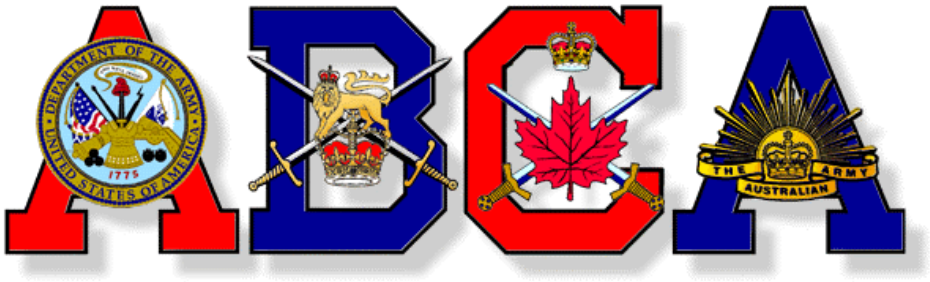
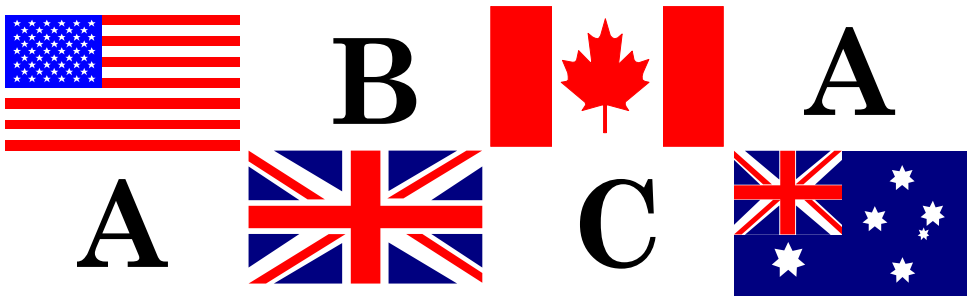


COALITION LOGISTICS HANDBOOK



01 JUNE 2003

Quadripartite Advisory Publication
(QAP)

Number 323 Edition 1

COALITION LOGISTICS HANDBOOK

DECLARATION OF ACCORD

Introduction

The information contained in this Quadripartite Advisory Publication (QAP) introduces those areas of a specialized nature where standardization is not possible but the identification and exchange of which achieves substantial gains in mutual understanding and cooperation.

Scope

The purpose of this document is to advise the Armies of the United States, United Kingdom, Canada and Australia of the general principles, planning, organization and procedures for management and control over logistics.

Background Continuity and Related Documents

This document was developed as a result of work/discussions carried out by Quadripartite Working Group Logistics. The Canadian Army is the Custodian Army.

References:

- QSTAG 2020 Edition 1 Coalition Logistics Planning Guide (CLPG)
- NATO Allied Logistics Publication (ALP) 4.2 Final Draft October 2002.

Amendment.

The contents of this QAP should be revised as appropriate by contributing Armies, to reflect developments in national practices, and to maintain its currency.

Date:

Philip Barry
Colonel
Director
Primary Standardization
Office

This page intentionally left blank.

Coalition Logistics Handbook

Contents

Chapter 1

Introduction

AIM

1-1. The aim of the Coalition Logistics Handbook (CLH) is to provide a guide to the planning and conduct of logistic support in an ABCA coalition

SCOPE

1-2. Chapter 5 of the Coalition Operations Handbook (COH) gives an overview on the conduct of logistic operations and specific issues that need to be addressed at the operational level. The CLH provides ABCA members with greater detail on the conduct of logistic operations, and guidance to ABCA and national commanders and the staff of the land component on optimizing the use of available logistic resources in multinational operations from crisis to conflict. The CLH may also be used for ABCA led operations involving non-ABCA nations. The focus of the CLH is on logistic command and control and planning at the operational and tactical level.

BACKGROUND

1-3. The ABCA Program is not an alliance nor has an ABCA force ever been employed under the program. However, the ABCA nations have served together in ad hoc coalitions on a number of occasions in pursuit of common objectives. In 1999, the Coalition Logistics Planning Guide (CLPG) was ratified, providing ABCA members with a logistics checklist to be used as a generic planning guide for coalition operations. It was evaluated during ABCA exercises, and used in East Timor by International Force East Timor (INTERFET). The requirement for a CLH was noted, which was to include the checklists provided by the CLPG, but with additional information on the logistics processes and functions of the nations, and guide the user in achieving interoperability. The CLH is designed to assist the ABCA nations in serving together in any coalitions and assist any of the nations when serving in a coalition with other countries.

1-4. The primary reason why nations enter into a coalition is for mutual advantage and shared interests. Coalition operations can combine military resources to facilitate attainment of common political objectives and military unity of purpose.

1-5. Every coalition is different. The purpose, character, capabilities, composition and scope of a coalition are functions of changing missions, which are magnified by the complexities of two or more armies operating together. Each Army brings its own view and methods of operations. Because ABCA logistics is a flexible tool the CLH does not posit a template for logistics structures. Instead it prepares the mind of the reader for multinational logistics, providing the intellectual base needed when the reader must meet with coalition partners to design a suitable cooperative logistics system, including structures, responsibilities and procedures.

1-6. Although nations bear the ultimate responsibility for ensuring logistics support to their forces allocated to coalition operations with ABCA partners, duplication of logistics functions must be minimized. Equitable cooperative arrangement and mutual assistance among nations in the provision and use of logistics resources, including medical, should ease the individual burden. This handbook provides the commander and staff of organizations operating in a coalition environment a handy reference of fundamental issues and interfaces that must be addressed to promote a successful coalition operation.

1-7. The CLH is supported by the following ABCA handbooks and planning guides:

- Coalition Operations Handbook (COH);
- Medical Interoperability Handbook (MIH);
- Electronic Warfare Handbook (EWH);
- Communications Information Systems Planning Guide (CISPG); and
- Intelligence Handbook (IH).

ABCA

1-8. From the Program Plan 2002-2004:

*"**THE ABCA MISSION**." "The mission of the ABCA Program is to ensure ABCA Armies achieve levels of standardization necessary for two or more ABCA Armies to operate effectively together within a coalition and in a joint environment…now and*

into the future." The goals of the program are broad in scope:

- recognition of common national goals with respect to world security—"why" we form coalitions;
- mutual understanding of each other's military capabilities and doctrine—with "what" and "how" do fight as a coalition; and
- build mutual trust in each other's military forces—"who" forms the coalition.

1-10. As logistics is more science than art, the goal of understanding capabilities and doctrine is foremost, and this goal lends itself to standardization, a process of achieving maximum synergy in a theatre and on the battlefield. The standardization objectives that form the backbone of this handbook are as follows (note the definitions focus on materiel, but they apply to "human resources" as well):

- **Compatibility**. Capability of two or more items or components of equipment or material to exist or function in the same system or environment without mutual interference. This level of standardization normally exists, with a few exceptions that are usually related to electro-magnetic interference.
- **Interoperability**. The ability of systems, units or forces to provide services to and accept services from other systems, units or forces and to use the forces so exchanged to enable them to operate effectively together. This is best achieved through cooperatively developed doctrine and procedures.
- **Interchangeability**. A condition which exists when two or more items possess such functional and physical characteristics as to be equivalent in performance and durability, and are capable of being exchanged one for another without alteration of the items themselves, or of adjoining items, except for adjustment, and without selection for fit and performance.
- **Commonality**. A state achieved when groups of individuals, organizations or nations use common doctrine, procedures or equipment.

1-11. With this broad range of goals, a coalition can gain significant benefits from standardization within a theatre of operations at the operational level:

- reduced logistic footprint, without loss in effectiveness;

- reduced costs to all contributors;
- best use of host nation and local resources;
- reduced timeline for deployment, reception, staging and onward movement; and
- better plans and reduced planning times.

1-12. Though more difficult to achieve at the tactical level, standardization can increase the freedom of action of tactical forces through:

- increased ability of a nation to reinforce another with common fuel, ammunition and substance rations in battle;
- interoperable command and control to achieve better rear area security;
- interoperable logistic management systems (movement, material, equipment) with Total Asset Visibility (TAV) and In Transit Visibility (ITV), which will maximize throughput on lines of communications regardless of boundaries;
- interoperable modes of transport and container systems, which will maximize usage of available transport; and
- interoperable recovery systems, which will improve availability of weapon systems.

TERMINOLOGY

1-13. This handbook uses terms in accordance with AAP-6 NATO Glossary of Terms and Definitions as well as jargon from many nations and NATO. For clarity a CLH glossary is included.

1-14. The reader should bear in mind that terms such as coalition, combined force, joint force, joint task force, multinational force and force are intermixed throughout this handbook.

FURTHER READING

- QSTAG 163 Military Abbreviations
- QSTAG 894 NATO Glossary of Terms and Definitions
- QSTAG 896 Land Force Tactical Doctrine
- QSTAG 509 Military Symbols
- QAP 111 ABCA Armies Land Forces SOPs

Chapter 2

Logistic Support Concept

LEVELS OF LOGISTIC SUPPORT

2-1. Military operations are conducted at three levels: strategic, operational and tactical. Strategic and operational level logistics are focused on the support of wars, campaigns and major operations, whereas tactical logistics is concerned more with the support of battles and operations at the land component level and below. Although it is helpful to understand the different levels, it is important to recognize that there is a significant degree of overlap and the reality is that logistic units assigned to, for example, operational level missions will be employed to perform strategic and tactical level tasks when required. In describing the levels of support, the intention is not to create imaginary or real barriers within the lines of communications (LOC), but rather to focus on assigning responsibility to given commanders. There is a single logistic battle stretching from home to foxhole.

2-2. This handbook dwells on the operational and tactical levels and how they interface with strategic support, particularly the strategic LOC. It is also concerned with the employment of strategic resources while they are operating within the theatre. This handbook is not concerned with the remainder of the strategic level that generates forces and resources, which is purely a national endeavour, though it is guided by the American, British, Canadian, and Australian (ABCA) Standardization Program as outlined in the introduction to this handbook.

2-3. **Strategic Level.** Strategic level logistics supports nations in attaining strategic goals established in national security policies—war winning support. It also deals with the peacetime preparation and inspection of assigned forces. At this level the efforts of national political and military leaders, national military organizations, civilian industry and contractors are combined to provision the force. Strategic level logistics deals with mobilization, national acquisition, force projection and strategic mobility.

2-4. **Operational Level**. Operational level logistics focuses on establishing and maintaining in-theatre LOC and sustaining a force in a theatre—campaign winning support. It also provides the linkage between strategic and tactical level logistics. Operational level logistics encompasses force reception, staging and onward movement of units and personnel, support base development and force level supply, maintenance, transportation and movement services. Engineering support related to logistics at this level includes the security engineering aspects of force protection.

2-5. **Tactical Level**. Tactical level logistics sustains the tactical commander's ability to execute the mission—battle winning support. At this level, the essential functions of supply, transportation, maintenance, medical and health service support and personnel, administrative and field services are provided to soldiers to allow them to accomplish their specific mission.

2-6. The following table illustrates the representative logistic functions carried out at the strategic, operational and tactical levels (the functions marked with an asterix include some engineering functions relating to logistics):

Strategic	Operational	Tactical
Acquisition	Reception	Transportation
War Reserves	Staging	Supply
Material Readiness	Onward Movement	Maintenance
Force Projection	Intra-theatre Lift	Health Services
Mobilization	Theatre Distribution	Support
Facilities	Sustainment	*Fortification
Strategic Lift	Reconstitution	
Force Generation	*Security Engineering	
*Force Protection		

Table 2-2. Logistics Functions at Strategic, Operational and Tactical Levels

2-7. **Lines of Support**. Each nation echelons sustainment throughout its forces to provide enough to each commander to carry out his mission. This handbook will use "lines" to describe where each echelon is located:

Line	Echelon
First Line	Organic to a Unit
Second Line	Organic to a Formation (Brigade or Division)
Third Line	Organic to a Corps and Higher (Coalition Force)
Fourth Line	Elements Organic to the National Military and Industrial Base (the Nation)

2-8. Each nation has doctrine describing the levels of capability inherent to each echelon of sustainment, and each nation has its own concept of support, i.e., how the echelons integrate to provide seamless support. Generally each nation seeks to control logistic capabilities centrally while executing the support in a decentralized fashion. This ensures the right support is provided in a timely manner.

2-9. It is fundamental that logistic support capability be tailored to suit the mission to maximize efficiency while maintaining the requisite effectiveness. Therefore, all echelons are subject to redesign prior to operations. This includes:

- change of table of organization and equipment (TOE) to augment or reduce the range or depth of capabilities;
- centralizing support at higher levels to gain best use of limited resources; and
- decentralizing support to provide subordinate commanders with increased freedom of action.

2-10. It is for this reason that logistic echelons are usually packaged in modular form, i.e., platoons or companies with a command and control (C2) element, facilitating this regrouping within and between echelons.

2-11. As well, logistic capabilities within each echelon are open to re-rolling—to be assigned tasks with a higher or lower level of complexity (given suitable equipment and resources) to suit the needs of the operation.

WHAT IS LOGISTICS?

2-12. The definition of logistics is not the same for all nations. Canada, for example, excludes medical support from the definition as defined in AAP-6:

> *"The science of planning and carrying out the movement and maintenance of forces. In its most*

comprehensive sense, the aspects of military operations which deal with:

- *design and development, acquisition, storage, transport, distribution, maintenance, evacuation and disposition of materiel;*
- *transport of personnel;*
- *acquisition, construction, maintenance, operation, and disposition of facilities;*
- *acquisition or furnishing of services; and*
- *medical and health service support."*

2-13. A broader definition is found in the term combat service support (CSS), but again nations have their own definitions. Canada, for example, adds the phrase "in the combat zone" to the definition found in AAP-6 and shown below:

"The support provided to combat forces, primarily in the fields of administration and logistics."

2-14. This handbooks takes the widest view possible and sees logistics as:

- The science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, the aspects of military operations which deal with:
- **Command and Control**
  - Planning CSS Operations
  - Controlling CSS Operations
  - Information Management and Systems
- **Supply**[1]
  - Material Management
  - Warehousing
  - Contracting
  - Host Nation Support (HNS) and Local Resources
- **Transportation**[2]
  - Modes of Transport (Road, Sea, Air)
  - Terminal Operations
  - Movements
  - Movement Control

[1] Distribution is a term used within some nations to encapsulate both supply and transportation, much like equipment support, which encapsulates fleet managements, repair parts management and maintenance management.
[2] See footnote 1.

  - Highway Regulation / Traffic Control
  - Battlefield Circulation
- **Equipment Support**
  - Equipment Management
  - Repair Parts Management
  - Maintenance
  - Repair
  - Recovery
- **Medical Service Support**
  - Patient Evacuation
  - Treatment
  - Medical Logistics
  - Preventative Medicine
- **Engineering Support and Infrastructure Management**
  - Engineering in Support of Logistics
  - Infrastructure Management
  - Security Engineering Providing Physical Protection of Individuals, Equipment, and Structures
- **Personnel, Administrative and Field Services**
  - Strength Management
  - Morale, Discipline, Leave and Welfare
  - Pay and Records
  - Replacement Management
  - Legal Services
  - Religious Services
  - Military Police Services
  - Finance Service
  - Laundry and Bath

2-15. The role of logistics varies with the environment and the nature of the operation. This handbook will discuss the logistic functions within the following perspectives:

- Urban;
- Reconstitution;
- reception, staging, onward movement and integration (RSOM&I); and
- Nuclear, Biological and Chemical (NBC).

BATTLEFIELD FRAMEWORK

2-16. Combined logistics was traditionally described within the context of the various zones of the battlefield. The battlefield is segmented to illustrate and delineate geographical responsibilities (note that areas and zones are three dimensional, though the diagram below illustrates two dimensions only) or to define what activities are carried out within the sector:

- **Area of Interest**. The logistic area of interest is much wider than for the other combat and combat support functions, as support resources must be sought wherever they are available and move on long and vulnerable lines of communication.
- **Theatre of Operations**. Increasingly much support is provided from within the theatre but outside the Area of Operations.
- **Area of Operations.** Areas of operations are created to designate geographical areas in which commanders can accomplish their missions and protect their forces. It has wider definition than the Area of Responsibility (AOR) which is the geographical area within which a commander has authority to plan and conduct operations.
- **Support Areas**. These are areas designated for logistic support activities, and may an AOR assigned to the resident support commander. This commander will control terrain, routes, and movement in the AOR and will likely coordinate the defences of all elements located within the support area. Support Areas will be established in all formations down to bde. Examples: theatre support area[3], national support areas, Corps Support Areas, Division Support Area, Brigade Support Areas. These may further be split into forward and rear support areas. There are obvious benefits to collocating various support organizations within a given area.
- **Communications and Combat Zones (COMM Z and CZ)**. These zones are named because of the activity predominate within them. In this day and age the two zones do not need to be contiguous, nor does are they mutually exclusive—there will likely be combat within the COMM Z and communications will certainly occur in the CZ. The COMM Z includes the strategic LOC, with its

[3] Other terms used to describe this concept are “Force Maintenance Area”, “or Logistic Base”

associated C2 arrangements and mix of joint, combined, civilian and military assets.

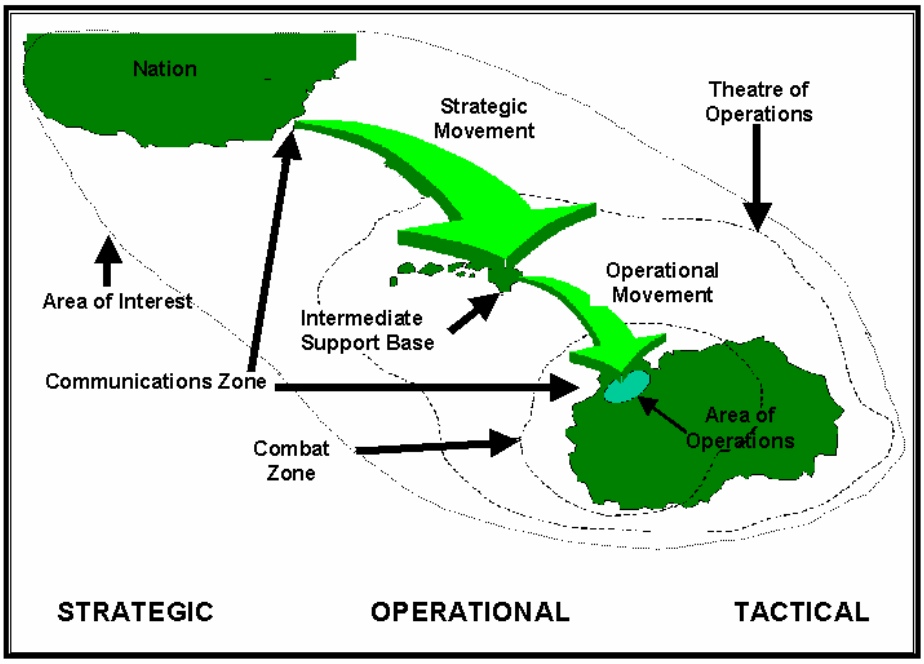


Figure 2-1. This illustrates the battlefield framework within the Single Logistics Battle

2-17. **The Single Battle Concept**. As the figure below illustrates, the impact of enemy action on the rear may affect the close and deep battles. The logistics battle is similar, as events in the national support base may have an impact on the combat effectiveness of the front line troops. Time is another dimension of the logistics battle, as support to future operations will not be available if not planned for in the present.

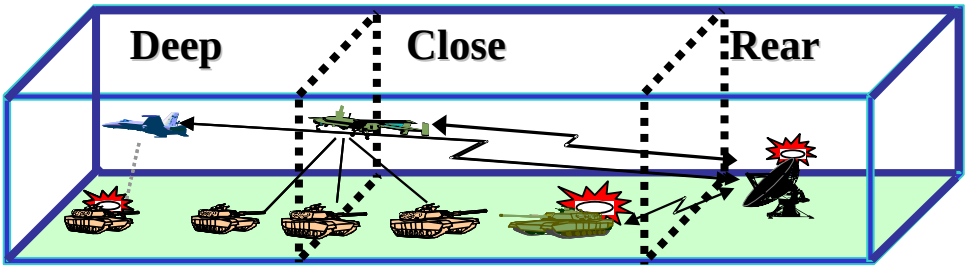


Figure 2-2. The Single Battle

2-18. **Battlefield Geometry**. Which is the battlefield of the future?

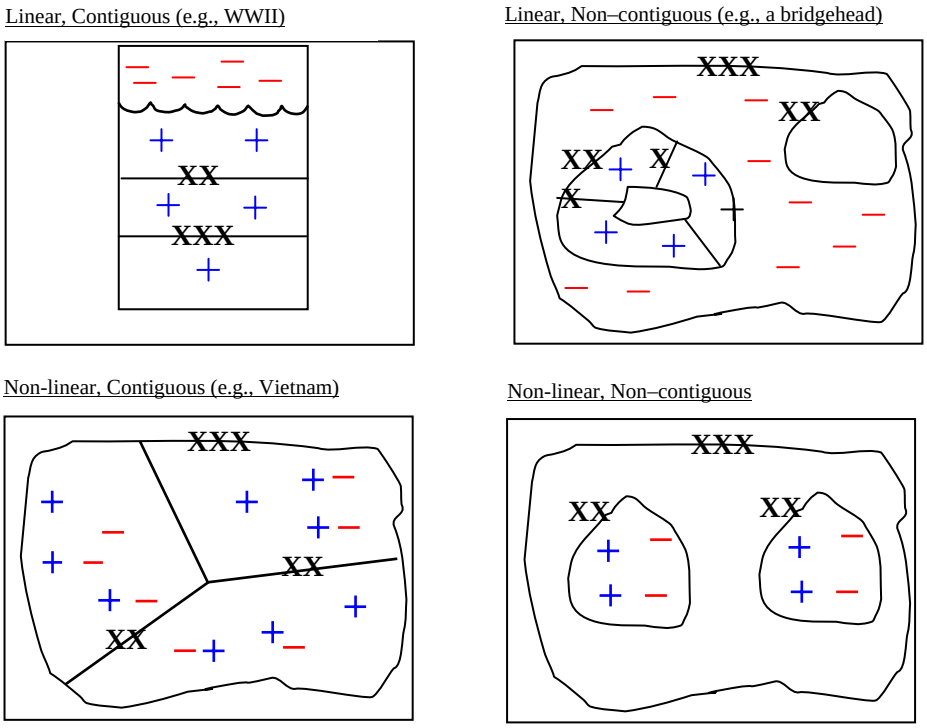


Figure 2-3. Battlefield Geometry

2-19. It is the non-linear, non-contiguous battlefield that is being envisioned within emerging ABCA doctrine, though this will not always be the case. It may be a worst-case scenario for logistics, mainly as ABCA nations have been optimized for linear battles. Some possible implications of this type of battlefield include:

- It is increasingly expected that the enemy will be able to conduct attack throughout the world, not just in the combat zone. Risk assessments will determine a balance between force protection and logistics operations that tend to be mutually exclusive.
- This effects-based doctrine takes battle to wherever the enemy may be found. Whether striking the enemy's centre of gravity, hence his will to fight, or engaging targets throughout the battle space, ABCA combat power

will be extremely mobile and active. To adapt to such a framework, logistic forces must be increasingly knowledge based (TAV, ITV, etc) and distribution centric rather than base centric (move logistic services to where they are needed for the period needed). The only secure bases may be the home nation or intermediate support base, and minimal logistics will exist in the combat zone.

- New terminology and concepts such as **nodes** or **nodal networks** are replacing the traditional zones and areas in the battlefield framework lexicon. The difference is transience—a node has a limited lifespan, existing for a specified period of time or phase of a campaign. The nodal concept also de-emphasizing geography in segmenting the battlefield (the idea of an area of responsibility, for example). The impact on logistic operations may be:
  - Logistic forces must be increasingly knowledge based (TAV, ITV, etc) and distribution centric as mentioned above.
  - Permanently secure LOC will not be available. Multiple routes by road and by air will be needed, making the traffic control and route management far more complex than it would be in a linear conflict.
  - Complex logistics tasks may be restricted in the forward areas, in favour of conducting them in a more secure base, likely out of the combat zone. Operational and tactical airlift will have heightened role to play in non-linear, non-contiguous warfare.

LOGISTIC FRAMEWORK

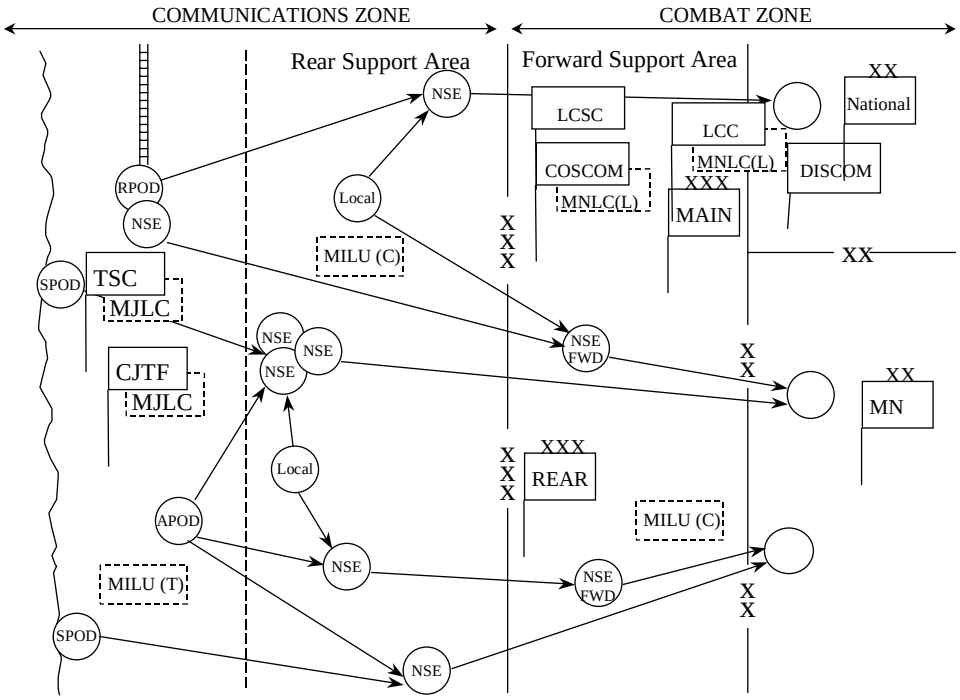
2-20. In the layout of the battle space, there must be a clear understanding among the nations that national logistic organizations exist in a multinational framework in support of combined operations. Flexibility within the support framework is required as there are no standing multinational forces, units or headquarters within the ABCA program, and logistic support will be based on national provisions and may include degrees of multinational support as agreed by those nations where it makes sense and is feasible to do so. A basic outline concept of logistic support for an operation is shown at Figure 2-3 Layout of Logistic Elements in a Theatre. The elements of the concept include:

- **The Civilian Economy**.
- **Military Forces**:

- **Bases**. These include the nation and its bases or intermediate support sites around the world. Support form the home base is increasingly important because coalitions wish to minimize static logistic installations and stockpiles within the theatre of operations. The support of these bases extends into theatre via strategic lift, and elements may be located in theatre as part of a split-base concept of operations.
- **Combined or Multinational Elements**.[4] There may be all or some of these:
  - Coalition HQ (Combined or Combined and Joint),
  - Theatre Support Command (Combined or Combined and Joint),
  - Land Component Command (Combined), and/or
  - Multinational Formations and Units.
- **National Elements**:
  - National Command Elements,
  - National Support Elements, and/or
  - Formations and Units.

- **Other Government Agencies and Non-government Organizations (NGOs)**. These groups operate in a theatre in support of humanitarian operations. These operations are a significant part of the overall success of a coalition operation. The coalition civil–military cooperation (CIMIC) staff coordinates their activities with military operations and may be another source of demand for military logistical support.

[4] The term "element" is used to denote a generic organization of non-specific size. It is a capability with a size commensurate to its mission.



Legend:

Local	=	Local Resources (Host Nation Support and/or contracting)
CJTF	=	Combined Joint Task Force
LCC	=	Land Component Command
TSC	=	Theatre Support Command
LCSC	=	Land Component Support Command
MJLC	=	Multinational Joint Logistic Centre
MNLC (L)	=	Multinational Logistic Centre (Land)
MN	=	Multinational (Division)
MILU (T)	=	Multinational Integrated Logistic Unit at Theatre level
MILU (C)	=	Multinational Integrated Logistic Unit at Component level
NSE	=	National Support Element
SPOD	=	Sea Port of Disembarkation
RPOD	=	Rail Port of Disembarkation
DISCOM	=	Division Support Command (a US formation for illustrative purposes)
COSCOM	=	Corps Support Command (a US formation for illustrative purposes)

Figure 2-3. Layout of Logistic Elements in a Theatre

LOGISTIC SUPPORT OPTIONS

2-21. Although nations bear ultimate responsibility for ensuring the provision of logistic support to their forces allocated to a coalition, duplication of common logistics functions should be

minimized. Nations and appointed coalition commanders are collectively responsible for the logistic support and designing the coalition logistic framework that will deliver that support. This process of international coalition building is covered in chapter 2. In choosing the support option, there a few key considerations:

- Logistics forces will be assigned coalition missions and tasks consistent with national policies.
- The provision of first and second line logistics support for national combat formations is usually a national responsibility given the nature of that support is too critical and potentially dangerous to be relegated to a multinational support organization or another nation. However, in certain cases, exceptions to this principle are possible depending largely on the level of multinational collective training carried out in the preparation phase of the coalition operation.
- Multinational logistics works best at the third line echelon, as it is generally in a safer area and does not deliver critical or immediate battle support.
- Arranging local support should be a cooperative venture within a coalition to ensure the resources are best used and the competition for resources does not drive up prices or cause friction where it can be avoided. This includes HNS and contracting local resources.
- Because ABCA does not have standing multinational HQ and units like those of NATO, there is no standing ABCA authority that facilitates the building of a coalition logistics framework; it is the nations who cooperatively develop the plan to meet their individual and then collective needs. Once a coalition is formed, the authority of the coalition commander over logistics is decided by the nations.
- The chosen option must be the most cost effective, while providing the requisite operational effectiveness.
- The choice of option depends greatly on the time constraints, the degree of standardization between the contributing nations and any bilateral or multilateral agreements already in place within the contributing nations.

2-22. The basic logistic support framework options are national, lead nation (LN), role specialization and multinational integrated support. These options are not mutually exclusive, and a support framework will likely include elements from each option. The

contributing nations decide on the framework prior to the coalition being fielded, and they will approve any recommendations that flow from the coalition after the force is fielded:

- **National Responsibility**. In this option, each nation takes full responsibility for providing support, from nation to foxhole. Short-notice deployments involving hurriedly assembled forces may dictate that the only safe logistic support option during the initial stages of an operation is a national stove piped system. However, once a steady state has been attained and the national cost and manpower implications (of a protracted deployment) have been considered, the opportunity to switch to multinational options should not be ignored. The national support element (NSE) providing this support can be located in and/or out of the area of operations (AO) to include intermediate sites between the participating nation and the most forward location of their contributed force. Even when contributing nations rely solely on national logistics, the ABCA commander retains responsibility for the coordination of the overall logistic effort. This requires nations to coordinate any activities that may have impacts on other nations support plans. They must also be prepared to report on sustainment issues, availability of critical operational assets and critical logistic activities in accordance with the coalition directives.
- **Lead Nation (LN)**. An LN for logistic support has agreed to assume overall responsibility for coordinating and/or providing an agreed spectrum of logistic support for all or part of a multinational force, including headquarters, within a defined geographical area. This responsibility may also include procurement of goods and services. Compensation and/or reimbursement will then be subject to agreements between the parties involved. This obviously is the purview of nations with a robust logistic capability, in particular a C2 capability.
- **Role Specialization (RS)**. One nation may assume the responsibility for providing or procuring a particular class of supply or service for all or part of the multinational force. A role specialist nation's (RSN's) responsibilities include the provision of assets needed to deliver the specialized supply or service. Compensation and/or reimbursement will then be subject to agreement between

the parties involved. This works for common classes of supply such as bulk fuel, fresh and hard rations, etc. It can also work for services such as operating a port or LOCs within a theatre, etc.

