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1. The enclosed Allied Joint Publication AJP-4.4 EDITION B VERSION 1, ALLIED JOINT MOVEMENT AND TRANSPORTATION DOCTRINE, which has been approved by the nations in the LCEG(S), is promulgated herewith. The agreement of nations to use this publication is recorded in STANAG 2506.

2. AJP-4.4 Edition B Version 1 is effective upon receipt. It supersedes AJP-4.4(A) which shall be destroyed in accordance with the local procedure for the destruction of documents.

4. This publication shall be handled in accordance with C-M(2002)60.

Dr. Cihangir Aksit, TUR Civ
Director NATO Standardization Agency

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CHAPTER 1

Introduction

0101 **Background**

1. NATO has been and will be involved in out of area operations, in a complex and dynamic environment. Future Alliance operations are characterized as expeditionary, multi-dimensional and effect-based. NATO operations in Afghanistan and the Balkans confirm that NATO needs modern, highly capable forces to respond to this new environment – forces that are fully deployable, sustainable and interoperable, able to operate across the full spectrum of conflicts and crises for extended periods of time beyond alliance territory and at strategic distance. The 2007 Bucharest Summit Declaration emphasises the necessity to deploy and sustain more capable forces to support current operations and to be prepared for future missions.

2. According to NATO policy, Nations and NATO have a collective responsibility for logistic support for NATO operations.

0102 **Aim**

1. This document provides Allied Joint Movement and Transportation (M&T) Doctrine for NATO-led operations and exercises. It aims to contribute to freedom of action for the NATO Commander, at best value for Nations.

2. This document gives also guidance for M&T training in order to achieve a higher level of interoperability.

0103 Scope

This document explains both the M&T system and the Movement process. A system means a set of components working together as part of a mechanism or an interconnecting network with a common function. A system contains elements, which act to fulfil the function of the system. A process is a series of actions or steps taken in order to achieve a particular end. In other words the Movement process is executed by the elements of the M&T system. This publication also describes the M&T organization, responsibilities and associated arrangements.

0104 Applicability

This document is applicable to NATO commanders and nations (as appropriate) participating in or contributing to NATO activities. It is part of the logistics doctrine series under AJP-4, Allied Joint Doctrine for Logistics. Furthermore, M&T is an integral component of the overall operational design and therefore this document is also applicable to the wider operational community.

0105 **Terminology**

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

2. Transportation refers to the means of conveyance to move forces, equipment, personnel and stocks, and includes the requisite material handling equipment.

3. Other applicable terms and definitions are described in annex C of this document.

0106 **Principles**

1. This document is based on the following M&T principles

a. **Collective Responsibility.** NATO and nations have a collective responsibility for the M&T support to NATO operations. This responsibility extends from initial M&T planning through the Strategic Deployment (SD), Reception, Staging, Onward Movement (RSOM), sustainment and redeployment stages of operations.

b. **Cooperation.** Cooperation between NATO and national authorities, both military and civil, is essential. Such cooperation can be of a bi- or multilateral nature. This includes, as required, non-NATO nations, the EU, the UN and other organizations. Cooperation between NATO and these entities **will be consistent with agreed and applicable NATO logistics policies, decisions and procedures**.

c. **Coordination.** It is essential that all M&T activities are fully coordinated and synchronized at the appropriate levels.

d. **Effectiveness.** M&T planning and execution must be primarily tailored to satisfy NATO operational requirements.

e. **Efficiency.** Use of military and civil resources, facilities, existing infrastructure and MOT must be optimized, for example consideration of economies of scale.

f. **Flexibility.** M&T support must be proactive, adaptable and responsive to achieve the objective and must be capable of reacting in a timely manner to changes in the operational situation and/or requirement.

g. **Simplicity.** M&T plans and procedures must be kept as simple as possible.

h. **Standardization.** Systems, data, software, procedures and equipment must be standardized to facilitate interoperability and M&T support.

i. **Visibility and Transparency.** The exchange of M&T information between all participants is essential for the efficient planning, coordination and execution of M&T tasks.

CHAPTER 2

Concept of movements

0201 **Movement process**

1. The three main actors in a movement process are the movement organization, military and civilian transport agencies and the customers.
***Note**. These actors could also be referred to as elements of the M&T system.*

2. The customers are the military units, their personnel, equipment and supplies. Civilian organizations may also be customers of the movement process. All customers are moved by the transport assets provided by the transport agencies. This process is planned, routed, scheduled and controlled by the movement organization.

0202 **Strategic Movement**

1. Strategic movement is a collective responsibility for NATO and nations. Specific responsibilities are described in Chapter 5.

2. A strategic movement consists of a national leg (between home base and the Port (Point) Of Embarkation (POE)), a strategic leg (between POE and Port (Point) Of Disembarkation (POD)) and an operational leg (between POD and Final Destination (FD). The responsibilities are different within each leg.

a. **National leg.** Movement from home locations to the POE (may include border crossing) is a national responsibility. Coordination at national level will especially be required to ensure a regulated flow into and out of the POE.

b. **Strategic leg.** Within the strategic leg the responsibilities are:

(1) Supreme Allied Commander Europe (SACEUR) (through Allied Movement Coordination Centre (AMCC)) plans, prioritizes, coordinates and deconflicts the strategic leg of the movement.

(2) Nations are responsible for their national planning and the provision of transportation for the movement of their forces.

c. **Operational leg.** Within the operational leg the responsibilities are:

(1) The Joint Force Commander (JFC) plans and executes RSOM in coordination with the HN if applicable.

(2) Nations are responsible for their national planning, the provision of transportation and the execution of the movement of forces, according to the JFC’s plan.

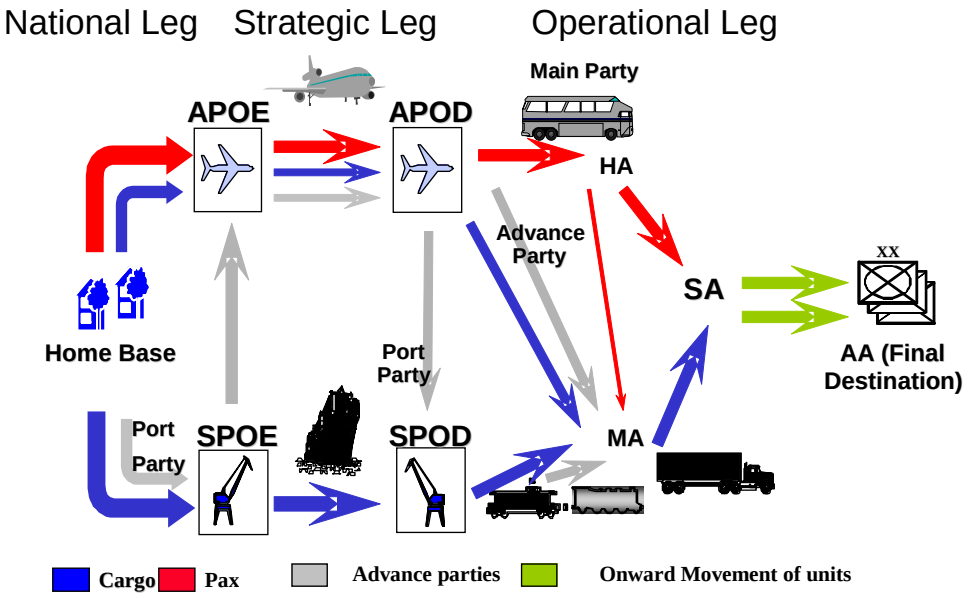

Figure 2-1 - This shows an example of the various legs and terminals through which forces may move when deploying from their home base to their FD in the Area of Operation (AO). The figure is generic and can differ, depending on the specifics of the operation**.** For an explanation of the acronyms, refer to Annex B.

0203 **Movement Concept for Deployment**

1. NATO requires the capability to deploy forces to AO and to establish an M&T system capable of supporting these operations. The operation of an efficient M&T system and development of effective lines of communications (LOC) are prerequisites for the successful projection and sustainment of forces. Therefore it is essential that M&T personnel are involved from the early stages of the operational preparation (e.g. initial planning, reconnaissance and advance parties).

2. The M&T system needs to be flexible and adaptable in order to meet the operational requirement.

3. The LOC to the theatre may include water, land and air routes. The climatic conditions, terrain, border crossings, civil regulations and quality of infrastructure of potential areas for deployment, are major factors affecting movements along these LOC.

4. The Strategic Leg of the deployment projects national or NATO capabilities to a Joint Operations Area (JOA) in support of NATO operations in accordance with the

JFC’s requirements and priorities.

5. The Operational Leg of the deployment is the part of the strategic movement that transitions units, equipment and materiel from arrival at PODs to their FD. During this leg the RSOM process will be conducted.
***Note**. The doctrine for RSOM is described in Chapter 4 of AJP 3.13.*

0204 Movement Concept for sustainment, rotation of forces and redeployment

The process, as described above, generally applies also to sustainment, rotation of forces and redeployment.

CHAPTER 3

M&T Operations

0301 Introduction

This chapter describes each of the mode operations, followed by a general description of terminals and other transportation nodes, and how they are operated.

SECTION I - MODE OPERATIONS

0302 **General**

1. In this section the five main modes of transport (MOT), sea, air, road, rail and inland waterways, are described. Before going into the details of the specific MOTs, multi-modal and general considerations applicable to all MOTs are described. Because of their limited applicability, the use of pipelines and pack animals are not considered in this document.

2. The following aspects should be considered, regardless of the MOT used:

   a. Who, what need to be moved from where to, by when and with what priority influences how and by whom it will be moved.

   b. The time available to meet the Commanders Required Dates (CRD) will influence the selection of the MOT(s).

   c. The use of different MOTs and transport assets should be optimized. This includes shared and combined use of transportation capabilities between nations.

   d. Customs, immigration, food and agriculture regulations, border crossing procedures and Host Nation Support (HNS).

   e. Safety and security aspects, such as dangerous goods regulation, explosive licensing at the terminal, protection of critical infrastructure and MOT as dictated by the threat situation.

   f. The military are usually not the only users of transport infrastructure during a military operation. A considerable part of the overall transport capacity could be used by other customers such as commercial and humanitarian organizations.

   g. In order to optimize the movement process, a Hub and Spoke network may be established. Such a hub and spoke system links strategic (inter theatre) legs with the operational (intra theatre) legs. A POD could function as a hub

that is connected through the spokes to the other destinations in the network, for example through an Intra Theatre Airlift System (ITAS) operated by tactical air transport aircraft.

0303 **Sea**

1. The main characteristic and advantage of sea transport is its large carrying capacity and endurance. Sea transport is very suitable to transport large amounts of (military) equipment and materiel. Its principal limitations are its vulnerability, particularly in ports or at anchorage, and its slow speed. However, because of its ability to move huge tonnages, it remains the most economical and is often the fastest way to deploy large amounts of equipment. Therefore it is the principal MOT for overseas movement of materiel. Sea transport is normally not the best method for deploying personnel, with the exception of an amphibious landing force.

