed past initiatives and action items. Highlights include:

Quality Assurance (QA) Forum. The Australian delegate spoke on the outcome of the initial meeting to determine interest in a continuing quality forum. Seven countries attended. It was agreed that the PDC propose to the LSG that the quality forum be continued. and that the QA Forum would present a 45 minute briefing at PASOLS.

Pacific Area Cataloguing System (PACS). Mr Takasaki, USA member of the PACS Working Group, briefed on a recommendation to form a permanent cell to advance this initiative. He sought approval to change the working group to a forum since the working group had completed its charter. He also proposed a symbolic signing of the charter at PASOLS XXVI and that the working group chairman be invited to speak at PASOLS. It was agreed that the working group would be converted to a forum to continue oversight of this initiative; that action on the permanent cell be deferred and re-evaluated at the next PDC; the signing be declined; and the chairman be asked to speak.

PASOLS Home Page. The Australian delegate briefed on proposed architecture for a PASOLS home page, including country formats, and division of responsibilities. The PDC agreed to recommend to the LSG that Australia continue to advance the home page. Each country will be encouraged to develop their own Home Page and provide access numbers to the Australian delegate not later than 1 July.

The PDC selected the following as panel topics for PASOLS XXVI:

Canada Case Study: Canada agreed to provide a discussion guide to the Secretariat once developed.

Information Technology (IT) Solutions to Logistics Challenges.

What Can be Done to Advance the **Top Five PACALS Initiatives**?

A draft agenda for **PASOLS XXVI** has been included in the final report.

Delivering Logistic Support To The Military Front Line

Commander Greg Lowe, ME, RNZN

It's all very well establishing a support infrastructure modelled on the elements of ILS, but how do you actually deliver front line support in an integrated manner? How do you put the established principles to work in a way which improves the efficiency and effectiveness of military operations? The Royal New Zealand Navy has teamed with the Royal Australian Navy to try and answer these questions as they develop the 'support at sea' solutions for the new ANZAC Class of frigates now entering service with both Navies.

The heart of the ANZAC Ships' solution is an integrated software system that handles all ILS activities at sea in a single database and associated applications. This system interfaces to a larger system ashore that directly supports the data necessary to deliver front line ILS.

The seagoing system is centred primarily around maintenance. In designing this system *(called the ANZAC Ship Maintenance and Planning System - AMPS)*, the joint Navy Project Office in Canberra has sought to identify cause and effect relationships in the operational scenario and create support directly for these activities. Maintenance is a core operational support activity and the system recognises the cause and effect relationship between **maintenance** activity and the **inventory and stores delivery** effort that supports it. Accordingly, these two core functions are closely integrated to maximise productivity and data transparency.

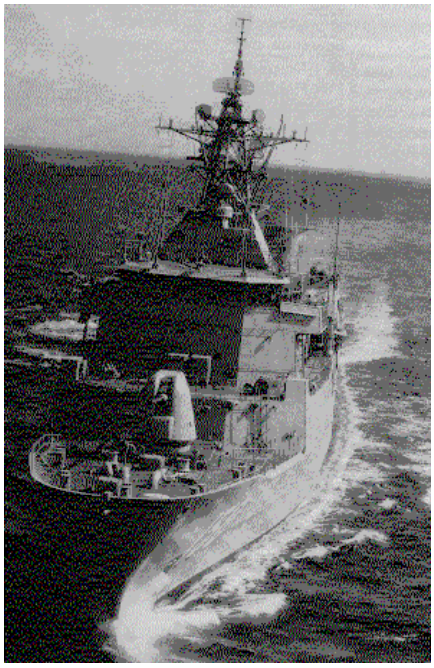
This leads to a number of activities to improve efficiency. For example, the maintainer has visibility of the complete parts breakdown of the system being maintained (through a clear hierarchy) and can seek inventory status of these parts both onboard and at the depot. Demands for inventory are transmitted to the supply department as an automatic result of planning the maintenance (no more 'air gaps' in the supply chain) together with the required delivery dates so that planning can start immediately for delivery. Where inventory required is not held onboard, requisitions are transmitted ashore (by a number of data transfer methods, including satellite link if necessary - the system also produces formatted military signals for urgent deliveries and notification of operationally significant defects). Greater control is also effected by this activity - the job number becomes the authority to draw the spares. All issues are associated with a particular job so greater visibility is provided in both inventory consumption and the cost of operating and maintaining individual systems.

It sounds good, but gets better. A number of other maintenance support activities are accessed from the AMPS maintenance core. These include an electronic library of engineering drawings, each linked to an appropriate level in the equipment hierarchy. The search engines allow access to engineering drawings in a matter of seconds instead of the traditional time consuming search through manual indexes and hard copy or microfiche storage systems.

System Overview

So how is all this done? The secret is a single database for the ILS activity, breaking down traditional ‘tribal’ barriers between the support branches and developing a view of data that is common to both engineering and supply disciplines. Having all ILS data on a single database means that the six user applications can access common data and provide the view required by each user profile.

Maintenance Management



This is the core of the AMPS application suite and is a flexible commercial product developed by an Australian company. Given the importance of getting the functionality right, this product *(Facilities Maintenance Management System - FMMS, from KDR Creative Software in Melbourne)* was chosen following a world-wide market review. FMMS is extremely flexible and includes scheduling tools for pre-planned, condition based shut down, and defect maintenance at all levels of the ship’s engineering organisation. Budget management and cost collection elements are provided to monitor the cost of maintenance.

Inventory Management

Fully integrated with maintenance functionality, Inventory Management *(Procurement Automation - PA, from Eden Technology in Sydney, the integrator of AMPS)* responds automatically to planned and defect maintenance requirements. This part of the system also supplies inventory management and stock control data to the onboard supply team. The common database and integrated reporting provides more meaningful management reports.

Document Management

A document management ‘vault’ has been constructed at the new ANZAC Class Logistics Office in Melbourne. ISDN data access is provided to users in both Navies so that only one storage (up to 400 GB) facility is required. A complete document index is carried onboard each ship, with a reduced ship set of logistic support documents (electronic drawings and technical manuals). Access can be direct from the maintenance management tools (in which case documents are filtered to only show those attached to the system or equipment being maintained) or by a separate ‘search and retrieve’ tool. A drawing not carried can be downloaded from the main repository anywhere, even by satellite at sea in urgent cases. Direct access to documentation from the maintenance tools allows a maintainer to receive a task, access documentation and data needed for the job, provide history file feedback, clearances etc, and complete the job, without handling a piece of paper. Access is provided in all ANZAC Ship spaces, but where the job is unsuitable for computer access, temporary printouts of selected data can be made. However, the master data is electronic to aid configuration management.

Configuration Management

A single database for all ILS data offers a unique opportunity for through life configuration management. The data is a snapshot of the 'Product Baseline' (in MIL-STD 973 context) at any particular point in time. Equipment configuration and history (resource use, maintenance, cost), inventory status and history, related engineering drawings and technical manuals - every piece of logistic support data required for the ship is in the database.