- **Multinational and Multinational Integrated[5] Support**. Building this support framework would take considerable time and is likely only to exist in a mature theatre. The elements of a multinational support framework would include:
  - **Multinational Integrated HQ and Staffs**. For command, control and planning purposes.
  - **Multinational Logistic Formations**. Formations consisting of formed units from various nations under the operational control of an appointed formation commander.
  - **Multinational Integrated Logistic Units (MILUs)**. A multinational integrated logistic unit (MILU) is formed from elements of two or more nations that are detached under the operational command of the unit commander. This is a difficult level of integration to achieve unless the unit components train together regularly between periods of employment. MILUs can be established at theatre as well as at component level. The transport function is one that lends itself to this option given the similarities with the ABCA members transportation functions .
- **Logistic Support Enablers**. Nations use the following to enable support framework (besides their own military support capabilities):
  - **Mutual Support Agreements (MSAs) / Acquisition Cross Servicing Agreements (ACSAs)**. Participating nations have the option to develop support agreements bi and multilaterally to ensure provision of logistic support to their forces. This is especially useful when nations have small force contingents collocated with the forces of another nation that have the capacity to support them. By working together and sharing resources (especially

[5] NATO uses the term “integrated” to denote a significant level of multinationality, i.e., an element that is formed from individuals of all nations vice formed sub-units provided by various nations. The MN commander of a MILU would need command vice control authority over these elements. For this manual, MN and MN integrated are synonymous

services capabilities), nations can achieve economies of scale in their logistic operations. MSAs have the advantage of being simple to set up and can take place on an ad hoc basis. It is essential that the coalition HQ be given an overview of such arrangements in order that they can be taken into account in the overall concept of support or in formulating logistic plans.

- **Host Nation Support (HNS)**. HNS is civil and military assistance rendered in peace, crisis and conflict by a host nation to allied forces and organizations that are located on, operating in or in transit through the host nation's territory. Arrangements are concluded between the appropriate authorities of host nations and sending nations. An ABCA coalition commander (particularly if it is an LN framework) may be authorized by nations to coordinate and control the provision of that support on behalf of all nations or may be limited to publishing policy on the use of HNS subject to agreement by the nations. It is to everyone's benefit to have one voice conduct these arrangements, but this situation is likely possible in a mature theatre only. Host nation agreements potentially can do much to relieve the logistic support burden in mounting and conducting operations. (QAP 960 refers.)
- **Contracting Local Resources**. Local in this sense refers to contracts let to vendors within the theatre or AO not global companies who have no local footprint. A nation will establish contractual arrangements with local contractors for labour, rental vehicles, etc. As with HNS, the coalition commander's authority with respect to this resource is determined and agreed to by the nations. Nations should agree to a set of principles that ensure common pricing, that everyone gets a share, and that the local economy is not destroyed and replaced by the coalition economy thus having a destabilizing effect. Coordination should be accomplished at the highest appropriate level.
- **Third Party Logistic Support Services (TPLSS)**. This logistic support enabler is defined as the use of pre-planned civilian contracting to perform selected logistic support services. Its aim is to enable competent commercial partners to provide a

proportion of deployed logistic support so that such support is assured for the commander and it makes the most efficient and effective use of resources. TPLSS does not lend itself to application in equal measure across all operations and environments due to the varying security implications and liability considerations. This is a national resource and will be shared subject to bi and multilateral agreements. The coalition commander will not be directly involved with TPLSS until such time as the ABCA program establishes such pre-planned and contracted logistic support. However, the ABCA program facilitates the sharing of doctrine, lessons learned and vendor information and contacts between coalition members.

- **ABCA Standardization Agreements**. The ABCA program is a logistic enabler as it promotes interoperability through quadripartite standardization agreements (QSTAGs) and quadripartite advisory publications (QAPs). The ABCA logistic doctrine and material and equipment standards produce the mental and technical interoperability that will be the backbone of coalition logistics. Non-ABCA nations will be expected to comply with ABCA publications to the best of their ability while participating in ABCA coalition operations.

Annex A

Support Options

CSS Functions	NSE	Third Party Contractor	HNS	Local Contracting	MILU	Lead Nation	Role Specialization
Fresh rations	X	X	X	X		X	X
Combat rations	X						
Bulk water	X	X				X	X
Bottled water	X			X		X	X
General technical stores	X						
General non-technical stores	X	X		X			
Bulk fuel	X	X	X		X	X	X
Packaged POL products	X	X					X
Engineer stores	X	X	X				X
Ammunition	X						
Local labour management	X						
Contracting	X					X	
Storage/warehousing	X	X	X		X	X	X
Transportation	X	X	X	X	X	X	X
Movement control	X				X	X	
Terminal operations	X		X		X	X	X
Repair	X	X					
Recovery	X						
C4I	X					X	
Laundry and Bath	X	X	X		X		X
Treatment	X				X	X	
Patient evacuation	X				X	X	
Preventive medicine	X						
Medical logistics	X						
Religious services	X						
Legal services	X						
Postal	X						
Mortuary affairs	X						
Sanitation / Sewage / Refuse	X	X	X	X			
Personnel management	X						
Welfare services	X						
Electric power generation and distribution	X	X	X				

NOTES:

1. Only US and Netherlands blood is certified for use by all NATO nations. There are strict national policies regarding provision of medical supplies, including blood, blood products and pharmaceuticals.

2. This can be used in conjunction with planning guidance and checklists provided in chapter 4.
3. Secure areas and higher echelons of support lend themselves to cooperative and contracted support.

Annex B

Responsibility Matrix by Function

Serial	Logistic Function	National					Lead Nation					Role Specialist					MILU					HNS
		US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	
1	**SUPPLY**																					
	CLASS I (Subsistence Items)																					
1.1	Fresh Rations																					
1.2	Combat Rations																					
1.3	Other Rations																					
1.4	Bulk Water																					
1.5	Packaged Water																					
1.6	**Forage**																					
1.7	Other																					
	CLASS II (General Stores)																					
1.8	NBC Defence Equipment																					
1.9	Clothing																					
1.10	Maps																					
1.11	Tentage																					
1.12	Tools																					
1.13	General Administration Items																					
1.14	Other																					
	CLASS III (POL)																					
1.15	Bulk POL																					
1.16	Packaged POL																					
1.17	Storage																					
1.18	Security																					
1.19	Distribution																					
1.20	Accounting																					
1.21	**Other**																					
2	**EQUIPMENT SUPPORT and MAINTENANCE**																					
2.1	Concept of Support																					
2.2	Maintenance and Repair																					
2.3	Recovery																					
2.4	Diagnostics and Preventative Services																					

Serial	Logistic Function	National					Lead Nation					Role Specialist					MILU					HNS
		US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	US	UK	CA	AS	NZ	
3	**TRANSPORT**																					
3.1	Inter Theatre																					
3.2	Intra Theatre																					
4	**ENGINEERING SUPPORT**																					
4.1	Establishing Camps																					
4.2	Security Engineering																					
4.3	Power Generation and Distribution																					

Chapter 3

Command and Control

GENERAL

3-1. Unlike NATO, American, British, Canadian and Australian (ABCA) operations are not buttressed by standing HQ, formations and agencies. Therefore, the establishment of coalition command and control (C2) structures is a time and mission dependent process that is necessarily flexible and fluid. It is likely that a lead nation (LN) will emerge in the coalition design process and will become the cornerstone of the structure. A more complex multinational HQ may eventually emerge if the mission requires one and given sufficient time and resources.

3-2. This manual has used the HQ structures, including nomenclature, from NATO Allied Logistics Publication (ALP) 4.2 rather than the ABCA nomenclature found in the Coalition Logistics Planning Guide (CLPG). This was done to improve understanding and interoperability of ABCA and NATO concepts.

COMMAND AND ADMINISTRATIVE RESPONSIBILITIES

3-3. Figure 1-2 of the ABCA Coalition Operations Handbook (COH) outlines the various command relationship terms used by the ABCA member nations. Normally national contingents are placed under OPCON of the coalition force commander and remain under command of their nations. The definition of OPCON will be agreed to by all nations, with a number of caveats in accordance with the wishes of each nation included in the transfer of authority agreements. Changes to these relationships can be done with national concurrence only. Command relationships as specified in COH Figure 1-2 do not include administrative support for any relationship other than full command.

3-4. Other than the coalition force HQ, the forming of multinational combat and combat service support HQ, formations and units may or may not be done. National forces could remain grouped under their national flags. They may be regrouped under a multinational HQ for specific operations or phases and then

returned to national control upon completion of those operations or phases.

3-5. If done, the formation of multinational forces would benefit from the integration of administrative responsibilities, creating efficiencies through the elimination of duplicative support elements. Plans and orders must be clear as to any changes to administrative responsibilities, and the command relationship terminology must include the necessary administrative caveat, e.g., 3 (CA) RCR is placed OPCON to 10 (US) Mtn Div, including *replenishment of common combat supplies (Class I, III (B), V)*. In this example:

- the parent nation remains fully responsible for all other aspects of administration
- the gaining commander is now responsible to coordinate or provide the daily replenishment of those common combat supplies
- the details are to be coordinated between the gaining and losing unit HQ
- depending on the size of the units or formations involved, the support could be provided by first, second or third line CSS elements
- administrative relationships should be limited to a certain time period or phase of operation
- administrative relationships should be organized such that minimum changes occur during a battle and the administrative support processes become routine.

SUPPORT RELATIONSHIPS

3-6. Support relationships can be created between nations without the need to establish command relationships between them, particularly at the theatre or operational level where various national support elements (NSEs) establish working arrangements that do not necessitate formal regrouping of assets. Logistics elements can be assigned support missions that ensure the support is provided without changes to the command authority over them. Various nations have different terms for such missions, which are similar in concept. These missions need to be explicitly described in plans and orders. Support missions include:

- **Direct Support (DS)**.[6] This is a mission given to supply, services, transportation and maintenance units that normally provide support directly to other specific units. This allows the direct support unit to respond directly to the supported unit's requests for assistance or supplies. DS is predominately a retail type of service support.
- **General Support (GS)**.[7] This is a mission given to supply, services, transportation and maintenance units that normally provide support to DS units and other GS units (i.e., given to the supported force as a whole and not to any particular subdivision thereof). GS is a predominately wholesale type of service support.

COALITION FORCE STRUCTURE

3-7. The following figure illustrates a large coalition force structure (with US as LN):

[6] Britain, Australia and Canada use "Close Support" in a similar fashion but with nuances as to the characteristics of the support unit (i.e., highly mobile, meeting critical DS needs only). The Canadians consider close support as follows: "That action of the supporting force against targets or objectives that are sufficiently near the supported force as to require detailed integration or coordination of the supporting action with the fire, movement or other actions of the supported force. In the logistician sense, it is the proximity and responsiveness of the supporting force to the supported force that is the issue, not targets or objectives."

[7] Britain and Canada define GS more broadly, including the less critical DS "retail" functions as well.

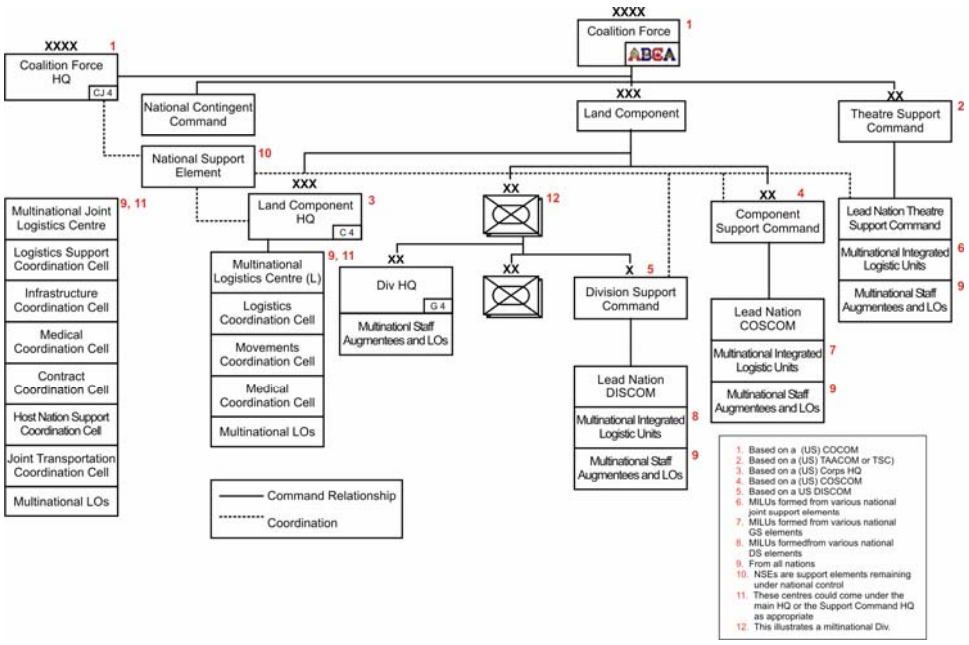


Figure 3-1. Example Large Coalition Structure

THEATRE LEVEL STRUCTURES

3-8. **National Support Elements (NSEs)**. All nations provide NSEs suited to the size of their forces, and these elements form the building blocks of any multinational support organizations being established as part of the coalition. The NSEs have the following functions:

- Performance of national logistic support, coordination of logistic support functions with other participating nations. NSEs are organized and located at the levels dictated by their national authorities.
- Coordination with, and reporting as required, to multinational logistic command and control organizations to ensure continuity of the total logistic effort.

3-9. **Multinational HQ, Formations and Units**. In principle the higher echelon the larger the requirement to make it multinational:

- The coalition HQ, theatre support command (TSC) HQ, land component HQ, land component support command (LCSC) HQ and corps HQ will likely be multinational.
- The majority of combat formations and units (division, brigade, bn) will likely be national, though one

multinational division/bde will likely always be required to cater for those nations that provide forces of brigade or less.

- The majority of support formations and units will be national, though extensive exchange of LOs will be required wherever cooperative support is being provided.
- Multinational integrated logistic units (MILUs) of bn size could conceivably be created, likely performing a third line transport function. Again their existence would be more likely within higher formations (third line) than lower to reduce risk to the support system.

3-10. **Coalition HQ Logistic Staff**. The CJ 4 develops the force commander's logistics policy, plans and priorities in concert with the other HQ staff members, notably the joint theatre movement staff, the CJ 3 and the theatre surgeon and engineer staffs. The size of this staff is commensurate with the scope of the coalition force. The focus of this staff is on the development of the theatre support base, linking with the national lines of communications and setting in place agreements between the nations, deconflicting national priorities, coordinating host nation support, etc, which will form the basis of the coalition logistic effort. They and the national staff will determine the coalition logistic support structure needed to support the campaign.

3-11. **The Theatre Support Command (TSC)**. All NSEs will have a component providing theatre, or operational level (joint), support. In a large (corps sized) coalition, these elements could range from division sized to bn sized logistic formations/units. A multinational TSC (based on an LN) is likely required when:

- There are significant cost savings possible through the centralization and sharing of logistic resources.
- There are factors that dictate the smallest possible theatre logistic footprint. These factors could be a small physical space, restrictive lines of communication due to limited port faculties, limitations on overall force size due to host nation or political considerations, etc.

3-12. The TSC HQ will execute the opening of the theatre and will command or coordinate construction of the theatre support base, the operation of ports and airheads and the reception, staging and onward movement of forces. The role and responsibilities of the TSC staff, CJ 4 staff, and the multinational joint logistics centre (MJLC) must be clearly delineated.

3-13. **Multinational Joint Logistics Centre (MJLC)**. This staff element exists within NATO doctrine, and an MJLC course exists to prepare staff to work within it. It is worth mentioning as it may be a valuable model to follow when creating logistic staff cells within the theatre HQ, the theatre support command HQ and possibly the land component HQ (which would then be called a multinational logistic centre land (MNLC [L]). The employment and the composition of the MJLC depend on the logistic support concept of the operation. It will act as a coordinating agency between component command, national support elements, host nation and non-governmental organizations. The MJLC develops and coordinates coalition level logistic plans and policies. The MJLC is the tasking authority for those units placed under the HQ control. There must always be a clear delineation of responsibilities between the HQ CJ 4 staff, which establishes policy and formulates the overall logistic concept of operations, and the MJLC, which has the execution and coordination task. Additional details on the establishment and employment of the MJLC can be found in AJP-4.6 (A) MJLC Doctrine.

3-14. To execute its coordinating task, the MJLC may establish some or all of the following coordination cells:

- **Logistics Support Coordination Cell** (**LSCC)**. The primary mission of the LSCC is to coordinate the provision of multinational, joint and multifunctional supplies and services with component commands and participating nations. A secondary mission is to provide a focus for property accountability and real estate management. The LSCC also maintains a direct linkage and liaison with all LN, role specialist nation (RSN) units, third party logistic support providers and other participating nations.
- **Transportation Coordination Cell** (**TCC)**. The JTCC will, when established, conduct movement control (in the absence of an LN movement control centre [MCC]) and control transportation resources assigned for shared use.
- **Infrastructure Coordination Cell** (**ICC)**. The primary mission of the ICC is to develop, coordinate and facilitate common funded infrastructure projects, including environmental projects, security engineering enhancements, power and water projects, and public works in support of the operation. The ICC receives functional guidance from the joint force engineer. A secondary mission is to coordinate and monitor the

procurement and use of multilateral funded engineer materiel for infrastructure tasks in support of the force.

- **Medical Coordination Cell (MEDCC)**. The MEDCC mission is to execute medical plans and implement the medical policies set by the theatre surgeon as well as to coordinate multifunctional medical issues, including medical evacuation, medical logistics, preventive medicine and environmental health.
- **Regional Allied Contracting Office (RACO)**. The mission of the RACO is to provide dedicated MJLC logistic contracting and financial management support to execute contractual tasks in support of logistic requirements for NATO (in this case ABCA) HQ and participating nations. The RACO will receive functional guidelines from the CJ 8.
- **Host Nation Support Coordination Cell (HNSCC)**. The HNSCC will coordinate logistic support provided by the host nation(s). As HNS covers a wide spectrum of logistic and other support functions, the cell will need to liaise directly with other HQ staff divisions, nations and force elements as well as HN ministries and government agencies in coordination with CJ 9.

LAND COMPONENT LEVEL

3-15. **General**. The Combined Joint Force Land Component Commander (CJFLCC) has great flexibility in the manner in which the command and control structure is established in coordination with the contributing nations and the commander at joint force level. There is no single blueprint that can be used as a guide to establishing command and control structures, rather a series of options that covers the range of operations and operating environments and the complete spectrum of associated logistic challenges.

3-16. **Land Component HQ Staff**. This HQ focuses on the ground campaign, in particular the integration of combat forces, establishing support areas and supply routes, and developing the concept of support for the campaign. The degree of multinationality is determined by the size of the force and the complexity of the mission. This HQ will coordinate third line support (and control cooperative aspects of that support) including military, HN and commercial contracted support.

3-17. C 4 Responsibilities at land component level include:

- acting as the single point of contact for the commander for all logistic matters;
- formulating and disseminating logistic policy based on policy statements and operational level guidance from superior headquarters;
- preparing logistic plans in support of operations;
- allocating logistic priorities in line with the commander's intent;
- providing assessments of logistics capabilities and constraints, evaluating their impact on current and planned operations and providing feedback to the superior HQ;
- producing options on, and coordinating the balancing of resources in order to overcome logistic deficiencies in specific areas in accordance with the combined joint force land component commander's authorities;
- preparing and forwarding logistics reports to the higher authority as required;
- acting as logistic coordinating authority between the commander and formations;
- establishing, if required, an MNLC (L);
- liaising, via the C 3, with the joint transportation and movement staff, operational planners, to develop movement and transportation plans and prioritizing movement requirements as applicable to CJTF deployment;
- providing coordination with non-assigned medical authorities;
- developing medical and health service support plans for the treatment and evacuation of patients, medical logistics (including blood supplies) and preventive medicine; and
- coordinating with other staff branches that impact significantly on logistic support operations, including, finance, contracting and CIMIC and rear area security.

3-18. **Command Structure Options**. During the planning phase of an operation, the following logistic C2 options will be considered:

- If the operation is relatively simple from a logistics point of view, a suitable multinational joint C2 structure may also be possible by merely augmenting the existing C 4 staff of the LCC HQ of the lead nation.

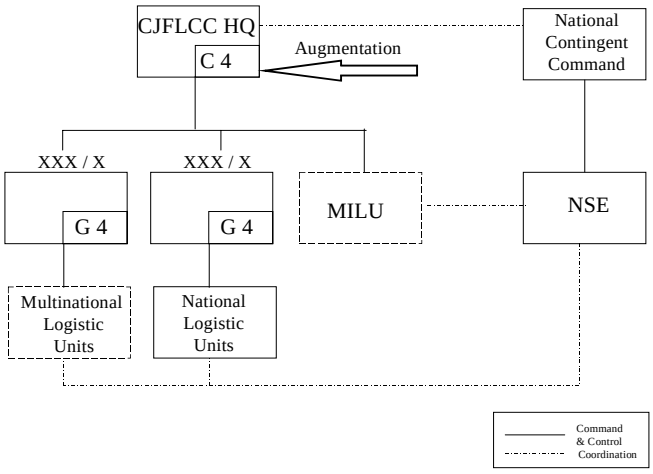


Figure 3-2. HQ Augmentation Option

- If the operation is more complex, it may be necessary to establish an MNLC (L). Once established, an MNLC (L) can be employed—either collocated with the CJFLCC HQ or at the LCSC, depending on the assessment of the commander and C 4.

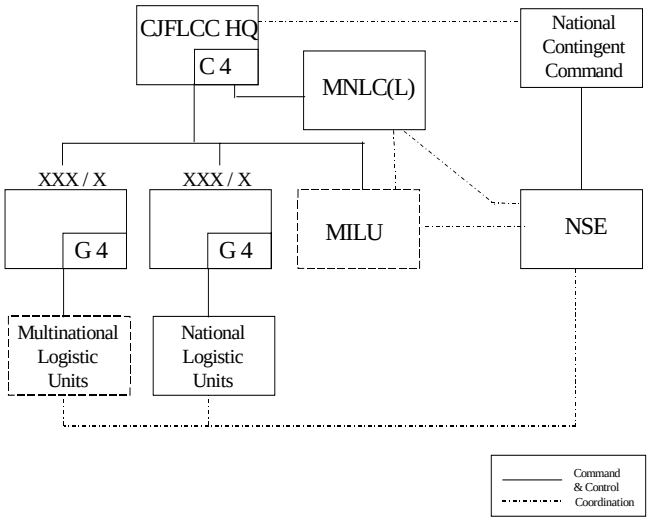


Figure 3-3. MNLC (L) Option

3-19. It should be emphasized that there is no pre-ordained requirement to establish an MNLC (L). Where appropriate, MNLC (L) can be established to reduce the burden of the C 4. At

land component level, C 4 will maintain primary responsibility for logistic planning and operations.

3-20. **MNLC (L) Functions**. The main functions are to establish coordination cells similar to the MJLC model, but reduced in scope and size. The MNLC (L) will also monitor, assess, and report the status of logistics resources and infrastructure—including reception, staging and onward movement—and the status of logistics units, assets, and resources. Furthermore, the MNLC (L) will coordinate, assess and report upon medical and health issues. Should it be necessary, typical MJLC functions such as contracting, liaising with the host nation or NGO and coordination of NSE activities may be devolved to an MNLC, although assistance may be required to find manpower to fulfil these (additional) tasks.

3-21. To execute its coordinating task, the MNLC (L) may establish several coordinating cells. These coordination cells are shown in Figure 3-4:

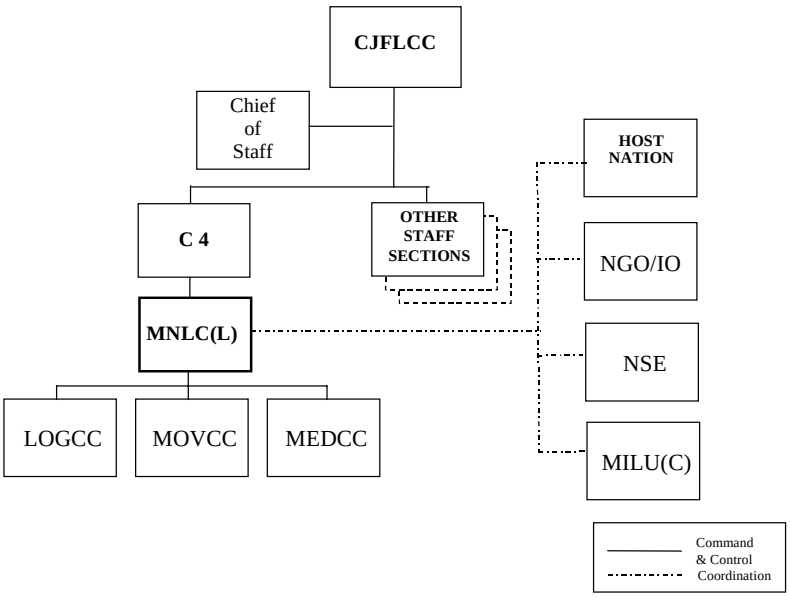


Figure 3-4. MNLC (L)

3-22. **Logistic Coordination Cell (LOGCC)**.[8] Regardless of the type of structure adopted to support the commander, a LOGCC composed of logistic staff could include national liaison

[8] Abbreviation has not yet been agreed upon.

teams and representatives from other organizations/agencies. The LOGCC will be responsible for implementing logistic policy, ensuring adherence to the sustainability statement and reflecting the commander's views on logistic issues to the NSE. It will task assigned MILU and take on any additional land component joint operations area (JOA)-wide logistic responsibilities as directed.

3-23. **Movement Coordination Cell (MOVCC).**[9] A MOVCC will be established to coordinate land movement issues outside the sphere of influence of the MJLC. These might include hub and spoke activities, forward rail movement and convoy control on designated routes within the area of operations (AO).

3-24. **Medical Coordination Cell (MEDCC)**. If established, the primary responsibility of the MEDCC will be formulating and implementing both generic and mission/operation specific medical plans. The MEDCC will be responsible for medical policy on veterinary and preventive medicine.

3-25. **The Land Component Support Command (LCSC)**. The same considerations that drive the formation of a multinational theatre support command apply to the land component. If the land forces are expected to advance in distances that require the leapfrogging of formation level support commands, the combining of these commands under a multinational HQ may improve coordination of follow-on support to the land forces as they advance. As the line of communication lengthens within the land component AO, centralization of movement control and transportation assets in particular could benefit the land component commander.

DIVISION AND LOWER LEVEL

3-26. The nature of tactical direct support is one that national forces can best deliver themselves-their support vehicles and loads are optimized to sustain their specific national weapon systems-and there is no danger of disturbing the unit cohesion vital to successful combat service support (CSS) in battle. The nature of the operation and the threat level are the primary factors in determining whether to use multinational HQ and units within combat formations-a multinational division with a multinational HQ, support command and MILUs may succeed in an ongoing peace support operation but may be too risky to attempt in war unless the div is well integrated and trained prior to employment.

[9] Abbreviation has not yet been agreed upon.

3-27. The formation HQ will:

- coordinate or execute all aspects of the logistic and medical support missions within its AOR;
- coordinate national and multinational logistic support provided by the formation, the land component and JOA;
- execute redistribution authority as specified in Transfer of Authority (TOA) documents and arrangements; and
- coordinate the logistic reporting in order to inform higher HQ of the logistic status.

3-28. Formation commanders are granted the authority to redistribute logistic resources under their command. Such a provision is intended only to allow forces to remain logistically balanced in the pursuit of assigned missions and is not designed to routinely compensate for deficiencies in other nations' forces. Any logistic redistribution will not be to the detriment of the providing nation.

ESTABLISHING LIAISON

3-29. **Reciprocal Liaison**. This type of liaison is required in multinational operations and is the most effective means of coordinating cooperative logistics. Liaison between logisticians should be established when:

- a force is placed under OPCOM or OPCON of a headquarters of a different nationality;
- when connectivity is sought through a command and control information system (C2IS)—details of establishing such a C2IS interface are given below;
- when a DS or GS support relationship exists between nations;
- the military establishes liaison with non-military agencies.

3-30. **C2IS Augmented Liaison**. The use of a C2IS within a liaison team will increase the effectiveness of the liaison and increase the pertinence, accuracy and timeliness of information transmitted. The use of this means can augment the efficiency of the human interaction already enjoyed by the liaison team/detachment. These interfaces will be established in a manner agreed upon by each participant and according to specified contracts. Some considerations:

- Transferring information/data from one system to another must be controlled to ensure each C2IS remains secure.

These C2ISs should be stand-alone systems to reduce this possibility.

- Security classification issues must be addressed depending on the system and operator security classifications of all nations concerned.
- Technical expertise may be required to maintain the interface.

COMMAND, CONTROL, COMMUNICATION, COMPUTERS AND INFORMATION SYSTEMS

3-31. In the lead nation concept, the LN determines the appropriate command, control, communications, computers and information (C4I) procedures, working closely with the other national contingents. The mission will require definition of the necessary information exchange requirements (IER), and recognition of the national security considerations implicit to these operations. Elements of an effective C4I system include some or all of the following:

- All nations will be expected to provide liaison officers to the LN HQ and other nations' HQ as required.
- An LN may be required to provide C4I support to nations without compatible systems, likely down to operational level HQ only. This may include hardware, software and digital and analogue communication networks.
- IER will be agreed to and standard operating procedures (SOPs) for their production and use will be developed within the coalition.
- Nations will be expected to provide their own strategic, operational and tactical C4I in keeping with their national commitments and goals.

3-32. Regardless of the level of command, the ultimate aim of logistic C2IS is to provide the commander with visibility of his logistic assets. Robust communications and dedicated information technology (IT) systems respectively will be needed if the flow of personnel and materiel in the lines of communications (LOC) is to function most effectively. As nations move to the battlefield distribution management for support, total asset visibility and in-transit visibility become even more important aspects of the LOC.

3-33. Each nation will have its own unique C2IS to manage logistic support of its committed national forces. However, to provide the greatest possible support to committed forces, each nation should interface and exchange information with the higher, lower and adjacent forces. The information to be

exchanged between national logistics units is dependent upon the type of equipment held by various units, their interoperability and their respective missions. Interoperability with other nations should be addressed through bi/multilateral talks and agreements with all affected nations and the subsequent development of quadripartite standardization agreements (QSTAGs). Each nation, whenever possible, should strive to develop an interoperable C4I system.

INFORMATION MANAGEMENT

3-34. Cooperative logistics is enabled by shared (logistic) information at all levels of a coalition:

- **Strategic**.
  - National sources will collect the majority logistic preparation of the battle space[10] Logistic preparation of the battle space (LPB) related information, particularly the geospacial and physical information of the theatre and what economic resources are present for possible exploitation. Agreeing to share this information could reduce the overall burden on collection and processing costs and effort and decrease the preparation phase of the coalition building process. Though of the most benefit, this level of cooperative information use is the most difficult due to political, security and technological reasons.
  - National TAV and ITV systems movement information is vital to a commander in the theatre-opening phase to deconflict and prioritize events. The time needed to bring a force to battle readiness could be reduced if this information was shared.
- **Operational (Theatre HQ)**. Nations will deploy C2IS with links to national databases and likely stand-alone databases as well. As the range of information is more focussed than the strategic level, cooperative use should be easier to achieve, though security and technological barriers may still exist. It is the in-theatre TAV and ITV

[10] There is no agreed upon definition. At this level it is an analysis of all factors that may impact the design and concept of operations of the logistic support structure. It can include gathering information on climate, geography, demographics and economic development of the theatre and surrounding countries. At the operational and tactical level LPB becomes more focussed, seeking refinements to plans, groupings and tasks. Proper LPB aids the logistic staff and commanders to envision the support end-state and the sequence of activities to achieve that end-state.

information that will be of most value to improve understanding of force readiness and combat capability.

- **Tactical (Component HQ and Below)**. The focus at this level is understanding the combat capability of formations as the battle progresses. Logistic information sharing should be focussed on only those indicators that predict the formation reaching its culmination point due to reduced combat capability. Commanders will establish IRs that support this kind of decision-making, and that information is the basis for IER. Exchanging a broader range of information at this level is not only of no value, it is *counter-productive* as it wastes bandwidth.

3-35. **Information Requirements (IR)**. All information that must be collected in order to meet the mission specific requirements of the commander and staff for the successful execution of a specific operation. IR must be related to a specific decision. IR may be related to enemy forces, friendly forces or the operational environment:

- **Commander's Critical Information Requirements (CCIRs)**. CCIRs are defined as crucial elements of information identified and required by the commander that directly affect decision-making and successful execution of operations. The designation of CCIRs is a command responsibility. CCIR communicate to the staff those elements of information the commander deems necessary for his own decision-making and focus, bind and discipline staff activity. A commander of logistic forces is no different in this regard. The sub-sets of CCIRs are:
  - **Priority Intelligence Requirements (PIR)**. Those intelligence requirements (regarding the enemy) for which a commander has an anticipated and stated priority in his task of planning and decision-making. These may be of lesser importance to the logistic commander, except wrt force protection and security engineering implications.
  - **Friendly Force Information Requirements**. Information the commander needs about friendly forces in order to develop plans and make effective decisions. This is vital to the tactical logistic commander.
  - **Essential Elements of Friendly Information (EEFI)**. Critical aspects of a friendly force that, if

known by the adversary, would subsequently compromise, lead to failure or limit success of the operation. Therefore, those aspects must be protected from adversary detection. EEFI are a critical element of operational security (OPSEC). These elements of information will be vital to the logistic commanders and staff so that theatre and component support areas can be shaped to conceal main efforts, force readiness, combat capability and contribute to faints and demonstrations.