2. Sea transport is most likely to be used in conjunction with air transport to:

a. Reduce deployment time;

b. Move heavy or large pieces of equipment that are unsuitable for air transport;

c. Maintain the subsequent logistic support and sustainment of forces; and

d. Reduce costs for deploying/redeploying units, their equipment and supplies.

3. The modern, large capacity roll-on/roll-off (RORO) type ships are favoured for the deployment of forces as they can normally handle a mixed cargo of military equipment in a speedy and, if necessary, ready to operate "tactical loading" configuration. The demand for ROROs in large combined operations will, in most cases, far outweigh the availability; it is likely that some conventional lift on/lift off, sometimes referred to as “load on/load off” (LOLO) shipping will be required to move the complete force.

4. The following factors will help determine the suitability of sea transport and should therefore be considered when planning the use of sea transport:

a. For most military sea movement planning purposes, RORO and self-sustained LOLO ships are the most suitable;

b. Load planning limitations, such as type and capacity of ship, lift requirements, dangerous goods requirements, dunnaging, blocking and bracing requirements;

c. The availability of appropriate material handling equipment (MHE);

d. The availability of suitable ports, particularly in or near the operational theatre, may limit the potential of sea transport;

e. Throughput capacity of ports (tonnage that can be moved out of the port area in one day), which is dependent on the RSOM capacity and Host Nation (HN) transportation infrastructure;

f. The threat to shipping, including piracy and the availability of naval escorts.

0304 **Air**

1. Although air transport is a relatively expensive mode of transport, its inherent speed, range and flexibility makes it ideally suited for military operations whenever necessary, including those of a humanitarian nature. The speed and range of fixed wing transport aircraft enable the rapid deployment of a force over long distances. The longer the distance and the shorter the time available, the more attractive the use of air transport becomes. There are few occasions when deployment of personnel over long distances would be considered by any other means. However, contrary to broad thinking, air transport is often not the best means to deploy or redeploy large units with their equipment.

2. The following factors will influence the suitability of air transport and should therefore be considered when planning the use of air transport.

a. Especially when deploying and sustaining large forces over extended LOC, air transport is expensive in comparison to other modes for the load carried, due to its high operating and maintenance costs;

b. Especially during a crisis, movement plans have to be responsive to the limited availability of adequate air transport (civil and military, strategic and tactical);

c. Not all air transport assets are suitable, effective and efficient for the various air transport operations. Maximum payload and dimensions of the cargo compartment in combination with the specific nature and characteristics of air transport cargo (weight and dimensions, hazardous or sensitive material, wheeled or palletized) have to be considered before planning to use this mode of transport. Transport aircraft suitable for carrying heavy loads of outsized cargo and capable of ramp loading will considerably enhance the efficiency of air transport. This will not only limit the number of aircraft necessary, it will also enhance the throughput capacity of the airfield;

d. The availability of suitable airfields may limit the potential of air transport. Suitability of potential airfields is dictated by factors such as:

(1) Length and load classification (Load Classification Number (LCN), Pavement Classification Number (PCN)) of runways, taxiways and aprons;

(2) Number and size of aprons which will dictate the number of aircraft that can be handled simultaneously, which is usually identified by Maximum On Ground (MOG);

(3) Airfield operating hours which are dependent on the availability of airfield lighting and sufficient personnel;

(4) Availability of adequate cargo and passengers handling equipment with sufficient experienced handling personnel;

(5) Throughput capacity of airfields, which is dependent on the RSOM capacity and Host Nation transportation infrastructure;

(6) The availability of re-fuelling capabilities has a direct impact on the payload of the aircraft;

e. Threat to air transport. Transport aircraft are relatively vulnerable, especially during take-off and landing. Threats may include sabotage, small arms, mortars and artillery to aircraft on the ground, and Man Portable Air Defence Systems (MANPADS) and Surface to Air Missiles (SAMs) to aircraft in flight. When considering the use of air transport, a threat assessment has to be performed. Air superiority and active air defence, particularly near to, or in the theatre of operations, can mitigate to a certain extent such a threat to transport aircraft. In case of a significant threat, only transport aircraft fitted with Defensive Aids Suites (DAS) should be considered. Also, minimum time on the ground (swift turnaround of aircraft), short field performance and the ability to operate at night and in poor weather, will help to reduce vulnerability;

f. The altitude of an airfield may influence the performance and therefore limit the payload of visiting aircraft. Also the climatic and weather conditions may have a particular influence over the full exploitation of aircraft capabilities;

g. Diplomatic clearances for landing at and crossing the airspace of other nations may not always be available when required and may cause considerable routing delays with a consequent loss of efficiency.

h. When transporting personnel, especially with weapons, specific (diplomatic) clearances and visas may be required. Unavailability of these clearances and visa will cause considerable delays.

0305 **Road**

1. The main characteristic of road transportation is flexibility. Generally for the operational leg, there are few destinations that cannot be reached. Road transport, however, is seldom suitable to cover the strategic leg and is not normally a viable alternative to sea or rail transport for sustained operations over long distances. It is primarily a distribution means and, as an inter-modal leg, plays a vital part in the overall M&T system. Road transport is most practical at the initial and final leg of a movement.

2. Road transport is limited by the poor carrying capacity over long distances in relation to the manpower required to operate and support it, as well as the extensive logistic and administrative facilities and effort needed to support a road transport operation.

3. The following factors will influence the suitability of road transport and should therefore be considered when planning the use of road transport:

a. Availability of secured routes;

b. Availability, classification, surface, capacity, state of repair or damage of the road network, will determine size, number, density and speed of vehicle movement;

c. Climatic and weather conditions, such as heavy rain, fog, frost and snow, can make movements dangerous and slow on routes that are normally adequate;

d. Time allowance depends on the distance to be covered, number and type of vehicles to be moved, routes, speed and density;

e. Availability and suitability of waiting areas along the routes will be influenced by factors such as vehicle/driver endurance, traffic and road conditions;

f. The speed of road movement will be influenced by the types of vehicles (wheeled or tracked), their size and state of repair;

g. The density of civilian traffic could affect road movement and may require extra measures.

0306 **Rail**

1. Railways are unrivalled in their capacity to move heavy and bulky loads, over long distances at relatively high speeds. Its capacity is dependent upon factors such

as loading gauges, passing facilities and the availability of motive power and rolling stock. Special loads, such as main battle tanks, will require scarce specialized rolling stock, which must be identified well in advance of the movement to allow for its positioning. Time “slots” on the rail network system need to be identified well in advance as unplanned movement is not possible.

2. During a rail move, trains may be required to switch onto differing national and regional networks which would normally have separate regulations and standards (e.g. track width, bridge and platform heights, speed limits etc). Under these circumstances, load planning must meet the most restrictive regulations, and standards, of the region, or nation, through which the train will pass.

3. The fact that rail movement needs a permanent way, rail tracks, is in itself a limiting characteristic. Remote and rugged areas are often not served by rail and the laying of new track is both expensive and very time consuming.

0307 **Inland Waterways**

1. Inland Waterway Transport (IWT) can be operated on rivers, canals, inland seas, lakes, inter-island or limited coastal routes and for ship to shore discharge. 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. Many countries have natural IWT routes, based on rivers and lakes that provide the only viable means of bulk transport. Many industrialized countries also have good IWT infrastructures that should not be overlooked in movement planning.

2. IWT tends to be slow, but it is reliable, simple to operate and can be invaluable as a means of maintaining a regulated, even flow of supplies. Limiting factors in the use of IWT are its inflexibility in deviating from established routes and its vulnerability to enemy action, particularly to bridges, lock systems and dams. IWT operations on inter-island and coastal routes can also be affected by weather conditions. Specific threat situations may require the use of escorts.

3. The following factors might influence the suitability of IWT and should therefore be considered when planning the use of IWT:

a. Most IWT vessels are usually bulk or container ships and are smaller than those used for sea transport;

b. Bridge lifts and the throughput capacity of locks;

c. Availability of suitable ports, terminals and MHE.

SECTION II - TERMINAL AND NODE OPERATIONS

0308 **General**

1. A transportation node is any infrastructure used to influence the movement along a LOC. Some of the transportation nodes are also terminals. A terminal is any point at which a mode of transport (MOT) starts, changes or ends. These may more commonly be addressed by their functional role. The following all have terminal functions:

    a. Sea ports of embarkation or disembarkation (SPOE/SPOD);

    b. Airports of embarkation or disembarkation (APOE/APOD);

    c. Road transport exchange points;

    d. Railheads;

    e. IWT ports.

0309 **Transportation terminals**

1. Strategic movements make use of the following terminals:

    a. A Port Of Embarkation is the seaport (SPOE), airport (APOE) or railhead where deploying units, their personnel, equipment and supplies, depart for the AO.

    ***Note**. AJP-3.13 mentions only RPOD, not RPOE. The term Railhead is used in this document to cover both.*

    b. A Port Of Disembarkation is the seaport (SPOD), airport (APOD) or railhead where deploying units, their personnel, equipment and supplies, arrive in the AO.

2. A terminal should operate according to the following guidelines:

    a. All units and agencies involved in the process of handling transport and the processing of cargo and personnel should be placed under one commander;

    b. Movement Control operations within a terminal should be executed under the direction of only one superior headquarters;

    c. Terminal organizations normally include a variety of specialist functions and units. Units or specialists can be added or removed as required;

d. Representatives from appropriate military and civilian organizations should be involved in planning terminal operations;

e. The terminal organization has to liaise and coordinate with HN agencies (operating authorities, customs and immigration) and other agencies (e.g. traffic control, security).

3. The three options for terminal operations are:

a. Utilization of civilian agencies, capable of coping with the military requirements. Only military direction, advise and/or liaison will be required;

b. Supplementing civilian agencies where they are unable to cope with the military requirement unaided;

c. Operating as a solely military terminal where no suitable agencies and/or infrastructure are available.

4. The factors affecting terminal operations include the following:

a. The quantity, including weight and volume of cargo and its nature, particularly with dangerous goods;

b. The transport agencies to be used;

c. The composition of the terminal organization and its resources;

d. The nature of the operation;

e. The availability of civilian facilities and support;

f. Security as dictated by the operational situation. A major factor in terminal operations is security, particularly as most modern ports cover vast areas.

0310 **Sea Terminal Operations**

1. Sea terminal operations may be conducted from large ports, with deep water complexes containing several wharves, anchorage areas, shore-based cranes, cargo sorting and storage areas, dry docking facilities and rail sidings, or from smaller shallow draught harbours, with few berths and minimum cargo handling, storage and clearance facilities.

2. Due to the large quantities of vehicles and equipment that can be carried by ships, a suitable holding/marshalling area is required close to a sea terminal. This

facilitates both load preparation prior to embarkation, and the reconstitution of unit convoys, following disembarkation.