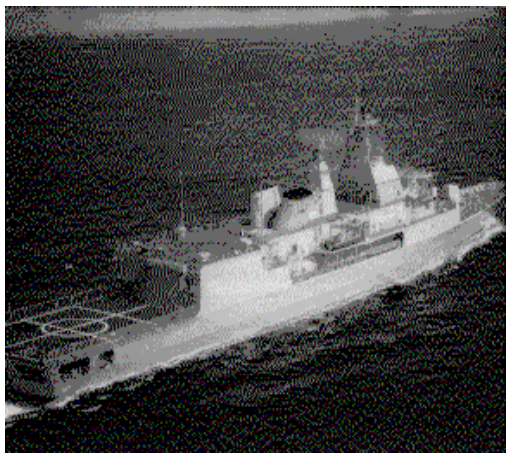
To capitalise on this opportunity, the AMPS development has integrated ongoing configuration management principles with the applications that control the data. Configuration Change Proposals (CCP's), ranging from corrections to manuals to major system changes are all handled in the same way - raised on the database, communicated ashore in the data transfer process then managed by a 'workflow' tool that monitors the change processes in both Navies.

The workflow system *('In-Concert' from X-Soft)* provides wide area visibility to the CCP status and related or attached data (drawing, reports etc), affording greater control to the management of engineering change.

Once new data is developed, data transfer procedures ensure accurate integration with the 'product baseline' data as systems are modified.

The Network

Putting a system like AMPS to work requires access to data from the logistic support point. In the ANZAC Ships, a comprehensive shipboard network allows client access via plug-in fibre fly lead from every equipment and management space in the ship. Nomadic PCs provide access for the user wherever needed. The RNZN is currently acquiring stand alone machines (client/server on the same PC for small ships) and the maintenance software developer is developing a download facility to allow mobile client-only operation with a data subset.



Conclusion

For the first time AMPS will deliver truly integrated logistic front line support for the Navies of New Zealand and Australia. Planning is underway to spread this environment further in both navies.

As well as providing meaningful ILS, AMPS delivers productivity improvement in each of the disciplines it touches:

- management of maintenance,
- delivery of inventory support,
- access to documentation and, most importantly,

- effective configuration management for the first time in any navy.

Utilisation of one database at sea and its transfer ashore in a well managed process provides greater visibility of data and the opportunity to access and report on this data from a limitless number of perspectives through flexible analytical and report writing tools.

AMPS will overhaul the business of support for both navies. It is the basis for the complete support infrastructure of the ANZAC Ships and offers significant business improvements for this new class of ship for both countries.

Sharing data via the storage facility at the ANZAC Class Logistics Office makes joint logistics management a reality in the sharing of support data among user navies.

Commander Greg Lowe is the Director of Marine Engineering on the RNZN Headquarters Staff in Wellington. He has recently returned from a four year tour with the ANZAC Ship Project in Canberra, part of which was spent as the Project Manager for the development of the ANZAC ILS solution at sea - the ANZAC Maintenance and Planning System (AMPS).

ANZAC Ship
Maintenance and Planning System
Technical Details

Commercial off-the-shelf software has been selected in an attempt to ‘future-proof’ the development. Wherever possible, Navy enhancements are driven back into the ‘core’ product so that subsequent releases from the developers can be easily integrated into AMPS and LIMS (an associated development for other RNZN ships). This has reduced development cost and will allow integration of ongoing software development at minimal cost.

FMMS and PA are developed in CA-Open Road. The RNZN and RAN use these applications over a CA-Ingres database (both on a Solaris platform and, latterly, on a Windows NT server platform using Open Ingres 1.2). Open Road also allows the use of other main stream databases (other Eden customers are implementing using Oracle).

Onboard storage requirements are 30 GB (mirrored on backup servers, so 60 GB is provided per ship).

PASOLS BENEFITS
A Malaysian View

Lt Col Narindar Singh

The Pacific Area Senior Officer Logistics Seminar (PASOLS) began in 1971 as a United States Army sponsored PACEM Army Senior Officer Logistics Seminar. It has increased in strength over these years. Malaysia first sent representatives to PACEM in 1974 and was an observer until 1993.

At PASOLS XXII in Sri Lanka in 1993, Malaysia was inducted as a full member of the PASOLS family and a year later hosted PASOLS XXIII in Kuala Lumpur.

Was it a step in the right direction?

Goals and Objectives of PASOLS

The major goal of PASOLS is to provide an **opportunity** for senior defence logistics officers from the Pacific, Asian and Indian Ocean nations to **exchange information** on logistics, including capabilities and experiences and to pursue agreed bilateral or multi-lateral initiatives.

PASOLS objectives are to **improve logistics management** and **encourage** a spirit of **regional co-operation.**

Logistics Co-operation

With shrinking defence budgets and massive downsizing, many countries exist in a climate of general uncertainty. Peaceful co-existence and a harmonious atmosphere must be developed to understand the needs of a changing world.

PASOLS has rightfully adopted ***LOGISTICS CO-OPERATION*** as the key theme of its annual seminar since 1992. It must be viewed as a vehicle of the future. For in it lie the bonds of tomorrow.

Opportunity

PASOLS offers the best opportunity for logisticians to view one another's' ideas, system, methods, procedures and policies. Each year the host country has the opportunity to seek the forum's help to address concerns in their logistics support system. Views are exchanged and possible solutions identified.

This is an opportunity taken by many to underline their concerns on given issues. Suggestions can be made and the contacts made at PASOLS can be further developed in more detail.

Exchange Information

A tremendous amount of information is exchanged at PASOLS. Information pertaining to current, past and even future issues is discussed at formal and informal meetings. From PASOLS XXII in Sri Lanka to PASOLS XXV in Bangladesh, countries have exchanged information on problems associated with spares, UN peacekeeping operations, inventory management, information technology, collective responsibilities, cataloguing and acquisition methods.

Initiatives are developed and in some cases Working Groups formed to address key issues. All these provide an opportunity to exchange valuable information.

PASOLS LOG is another medium of information exchange. It is up to members to use this information for their own benefit and to pass on to others.

Improve Logistics Management

No country can expect to have a complete answer to any given problem. The way to do logistics business can vary from country to country and region to region. Members put forward positive responses to given problems at almost all PASOLS forums.

PASOLS **homepage** can also be an effective management tool. The Pacific Area Cataloguing Working Group has demonstrated that the **logistics cataloguing system** in the region can be improved. Another issue now on the right track is the **Quality Assurance Forum.**

Encourage Co-operation

This annual meeting of the region's logisticians creates an atmosphere which can encourage co-operation. This is reflected in the many issues, ideas and items of information exchanged on UN Peacekeeping Operations.