FURTHER READING

- QSTAG 506 Operations Orders, Warning Orders and Administrative/Logistics Orders
- QSTAG 510 Operational Situation Reports
- QSTAG 532 Signs, Signals and Markings to be used in Controlling Combined Exercises
- QSTAG 533 Principles and Procedures for Establishing Liaison
- QSTAG 538 Recognition and Identification of Forces on the Battlefield
- QSTAG 1067 Compendium of Land Forces Messages for Command and Control
- QSTAG 2051 Agreement on the Principles and Vocabulary of C2 Doctrine

Chapter 4

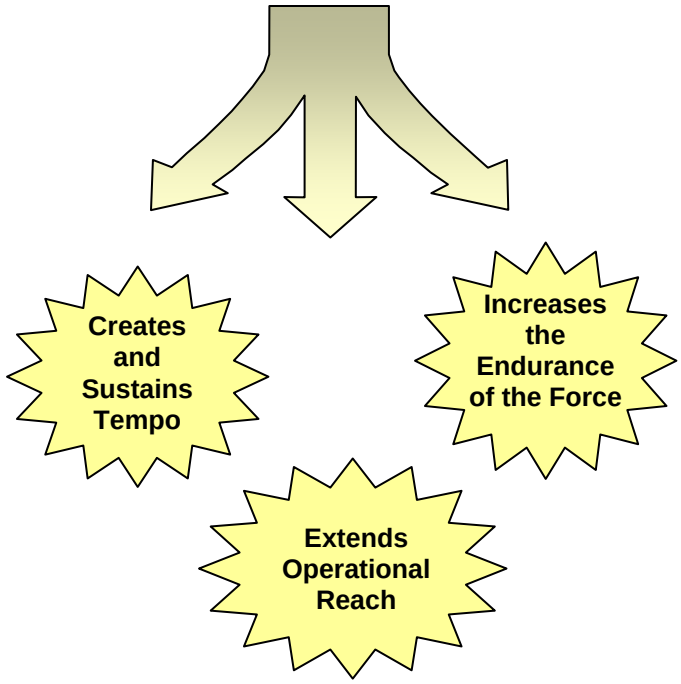
LOGISTIC PLANNING

GENERAL

4-1. The purpose of this chapter is to describe the actions involved in planning of land forces logistic support in coalition operations. This chapter covers two aspects of planning: the integration of national strategic planners as a coalition is built and the operational planning done within the coalition to achieve its mission.

4-2. The aim of sustainment planning is to ensure the availability of the support necessary for the accomplishment of a mission and allow the commander to achieve the desired operations tempo. The system should cater for sustainment requirements from beginning to end, including the phasing of support where appropriate. The system must provide support to all combat elements and must include the best possible integration of all sustainment capabilities and distribution methods. Sustainment planning must be directly linked to the scheme of manoeuvre, as it is the scheme of manoeuvre that outlines the limits of the battle space within which support will be provided. Sustainment planning provides the means to test the feasibility of operations courses of action (COAs), in particular the availability of resources to meet the expected requirements. Although sustainment may place limitations on operational options, the aim of the sustainment planner is to reduce or eliminate such limitations and contribute to the effective application of combat power[11].

[11] Figure 4-1 was copied from USMC Advanced Logistic Officers Course lecture notes. An excellent course!



*Planned operational pauses will eliminate unsupportable over extension and premature culmination

Figure 4-1. The Aim of Proper Logistic Planning and Execution

4-3. The logistic planning cycle is one contributed to by the visualization of the commander (an “art”), and the hard work of the staff (the “science”). The general process would be:

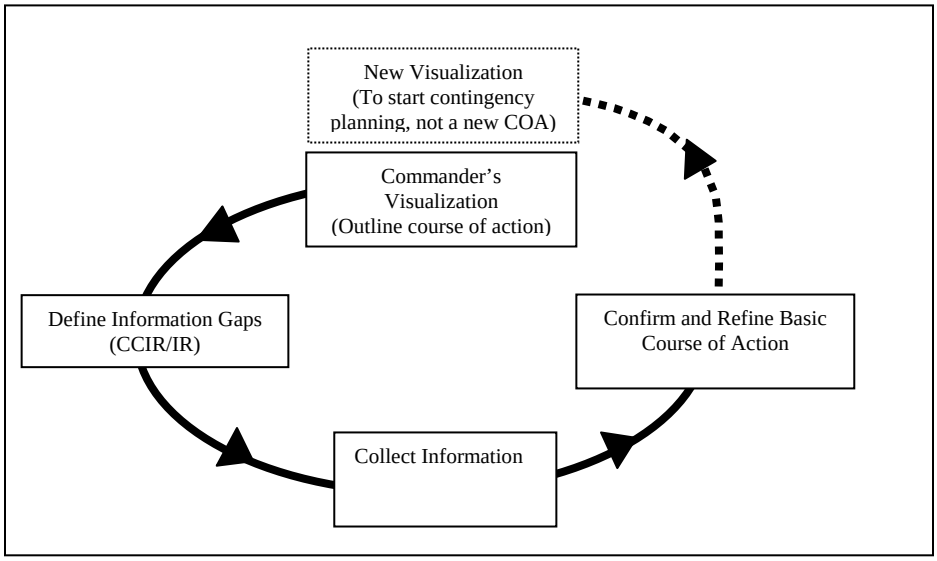


Figure 4-2. Logistic Planning Cycle

4-4. It is not a linear process but an ongoing one. There may be a number of cycles, working in parallel but slightly out of step, each based on a different time horizon. These cycles support:

- **Current Operations**. This has a near term planning window (looking out 24 hours or so), focussed on the current battle. It is the realm of ops staff in units and formations.
- **Future Operations**. This is a longer term planning window (96 hours or so) focussed on the next battle. Formations usually have a planning staff for this function.
- **Future Plans**. This planning window is longest and may be characterized as deliberate (vice crisis). It focuses on operational planning and campaign design. Corps and higher HQ are capable of such planning.

4-5. There is no intrinsic difference within the process as one moves from the strategic to operational to tactical levels, only differences in the focus of the plan (which phase of an operation), its time horizon, resources available (time, staff, command and control information system [C2IS]). **Ideally, the planning levels operate in an integrated fashion with the products of the higher shaping those of the lower levels.**

STAFF INTERACTION

4-6. All American, British, Canadian, and Australian (ABCA) member nations employ relatively similar operational planning processes (OPPs). Any one, or combination, could be used in the coalition HQ. The OPP is an integrating process, led by the G3 or COS. Inputs are provided by a variety of staff as well as arms and service advisors. The G1 and G4 staff branches provide sustainment input. This input is provided at every step in the process. The depth of detail and accuracy of analysis increases as the process unfolds in concert with the increasing sophistication of all other parts of the process such as the scheme of manoeuvre, fire planning, engineer support, etc. Unless the process is dramatically abbreviated, this analysis usually progresses through a series of preliminary staff checks, refined staff checks, concept development and plan development.

STRATEGIC PLANNING

4-7. Because ABCA has no standing HQ and is not an alliance with agreed strategic interests and contingency plans, the cooperative and integrated strategic planning is done on an ad hoc basis. Each of the nations has a national strategic planning process that will result in plans and orders that will put troops into the field. The strategic planning process will generally include the following:

- the government decides national goals;
- military staffs develop strategies and options for military force structures (ad hoc or based on contingency plans) to achieve these goals;
- reconnaissance's are made by various levels of command and staff to update information;
- staff checks are done to confirm troop and material readiness, assess strategic movement requirements and availability, develop cost estimates, etc; and
- enabling operations would commence, including:
  - activation of logistics elements;
  - establishment of all lines of communication (LOC) including points of embarkation (POEs), points of disembarkation (PODs), movement control assets, intermediate support / staging bases;
  - establishment of HNS or regional contracting offices;
  - supply build-up; and
  - activation of third party support contracts.

4-8. **Multinational Logistic Planning**. This is done through linking the various national staffs, once given direct liaison authority, via the following means:

- Direct Communication.
- Conferences. These conferences should be located where decisions are being made, i.e., initially at national HQ, and later on in theatre as national command and support elements deploy. They may include representatives from nations, host nation, non-governmental organizations (NGOs), etc.

4-9. The aim of this planning will be:

- harmonize force packages;
- prioritize national deployment;
- establish cooperative logistic polices, i.e., identify lead or role specialization nations, etc;
- determine which HQ, formations and units will be multinational;
- establish policies that reduce competition for infrastructure and local resources;
- establish either multinational or bi-national support agreements / MOUs as required;
- agree to the redistribution authority granted to the coalition commander; and
- confirm capabilities of all troop contributors, particularly non-ABCA nations, with a view to understanding surpluses and shortfall in logistic capability.

4-10. The strategic planning focuses on building coalitions, deployment to theatre, operating the strategic sustainment LOC, and redeployment home. The execution phase is more the purview of the operational and tactical levels of planning. The chart below illustrates the movement planning interactions between force HQ and nations—this kind of interaction applies to the strategic planning of the other logistic functions as well:

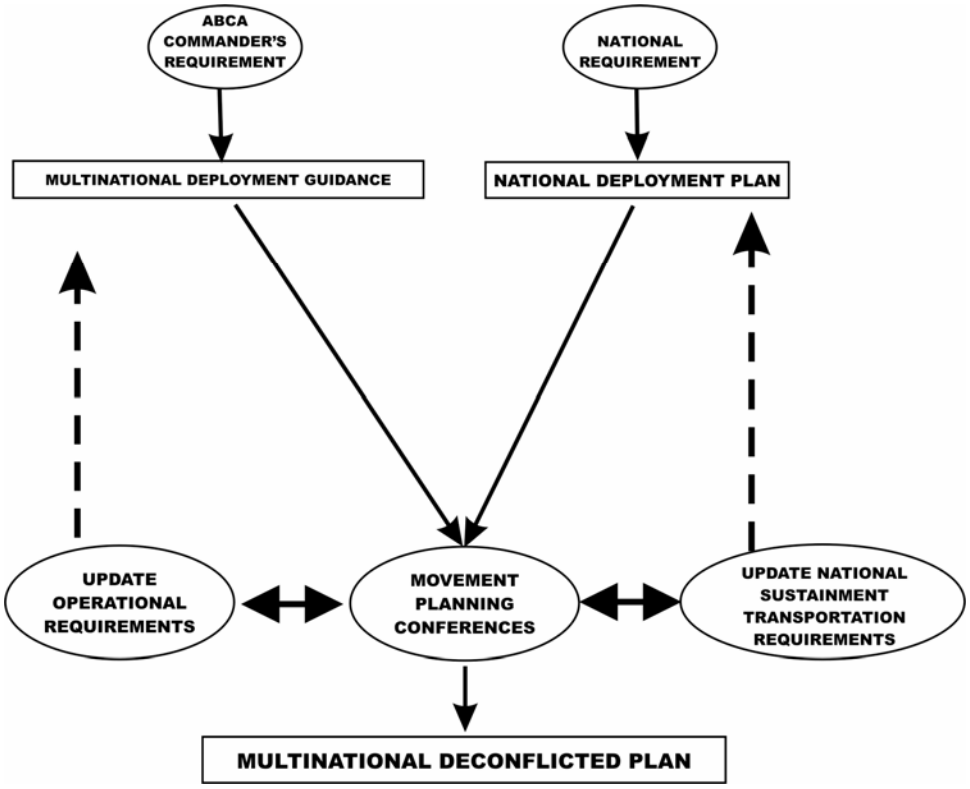


Figure 4-3. Deployment Planning

OPERATIONAL AND TACTICAL PLANNING

4-11. There is no agreed ABCA planning process, but the member nations share much the same doctrine, with relatively modest differences. Operational level planning focuses on campaign planning, including the integration and preparation of tactical forces for battle, the execution of the fight and reconstitution and sustainment of the operation until complete.[12] The coordination and integration required to wage war suggests that this level of planning can not be ad hoc—multinational integrated planning cells will be required at the theatre HQ, theatre support command HQ, land component HQ and land component support commander (LCSC) HQ. These HQ will require planning standard operating procedures (SOPs).

4-12. Sustainment planners must be fully engaged in the planning process and clearly appreciate the commander's intent and priorities. Sustainment planners must maintain situational awareness by tracking

[12] Other language used in the description of land operations is "Understand, Shape, Engage, Consolidate, Transition."

ongoing operations in order to anticipate requirements and act proactively to resolve deficiencies. The sustainment of forces engaged in high-speed operations in a non-contiguous battle space places increased emphasis on the distribution system, with the attendant need for redundancy and flexibility.

4-13. The process is as detailed as time and the situation permit and demand:

- the process my be restricted to a few *staff* checks on critical issues;
- *estimates* may be done by individual commanders or staff officers; and
- estimates are collaborative, what is known widely as the operational planning process (OPP).

4-14. Regardless of the complexity of the analysis, the product is not normally in written format. Sustainment analysis is best presented in the form of numerical tables, graphs or schematics.

OPERATIONAL PLANNING PROCESS

4-15. The OPP is a collaborative planning process used in some form or another by the member ABCA nations in HQ generally bde and higher. Annex A shows the process as used by the ops and log staffs. It consists of four consecutive steps:

- Step One—Mission Analysis (and issue of commander's guidance).
- Step Two—Course of Action Development.
- Step Three—Course of Action Analysis (comparison.
- Step Four—Decision and Execution.

THE COMMANDER'S ROLE

4-16. Successful commanders are able to visualize the battle space and the intended actions of both the enemy and friendly forces. Visualization is a continuous process that requires an in-depth understanding of the current situation, an appreciation of the possible future situation and the actions necessary to bring about the desired end-state. To be successful, the commander must be able to translate this visualization into direction to staff and subordinate commanders and, in turn, focus their planning and execution of tasks. The commander will not necessarily limit the operations staff to one course of action, but his judgement applied early in the process will bring the planning cycle to a workable plan much sooner than merely presenting an end state and letting the staff carry on.

4-17. Sustainment commanders are no different. They should intuitively visualize the general configuration of the sustainment requirements and the

system needed to sustain it based on their profession training, their understanding of the overall mission and their grasp of the standing logistic forces under their control. At the operational level and below, there will likely be only one true logistic COA, one that successfully supports most operational COAs (with refinement). The doctrinal HSS, replenishment system, repair and recovery systems are such that they require tweaking and adjustment rather than fundamental re-design.

4-18. There are various national doctrines that describe how commanders present their guidance to staffs. The guidance should include:

- the Commander's intent, including:
  - mission,
  - outline COA,
  - end state,
  - key tasks, and
  - commander's critical information requirements (CCIRs);
- the expected duration of the operation;
- mission essential equipment and availability requirements; and
- national sustainment levels in theatre.

THE COURSE OF ACTION (COA)

4-19. Unlike operations COAs, where multiple options are often generated, sustainment planners normally generate a single, flexible COA that maximizes throughput of resources and contains some redundancy. Where the operations COAs are dramatically different, the sustainment planner will have to consider how to adapt to one course or another, but this does not normally require the development of a completely different approach. The sustainment COA will, however, use multiple sites and methods of distribution. All potential sites and distribution capabilities must be identified early in the planning process so that they may be incorporated into the evolving concept. This allows the sustainment planner to deal with branches and sequels to the selected COA and plan force protection measures to protect critical vulnerabilities.

4-20. The sustainment COA must be tested against all operations COAs and be part of the OPP war gaming process. Based on war game results, the sustainment planner will be able to identify the best possible use of the available resources and distribution capabilities, including holding some in reserve.

4-21. A graphical representation using the coalition C2IS of the COA should be created ASAP in the planning process, as it will become the key building block for the plan and for sharing information with surrounding

staff and other HQ. An HQ must develop SOPs for the production of such overlays and how the layering of the information within the overlays is to be done. Current ops, future ops and functional overlays could contribute to the COA package.

4-22. The COA should:

- be succinctly expressed and easily understood;
- provide sufficient detail to facilitate visualization of the overall concept;
- be synchronized with the operations COA, including phasing and main effort;
- address each sub-system by phase where appropriate; and
- establish priorities of support before, during and after the operation.

4-23. The chosen COA is best presented in short narrative form with supporting graphics. This provides the basis on which to prepare the combat service support (CSS) paragraph or annex of op orders or administrative orders. A COA should address essential, unusual and non-standard aspects of CSS in a framework of who, what, when and where. A COA could include:

- a brief synopsis of the mission;
- CSS units, locations and capabilities;
- higher support commander's priorities;
- task organization of CSS resources;
- support relationships;
- command and control of CSS assets;
- the sustainment main effort;
- requirements;
- risks; and/or
- priorities and resource allocation.

THE ESTIMATE

4-24. An estimate of the situation is a logical process of reasoning to solve a problem. It is an individual process taught to most officers within ABCA as an analytical thought process. Today it is not likely that a lone estimate will be used to shape a war, but it is a contributor to the overall OPP. Commanders at all levels rely on it when making quick decision (sometimes called a combat estimate), and a functional (supply, maintenance, transportation) staff may do an estimate to study the specific factors relevant to that function to contribute to the overall collective OPP. Various nations use various formats, though generally it is similar to the OPP in outline: Mission Analysis, Develop COA, Compare COA, Decide.

4-25. The basis of the estimate is the study of factors, or a checklist of questions (Annex B, from the old Coalition Logistics Planning Guide), which lead to an examination of a fact or circumstance that bears on the situation and to deductions regarding the conduct of the operation. In the case of logistics, the study of factors usually results in the key elements of an outline plan (as discussed previously, logistic planning usually refines a single COA rather than develop several and choose).

4-26. There are no fixed list of factors, however, two doctrinal samples are provided below and amplified in Annex C. Both sets of factors may be applied against any of the support functions (supply, maintenance and equipment sp) if that meets the needs of the officer doing the estimate:

- destination, demand, duration, distance, risk (4DR); and
- enemy, terrain, weather, friendly forces, time and space, surprise deception and security, lessons learned, doctrine.

4-27. The study of the factors, or checklist, will lead to a number of deductions such as:

- requirements, i.e., how much is needed (where, by whom, when), what is available, priorities, etc;
- changes to doctrinal support concepts, i.e., tables of organization and equipment (TOEs), groupings, etc;
- identifying higher support; and
- identifying risk and mitigating it through redundancies, and highlighting "showstoppers" as soon as possible.

4-28. There will be a number of staff checks done to support the estimate, which will in turn provide the supporting information and detail that will contribute to OPP and the production of the concept of sustainment and the OPLAN. Regardless of the level of detail in the plan, it must be based on a reasoned analysis of all applicable factors.

STAFF CHECKS

4-29. Staff checks are calculations to confirm, within limits, the feasibility of a tentative activity within a proposed COA. Various staff checks will be conducted throughout the OPP and, in particular, during the early portions of the branch staff estimate processes. Numerous staff checks may be required during the development of a single COA and more may be required as the COA is refined. Staff checks are particularly prevalent in the sustainment estimate process due to the extremely wide range of issues to be considered. Staff checks can be conducted on issues across all four sub-systems of the sustainment system; however, they are particularly useful when determining gross requirements for combat supplies or for gross movement calculations. The essence is to compare requirements against

availabilities and determine where changes to evolving COAs might be necessary.

4-30. In a staff check, all pertinent factors must be considered. Absolute accuracy and detail is traded for speed and timeliness in the decision making process. A staff check is the most rudimentary of estimates and may involve automated or manual calculations or simply interpersonal queries. Where automated templates are not available, the staff check can be simplified by reducing a unit of measure to a common denominator such as tonnes, truckloads, standard pallets or kg per soldier per day.

CONTRIBUTING TO THE OPS COA DEVELOPMENT

4-31. Combat commanders and the ops staff are not interested in the routine transactions that fill the logisticians life. They want to know the following:

- Do they have the initial required combat capability measured in availability of personnel, weapons and combat supplies?
- Can ongoing replenishment be conducted, or will the force culminate due to depleted logistic resources?
- Can reconstitution be conducted in time to carry on follow-on missions, or is an operational pause required?

4-32. Logistic staffs use staff checks for the most part to answer these questions for each of the COAs presented by the ops staff. They also consider the tactical concept of operations to deliver that support, the regrouping of logistic assets, changes to routine replenishment procedure, etc.

TOOLS

4-33. Sustainment can be the most complex of the combat functions, but its planning is largely a science.[13] Successful planning and execution can demand extensive analysis of a myriad of factors and the melding of a wide variety of individual estimates and staff checks. Most of the required analysis can be conducted using computer supported planning tools. In addition to analytical tools, the planner may wish to create tables, graphs and matrices to assist in synchronizing what might be a complex effort.

4-34. **Staff Data Handbooks**. All nations have handbooks (paper or electronic) with logistic information on their national forces that support the estimating of supply requirements, vehicle casualties, personal losses, etc. A coalition HQ requires all available tools and should develop an understanding of key planning figures that will be used most often (referred

[13] However, the successful sustainment plan still requires the creative input of the planner, based on experience, training and education.

to as "yardsticks"). Refer to QSTAG 1030 ABCA Staff Planning Data Requirements.

4-35. **Logistic Preparation of the Battle Space (LPB)**. This is a key tool in building a flexible operational support plan. It is a process that is used to understand the environment so that all factors potentially capable of affecting the logistic mission are understood. It enables the designing of forces, the shaping of the battle space infrastructure and the concept of providing support on the battlefield. It must be supported by the information systems discussed in the previous chapter. LPB is the start point for OPP. LPB focuses on three sub-processes:

- **Defining the Battle Space Environment**. This step consists of determining which issues are pertinent to the planning and operating environment. Where information is not available, the planner creates an information requirement (IR) and determines an information acquisition strategy. Factors might include:
  - **Enemy**. Understand his impact on CSS operations.
  - **Geography**. Climate and terrain in the area of operation (AO) to determine type(s) of equipment needed and when. Use water information to determine the need for such things as early deployment of water production and distribution units.
  - **Supply**. This includes items that are readily available in the AO and can be used in support of forces. Fresh food, bulk water, bulk fuel and construction materials are best sought locally to reduce the LOC burden.
  - **Facilities and Services**. Availability of such things as warehousing, cold storage facilities, production and manufacturing plants, reservoirs, administrative facilities, sanitation capabilities and hotels.
  - **Transportation**. This includes road and rail nets, inland waterways, airfields, truck availability, bridges, ports, cargo handlers, petroleum pipelines and materials handling equipment (MHE) as well as traffic flow, choke points and control problems.
  - **Maintenance**. This includes maintenance facilities that could support coalition equipment. Does the country have adequate machine works for possible fabrication of repair parts?
  - **Medical Aspects**. These include information on all health-threatening aspects and necessary preventive

medicine program related to the theatre. Availability of medical facilities, especially acceptable role 3 capacity, should also be ascertained.

- **Labour**. What are the skills of the general population of the country? Are interpreters available? Will a general labour pool be available? What skills are available that can be used in logistics support operations? For instance, will drivers, clerks, MHE operators, food service personnel, guards, mechanics and longshoremen be available?
- **Political Situation**. Willingness or resistance of population to the presence of the coalition will define the degree of general friction to operations. Friction requires more negotiation, time and money to overcome.

- **Determining the Battle Space Effects**. Having established the environmental context, the intent of this step is to examine the effects of the defined battle space on combat, combat support and combat service support forces. Deductions drawn from this step will serve as the initial start point in determining the risk associated with subsequent COAs.
- **Information Integration**. This step is concerned with collating information that may come from a variety of sources and integrating it into a useable intelligence analysis, which will shape the remainder of the estimate or estimate process. Where applicable, the product from this step must be summarized and passed to subordinate planners.

4-36. **Network Analysis**. This is a detailed analysis of the distribution capacity to achieve the requirement. It ties requirements, availabilities and intelligence products into a single overlay. Visualizing the system in this way helps the sustainment planner to simplify a complex task by breaking it down into subordinate elements such that network analysis can be conducted:

- **Demand**. Each supported formation has its key replenishment requirements summarized.
- **Availability**. Logistic nodes have stocking levels portrayed, etc.
- **Throughput**. Capacity of LOCs are listed.
- Redundancy and flexibility must be planned into the system.

4-37. **Tables**. These are shared tables, spreadsheets or databases:

- **Task Table**. Completed as early as possible in the planning process, it is often advantageous to prepare a matrix of possible tasks, by phase if appropriate. Tasks should be identified as assigned, implied or critical. The resulting table can be used to begin the analysis of requirements and availabilities.
- **CCIR and Request for Information (RFI) Tables**. These summarize the information needs and collection plans. May link to Named Area of Interest (NAI) tables.
- **Synchronization Matrix**. One approach is to use a table showing sustainment sub-systems down the side and phases or timings across the top. The major activities and requirements to support them would complete the table.
- **Decision Support Matrix**. Created in table format, a decision support matrix (DSM) reflects what critical decisions are required and what information is required to support the decision. It is often supported with a decision support template—a graphic depiction of the battle space showing timelines at which decisions must be made.

4-38. **War Gaming**. Time permitting a number of war games will be done:

- By logistic staffs of various HQ involved in complex logistic operations such as operating the theatre LOC, leapfrogging GS installations, conducting LOTS, etc.
- By operations staffs, with logistic staff representation, who conduct games to help select or refine COAs.

4-39. War gaming can:

- identify strengths and weaknesses of each COA and stimulate ideas, insights and tasks that might not otherwise be developed;
- assist the staff in identifying branch plans and sequels to the COA;
- improve staff familiarity and understanding of the operation;
- emphasize battlefield synchronization and support detailed development of coordinating instructions;
- confirm requirements estimates; and
- confirm decision points, areas of interest.

4-40. **Situational Awareness Systems**. Modern C2IS can provide a near live representation of the ongoing battle generated by GPS/SAS

systems and the G3 and G2 Ops staffs. Mitigation of problems can be done more promptly than before.

4-41. **Shared Data and Graphics**. Modern C2IS allow the sharing of products such that overlays can be copied and amended rather than starting from scratch. This goes for lower HQ using higher HQ products as well. Data should be entered once and roll up should be automatic. The burden associated with the hard copy reports and returns should be eliminated.

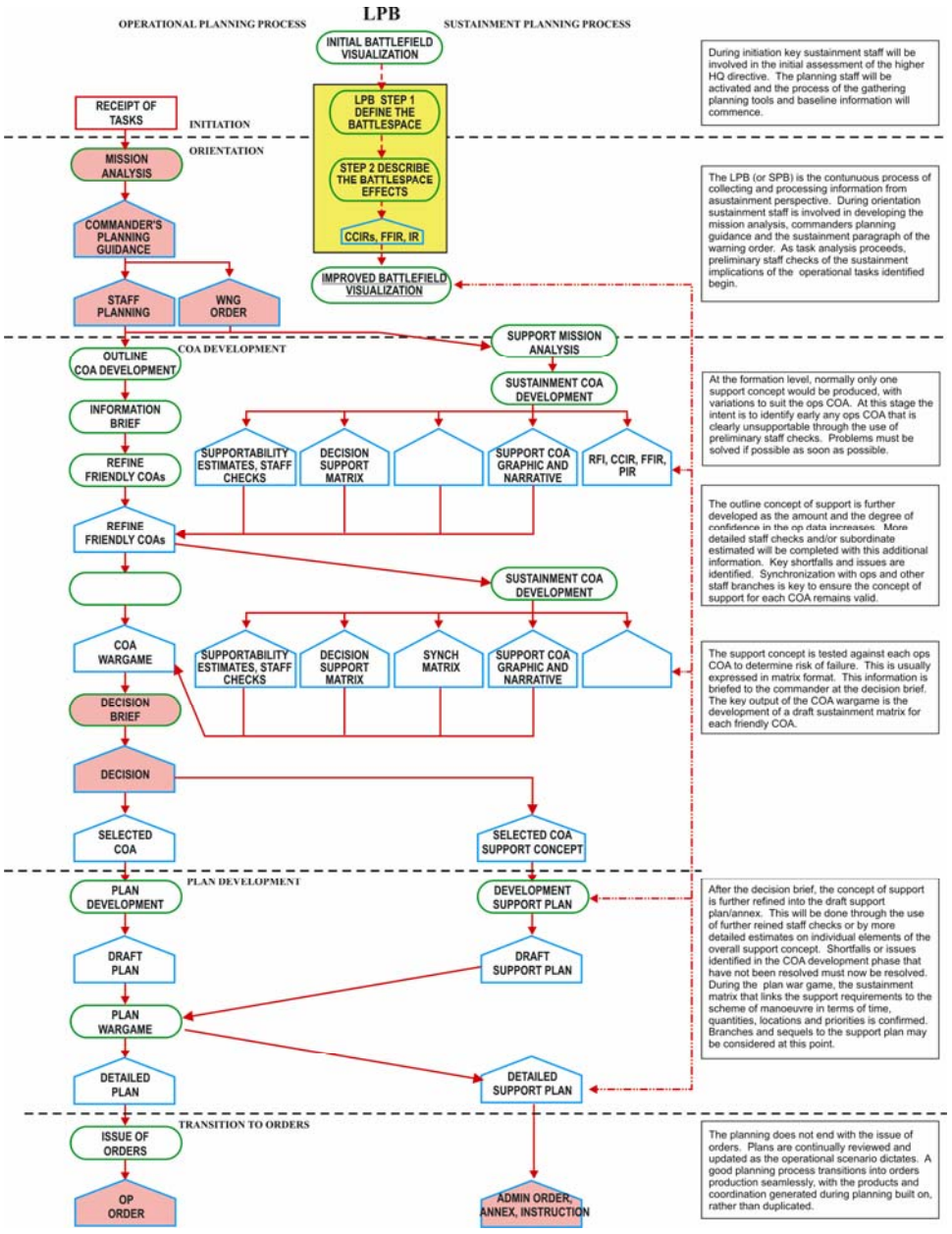
FURTHER READING

- QSTAG 1030 ABCA Staff Planning Data Requirements

This page intentionally left blank.

Annex A

Sustainment Planning Within OPP



This page intentionally left blank.

Annex B

Planning Guidance Checklist

4B-1. **Introduction**. This annex introduces possible questions lead nation logistics planners could ask themselves in developing a multinational logistics operations plan (OPLAN).

4B-2. **Use**. Information contained in this annex should be used by American, British, Canadian, and Australian (ABCA) armies to improve the level of standardization whenever possible. Basic sections will be in bold.

4B-3. **References**. Is a listing available of national doctrinal, policy and procedural publications appropriate to the level at which the plan is prepared? Are coalition and joint service references included where applicable?

4B-4. **Purpose**. Is there a concise statement of the purpose of the coalition plan?

4B-5. **General**.

- Is a concise concept of support stated?
- Do plans provide a summary of the requirements, tasks and concept of coalition operations that the logistics planning supports? Are national, role specialization, lead nation and host nation responsibilities (see Annex A and B) defined for the various logistics tasks.
- Are the multinational logistics objectives specified? Are they achievable with respect to the plans?
- Are the character, size, expected duration and dates of the multinational operation stated?

4B-6. **Logistics Assumptions**.

- Do plans include all assumptions (national and multinational) upon which the concepts of logistics support are based?
- Do assumptions conflict/agree with supporting/supported OPLANs?
- Are assumptions realistic?
- Are enemy capabilities adequately addressed?

4B-7. **Responsibilities**. Are the responsibilities for support clearly stated for the following, and are those responsibilities aligned with the correct authority?

- supporting command(s),
- supported command(s),
- host nation support (HNS),
- other services,
- coalition partners, and
- national support element (NSE).

4B-8. **Concept of Logistics Support**.

- Does this paragraph describe how support functions at Annex B (supply, maintenance, transportation, facilities, field service, personnel, engineering) will be provided?
- Has the logistics planner developed the support planning to complement the multinational operational and tactical planning?
- Are known logistics constraints and limitations identified? Have alternative resources been considered where constraints are known to exist?
- Are operational and tactical planners aware of multinational logistics strengths and weaknesses?

4B-9. **Supply and Distribution**.