0311 **Air Terminal Operations**

1. Air terminals are key nodes in any operation. During operations, air terminals process personnel and cargo in both directions (inbound and outbound). APODs function as hubs that link strategic (inter theatre) legs with the operational (intra theatre) legs, ideally through an Intra Theatre Air Lift System (ITAS) (Hub and Spoke) system. The APOD serves as the primary point of entry for deploying personnel, as well as for early entry forces, that will normally be airlifted into the AO together with their equipment and supplies. Air terminal functions and activities at APODs and other airfields include:

   a. Utilization of air transport operations, including the ITAS;

   b. Allocation of parking space at the apron;

   c. Handling of transport aircraft (loading and unloading of passengers, equipment and cargo);

   d. Assisting with aero medical evacuation.

2. The Air Component Command (ACC) is responsible for air terminal operations (including air terminal control, loading, unloading, servicing of aircraft). The Joint Logistic Support Group (JLSG), when established, is responsible for RSOM (including holding) of personnel and cargo and for life support as defined in the Operational Plan (OPLAN). If no JLSG is established the RSOM tasks may be assigned to a Component Command (CC) or a Logistics Lead Nation (LLN).

3. A dedicated element (e.g. a Combined Air Terminal Operation (CATO) unit) may be deployed to execute and coordinate those activities directly concerning the handling of aircraft. While the structure of terminal elements will be determined by the size of the terminal, the type of aircraft and the throughput requirement, it must include personnel trained in the loading and unloading of military and contracted aircraft.

4. Due to the quantity of personnel, cargo and equipment, and the considerable time necessary for their processing (including offloading, customs & immigration, etc), large holding areas for personnel and equipment may be necessary to avoid congestion at the air terminals.

0312 **Road Terminal Operations**

1. The organization of road terminals will vary according to the scale of operation being conducted. Generally, the activities that may be part of a road terminal are:

a. Movement Control, including the regulation of traffic flow (convoy planning), onto the military route system;

b. Reception and dispatch of materiel;

c. Driver and/or vehicle changes;

d. Temporary storage of freight and parking of vehicles.

2. The road transport loading and unloading facilities incorporated within the other types of terminals or depots do not constitute road terminals as they are in effect a constituent part of that other type of terminal.

0313 **Railhead Operations**

1. A relatively large marshalling area (MA) is required to hold and disperse “train loads” prior to embarkation, and following disembarkation. The rail terminals forming part of the rail LOC can only operate effectively when sufficient trained personnel are available to perform the railway operating tasks within those terminals. This will normally be a function of commercial railway companies assisted by military staff.

2. Loading and unloading of trains is the responsibility of the military, in accordance with the applicable railway regulations. This will require the allocation of sufficient experienced personnel and MHE to effect movement through the terminal.

0314 **IWT Terminal Operations**

1. IWT terminal operations may be conducted in large ports in industrialized countries, with shore-based cranes, cargo sorting and storage areas, rail and road connections, or from smaller harbours, with minimum cargo handling, storage and clearance facilities.

2. A relatively large MA may be required to hold and disperse loads prior to embarkation, and following disembarkation.

0315 **Other nodes**

1. **General.** The factors affecting terminal operations are also valid for node operations.

2. The following other nodes can be identified.

a. **Forward Mounting Base (FMB).** The operational situation may necessitate the establishment of a FMB along the LOC, between the POE and

the POD. The purpose of a FMB is to facilitate re-fuelling, crew changes and re-configuration of the forces as may be required. The FMB may develop into a support area for the sustainment of the forces.

b. **Holding Area (HA).** To prevent congestion which could hamper the unloading at an airport or seaport a HA can be established to temporarily hold personnel and/or equipment and supplies.

c. **Marshalling Area (MA).** The movement of vehicles and heavy equipment will usually be by sea or by rail, personnel will normally move by air. There will consequently be a requirement for a MA to be established. This facility provides an area where vehicles, equipment and personnel can be reformed (or “married up”). Ideally, it will be close to the POD to allow a quick off-load, but sufficiently distant to avoid congestion.

d. **Staging Area (SA).** In a SA personnel and vehicles/equipment are formed up into units and start their onward movement. There may be a requirement to establish and use one or more SAs. At a SA the following activities also take place:

(1) vehicles and trailers are loaded with their combat supplies (depending on the operational situation);

(2) personnel can be trained;

(3) real life support is available;

(4) minor repairs are completed;

(5) vehicles are re-fuelled;

e. **Convoy Support Centre (CSC).** If there is a considerable distance between nodes there may be a requirement to establish and use one or more CSCs. At a CSC the following activities may take place:

(1) vehicles are re-fuelled;

(2) minor repairs are completed;

(3) real life support is available;

f. **Assembly Area (AA).** The AA is considered the Final Destination (FD) where the onward movement ends. Once the units arrive at the AA they become the responsibility of the tactical commander.

CHAPTER 4

M&T Planning

0401 **General**

1. The overarching principles for NATO's Operational Planning System are described in MC 133. The procedures and responsibilities governing preparation, approval, promulgation, distribution, implementation, and review of operational planning documents necessary to execute the tasks allocated to the SACEUR and his subordinate commanders, are further described in Allied Command Operations (ACO) Guidelines for Operational Planning (GOP).

2. The Operational Planning Process (OPP) describes a logical sequence of cognitive processes and associated procedures undertaken by commanders and staffs to analyze a situation, deduce mission requirements and determine the best method for accomplishing assigned tasks and a desired military end-state. It also includes the identification of military forces and capabilities required to carry out the operation as well as planning for their deployment and employment. The OPP is applicable to all operational planning activities at Strategic, Operational and Tactical levels of command within the NATO Military Command as well as appropriate elements of the NATO Force Structure.

3. M&T planning is a distinct, but integral, part of logistic and operational planning, which must be consistent with the overall planning process and should be executed with a combined, joint and multimodal approach. Therefore the Movement staff must be involved in the operational planning from the beginning of the planning process.

0402 **Deployment planning**

1. The Movement Planners within the (Joint) Operational Planning Group (JOPG) play a key role in developing a realistic deployment plan. Earliest participation in the JOPG will prevent the development of Courses of Actions (COAs) that cannot be supported. Furthermore, the deployment consequences of changes to the plan can be identified immediately.

2. To support deployment planning NATO has developed the Allied Deployment and Movement System (ADAMS). All nations participating in NATO operations have to submit their national deployments plans in ADAMS format to SHAPE. Additional information on ADAMS can be found in Chapter 6 and in Annex E

3. M&T planning should consider the use of NATO civil transportation experts from the **Transport Group (TG) with its subgroups (i.e., Transport Group – Civil Aviation (TG-CA), Transport Group – Inland Surface Transportation (TG-IST) and Transport Group - Ocean Shipping (TG-OS))** and their products. Also non-NATO multinational movement coordination bodies can be used, when required and where appropriate, to provide information and offer assistance to NATO M&T

planners in all phases of planning and execution of operations, **provided that it is consistent with agreed and applicable NATO logistics policies, decisions and procedures.**

4. M&T planning should consider, where appropriate, the use of HNS and/or local resources, particularly during the RSOM stage. When HN authorities are not able or not willing to provide the required support, the JFC bears responsibility for coordinating the use of required resources. If the JFC is unable to accomplish the associated tasks through his own means, a LLN may be requested to perform them.

0403 Planning for sustainment, rotation of forces and redeployment

The deployment planning process as described above generally applies also to sustainment, rotation of forces and redeployment. However the conditions might differ and have an impact on the planning results.

0404 **Coordination.**

Movement coordination generally consists of these activities:

1. **Deconfliction role of SHAPE/AMCC.** Since Nations start their deployments at National home bases and select their own POE's, the synchronization of these movements must be done by prioritization (what units are required in what order in accordance with the CRD) and de-confliction at the PODs. SHAPE/AMCC deconflicts movements by merging National Detailed Deployment Plans (DDPs) into a Multi-National Detailed Deployment Plan (MNDDP). To speed up the deployment planning process for NRF missions, SHAPE/AMCC has established a fast track planning method, in which they provide an unsourced MNDDP to contributing Nations. National deployment planners then fill the MNDDP with national assets.

2. **Optimization of M&T capabilities.** In order to reduce the burden for NATO and Nations (reduce logistic footprint, associated risks and costs), available scarce M&T capabilities are to be utilized in the most effective and efficient manner. Therefore, active coordination between (NATO) Headquarters, participating Nations and other organizations involved in an operation is necessary to optimize the utilization of existing M&T capabilities. In order to achieve this coordination, NATO and Nations may use services offered by NATO and Non-NATO organizations and bodies. To facilitate coordination and cooperation between (NATO and) Nations bi-lateral and multi-lateral arrangements have to be established. Ideally, such arrangements should be pre-planned and readily available at the start of an operation.

0405 M&T aspects of Civil Military Cooperation (CIMIC)

In order to exploit existing M&T capabilities (military, military chartered and civil) to the maximum extend possible, M&T requests from International Organizations/Non Governmental Organizations (IO/NGO), validated by CJ-9, have to be integrated in

the overall (optimized and harmonized) M&T planning**.** Also exchange of information between military and civil actors (IO/NGO) should enhance the effectiveness and efficiency of all actors in an operation.

CHAPTER 5

M&T Operational Responsibilities

0501 General

Operational responsibility for M&T is a collective responsibility between NATO and the Nations. This responsibility extends from initial M&T planning through the deployment, RSOM, sustainment and redeployment phases of an operation. Depending on the operation, the Transfer of Authority (TOA) of assigned forces may take place in different stages of the operation, which will affect the movement responsibilities.

0502 Responsibilities

1. NATO

a. **General**. NATO Commanders at the appropriate level are responsible for establishing the M&T requirements and for initiating, prioritising, coordinating and de-conflicting movements. NATO is responsible for the movement of NATO owned equipment and assets including Headquarters elements for NATO-led operations.

b. **Supreme Headquarters Allied Powers Europe (SHAPE)**. At the strategic level, SACEUR is responsible for deployment synchronisation, overall command of the operation, strategic military guidance and direction to subordinate commanders and coordination of national support. SHAPE fulfils its role and responsibility in the deployment of forces by:

(1) Designating the JOA, LOC and FMBs for the strategic leg if required;

(2) Designating PODs, in conjunction with the HN;

(3) Developing the MNDDP based upon the Desired Order of Arrival (DOA), CRDs and FDs as proposed by the JFC;

(4) Monitoring and coordinating the use of strategic lift with the Nations through the AMCC. In addition AMCC controls the strategic leg for NRF deployments;

(5) Coordinating, prioritising and de-conflicting movements;

(6) Assisting in the development of arrangements for strategic lift, including the transfer of NATO owned equipment from storage sites onto strategic lift.

(7) Coordinate the formation (integration/consolidation) of M&T Multinational Integrated Logistic Units (MILUs) at a very early stage to allow these units to deploy as a single entity.

c. **Joint Force Command (JFC).** JFC is responsible for all movements within its JOA as designated by SACEUR including RSOM in coordination with HNs, when appropriate. JFC determines the order of arrival in theatre, priority and required dates which are then incorporated into the strategic movement planning process and reflected in the MNDDP. This is done in close coordination with SHAPE and the contributing nations. The Operational Commander is responsible for the flow of forces from the POD to the FD.