Many Pacific, Asian and Indian Ocean Nations are involved in UN Peacekeeping Operations. Experiences of one nation can be beneficial to others. Nations are also prepared to organise and operate information centres for UN Peacekeeping Operations.

The Australians and Canadians have over the years organised forums, courses and seminars to help understand UN Peacekeeping Operations. Countries can always find ways to improve their such operations. Malaysia has now started a UN Peacekeeping Training Centre to help train future peacekeepers from the region.

Conclusion

Malaysia has benefited in many ways from joining PASOLS.

It was a step in the right direction.

Issues addressed at PASOLS are at times unique and solutions or initiatives prepared can be useful to member states.

PASOLS is the only regional logistics forum which addresses specific and general issues that can be understood by all Logisticians. The spirit of co-operation developed in the uncertainties of today are the cornerstone of the PASOLS legacy.

The fact that PASOLS has endured all these years is itself something to be proud of. Malaysia has advanced from being an observer nation to a full member, and is proud to have hosted PASOLS. Malaysia has certainly benefited a lot from PASOLS.

Lt Col Narindar Singh *recently retired from the position of Staff Officer 1 Logistics Planning at the HQ Malaysian Armed Forces Logistics Division. He was the point of contact for all PASOLS activities in Malaysia. He holds a Masters Degree in Business Administration with Diplomas in Human Resources Management and Behavioural Science Management.*

Safety and Suitability for Service (S3) Assessments of Ammunition for Canadian Forces Use

***Written* by Maj A Pelchat, P. Eng; *Edited* by G J Birkas, P Eng.**

Introduction

After Manpower resources, ammunition is the most critical element of the Land Force's ability to conduct military operations.

This 1992 statement by the Canadian Army's Director Land Requirements highlights the importance of ammunition to fighting forces. Equally important is the value of ammunition inventory, several billions of dollars. Annual procurement, even by Canada's relatively small force, may exceed hundreds of millions of dollars. To find ways to reduce costs, Canada established OPERATION EXECRATE, a project to reengineer the Materiel Group business methods. Not surprisingly, support activities were amalgamated under one programme, the Directorate Ammunition Programme Management (DAPM) headed by Ms Normoyle.

Today's trend towards "off-the-shelf" procurement, coupled with increased use of commercial rather than Military Specifications, makes it imperative that ammunition is known to be safe and meet operational requirements.

Conduct of Assessments

Three years ago, the Chief of Review recommended formalising Safety and Suitability for Service. "S3" is a widely accepted NATO term utilised by National Ammunition Safety Offices when they "authorise" the use of an ammunition. In 1979 NATO was so concerned about the need to standardise nations' assessment of ammunition for service use, that they created an expert committee to develop safety principles for munitions and their testing and assessment. Canada's attendance at the "group of Experts on the Safety and Suitability for Service of Munitions and Explosives" (more formally known as AC/310) spans 15 years.

*AC/310 defines **Safety and Suitability for Service**:*

- **Safety** is *freedom from hazards to personnel and material at all times, recognising operational necessity as a limiting factor.*
- **Suitability for Service** is *the property by which ammunition is capable of functioning as designed without an unacceptable degradation of function or safety throughout the agreed service life*.

Active participation in AC/310 provides real dollar savings since participating nations share information on design, testing and safety and suitability of specific munitions. This sharing enables us to conduct assessment and testing rapidly and economically. *In this business testing costs big bucks.*

Although S3 assessments were carried out by the former Director Ammunition Maintenance and Engineering, formalisation of the process took place only after the 1995 creation of Ammunition Engineering Services organisation within Ammunition Programme Office. A first priority was to review how our allies perform S3 assessments. We examined the UK "Ordnance Board" (whose lineage goes back to 1414), the USAF "Non-Nuclear Munitions and Safety Board", the USN "Weapons Safety and Explosives Safety Review Board" and the US Army's "Ammunition Safety Release" processes. Similarities between nations also led us to look at the "Australian Ordnance Council".

This review greatly influenced the composition of the DAPM (Eng Svc) and led to the birth of yet another but very important acronym: the ASSB, the Ammunition Safety and Suitability Board. DAPM (Eng Svc)'s organisational is a small engineering safety office, composed of staff officers specialising in ammunition engineering. Military officers have completed either the 14 month Ammunition Technical Officers' Course or the 12 month Degree in Explosives Ordnance Engineering, both in the UK. Civilian specialists gained their knowledge through the Engineer-in-Training programme. The only resident non-engineer is our ballistician/Master Gunner who is a graduate of the prestigious Master Gunners' Course. Staff specialists include numerous people with master's degrees, and the direct support of a PhD scientist in Chief: Research and Development. DAPM (Eng Svc) accomplishments depend on the complementary nature of these people's capabilities.

Two Technical Services Officers provide a link to respective services and co-ordinate work within the Directorate. Expert services are provided through the Explosives Engineer, the Safety Critical Engineer and the Test and Evaluation Engineer, who provide a direct link to the new Munition Experimental Test Centre collocated at Val BelAir and Nicolet, Quebec. Additional personnel are assigned to support major acquisition projects, such as the new Light Gun Extended Range Project and mid calibre acquisition (25mm/35mm). Finally, an *Environmental Engineer* deals with environmental issues to support the Ammunition Programme.

Principal tasks of the DAPM (Eng Svc) are to:

- manage ASSB activities and
- be the Engineering Authority for Ammunition and Explosives.

Any munitions entering into service or to be used by CF personnel, even on an interim basis, must be subject to an independent safety and suitability for service assessment by a DAPM (Eng Svc) engineer. Assessments range from "preliminary S3 assessments" for trial or interim ammunition, to full-blown assessments referred to as "Type Classifications" for items entering full CF service. All assessments are co-ordinated through the TSOs and are presented to the ASSB for approval. **This is a key step in the process**.

The ASSB is chaired by DAPM (Eng Svc). Participants must be involved in and understand the assessment to ensure that limitations to a specific munition, or safety limitations for a specific application are well understood and documented. The independent assessment is presented to the Board, all views are heard, and the assessment is finalised and distributed as an ASSB Approved Document. Dissenting views are recorded in both the minutes and the assessment’s covering letter. The

presentation and the document give the customer a detailed independent assessment of their product for the **specific CF environment in which it will be used**. A European anti-tank missile suited to the environment for which it was designed may not function properly at CFB Valcartier in the dead of Winter at -400C. A timely presentation to customers also allows us to propose solutions to design limitations prior to introduction. This includes **additional testing, design changes** or, *the least preferred method*, **procedural safety practices.** Customer surveys have highlighted areas for improvement but have also clearly shown that we do ensure that our ammunition is "safe and suitable". The forty or so presentations have included:

- urgent assessment of 155mm Copperhead artillery cartridges for deployment to Yugoslavia;
- assessing the safety of a passive radar augmented 57mm projectile; and
- assessing the AGM-65G Maverick missile for introduction into service with the CF18.