- Is the coalition supply system described for all echelons and is procedural guidance provided? Is the supply item packaged in the form to suit the end user?
  - Is the flow of requisitions and materiel described?
  - Are national procedures for strategic distribution of materiel (air and sea delivery to coalition) described?
  - Are levels of accompanying supplies with national formations addressed?
  - Is a known or estimated order ship time (OST) provided from national industrial bases to the coalition theatre of operations?
  - Are procedures included for support to, from and between other coalition members and other coalition services?
- Are the stockage objectives by class of supply specified?
- Are build-up requirements specified? Are national operational packages on hand to support multinational

operations until the in-country coalition logistical support base is established?

- Are resupply time frames consistent and reliable?
- Have coalition critical and common items been identified? What provisions have been made for fill of coalition critical items and items common to the coalition? Have they been quantified?
- What support will be provided to the coalition as a national responsibility, a cooperative responsibility, solely by one nation or by HNS (or contracting)? (See Annex B.)
- What coalition support must be provided to the host nation (HN) or other services?
- Are provisions made for emergency resupply?
- Are provisions made for logistics support of civilians, prisoners of war or non-governmental organizations (NGOs)?
- Are supply support responsibilities identified for various coalition activities in the theatre and for the NSE?
- Are the specifics concerning the various classes of supply answered?
- **Class I**:
  - Are local HN sources available? If so, are acquisition procedures addressed?
  - What is the ration cycle that is supportable by on-hand rations?
  - Has veterinary or Preventive Medicine services been coordinated to inspect Class I? Are mess sanitary requirements the same for all coalition participants?
  - Are requirements for water and ice known? Are water sources and the quality of the water known?
  - Are there limitations or constraints?
- **Class II**:
  - Are there any items that require special consideration, such as:
    - Cold weather clothing/equipment?
    - Tropical clothing/equipment?
    - Chemical defence equipment?
    - Special tools and test equipment?
  - Will chemical protective clothing and equipment be needed for HNS or third-country labour personnel? Who will provide these items?

- Are there any limitations or constraints?

- **Class III**:
  - Are the requirements in U.S. gallons/day or litres/day for each type of product established?
  - Are available quantities specified?
  - Is the use of contractor provided bulk fuel supply considered?
  - Are existing pipeline distribution systems available?
  - What are the pipeline capabilities?
  - Is the distribution system hardened?
  - Are tanker assets adequate? Are tanker and hose connections interoperable, or have adapters been provided to the force to allow for exchange of fuel between coalition partners and with host nation?
  - Are port facilities adequate?
  - Will Army provide support to other services or receive support from other services? If so, how much and when?
  - Are petroleum, oil(s) and lubricants (POL) over-the-shore sites known/identified?
  - Are store facilities available?
  - If utilized, are contractor-provided fuel storage site hardened?
  - Are critical item requirements identified?
  - Are HN capabilities considered?
  - Is POL quality control provided for? Are extra fuel filters deployed with force to cope with poor quality fuel?
  - What are limitations or constraints?
- **Class IV**:
  - Are requirements for lines-of-communications (LOC) construction/repair addressed?
  - What is the condition of Class IV?
  - Are available stocks adequate?
  - Is in-country procurement considered? If so, are acquisition procedures addressed?
  - What are limitations or constraints?
  - Have transport and material handling equipment (MHE) requirements been included?
- **Class V**:

- Have requirements been developed for support of common munitions to coalition partners or other services?
- Are requisitioning and issue procedures included for support to coalition Army customers and other services?
- Have transportation and material handling requirements been included?
- Are critical (determine what is critical) munitions requirements addressed?
- Are stockage objectives/requirements identified?
- Are available stocks adequate?
- How will shortfall impact on operations?
- Is the logistics support structure described?
- Are facilities adequate?
- Are sustaining rates of munitions addressed?
- Must allocations be constrained?
- Will HN move ammunition? How far into the combat zone will HN move munitions?
- What are limitations or constraints?

- **Class VI**:
  - Are nations self sufficient for amenities?
  - Are multinational canteens if authorized?
  - Are policies in place to support these canteens—money exchange, common alcohol and smoking policies, policing?
  - Are policies in place to limit black marketing?
  - Are there limitations that should be considered in consideration of local cultures?
- **Class VII**:
  - What are battle loss expectations?
  - Is equipment redistribution addressed?
  - Are pre-planned packages available?
  - Are maintenance responsibilities fully covered?
  - Is reconstitution addressed?
  - What are requirements for common equipment among coalition partners or other services?
  - What are limitations or constraints?
  - Is visibility of other armies assets available?
- **Class VIII**:

- Are activities identified for providing medical support?
- Are procedures unique to medical supply described?
- Does this portion of the logistics support plan complement the medical support plan?
- Are references included for medical support planning?
- Has blood and blood products been addressed?

- **Class IX**:
  - Will supply units deploy with full-authorized stockage lists (ASL)?
  - Are excess and cannibalized items considered as sources of supply?
  - Will the third line completely support all the coalition's Class IX supply system? If not, what will be exempt? How will the system operate?
  - Have stockage levels been identified for field units?
  - Will field trains or unit trains be utilized?
- **Class X**:
  - Has humanitarian support been considered by the commander?
  - Are there NGOs and UN agencies present? They are experts at distribution and interfacing with the supported communities.
  - What humanitarian supplies are required to be stocked, and where?
  - Will military distribution systems be required?
  - Are control needed, and who has release authority?
  - Has coordination been established with NGOs, and other humanitarian agencies?
  - What priority does this support have wrt other military support operations?
- **Reserve Materiel**:
  - Is national reserve materiel stored in coalition theatre of operations or at the national industrial base?
  - Are call forward procedures specified?
  - Are stockage objectives by class of supply specified?
  - Can national reserve materiel be distributed to coalition partners?
- **Initial Pre-planned Supply Support (IPSS)**:

- Are IPSS call forward procedures established?
- What are IPSS requirements in terms of days of supply (DOS)?
- What classes of supply are included in IPSS planning?
- Will IPSS satisfy any critical items requirements?

- **Local Acquisition**:
  - What is local procurement policy?
  - Are responsibilities and procedures for local procurement established?
  - Are local sources for supplies and services identified?
  - Do local supplies and services meet appropriate coalition standards for use or consumption?
  - What are limitations or constraints?

4B-10. **Maintenance**.

- Does the plan describe how first, second and third line maintenance will be performed, and by whom?
- Is the number of repair days of supply at each level defined?
- Are battle damage assessment (BDA) and battle damage repair (BDR) addressed?
- Is missile and aviation maintenance support adequate?
- Is electrical equipment compatible so that adapters or voltage converters are not required?
- Does the plan cover test, measurement and diagnostic equipment (TMDE) repair and calibration?
- Is the backloading and evacuation of repairable and major end items discussed?
- What support will be provided to and from coalition partners, HN, and other services?
- What are limitations and constraints?

4B-11. **Transportation**.

- **General**:
  - What are primary modes for supply movement?
  - Is maintenance backhaul addressed?
  - Are air lines of communications (ALOC) and dates addressed?
  - Is coastal LOC required?
  - Will a logistics-over-the-shore (LOTS) operation be required?

  - Are ports, airfields, highway nets and rail systems adequate?
  - Are the sea port of debarkation/sea port of embarkation (SPOD/SPOE) and air port of debarkation/air port of embarkation (APOD/APOE) specified?
  - Is a movement system for personnel and cargo specified (intra-theatre, inter-theatre, in-country)?
  - Has use of foreign flag sea and airlift been addressed?
  - What support will be provided by or to coalition partners, HN, or other services? When will it be provided?
  - What are limitations or constraints?
- **LOTS**:
  - Are shorelines for LOTS operations identified and capabilities estimated?
  - What are the characteristics of the shorelines, i.e., road access, rail access, limitations?
- **Inland Waterways**:
  - Are inland waterways available?
  - What are the characteristics and capabilities of the inland waterways and terminals?
  - What are the vulnerabilities of the inland waterways?
- **Intercoastal Shipping**:
  - Are intercoastal shipping assets available?
  - What is the enemy's ability to interdict intercoastal shipping?
- **Containers**:
  - What is the container policy?
  - What contract civilian/HN personnel and equipment assets are available to assist intermodal operations?
  - Is container inland movement plan established? Are assets available to move and haul containers?
- **Fixed Ports**:
  - What fixed ports are available to support military marine terminal operations?
  - What are the characteristics and capabilities of the fixed ports (including containerized cargo capability, current throughput, port warehousing and storage, ammunition restrictions and road/rail access)?

- What are the vulnerabilities (including those from NBC weapons) of the ports?
- What contract civilian/HN marine terminal personnel and equipment assets are available to support military terminal operations?
- What are limitations on port utility?
- Can the port support roll-on, roll-off (RO/RO) vessels and increased berth depth?

- **Airfields**:
  - What airfields are available to support military operations?
  - What are the personnel and cargo reception capabilities of the airfields, i.e., cargo/passenger throughput, staging facilities, and road/rail access?
  - What are the airfield vulnerabilities?
  - What contract civilian / HN personnel and equipment assets are available to support military airfield operations?
  - What are limitations to airfield utility? Will airfield physical attributes such as length, width, weight bearing capacity, parking capacity, POL and ground handling equipment available and navigational aids support national aircraft?
- **Highways**:
  - Are adequate routes available to support military operations?
  - Have clearances been negotiated?
  - What are the characteristics and capabilities of the routes available to support military operations, i.e., road carrying capacity, road surface conditions, tunnels, bridges, cargo restrictions and route redundancy?
  - What capability exists to repair or renovate highway segments? Will the coalition or HN perform work?
  - What are the highway limitations?
- **Rail**:
  - Are adequate rail lines available to support military operations?
  - What rail assets are available to support military operations?

- What capabilities do government or local civilian contractors have to repair damaged track, bridges and tunnels? Will coalition support be required to assist?
- What are the characteristics, limitations and capabilities of the rail terminals, rail yards and rail sidings for handling cargo or equipment?
- What are the limitations and vulnerabilities of the rail lines?

4B-12. **Services**.

- **Mortuary**:
  - Are responsibilities defined for Army and the other services?
  - Is local mortuary support available?
  - Is lift to evacuate remains available?
  - What are limitations or constraints?
- Are laundry, bath and clothing renovation requirements addressed?
- Are procedures for salvage collection, evacuation and disposal covered?
- Are messing, water, hygiene and electric power requirements addressed?
- Are reception and staging requirements addressed?

4B-13. **Engineer Support**.

- What are the facilities requirements to support logistics systems and logistics planning?
- Have these requirements been incorporated into engineer planning?
- Can any of the facility requirements be satisfied by HN facilities?
- Are fire fighting capabilities addressed?
- Is explosive ordnance disposal (EOD) covered?
- What security engineering enhancements are required?
- What electrical power generation and distribution requirements?

4B-14. **Force Structure**.

- Do OPLANS specify which coalition logistics elements will provide the support required?
- Does combat service support (CSS) deployment flow from national bases and into the coalition theatre of operations complement the logistics plan?

- Will unsourced coalition logistics force structure requirements be offset with HNS, contracting or interservice support?
- Is the amount of HNS to be provided stated in terms of workload to be performed or in coalition force equivalents?
- Is HNS coded into deployment plans to ensure functions are covered and force structure is offset?

4B-15. **Personnel**.

- **Force Management**.
  - Does an information management system exist for the coalition that allows summation of personnel status reports, including authorized, assigned and deployed strengths, critical personnel shortages, casualty accounting and personnel requisitions?
  - Do plans include a current summary of unit personnel requirements?
  - Are minimum grade or rank, security clearances and occupational skill requirements specified for critical positions or specialist requirements?
  - Has a coalition reception centre been established to handle personnel flow into and out of the area of operations (AO)? Have reception centre manning requirements identified?
  - Have procedures been established to identify personnel information on all in-bound personnel upon arrival or out-bound personnel upon departure?

4B-16. **Troop Support**.

- Have minimum reporting instructions such as passports requirements, visas, immunizations, uniform and equipment requirements and travel restrictions been addressed?
- Have billeting arrangements been addressed and requirements coordinated with logistics personnel or host nation support activities?
- Are personnel arriving in the AO with updated wills, powers of attorney, pay to banking institution, identification tags, emergency data, etc?
- Will pay be provided to personnel within the AO? Has consideration been given to personnel status during deployment so pay and allowances will not be adversely effected?

- Have morale, welfare and recreation activities been planned for personnel?
- Is postal support adequately planned for?
- Have religious support needs for pastoral care and worship opportunities been addressed? Is adequate religious support being provided?

4B-17. **Administrative**.

- Are administrative requirements written and signed to allow for message centre operations and distribution of traffic including special categories of messages? Have clearances been granted to allow for multinational handling of national communications traffic?
- Have procedures been established and responsibilities been assigned for handling prisoners of war, civilian internees, retained personnel and other detainees? Have logistics requirements been coordinated with logistics personnel? Is Red Cross involvement addressed?
- Are return of coalition personnel who were prisoners of war addressed?
- Are serious incident reporting procedures established?
- Have operational law officers been identified? Have procedures been established to allow for multinational jurisdiction in investigating police matters without interfering with personal national civil rights?
- Are civil affairs (CA) addressed? Is liaison with civil authorities planned? Have all commanders been briefed on provisions of international law and applicable treaties or agreements which affect their relations with local citizens and civil authorities?
- Have non-combatant evacuation operation (NEO) plans been established?
- Are procedures established to streamline the execution of recurring activities and reports?

Annex C

Factors and Deductions in a CSS Estimate

TABLE 1—GENERAL FACTORS AND DEDUCTIONS

General Factors		Deductions
Terrain	Destination	• Restricted terrain • Movement corridors and traffic control • CSS locations (equipment collection points [ECPs], back loading points (BLP), etc.) • Key infrastructure elements • Convoy protection requirements • Requirement for forward support • Movement support (recovery, etc.) • Fuel consumption • Support from local population and host nation support
Weather	Destination	• Impact on movement (speed, dencity of movement) • Impact on visibility • Movement support requirements • Vehicle maintenance • Shelter • Impact on aviation • Water consumption • Health concerns
Enemy	Risk	• Impact on CSS operations • Prisoners of war • Projected losses • Security and defence requirements • Day vs night operations
Friendly Forces	Demand	• Availability target, priority of support • Consumption data, surpluses and shortfalls • CSS deployment and projected moves of CSS units

General Factors		Deductions
		• Tasks • Allocation of terrain and support areas • Support relationships • CSS task organization • Interface with joint level of support
Time and Space	Distance Duration	• Distribution plan • Stocking plans • Transportation requirements • Intermediate support locations • Operational pause requirements • Priorities of routes
Surprise, Deception and Security	Demand Risk	• CSS actions (or inaction) in support of security or deception plans • Limitations on operations • Protection and security engineering measures • Day vs night operations
Lessons Learned	All	▪ Amendments to doctrinal staff data
Doctrine	All	▪ Focus on changes to doctrine ▪ Precision in orders and plans

TABLE 2—FUNCTIONAL FACTORS AND DEDUCTIONS

Functional Factor	Deductions
Supply	▪ Availability by class of supply ▪ Reserves ▪ Distribution methods ▪ Mission configured loads—where, when ▪ Emergency resupply procedures ▪ Reporting requirements ▪ Reconstitution ▪ Support from higher formation ▪ Fuel: current status, bulk storage, requirements, bulk refuelling capability, distribution plan, allocations, risk ▪ Ammunition: requirements vs availabilities, ammunition storage sites, restrictions, risk ▪ Water: current status, bulk storage, requirements, distribution capability, allocations, risk
Personnel and Medical	▪ Current status and replacement operations ▪ Casualty estimate and effect on combat readiness ▪ Pers and medical priorities ▪ Medical facilities ▪ Evacuation procedures and capabilities ▪ Mortuary affairs ▪ Enemy prisoners of war ▪ Refugees ▪ Evacuees ▪ Postal services ▪ Finance services
Maintenance and Equipment Support	▪ Priorities by unit and vehicle type ▪ Anticipated casualties ▪ Battle damage assessment and repair ▪ Repair limits by time and level ▪ Cannibalization policy ▪ Mobile repair team allocation ▪ Repair parts availability, and controls ▪ Recovery allocation

Functional Factor	Deductions
	▪ % available for operations ▪ Is forward repair desired? Is backloading desired? ▪ What replacement equipment is required, where? Replacement crews? ▪ How many ECPs and BLPs should be established to support the operation and where should they be situated? ▪ Should recovery resources be forward or rearward? ▪ What maint units are priority for replacement parts, technicians, reinforcements? ▪ What restrictions on maint operations exist (light discipline, emissions control, etc)? ▪ Higher level support is required and should be requested ▪ A reconstitution pause or halt is required
Transportation	▪ Requirements ▪ Movement control ▪ Route use and priority traffic ▪ Traffic control ▪ Trailer transfer points ▪ Alternate modes available ▪ Security of lines of communications (LOC) ▪ Back haul priorities
Engineer support	▪ Protection support ▪ Mobility support ▪ Electric power ▪ Water ▪ Fuel pipelines

Chapter 5

Supply

The purpose of this chapter is to describe supply support procedures within American, British, Canadian, and Australian (ABCA) forces during the execution of military missions.

GENERAL

5-1. Supply is defined as the procurement, reception, storage, issue, maintenance and salvage of supplies, including determination of type and quantity in each instance. Supplies are all materiel and items used in the equipping, support and maintenance of a military force.

5-2. Nations have the ultimate responsibility for ensuring the provision of sufficient supplies to sustain their forces in coalition operations. Nationally provided supplies can be augmented by host nation support (HNS) or by contracting, and where appropriate, by bi- or multinational provision as agreed between nations. Therefore, it is essential that the coalition commander is granted the authority to coordinate the provision of supplies.

5-3. Multinational supply systems should only be the chosen option if it is more cost effective and enhances operational effectiveness and not be pursued for its own sake. The option of multinational support will be determined during the logistic assessment and planning process and will depend greatly on the time constraints, the degree of standardization and any bilateral or multilateral agreements already in place within the force.

NATIONAL AND COALITION RESPONSIBILITIES

5-4. National authorities conduct their own estimate to calculate their long-term stockpile requirements. The factors include the capability of home bases and industry to generate stocks, the capacity and length of the lines of communication, etc.

5-5. Nations and the coalition commanders must collectively agree on those stocks and their levels if they are related to force readiness. Such agreements are fundamental to measuring the readiness of the force to conduct operations, the freedom of action

of commanders once engaged, and identifying operational limitations due to shortfall in key commodities. The coalition will identify these key stocks and design a management plan to ensure they are available when needed. Nations, in turn, must design their sustainment system to put in place and follow the stock controls provided by the coalition.

PLANNING YARDSTICKS

5-6. As nations may have differing standards of support, it is essential for the commander that the contributing nations and HQ use common standards to assess their sustainment requirements. The following methodologies are examples used to calculate necessary stocks to sustain mission:

- **Level of Effort Methodology (LEM)**. This methodology is based upon a daily expenditure rate for missions/tasks, where the number of targets is unknown or not applicable. Factors in this methodology are average consumption of a consumer per day, number of consumers, number of days and intensity of the campaign. The amount of stocks is expressed in Days-of-Supply (DOS).
- **Target-Oriented Methodology (TOM)**. This methodology is used to calculate battle decisive ammunitions. By definition, this methodological approach is time independent and considers target attrition. It applies to missions of all kinds, of short or long duration. Factors in this methodology are list of enemy targets to be neutralized, list of own holdings and calculation model software with operational parameters. The amount of stocks is expressed in single rounds.

5-7. Artillery ammunition planning is likely the most vital aspect of support planning due to its value in battle and the tremendous amount of resources needed to store and move it. The methodologies described above result in two key yardsticks:

- **Required Supply Rate (RSR)**. This is the amount of ammunition a manoeuvre commander estimates will be needed to sustain tactical operations, without restrictions, over a specified period of time or for a specific mission. It is expressed as rounds per weapon per day. Commanders submit them to their higher HQ via the operations staff. Each HQ review, adjusts, and consolidates RSRs and forwards them. At the HQ that has ammunition management responsibilities (normally theatre level) the

total requirement is compared to total ammunition assets expected for that period. If there is a shortfall, a controlled supply rate (CSR) will be established.

- **Controlled Supply Rate (CSR)**. This is the amount that can be allocated based on availability of ammunition types, storage facilities, transportation assets, etc. It is expressed the same way as the RSR. The commander who has the responsibility to designate the CSR will inform the corps commander, who will in turn announce the CSR to the next subordinate commanders. Commanders making CSR allocations can retain a portion for contingencies. These CSRs are published in orders and can change daily. A commander seeking more ammunition will seek the permission of the next higher commander who will manage the request by using up contingency stocks, withhold or reduce issues to other units or request an increase in his CSR from the next higher commander.

MULTINATIONAL SUPPLY

5-8. Where possible, it is expected that nations will cooperate, either using bilateral arrangements or through other cooperative approaches, to optimize the provision and use of limited resources. In the field of supply, multinational support arrangements can usually be considered for the provision of food, water (bulk and bottled), bulk fuel, some ammunition types and medical supplies. But great care will be needed in respect of the multinational provision of blood products because of the present differences in national standards and therefore the perceived health risks. Additionally, the multinational supply of food, especially combat rations, may be affected by ethnic and/or cultural factors.

5-9. **Storage**. Storage is a function that lends itself to cooperative logistics. The shared use of ammunition and fuel facilities through multinational, bilateral, lead nation (LN) and role specific arrangements are to be encouraged to minimize duplication of services and costly infrastructure.

5-10. **Fuel**. Though a single fuel concept (SFC) has not been adopted by ABCA,[14] member nations need to be cognizant of the

[14] The point may be moot, as most nations have switched from an Otto (gasoline) cycle to diesel (multifuel) cycle engines. These can consume diesel, kerosene and kerosene based fuels (JP-8, Jet A1, JP-5, etc.) and remain within acceptable performance criteria.

benefits that are derived from such a concept, i.e., only one bulk fuel type has to be supplied in the theatre. The de facto standard is JP-8 (F-34), the fuel used by the US Army. Moreover, in the coalition's broadened mission spectrum, nations will ensure that the appropriate logistic units have sufficient interoperable tactical fuels handling equipment (TFHE), standardized means of transportation and a compatible container handling capability.

5-11. **Water**. The provision of this vital commodity is particularly suited to cooperative logistics and should be considered from a multinational and joint perspective.

5-12. **NATO Codes**. Standard materiel codes are vital to aligning logistic information system (IS) and allowing nations to interoperate. ABCA nations have agreed to use the following NATO codes:

- **NATO Stock Numbers (NSNs)**. All materiel should be identified using this coding system.
- **NATO Ammunition Demand and Reporting Code (NARC) (a five-digit system)**. The AOP-6 (STANAG 2928) gives the interchangeable NATO Stock Number (NSN) for each NARC and indicates interoperability with the barrels/guns. The NARC is used to manage the interchangeability of ammunition.

5-13. **Classes of Supply**. It is important that ABCA coalitions share an understanding of the language used in supply, as one (and only one) set of language will be used in coalition orders and instructions. There is no standard language, however, and each nation (and NATO) has its own classes of supply (STANAG 2961). The tables below provide some description:

US, AU, CA	Description	Examples	NATO
I	Subsistence	Food and water	I
II	General and Technical Stores	Clothing, individual equipment, tentage, tent sets and tool kits, hand tools, administrative and housekeeping supplies and equipment. Includes items of equipment, other than principal items, prescribed in authorization/ allowance tables and items of supply (not including repair parts)	II
III	POL	Petroleum fuels, lubricants, hydraulic and insulating oils, preservatives, liquid and compressed gases, chemical products, coolants, de-icing and anti-freeze compounds, together with component additives of such products and coal	III
IV	Construction and Field Defence Stores	Construction materials to include installed equipment and all fortification/ barrier materials	IV

US, AU, CA	Description	Examples	NATO
V	Ammunition	Ammo of all types, including chemical, radiological and special weapons, bombs, explosives, land mines, fuses, detonators, pyrotechnics, rockets, propellants and other associated items	V
VI	Amenities	Personal demand items, non-military sales items	I
VII	Major End Items	A final combination of end products that is ready for its intended use, e.g., launchers, tanks, mobile machine shops, vehicles	II
VIII	Medical Materiel	Including medical specific repair parts	II
IX	Repair Parts and Components	Includes kits, assemblies and sub-assemblies, repairables and non-repairables required for maintenance of all equipment	II
X	Materiel to Support Non-Military Programs	Agriculture and economic development if not included in V and IX	IV

Figure 5-1. US, AU, CA, NATO Classes of Supply

5-14. The UK does not use classes of supply but uses the following generic description. (Canada used this language as it was in use prior to the adoption of the US stock classes):

UK Description	Examples	US Class (approx)
Combat Supplies	Ammo and guided wpns	V
	POL	III
	Rations	I
	Water	I
Materiel of Engineer Supply	Engineer equipment	VII
	Engineer resources	IV
Ordnance Materiel	Technical equipment	VII
	Technical spares and assemblies	IX
	Vehicles	VII
	MT spares and assemblies	IX
	Aircraft spares and assemblies	IX
	Clothing	II
	General stores	II
Medical Stores and Equipment	All medical items of a technical or specialist nature including drugs	VII
Canteen Supplies	Canteen stores	V

Figure 5-2. UK Supply

THE SUPPLY SYSTEM

5-15. The flow of supplies into an operational area must be fully synchronized with the establishment of storage areas and the flow of supply unit equipment and personnel if control of the materiel is to be continuously maintained. Congestion at the ports and along the lines of communications (LOC) and insufficient supply management increase the chances for a break

down of TAV/ITV systems—these in turn can seriously effect the campaign timetable and cost a lot of money to correct. The flow of supplies into the theatre is a national responsibility, but the priorities must flow from the coalition campaign plan. Coalition HQ will perform a coordination, de-confliction and monitoring role.

5-16. **Loading Systems**. A mix of loads are required the balance the loads optimized for the receiver and optimized for movement:

- Bulk palletized loads can allow most efficient packing of ships but require bulk breaking and transhipment as it moves along the LOC.
- Configured loads are specifically package to suit the receiving unit. As a result this is more inefficient than bulk. An example is a combat configured load (CCL), which is a pre-planned package of ammunition used to support a specific weapon system or unit and is transported as a single unit. Other variations on this concept are unit configured loads and mission configured loads.
- Sea containerized loads are used by ABCA nations because they significantly reduce or eliminate transhipment along the LOC. All ABCA nations have tactical vehicles with palletized loading system (PLS) or equivalent equipped vehicles to haul them right up to the combat units. Modern sea containers come in a range of styles, including bulk cargo, liquids, and ITV/TAV equipped mini-warehousing systems, etc.

5-17. **Elements of the Supply System**. The supply system is made up of a combination of static, mobile and control elements. A balanced mix of supplies held on wheels and ground loading or dumping of stocks is the most flexible option:

- **Static Supply Elements Supported by a Distribution System**. Grounded stocks form the bulk of the storage methods, particularly in secure areas or in third line supply elements. Truck, rail and air transportation elements are tasked to distribute supplies as required. These are empty until tasked by the movement control centres. This is the most efficient use of supply and transport assets.
- **Mobile Supply and Transportation Elements**. Some nations include within their formations and units supply

and transportation elements loaded with the supplies needed to give them the desired freedom of action. This is most responsive and effective from the supported unit perspective. Maintaining stocks on wheels offers flexibility and may assist the commander in maintaining tempo.

- **Control Elements**. These elements are all present in a large force, while a smaller one may combine the functions into one cell[15]:
  - material management centres (MMCs) are present in all formations and manage the stocks of supplies—what gets held where and who gets issued what;
  - movement control centres (MCCs) control the transport needed to conduct the distribution; and
  - highway regulation (or traffic control) centres control the routes and allocate capacity.

5-18. There are three methods of distribution to the supported unit:

- **Unit Distribution**. Supplies are delivered forward to the supported unit.
- **Supply Point Distribution**. Units drawing supplies must travel back to the supply point, load up and return to their locations. Supply points may be designed around one class of supply or may be multi-class.
- **Throughput Distribution**. This method is a variation of unit distribution that seeks to bypass intermediate supply points and go directly to the supported unit. This bypassing reduces double handling, is more efficient use of transport and best meets the users' needs. In modern logistics language, this promotes velocity over mass. This method demands a good logistics command, control, communications, computers and information (C4I) that enable TAV and ITV.

5-19. There are three basic methods of operating the supply system:

- **Push**. The logistic organization operates a "push"system when the replenishment is based on forecasted or scheduled requirements based on standard consumption rates. Generally, in such a system, the supplies are

[15] This could be referred to as a distribution management centre, denoting the combination of supply and transportation responsibilities.

shipped (pushed) as far as possible to the customer. This method suits classes I, II (B) and V.

- **Pull**. The logistic organization operates a "pull" system when the resupply is based on reacting to requisitions from the supported units. This suits classes II, III (P), IV, VII and IX.
- **Directed**. This is a variation of the push system enabled by modern C4I providing situational awareness, ITV and TAV. Design of the push package can be done more accurately and faster, reducing wastage (e.g., pushing supplies that aren't really needed) and allowing supplies to arrive in time and in the right place (whereas the traditional push was designed 24 hrs in advance and may be planning locations and times based on inaccurate information). Modern on-board diagnostics can predict vehicle component failure such that class IX can be "pushed" as well as the traditional combat supplies. A directed supply system effectively substitutes information for inventory.

5-20. **Controlled or Regulated Items**. Particular attention is to be paid to critical items, items vital to operations, that are of high cost or in short supply. These items must be subjected to special supervision and positive controls by commanders at all levels to ensure that the appropriate priority is applied. To aid this process, it is important that commanders have visibility of stocks and an ability to track key assets. As nations begin to make greater use of intermodal containers in their respective distribution networks, it is vital that containers and their contents are known and made visible to commanders within their interest and authority.

5-21. **Reportable Item Codes**. Controlled, regulated items or others as identified by commanders and staff should be assigned a code to facilitate reporting and control. There is no standardization agreement in place to refer to, and each coalition will have to develop a system to its needs.

5-22. **Reallocation of Supplies**. National components confronted with critical deficiencies may submit requests to the ABCA commander for emergency assistance from other nations or directly to other force/unit commanders. Commanders may be authorized to redistribute common user items by the nations in order to meet operational requirements. The QSTAG 516 "ABCA Army Procedures for Supply Transactions" is the reference for requesting the support. There is no agreed format for logistic

reporting, though applicable NATO reports and returns formats (see BI-SC Reporting Directive) will likely be used.

LOCAL SUPPORT (HNS AND ICR)

5-23. Local support refers to those resources found within the host nation or in the theatre that can augment the logistic resources brought in by the ABCA nations. It includes HNS and locally contracted resources.

5-24. Host nation support is civil and military assistance rendered in peace, emergencies, crisis and conflict by a host nation to a force and organizations which are located on, operating in or transiting through the host nation's territory. The basis of such assistance is commitments arising from bilateral or multilateral agreements concluded between host nation or nations, ABCA organizations and the nation or nations that have forces on the HN's territory.

5-25. In-country resources (ICR) are those resources gained through the direct contracting of local civil economy. This is synonymous with the terms "local contracting" or "contracting."

5-26. Additional support capability from the local government or economy can be gained using two methods:

- The first and preferred method is the establishment of a HNS agreement. If a legitimate government exists and there is sufficient time to negotiate an agreement, the implementation of HNS under an umbrella memorandum of understanding (MOU) is optimal. In this case the major ABCA commander will, in conjunction with the troop contributing nations, prepare an HNS agreement on behalf of all ABCA and non-ABCA forces that are part of the ABCA force package. A status of forces agreement (SOFA), negotiated at the highest level between sending nations and/or ABCA and host nation authorities, governs the status of forces and affects the conduct of their business with the host nation. Where it exists, the SOFA may have an impact on HNS and should be taken into account.
- The second method is used primarily in cases where formal HNS agreements are not practical. This may be true because an agreement could not be reached with the host nation or, in some cases, because no legitimate government exists with which to negotiate an agreement. In cases where no HNS agreement is in place, ICR may be obtained

through contracting. In these cases, agreements are made between ABCA commanders and individual civilian providers rather then the national government acting as the guarantor of support.

5-27. Host nation support seeks to provide the ABCA commander and the sending nations with support in the form of materiel, facilities and services, including area security and administrative support in accordance with negotiated arrangements between the sending nations and/or ABCA and the host government. As such, HNS facilitates the introduction of forces into an area of operations (AO) by providing essential reception, staging and onward movement support. Host nation support may also reduce the amount of logistic forces and materiel required to sustain and redeploy forces that otherwise must be provided by sending nations.