2. **Nations**

a. **Sending Nations (SN).** SNs are responsible for obtaining transportation resources to deploy, sustain and redeploy their forces. Consequently the following tasks can be identified:

(1) Movement planning of own forces;

(2) Coordination of their national movement plans with NATO and other nations;

(3) Provision of transportation resources and other movement enablers;

(4) Execution of the movement plan;

(5) Provision of liaison/augmentation as necessary.

b. **Host nation (HN).** The HN has the ultimate authority to approve, coordinate and control all movements, including RSOM related activities, on its sovereign territory. Operations on HN territory will be conducted in accordance with the NATO Commander's priorities and the Host Nation Support Agreements (HNSAs), with the exception of a defined force employment area. In this area, based upon agreements/arrangements (e.g. Memorandum of Understanding (MOU)), approval, coordination and control of movements may be delegated, partially or totally, to the JFC. Consequently the following tasks for the HN can be identified:

(1) Coordination and control of air, sea and inland surface movements on its territory;

(2) Control, support and execution of their agreed portions of the RSOM plan.

(3) Establishment of agreements and/or implementation arrangements with neighbouring states and assistance to NATO in the

coordination to facilitate border crossing procedures.

(4) Control and/or facilitation of the use of national civil and military transportation resources.

(5) Provision of liaison/augmentation as necessary.

0503 **Specialist Roles**

1. **Logistics Lead Nation (LLN).** One nation can assume overall responsibility for organising and coordinating an agreed spectrum of M&T support for all or a part of the multinational force, including headquarters, within a defined geographical area for defined periods. In this case, this LLN can also take responsibility as Logistics Role Specialist Nation (LRSN) at the same time.

2. **Logistics Role Specialist Nation (LRSN).** One Nation can assume overall responsibility for providing or procuring a specific M&T capability and/or service for all or part of the multinational force within a defined geographical area for a defined period. Compensation and/or reimbursement will then be subject to agreement between the parties involved.

3. **Supporting organisations.** There are other [ ] organisations which are available to NATO and nations to support them in M&T operations. These organizations are described in Annex D.

CHAPTER 6

Command, Control, Communications and Information

Section I - General

0601 Movement Command, Control, Communications and Information are critical to a successful operation. There must be a clear chain of command that is understood by all, a system of control to monitor and measure progress, and communications and information systems including verbal, written and electronic means that can respond to the needs of all concerned.

0602 **Command structure**

1. SHAPE/AMCC provides the movement staff functions to SACEUR at the strategic level.

2. The Joint (Force) Commands and CCs have a Movement Staff that is responsible to their respective Commanders.

3. The NATO M&T structure will be tailored to the specific operation.

0603 **Command and Control**

1. The JFC establishes a theatre Movement Control system, under the general principle that a commander should command the resources necessary for him to complete his mission.

2. The foundation of successful military movement rests on the establishment of centralized control, at the highest practical level. Factors such as the complexity of the move, security and communications requirements and the desired degree of control will determine the level at which command and control is exercised.

3. Once the movement begins, progress must be sensed, monitored and reported on a regular and systematic basis in order to keep the Movement Organization and other staffs informed. In this manner timely action can be initiated, to respond to unforeseen delays, changes or resource shortfalls. Therefore a reporting system is required.

4. When establishing the reporting system, the following should be considered:

   a. Operational security during all phases of the move is essential and must always be a factor;

b. reporting systems must be secure if classified information is to be exchanged;

c. the information provided must be timely and accurate;

d. necessary communications facilities should be available;

e. those responsible for making reports must have the necessary information and use the correct report format to inform the designated Head Quarters (HQ) or staff;

f. only essential information should be transmitted.

5. There are various reporting means, such as Effective Visible Execution (EVE) and written reports (MOVSITREP, MOVASSESSREP).

0604 **Communications and Information**

1. Communications and information systems to support the movement plan must be secure, available at the appropriate levels, simple to use and responsive. These systems must be operational at an early stage, to support the deployment.

2. In addition to the normal military systems, civilian communication and information systems may also be available in theatre. Most commercial systems are not secure and additional security precautions may be necessary if these systems are used.

3. The civilian agencies under contract to provide transportation may also have communication and information systems that can be used. Where possible these should be included in the contract.

0605 **Information technology (IT)**

1. Movements require sophisticated IT support that enables data-sharing, a common perspective of the movement picture and early awareness of disruption. These are pre-requisites for a cohesive, adaptable, flexible and responsive movement control system. This IT support also contributes to movement visibility and infrastructure utilization.

2. Within NATO, Logistics Functional Area Services (LOGFAS) and Automated Identification Technology (AIT) are used to achieve movement visibility. Also other tracking and tracing information e.g. by Global Positioning System (GPS) and Radio Frequency Identification (RFID) can be used in addition to military means.

3. NATO Nations, NATO Command Structure HQs, as well as non-NATO nations are to use LOGFAS tools to facilitate multinational deployment planning, execution monitoring and transfer of information. NATO nations may use other systems, but

are encouraged to use NATO LOGFAS applications to do their internal, national level deployment planning and execution coordination.

4. The M&T LOGFAS applications are:

a. **Allied Deployment and Movement System (ADAMS).** ADAMS provides the tools to plan deployments at the strategic and operational level. For NATO operations and exercises, national movement plans will be communicated and coordinated between nations and NATO using ADAMS. SHAPE/AMCC conducts movement planning with ADAMS, in coordination with the appropriate operational level HQ and the HN, and develops MNDDPs to de-conflict national deployment plans.

b. **Effective Visible Execution (EVE).** EVE is the M&T execution tool for managing the (multi-)national strategic and theatre movements. This includes all movements, (re)deployments, movements for sustainment and rotation of forces. In addition to its primary mobility management functions, it provides visibility for ongoing and planned transport missions to all participating nations and NATO.

c. **Coalition Reception Staging and Onward Movement (CORSOM).** In addition to ADAMS, the CORSOM software tool has been developed to improve the planning and execution of RSOM during joint and combined operations.

SECTION II – MOVEMENT CONTROL

0606 Definition

The following definition of Movement Control applies to this section: “The planning, routing, scheduling and control of personnel and cargo movements over LOC.” The word control in this definition refers to the control of the execution of the movement plan.

0607 Purpose

The purpose of Movement Control is to enable commanders to control the movements within their Area of Responsibility (AOR) and to influence the movements to their AOR.

0608 **Principles.** Movement Control is based upon the following five principles:

1. **Centralized Control**

a. The success of military movement rests on the establishment of centralized control at the highest practical level. The multi-national and multi-modal nature of the NATO military movement system requires that it is coordinated as a whole, in order to avoid an overall loss of efficiency. Factors such as the composition of the forces to be moved, the complexity of the move, security, communications requirements and the degree of control necessary will determine the level at which control can be exercised. This level must be high enough to ensure that the controlling authority has visibility over the whole movement and operational situation.

b. It is the commander's responsibility to establish movement requirements and set priorities for movement. Movement Control should provide advice on the capabilities of the movement system and the most effective use of transport, to ensure that operational priorities are met.

2. **Flexibility and Adaptability**

A movement control system must be flexible and adaptable enough to respond to non-programmed movement (e.g. surge requirements), changes in movement system capacity or any other factor, that affects either the resources or the network over which that system operates. The movement planners must have flexible contingency plans.

3. **Regulation of Movement**

Movement must be planned and regulated, in accordance with the following principles, to ensure that the desired rate of flow is maintained, and to make the best use of limited transport resources:

a. rules and procedures governing movement must be established before the start of an operation or exercise

b. priorities of movement must be established by the Operational Commander;

c. the traffic dispatched must not exceed the system's capacity (measured at the critical points).

d. an item, individual or unit, must not be dispatched if it cannot be accepted at its destination at a scheduled time of arrival;

4. **Maximum Utilization**

Utilization of M&T capabilities should be optimized by active cooperation, but maximum use of carrying capacity depends also on accurate load planning, correct loading to the maximum permissible payload, minimization of turn-around times and avoidance of congestion. The use of standardized packages in combination with

interoperable load clearance procedures (airlift and sealift) can help maximize transportation asset utilization. Maximum utilization also applies to return shipments from the theatre.

5. **Transparency and Visibility**

In order to be flexible and adaptive, the Movement Control system requires timely and adequate information from operators and users on factors that may affect the movement flow. This is essential for efficient planning, coordination and execution of Movement Control tasks and for situational awareness. Transparency (access to the information) and visibility is required of the consignment (personnel, equipment, materiel, units), the assets and infrastructure.

0609 **Main processes**

The main processes of Movement Control are:

1. Planning the movement, including the apportioning of assets and the de-confliction of priorities;

2. Routing and scheduling including validation of the movement;

3. Controlling the execution.

0610 **Requirements**

To enable commanders to control the movements within their AOR and to influence the movements to and from their AOR, they require:

1. Timely and adequate information;

2. Authority (to influence the movement);

3. Movement plan, regulations and procedures;

4. Means to control (tools, equipment, communications and IT support, finance);

5. Trained and experienced personnel;

6. Interface with HN;

7. Interface with SN.

CHAPTER 7

M&T Organization

SECTION I – GENERAL

0701 **Organization**

1. M&T are integral aspects of military operations. To assist commanders and military authorities in carrying out their tasks and responsibilities, specialized M&T personnel should be integrated into staff/commands at all levels.

2. Nations will control all aspects of their national LOC and M&T resources. Nations must take into account the agreed operational priorities set out by the appropriate NATO Commander. M&T organizations may differ between Nations, but a National Movement Coordination Centre (NMCC) has to be established to coordinate movements.

3. In Figure 7-1, NATO supporting organizations (NATO Maintenance and Supply Agency[1] (NAMSA) and **Transport Group (TG) with its subgroups**) are depicted. These organizations, in their respective areas of expertise, can support NATO and Nations in their M&T operations. A detailed description of their capabilities is outlined in Annex D.

[1] In the framework of the NATO Agencies' Reform, the NATO Maintenance and Supply Agency will be merged into the new NATO Support Agency as of 1st July 2012.