Conclusion

NATO protocols facilitate munitions exchanges with NATO countries with their full acceptance of the qualification carried out by Canada.

DAPM (Eng Svc) now truly provides "one stop shopping" for safety and suitability of CF ammunition.

Basic Building Blocks of an S3 Assessment.

The process starts with the MTTDS (Manufacturer To Target or Disposal Sequence) questionnaire, completed by Project Directors and their staff, with our active assistance and participation. This provides the assessor with the specific environments the munition should see during its complete lif cycle. Next we perform a Design Safety Hazard Analysis of the munition. At this stage we carefully examine its specific design, emphasising areas such as selection of energetic materials, safety of fusing systems and issues such as storage and transportation.

For offshore munitions, we consult the respective country’s safety offices to get the assessments th carried out as well as qualification testing and in-service experience. NATO and ABCA contacts pay dividends here. If information is incomplete, or there is room for interpretation, a qualification programme can be designed, followed by First Article Testing to ensure reproducibility if the item is be assembled in Canada. This information is compiled into the S3 assessment and presented to the ASSB. Canadian Force Use for that specific design is then authorised for the identified expected service conditions. Should the design or service use change, then the S3 certification will be reassessed for continued validity. All certifications remain in our library, fondly referred to as the "Shrine" and are reviewed periodically for currency. Safety releases are subject to national and intellectual property limitations between safety offices, on case by case basis.

Major André Pelchat *began his military career at College Militaire Royal in 1977 and graduated in 1982 with a Chemical Engineering Degree. CFB Greenwood was his first posting as an AERE officer where he was responsible for Armament. After attending the UK's Ammunition Technical Officer Course, he completed tours of duty at CFAD Bedford and NDHQ/DAOES and an exchange posting with USAF at Elgin AFB, Florida where he was Programme Manager for the F-16 Aircraft Store Certification Programme. Maj Pelchart returned to NDHQ as Technical Services Officer (Air & Maritime) in DAPM (Eng Svc) where he was responsible for Safety & Suitability for Service Assessment and Engineering aspects of most air and naval*

ammunition and explosives in the CF. Maj Pelchat is currently Aircraft Maintenance Officer at 14 Wing Greenwood.

Mr G.J. Birkas *P Eng, is currently the CF's Chief Ammunition Engineer. He is a graduate of the Royal Military College of Canada with a Civil Engineering Degree, and a former Ammunition and Technical Officer. Mr Birkas has held numerous positions in the field of ammunition. He has represented Canada on AC/310 in SGII-Fusing; SGIV - Munitions and the Main Group.*

Inaugural Meeting Of Quality Assurance Forum : A Success

Mrs Fatima Beattie and Mr André Lagace

Introduction

The inaugural meeting of the Quality Assurance (QA) Forum in PASOLS proposed at the XXV meeting was held in Kuala Lumpur, Malaysia on 15-18 April. Representatives from seven PASOLS member nations attended: *Australia, Canada, Korea, Malaysia, New Zealand, Philippines and the United States of America.* The objectives of the meeting were to determine the level of interest in establishing a QA Forum in PASOLS, agree on terms of reference and recommend a future course of action.

Background

The idea for a QA Forum under the umbrella of PASOLS was, as reported in *PASOLS LOG Number 13,* put forward at the XXV PASOLS meeting, held in Bangladesh in September 1996. The concept was presented by Mr Gordon Hunter of Canada on behalf of the Trilateral Quality Assurance Members, which include Mr Alan Brecht of Australia and Mr Mark Schaeffer of the USA. The objectives of the QA Trilateral Agreement are "to pursue harmonisation of quality assurance practices and promote continuous quality improvement through identification, promotion, education and dissemination of advanced quality practices". In recognition of the benefits of co-operation and collaboration, the Trilateral members sought to expand the concept under PASOLS. The PASOLS Logistic Steering Group (LSG) last year approved a recommendation from the Project Development Committee (PDC), initiative 96-I-01, that Canada and Australia take a lead in convening the inaugural meeting of the QA Forum.

Unanimous Support

All nations represented at the inaugural meeting were enthusiastic about a PASOLS QA Forum. They noted that the benefits of such a forum include:

- A cost effective means to exchange information and experiences on QA principles, concepts, best practices and benefits.
- An avenue of access to information on areas such as procurement processes, force development, and requirements definition.
- Increased influence in other forums by representing a consolidated rather than an individual nation’s view.
- Knowledge of other nations’ approaches, strengthening participants’ own leadership efforts when advocating changes within their own organisation.
- A harmonised QA framework among PASOLS nations, facilitating mutual Government QA and offering potential cost savings.

Operating Principles

The key operating principles were outlined as facilitation rather than direction and pacing the implementation of initiatives to the requirements of individual nations. Attendees noted the importance of appropriate representation at such a forum, agreeing on the title ***Pacific Area Quality Assurance Forum (PAQAF)*** operating under PASOLS in similar fashion to the Pacific Area Codification System (PACS). Terms of Reference were developed and will be submitted to the next PASOLS in August 1997 for endorsement in principle. The aim of PAQAF as outlined in the Terms of Reference is "to encourage development and harmonisation of Defence Quality Assurance Programmes among PASOLS members to facilitate mutual Government Quality Assurance (GQA)".

Action Plan

The degree of enthusiasm shown by members has led to the development of an action plan for the next year. Proposed actions include:

- Forwarding a copy of the proceedings and resolutions of the inaugural meeting to non-attending members of PASOLS.
- Actively encouraging other members of PASOLS to attend future meetings of PAQAF through leadership and personal networking.
- Australia organising the next meeting sometime in the first half of 1998.
- Attendees undertaking to review the documents:
    - *Guide to Delegation of Government Quality Assurance,*
    - *Mutual Acceptance of Government Quality Assurance, and*
    - *General Guidance on Quality Assurance.*

Conclusion

A presentation on PAQAF will be made at the next PASOLS meeting in Vancouver in August 1997. The presentation will include a report on the actions and resolutions of the inaugural meeting, recommend a constitution for PAQAF and promote active participation among PASOLS members.

Mrs Fatima Beattie i*s the Director of Quality Assurance Policy, Australian Department of Defence. She is responsible for the development of Defence quality assurance policy and procedures, and for promoting those policy interests in the evolution of the quality capability of Australian industry.*
Mr André Lagace *is the Director of Quality Assurance for the Equipment Programme Services Division of the Canadian Department of National Defence. He is responsible for the strategic direction and management of the Defence Quality Assurance programme.*


PASOLS QA FORUM
15-18 APRIL 1997

PACIFIC AREA CATALOGUING SYSTEM WORKING GROUP WRAP-UP

"THE END OF THE BEGINNING"

James L. Burns

In less then three years a concept has become a reality. The business of the Pacific Area Cataloguing System Working Group (PACS WG) is complete and we can move into a new era with the PACS FORUM providing on-going support to continue the momentum generated by this PASOLS Initiative.