5-28. Host nation support must not be confused with civil-military cooperation (CIMIC). The purpose of CIMIC is to establish and maintain full cooperation between ABCA forces and the civilian population and institutions within a commander's AO in order to create civil-military conditions that offer him the greatest moral, material and tactical advantages. Civil-military cooperation will normally be employed to facilitate the execution of HNS, in particular in respect of the use of HNS resources.

5-29. A distinction has to be made between HNS and the direct contracting of local civil resources. The latter is not always based upon formalized arrangements such as HNS. Host nation support, on the other hand, represents a formal means of securing support from a host nation government.

5-30. In many operations, local resources might be scarce, host nation support agreements limited or non-existent and there may be only limited coordination and authority at national and local government level. A deployed force may well be required to negotiate individual contracts with local and non-local contractors to make use of whatever resources are available.

5-31. Good coordination between contributing nations and the in-place ABCA HQ in their contractual dealings is essential to ensure theatre-wide common pricing, prices of scarce resources do not escalate and our contracting initiatives do not become destabilizing to the local population, economy or to the ABCA coalition. It will be especially important in these cases that a system is established by the ABCA commander to monitor or coordinate contracts to limit competition for scarce resources and establish HNS priorities when required.

5-32. Contracting from local resources should not interfere with HNS and should always take into account the essential needs of the local population. Contracting shall, therefore, be coordinated with or through the host nation where possible. In cases where there is no legitimate host nation government with whom to coordinate, a sending nation and/or the ABCA commander may contract directly with private sources within the host nation.

5-33. In practice there are many similarities between HNS and ICR. Most significantly, in both, resources are usually obtained through contracts under the coordination of the ABCA contracting coordination activity. The activity of drawing logistic support from HNS or ICR shares the same set of principles and policies.

5-34. The required mobility, flexibility and multinationality of ABCA forces highlight the need for commonly agreed principles of acquiring HNS and ICR and the need for ABCA commanders to be involved in the development of HNS and ICR arrangements. Moreover, the increasing requirement to take advantage of economies of scale and to more rapidly and effectively implement responsive support concepts dictates that HNS and ICR be considered as an important pillar of the planning process in future support plans.

5-35. Sources of HNS and ICR include:

- **Government Resources**:
  - Host nation military or paramilitary units to support requirements such as traffic control, convoy escort, installation security, terminal operations, maintenance and repair, cargo and troop transport, and rear area protection;
  - Host nation government agency support such as facilities, utilities and telephone networks;
  - Host nation government agency services such as police, fire and border patrols;
  - Host nation government or contracted buildings and facilities for use as headquarters, billets, maintenance shops or other activities;
  - Host nation function or area support within designated boundaries such as rail operations, convoy scheduling, highway regulation, harbour pilot services (if appropriate), customs and hospitals;
- **Local Economy**:

- Host nation issuance of supplies and equipment needed for mission accomplishment, which are available locally, thus precluding or reducing material shipments from the ABCA nations;
- Host nation contractors for the full range of logistics support functions, including light textile repair, laundry, bath and food services and maintenance of equipment and facilities; and
- Host nation civilians with skills such as labourers, stevedores, truck drivers, supply handlers, equipment operators, mechanics, linguists, inspectors, railroad engineers, computer operators, personnel managers and hospital staffs.

FURTHER READING

- QSTAG 516 ABCA Army Procedures for Supply Transactions
- QSTAG 642 Codification of Equipment—Uniform System of Item Identification
- QSTAG 657 Guide Specifications for ABCA Army Fuels, Lubricants and Associated Products
- QSTAG 660 Movement Control
- QSTAG 680 Codification of Equipment Uniform System of Supply
- QSTAG 830 Procedures for Emergency Logistic Assistance
- QSTAG 879 Materials Handling Equipment
- QSTAG 880 Military Pallets, Packages and Containers
- QSTAG 972 Materiel Salvage Procedures
- QSTAG 973 Material Disposal Procedures
- QSTAG 988 Lithium Batteries—Handling, Storage and Disposal
- QSTAG 1149 Standard Method of Preservation
- QSTAG 1150 Glossary of Packaging Terms and Definitions
- QSTAG 1151 Levels of Packaging
- QSTAG 1152 Standard Barcode Symbology
- QSTAG 1154 Standard Marking for Shipment and Storage
- QSTAG 1155 Standard Packaging Test Procedures
- QSTAG 1156 Requirements for Reusable Containers
- QSTAG 1157 Standard Packaging for Materiels Susceptible to Damage by Electronic Discharge
- QSTAG 1210 Standards for Class and Symbols

- QSTAG 2019 Common Critical Procedures for the Storage of Materiel
- QSTAG 1214 Standards for Temperature and Humidity Safety Limits in Munitions Storage Areas
- QSTAG 1366 Common Fuel Testing Standards.
- QSTAG 1367 Interchangeable Fuels and Lubricants in ABCA Armies.
- QAP 324 Principles and Procedures for Acquiring Logistic Host Nation Support to Augment Logistic Capability of an ABCA Coalition

This page intentionally left blank.

Chapter 6

Movement and Transportation

GENERAL

6-1. Movement and transportation (M&T)form the cornerstone of logistic support to the land force, enabling the mobility of the land forces and the sustainment of the force though the distribution of supplies. Movement and transportation encompasses the whole spectrum of infrastructure, facilities, modes of transportation—including air, sea, rail and road—command and control and equipment.

6-2. The mission of movements and transportation is to plan, direct and control all modes of transportation with the aim of getting the right people, supplies and equipment moved to the right place at the right time in the right quantities, in the right condition and by the most economical means to the satisfaction of the operational commander.

6-3. Movements and transportation is a system of related but different functions that operate to form a cohesive movements chain across the strategic, operational and tactical levels of war. This chapter focuses on the operational and tactical levels in support of the land component commander (LCC) and the land force in operations rather than the strategic or inter-theatre movements that is largely the purview of troop contributing nations (TCNs) and echelons above the land component command.

TERMINOLOGY

6-4. **Movement**. Movement is the activity involved in the change in location of equipment, personnel or stocks as part of a military operation. Movement requires the supporting capabilities of mobility, transportation, infrastructure, movement control and support functions.

6-5. **Transportation**. Transportation is the means of conveyance to move forces, equipment, personnel and stocks and includes the requisite materials handling equipment.

6-6. **Movement Control**. The planning, routing, scheduling and control of personnel and cargo movements over lines of communications (LOC). Staff planners, movement managers and mode operators at each echelon conduct movement control.

6-7. Traffic control / highway regulation is one of the functions of movement control. It is the function of planning, scheduling and directing of the use of the available road network. (A definition is "The enforcement of traffic laws, traffic regulations and the external control of traffic movement over roads, routes or across country to meet the requirements of the military situation.")

6-8. **Mobility**. This is a quality or capability of military forces that permits them to move from place to place while retaining the ability to fulfil their primary mission.

PRINCIPLES OF MOVEMENT AND TRANSPORTATION

6-9. The principles of movement apply to all military transportation services and remain constant in peace and war. Additionally, they apply regardless of the planning level.

6-10. **Centralized Control / Decentralized Execution**. Movement control will be centralized at the highest level at which it can be adequately exercised by commanders charged with providing the total logistic support and monitoring the transportation system and infrastructure. This requires a focal point for transportation movement planning and resource allocation at all levels. This controlling authority must have visibility over the whole movement program and have knowledge of the force requirements and capabilities and the operational or tactical situation. Decentralized execution enhances the flexibility to meet local requirements and to rapidly reprioritize support.

6-11. For American, British, Canadian, and Australian (ABCA) multinational operations, the principle of centralized control may be limited to coordination, depending on the authorities granted to HQ by the TCNs. Should the TCNs retain command of their transportation resources, the coalition movement function will be one of coordination. Should the TCNs contribute to transportation Multinational Logistic Units (MILUs), these HQ will exercise the complete control function.

6-12. The land component HQ (LCHQ) will require a movement staff and transportation coordination centre to carry out this mission. These cells will link upward to the joint theatre

movement staff and joint transportation coordination cell, particularly to coordinate operational level movements. The LCHQ will also be linked to the movement control centres and transportation staffs of the formations under its command.

6-13. Land forces perform decentralized execution by echeloning transportation resources throughout the force where they can best perform the overall mission of the force. While movement staffs define the mission in terms of what commodities are to be moved where, by when and on what routes, the land formation transportation staffs and commanders decide what resources will conduct the movement task and how. All land formations are supported by an organic transportation element of a size determined by the force designers in accordance with the mission of the formation. Generally transportation elements are optimized to carry out carry out one of the following support missions but can easily re-roled as needed:

- **General Support (GS)**. The bulk of GS transport is held at theatre and corps level in support of the LOC from the communication zone to the combat divisions. General support transport may be allocated to subordinate formations for campaigns or portions thereof to reinforce the formation owned transportation to allow it to perform its mission. This transportation is empty until tasked.
- **Direct Support (DS)**. Direct support is transportation organic or assigned to support a division or brigade. It is typically loaded with designated combat supplies (mainly fuel and ammunition) to replenish units or reinforce the support element found at unit level.

6-14. **Regulation of Movement**. Movement to be regulated so as to flow evenly and to avoid congestion or breakdown along the LOC. Movements cannot be approved if any part of the transportation system cannot meet the requirement. A central regulating authority provides regulation according to command movement priorities. Movement priorities are established in accordance with the commander's desires, combining supply and transportation priorities to provide a basis for allocating transport resources and for furnishing transportation service when requirements exceed capabilities.

6-15. Proper regulation will strive to reduce double handling of commodities by using direct delivery or throughput operations where possible. Disruptions during intermodal operations have been minimized by the use of common ISO containers and the

adoption of STANAG/QSTAGs for containers, vehicles, material handling equipment, etc.

6-16. This principle is embodied in how the land force conducts battlefield or terrain management. The area of operations (AO) of the land forces is divided into areas of responsibilities (AORs) assigned to the appropriate formation HQ. This formation conducts regulation of the road network as part of a regulation network established within the land force. More specific control may be placed on certain routes that are deemed to have particular value to the land force commander. In this case he will designate the route and may retain control over movement and regulation at a higher level HQ even while it transits the AO of a subordinate formation. Examples of this may include the main supply route for corps level convoys bringing prioritized supplies forward, medical evacuation routes or other single purpose routes or routes reserved as operational manoeuvre corridors.

6-17. **Fluid and Flexible Movement**. The movement and transportation requirements are analyzed during the operational planning process and result in a program designed to provide an uninterrupted flow of traffic that is flexible enough to meet changing priorities. The execution of the transportation tasks must adapt to the operation being conducted (e.g., offensive or defensive) and environmental conditions such as NBC conditions. Different tactics regarding convoy size, organization of escorts and route reconnaissance will be needed to operate in support of fluid operations. Movement and transportation staffs and commanders must be proactive rather than reactive in the way they perform their mission, or interruptions may occur and the commander's concept of operations may be placed in jeopardy.

6-18. The interoperability of a coalition force's movement and transportation assets, management systems and communication networks is vital. Within the land force, rules, regulations and procedures governing the preparation, documentation and loading/unloading of traffic must be established jointly by movement and ops staffs and transport agencies.

6-19. Redundancy must be planned into the system and contingencies developed to use alternate modes of transport. The possible use of national transportation resources to support other nations must be accepted by TCNs and training conducted in theatre to test this level of interoperability.

6-20. Tactical lessons learned must be shared across formations to minimize losses of personnel, equipment and stocks.

6-21. **Maximum use of Carrying Capacity**. The modern battlefield requires the land force to be mobile and agile, while weapon systems and armoured vehicles consume tremendous amounts of fuel and ammunition. No commander ever has enough transportation resources, and none can be wasted either through inadequate loading or by leaving transport loaded and sitting idle. Maximum use of carrying capacity depends on accurate load planning, correct loading to the maximum permissible payload, minimization of turn-around times and avoidance of congestion along routes and at terminals. While allowing for adequate equipment maintenance and personnel rest, planners should keep transportation assets loaded and moving as much as the tactical situation permits. Each dispatch serves two purposes—haul cargo forward and return damaged equipment, salvage, prisoners of war, etc. Each mode must be properly employed, e.g., airlift is employed if reaction speed is the priority, and road transport is used if flexibility and door-to-door delivery is required. The TCNs are expected to report surplus lift to the movement coordination centres for precisely this reason.

LEVELS OF MOBILITY

6-22. **Strategic Mobility**. Strategic mobility is the capability to move forces and their associated logistic support quickly and effectively over long distances. This can be between theatres (inter-theatre), between regions (inter-regional) or beyond the coalition AOR. Strategic movements support this.

6-23. **Operational Mobility**. Operational mobility is the capability to move forces and their associated logistic support within a region (intra-regional). Operational movements largely conducted via theatre and land component level M&T staffs, and resources support this.

6-24. **Tactical Mobility**. Tactical mobility is the quality or capability to concentrate regional in-place forces up to division level against the major local enemy thrust and to counter-concentrate tactical reserves. Tactical movements largely conducted via land component level M&T staffs, and resources support this.

MODES OF TRANSPORTATION

6-25. **Classification**. There are several transportation modes available for the conduct of military operations: air, sea, road, rail, inland water transport, pipeline and manpower / pack animals.

6-26. **Selection**. The transportation mode used depends on the existing geography and developmental infrastructure available. Selecting the mode of transport for a particular mission, regardless of the level of war, requires the consideration of certain criteria. The criteria are priority of the requirement, required delivery date, type of cargo, special restrictions, economy and efficiency, available resources and security. The type of military involvement may also influence mode selection. A multinational approach and redundancy of modes enhances the flexibility of the transportation system, making it more responsive to changing situations.

6-27. **Intermodality**. Intermodal capability is the ability of modes to transfer shipments from one to another with minimum handling requirements. It involves more than the mode or transport; it also includes the container, packaging or other preparations. The positioning of the appropriate materiel handling equipment (MHE) to handle the cargo is very important in intermodal operations. Also crucial is the preparation of cargo to guarantee acceptability by the succeeding mode.

6-28. **Air Transport**. Air transport is a flexible and essential element of the transportation system and is vital for operational mobility, allowing the land force to participate in the deep battle and extend their missions beyond the landline of communications. It is also a routine method of moving key personnel, equipment and supplies within the AO and theatre of operations. Rotary-wing air transport provides a more rapid and flexible system of transportation and assists tactical level movements within the AO. The flexibility of military air transport allows it to be employed strategically, operationally and tactically.

6-29. **Sea Transport**. Sea transport is the essential element of the transportation system at the strategic and operational levels. In certain theatres it may serve as a tactical movement mode as well. Sea transport provides the capacity to move commodity in large volumes in the most economical manner over long distances. Sea transport is relatively slow and limited by the adequacy of port facilities and beaches.

6-30. **Road Transport**. Because of its relative low costs and its high versatility, road transport is the key element in the integrated transport system and is the primary mode of transport for tactical mobility and distribution within the land force. Road transport is not normally a viable alternative to sea or rail

transport for sustained operations over long distances. The chief characteristic of road transportation is flexibility. Generally there are few destinations in either developed or undeveloped countries that cannot be reached through the existing road network or through the ability of road vehicles to negotiate all but the most unfavourable terrain. At the outset of operations in undeveloped countries, road transport will often be the only suitable mode of transport for the movement of materiel and personnel, albeit further consideration must be applied if operating in countries affected by monsoons. In terms of its ability to rapidly resume operations, road transportation is the mode least affected by enemy interdiction. Developments in technology have improved the capacity and turnaround times of road vehicles. The dismountable load platform, palletized loading system (PLS), in military use, has revolutionized the road resupply system from depots to formations and units in the forward areas. The capacity achieved, although much improved, still suffers in comparison to rail for long haul operations.

6-31. **Rail Transport**. Rail transport is the primary inland mode for sustained flow of large quantities of equipment and supplies over long distances at relatively high speeds and is very useful to the land force as a mode of operational mobility and for providing operational level M&T support. Rail transport is limited in its flexibility. Fixed routes, restrictions on cargo size and weight, the need to gather sufficient and specific platforms all necessitate advance planning. Railways are particularly useful for delivering combined arms packages that are required to be completely operational, at short notice, upon arrival at the destination.

6-32. **Inland Water Transport**. Inland water transport (IWT) is another inland mode for sustained flow of large quantities of equipment and supplies over long distances useful for providing operational level support. Inland water transport is limited in flexibility and speed. It is particularly suited to the carriage of heavy and bulky equipment, stores, fuel and bulk non-perishable food when time in transit is not of overriding importance.

6-33. **Pipeline Transport**. Pipeline transport is the most cost-effective and environmentally friendly method of storing and distributing bulk fuels, and it is vital operational level movement support. Pipelines lack flexibility and are generally designed for a single product, normally fluid or gas, although solids in suspension can be moved. This mode is not controlled by the

movement control centre (MCC) nor is it regulated by the traffic control teams; it is managed by the supply managers.

6-34. **Manpower / Pack Animals**. The use of porters or pack animal transport should never be ruled out, particularly where rugged terrain is encountered, such as that found in mountains, jungles or urban operations. This mode of transportation remains of important tactical value to the land force. Although limited in capacity, it is a time proven means to transport relatively small loads over both short or long distances in the roughest conditions. All nations must equip their soldiers with load carrying systems and be prepared to provide human configured loads forward through the LOC where the operational conditions dictate.

CONCEPT OF OPERATIONS

6-35. The concept of operations for the M&T system depends largely on the nature of the coalition (whether LN, multinational, etc.) and cannot be articulate in detail. As an overview (assuming a corps level operation):

- Corps transportation assets are centrally controlled to ensure all resources are used to maximum extent. They provide throughput distribution as far forward as the brigades or emplacement sites for ammunition and class IV barrier or fortification material or priority deliveries. They operate the LOC to the supply points serving the divisions for other classes of supply. Division transportation units go to their supporting supply point to pick up their supplies and perform the distribution within the division. Corp truck units also support personnel and heavy equipment movement and cargo transfer operations in the division.
- The corps movement control centre (CMCC) provides centralized movement control (planning and management of the movement of personnel, units, supplies and equipment) and highway regulation (management of routes and traffic to provide order and prevent congestion) for the corps using subordinate movement control teams and movement regulating teams. These centres are connected to theatre materiel management centres (MMCs) and MCCs and division MMCs and MCCs. These centres make the plan and give the orders - the functional units execute the orders.
- The transportation staffs are another important part of the movement control process. They plan and establish

movement priorities and are the staffs' communication link to higher transportation support. They give the MCCs guidance such that they can manage routine business within the capabilities of their resources. Non-routine requests are sent to the staff for consideration.

RESPONSIBILITIES

6-36. **Collective Responsibility**. ABCA HQ and nations have a collective responsibility for movement and transportation support to ABCA operations.

6-37. **ABCA Responsibility**. ABCA commanders must understand the requirement transportation assets and availability within TCN and host nation and region. This allows the coalition HQ to provide guidance as necessary to TCNs to help them design their transportation elements. Transportation limitations must be taken into account accordingly, or the requests for more lift from the nations coordinated, and should promote cooperative logistics either through multinational transportation and movement elements or by agreement between nations. Lastly, the HQ must seek authority to reallocate transportation resources from the nations if it feels such authority is required.

6-38. **Troop Contributing Nations**. The TCN is responsible for its own M&T support. This principle must be tempered by the need for cooperation, coordination and economy and may include bilateral and/or multilateral cooperative arrangements. In the provision of M&T resources, nations should consider the following:

- Nations are responsible to meet their mission requirements.
- They can apply to the coalition HQ for access to shared transportation resources or seek agreements with nations to gain access to their transportation resources.
- They must approach the civil transportation market through ABCA HQ, or in accordance with their priorities and policies, to minimize competition for resources.
- They must report to the ABCA authorities those military and civil transportation resources that may be available for shared or cooperative use.
- They must respond to requests to allocate transportation resources to another nation in order to meet the theatre commander's priorities.

6-39. **Lead Nations**:

- Take the lead in planning and controlling deployment, transportation for sustainment (re-supply) and re-deployment as well as obtaining transportation resources for multinational headquarters groups and units with a high degree of multinationality.
- Conduct either partially or totally the task and responsibilities of a host nation in the case where no host nation authority exists or by agreement between sending and host nations.
- Take the lead in performing specific movement and transportation tasks as identified by ABCA HQ in cooperation with the nations.
- Arrange compensation and/or reimbursement for those LN functions with all partners involved.

6-40. **Staffs**. This table uses a fictitious coalition corps (with the US as LN for land logistics) for the purpose of illustration. It is not a template, but it serves to outline the main focus of each level of M&T staff:

Element	M&T Staff	Responsibilities
Land Component	LCC HQ Tn Staff	• Contribute to the operational planning process of the HQ • The force packaging/design of land force movement and transportation assets • Issuing of movement orders (Mov O), regulations and instructions • M&T policies within the coalition • Coordinate the HNS requirements for the LCC • Coordinate local and third party contracted transportation support for the LCC • Coordinate and transmit demands for higher level support • Collecting movement intelligence comprising detail such as route and terminal information, update the appropriate information warehouse, and disseminate
Corps	Corps HQ Tn Staff	• Contribute to the operational planning process of the corps HQ, producing campaign plan, instructions and orders generally focussing on: o The stocking of tactical sustainment areas o Supporting operational manoeuvre o The concept of support operations during all phases of the campaign

Element	M&T Staff	Responsibilities
		o The allocation of corps M&T resources o Coordinate transportation surpluses and shortages with LCC HQ
COSCOM	COSCOM HQ Tn Staff	• Contribute to the operational planning process undertaken by the Corps HQ Tn staff • Contribute to the operational planning process of the COSCOM HQ and produce plans and orders for the execution of support operations during all phases of the campaign • Manage Corps level M&T resources, including NATO, HNS and contracted forces • Plan, implement and manage the traffic control system within the corps AO
Division	Div HQ Tn Staff	• Contribute to the operational planning process of the div HQ, producing campaign plan, instructions and orders generally focussing on: o The movement from concentration to tactical assembly areas or into attack/defence position o Stocking of tactical dumps in support of the initial phases of battle o Supporting operational and tactical manoeuvre during the campaign o Execute support operations during all phases of the campaign in support of the div comd o The allocation of div M&T resources o Coordinate transportation surpluses and shortages with div HQ
Division Support Command	DISCOM HQ Tn Staff	• Contribute to the operational planning process undertaken by the div HQ Tn staff • Contribute to the operational planning process of the DISCOM HQ and produce plans and orders for the execution of support operations during all phases of the campaign • Manage div level M&T resources, including NATO, HNS and contracted forces • Plan, implement and manage the traffic control system within the div AO
Brigade	Bde HQ Tn Staff	• Contribute to the operational planning process of the Bde HQ producing orders generally focussing on: o The movement from tactical assembly areas into attack/defence positions o Execute support operations during all phases of the

Element	M&T Staff	Responsibilities
		campaign in support of the bde comd o The allocation of brigade M&T resources o Coordinate transportation surpluses and shortages with div HQ
Transport Unit	Operations Officer	• Manage resources to execute the assigned missions

6-41. **Movement Control Units, Detachments and/or Teams**. These units perform a "line" function, meaning they ensure the execution of the movement program as designed by the movement staff at all organizational levels from the strategic to tactical. Mov con units and their detachments:

- Advise the mov staff about the feasibility of plans, regulations and instructions.
- Control or coordinate the execution of the movement program via transportation coordination cell, movement coordination cells and traffic control/regulation centres as appropriate. This includes the tasking of allocated transport resources and the issuing of movement credits.
- Act as a medium through which all users can make their transport requirements known. Consolidate and arrange for transport services in connection with non-programmed movement requirements of local units, installations and depots.
- Decide the Mode of Transportation (MOT) necessary.
- Allocate traffic by route, amount and destination.
- Ensure that there are facilities for loading and unloading the MOT.
- Control movement at terminals, intermodal transfer points and along routes on which movement is taking place (and prevent independent, unauthorized use of components of a movement system).
- Monitor movement as it takes place and maintain records for statistical analysis.
- Pass movement information to other elements of the movement organization.
- Establish and maintain liaison with installations such as depots and representatives of transport units in the area.
- Maintain current information, including locations of units, installations and depots, movement requirements,

changes in movement capabilities and the status of the local transport situation.

- Effect re-consignment and diversion instructions as required by the appropriate authority.
- Ensure that shippers and carriers comply with the shipping regulations, and ensure all movement is properly documented.
- When required, arrange itineraries, reservations and the issue of the necessary travel documents for individuals and groups.
- Ensure that all ordered security measures concerning movement of personnel and materiel are complied with.

6-42. **Traffic Control / Highway Regulation HQ, Units, Detachments and/or Teams**. These elements work in conjunction with the movement control units. They perform the regulating function, including planning, routing, scheduling and deconflicting the use of the road network by vehicles and personnel afoot, including troops and refugees, to utilize the network most effectively.

6-43. The commander accomplishes traffic control on controlled routes such as main supply routes (MSRs) through traffic control headquarters and its subordinate road/highway regulation detachments in the AO. The extent of traffic control exercised by an HQ depends on the amount of movement expected and the capacity of the road network.

6-44. Traffic control HQ operates under the supervision of transportation staff officers at the appropriate HQ in the combat zone (CZ) or communications zone (COMM Z). Engineer, communications, CIMIC, military police and security forces are attached to the traffic control HQ by the commander, as required.

6-45. The functions of the traffic control detachments include:

- Reporting convoys and other vehicles arriving at and clearing the regulation point so that the rate of march can be adjusted if necessary.
- Receiving, correlating and the dissemination of traffic control and operational information to the regulating detachments and to other traffic control HQ.
- Reporting current road conditions and changes as they occur. These reports are sent to traffic control HQ and regulating point along the route as appropriate.

6-46. The role and functions of traffic control at corps, division and bde levels are similar to that carried out to that in the COMM Z. On uncontrolled routes, movement is controlled as required by the unit conducting the move—a form of traffic control that is called battlefield circulation control.

6-47. Transport **Elements**:

- decide on the method of operating its MOT; and
- provide advice to the movement organization on the operational aspects of its MOT.

6-48. **Users**:

- identify the movement requirement;
- stipulate any deadlines, restrictions and limitations; and
- provide the priority for movement, normally in terms of desired order of arrival and the required delivery date-time group.

SEA CONTAINERS

6-49. The use of International Standards Organization (ISO) containers (often referred to as Sea Containers [SC], Twenty Foot Equivalent Units [TEUs] and ISOs) has become an essential element in meeting the transportation and storage requirements of the land force. The use of sea containers for the movement of general cargo or stores is a well-established and proven method. Future operations will be as dependent, if not more so, on this method of movement, and the need for a comprehensive policy on the use of containers has become increasingly important.

6-50. Although sea container boxes are supplied commercially in a number of shapes and sizes, the most commonly used is the 20 ft sea container constructed to ISO standards. Sea containers are available in different configurations such as open or closed top, ventilated or non-ventilated, etc. The design of sea containers is tailored to meet the needs of the cargo being carried. Details such as lifting points and securing arrangements are configured to international standards, thereby easing the handling of sea containers worldwide. A summary of the key characteristics and uses of sea containers is provided at Annex A to this chapter.

6-51. **Standards**. In order to maintain the key elements of mobility, flexibility and interoperability in the support of deployed operations, wherever possible, standard sea containers constructed of steel are to be utilized. The following dimensions should be considered as the norm, wherever possible, when

considering leasing or purchasing sea containers to meet a movement requirement:

- length - 20 ft;
- width - 8 ft; and
- height - 8 ft 6 in.

6-52. This standard takes into consideration that there may be occasions that will require the use of 40 ft sea containers to transport items such as helicopter blades, etc. It is also recognized that difficulties could be encountered with the in-theatre movement of sea containers if the container height exceeds the preferred standard of 8 ft 6 in. Personnel involved with such movements must consider this factor in their movement planning or, when appropriate, purchase sea containers lower in height.

6-53. **Refrigeration Standards**. Refrigerated sea containers, commonly called "Reefers" and referred to in this chapter as such, are an essential requirement for most deployments. The following additional standards for Reefers are identified as the norm for operations:

- **Temperature Range**. The internal storage temperature range should be from +50°C to –25°C and capable of operating in an ambient temperature of +50°C to –30°C.
- **Refrigerant**. The refrigerant should be environmentally friendly with a "zero" ozone depleting potential (ODP) rating.
- **Voltage**. There should be a dual-voltage transformer provision, quick-connect 190/230 volt-50/60Hz dual voltage transformer module and 230- and 460-volt plugs.

6-54. **Palletized Loading Systems**. The use of palletized loading systems (PLS) is vital to land force M&T systems, as they are self-loading and unloading, eliminating the requirement for additional material handling systems. Palletized loads are particularly useful in establishing supply points in the forward combat zone. The points can be rapidly established by dropping the loads on the pallets, the stores can be removed quickly, and the empty pallets picked up when the point is closed. The PLS systems can carry pallets or conventional sea containers. A high level of standardization would best serve the land force—"interchangeable" should be the goal of NATO standardization of pallets and the loading systems.

6-55. **Stuffing Guidelines**. There are certain basic rules that apply to all types of stores in all freight containers. The tighter the stow, both lateral and longitudinal, the safer the contents. Free movement will generally lead to damage to the container and contents. A key principle for stuffing containers should be no movement of the contents.

6-56. Sea containers packed for delivery to the combat zone must be "combat loaded." Rather than packed to maximize the use of capacity, combat loading recognizes certain limitations of tactical consignee:

- The tactical tpt unit distributing the load may be operating military pattern vehicles on poor roads or even off road. This means the weight of sea containers may be restricted.
- The unloading of containers must be rapid, minimizing bulk breaking and sorting out loads for each consignee. A percentage of loads should be unit configured rather than bulk.

6-57. Configuring loads is best done behind the combat zone to eliminate the burden on forward support echelons, but obviously bulk deliveries will form the majority of sea container loads to make good use of this method of shipping. National and coalition staffs must consider the type of loading methods and where the load configuration is to be done with a view to minimizing the impact on the combat and combat support echelons.

6-58. Other guidelines for the stuffing of sea containers are:

- The load should be stuffed such that it will remain in place and be easily extracted when the sea container is opened at the destination.
- An end loading sea container, mounted upon a road vehicle, may be subjected to a downward slope of some 7 to 23 degrees towards the door end whilst being demounted. Any unavoidable gap in the stow, should be along the centre-line of the sea container rather than the walls. This allows easier access and requires the minimum of dunnage.
- The load should be distributed as evenly as possible within the sea container. In the case of an end loading sea container, the door end must not carry more than 60% of the total load and the closed end must not carry more than 65% of the total load.

- The location of the centre of gravity of the sea container is very important, as an imbalanced load could cause the vehicle carrying it to tip over. As noted at ISO 8323-1985(E), cargo placement limits the centre of gravity to within the following envelope:
- plus or minus 10% of the external width, measured from the geometric centre;
- plus or minus 5% of the external length, measured from the geometric centre; and
- between a height of 356 mm (14 in) to 1219 mm (48 in), measured from the bottom of the base.[16]

- All dunnage must be clean and free from infestation.

TAV / ITV

6-59. Interoperable and secure communications between coalition members, with linkage to civil transportation authorities, will be needed to enable appropriate movement planning, control and coordination.

6-60. Any non-interoperable communication systems must be understood, mitigated or accepted prior to design of the M&T program. The principle of centralized control will be implemented only to the highest level capable of carrying out the task, as determined by the information management capability.

6-61. **Visibility and Tracking**. International standards for registering and marking sea containers have been established, and asset visibility and tracking systems are in wide use in many nations. It is vital to the land force that nations maintain control over the containers and the goods within, or the support system will become wasteful, inflexible and immobile.

6-62. **Information Management Systems**. If the coalition is to gain maximum effect from the M&T system, a coalition wide asset tracking and visibility capability is required. A common M&T information database structure is required to achieve this level of interoperability. Further, doctrine should be developed to identify the information requirements of the staff and movement control and traffic regulation elements so that standards for M&T information management systems and supporting databases can be developed.

[16] To obtain the above asymmetric conditions, cargo density is assumed to vary linearly.