0702 **Movement architecture**

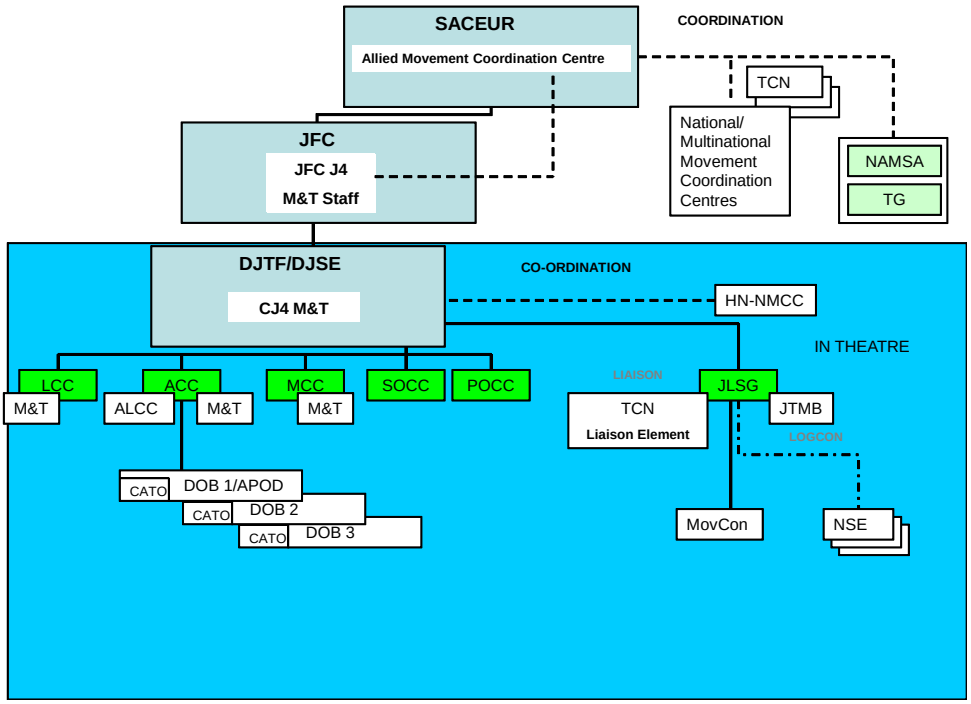

Figure 7-1 – Movement architecture
Note: This is an example of a movement architecture; the characteristics of a specific mission might justify a different architecture.

SECTION II – MOVEMENT CONTROL ORGANIZATION

0703 **General**

1. The Movement Control organization consists of the movement staff (the movement staff at various levels of NATO and national HQs) and the line organization (various Movement Control units and detachments).

2. The Movement Control organization coordinates and controls movement and acts as the coordinator of, and interface between, all elements involved in movement (in accordance with the stated operational requirement).

3. In more detail the Movement Control organization:

   a. Plans, coordinates and controls movement in support of the Operations Staff;

   b. Acts as the medium through which all users make their transport requirements known;

c. Advises the Commander on the MOT;

d. Advises on routings to implement the movement order or instruction;

e. Acts as the intermediary between the users and the transport agencies;

f. Allocates traffic by route, amount and destination;

g. Ensures that there are facilities for loading and unloading the MOT.

4. In addition to the Movement Control organization there are many other organizations that may become involved in providing specialist support such as packaging, escorts, force protection, traffic control, engineering, accommodation, messing, quarantine, customs, medical and financial services.

0704 **Staff function of the Movement Control organization**

1. Movement has a staff function that is performed mainly at National, Strategic and Operational HQ, but may also be performed at any other level if so authorized.

2. Movement Staffs must be fully aware of all aspects of the operational and movement plans, and any change in situations. This allows them to be in the best position to make decisions, and to coordinate/control the activities of users, transport agencies and movement line units and detachments.

3. Although Movement Staffs at various levels are involved in mode selection, they do not determine how the selected transport agency operates. The Movement Staff is responsible for ensuring that a movement order is prepared and executed.

4. The staff aspects of the Movement Organization comprise:

a. Movement planning;

b. Allocating available strategic military transportation resources and defining the requirement when the contracting of civilian resources is required;

c. Collecting and disseminating movement intelligence comprising details such as route and terminal information;

d. Issuing of movement orders, procedures and instructions;

e. Tasking the Movement Control Units;

f. Coordinating movement at all levels within the command.

0705 **Line function of the Movement Control organization**

1. The line organization executes Movement Control at the various terminals and along the LOC

2. The line organization speaks with the authority of the Commander of the HQ directing the move.

3. Line Movement Control tasks are executed in all areas where movement originates, terminates, is transferred between transport agencies or is diverted. The line organization may be required to perform the following tasks:

a. Implementing plans and instructions issued by the movement staff which may include the tasking of allocated transport resources;

b. Conduct reconnaissance of terminals and LOC;

c. Control movement to ensure that it is achieved by the means and in the priority designated in the movement orders or instructions;

d. Establish and maintain liaison with installations such as depots, representatives of transport units and relevant civilian agencies including HN;

e. Maintain current information including locations of units, installations and depots, movement requirements, changes in movement capabilities and the status of the local transport situation;

f. Consolidate and arrange for transport services in connection with non-programmed movement requirements of local units, installations and depots;

g. Ensure efficient utilization of transport resources allocated by the Movement Staff;

h. Prepare plans, when required, for local employment of transport;

i. Effect re-consignment and diversion instructions as required by the appropriate authority;

j. Avoid congestion by regulating movement and by recommending to the Movement Staff the establishment of traffic priorities and/or restrictions or other appropriate actions;

k. Advise local commanders and units on movement matters;

l. Where appropriate arrange for the provision of customs and assist in customs and immigration clearances, when required;

m. Ensure that shippers and carriers comply with the regulations concerning dangerous goods and any material needing special handling and obtain the necessary approval for movements prior to shipment;

n. When required, arrange itineraries, reservations and ensure that the necessary and valid travel documents for personnel and cargo are present;

o. Ensure all movement is properly documented;

p. Ensure that all security measures concerning movement of personnel and materiel are complied with;

q. Determine the ability of consignees to accept shipments;

r. Monitoring movement (including tracking) as it takes place and maintaining records, passing the movement information to the movement staff and other elements of the movement organization.

4. **Movement Control MILU**. A movement control MILU has been stood up at the initiative of voluntary participating nations and will act as a movement control unit for NATO deployments. Its key responsibility will be to provide Movement Control for NATO assigned personnel and NATO owned equipment. Additional responsibilities for this MILU will be:

a. Coordination of Movement Control units at PODs;

b. Movement Control for other multi-national units;

c. Movement Control of the operational deployment leg on theatre Main Supply Routes (MSRs), railheads and IWTs;

d. Movement Control for nations who have no Movement Control capability in theatre;

e. In-theatre cross border Movement Control/liaison.

0706 **Allocation of Movement Control Units**

1. The number, size and location of Movement Control Units depends on the following:

a. The number and location of facilities requiring their presence;

b. The intensity of movement;

c. The geography of the theatre of operations and the length, and condition, of the LOC.

2. Movement Control units are deployed at main terminal points in a movement system such as:

a. APOE/APOD and other airfields in theatre (ITAS);

b. SPOE/SPOD and other ports in theatre;

c. HA/MA, SAs and CSCs

d. Railheads;

e. IWT loading/unloading ports;

f. Border crossing points.

3. The tasks given to Movement Control units can be performed by sending out smaller Movement Control detachments. Several factors determine the provision of Movement Control detachments. For any given operation, the requirement will be scenario driven and may even vary for the deployment of similar forces, depending upon the methods of deployment utilized and the speed at which it occurs. The following factors should be considered when determining the requirement for and size of a Movement Control detachment

a. **Rate of Flow.** An increased rate of flow through a terminal and on the LOC will generally require a larger Movement Control detachment, to ensure a constant level of control;

b. **Mode of Transport (MOT).** The basic functions of a Movement Control detachment at any terminal are the same regardless of the mode being used. The MOT being used will affect the qualification requirements of the personnel chosen to man the Movement Control detachment. Personnel assigned to Movement Control detachments must have a good working knowledge of the MOT that are used at that specific terminal;

c. **Complexity of the Terminal Operation.** If multiple MOTs end at a terminal (e.g. road and rail at a APOE), additional manpower is likely to be required to operate the terminal;

d. **Duration of the Movement Activity.** If a movement activity is to be conducted over a longer period, it may be required to provide extra detachments;

e. **Climatic conditions.** Operating in extreme conditions may require personnel to be changed more frequently and therefore increase the size of detachment;

f. **Availability of HNS.** Utilization of HNS can reduce the size of the detachment.

0707 **Traffic Control**

1. Movement Control should not be confused with traffic control. Road traffic control facilitates the movement of road traffic and prevents and/or reports any breach of road traffic regulations. This is considered to be a police task. Road traffic control can be considered as an instrument for movement control. It provides the movement control organization with movement information along the Land Lines of Communication (LLOC).

2. Air Traffic Control (ATC) is a flight management function and not part of the movement control system. ATC guides, controls and supports civil and military air traffic. ATC provides prerequisites for the safe, orderly and expeditious flow of air traffic as well as for effective and economic mission accomplishment. ATC controls air traffic, supports air operations and provides information to aircrews and CATO.

CHAPTER 8

M&T Training

0801 General

1. To ensure effective movements it is essential that all elements of the movement organisation are properly educated and trained to perform their duties. In this chapter specifically the training responsibilities for Movement Control are described as well as specific training needs for the different elements within the Movement Control organisation.

2. Transportation training focuses on the ability of the transportation units to move personnel, equipment and supplies between locations. The transportation training requirement applies to all MOTs.

0802 Responsibilities

1. **National training responsibilities.** Nations are responsible for basic M&T training. National training should be in line with national and international regulations and NATO (e.g. STANAGs) standards. National training is focused on tactics, techniques and procedures (TTPs). The nature of an operation may create specific demands, particularly on logistic and equipment preparation. Mission-specific training within the JOA may be required. To improve interoperability nations should take advantage of multi-national training opportunities.

2. **NATO training responsibilities.** NATO focuses on collective M&T training for the joint operational level; NATO plans exercises to train Movement Control in a multi-national environment. Training on movement planning is provided by NATO School. Training on movement IT systems (e.g. ADAMS) is provided by NATO Communications and Information Systems School (NCISS).

0803 Training requirements

1. The training requirements for M&T can be divided into individual and collective training. In general the individual training is a national responsibility and the collective training is both a national and a NATO responsibility.

2. The movement organisations should be trained regularly in NATO and national (movement) exercises.

3. Basic training for Movement Control units must at least include:

   a. Conducting reconnaissance of terminals and LOC;

   b. Arrangement for transport services:

c. Ensuring the efficient utilization of transport resources;

d. Regulation of movements;

e. Arranging and conducting terminal operations;

f. Arranging for the provision of customs and immigration clearances;

g. Applying regulations concerning dangerous goods and any material needing special handling;

h. Procedures for establishing liaison with depots, transport units, civilian agencies and HN;

i. Maintaining the information about units, installations, movement requirements, changes in movement capabilities and the status of the local transport situation;

j. Monitoring movements during execution and maintaining records;

k. Reporting, using EVE and other reporting methods;

l. Advising commanders and units on movement matters;

4. Above the basic training, the training for Movement Control Staff personnel should include:

a. Movement planning, using ADAMS;

b. Allocation of available strategic military transportation resources;

c. Contracting civilian resources;

d. Arrangement of diplomatic clearances and border crossings;

e. Issuing of movement orders, procedures and instructions;

f. Tasking of the Movement Control Units;

g. Collecting and disseminating movement information, comprising details such as route and terminal information, using EVE;

h. Coordinating movement at all levels within the command.

5. The training requirements for individual and collective M&T training are identified in the training matrix in Annex F.