Over the past three years we have provided articles for PASOLS LOG on the progression of PACS. This was done to:

- inform PASOLS nations of progress; and
- keep the issue of adoption of the NATO Codification System by non participating nations to the forefront of Defence thinking.

This will be the last article on the PACS WG but not on PACS itself. We have set in motion the theme for future articles for PASOLS LOG. These will be more in line with the functioning of the PACS FORUM and will cover "technical" aspects of the NATO Codification System. For example the first scheduled article covers the *challenges and problems associated with retrospectively cataloguing an inventory to the disciplines of the NCS.*

The fifth and last PACS WG meeting, held in Wellington, New Zealand, in March 1997 was attended by representatives of 17 nations, including first time attendance from China and Japan. The meeting had two specific aims:

- to complete outstanding business associated with the implementation of PACS; and
- to use the WG as an "information and ideas exchange" so PACS nations currently not NCS sponsored can progress towards an informed decision on an NCS.

With the second aim we were fortunate in having a NATO Codification System Agency staff member, Mr Denis Lampron, present to address specific issues. He had a particular empathy with PACS, having been the first PACS Chairman.

The business sessions successfully completed the outstanding issues. Protocols, principles and practices are now clearly defined and every PACS nation has copies of the publications associated with PACS. Two long term strategies supported for progression were establishment of the PACS FORUM, and establishment of a central agency to provide continuing support for PACS.

The PACS FORUM is intended to provide a Pacific version of NATO Allied Committee 135, the committee responsible for codification issues. The NATO committee consists of the National Codification Bureau Directors of each NATO nation. In PACS this is likely to

be PACS national representatives responsible for cataloguing matters, be they NCB Directors or Logisticians. Meetings will initially be held annually, but this may change when the volume of business is determined. The first PACS FORUM Chairman is Mr Paul Kenworthy from Australia. Mr Kenworthy is to produce goals and objectives for the first PACS FORUM meeting, to be held in Kuala Lumpur in March 1998.

PACALS, another PASOLS initiative, was seen as one possible option for a centralised agency to provide continued support to PACS. The administrative burden associated with the progression of PACS, which is likely to continue, has been carried by the nation providing the Chairman. An agency undertaking administrative and co-ordination tasks would reduce the burden on the Chairman and provide neutral advice and doctrine links between nations requiring support to progress PACS and the NCS.

Both strategies were presented to the PDC in Tonga, April 1997. The PDC acknowledged the completion of PACS WG tasks, and endorsed formation of the PACS FORUM. However, it concluded that the PACS FORUM Chairman must continue to be the central contact for PACS matters, and that the centralised agency concept needed further consideration. It will be raised again at future PDC meetings.

PACS involvement has provided several highlights for participants. The most obvious has been contact and sharing with fellow logistics and cataloguing operatives from Pacific rim nations. Each of the five meetings produced frank and honest discussion of issues of the day. In spite of diverse backgrounds, the WG progressed the project with enthusiasm. The result is completion of the task ahead of schedule.

The ultimate highlight for me was an invitation to address the 8th NATO Symposium of Codification in San Diego in May 1997. The Symposium was briefed on *the progress made by PACS, how PACS has developed and where it is going*. There were 450 attendees representing some 38 countries, including NATO nations, Partner for Peace nations and our own PACS nations. It was pleasing to report the achievements of those three years. Among many positive comments following the presentation, were nations reflecting that the progress PACS had made in such a short time would inspire nations considering full or sponsored membership of the NATO Codification System.

The Chairman’s Final Report will be presented to PASOLS in Vancouver, followed by a presentation on *Establishing the NATO Codification System and a National Codification Bureau in a New Country.* Canada will provide this presentation, as is fitting because they started the initiative in Malaysia and can now finish it in their own country.

The completion of the task of the PACS WG is not the end of PACS, rather it is the end of the beginning. NCS participating nations have contributed much time and effort to see PACS established as a workable Pacific contribution to globalisation of the common materiel management language. The PACS WG has provided the tools and the potential support, so the initiative now lies with individual nations to develop their own paths towards gaining the benefits of the common logistics language.

PACS has been declared one of the more successful recent PASOLS initiatives. The successful effort put into PACS, may be seen as *The Key to Logistics Interoperability in the Pacific Region.* Through that interoperability, PASOLS nations will become part of the driving force making the NATO Codification System the globalised standard for the

common materiel management language. In concert, PACS and the NCS, are fundamental to the ideal of the World Wide Warehouse.

Mr James Burns *is Director of the New Zealand National Cataloguing Bureau and Chairman of the Pacific Area Cataloguing System Working Group.*

REPUBLIC OF KOREA LOGISTICS SUPPORT FOR UN PEACEKEEPING OPERATIONS

Col Seo, Myung Sang,

Introduction

Discussions on Repulic of Korea (ROK) peace keeping operation (PKO) participation began with the joint South/North Korean entry into the UN in September 1991. The first ROK PKO was in Somalia (UNOSOM II) in 1993. ROK has since participated in numerous PKOs in such regions as Western Sahara, Gruzia and India-Pakistan. Notable events since have been:

- Late 1996/early 1997 the **ROK Bridge Construction Engineering Unit** and **PKO Command Staff** in Angola completed their missions and withdrew.
- A ROK Major General has been designated **PKO Chief** to India-Pakistan.

All PKO related policy decisions were concluded after full consultation between the Ministry of Foreign Affairs and the Ministry of National Defence (MND), with final approval from the Korean National Assembly.

Logistics Support Guidelines and Procedures

The following is an overview of the logistics support system for PKOs.

The Field Operations Department in the Department of Peace Keeping Operations has jurisdiction over logistics support at UN Headquarters, but the Field Administration and Logistics Division of the UN Command provides support in the field. UN support for each PKO is different, depending on the location and mission of the operation. To guarantee efficient execution of missions, troop dispatching countries should achieve minimum UN standards and provide any additional equipment or material required.

The ROK wishes to abide by UN logistics support directives, contribute to the success of peace keeping operations, and promote national interests. The Ministry of National Defence uses the following guidelines:

- Maintenance of good working conditions.
- Operational efficiency through co-operation.
- Follow on supplies provided in accordance with UN requests.
- The Korean government to supply native food, "morale packages" donated by command groups, and PX goods to enhance morale and welfare.
- Supplies unobtainable by a specific deadline to be temporarily supplied from ROK resources.

Table 1 shows that logistics support is not the sole duty of the MND but is carried out through close co-operation among related divisions at the UN Logistics Bureau, the Ministry of National Defence, Joint Chiefs of Staff (JCS), and related divisions from each Service HQ.

Even though the ROK MND has implemented these logistic support procedures, problems remain due to ROK's limited PKO experience. Most notably, delays in organising staff members in charge of logistic support for contingents have caused miscalculation of demands for equipment and materiel, resulting in provision of unnecessary items. There have also been cases where procurement personnel lack knowledge of the operational area’s characteristics, resulting in requests for equipment often inappropriate to the mission, bringing about over consumption and handling difficulties.