FURTHER READING

- QSTAG 1069 Control of Movement in the Tactical Area of Operations
- QSTAG 165 Movements Principles, Policies and Duties
- QSTAG 190 Movements and Transport Documents Used for Movements by Ship
- QSTAG 507 Military Routes and Route/Road Networks
- QSTAG 520 Operation Orders, Tables and Graphs for Road Movement
- QSTAG 539 Regulations for Military Motor Vehicle Movement by Rail
- QSTAG 540 Identification of Movement Control and Traffic Control Personnel and Agencies
- QSTAG 562 Surface Transport Request and Surface Transport Reply
- QSTAG 591 Basic Military Road Traffic Regulations
- QSTAG 592 Forecast Movement Requirements Rail, Road and Inland Waterways
- QSTAG 627 Materials Handling in the Field
- QSTAG 628 Handling Aids
- QSTAG 785 ABCA Armies Materiel Issue and Movement Priority System (ABCAMIMPS)
- QSTAG 2015 Outline Organization/Authority and Responsibilities of a Joint Combined Movement Control Centre
- QSTAG 2014 Compatible Procedures, Organization, Authority and Responsibility for Coordination of Infra-Theatre Administrative Movement
- QSTAG 2034 Interoperable Ground Movement Planning Procedures
- QAP 316 Define Mobility Categorization in ABCA Armies
- QAP 252 Common Critical Procedures for the Transportation of Hazardous Materiel and Dangerous Goods

Chapter 7

Equipment Support

GENERAL

7-1. **Definitions**:

- Maintenance is defined as all action taken to retain equipment in or to restore it to a specified condition, including inspection, testing, servicing, and classification as to serviceability, repair, rebuilding and reclamation.
- Equipment support is a broader concept that concerns itself with supporting equipment as a system, thus including:
  - maintenance as defined above;
  - equipment fleet or system management;
  - repair part management; and
  - replacement equipment management.

7-2. The national maintenance and support policies covering the entire life cycle of a piece of equipment are established during the equipment acquisition process. It must meet the fleet availability and serviceability requirements of peacetime and wartime, balancing operational needs against resources. The policy will be influenced by many factors such as the fleet size, usage, operating environment, threat, complexity, service life, operation and logistic stock requirements and industrial capacity.

MULTINATIONAL EQUIPMENT SUPPORT

7-3. **Responsibilities**. Nations are responsible for the provision of equipment fleets, parts and maintenance assets to support their forces. However, nations and coalition HQ have a collective responsibility for equipment support and should make full use of bilateral or multilateral agreements in peacetime to ensure the best use of maintenance capabilities and common repair parts. Requests for maintenance support, if required, are to be submitted in accordance with QSTAG 516 and STANAGs 2034 and 2399.

7-4. Interoperability is increasingly complex, as repair procedures must reflect the statutory requirements of the user

nation as regards safety, accident prevention and legal requirements for use of the equipment. National armies may need legislative protection from some regulation impossible to achieve in wartime conditions. This is an area of standardization that requires development.

7-5. Interoperable repair is difficult to achieve unless two or more nations possess the same items of equipment (i.e., same make, model, key components). Any reallocation of repair capability must be planned to give technicians time to train on the equipment and get parts and special tooling in place. Nations who share equipment should exchange maintenance management information as the operation continues so that both nations may improve their maintenance programs, better forecast failures, parts requirements, technical training programs, and any safety related issues.

7-6. There is much interoperability possible in the fields of recovery and evacuation, cannibalization, battlefield salvage / reclamation and in battle damage repair (expedient repairs to return equipment to service until proper maintenance can be done). As well multinational warehousing of repair parts and replacement equipment could be done, as discussed in the supply chapter.

7-7. **Operational Aim**. The aim is to keep operationally fit equipment in the hands of troops. Equipment availability is an essential factor in a commander's sustainment planning in all kinds of operations across the spectrum of possible conflicts.

EQUIPMENT SUPPORT SYSTEM

7-8. **Equipment Management and Maintenance Staffs**. Within the G4 cells in all formation HQ is a component that provides equipment support management to ensure equipment availability meets the commander's needs and contributes to the OPP of the HQ. This cell includes expertise in:

- fleet management (which could also be a tn staff function in some armies);
- maintenance management and supporting information systems;
- repair part management (which could be a supply staff function in some armies);
- technical information management; and
- engineering.

7-9. Some nations group this expertise into equipment or weapon system management teams, which are able to manage all aspects including repair, replacement and crew replacement activities.

7-10. **Supply and Transportation Units**. These units operate the warehousing and distribution of class IX (repair parts) and IV (major end items) as discussed previously in chapter 5. The coalition and national HQ will likely include many repair parts on the controlled / regulated item list and procedures to gain release or issue authority.

7-11. **Maintenance Units**. These are the characteristics of maintenance units:

- They are organized for mission, though they can be re-roled given resources (tools, time and parts):
  - **Unit Level (First Line)**.[17] The operators and unit maintenance personnel perform operator maintenance and servicing (preventive maintenance). They have recovery assets sufficient to extricate stuck vehicles and recover them to an equipment collection point (ECP) or Unit Maintenance Collection Point (UMCP).
  - **Direct Support Maintenance Units**. Found at second and third line,[18] these units conduct corrective repair for the supported formation. They are self-mobile such that they can follow the supported formation and operate under the same battlefield conditions. They conduct repair and recovery support:
    - At a central repair site. They operate the ECPs and recover the vehicles to this repair site. Units can also go direct to this facility. They also can reinforce the unit maintenance echelon.
    - In situ[19] (at the breakdown site or ECP) using special vehicles called mobile repair teams (MRT) or maintenance support teams (MST).
  - **General Support Maintenance Units**. Found at third line, these units conduct lengthy corrective maintenance and repair and overhaul in support of

[17] Not all nations have maintenance resources at unit level.
[18] A DS unit in a third line support organization usually provides DS to itself (e.g., to the COSCOM vehicles) and can reinforce DS units found within divisions and brigades.
[19] This type of DS is referred to as CS by Canada

the supply system. They can also reinforce direct support (DS) maintenance units. These units are static or semi static.

- **Repair Parts**. All maintenance units hold some repair parts, though their lift is usually limited.

- Maintenance units perform best when they are given appropriate real estate and a degree of stability. Frequent relocation may aid survivability but reduces maintenance effectiveness. A balance must be struck. Much will depend on the perceived threat. Distance from maintenance units to supported units will also have a marked effect; planners must take this into account.

REPAIR

7-12. Repair is a technical operation to restore operational functions to an item of equipment or repairable damaged part by adjustment, manufacture or the replacement of defective components.

7-13. The guiding principle is that unserviceable equipment should be repaired as far forward as operationally possible and technically feasible. Quick repair or replacement of unserviceable equipment as close to the location of equipment breakdown or damage as possible should be the main focus of maintenance planning. Repair capabilities should therefore be mobile and be employed close to the units they support. If the situation requires, higher-level repair capacities will have to support formations in forward areas by deploying mobile and modular maintenance units. Effective repair depends on a systematic though flexible application of the following:

- inspection of defective materiel for damage assessment;
- repair priorities, which will depend on the operational situation;
- decisions on the location of repair which will, amongst others, depend on its priority, threat level and complexity of repair;
- provision of required repair spare parts, including the return of non-serviceable repairables to the supply system; and
- collection of maintenance management data, and using the information to improve overall equipment support.

7-14. **Battle Damage Repair (BDR)**. Battle damage repair is essential repair, which may be improvised, carried out rapidly in

a battle environment in order to return damaged or disabled equipment to temporary service. The need to maintain equipment—especially battle decisive equipment—in working order, even with a limited functionality, will be imperative. Under these circumstances it will be necessary to allow improvised repairs. Nations should train their technicians in the techniques of BDR in peacetime. Once the mission has been accomplished, in most cases BDR must be followed by regular maintenance to restore full materiel operability or return the equipment to its original specifications. BDR actions will be documented as required. The policy for BDR is contained in QSTAG 915 / STANAG 2418.

RECOVERY

7-15. This is an area in which nations must move towards interoperability so that any nation's recovery assets can be used in recovery and evacuation operations. Personnel should have knowledge of the capabilities of their own and allied recovery resources. STANAG 2375, Battlefield Recovery Data (AEP-13) is a reference manual that is useful in planning and executing battlefield maintenance and recovery operations. It contains recovery data on each nation's vehicles.

7-16. Recovery is the extraction of an abandoned, disabled or immobilized vehicle and, if necessary, its removal to the supporting collection point or appropriate maintenance facility. Equipment casualty evacuation (Canada and Australia call this "backloading") is the movement within a logistic system of equipment requiring maintenance.

7-17. Recovery of bogged, but otherwise serviceable, equipment is of prime importance to the current battle. But recovery and evacuation is more far reaching than just this aspect. It is the mechanism by which the repair loop is serviced, making equipment available for future battles. Recovery assets remove unserviceable equipment away from the immediate threat of enemy weapons, prevent serviceable or economically repairable materiel from falling into enemy hands and then enable the repair of damaged equipment to start without delay. This mechanism is in line with the principle of forward repair. Equipment that cannot be evacuated, or salvaged, must be destroyed to deny its use to the enemy.

7-18. Because of the importance (and shortage) of recovery assets on the battlefield, control over recovery assets is normally centralized within the support echelon so they are most flexibly

employed. Most recovery assets are grouped in GS units for this reason and allocated out only after careful consideration of the supported commander requirements.

SALVAGE AND RECLAMATION

7-19. Salvage is the reusable material contained in damaged, condemned, discarded or abandoned equipment.

7-20. Reclamation is the process of saving or cannibalizing rescuing of salvage within the damaged, condemned, discarded or abandoned equipment left over from operations. This can then be re-used, re-built or scrapped. The process should be a collective responsibility as national forces interoperate in the same AO. Units finding such materiel must report the find or turn the equipment in to collection points, where it will be inspected and decisions made regarding its potential use.

7-21. This process is also governed by the security, environmental and health policies published by the coalition and nations prior to battle which should include:

- categorization of issue (danger, security, etc., e.g., contains depleted uranium armour);
- situations causing danger (e.g., penetration of frontal hull armour);
- precautions during salvage (e.g., wear closed suit with air bottle when approaching); and
- restrictions (i.e. owner nation only is authorized to maintain).

REPAIR PARTS MANAGEMENT

7-22. The availability of repair parts has a decisive influence on the time with which unserviceable materiel can be restored to a serviceable condition.

7-23. The range and level of supply of repair parts, as determined by national policies, have to be established in accordance with operational requirements, the expected frequency of failure, the time required for repair, the availability and the procurement lead-time.

7-24. An essential prerequisite for repair parts management and mutual support is the ability to exchange information relevant to the materiel. The management of items of supply will be enhanced by the implementation of visibility and asset tracking. The NATO Stock Number (NSN) plays an important

role in this process and provides a unique identity for each item of supply.

7-25. **Critical Items Management**. Critical items are those items of supply that are vital to operations and are in short supply or are expected to be in short supply. Since critical items needed for repair have lasting implications for the ability to restore unserviceable materiel to a serviceable condition, they must be subjected to special supervision and management control at all levels. For urgent maintenance functions, critical items will be moved to the location of repair using all available means of transport, including airlift.

FURTHER READING

- QSTAG 171 Procedures for Requesting Repair and Recovery of Land Military Technical Equipment
- QSTAG 2022 Interoperability Requirements for Asset Tracking and Visibility of Materiel within Distribution System
- QSTAG 915 Procedures for Battlefield Damage Repair of Army Equipment
- QSTAG 659 Emergency Recovery / Towing Facilities
- QSTAG 940 Procedures to be used to assess the Extent of Wear in Artillery and Tank Guns
- QSTAG 1207 Hazards to Personnel and the Environment for Ordnance Systems, Items and Materials
- QSTAG 1215 Quality Management System Standards
- QSTAG 1345 Reporting Procedures for Critical Failures of Materiel used in more than one Army to other Armies
- QAP 269 Hazards to Personnel and Environment, and their Degree of Severity for the M113 Family of Vehicles, its Associated Repair and Maintenance, Including Consumable and Disposable Items
- QAP 270 Hazards to Personnel and their Degree of Severity for 155 Ammunition, its Associated Repair and Maintenance, Including Consumable and Disposable Items
- QAP 271 Hazards to Personnel and their Degree of Severity for Small Calibre Ammunition, its

Associated Repair and Maintenance, Including Consumable and Disposable Items

- QAP 272 — Hazards to Personnel and Their Degree of Severity For 81 mm Mortar Ammunition, Its Associated Repair and Maintenance, Including Consumable and Disposable Items
- QAP 314 — Hazards to Personnel and the Environment, and their Degree of Severity for the LAV II Family of Vehicles, its Associated Repair and Maintenance, Including Consumable and Disposable Items
- QAP 99 — Technical Data Packages (TDP)
- QAP 185 — Whole Lifecycle Testing Requirements to Assist in the Purchase of Common and New Armament Systems Among ABCA Armies

Chapter 8

Health Service Support

GENERAL

8-1 **Health Service Support Strategy**. The revolutionary changes in military strategy have demanded the development of a corresponding interoperable health service support (HSS) strategy. Global conflict has changed to regional conflicts embodied by the three strategic pillars, peacetime engagement requiring a healthy and fit force, deterrence and conflict prevention with casualty prevention, and fight to win with the resource intensive addition of casualty care and management HSS focused on health promotion, casualty prevention, and capable and agile HSS units. This paradigm shift requires maximizing the synergistic effects of the American, British, Canadian, and Australian (ABCA) HSS elements through coordinated, comprehensively planned and mutually supported medical operations.

8-2 **Mission**. The mission of the HSS system is the conservation of the personnel strength of coalition forces. This is achieved by:

- the prevention of disease and injuries;
- the treatment, evacuation and rapid return to duty of the sick and injured;
- the early application of measures for preservation of life and limb; and
- the evacuation from the area of operations (AO) personnel who are not expected to return to duty within a reasonable period of time.

8-3 **Medical Support Principles**. General logistics principles and support options as outlined in Chapters 1 and 2 of this publication are applied to a wide extent, however, HSS guidance must be governed in addition by specific medical factors. Specific HSS principles, policies and support concepts agreed to by the ABCA partners are laid down in the Coalition Health Interoperability Handbook (CHIH).

HSS CONCEPT WITHIN THE COALITION CONTEXT

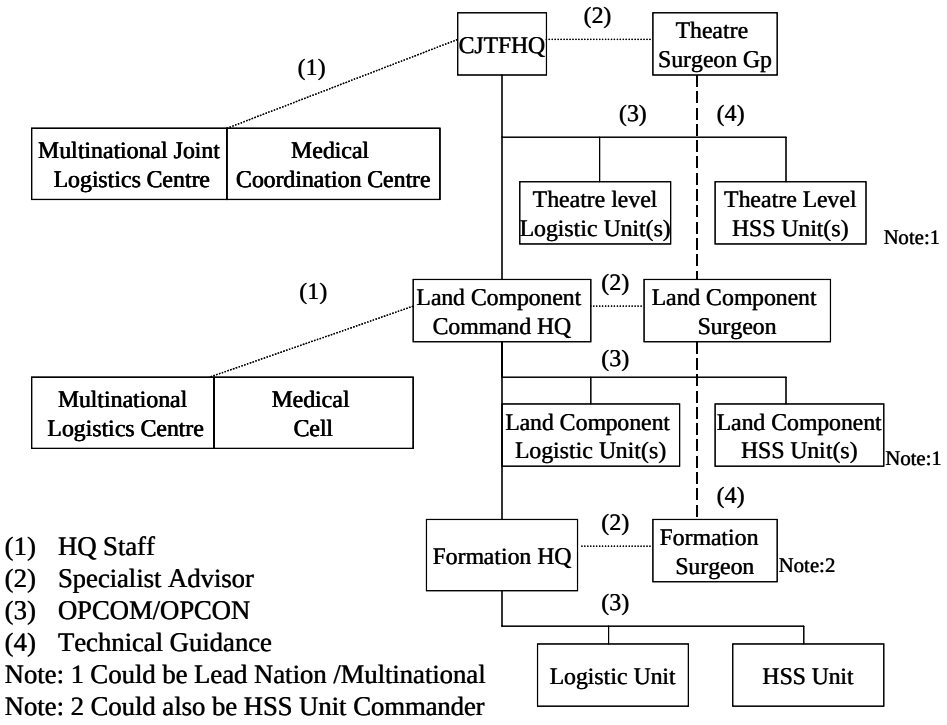
8-4 **General**. The responsibility for obtaining medical resources and for planning and controlling the medical support of national forces and national components of multinational formations rests with each nation. Additionally, national standards for health care and medical treatment have to be taken into account. These principles must be tempered by the need for cooperation, coordination and economy and may include cooperative arrangements initiated by coalition members. Nations retain the ultimate responsibility for ensuring the provision of HSS for their forces allocated to ABCA, but on transfer of authority, the coalition commander will share the responsibility for the health and medical support of assigned forces.

8-5 **Lead Nation Concept**. The provision of one or more specific medical functions or roles may be assumed by one nation, designated as either the lead nation (LN) or role specialist nation (RSN). The lead nation may also assume the responsibility to coordinate medical support of other nations within its area of responsibility (AOR).

8-6 **Multinational Integrated Medical Units (MIMUs)**. In recognition of the requirements for efficiency and economy, coalition members may form a MIMU to make best use of scarce resources or reduce redundancy. Due to the complexities involved in operating a MIMU, a memorandum of understanding (MOU) between the participating nations must be approved prior to the creation of such a unit.

COMMAND AND CONTROL

8-7 **General**. The command relationships of the HSS components are clearly defined when coalition forces are organized and are embodied in the command directives issued by the authority creating the coalition forces to each national component commander. Due to national requirements, it may not be possible to establish command and control over all participants, and command in the formal sense may not exist. A typical command and control relationship for HSS elements in a theatre of operations is shown in Figure 8-1.



(1) HQ Staff
(2) Specialist Advisor
(3) OPCOM/OPCON
(4) Technical Guidance
Note: 1 Could be Lead Nation /Multinational
Note: 2 Could also be HSS Unit Commander

Figure 8-1. HSS Command and Control

8-8 **HQ Representation**. At each level of command the senior HSS officer should be appointed as the HSS advisor. As the HSS advisor, this officer must possess the right of direct access to the commander on matters affecting the health of the command.

8-9 **HSS Technical Control**. The HSS technical control extends from coalition partners' senior HSS advisor through the theatre surgeon to all HSS assets in theatre. Health service support staffs above formation level should therefore be compromised of HSS personnel from each participating nation to facilitate the coordination of national HSS policies within the theatre.

8-10 **Theatre Surgeon (Group)**. The theatre surgeon, with an appropriate staff element, will be included in the CJTF HQ. The theatre surgeon, as the theatre commander's HSS adviser, sets HSS policy for the theatre and provides HSS input to logistic planning.

8-11 **Medical Coordination Cell (MEDCC)**. The MEDCC works under the functional direction of the theatre surgeon and coordinates multinational, joint and multifunctional HSS issues, including aero medical evacuation. The MEDCC will normally be assigned to the multinational joint logistics centre (MJLC), when formed. When a MJLC is not formed, the MEDCC will normally form a part of the CJ 4 staff at the CJTF HQ. The principal function of the MEDCC is the execution of medical plans and implementation of medical policies set by the theatre surgeon.

8-12 **Land Component Surgeon**. As the land component's HSS adviser, the land component surgeon sets medical policy for the land component and provides HSS input to logistic planning.

8-13 **Land Component HSS Staff**. Depending on the mission, type and AO, and availability of dedicated air evacuation assets, the land component HSS staff may be responsible for coordination of out-of-theatre strategic aero medical evacuation and direction / execution of tactical medical evacuation within the theatre. Furthermore, a medical force protection cell may be established, providing preventive medicine and veterinary advice/surveillance, depending on the operational requirements and availability of specialist advice at CJTF, MJLC and formation level.

8-14 **Formation Surgeons**. The formation surgeons are responsible for the execution of the HSS mission within the AOR. The formation HSS plans must be established in close cooperation with the LC surgeon and troop contributing nations (TCNs). They should ensure that bi/multinational arrangements for HSS to contingents and units are established if required. If a CJTF is formed for a specific mission, framework/LNs should be appointed to take responsibility for the coordination of HSS plans within each multinational formation sector.

FURTHER READING

- QSTAG 479 Water Quality Analysis Set (Engineer and Preventive Medicine)
- QSTAG 245 Minimum Requirements for Water Portability and Long Term Use
- QSTAG 291 Interface of Medical Materiel Procedures
- QSTAG 322 Emergency War Surgery
- QSTAG 423 Levels of Medical Support
- QSTAG 435 Medical Materiel Management during Patient Evacuation

- QSTAG 470 Documentation relative to Medical Evacuation, Treatment and Cause of Death of Patients
- QSTAG 519 Common Standards on Stretchers to be used in Both Air and Land Evacuation Ambulances
- QSTAG 529 Medical Employment of Air Transport in the Forward Area
- QSTAG 624 Medical Design Requirements for Military Pattern Ground Ambulances
- QSTAG 908 Medical Warning Tag
- QSTAG 956 Medical Situation Reporting
- QSTAG 999 Minimum Essential Characteristics of Field Medical Equipment
- QSTAG 1169 Common Minimum Health Intelligence Requirements for the Determination of Medical Countermeasures
- QSTAG 1170 Common Minimum Requirements for Evacuation Request Messages
- QSTAG 1218 Minimum Requirements for Evacuation Request Messages
- QSTAG 1263 Common Principles and Interoperable Procedures for the Critical Aspects of the Medical and Dental Treatment of Personnel
- QSTAG 2042 Common Principles for Deployment Health Surveillance
- QAP 45 System of Medical and Dental Supply in the Area of Operation
- QAP 60 Insecticides and Rodenticides and Insect Repellent
- QAP 82 Medical Interoperability Handbook
- QAP 247 Reportable Medical Events
- QAP 253 Deployment Health Surveillance System
- QAP 255 Armies Health Countermeasures for Operational Deployment, Excluding NBC Issues
- QAP 256 Inter-Service HSS Doctrine—ABCA Medical Interoperability Handbook (ABCA MIH)
- QAP 257 Outline Responsibilities for Repair and Maintenance of Medical Equipment, to include Capabilities of Technicians at each Trade Qualification Level

- QAP 286 The National Health Professional Credentialing and Trade Competencies Processes
- QAP 313 Monitoring and Resuscitation Equipment Carried by Casualty Evacuation Motor Vehicles, Including Respirators/Ventilators, Monitors and other Life Support Equipment

Chapter 9

Personnel, Administrative and Field Services

GENERAL

9-1 In the American, British, Canadian, and Australian (ABCA) nations' armies, personnel, administrative and field services functions can be the responsibility of various staff branches and functional units. Personnel support functions, as any other support function, must be coordinated by the ABCA HQ to ensure the coalition human resources are available for duty, properly trained and equipped and motivated. Its soldiers are the single greatest asset of an army.

9-2 While the majority of these functions are a national responsibility, opportunities for interoperability may exist due to the cultural similarities of the ABCA nations and should be pursued where multinational cooperation is a more efficient option. Issues such as leave, honours and awards and discipline are purely national responsibilities.

PERSONNEL MANAGEMENT

9-3 While personnel management is a national responsibility, its execution must be ensured so that the ABCA commander's ability to accomplish his mission is not impaired. Manning the force ensures that military personnel of the right type and in the right numbers are in the battle space.

9-4 Personnel management is the formulation of policies and plans and the execution of those functions leading to the most efficient employment of personnel. Personnel management comprises the following elements:

- personnel records (a national responsibility and not discussed further);
- personnel allocation (a national responsibility and not discussed further);
- strength management;
- personnel replacement management; and

- casualty reporting.

9-5 **Strength Management**. While detailed personnel strength management is a national responsibility, the ABCA commander requires information needed to assess operational capability and readiness for current operations and planning for the future. Strength management data is also used in providing water and rations, amenities, replacement management, casualty management, postal services, etc.

9-6 Currently multinational personnel reporting systems or procedures do not exist in ABCA. These procedures and the content of the reports will need to be improvised, likely based on the capabilities of each nation's personnel management information system (IS). The frequency of reporting and the roll-up of information must be considered to enhance the decision making process without presenting too much useless data.

9-7 Strength reports should include as a minimum:

- authorized unit strength,
- current operating strength,
- critical personnel shortages by skill and rank, and
- assessment of impact on current or planned mission.

9-8 **Personnel Replacement Management**. Though a national responsibility, the ABCA nations share much the same doctrine on this function. Most have a system that supports a mix of individual, group and crewed vehicle replacements. Cooperative use of replacement camps, training areas, etc. should be possible and advantageous to the coalition. The ABCA commander will likely have no authority over these replacements, except to understand the nations' shortfalls in this aspect of their capability.

9-9 **Casualty Reporting**. Another key personnel activity of importance to nations and the ABCA commander is casualty reporting. Casualty reporting is a national responsibility, but coalition standard operating procedures (SOPs) are required because superior commanders (national and coalition) will require the information and nations may handle each other's casualties.

9-10 Since casualty reporting has far-reaching effects on morale, the military's image and logistics functions, it requires 100 percent accuracy. Logistics, medical and other agencies must coordinate closely concerning disposition of remains, personal

effects and military equipment and must also maintain the current status of all casualties.

9-11 It is essential that similar procedures be applied to enemy casualties. Only in this way can reciprocation be expected. Liaising with prisoner of war (POW) staffs, the Red Cross/Crescent and other service organizations may be required.

ADMINISTRATIVE SERVICES

9-12 Administrative services are services that enhance the combat capability of the force through soldier sustainment activities. The ABCA nations' armies address administrative services differently. They are known as administrative services in some armies, personnel support services in others, but usually are the responsibility of the G1 or G4 staffs. Administrative operations can include postal services, morale, welfare and recreation operations, religious support, public affairs and legal services.

9-13 **Financial Services**. Financial services are a national responsibility and will be exchanged through MOU or agreements between the relevant nations. ABCA HQ may play a coordination role and will establish policies aimed at curbing black market activities, inflating the local economies, etc.

9-14 **Postal Services**. Postal services will be operated on the battlefield to deliver official and personal mail in accordance with QSTAG 181 Postal Organization in Joint Operations or Training. This QSTAG ensures national postal systems operate to the same standard such that cooperative mail services can be established if nations decide to do so. The use of the coalition transportation along the lines of communications (LOC) is encouraged. All nations are required to redirect other nationality personal and official mail based on the best available information.

9-15 **Morale, Welfare and Recreation Activities**. Morale, welfare and recreation activities promote combat readiness and reinforce unit cohesion by promoting and building morale and cohesion, enhancing quality of life and providing recreational, social and other support services for military forces. Each nation must plan and execute these activities for its own forces.

9-16 The objective of high morale across the entire coalition would be supported by a common high standard for such activities. Mutual support among nations would aid in this and likely prove the most economical and efficient method. ABCA elements should be prepared to share facilities and to obtain

common supplies from allied units as well as provide them. Each nation must provide its unique items to elements attached to other nations. Access to host nation (HN) or regional recreation areas should also be coordinated within the coalition.

9-17 **Religious Support**. Religious support activities support combat operations by promoting spiritual welfare, morale, personal stability, self-confidence and humanity. Religious support is provided at all echelons of combined operations. Ministry teams consisting of a professionally trained chaplain plus support personnel normally provide it. Each commander should ensure freedom of worship and ensure nurturing the living, comforting casualties and honouring the dead. Where multinational cooperation is feasible, it should be utilized.

9-18 **Public Affairs**. The public affairs organization serves as the commander's official spokesman and satisfies the media's appetite for news. An informed media will likely be supportive and will play an important role in determining the morale of the force.

9-19 The ABCA commander will establish a policy regarding the release of information. He should establish a single spokesman for his command, and all public affairs activities should be coordinated through the highest command HQ.

9-20 **Legal Advice**. Legal advisers should be present to advise the commander on matters of national and international law. Sensitivity to the laws and traditions of host nations and coalition nations is imperative; this should be achieved by liaison between the respective legal advisers. Combined warfare necessitates the application not only of the international law of armed conflict but also of national laws and practices in a manner compatible with the laws and practices of those countries occupying the geographic area. Formal agreements among nations will be necessary to clarify legal lines of authority. Legal advice is not restricted to matters such as rules of engagement (ROE), but will also serve combat service support (CSS) staff in the realm of contracting, host nation support (HNS) agreements, etc.

9-21 **Military Police Services**. Though discipline and military law are the purview of nations, some military (MP) activities can gain from cooperation. These services include:

- **Straggler Operations**. Stragglers are individuals who, without apparent purpose or assigned mission, become separated from their unit. They may be lost, have medical problems or be absent without authority. They must be

directed back to their units without delay, receive medical treatment or be detained if necessary. Military police units usually establish a straggler control system, paralleling the traffic control network, to aid in the return of stragglers.

- **Police Operations**. The MPs will conduct crime prevention, law enforcement and investigations as authorized under their nations' laws and service regulations. The ABCA HQ must establish policies and coordinate agreements that:
  - recognize national jurisdiction and organize multinational MP cells to service multinational camps or areas;
  - facilitate international investigations (crime knows no borders);
  - deconflict jurisdictional problems;
  - recognize the sensitivities of HN laws and customs; and
  - address the issue of arresting civilian persons, their treatment and how to interact with civilian authorities.
- **Prisoners of War Operations**. Nations are responsible for their own POWs until dealt with by the relevant court, in accordance with the Geneva Convention and national policies. Allied POW camps must have multinational representation and meet all nations' standards of treatment.

FIELD SERVICES

9-22 Field services affect the health, sanitation, welfare and morale of soldiers. Field services can include mortuary affairs, food services or catering, clothing replacement, shower, laundry, clothing and textile repair, water support and soldier life support systems (e.g., the U.S. Force Provider system).

9-23 Coalition authorities and member nations have a collective responsibility for supply support; they have the same responsibility for field service support. Furthermore, cooperative arrangements between nations should be pre-arranged as much as possible based on the nations' capabilities.

9-24 **Mortuary Affairs**. Mortuary affairs include graves registration. Care for the dead is a national responsibility, and each nation should have its own instructions. In general, graves

registration services, to include all phases of remains processing from search and recovery to final disposition/emergency burial on the battlefield or return to the next of kin, will be carried out in accordance with QSTAG 655 Handling of Deceased Personnel in an Area of Operations.

9-25 **Food Services / Catering**. Food services are a national responsibility, though this is an area that is entirely suited to cooperative arrangements. This includes the supply and accounting for fresh and hard rations, food preparation, the operation of kitchen facilities, the provision of ice, bakery support, etc.

9-26 **Water Support**. Water support includes the provision of water, water testing, tactical water distribution, operation of water facilities (wells, etc.), bulk storage and distribution terminals.

9-27 **Other Services**. Laundry and bath services are suited to cooperative arrangements, through third party contractors in rear areas and by military units in the tactical area. Coalition environmental policies are required.

FURTHER READING

- QSTAG 181 Postal Organization in Joint Operations or Training
- QSTAG 655 Handling of Deceased Personnel in an Area of Operations
- QSTAG 2026 Common Critical Procedures for Tracing and Tracking Personnel
- QAP 251 General Finance and Contracting Principles for Mutual Logistics Support

Chapter 10

Engineering Support and Infrastructure Management

GENERAL

10-1 Logistics is a huge consumer of engineering services and infrastructure[20] as it establishes theatre logistic bases, support areas and lines of communications (LOC). Therefore, this chapter will touch on the staffs and elements responsible for providing or controlling these services and resources.

ENGINEERING FUNCTIONS

10-2 Engineering in support of logistics is but one of the tasks performed by engineers in a theatre of operations. It may be performed by a combination of engineer units, civilian contractors and host nation support (HNS). Security engineering considerations are found in QAP 293. These tasks could consist of the following:

- **Rear Area Restoration**. Rear area restoration is the return of the infrastructure to a usable condition. It permits the continuation of operations in the rear area, including conducting damage assessment, controlling flooding, fire protection, restoring basic utilities, disposing of human and hazardous waste, and clearing debris and rubble.
- **Horizontal Construction**. The maintenance of the routes that connect the formation to its sustainment base, along which combat supplies and follow-on forces move, including the construction of roads, the maintenance of main supply routes, the repair and replacement of bridges, the upgrade and expansion of landing zones, the construction and expansion of airfields, the construction of fuel and water pipelines, the maintenance of railways, the conduct of quarry and pit operations and the support of beach, port and riverine operations.

[20] The term “infrastructure” includes buildings and real estate that is contracted or rented for use by the coalition.