ANNEX A

Reference Publications

A101. Military Committee Documents

MC 133/3	NATO's Operational Planning System
MC 299	MC guidance for Defence Planning
MC 319/2	NATO Principles and Policies for Logistics
MC 327/1	NATO Military Planning for Peace Support Operations
MC 334/1	NATO Principles and Policies for Host Nation Support
MC 336/3[2]	NATO Principles and Policies for Movement and Transportation
MC 477	Military Concept for the NATO Response Force
MC 526	Logistics Concept for the NATO Response Force
MCM-0001-2008	Military Concept for NATO's Deployable Joint Staff Element
EAPC (SNLC) D (2008) 002	NATO Operations Logistics Chain Management concept

A102. Allied Publications

AAP-3	Direction for the development and production of NATO Standardisation Agreements and Allied Publications
AAP-6	NATO Glossary of Terms and Definitions
AAP-15	NATO Glossary of Abbreviations
AAP-23	NATO Glossary of Packaging Terms and Definitions
AAP-24	Materials Handling Glossary of Terms and Definitions
AAP-35	NATO Glossary of Asset tracking terms and Definitions
AAP-47	Allied Joint Doctrine Development (supplement to AAP-3)
AJP-01(D)	Allied Joint Doctrine
AJP-4(A)	Allied Joint Doctrine for Logistics
AJP-5(A)	Allied Joint Doctrine for Operational Planning
AJP-3.13	Allied Joint Doctrine for the Deployment of Forces
AJP-4.5(A)	Allied Joint Host Nation Support Doctrine
AJP-4.6(B)	Allied Joint Doctrine for the Joint Logistics Support Group
AJP-4.9(A)	Modes of Multinational Logistics Support
AJP-4.10(A)	Allied Joint Medical Support Doctrine
AMovP-01(A)	Road Movements and Movement Control
AMovP-02(B)	Procedures for Surface Movement across National Frontiers

[2] When approved

AMovP-03(B)	Movements and Transport Documents and Glossary of Terms and Definitions
AMovP-04(A)	Technical Aspects of the Transport of Military Materials by Railroad
AMovP-05	Multimodal Transport Issues
AOP-38	Glossary of Terms and Definitions concerning the safety and suitability for service of munitions, explosives and related products

A103. STANAGS

2002 NBC	Warning Signs for the Marking of Contaminated or Dangerous Land Areas, Complete Equipments, Supplies and Stores
2010 ENGR	Military Load Classification Markings
2021 ENGR	Military Computation of Bridge, Ferry, Raft and Vehicle Classifications
2253 IGEO	MGD - Roads and Road Structures
2254 IGEO	MGD - Navigable Inland Waterways
2255 IGEO	MGD – Ports
2257 IGEO	MGD – Railways
2827 MH	Materials Handling in the Field
2828 MH	Military Pallets, Packages and Containers
2829 MH	Materials Handling Equipment
2889 ENGR	Marking of Hazardous Areas and Routes Through Them
2926 MH	Procedures for the Use and Handling of Freight Containers for Military Supplies
2927 MH	Marking of Restraint Equipment for Road Movement
3150	Codification - Uniform System of Supply Classification
3466 AT	Responsibilities of Air Transport Units & User Units in the Loading & Unloading of Transport Aircraft in Tactical Air Transport Operations
3543 AT	Air Transport Cargo Passenger Handling Systems Request for Information
3739 AT	Combined Air Terminal Operations (CATO)
3854 AT	Policies and Procedures Governing the Air Transportation of Dangerous Cargo
4441 PPS	Manual of Safety Principles for the Transport of Military Ammunition and Explosives – AASTP-2
7057 AT	Exchange of data on multi-modal documentation of cargo

ANNEX B

List of acronyms

A

AA	Assembly Area
AALPS	Automated Air Load Planning System
ACO	Allied Command Operations
ACC	Air Component Command
ADAMS	Allied Deployment and Movement System
AIT	Automated Identification Technology
ALCE	Air Lift Control Element
AMCC	Allied Movement Co-ordination Centre
AO	Area of Operations
AOR	Area of Responsibility
APOD	Air Port of Disembarkation
APOE	Air Port of Embarkation
ATC	Air Traffic Control

B

Bi-SC	Bi (both) Strategic Commands

C

C3I	Command, Control, Communications and Information
CA	Civil Aviation
CATO	Combined Air Terminal Operations
CBRN	Chemical, Biological, Radiologic and Nuclear
CC	Component Command
CIMIC	Civil Military Co-operation
COA	Course of Action
CONOPS	Concept of Operations
CORSOM	Coalition Reception Staging and Onward Movement
CRD	Commander Required Date(s)
CSC	Convoy Support Centre

D

DAS	Defensive Aids Suite
DDP	Detailed Deployment Plan
DOA	Desired Order of Arrival
DOB	Deployed Operating Base

E

EVE	Effective Visible Execution

F

FD	Final Destination
FMB	Forward Mounting Base

G

GOP	Guidelines for Operational Planning
GPS	Global Positioning System

H

HA	Holding Area
HN	Host Nation
HNMCC	Host Nation Movement Coordination Centre
HNS	Host Nation Support
HQ	Head Quarters

I

IO/NGO	International Organisation/Non-Governmental Organisation
IST	Inland Surface Transport
IT	Information Technology
ITAS	Intra Theatre Airlift System
ITV	In-Transit Visibility
IWT	Inland Waterway Transport
IWW	Inland Waterway

J

JFC	Joint Forces Command(er)
JLSG	Joint Logistics Support Group
JOA	Joint Operations Area
JOPG	Joint Operational Planning Group
JTMB	Joint Theatre Movement Branch

L

LCC	Land Component Command
LCN	Load Classification Number

LLN	Logistics Lead Nation
LOC	Line(s) of Communication
LOLO	Lift On Lift Off
LRSN	Logistics Role Specialist Nation

M

M&T	Movement and Transportation
MA	Marshalling Area
MANPADS	Man Portable Air Defence System
MCC	Maritime Component Command
MHE	Material Handling Equipment
MILU	Multi-national Integrated Logistics Unit
MLOPC	Movement and Logistics Operational planning Course
MNDDP	Multi-National Detailed Deployment Plan
MOG	Maximum on Ground
MOT	Mode of Transport
MOU	Memorandum of Understanding
MOVASSESSREP	Movement Assessment Report
MOVSITREP	Movement Situation Report
MSR	Main Supply Route

N

NAMSA	NATO Maintenance and Supply Agency
NATO	North Atlantic Treaty Organisation
NCISS	NATO Communication and Information Systems School
NMCC	National Movement Coordination Cell
NRF	NATO Response Force
NSE	National Support Element

O

OLCM	Operations Logistics Chain Management
OPLAN	Operations Plan
OPP	Operational Planning Process
OS	Ocean Shipping

P

PCN	Pavement Classification Number
POCC	Psychological Operations Component Command
POD	Port (Point) Of Disembarkation
POE	Port (Point) Of Embarkation

R

RFID	Radio Frequency Identification

RORO	Roll On Roll Off
RPOD	Rail Point of Disembarkation
RPOE	Rail Point of Embarkation
RSOI	Reception Staging Onward Movement and Integration
RSOM	Reception Staging and Onward Movement

S

SA	Staging Area
SACEUR	Supreme Allied Commander Europe
SAM	Surface to Air Missile
SD	Strategic Deployment
SHAPE	Supreme Headquarters Allied Powers Europe
SN	Sending Nations
SOCC	Special Operations Component Command
SPOD	Sea Port of Disembarkation
SPOE	Sea Port of Embarkation
STANAG	Standard NATO Agreement

T

TAV	Total Asset Visibility
TCN	Troop Contributing Nation
TG	Transport Group
TTP	Tactics, Techniques and Procedures

Annex C

List of terms and definitions

Aeromedical evacuation (AeroMed)
The movement of patients to and between medical treatment facilities by air transportation. (AAP-6)

Airport of Disembarkation (APOD)
The airport at which the aircraft carrying personnel and/or materiel are off-loaded. (AAP-15)

Airport of Embarkation (APOE)
The airport at which final preparations for embarkation are completed and through which assigned troops, materiel, and vehicle loads for aircraft are called forward and loaded onto the strategic airlift. (AAP-15)

Apron
A hard surfaced area on an airfield used for manoeuvring or parking of aircraft. (AAP-6)

Area of Operations (AOO)
An operational area defined by a joint commander for land or maritime forces to conduct military activities. Normally, an area of operations does not encompass the entire joint operations area of the joint commander, but is sufficient in size for the joint force component commander to accomplish assigned missions and protect forces. (AAP-6)

Assembly Area (AA)
An area in which a command is assembled preparatory to further action. (AAP-6)

Blocking and Bracing
The placing of blocks or timbers, against the ends or sides of a vehicle, or heavy equipment, to prevent horizontal movement. Bracing strengthens the blocked item, horizontally tying the blocking to an immovable item. Also the material used in such loading such as blocks, wood strips, steel straps, etc.

Cargo
Commodities and supplies in transit. (AAP-6)

Combined / multinational
Adjective used to describe activities, operations and organizations, in which elements of more than one nation participate. (AAP-6)

Combined operation
An operation conducted by forces of two or more Allied nations acting together for the accomplishment of a single mission. (AAP-6)

Commander's Required Date (CRD)
The latest date, calculated from G-day, established by the theatre commander, on which forces are required to be complete in their final destination and organized to meet the commander's operational requirement. (AAP-6)

Component command (CC)
1. In the NATO military command structure, a third-level command organization with specific air, maritime or land capabilities. It is responsible for region-wide operational planning and conduct of subordinate operations as directed by the NATO regional commander. Note: Its headquarters is distinct from the regional command headquarters.
2. A functional component command or service component command responsible for the planning and conduct of a maritime, land, air, special or other operation as part of a joint force. (AAP-6)

Concept of operations (CONOPS)
A clear and concise statement of the line of action chosen by a commander in order to accomplish his mission. (AAP-6)

Container Equivalent
The term Twenty foot Equivalent Unit (TEU) is used as a conversion of the volume of a given commodity into sea container equivalents. These are based on the amount of sea containerized cargo, the cargo densities, and the weight or measurement capacities of sea containers. Twenty foot equivalent (TEU) is the internationally recognized standard of comparison. A TEU is a measurement, not a container. (Under development (TEU))

Control
That authority exercised by a commander over part of the activities of subordinate organizations, or other organizations not normally under his command, which encompasses the responsibility for implementing orders or directives. All or part of this authority may be transferred or delegated. (AAP-6)

Convoy
A group of vehicles organized for the purpose of control and orderly movement with or without escort protection (AAP-6).

Dangerous Goods
Cargo, which, because of its dangerous properties, is subject to special regulations for its transportation. (AAP-6).

Density
The average number of vehicles that occupy one mile or one kilometre of road space, expressed in vehicles per mile or per kilometre. (AAP-6).

Deployment
1. The movement of forces within areas of operation.