TABLE 1 - PKO Logistic Support Procedures

Stage	Duties	Responsibility
	Organisation of contingent personnel and equipment	JCS, each Armed Forces Service, (Consult with Logistics Bureau)
	Delivery of Logistic Support Guidelines	MND Logistic Bureau
Dispatch	Request Logistic Support Demands	Contingents, each Armed Forces Service
Preparations	Review/Decision on Logistic Support Demands	MND Logistics Bureau
	Preparation of Equipment and Material	MND Logistics Bureau, Defense Procurement Agency, Contingents, Assistant Chief of Staff for Logistics at each Armed Forces Service
	Packaging PKO Materiel and Equipment	Contingents
Transportation of	Domestic Transportation	Assistant Chiefs for Logistics
Troops	Foreign Transportation	UN, MND Logistics Bureau
During Operations	In-survey of Contingent Owned Equipment/Materiel by UN Field Chief Administration Officer (FCAO)	Contingents
	Follow on Logistics Support in accordance with UN Letter of Assist	UN, Logistics Bureau, Assistant Chiefs for Logistics
	Out-survey and Report on Contingent Owned items by UN FCAO	Contingents
Withdrawal	Transportation	UN
	Handling of equipment to be withdrawn	Logistics Bureau, Assistant Chiefs for Logistics

UN Expenditure Reimbursement.

The UN funds peacekeeping missions from contributions by member nations. When the UN requests PKO participation, it does not provide finance at the time, so the troop despatching country must meet initial expenses with its own government funds. It must then request reimbursement from the UN.

Table 2 lists UN standards for PKO reimbursement.

The ROK MND handles reimbursements as follows:

- Individual personal allowances are reimbursed by the UN, based solely on the initial embarkation date. The Policy Planning Division will receive the monthly payment from the UN and report it to the Budget Finances Bureau who deposit the payment into the National Treasury. The Budget Finances Bureau notifies the deposit back to the Policy Planning Division.

- The Director General (DG) of Logistics Bureau will complete a *request for reimbursement of expenditure on equipment and materiel*, and send it to the UN. If UN funds are available, the DG of Logistics Bureau will so report to the Budget and Finances Bureau and the funds will be transferred back to the National Treasury.

Reimbursements differ in priority and time of payment. For example, since the troop despatching country has to request reimbursement for equipment depreciation resulting from the PKO after withdrawal from the field, reimbursement may take a considerable time. Personal allowances, on the other hand, are usually reimbursed regularly each month.

The major problem with the UN system concerns reimbursement delays. This is mainly due to member nations delaying, and some times rejecting, submissions of PKO expense shares, causing shortages in UN funds. Thus expenditures by a troop despatching country may simply become donations to the UN, although in most cases the UN has eventually reimbursed the expenditure.

Accelerated demand for PKO activity in recent years is also cause for concern. Only a decade ago costs were approximately $230 million, trebling in 1989, and trebling again to $1.74 billion in 1992. In 1993 alone, addition of six new PKOs lifted costs to $3.6 billion, compounding reimbursement difficulties.

TABLE 2 - STANDARD FOR EXPENDITURE REIMBURSEMENT

Classification	Reimbursement Method	Remarks
Equipment and non consumption Materiel	Depreciation of equipment difference of value between in-survey (on arrival)and out-survey (on withdrawal)	Only depreciation in value will be reimbursed after return of contingent

Consumption Material	Reimbursement of total expenses	
Preventive inoculation, equipment painting expenses	Reimbursement of total expenses	Total reimbursement made after withdrawal of troops
Disaster Compensation	Reimburse after receipt of requests from each country	
Personnel Transportation for despatch and rotation	Reimbursement of total expenses	Under provisional contract the ROK Government will supply
Equipment and Materiel Transportation by sea or air	Reimbursement of total expenses	funds according to UN LOA requests
Clothing and Ammunition Expenses	$65 per person per month	Paid in lump sum to related government

Conclusion

Korea's participation in UN peacekeeping activities has been limited, and inexperience still causes some difficulties. Nevertheless, missions by contingents participating for the first time with no experience in foreign logistic support were evaluated as successful due to the ability to acquire the equipment and materiel expeditiously, providing rapid support.

Korea has established a foundation for efficient foreign logistics support through PKO participation. The value of experience, professional development of personnel and increased understanding of regulation and reimbursement directives ensures the success of future PKO missions. We believe that experience in PKO participation will greatly contribute to Korea's military standing in the international community as well as its globalization efforts.

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Contingent Owned Equipment Concept

Captain A.M. Banville

Introduction

Increasing pressure from Member States led the United Nations General Assembly, in December 1994, to authorise the Secretary-General to proceed with reform of procedures for determining reimbursements to Member Nations for contingent owned equipment (COE) provided to peacekeeping missions. The goals were three-fold:

- simplify reimbursement;
- improve verification and control of COE; and
- reduce the administrative burden of accounting for this equipment.

A five phase working group involving 57 countries and representatives from the UNNY Secretariat started work in February 1995. The report, presented to the Fifth Committee in July 1995, recommended:

- Reimbursements to troop contributing countries (TCNs) to be made on the basis of a *wet lease* (where TCNs provide and maintain specified items of equipment) or a *dry lease* (whereby TCNs would provide only the equipment, with the UN assuming responsibility for maintenance). Reimbursements would be developed as standard rates for specific major equipment;
- Minor equipment and consumables not directly related to major equipment would have "self-sustainment" costs based on troop strength reimbursed; and
- The UN continue to reimburse TCNs for troop costs on a monthly basis.

Major Equipment

The intention of the *dry lease* reimbursement is to compensate a TCN for non-availability of COE in its home country during the period of the mission. The Working Group developed reimbursement rates based on the following:

- generic fair market value including the initial purchase price;
- major capital improvements;
- the impact of inflation and discount factors relating to prior use;
- a factor reflecting potential loss or damage; and
- a useful life component which recognises the expected life of equipment.

The main advantage of the *dry lease* is that it gives the UN access to a larger number of TCNs by not limiting access to those which can provide and maintain their own equipment. The equipment may be operated by either the equipment-providing country or another TCN. *Dry lease* also allows the UN flexibility to provide maintenance and spare parts should it choose.

Wet lease has the TCN assuming full responsibility for maintaining and supporting deployed major equipment. The TCN is reimbursed on a fixed monthly rate that includes the *dry lease* rate for usage of the equipment as well as the cost of spare parts, third line maintenance and associated minor equipment with a 2% increment to cover resupply transportation costs. Quality and performance standards were developed for all major equipment.

TCNs are permitted to hold 10% safety stock of each equipment type to help meet designated performance standards. Verification and control will be reduced to accounting for equipment on arrival in and departure from the mission area, and as required while the equipment is used in theatre. Costs associated with preparing contingent owned equipment for deployment to the mission area will be reimbursed separately, at a rate determined between the UN and TCN.