- **Vertical Construction**. Establish facilities that provide deployed forces with protected, healthy and safe accommodations. This also includes management and contracting for real property (from acquisition to disposal), construction and maintenance of base storage and distribution facilities, refurbishment and repair of fixed facilities, establishment of initial or temporary standard camps and the production of construction material.
- **General Engineering Support.**
  - **Ports**. Clearance of underwater obstacles, construction or repair of jetties.
  - **Airfields**. Airfield damage repair, hardening command facilities, security engineering, construction of blast protection for aircraft, expedient surface construction, temporary accommodations, provision of utilities, provision of fire services.
  - **Utilities**. The provision of utilities, including power, water and sewer is critical to sustaining operations. Utilities can be acquired through contract, construction or repair. Other related tasks include the supply of mobile electric power, the construction of terminal pipelines and bulk storage facilities, the production of bulk potable and non-potable water, the operation and maintenance of power production equipment and the provision of environmental services such as sewage and waste disposal.
  - **Material Management**. Provide material management for defence and construction material, though these may be warehoused and distributed within the supply and transportation system.
  - **Geomatic**. Engineers provide geomatic support to HQ and are a tremendous source of information necessary for the logistic preparation of the battle space.
  - **Survivability**. Survivability support is provided through the construction of berms and barriers around fuel and ammunition storage facilities and key command and control centres, by reinforcing structures, and by installing intruder alert systems.
  - **Advice and Expertise**.
  - **Explosive Ordnance Disposal**. This may be a logistic or engineer activity depending on national

perspective. This support is required by logistic ammunition units who may need to destroy old stocks, or destroy captured stocks.

- **Fire Protection Service**. This is a important to damage control operations.
- **Water Production**. This is a dual logistic (distribution and storage) and engineer activity (generation and storage).
- **Waste Management**. This is a dual logistic and engineer activity.

- **Combat Engineering**. CSS units and formations operating in the tactical area may require this support from combat engineers supporting that formation.

10-3 **Responsibility**. Engineering functions are generally a national responsibility. Due to the cost, the differences in training and equipment and the complexity of managing large construction projects, it is difficult to create a multinational engineering element to support a coalition. It is better that the coalition commander coordinate the national engineering efforts by establishing priorities, facilitating agreements and contracts between nations, etc. Nations must meet to integrate their plans and requirements likely leading to:

- designation of a lead nation (LN);
- role specialization;
- scheduling the use of limited facilities;
- defining areas of responsibility;
- multinational access to third party engineering resources; and
- multilateral or bi lateral cooperative agreements.

ENGINEER AND LOGISTIC STAFF INTERACTION

10-4 The complex nature of the tasks listed—planning, time, material—means that detailed coordination is required. Theatre level coalition and national staffs will make the overall plan based on their assessment of requirements, priorities and resources. In order to prevent the contributing nations from competing for limited facilities, fulfilling the prioritized list of requirements will require coordination at the highest level.

10-5 The logistic staff must consider their requirements from front to rear, understand the need for permanent or temporary accommodations, etc. Additionally, operations may generate infrastructure requirements for support of forces operating out of

the theatre. They must deliver these requirements to their corresponding engineer staff in all levels of HQ, whether multinational or national.

10-6 Medical staffs, logistic staffs and engineer staffs must interact to produce plans concerning all their expertise:

- water production and storage;
- waste and sewage management;
- mortuary affairs;
- environmental / spill damage control; and
- nuclear, biological, chemical defence (NBCD) operations (with the NBCD staffs).

10-7 **Reconnaissance**. A combination of specialist staffs (logistic, engineer and others) is required to conduct thorough reconnaissance of theatre engineering requirements. A good reconnaissance, well in advance of deployment, is essential and will identify major shortfalls and influence the preparation of the operation. Reconnaissance must take into account the available infrastructure and the available local resources for the construction, maintenance and operation of facilities. Priority is given to facilities to install points of disembarkation (PODs), staging areas, assembly areas and their connecting routes. Additionally, the reconnaissance should include all other required infrastructure as stated by the commander or his staff. The reconnaissance will result a recommendation of measures to be taken to prepare the theatre.

10-8 **Phase of an Operation**. The engineer activities during the deployment, sustainment and redeployment phases are the same, but the emphasis will be different:

- During the deployment phase, the emphasis will be on enabling operations and maintenance of the facilities such as seaports, airports, railways and stations and communication facilities for strategic and operational mobility.
- During the employment phase, the emphasis shifts to supporting combat operations, including operational and tactical mobility support, maintaining the supporting LOC to the support base and establishing forward support bases before the LOC become excessively long.
- During the redeployment phase, the emphasis will be similar to the deployment phase. There may be additional tasks associated with the concept of “nation building,” as

local civil infrastructure is built (or rebuilt) so the new nation or government can function once the coalition has departed.

INFRASTRUCTURE MANAGEMENT

10-9 **General**. The management and coordination of infrastructure is of prime importance in multinational logistic operations. In some operations much of this responsibility will be assumed by the host nation (HN) which will deal with the nations directly, though the coalition commander will always be required to deconflict and facilitate this activity. In some other operations, however, the complexity of the problem may be such that the coalition commander must closely coordinate these functions through the appropriate staffs established in multinational and national HQ.

10-10 Management of infrastructure can be done by the occupying nation, an LN (for sites such as commonly funded concentration areas) acting on behalf of the coalition, or a coalition HQ itself (this last case is extremely unlikely given that ABCA has no standing HQ nor standard operating procedures [SOPs] or agreements to use).

10-11 In accordance with national doctrine, the task of infrastructrure management is one for the logistic staff, engineer staff or a specific cell designed for the task. The specific organization will remain flexible, to be dictated by the size and complexity of the real estate mission, and it will normally be sited in the multinational joint logistics centre (MJLC) when established. It will include or liaise the following expertise:

- contracting and acquisition expertise;
- legal expertise;
- construction engineering expertise;
- CIMIC, HN or local expertise, including property management, translation, etc;
- it can be government, civilian, contracted civilian and/or military personnel;
- establishment and monitoring of environmental and maintenance standards for real estate and facilities to be occupied; and
- processing and execution of claims for damage to any property or facility.

10-12 **Responsibilities**. There are certain responsibilities that apply in the management of real estate, regardless of the type of operation:

- **National Responsibility**. Nations remain responsible for the taking over and handing over of property and real estate occupied by troops contributed by their nations. Further, the costs of occupation and the settlement of claims arising due to that occupation are a national responsibility.
- **Coalition Responsibility**. The coalition will take the responsibilities of a nation, as described above, in respect to property or real estate of multinational manned military headquarters and sites. In general, this means that if a facility or site is provided through coalition common funding, the coalition will have a responsibility in respect to claims or costs that arise. As stated above, it is likely that the LN will manage the property issues on behalf of the HQ.

10-13 **Property Condition Standards**. All occupied sites will be turned back to the HN in a condition comparable to that at the time of occupation. Particular attention must be given to environmental standards of property. Any deterioration in environmental conditions should be documented and addressed before property is turned back to the HN. In order to protect the nations and coalition common funds from excessive and spurious claims, the following will apply:

- **Archiving**. A central archive will be established in order to hold copies of surveys, documents and claims in relation to the operation. This should be in theatre and located either with J/G/S 4 or the multinational joint logistics centre (MJLC). After an operation, the continued archival of site surveys will be an important protection for the nations.
- **Pre Occupation Survey (POS)**. (Also referred to as In-Survey.) Each nation, or the coalition commander for sites at which the coalition acts as the responsible authority, will conduct a POS at the time of occupying a site. One copy of this survey is to be retained in the central archive, and one copy remains with the site commander. This establishes the base standard that claims will be judged against when the site is vacated.
- **Post Occupation Survey**. (Also referred to as Out-Survey.) Each nation, or the appropriate coalition

commander, will conduct a post occupation site survey on departure, including occasions when the site is handed over to another contributing nation. Again, one copy is to be retained with the central archive.

- **Representation**. It is important that the owner, or his legally appointed representative, is present during the conduct of both surveys. It also serves the best interests of the nations that the same person is invited to both surveys.
- **Claims**. Whenever possible, claims should be settled before departure.

FURTHER READING

- QSTAG 180 Military Load Classification of Civil Bridges (Computation of Bridge, Ferry, Raft and Vehicle Classifications)
- QSTAG 501 Warning Signs for the Marking of Contaminated or Dangerous Land Areas, Complete Equipment, Supplies and Stores
- QSTAG 504 Bridge Classification Markings
- QSTAG 1174 Compatible Engineer Doctrine Force Projection and Sustainment
- QSTAG 1175 Engineer Information Exchange Procedures for Support Capabilities, Utilities Requirements and other Critical Information During the Preparation Stage, Prior to Deployment
- QSTAG 1176 Scales and Standards for Facilities for Short Term Camps
- QSTAG 2028 Minimum Compatible Doctrine for Bulk Water Supply on Extended Operations
- QSTAG 2029 Compatible Procedures for the Control of Construction Tasks in the Rear Area
- QSTAG 2044 Requirements for Waste Management, Including Staff Responsibilities, Marking, Storage, Transportation and Handling, Inspection and Disposal
- QSTAG 2045 Outline the Engr Recon Requirements for Sea Points of Entry to Determine Suitability and Works Required
- QSTAG 2046 Identify Common Critical Procedures for Water Supply

- QAP 29 Engineer Logistic Operations
- QAP 46 Repair of Aircraft Operating Surfaces
- QAP 65 Physical Protection of Key Installations
- QAP 292 Engineer Handbook
- QAP 187 ABCA National Armies Policies and Countries Legislation with Respect to the Environment

Chapter 11

Special CSS Operations

The purpose of this chapter is to discuss complex combat service support (CSS) missions that will involve a high degree of cooperative logistics if success is to be achieved. The operations discussed are:

- reconstitution;
- reception, staging, onward movement and integration (RSOM&I[21]) and redeployment/recovery;
- urban operations; and
- nuclear, biological, chemical defence (NBCD) operations.

PART 1—RECONSTITUTION

11-1 There is no agreed reconstitution doctrine within the American, British, Canadian, and Australian (ABCA) Standardization Program. One definition (from CA) of reconstitution is: "An extraordinary action planned and implemented to restore a desired level of combat effectiveness to units or formations."

11-2 NATO uses the term "rehabilitation" and "limited rehabilitation" in its draft doctrine:

- "Rehabilitation" is defined as follows: "to improve or restore combat power, rebuild cohesion and minimize disruption and dislocation by the enemy."
- "Limited rehabilitation" is: "a graduated approach to the activity conducted with limited resources or within a limited timeframe or to achieve a declared condition within the unit's current location or relatively nearby."

11-3 Terminology aside, the doctrine for reconstitution does not vary significantly between the nations. However, the human and materiel differences mean that this process is largely a

[21] There is no agreed abbreviation for this concept. NATO joint doctrine currently uses RSOM, though RSOI had been used in the past.

national task not international. However, all nations should be expected to provide common support such as:

- medical support;
- fuel;
- rations and catering;
- infrastructure—accommodation, bath, laundry;
- general transportation; and
- security.

11-4 The removal of a unit or formation from operations is a command decision influenced by an assessment of risk, the acceptability of loss, the urgency of re-employment and the availability of reserves. The problem is beyond the capability of the normal sustainment process, and there may be a need to conduct a specific operation to restore a specified level of combat effectiveness prior to the unit or formation conducting another operation. Logistics plays a major role in this operation, particularly if the logistic resources have themselves been reduced in effectiveness.

11-5 Reconstitution is a complex operation that should be controlled by higher levels of command, particularly when significant effort is required—security forces, real estate, training areas, supplies, services, personnel, etc.—and also due to the need to have certification of effectiveness conducted before continued employment on combat mission.

11-6 Reconstitution operations should be a contingency plan in all operations, and for the most part they will occur after the campaign is won and the elements return to their home base or station. The doctrine remains viable, however, because no war is a sure thing, and increasingly ABCA armies are forging high readiness forces which will be required to undertake follow-on missions with alacrity. The “pit stop” replenishment concept at the formation levels and the US “Unit of Action” concept are similar to the reconstitution doctrine.

THE PROCESS

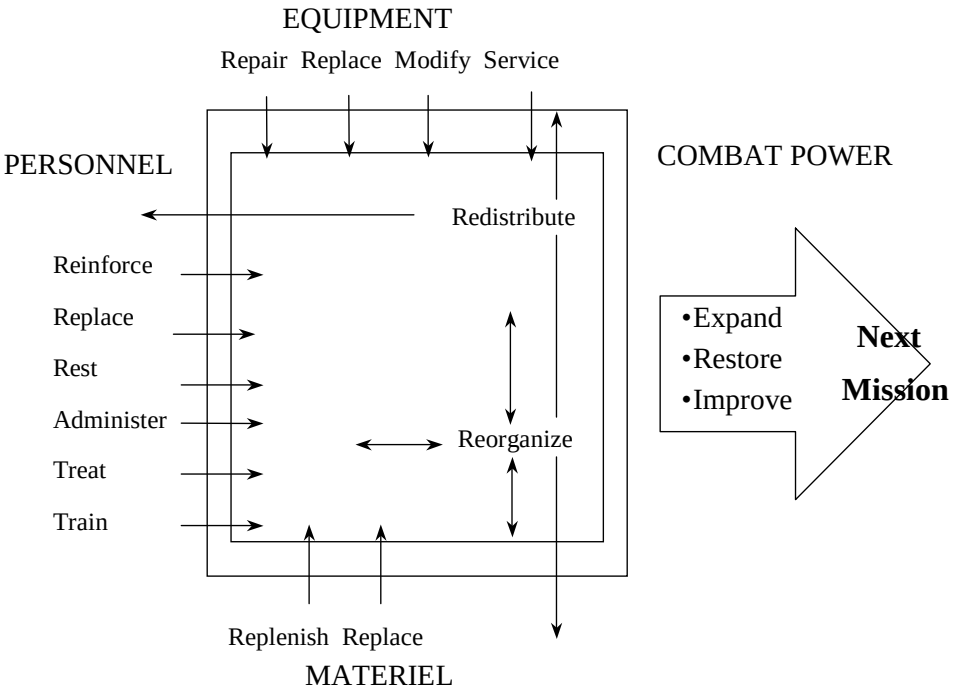


Figure 11-1. The Reconstitution Process

CSS CONSIDERATIONS

11-7 **Commander's Guidance**. A target level for restoration of combat power must be set, resources allocated and a time for completion given.

11-8 **Command and Control**. Reconstitution will require specific organization, command support and a designated commander. The commander must regroup, as necessary, the element and the supporting forces so that they have clear command and support relationships, and they must work for a common commander for the duration of the process. It is likely that the process would benefit from the centralization of all CSS echelons under one CSS commander to ensure max use of all resources.

11-9 **Security**. It is usually necessary to rehabilitate or regenerate a unit out of contact or within a secure area. Neither the unit nor supporting elements may have the capability to

conduct this security task due to the depleted condition of the element and the CSS tasks facing the supporting units.

11-10 **LOC**. The area selected for the reconstitution should have access to road, rail and air lines of communications (LOC).

11-11 **Assessment**. Upon arrival the unit is assessed as to its state from a personnel, equipment and materiel perspective. Surplus or deficient resources can be then acquired or released as required. The commander can be advised as to the time requirement.

11-12 **Training**. Stocks of material must be provided for training as well as for combat.

11-13 **Certification**. The status of the reconstituted unit's CSS capability is to be certified prior to reemployment.

11-14 **Health and Welfare**. Given that most of the unit casualties will have already been treated or evacuated, the focus here will likely be on the treatment of stress reaction within the HSS system and without. A program of assessment, stress de-briefing, rest, food, morale and welfare activities, honours and awards should be implemented to prepare the mind for further operations.

11-15 **Personnel Replacements**. The movement and integration of replacements must be done as quickly as possible, in the form of formed bodies and crewed vehicles as much as possible. A collective training program must be implemented to build cohesion and competence as soon as possible. The unit and formation "left out of battle" personnel will play a key role in this.

11-16 **Equipment Support**. Central control of maintenance assets will allow the most flexible and speedy repair program. Access to an already established maintenance facility with repair parts and replacement equipment will minimize start up time.

11-17 **Material Replenishment**. A supply unit capable of receiving and issuing all types of supplies and supported by a stockpile of stores pushed to it prior to the unit arriving at the area will be required. This stockpile of stores should be in unit-configured loads as much as possible.

11-18 **Movement and Transportation**. Significant support will be required to move the element to the reconstitution area and to move the replacement personnel, equipment and stores to the site.

PART 2—RSOM&I AND REDEPLOYMENT

11-19 **Background**. ABCA armies are capable of projecting combat power worldwide to meet challenges posed across the spectrum of conflict. Key to a rapid and effective transition process from deployment to employment are agreed coalition procedures for reception, staging, onward movement and integration (RSOM&I). The RSOM&I process is very similar to the reconstitution process, though obviously it is focussed on "constitution" prior to battle rather than the reverse. It is not necessarily a linear process.

11-20 NATO and most joint doctrine use the term RSOM (reception, staging, onward movement). This handbook considers the integration to be a key component in the preparation of land forces for war. This handbook also includes redeployment in this section as it relates so closely to RSOM&I.

11-21 Nations and ABCA authorities have a collective responsibility for RSOM&I. While nations have to ensure, individually or by cooperative arrangements, the provision of logistic resources for RSOM&I to support their forces, the success of their efforts will come only with the coordination provided by a multinational HQ cognizant of the needs of all nations, the force commander and the availability of host nation (HN) support. The HN has ultimate authority to approve, coordinate and control movement on its sovereign territory.

11-22 The commander and his staff must coordinate the efforts of the contributing nations and synchronize the flow of personnel and equipment into theatre in order to facilitate the build up of military capability and avoid saturation at nodes or bottlenecks within the area of operations (AO). Balance must also be achieved between the national inter-theatre pipelines and the intra-theatre distribution network. Clearly, on completion of the operation, this process can be applied in reverse for the re-deployment of the force(s).

RSOM&I PROCESS

11-23 Transition from deployment to employment is a four stage process designed to quickly and efficiently receive deploying units and prepare them for rapid employment:

- reception of personnel and equipment;

- staging and validation of unit personnel and equipment for onward movement;
- coordination and conduct of onward movement of the deploying unit(s) to a tactical assembly area (TAA); and
- integration into the gaining unit, formation or the land component.

11-24 The theatre level, third line logistic staff and units (coalition and national) will be responsible for the bulk of the reception, staging and onward movement and may be regrouped as needed to execute the process. The land component and its subordinate formations will be primarily focussed on the integration task. However, the large amount of tasks in the RSOM&I process will likely require much of the land component logistic capability to be subordinated to the theatre level echelon of logistics (i.e., OPCON to the CFHQ or theatre support command [TSC]).

11-25 **RSOM&I Principles**. There are five overarching principles that must be considered during the development and execution of RSOM&I:

- **Unity of Command**. The competing requirements of nations and the authority of the HN require central coordination and direction over the RSOM&I process. The coalition HQ must be given requisite authority over this phase of the operation. Depending on the role and presence of the HN, a lead nation (LN) should selected to execute the process so that it remains coherent from port to AO. The joint force commander (JFC), who bears ultimate responsibility for the timely execution of the operational plan, needs to be provided overall visibility of the deployment of the national forces within the Joint Operations Area through coordination with troop contributing nations (TCNs), HN and LN.
- **Flexibility**. Flexibility is the key to successful RSOM&I, as the order of entry of forces can change suddenly or the priority of effort can switch to a certain unit because it is required for combat operations.
- **Coordination**. A communication and liaison network must be established to coordinate the activities of RSOM&I. This demands the earliest integration of command and control (C2), movement control centres (MCCs), materiel management centres (MMCs) and TAV /

ITV systems and a tremendous level of exchange of staff and liaison officers.

- **Integration into the Planning Process**. It is paramount that the operational planning process (OPP) integrates RSOM&I at the earliest opportunity. RSOM&I will have an impact on the flow of forces.
- **Optimum Logistics Footprint**. When determining the logistics structure required to support RSOM&I, the size of the logistics footprint should be tailored to the size of the deploying forces. Whilst some redundancy will be required, the goal is to avoid duplication of effort by deploying the minimum assets necessary to optimize throughput of units and materiel.

11-26 **The Deployment Planning Process**. RSOM&I requirements need to be identified early in the deployment-planning process to ensure the appropriate functional elements for executing RSOM&I are included in the flow. RSOM&I planning must begin in the early stages of an operation to avoid duplication of effort and to ensure the rapid movement of personnel and materiel into theatre. Early harmonization of deployment plans and cooperation in the use of strategic lift assets will minimize waste and speed the overall process. The coalition forces must coordinate and anticipate requirements to maximize capabilities and minimize the use of scarce resources.

RECEPTION

11-27 Reception operations include all those functions required to receive and clear unit personnel and equipment through the points of disembarkation (PODs). Reception is the process of off loading and marshalling unit personnel, equipment and materiel, and then transporting these elements from the POD to a staging area. Theatre level coalition logistic elements and national support elements (NSE) from all coalition partners will be present at the principle point of embarkation (POE) and will organize reception of personnel and materiel into theatre according to national reception procedures. These procedures have much in common, and there is much scope for role specialization and the use of shared facilities for materials handling, transportation, transit accommodation, administration and training as the situation allows. The Coalition HQ and multinational joint logistics centre (MJLC) will have a key role to play in ensuring that duplication of effort is avoided wherever possible.

11-28 **Air/Sea Ports of Debarkation**. The use of an LN or role specialization nation (RSN) to command key terminals will improve the throughput of the terminal due to the unity of command over the port resources and facilities.

11-29 **Personnel Tracking**. Handling of personnel will generally be conducted under national arrangements even though shared facilities at the POE may be used and a unit from a single nation may operate facilities. National contingent commanders should account for their personnel (by rank, name, service number and location) at all times. The Coalition Force Headquarters (CFHQ) will maintain visibility of personnel numbers by nation through submission of a PERSREP. Procedures for the tracking and tracing of personnel (QSTAG 2026 Common Critical Procedures for Tracing and Tracking Personnel) should be adhered to as a minimum.

11-30 **Contractor Logistic Support**. Given limitations on resources, it is highly likely that commercial contractor logistic support (CLS) and host nation support (HNS) will augment military support to the deployed force. Some contractors may be engaged under lead nation arrangements, but others will operate directly in support of national force elements and may compete for scarce local resources if some form of coordination is not applied across the coalition force. It will be for the CFHQ to provide the necessary coordination of CLS and HNS effort, and for Component RSOM&I functions this may be delegated to the CLSC.

STAGING

11-31 Staging is the assembly, holding and organizing of arriving personnel and materiel into units and formations and the preparation for onward movement and tactical operations.

11-32 **Shared Base**. This may be a shared facility by two or more coalition partners and can serve as a sustainment base or forward command and control centre. Again, the LN concept should be applied wherever possible to enhance cooperation and minimize competition over scarce resources. Clear command and control arrangements for any shared facility should be agreed early in the coalition planning process.

11-33 **Integrated Movement Control**. The flow through the common staging areas will require tremendous coordination across the nations and the coalition HQ.

11-34 **Support Requirements**. Whilst deploying, forces are not self-sustainable and may require support such as refuelling services, ammunition-holding areas, materiel handling equipment (MHE) and movement control. Also required are life support and essential services such as food, water, shelter, sanitation, health support, transport, maintenance, supplies and personnel services. The staging bases should be run under an LN concept or by a multinational support unit.

11-35 **Training**. Training is conducted in key mission essential tasks, ensuring that equipment is checked and made mission capable. This will require mobile support to conduct, including repair and recovery, ammunition and fuel support and medical evacuation. The coalition and component HQ will allocate real estate for training and prioritize use of facilities that are in short supply. Combat service support and combat units will be required to take part in this training. It will be vital that the command, control, communications, computers and information (C4I) and liaison procedures be installed and developed and that any multinational support elements receive training commensurate with their tasks. This will involve command post exercises (CPXs), computer-assisted exercises (CAXs) and collective training.

ONWARD MOVEMENT

11-36 Onward movement is the process of moving units and accompanying materiel from reception facilities, marshalling areas and staging areas to tactical assembly areas or other theatre destinations. Efficient onward movement of personnel, equipment and materiel requires a balanced, integrated system of control nodes, transport and movement capabilities and cargo transfer operations across the coalition force. Although national procedures can be accommodated within the overall plan, efficient onward movement must be coordinated by the coalition and land component HQ together with the nations.

11-37 **Intra-Theatre Movement**. Responsibility for the LOC and support along them will need to be defined. It will likely be a TSC task up to the land component AO, and from there it may devolve to a land component support commander (LCSC) and subordinate multinational support formations (i.e., COSCOM, DISCOMs) with support from national forces. Convoy support centres may have to be provided under the direction of responsible MCCs.

11-38 **Protection**. During onward movement, forces are vulnerable and may need additional protection. Each of the ABCA armies has a concept of force protection, but the coalition and land component commander will develop and coordinate force protection guidelines for the coalition as a whole.

INTEGRATION

11-39 Integration is the process of establishing force projection units into coherent operational units at the designated AO. It is a continual process, normally accomplished concurrently with other CRSOI tasks, which will commence at the POE but will mainly take place at staging and assembly areas.

11-40 Integration may be the most difficult function for a coalition to achieve quickly and efficiently. Timely and continuous coordination and planning will reduce integration time, and early liaison is essential for the exchange of information, staff officers, communication networks and plans. Subordinate units and formations should establish early liaison with the higher HQ (whether national or coalition HQ) in order to ensure that common coordination measures are followed. QSTAG 533 Principles and Procedures for Establishing Liaison should be followed for the exchange of LOs.

REDEPLOYMENT (OR RECOVERY) AND POST—COMBAT OPERATIONS

11-41 A reversal of RSOM&I occurs on redeployment as coalition forces dissolve and revert to national control. The need for close coordination remains valid as combat or peace support operations may be continuing as the redeployment process begins. Redeployment includes both preparatory action and the movement of formations, individuals and materiel from the AO to their intended destination that may not be their home base. Because the need for security is significantly reduced, the process should be faster as many more ports, airports and roads networks may be available for use.

11-42 The flow is not one way, however. The arrival of arms and munitions will cease, but it will be replaced by humanitarian aid, etc, and there will be a surge of national redeployment assistance teams, packaging materials, etc.

11-43 Logistic planning for redeployment will have to cover:

- plans for transfer of equipment and facilities;

- logistic support plan for withdrawal, including reconstitution if needed;
- logistic C2 structure and arrangements for redeployment, including communication requirements;
- inventory of the various categories of equipment;
- required date to initial movement—"M-Day" and order of march;
- guidance on disposal of NATO owned equipment;
- funding requirements for environmental restoration of NATO sites;
- plans for medical cover throughout the redeployment;
- guidance on multinational occupancy of LN administered sites, the apportionment of responsibility for real estate management and possible claims;
- preparation of force generation conference to cover critical logistic assets (e.g., container handlers, cranes, traffic control units and R/A/SPOD units);
- deconflicted movement plans and transportation requirements;
- quarantine and cleaning to remove all soil and pests from personnel, equipment and materials in keeping with national regulations; and
- customs clearance as required.

11-44 Post operation activities are not just focussed on redeployment. Other activities will include belligerent occupation, humanitarian relief, civil administration, demobilization operations and battle area clearance.

11-45 **Support to Remaining Forces**. There will be forces left in place for stabilization or peace support missions, including the occupation of foreign territory. The support plan for this phase of the campaign will be activated and put in place while the redeployment continues. A new coalition HQ and structure may be created.

11-46 **Humanitarian Relief**. While not being a primary military responsibility, the possible requirement to initiate or support humanitarian and related operations may arise. The demand for supplies will alter significantly from warlike stores to that for humanitarian and medical needs.

11-47 **Civil Administration**. The post conflict involvement of the military in civil administration can range from simple liaison

at one extreme to military government at the other. The tasks involved represent an extension of humanitarian relief, as expectations of normality rise, to the restoration of public services and political systems. From a military perspective, any commitment should be short lived, but this can occur only when the commitment was considered early in the initial analysis of the mission and this end state has guided the plans and efforts of the entire coalition during all phases of the campaign.

11-48 **Demobilization Operations**. Upon cessation of hostilities, a cease-fire may have to be supervised. This could involve wide dispersion of forces, placing a strain on the logistic infrastructure. The processing and collection of enemy prisoners of war (POWs), their repatriation, guarding, feeding, clothing and investigation of war crimes will place further demands and require legal, linguistic and provost specialists.

11-49 **Battle Area Clearance**.[22] Environmental awareness and concern for safety dictate that after operations, it will be necessary to mark and then clear possible hazards. In the long term, military involvement is not necessary, and appropriately trained civilians can be contracted to undertake the task. For many UN operations, once order is restored, it is policy to use civilian contractors to replace military resources. But in the immediate aftermath of operations, the commander will be required to at least identify and mark contaminated areas. Accurate records must, therefore, be kept during operations. Enemy POWs may not be compelled to work on war related tasks. Whilst their specialist knowledge of minefields, armament stores and NBC hazards may be useful, their cooperation cannot be guaranteed.

PART 3—URBAN OPERATIONS

11-50 Urban operations (UO) present particular challenges to ABCA armies and to their support echelons, particularly as many of the ABCA weapons systems and doctrines are optimized for open terrain. Urban operations are likely because the world is becoming urbanized and potential enemies may see the urban landscape as one that will turn the ABCA surgical operations into battles of attrition, which will defeat the political will holding the

[22] The systematic clearance of ground over which conflicts have been fought which is contaminated with mines, sub-munitions, unexploded ordnance, ammunition, nuclear biological chemical weapons and their components, missile fuels, weapons, and other hazardous debris.

coalition together, achieving their strategic goals while accepting larger tactical losses as part of the bargain.

11-51 Urban operations require a prolonged effort to sustain and require specific planning, reorganization, and training to perform the sustainment mission. Sustainment of urban operations requires the highest degree of ingenuity, improvisation and creativity on the part of CSS commanders and staffs. The emphasis is on leadership at all level within CSS units.

MULTINATIONAL LOGISTICS IN URBAN OPERATIONS

11-52 Multinational logistics can and should function as described throughout this handbook. The nature of urban operations requires even higher levels of integration:

- **Force Protection**. There are no "rear areas" in UO, as the enemy will likely conduct non-linear and asymmetric warfare. Coordination of security at bases and along the LOC will require higher degrees of coordination compared to traditional liner and open battlefields. There will be a need to secure nodes and LOC for particular periods of time or purposes, as there will never be enough forces to achieve wide area and permanent security.
- **Supporting Non-Linear Operations**. The traditional division of the battlefield by national sector may not provide the desired level of flexibility. To support such freedom of action, nations will be expected to provide second and first line support to other nation's forces and vice versa. Mixed forces will be more commonplace. All lines of CSS will likely decentralize resources such as medical evacuation, repair, recovery and surgical teams.
- **Supporting Non-contiguous Operations**. Combat forces will seek to conduct high tempo, pre-emptive strikes throughout the battle area without the land LOC back to the support echelon. Therefore, flexible and high technology delivery systems will be required supported by a directed logistics concept of operations. Some ABCA nations will not have such resources, and the lead nation will be required to provide. This will require a higher level of integration among support echelons across the nations and within.

- **Doctrine**. ABCA UO doctrine must be highly integrated—hopefully this handbook will contribute to this aim.

PLANNING IMPLICATIONS

11-53 Staff responsibilities in support of UO remain straightforward. The problem is still one of planning for and providing the daily maintenance of units. Plans are based on the following factors:

- **Destination**. Though the theatre environment will drive many logistic decisions, the urban environment requires specific consideration. The complexity of urban terrain is akin to a mountainous area in that it demands delivering support vertically. It resembles the jungle in that military movement will be slowed and restricted to readily identifiable routes. The urban population will create friction for military movement.
- **Demand**. All operations require tailoring of forces and sustainment to achieve success. The battle becomes decentralized, demanding independent small units to accomplish vital missions. This is accomplished through building self-sufficiency into the units. Humanitarian support to urban populations is another source of demands that will be concurrent with the demands of war materiel (in keeping with the concept of the *three-block war*).
- **Distance**. CSS forces to sustain the combat forces must establish the LOC. The longer or more difficult these lines are, the more resources must be put into them. Within the urban area, it is difficulty, not distance, that demands significant resources. Route destruction, vertical re-supply and movement through areas under enemy observation and fire will produce choke-points in the LOC forcing the use low capacity modes such as re-roled armoured personnel carriers (APCs) and man-portable loads. A major support base is required next to or within the urban AO, and each sector will require its own system of support bases. It must be assumed that the LOC **will** be cut at some point in operations, so contingencies must be planned for. The development of purpose built armoured logistic cargo variants should be considered by all nations.

- **Duration**. Though the duration of the urban fight drives the overall resource requirements as with any other battle, the high tempo of urban fighting requires special consideration both in terms of supplies of material and manpower. All ground forces within the urban environment are subject to rapid fatigue, and CSS forces will likely be required to conduct continuing reconstitution operations.
- **Risk**. The risk to soldiers conducting forward maintenance, transport, medical and supply tasks are increased due to the danger of snipers. The LOC through the urban area is subject to enemy attack. The unfriendly or unsupportive civil population will pose a direct threat to physical and information security. Toxic Industrial materials (TIM) may be used by the enemy as a "poor man's" weapon of mass destruction. Storage tanks of natural gas, chlorine, ammonia, industrial explosives and fertilizer-based bombs could be used to advantage. Mines and booby traps will abound. Self-protection measures may have to be enhanced.