2. The positioning of forces into a formation for battle.
3. The relocation of forces to desired areas of operation. (AAP-6)

Disembarkation
The unloading of troops with their supplies and equipment from a ship. (AAP-6)

Doctrine
Fundamental principles by which the military forces guide their actions in support of objectives. It is authoritative but requires judgement in application. (AAP-6)

Embarkation
The process of putting personnel and/or vehicles and their associated stores and equipment into ships or aircraft. (AAP-6)

Exchange Point
A point at which cargo is transferred from one vehicle to another of the same transport mode.

Explosive
A substance or mixture of substances which, under external influences, is capable of rapidly releasing energy in the form of gases and heat. (AAP-6)

Final destination (FD)
The location where a strategic movement ends, usually an Assembly Area. The FD is a location within the Area of Operations (AOO) where a unit, formation or capability is required to be ready for mission execution in accordance with the Commander's Concept of Operations (CONOPS).

Formation
1. An ordered arrangement of troops and/or vehicles for a specific purpose.
2. An ordered arrangement of two or more ships, units, or aircraft proceeding together under a commander. (AAP-6)

Forward Mounting Base (FMB)
A base located in or near a theatre of operations, the primary mission of which is to support military operations. (see **Mounting**)

Freight
The actual goods carried. (see **Cargo**)

Gauge (See International Loading Gauge)

Home base
The location where a strategic movement commences, usually the barracks, port of airbase where a unit is based.

Host Nation (HN)
A nation which, by agreement:

a. receives forces and materiel of NATO or other nations operating on/from or transiting through its territory;

b. allows materiel and/or NATO organizations to be located on its territory; and/or

c. provides support for these purposes. (AAP-6)

Host Nation Support (HNS)
Civil and military assistance rendered in peace, crisis or war by a host nation to NATO and/or other forces and NATO organizations which are located on, operating on/from, or in transit through the host nation's territory. (AAP-6)

Hub-and-spoke (System)
A central airport or seaport functions as a hub and is connected to smaller airports or seaports through the spokes. In certain cases a hub can also be a facility connected to LLOCs.

Infrastructure
A term generally applicable for all fixed and permanent installations, fabrications, or facilities for the support and control of military forces. (AAP-6)

International Loading Gauge-GIC (Gabarit international de chargement)
The loading gauge upon which international railway agreements are based. A load whose dimensions fall within the limits of this gauge may move without restriction on most of the railways of Continental Western Europe. (AAP-6)

Intra Theatre Airlift System (ITAS)
A system to provide airlift within a theatre, operated by tactical air transport aircraft. (AAP-15)

Joint operations area (JOA)
A temporary area defined by the Supreme Allied Commander Europe, in which a designated joint commander plans and executes a specific mission at the operational level of war. A joint operations area and its defining parameters, such as time, scope of the mission and geographical area, are contingency- or mission-specific and are normally associated with combined joint task force operations. (AAP-6)

Lead Nation
See **Logistics Lead Nation**.

Liaison
That contact or intercommunication maintained between elements of military forces to ensure mutual understanding and unity of purpose and action. (AAP-6)

Lines of Communication (LOC)
Routes (air, sea and surface) that are planned and used for (strategic) movements. (AAP-6)

Loading
The process of putting personnel, materiel, supplies and other freight on board ships, aircraft, trains, road vehicles or other means of conveyance. (AAP-6)

Logistics
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:

1. design and development, acquisition, storage, movement, distribution, maintenance, evacuation, and disposal of materiel;
2. transport of personnel;
3. acquisition or construction, maintenance, operation, and disposition of facilities;
4. acquisition or furnishing of services; and
5. medical and health service support. (AAP-6)

Logistics Lead Nation (LLN)
A nation that assumes overall responsibility for organising and co-ordinating an agreed spectrum of logistic support for all or a part of the multinational force, including headquarters, within a defined geographical area for defined periods.

Logistic sustainment
The process and mechanism by which sustainability is achieved and which consists of supplying a force with consumables and replacing combat losses and non-combat attrition of equipment in order to maintain the force's combat power for the duration required to meet its objectives. (AAP-6)

Marshalling
The process of assembling, holding, and organizing supplies and/or equipment, especially vehicles of transportation, for onward movement. (AAP-6)

Mobility
A quality or capability of military forces which permits them to move from place to place while retaining the ability to fulfil their primary mission. (AAP-6) (See **Strategic mobility**)

Mode of transport (MOT)
A way or manner in which transport is executed, e.g. road transport, sea transport or airlift.

Mounting
All preparations made in areas designated for the purpose, in anticipation of an operation. It includes the assembly in the mounting area, preparation, and

maintenance within the mounting area, movement to loading points, and subsequent embarkation into ships, craft, or aircraft if applicable. (AAP-6)

Movement
The activity involved in the change of location of forces, equipment, personnel and stocks as part of a military operation. Movement requires the supporting capabilities of mobility, transportation, infrastructure, movement control and support functions. (under development)

Movement control
1. The planning, routing, scheduling and control of personnel and cargo movements over lines of communication.
2. An organization responsible for the planning, routing, scheduling and control of personnel and cargo movements. (AAP-6)

Movement coordination
Organising movement activities of two or more agencies and providing information to other agencies involved.

Movement order
An order issued by a commander covering the details for the movement of a unit, personnel and/or materiel. (AAP-6)

Multimodal
In transport operations, a term applied to the movement of passengers and cargo by more than one method of transport. (AAP-6)

Node
A point in a network. A transportation node is any infrastructure used to influence the movement along a LOC.

Outsize cargo (air transport)
Outsize cargo is that which exceeds 810 inches long by 117 inches wide by 105 inches high in any dimension (equivalent metric dimensions are 2057.4 cm x 297.18 cm x 266.7 cm). This type of cargo exceeds the capabilities of C-130 aircraft and requires the use of C17/An 124 or equivalent aircraft.

Pallet
A flat base for combining stores or carrying a single item to form a unit load for handling, transportation, and storage by materials handling equipment. (AAP-6)

Payload
1. The sum of the weight of passengers and cargo that an aircraft can carry.
2. The load, in addition to its unladen weight, that a vehicle is designed to transport under specified conditions of operation.
   Note: The load may include people, materiel and/or equipment. (AAP-6)

POD / Port of disembarkation
A seaport, airport or railhead where personnel, equipment and/or stocks are unloaded from a means of transport. (AAP-6)

POE / Port of embarkation
A seaport, airport or railhead where personnel, equipment and/or stocks are loaded onto a means of transport. (AAP-6)

Railhead
A point on a railway where loads are transferred between trains and other means of transport. (AAP-6)

Reception, Staging and Onward Movement (RSOM)
Reception, Staging and Onward Movement is the phase of the deployment process, that transitions units, personnel, equipment and materiel from arrival at Ports Of Disembarkation (PODs) to their Final Destination.

Route
The prescribed course to be travelled from a specific point of origin to a specific destination. (AAP-6)

Runway
A defined rectangular area on an aerodrome, prepared for the landing and take-off run of aircraft along its length. (AAP-6)

Sea Port of Disembarkation (SPOD)
The Sea Port at which the ship/vessel carrying materiel and/or personnel are off-loaded. (AAP-15)

Sea Port of Embarkation (SPOE)
The Sea Port at which final preparations for embarkation are completed and through which assigned personnel, materiel, and vehicle loads for ships/vessels are called forward and loaded onto the strategic sea lift. (AAP-15)

Staging Area (SA)
1. An area located between the mounting area and the objective area through which all or part of the forces pass after mounting, for the purpose of refuelling, regrouping, training, inspection and distribution of troops and materiel.
2. A general locality established for the concentration of troop units and transient personnel between movements over lines of communications (AAP-6).

Stocks
The quantity of supplies and material on hand ready for use. (AAP-6)

Strategic aeromedical evacuation
That phase of evacuation which provides airlift for patients from overseas areas or from theatres of active operations, to the home base, to other NATO countries or to a temporary safe area. (AAP-6)

Strategic mobility
The capability to move forces and their associated logistics in a timely and effective manner over long distances. This could be between joint operations areas, between regions, or beyond NATO's area of responsibility. (AAP-6)

Strategic movement
A strategic movement is a movement from homebase to final destination and includes deployment, transportation for sustainment and redeployment.

Supplies
All materiel and items used in the equipment, support and maintenance of military forces. (AAP-6)

Support
The action of a force, or portion thereof, which aids, protects, complements, or sustains any other force. (AAP-6)

Sustainment
Resupply. The act of replenishing stocks in order to maintain required levels of supply. (AAP-6)

TEU
See **Container equivalent**.

Transfer of authority (TOA)
Within NATO, an action by which a member nation or NATO Command gives operational command or control of designated forces to a NATO Command. (AAP-6)

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

Annex D

Overview of M&T Supporting Organizations

D101 NATO Maintenance and Supply Agency[3] (NAMSA). NAMSA's expertise in contracting logistics capabilities can be used, on a cost recoverable basis, for the execution of M&T plans.

D102 Civil Emergency Planning Committee (CEPC). CEPC through its Transportation Group (TG) and subgroups (i.e., Transport Group – Civil Aviation (TG-CA), Transport Group – Inland Surface Transportation (TG-IST) and Transport Group - Ocean Shipping (TG-OS)) support NATO, nations and non-NATO multinational coordination bodies, by advising on the availability and use of civil transportation resources and related infrastructure. This support includes the provision of advice relating to acquisition or operation of civil resources. In addition to planning support, CEPC can provide active support to operations through the deployment of rapid reaction teams. Requests for civil expert assistance or initiating studies on a particular transportation issue should be forwarded by the SCs through the NATO HQ Civil Emergency Planning (CEP) to the experts in the **TG-CA, TG-IST and TG-OS,** as appropriate.

D103 M&T supporting Organizations. Strategic lift initiatives and multinational movement coordination centres are also providing M&T expertise and help generating required lift in support of operations.

[3] In the framework of the NATO Agencies' Reform, the NATO Maintenance and Supply Agency will be merged into the new NATO Support Agency as of 1st July 2012.

Annex E

Logistic Functional Area Services (LOGFAS) Movement and Transportation (M&T) software - Strategic Concept of Operations

SECTION I - INTRODUCTION

E101 Background

1. Logistic Functional Area Services (LOGFAS) is NATO's suite of software that supports logistical planning, execution and reporting, using an integrated series of computer programs.The programs use a common LOGFAS database (LogBase) so all data can be easily shared and used for various functions, from stockpile planning to logistical reporting, and of particular interest to this document, to support various movement related processes.