Self-Sustainment

Self-sustainment costs relate to minor equipment and consumables not associated with major equipment. Under this proposal the UN will pay for services rendered according to agreed functions and established standards.

Standard rates for reimbursement were developed to be paid to the TCN on a per capita basis according to the contingent's deployed troop strength. The current framework allows for reimbursement only if the TCN provides all sub-categories of a specific area of self-sustainment. Under the new system the TCN is responsible for sustaining its contingent without UN support. Should a contingent be unable to sustain itself, services may be obtained from the UN or another contingent.

Mission Factors

The Working Groups recommended establishment of environmental and operational mission factors to recognise extreme conditions that reduce equipment life and increase maintenance costs. These factors would be determined by a technical survey at the beginning of the mission. An environmental factor, not to exceed 5%, would be added to the lease of major equipment and self-sustainment reimbursement, to account for the increased cost borne by the TCN for extreme topographical and climatic conditions. An intensified operational condition factor, also not to exceed 5%, would be added to the same elements to compensate for increased costs resulting from the scope of the task assigned, the length of logistics chains, non-availability of commercial repair and support facilities and other operational hazards and conditions. These factors should be universally applied within the mission area so that the force commander has flexibility to redeploy forces unhampered by reimbursement conditions.

An additional factor, up to 5%, would be added for loss or damage owing to hostile action or force abandonment. This factor should be applied to each category of the self-

sustainment rates and spares element. A threshold for consideration of an exceptional case was established at the generic fair market value of $250,000. In the case of major equipment loss or damage resulting from a single hostile action, TCNs will assume liability for each and every item of equipment where the collective fair market value is below the threshold. The UN will reimburse the entire cost of loss or damage from a single hostile action where the collective fair market value of all equipment lost/damaged is equal to or exceeds the threshold value. Damaged equipment would be considered a total loss when the repair cost exceeds seventy-five percent of its generic fair market value.

Applying The Concept

An agreement between Canada and the UN was prepared in July 1996 for the UN Support Mission in Haiti. After intense legal review it was changed to a Memorandum of Understanding (MOU). Difficulties unique to this mission hampered application of the UN guidelines and reconciliation between UN funded and Trust Fund activities. The MOU was finally signed in June 1997. Concurrently, Canada has prepared a similar MOU applicable to Canadian participation in the UN Disengagement Observer Force mission. This will be submitted to UN HQ shortly.

Application To UNPROFOR/UNPF

Normal claims activities for both the UN Peace Force and UN Assistance Mission in Rwanda have been suspended, and summaries prepared for applications for retroactive reimbursement using the COE concept. Meetings with the UN Secretariat were held in December 1996 to review these summaries and the methodology to be used for claims settlement. The final claim will be based on agreed quantities of troops, equipment and self-sustainment, less amounts already paid. The UN has already completed a partial claim for the UN Protection Force with the UK and Belgium and is working on similar ones with India and the Netherlands.

There have been difficulties in reaching agreement on mission factors for the UNPROFOR/UNPF claim. The UN believed the reimbursement cost would be less than under the old system and is reluctant to apply the mission factors as per the decisions of the Working Groups and the Fifth Committee.

Lessons Learned

The new COE concept, in spite of its growing pains, is a vast improvement over the former reimbursement mechanism. Canada’s experience with negotiation and application of the COE concept shows that some areas could still be improved. Canada has proposed the following lessons learned to UN HQ:

- Need to amend the concept to apply to an extending/changing current mission as well as to starting a new mission.
- Need to clarify interpretations by UN and TCN.
- Need to make "all or nothing" provisions of sustainment reimbursement more flexible.
- Need to reconcile the COE manual and model agreement to conform to the UN General Assembly resolution/intent.

- Need to reduce negotiation time frame.
- Need to expand components of sustainment to include consumables, minor equipment and labour, if applicable.
- Need for an assessment period within which to gauge the effectiveness of UN support through an in-theatre fact-finding and substantiation process involving both the TCN and UNNY staff.
- Need for flexible/reactive authority for experience based modification of the implementation manual.
- Need for a consumables support standard.
- Need to refine the definition of bulk fuel to include packaged oils and lubricants.

Canada will continue to participate in peacekeeping missions and welcomes the application of this new COE concept for the reimbursement of TCNs.

Captain Angela Baneville is a Logistics - Supply Officer currently assigned to J4 Log Operations, and is responsible for deployment and redeployment logistics plans for all Canadian Forces' international operations.

EQUIPMENT MANAGEMENT IN A WAR ZONE

Major A. W. L. Watson, RNZALR

Introduction

Equipment management in seventeenth century armies may have been a simple task. If a wagon was moving it was working. If it could not move it may well have been left at the side of the track and another requisitioned locally to replace it. Equipment management in the modern Army is a complex task involving expensive and technologically advanced equipment. The process commences with identification of a requirement, progresses through a design and development phase, to utilisation for its intended or modified task, finally to be sentenced Beyond Economic Repair and disposed of.

This article will restrict its focus to equipment management in a theatre of operations. It will use experience gained in the equipment management function of the British Force deployed to the Former Republic of Yugoslavia as part of the NATO Peace Implementation Force (IFOR). Although this was a peacekeeping role, the principles could be applied to a more overt and militarily aggressive operational theatre. The primary objective of the equipment management regime should be to effectively manage deployed equipment to ensure a high level of serviceability and availability of the right equipment to meet the task.

Equipment Management Information

Effective equipment management requires accurate and up to date information on the deployed equipment. This needs to identify what is deployed, where it is located, who is operating it, what it is being used for, its serviceability and its level of utilisation. Reporting needs to be clearly established and should be in a tiered structure as the timeliness of information will vary according to requirements. Principle battle equipment like armoured, artillery and aviation resources may be monitored on a continuous basis and availability reported to commanders daily. These equipment types may have operating restrictions placed on them, such as track mileage limits, requiring awareness of their operability. Servicing and maintenance schedules are normally based on usage and repair parts scaling will represent historical serviceability and maintenance data.

Availability of principal equipment is normally part of daily reports and returns through the chain of command. It is often a manual process as part of SITREPs. Additional information is forwarded in weekly or monthly returns, depending on the level of information required and the occurrence of activity. It is a time consuming process and often conflicts with the primary effort required to support the battle. It is however, a very important part of the military process. On-board computers and integrated information systems are being developed to aid equipment management, speeding up the response and providing good historical data.

Equipment Roulement

The roulement of equipment in Bosnia took two forms. the first case is of a unit deployed with some of its own specialist equipment. On arrival it also inherited common theatre equipment from its predecessor. This led to a Local Equipment Table (LET) being created with significant effort required to complete it accurately. Quartermasters were busy supporting their unit on operations and had difficulty completing LET accounting. An audit of LETs was completed as part of the reduction in force size in Nov 96. The team found themselves resolving accounting problems up to two years old, often for units who had been replaced four times since the problem started. This was very difficult and time consuming and could have been avoided with correct accounting throughout the operation.