ORGANIZATIONAL IMPLICATIONS

11-54 **The Formation.** Combat formations will be increasingly integrated teams of combat, combat support and CSS elements. Layered upon them will be other forces such as SOF, intelligence elements and local forces. This will require specifically tailored unit-configured loads, increased use of man-portable loads and the requirement to meet unusual support requests.

11-55 The creation of hard points may be required at various locations to various sizes. These demand construction resources, defensive stores, surveillance suites, lights, power sources, water and food containers, latrines, garbage and other amenities. The creation of these points must be planned for.

11-56 Much of the mechanized force's equipment may be surplus. This surplus can be pooled and reallocated or parked, thus freeing the drivers and mechanics for other duties. Surplus light armoured vehicles (LAVs) should be re-roled as logistic carriers and modified as required to carry out this new mission. Armoured support vehicles (engineer, medical and recovery vehicles, etc.) will become of critical importance and will require careful allocation to the mission elements.

11-57 **Support Areas and Bases**. The choice of support areas has always required consideration of space requirement, closeness to the main supply route (MSR) and to supported units, routes, and defensiveness. Support areas serving UO can choose between the open terrain outside the urban areas or parks within (where the wider fields of observation benefit the friendly force's surveillance assets and firepower) or industrial areas. The disadvantage of this is that nations must minimize their logistic footprint.

11-58 Further decentralization of stocks will give increased self-sufficiency within combat units and reduce dependence on the tenuous LOC for support. Further decentralization has the disadvantage of placing stocks in high-risk areas, and it may tie commanders to a base that he must (or feels he must) protect. Urban operations must plan on redundancies in the stocking plan and accept mass over velocity as a cost of business.

11-59 **Supply**. Some considerations:

- Bulk breaking in the forward areas is to be avoided, as soldiers become exposed to enemy fire. The dumping of large quantities of supplies or forming single commodity dumps is to be avoided as they increase the risk to the force from enemy intervention.
- Combat supplies will be pushed forward, with stockpiles created if issue exceeds demand. This system is simple and mitigates the "fog of war." This approach recognizes that small units may be isolated and have to continue the fight for periods of time without replenishment.
- The ammo commodities likely to increase in demand are small arms, grenades, obscurants and engineer demolition/explosives. Greater use will be made of precision and less-than-lethal munitions (obscurants, pepper spray, CS, stun grenades, kinetic stun projectiles, etc). Past estimates based on WWII data suggested that ammunition consumption may increase by as much as a factor of four. The natures or mix of ammunition may be changed (e.g., tracers will be ordered removed from belt ammo). All of these changes requires changes throughout the sustainment chain and should be done before operations commence.
- Barrier materials are essential in defensive operations and in reinforcing base camps against attack, theft or sabotage. They also figure in consolidation of an objective

after an attack, and a rapid push of Class IV should be included in a logisticians plan to support offensive operations. Urban operations may demand a large quantity of typical defensive stores such as concertina and lumber (and the power tools to cut it) to reinforce bunkers and bar access to windows and doorways inside structures. Defensive stores may also include specialized collapsible fabric cribs that can be filled with sand, rock or dirt to create bulletproof barriers, to block roads, to reinforce defensive positions and to protect headquarters and logistics activities.

- The requirement for special UO equipment[23] will be identified, and the supply system must be capable of meeting those needs quickly.
- The timely issue of potable water is important, as local sources of water will be highly susceptible to contamination due to human waste, decomposing human or animal remains, dysfunctional sewer systems, industrial poisons or other contaminants. Anticipate increased consumption due to increased exertion levels in an UO environment. Urban combat causes great stress on soldiers and requires great physical exertion. This combination of stress and exertion causes rapid dehydration. Requirements exist for individual and small unit water purification capability for the needs of widely dispersed elements fighting in the urban environment.
- While fuel usage may be somewhat reduced, there will be significant difficulty in bringing fuel trucks forward. Maximum use must be made of local gas stations and fuel storage sites. The use of APCs carrying bladders under armour or rotating fleets into secure refuelling areas will also work. Fuel consumption should be reduced where possible. All armoured vehicles and control points (CPs) need auxiliary power units capable of powering on board systems without use of the main engine, for example.

11-60 **Transportation**. Some considerations:

- CSS units cannot expect to leave secure areas with less than 2-3 vehicles, common communication systems and protection. The convoy commander should be briefed on

[23] Such as detailed city maps, knee and elbow pads, ballistic eye protection, grappling hooks, lightweight ladders, fibre optic and mirror viewing devices, explosive sniffing equipment, temporary street signs, special communications equipment, etc.

the latest intelligence data before he/she departs the area. Convoys must be prepared for ambushes, sniping and mines at all times. They must have practiced quick reaction drills for these events and be aware of rules of engagement (ROE) with a view to encouraging them to fire back (historically, CSS soldiers tend not to return fire when initially engaged).

- Convoys must have escorts such as armoured vehicles, ad hoc "gun trucks" as used in Vietnam and Chechnya or helicopter gunship support. Convoys need expertise in identifying targets and calling in fire. Road inspections and mine clearing may be required daily on LOC.
- The military mobility corridors must include MSRs, refugee routes, etc. and be identified, approved, secured and controlled.
- The use of armoured, preferably tracked, vehicles must be considered as the primary means of logistic and medical transportation. Note that Infantry Fighting Vehicles may be used as ambulances, but no cross can be painted on unless the armament is removed.
- If surface movement ceases to be possible, it may be practical to use underground systems to carry out replenishment, particularly at unit level. Underground railways, sewers and lines of cellars provide the most practical routes. Although susceptible to flooding, underground systems should be considered at the earliest opportunity.
- Within the confines of a built-up area, the replenishment system may have to be modified. All combat vehicles may require a different ammo mix that must be programmed into the stocking and distribution plans.
- Avoid civilian traffic periods and crowds by executing transport missions at night.

11-61 **Equipment Support**. Some considerations:

- **Management of Replacements and Parts**. The re-roling or re-allocation of vehicle resources must be planned for to ensure maintenance resources are reorganized to suit, including the stocking of repair parts. Battle losses for infantry carriers and support vehicles will be high for those engaged in the close fight. These will also suffer from intense usage in rubbled and broken terrain. Replacement vehicles, suitably modified and

equipped with the vehicle load of equipment, stores and ammunition, must be readily available and held forward. These are to treated as crewed vehicles and issued with a replacement crew.

- **Modification**. Up-armouring programs may be required for APCs and soft-skin vehicles, and these must be planned for using available maintenance resources. The impact of this additional weight on reliability and mobility should be recognized. Be prepared for major modification projects such as ad hoc armouring and creation of new variants.
- **Repair**. Repair in the forward area is very difficult, requiring recovery to sheltered and secure areas where the repair can be done. Issue of replacement vehicles should be done immediately if stocks permit.
- **Recovery**. Recovery operations are dangerous since snipers may stake out disabled vehicles. Recovery crews must be proficient at working "buttoned up" during recovery operations. These recovery operations should be protected by fire to suppress sniper activity. Recovery personnel should be aware of the possibility of booby traps if recovering vehicles from a previously enemy-occupied portion of the city.

11-62 **Medical**. Some considerations:

- An urban operation is a physically and psychologically stressful combat environment; caused by continuous close combat, increased troop density and higher casualty rates for trades engaged in the close battle. Difficulty will be experienced in the locating, extricating, initial medical care and evacuation of casualties, and specially equipped rescue teams should be formed and trained.
- Combat units need a high degree of autonomy, to include self-sufficiency in medical support. The ability to provide skilled, initial care and to stabilize casualties far forward is vital. Given the dispersed nature of combat and the difficulties of evacuation, “life and limb” saving surgical capability well forward is vital.
- Evacuation is often dangerous, slow or delayed, with the means of evacuation often limited to heavily protected vehicles or stealth movement by foot. Opening of secure corridors for helicopters should be done if possible.

- Many deaths will occur as a percentage of total wounded if enemy snipers are present. Of the wounded, the injuries will include:
  - wounds of the head, neck and chest;
  - small fragment and secondary missiles wounds;
  - respiratory problems;
  - minor punctures and lacerations;
  - fractures due to falls;
  - injuries due to enemy blast–type munitions, including burns, broken bones, contusions from flying debris and blindness—furthermore, the crushing injuries from the overpressure can create air embolisms within blood vessels, concussions, multiple internal haemorrhages in the liver and spleen, collapsed lungs, rupture of the eardrums and displacement of the eyes from their sockets;
  - infectious disease; and
  - eye injury resulting from blast, fragments and particulates.
- In conjunction with the operational plan, military medical teams will assess the use of civilian medical facilities.
- Replacement planning must assume most wounded will not be returned to duty once they enter the medical system. Resource limitations have moved medical doctrine from return to service to return to health, meaning they will increasingly use evacuation to out-of-theatre or home country hospitals vice using hospitals in the combat zone. (Note: this is emerging doctrine.)

11-63 **Engineer Support**. Some considerations:

- Integration of military and civilian engineers to support CSS units is essential for such operations as route clearance, area damage control, firefighting and restoration of facilities and services such as power, water, sewage, etc. Engineers will be called upon to assess structural limitations of bridges, roads and buildings. Armoured combat engineer vehicles can perform important, specialized urban combat tasks such as clearing routes blocked by rubble even while under intermittent harassing fire from snipers.

- The backhauling of trash and the proper disposal of sewage must be planned for, or the health of the force will be in jeopardy. Using the local facilities is one solution; otherwise, innovative methods must be found. Note that ABCA garbage is attractive to some cultures, and security must be provided as appropriate. Sea container / palletized loading systems (PLS) may be useful in these tasks, as would be dump trucks, or local garbage trucks might be used.

11-64 **Civilian Contractors**. The use of a civilian contractor is threat dependant. The issues of liability, protection under the Geneva Convention and the requirement to provide them with force protection detract from their usefulness in UO, where a threat or potential threat exists. Civilian contractors are very useful in providing a wide variety of talent, goods and services in a limited amount of time if the situation permits.

11-65 **CIMIC**. Some considerations:

- CIMIC activities enhance military operations and take on additional importance in UO. These operations should be coordinated through a Civil-military Operations Centre (CMOC), allowing the commander to set and enforce priorities for support that complement his/her mission objectives and keep from overextending the capabilities of the CSS units.
- Note the security implications of working, or even socializing, with local populations.
- In the initial phases of UO, the provision of a secure environment for the locals is the immediate task, the outcome of which will be winning over the locals (who can be won over). Forget the major building projects and other resource intensive “hearts and minds” activities until the war is won.
- CIMIC operations may benefit the CSS units by:
  - Gaining the support of local population and refugees through the provision of security, money, food supplies and other resources.
  - Restoring of utilities and services such as water, medical, electricity, sewage treatment and petroleum facilities to reduce demand on military services.
  - Establishing (friendly) government, law and order and communications with a view to reducing the support given to the enemy.

- Controlling movement to deconflict civil and military traffic.
- Coordinating military operations with other government agencies or non-government agencies with a view to maximizing the support provided by non-military forces to the locals through the targeted use of military resources.
- Locating local resources (accommodation, equipment, manpower, etc.) useful to the military forces. A city provides a wealth of resources for the CSS unit to call upon. Large cities have a remarkable store of transportation, material handling equipment and construction materials that can be utilized.
- Locating linguist support which may be essential to local CSS activities.
- Forecasting resource requirements for rebuilding civil infrastructure, delivery of voting materials, restoration of utilities, assistance to non-governmental organizations (NGOs), etc.
- Paying financial compensation or accomplishing damage control by other means to maintain a good relationship with the local inhabitants if there has been unwarranted damage or destruction of civilian property. Plans have to be put in place for identification and adjudication of compensation to locals. Properly coordinated, legal, finance and Civil Affairs / CIMIC support can make a great difference by settling these claims.

PART 4—NBCD21

INTRODUCTION

11-66 ABCA Coalition forces must be capable of fighting and winning in a nuclear, biological or chemical (NBC) environment. Nuclear, biological, chemical defence is an all arms responsibility, though specialist NBC personnel will be available to advise commanders and staff on the conduct of NBC operations.

11-67 Operations within an NBC environment place tremendous burdens on the logistics system. Significant material

[21] Chemical biological radiological nuclear (CBRN) is another term synonymous with NBCD. It is used by civilian agencies and some ABCA armies in joint military–civilian documents.

resources are needed to carry and deliver protective equipments, perform decontamination operations and reconstitute units. Logistic elements may be key targets to an asymmetrically minded enemy. The physical impact of the protective postures will have significant impact on the productivity of CSS soldiers and civilians. Logistic commanders and staff must understand the possible effects on logistics operations.

AIM

11-68 The aim of this part is to provide logistics personnel with a list of topics and considerations that must be addressed during the development of the logistics plan.

NBCD FUNCTIONAL AREAS

11-69 When planning for operations in a potentially contaminated theatre, it is important for logistics planners to have a basic knowledge of the main NBC activities. They are:

- **Detection, Identification and Monitoring**. This involves the detection and characterization of NBC events, identification of the agents and hazards, delineating areas of contamination and monitoring changes.
- **Warning and Reporting**. This involves the rapid collection, evaluation and dissemination of data concerning NBC attack and hazards, including the prediction of hazard areas.
- **Physical Protection**. Individual and collective protection (COLPRO) are required so that personnel can survive NBC attacks or release other than attack (ROTA) and continue to operate in an NBC hazard environment. Measures to protect equipment are also included.
- **Hazard Management**. This aims to limit the operational impact of NBC hazards. Hazard management is based on the principles of pre-hazard precautions and hazard control through avoidance, control of spread, exposure control and decontamination.
- **Medical Countermeasures and Support**. These are needed both to diminish the susceptibility of personnel to NBC hazards and to treat and evacuate casualties (both contaminated and uncontaminated).

11-70 **NBCD Planning Principles**:

- **Centralized Planning and Decentralized Execution**. NBC assets are not omnipresent; therefore, their tasking needs to be controlled at the highest level but executed at the lowest level. Much of the NBCD equipment and stores will controlled/regulated stores.
- **Flexibility**. TCNs will have different NBCD capabilities. These must be understood by all other TCNs and tasks assigned accordingly.
- **Synchronization**. The NBCD plan must be synchronized with other plans such as the manoeuvre plan, reconnaissance plan and logistics plan.
- **Protection**. When conducting NBCD tasks such as recce and decontamination, force protection may be required from supported units.
- **Early Warning**. NBCD success depends the immediate transmission of information relating to NBC threat. Early warning can allow forces to adopt protective measures and get hazard management in action reducing the impact of NBC attack.

NBCD LOGISTIC CONSIDERATIONS

11-71 For all logistic functions:

- Planners must be able to assess vulnerability and predict effects of NBC warfare on logistics support operations, throughout the LOC.
- Standard operational procedures dealing with minimization of the contamination of supplies and equipment must be enforced.
- An NBCD course of action (COA) will need to be developed in the OPP:
  - a reassessment of supportability of the commander's plan will need to be done;
  - clean and dirty methods of logistics support need to be planned for and should be rehearsed;
  - decontamination COAs will need to be supported by laundry and bath, supply, maintenance, engineers (horizontal, waste management, and water generation) and medical;
  - reconstitution ops will be ongoing;
  - flexibility is required in the support plan to allow for continuation of logistics operations with reduced endurance, capability and responsiveness:

  - loss of equipment and personnel to attack or decontamination operations; and
  - the impact of fatigue on the mental and physical endurance and productivity of CSS personnel; and
  - the increase to humanitarian support must be planned for.

- The risk of operating in an NBCD environment may affect coalition logistic force structure and employment of support elements within the threat areas. Some national, HNS or contractor support elements may not be equipped or trained, and other nations will have to pick up additional responsibilities.
- NBCD training may be required prior to commencement of operations.
- Prioritization and reallocation of NBCD resources may be required, between nations, HNS, contractors and other support elements.
- All elements on the battlefield should have equal protection against NBC—CSS units should be equally scaled for protective equipment, detection equipment, decontamination facilities, etc. as the combat and combat support forces.
- The warning and reporting system—including procedures, formats and C4IS—must cover the entire logistic system.
- The coalition and nations must consider the NBC protection requirements of contractors and local labour.
- The COLPRO requirements must be considered, as well as the availability of these facilities. Construction of improvised COLPRO may be required.
- The coalition should establish equipment and consumables consumption rates (e.g., canisters) to facilitate interoperable planning and support.
- There may be a requirement for post-conflict area decontamination.
- A coalition policy for quarantine and clearance of forces (declaring forces “clean”) is required.
- A coalition policy for management of decontamination waste is required.

11-72 **Supply Operations**:

- Logistics units must protect supplies:

- supplies should be stored under overhead cover when available;
- covers of any sort, such as tarpaulins or plastic sheets, will provide some degree of protection; and
- a high priority for protection should be given to water and rations.

- Before issuing supplies suspected of being contaminated, qualified personnel must inspect and evaluate them.
- Logistics units cannot use the same method to decontaminate all supply items. Some supplies require specialized treatment. Other items such as paper products or fresh food items cannot be decontaminated as they will be destroyed in the process and should be discarded.
- Coalition stocking policies are required for individual protective equipment (IPE), collective protection kits, decontamination equipment, etc. within each echelon.

11-73 **Equipment Support**:

- Clean and dirty LOC will be needed for repair and recovery, including collection points and back loading points.
- The repair of contaminated unserviceable items should be done only if the equipment is of a high priority.
- Planning must be done to allocate maintenance resources to decontamination operations that may affect the paint, rubbers, and lubrication of vehicles as they go through the process.
- Operational procedures should be developed to minimize contamination during recovery, operations.
- To facilitate later decontamination, armies should record the contamination in vehicle maintenance records and mark the equipment with the date/time of its contamination and the type of contamination.
- Extra protective clothing must be available for maintenance operations because protective suits may lose protection when exposed to grease, oil and dirt.
- All incoming equipment must be monitored and checked for contamination—assume dirty until proven otherwise.

11-74 **Medical Operations**:

- The first place that a patient should be decontaminated is near where he falls on the battlefield. Decontamination of casualties starts at the organizational level.
- Staff must be prepared to operate dirty evacuation chains, including dirty medical support, until the casualty can be decontaminated and handed over to the clean line of evacuation. The clean line should start at formation level medical elements, unless they have already been contaminated.
- Number of casualties requiring medical care in a NBC environment will increase enormously over usual number of battlefield casualties, and the complexity of the wounds will be greater. Medical units will require augmentation of medical personnel.
- Medical units will require augmentation of personnel for non-medical duties such as monitoring and decontamination of incoming patients.
- Procedures for handling contaminated remains must be followed.
- Decontamination of the environment to prevent later casualties may be required depending on the climate, type of NBC contamination, etc.
- Distribution of NBC casualty bags must be done prior to the strike.
- Force should receive chemical pre-treatment and biological inoculations prior to deployment and/or in theatre. This is particularly important for HSS personnel and medics.
- Issue and holding policies for chemical pre-treatment / counter measures and biological inoculations are required.
- Medical support (evacuation and treatment) to NBCD operations must be planned for. The medical elements should train with the decontamination element.
- The nature of NBC casualties may suggest changes to minimum evacuation timings, holding policies, etc. within the force.

11-75 **Movement and Transportation Operations**:

- Alternate routes become very important, and strict traffic control measures are necessary to prevent the use of contaminated routes.
- The necessary detours and rerouting will increase turnaround times and require additional transportation assets to maintain the flow of materiel.
- The use of aviation support may increase on a contaminated battlefield because of an aircraft's ability to fly over contaminated areas.
- Aircraft will also prove very helpful in responding to casualty and medical evacuation requests.

FURTHER READING

- QSTAG 1329 Armies System of Prophylaxis, Pre-treatment, Antidotes and Therapy for CW Agent Injury
- QSTAG 1330 Medical Aspects of NBC Defensive Operations
- QSTAG 650 Chemical Casualty Evacuation Bag
- QSTAG 1335 Common Concept for NBC Decontamination, following ABCA Operations, for Redeployment and/or Recovery
- QSTAG 1336 Waste Management associated with NBC Contamination
- QSTAG 1338 Guidance on the Generic Hazard to forces posed by TIC Plants and Stockpiles

CSS Terminology

Introduction. This section introduces national logistics terminology where standardization has not been achieved but a common understanding is required. National publications should be referred to as well :

- US Joint Publication 1-02 Department of Defence Dictionary of Military and Associated Terms (Dec 89).
- US Army Regulation 310-25 Dictionary of US Army Terms (May 86).
- UK Joint Service Glossary - JSP 101 (1989)
- Canadian Forces Publication - CFP 303(2) Army Glossary Supplement 3 (2d draft) (Jan 82).
- Canadian Forces Publication - CFP 314(2) Ordnance Engineering System.
- Australian Joint Service Glossary- ADFP 101 1st Ed (1994).

NATO Terminology. The ABCA Program accepts all NATO agreed terms as defined in AAP-6 NATO Glossary of Terms and Definitions for Military Use.

-A-

Accessory Equipment

(US/CA) Any non-expendable item of equipment which has been fixed in place or attached to a craft, vehicle, or other equipment, but which may be serviced or removed without impairing the item removed or affecting the basic function of the object to which it is fastened.

(AS) An item of supply, for use in conjunction with or to supplement an item of equipment, contributing to its effectiveness without extending or otherwise changing the basic function of the item of equipment.

Administrative Area

(AS) An area in which administrative units are located and from which they may carry out their tasks. Administrative areas differ from maintenance areas in that no stocks are held on the ground.

Air Delivery Equipment

(US) Special items of equipment, such as parachutes, air delivery containers, platforms, tie downs, and related items used in air delivery of personnel, supplies, and equipment.

(AS) Equipment used for the preparation of personnel and material for air delivery. It includes slings, platforms, containers, parachutes, rigging materials, clothes, cords, tapes, threads, and webbing that are used when employing air delivery.

Air Dispatch Squadron

(UK/AS) A unit that is trained in preparing stores for dispatch by air, in loading aircraft, and in the ejection of cargo from aircraft in flight.

(US) Qualified Army and Air Force riggers perform a joint inspection of rigged equipment for Heavy Drop (HD), Cargo Delivery System (CDS), low velocity loads, and Low Altitude Parachute Extraction System (LAPES).

Ammunition Lot Number

(US/UK) Code number that identifies a particular quantity of ammunition from one manufacturer. The number is assigned to each lot of ammunition when it is manufactured.

(CA/AS) Code number systematically assigned to each ammunition lot at the time of manufacture, assembly or renovation that uniquely identifies the particular ammunition lot.

(AS) Term used as batch number.

Authorized Parts List

(US) List of authorized parts for units in each echelon of supply and maintenance as prescribed by appropriate authority.

(CA) Term used is "scale" (e.g., 15 or 30 days for spare parts).

Automatic Supply / Push Replenishment

(US/CA) A system by which certain supply requirements are automatically shipped or issued for a predetermined period of time

without requisition by using unit. It is based upon estimated or experience-usage factors.

(UK) Term is "automatic re-supply." The replenishment of a unit's stock of material by a supply authority, without demand by the unit when the unit's stock level falls to a pre-determined level.

-B-

Backloading

(US/CA) The rearward move of equipment and material, e.g., vehicle casualties.

(CA) The rearward movement of equipment within the logistics system.

(UK) The rearward movement of equipment, casualties, and material within a theatre.

(US) The act of loading outbound cargo on transport assets that delivered inbound cargo (FM 55-1 and 55-10).

Backloading Point

(CA) A location where equipment casualties requiring repair or disposal by a rearward formation are collected pending staff release and backloading by the movement resources of the rearward formation.

(AS) A location where equipment casualties requiring repair in a higher formation or disposal by a rearward formation are collected pending staff release and backloading by the movement resources of the rearward formation

Basic Daily Food Allowance

(US) A prescribed quantity of food defined by components, and monetary value, which is required to provide a nutritionally adequate diet for one person for one day.

Basic Issue Items (BII)

(US) Those essential ancillary items required to operate the equipment and enable it to perform the mission and function for which it was designed or intended.

Beachmaster

(US) A naval officer in command of the beachmaster unit of a naval beach group.

(AS) The officer responsible for controlling the beaching of craft and amphibians on one beach. He commands the amphibious beach team.

Billet

(US/AS) Shelter for troops.

(US/AS) To quarter troops.

(US/AS) A personnel position or assignment that may be filled by one person.

Break-Bulk

(CA) Term is "bulk-break." Implies breakdown, usually into unit lots before distribution.

(UK) Normally to break down pallets or vehicle loads into boxes or rounds for issue.

Bulk Cargo

(US) That which is generally shipped in volume where the transportation conveyance is the only external container such as liquids, ore, or grain.

(CA) Term is "bulk freight." Freight not in packages or containers.

Bulk Storage

(US/CA) Storage in a warehouse of supplies and equipment in large quantities, usually in original containers, as distinguished from bin storage.

(US) Storage of liquids, such as petroleum products in tanks, as distinguished from drum or packaged storage.

Bulk Supply

(US) Any kind of military supplies that are sent out in very large quantities. Sand, gravel, paint, gunpowder, etc., are examples of bulk

supply. Bulk supplies are measured in terms of weight or volume rather than in terms of number of units.

-C-

Calibration

(UK) A comparison between a standard or measuring equipment, instrument, or items of equipment with a standard high accuracy to detect, correlate, adjust, and document the accuracy of the instrument or equipment items being compared.

(AS) Process of comparing equipment of unknown accuracy against standard equipment of known accuracy. Variations discovered in the non-standard equipment are desirably adjusted out. If variations cannot be adjusted out, they are noted to make allowances when using the non-standard equipment.

Cannibalization

(US) The authorized removal of parts or components from uneconomically repairable or disposable end items or assemblies and making them available for reuse (FM 100-16).

(CA) The controlled removal, without intent to replace, of serviceable repair parts from an equipment as an alternate means of supply.

(AS) The removal of serviceable components from one repairable equipment and their installation in another repairable equipment thereby rendering that equipment serviceable.

Combat Reserves

(CA) Combat supplies held by a Corps as a reserve against interruptions in the normal supply system. Stock levels are established and expenditures controlled by Theatre Headquarters.

(AS) Theatre stocks held forward, just in rear of the combat force, to guard against a serious interruption of the normal system of maintenance.

Combat Supplies

(AS/CA) A term applied to ammunition, rations and petroleum, oils and lubricants.

Commercial Items

(US): Articles of supply readily available from established commercial distribution sources, which the Department of Defence or inventory

managers in the military services have designated to be obtained directly or indirectly from such source.

(AS) Term is “commercial item modified.” Item of supply that is not required to be procured to a military specification and is readily available from established commercial sources.

Condition Code

(US) Code used to classify materiel and to identify the degree of serviceability condition and completeness in terms of readiness for issue and use.

(UK, CA) Codes used to indicate whether the item is to be repaired and identify the lowest maintenance level authorized to perform repair (US equivalent term is maintenance code).

(AS) Term used is “equipment status” - the method of classifying the condition of an item of materiel in respect to its value as an operational asset.

Cooperative Logistics Arrangements

(US) Mutual logistics arrangements between Armies to economise time, manpower and resources. Under these arrangements, two or more Armies agree to provide and receive routine support, and emergency support where an Army's national resources are temporarily unable to meet critical requirements. Through these arrangements, each Army establishes its logistics requirements from other armies, and identifies the requirements placed on it by other Armies.

Cooperative Logistics Support

(US) The logistics support provided between ABCA Armies under ABCA procedures or multi-bilateral agreements between Armies.

Critical Item

(US/AS) An essential item that is in short supply or expected to be in short supply for an extended period.

-D-

Dead Lined Equipment

(US) To remove a vehicle or piece of equipment from operation or use for one of the following reasons: a) Is inoperative due to damage, malfunctioning, or necessary repairs. The term does not include items temporarily removed from use by reason or routine maintenance; and repairs that do not affect the combat capability of the item. b) Is unsafe. c) Would be damaged by further use.

(CA) Terms used are: a) Non-serviceable (NS). b) Unserviceable (US). c) Vehicle-off-the-road (VOR).

(AS) Terms used are: a) Repairable (R). b) Repairable by build (RR). c) Incomplete (I). d) Unrepairable (UR).

(UK) Reserved.

-E-

Equipment

(CA) A combination of parts, sub-assemblies and assemblies forming a unit that performs a complete function.

(AS) All articles needed to outfit an individual or organization.

Equipment Collection Point

(AS) A location where equipment casualties are collected and classified for segregation into equipment to be repaired in that area and equipment to be backloaded.

(CA) A location where vehicles or major equipments beyond unit repair are collected, prior to backloading by second line recovery resources.

(US) US term is “maintenance collection point.”

-F-

Field Train

(US) Unit train not required for immediate support of combat elements. Field trains may include kitchen and baggage trains, administrative trains, heavy maintenance, water, and those

ammunition, fuel, and lubricants trucks not required for direct support of troops in the immediate engagement.

(CA/AS) Term used is "unit echelon."

(UK) Reserved.

Food Packet

(US) Pre-packaged and pre-cooked foods, which may be eaten hot or cold, for use under special operational conditions that prevent issue or utilization of complete rations. Food packets are designed primarily to meet stringent operational requirements for minimum weight, cubage, and nutritional value commensurate with these requirements. One or more food packets do not necessarily constitute a nutritionally complete ration.

(CA) Term used is “combat ration.” Above definition is acceptable if last sentence deleted.

(AS) Term used is “combat ration.” Packaged rations designed for issue as the tactical situation dictates and when no other form of feeding is practicable. The ration is self-contained.

(UK) Reserved.

-G, H, I, J, K, M-

Maintenance Area or Support Area

(US) A general locality in which are grouped a number of maintenance activities for the purpose of retaining or restoring materiel to serviceable condition.

(CA) An area in which reserves, personnel and supply depots, hospitals, workshops, and other installations are set up on a temporary basis for the support of armed forces in the field. Maintenance areas will be called by the name of the formation controlling them.

(AS) An area containing administrative units, facilities, and stocks, from which formations and units are provided with administrative support.

Materiel

(US/AS) All items necessary for the equipment, maintenance, operation and support of military activities without distinction as to their application for administrative or combat purposes.

(UK) A genuine term covering equipment, stores, supplies and spares.

(CA) All movable public property, excepting money, obtained by a department for issue on demand, or for sale to its administrative and operating units, to other departments, or to the public. Material includes manufactured equipment, supplies, and raw materials.

-N, O-

Outsize Item

(US) An item exceeding 1090 inches times 117 inches times 105 inches and is qualified by MILSTAMP aircraft air dimension code (too large for C-130/C-141).

(CA) An item exceeding 88 inches wide, 108 inches long, 54 inches high or weighs more than 5000 pounds.

Overhaul

(US) To restore an item to a completely serviceable condition as prescribed by maintenance serviceability standards.

(UK) A comprehensive examination and restoration of materiel to a specified standard.

-P-

Prescribed Load

(US) That quantity of combat essential supplies and repair parts (other than ammunition) authorized to be on hand in units and which is carried by the individuals or on the unit vehicles to enable the unit to sustain itself until resupply can be effected. Normally 15 days level. The prescribed load is continuously reconstituted as used.

(CA) Term used is “basic load” or “scaling.” The quantity of combat supplies and specific expendable material carried by a unit to sustain it a specified number of days (usually three).

(AS) Term is “unit stocks” or “first line stocks” (normally 30 days).

(UK) Reserved.

-Q, R-

Ration

(US) The allowance of food for the subsistence of one person for one day.

(AS) The daily entitlement of food per man (or forage per animal).

Rebuild

(US) The restoration of an item to a standard as nearly as possible to its original condition in appearance, performance, and life expectancy.

(CA) Term used is “overhaul.” That corrective maintenance activity which restores equipment to a specified standard by complete disassembly, inspection, replacement of defective parts, re-assembly and testing.

(AS) To restore an item to a standard as near as possible to original or new condition in appearance, life expectancy, or to a specified standard.

(UK) Reserved.

Repair

(US) The restoration of an item to serviceable condition through correction of a specific failure or unserviceable condition.

(UK) Technical activities intended to restore an item to a required condition.

(CA) That corrective maintenance activity which restores an item to a serviceable condition by replacing or reconditioning faulty parts of the item.

(AS) To restore equipment to a serviceable condition following failure, malfunction, damage, deterioration, or wear beyond tolerance.

-S-

Strategic Logistics

(US) All military action concerned with the provision of logistics support to a theatre of operations.

-T-

Tactical Logistics

(US) The provision of logistics support to combat forces deployed within a theatre of operations.

-U,V,W,X,Y,Z-