Unit owned equipment was only deployed for six months so availability and serviceability was generally good. Theatre owned equipment had in many cases been in theatre for 3« years and serviceability was reduced as a result. There was no coordinated policy for the roulement of this equipment so the risk to the combat strength was increasing with time. An integrated management plan was needed to maintain the combat strength of the force.

Base Repair

The British Force in Bosnia was no different from other allied Armies. They did not deploy a base repair capability so any equipment Beyond Local Repair (BLR) was sent to UK for repair. A small power pack refurbishment section was deployed into the General Support Company of the Maintenance Battalion to provide routine overhaul of armoured vehicle components that travelled abnormally high mileages. This avoided time and staff work managing power pack movement to and from UK. However, it was disappointing to see a brand new 230001tr fuel tanker awaiting repatriation to UK one week after it deployed because it could not be repaired in theatre after a small traffic accident.

A theatre reserve of vehicles was maintained at divisional level and managed from the divisional rear headquarters. This covered repatriation and replacement of vehicles across the strategic water gap. The stocking level was based on 1-15% of theatre holdings depending on the importance of a particular equipment. Authority to issue from the reserve was required from UK to ensure that they were aware of stock levels and the incidence of BLR equipment. Holdings were reviewed in conjunction with the reduction in force size. This reserve pool was an integral part of the equipment management regime.

New Equipment

There were numerous instances where new equipment was required to meet an Urgent Operational Requirement (UOR). This ranged from clothing items to principal equipment like 23000 ltr fuel tankers. The manufacture and procurement of these items proceeded with best speed and the items deployed as soon as possible. This often led to untrialled equipment being deployed so the risk of problems was high. On several Occasions items had to be withdrawn from use while inspections and modifications were completed, compromising the combat strength of the force, at a very critical time for one particular item. *Trials and testing should be conducted outside the operational theatre.*

The identification and justification of new equipment should not be rushed just because the operational situation confirms a need for the equipment. Early in the Bosnia deployment, there was a need to set up accommodation in areas with no infrastructure. A new sewage trailer was needed to clear the ablution blocks. The justification put the responsibility for sewage clearance on the unit domiciled in the location and the trailer was designed for a 4 ton vehicle. Soon after manufacture and deployment, responsibility for sewage clearance became a 2nd line transport task. This organisation only had 8 16 ton trucks so the sewage that they did not have a good trailers had to be mounted on a DROPS platform as the towing assembly could not be adjusted for larger trucks.

Repatriation and Refurbishment of Surplus Equipment

The reduction in force size led to the repatriation of surplus equipment. Because the base refurbishment system was not going to be activated, the UK headquarters set a preshipment level of equipment inspection and serviceability, but it was not readily achievable in the operational environment. Units redeploying had little time to complete the task and those remaining were concentrating on operational tasks.

Comprehending the equipment management situation from afar is always difficult but alternative systems may be needed. Establishment of a refurbishment system after redeployment is highly desirable and can avoid a compromise on standards.

Equipment Visibility

The British National Audit Office had expressed concern with the size of the equipment loss and write-off following the Falklands Campaign and Gulf War. They indicated that a similar situation would be unacceptable following the Bosnia deployment. The British Army acknowledged that they did not have a good feel for what equipment was deployed in Bosnia and sought ways to improve equipment visibility. They believed there were at least 70,000 items above £2500 in value deployed with a combined total of more than £500 million. Corporate information systems could not accurately identify what was deployed and an initial database of 12,000 records was found to be 30% inaccurate. A two week check of deployed Local Equipment Tables identified an additional 7200 items not registered in corporate systems.
The visibility of equipment deployed to Bosnia and the timeliness of the information had to be improved significantly. A central database was needed to assist information handling and visibility. Barcoding was chosen as the desired method. This initiative became known as Project TEDY, Theatre Equipment Database - Yugoslavia. An MS Access database was created on a seven station network in Bosnia and synchronised with a live link to HQ Land Command in Britain.

After assessment, it was decided to use the two dimensional Portable Data Format (PDF) barcode protocol for Project TEDY. The largest block on the example is the PDF label. Information is embedded into the label and can include up to eight times redundancy to cover partial label destruction. One provider of the labels has the Gettysburg Address embedded in a demonstration label to show its capacity. The British Army decided to include equipment related information on the label, ie. type, description, registration number, serial number, chassis number, owner unit, operating unit, configuration, etc. This implies that variable information should not be included in the label.

The barcode is read by a Symbol Technologies 4600 intelligent reader with a 2mb memory. The configuration led to l mb being used to run the TEDY system and the remaining 1 mb being used to store a data set from the main TEDY database in the headquarters.

The data process was established as a loop. A data set of the main database was downloaded onto a laptop for use by the TEDY Verification Teams. When the teams visited each unit, they loaded known holdings into the 4600 reader. The team task was to scan the label on the equipment and confirm that the database information was correct. Any unlabeled equipment was given a temporary label and the information loaded into the reader using drop down menus and an alpha-numeric keypad. The revised and new information was uploaded into the laptop regularly then transferred into the main database at headquarters.

TEDY has given improved visibility to equipment management. It also eliminates much manual information generation and handling. The system is sent to a unit during their mobilisation phase and equipment information captured when the equipment is laid out in the unit's location rather than in the theatre where operational tasks complicate the function. The system is also being developed with a quartermaster package so that they can scan and record revised information as they pack up to redeploy. The packup will often be done over a number of days/ weeks and it will be inefficient to have a verification team located with each team during that time.

Project TEDY was a success and is now being applied to preparation for the possible British deployment to Zaire.

Conclusion

Equipment management is a key function on the modern battlefield. The technological advances and cost of equipment do not allow organisations to hold many reserves or surpluses. Careful management and timely analysis of operating information will ensure a high level of serviceability and availability. The British Force in Bosnia maintained an average availability of 91.2% for principal equipment through good management and support measures. Electronic information systems should be considered to remove the manual burden of equipment management, and support systems should be set up in a way that simplifies the business of the operators deployed in the warzone. A significant factor in the success of peacemaking and peacekeeping operations is maintaining good combat power through efficient equipment management.

Major Ainsley Watson, MNZM, Royal NZ Army Logistic Regiment, is presently OC Combat Service Support Company, 3 Logistic Battalion. He has an extensive background in transport and movements matters. During the period Jun - Dec 96 he was atached to HO 1(UK) Div Rear in Bosnia as the S02 Equipment Management. This was during a challenging time in Bosnia as IFOR was reduced in size in Nov 96 and the British Army introduced an electronic equipment visibility system during that period. Major Watson was appointed a Member of the NZ Order of Merit in the 1997 Queens Birthday Honours for his work in Bosnia.