2. Various Logistic LOGFAS Movement and Transportation (M&T) software have been developed over the years by NATO to allow military staffs to carry out deployment planning and monitoring more efficiently, and to exchange all of the movement related data in a clear, well understood and common format. The Allied Deployment and Movement System (ADAMS) was the first one to be released, focussing on the strategic movement planning process and the production of national and NATO organizations detailed deployment plans (DDPs), to be amalgamated into a multinational DDP (MNDDP) that represents all of the planned NATO-lead forces movements in a single view. The Effective Visible Execution (EVE) tool was then developed and is being implemented to actually monitor the progress of a specific deployment, as well as to coordinate and display the daily movements related to any given NATO-led operation. The Coalition Reception, Staging and Onward Movement (CORSOM) software was recently developed as the primary Reception, Staging and Onward Movement (RSOM) automated tool for NATO. It enables detailed planning for RSOM to be performed, and provides visualization and oversight of theatre movements during both deployment execution and sustainment operations. It is important to note that all three systems share the same data and are made to interact with each other, allowing a seamless transition from one phase of a movement operation to another, as well as their concurrent use.

3. While LOGFAS M&T tools offer many functionalities and represent most valuable capabilities, there is a recognized need to provide the necessary awareness and guidance to foster their efficient use and maximize their potential, for the benefit of all authorised users and ultimately of NATO. It is important to understand however that the existing LOGFAS M&T tools are at different stages of evolution and stability, which strongly influence the level to which defined processes are established, understood and accepted.

E102 Aim

The aim of this document is to describe the general requirements, management principles, procedures and responsibilities related to the use the LOGFAS M&T software for the planning, execution and monitoring of NATO movements.

E103 Scope

1. This strategic concept of operations (CONOPS) for LOGFAS M&T software applies to NATO and Partnership for Peace (PfP) nations, NATO headquarters (HQs) at all levels, and all other nations and organizations to which LOGFAS M&T software is officially released by NATO. The guidelines set out in this document apply to the full spectrum of actual and potential NATO-led military operations and exercises, where the use of one or more of the LOGFAS M&T tools is deemed necessary for the accomplishment of the mission or established training objectives.

2. This document is based on the perceived actual and potential use of the LOGFAS M&T software within the NATO context. This document will need to be updated and amended as necessary to reflect the likely changes that will be brought about by the implementation of the NATO wide Capability Package 9C0103 – Functional Services for Logistics C2 (LOG FS), scheduled to be completed in 2024. Furthermore, it will need to expand with time on the use of EVE and CORSOM, as the implementation of a defined management process for each one materializes.

3. Individual users should use this document as a template for developing their own CONOPS and supporting Standing Operating Procedures (SOPs), tailored to their own operational requirements. More detailed information on the use of LOGFAS M&T software can be found in the related tutorials and other technical documents distributed with the current version of the LOGFAS software DVD.

E104 Policy

1. The use of LOGFAS M&T software can be closely associated with many of the NATO M&T principles, such as *Collective Responsibility*, *Cooperation*, *Coordination* and *Effectiveness*. More specifically, it supports directly the principles of *Standardization* (to facilitate interoperability and M&T support) and *Visibility and Transparency* (the exchange of M&T information between all participants being essential for the efficient planning, coordination and execution of M&T tasks).

2. The slightly dated but still valid MC 336/2 states the following M&T policies with regards to *M&T Planning* and *Command, Control and Communications* respectively:

   a. NATO nations and, where appropriate, non-NATO nations are to use ADAMS as the NATO planning tool to facilitate multinational deployment

planning and transfer of information (Nations may use ADAMS or some other system to do their internal, national-level deployment planning). Strategic Commands (SCs) or Alliance nations will support non-NATO nations, as appropriate; and

b. To be viable, the communications and Automated Data Processing (ADP) systems must provide Commanders with timely information concerning status of force deployment, lines of communications and availability of transportation resources. As ADAMS is NATO's tool for multinational M&T planning, nations are to continue to support the use of ADAMS and communicate M&T data via this system.

3. Consequently, considering the recent development of EVE and CORSOM, the Military Committee approved MC 336/3 (yet to be approved by the North Atlantic Counsel at the time of publishing the present document) states in similar terms:

NATO nations, NATO Command Structure HQs, as well as non-NATO multinational movement coordination bodies and, where appropriate, non-NATO nations are to use the LOGFAS tools to facilitate multinational deployment planning, execution monitoring and transfer of movement information. Nations may use other systems, but are encouraged to use NATO LOGFAS applications to do their internal, national-level deployment planning.

4. The standardization of M&T data formats and their timely exchange is key to the success of complex movement operations, especially to facilitate the coordination between the many deploying forces, when limited transportation resources such as strategic lift assets and infrastructure (e.g. Air/Sea Ports of Debarkation (A/SPOD), Lines of Communication (LOC), etc.) are limited, must be shared or are restricted in their use. When tools other than LOGFAS are used for national purposes, nations should ensure that their system and data is either compatible or easily transferable into the LOGFAS tools, to avoid undue duplication of efforts and delays in data transfer and/or provision.

E105 Brief description of ADAMS

1. ADAMS is used mainly for planning and analysing strategic movement operations in support of NATO missions. The software assists M&T planners in developing deployment plans and in testing their feasibility, providing estimates on deployment timelines and potential movement bottlenecks, as well as lift resources requirements. Through its display function, ADAMS allows movement planner to actually simulate the plan that has devised and "see" any anomaly it could contain or problem it could create. The tool has rapidly proven to significantly reduce the time required to conduct movement planning through the simultaneous consideration of multiple movement planning factors and limitations. Using ADAMS for simulations, evaluation and analysis of the planned national movements enables the users to identify shortfalls and refine the movement flow.
2. ADAMS allows the nations and organizations providing forces to a NATO-led operation to report detailed data, in a standard format, on force and equipment

characteristics, movement routes and nodes, schedules, and supporting transportation assets. ADAMS enables rapid preparation, merging, de-confliction and dissemination of movement plans between nations and NATO commands.

3. ADAMS provides both a strategic overview and a detailed forecast of arrivals in theatre by air and surface means of transportation. Before the inception of EVE, ADAMS was used during deployment execution to monitor the progress of the deployment and to disseminate deployment information through frequent and multiple updates of the individual and multinational DDP.

4. ADAMS provides the basic capability to conduct the high level planning of RSOM operations through the consideration of transportation nodes and route throughput and characteristics, as well as through the establishment of road and rail transportation networks and simulated vehicle convoys and railway trains. The software can therefore be used to assess obvious limitations and to establish potential bottlenecks at the early stages of the strategic movement planning process, but should be supplemented as soon as possible by the use of CORSOM by RSOM specialists.

E106 Brief description of EVE

1. EVE is NATO's tool to provide visibility over movement and transportation of military resources during multinational, coalition operations. This software provides details of movement missions, either initially created in ADAMS or CORSOM, created directly into EVE, or provided from external sources, during the execution phase of an operation. This includes all movement, deployment, redeployment, sustainment and rotation of forces, to a level of granularity to be determined for each specific operation. EVE allows the user to fine-tune arrivals and departures, and to manage transportation node capacities. It is capable of managing aircraft slots and convoy credits and can be used to manage cargo and passenger manifest information. In addition to its primary mobility management functions, it provides the full visibility for ongoing and planned transport missions to all participating nations.

2. NATO's vision is to have EVE as the single, combined, joint, effective and efficient automated information system that integrates national transportation information of units, passengers and cargo during day-to-day operations, to create a multinational movement overview. It mainly imports, displays, provides statistics and reports on movement data information as to follow, if not in real time at least in near-to-real fashion, the different movements related to a specific exercise or operation**.** For near real time visibility of movements, EVE is highly dependant on timely and accurate input of current movement information.

3. EVE's main product is the Flow Execution Plan (FEP), depicting in general terms a list of all planned and ongoing movement missions, along with all relevant timings, itineraries, load details and status (e.g. Planned, Departed, Cancelled, etc). The FEP is more or less the materialisation of the DDP, with the details of each movement mission being confirmed after adequate operational coordination has occurred. The FEP should be updated as often as possible, ideally any time a change occurs to any detail related to a specific mission. EVE data can be displayed onto the NATO Joint Common Operational Picture (JCOP) via web services.

4. EVE is also used to request and authorize movement credits or “slot times”, as well as cargo and passenger lift, by having the user to enter its data in a determined template, most often in Excel format if the user does not use EVE. Any type of Movement Coordination Centre can then import the data into EVE, provide the requested authorization, and start to monitor the activities of a given movement mission.

5. A web version of EVE is being developed to improve the access to and visibility of EVE data, eliminating the large bandwidth requirements associated with data exchange and allowing remote access to a specific operation’s database. EVE web will reduce the number of EVE installations required to support any specific operation, as well as the training requirements related to its use compared to the normal EVE application.

E107 Brief description of CORSOM

1. CORSOM is the latest component of the LOGFAS M&T toolkit. It enables the performance of detailed planning for RSOM and provides visualization and oversight of theatre movements during both deployment execution and sustainment operations. It is specifically designed to support the planning and management of the operational theatre LOC, focussing on rail and road movements’ coordination, tracking, reprioritization and re-routing. It can as well be used to display and track in-theatre air and sea movements, such as for example Intra-Theatre Airlift System (ITAS) flights and ferry trips. CORSOM offers an excellent analysis capability by allowing the consideration of alternative routes and the assessment of the implications and results of such alternatives. When compared to ADAMS, it offers a much improved and more realistic convoy and train planning capability, as well as road and rail transportation assets requirements estimating functions.

2. CORSOM represents a suite of applications which are designed to be used in both the planning and execution phases of deployment operations. CORSOM has been constructed to be compatible with ADAMS and is capable of accepting the results of strategic planning activities and enable users to continue the more detailed planning required for Reception Staging and Onward Movement. In the field of deployment execution, CORSOM can integrate the data generated by EVE and allows plans to be modified in near real time to give users an overview of progress and the ability to monitor and control RSOM capacities and capabilities. Conversely, CORSOM plans and the resulting movement missions can be fed into EVE and become part of the overall operation’s FEP.

3. CORSOM was designed to provide improved visualisation functionality, allowing the user to obtain a clear picture of the geography, transportation infrastructure, facilities, allowing drawing overlays on actual maps and pictures, and interface with Microsoft tools such as PowerPoint. It is also capable of tracking convoys and trains interfacing with tracking systems or through remote connections to its database. CORSOM uses a Service Oriented Architecture to increase its interoperability with national systems, and its data can be displayed onto the NATO JCOP via web services, similar to EVE.

SECTION II – LOGFAS M&T SOFTWARE IN SUPPORT TO OPERATIONS AND EXERCISES

E108 General

This section describes how LOGFAS M&T software can be used to support the NATO operational planning process, through the movement planning process and its generated products, for both NATO-led operations and exercises. It then presents how these tools can support ongoing operations, and highlights some of the particularities related to the support to computer-assisted command post exercises in comparison to the support to operations or exercises involving real-life movements.

E109 Integration of LOGFAS M&T software in the conduct of operational planning

1. Movement planning is a distinct but integral part of the NATO operational planning process (OPP), no matter if done at the strategic, operational or tactical level. LOGFAS M&T software can produce most valuable input to every phases of the operational planning process, from *Initiation* to *Plan review*. While the use of these tools to produce some deliverables and to support specific processes may be directed from higher HQs, some other planning requirements can also greatly benefit from the timely and efficient use of LOGFAS M&T software. The following paragraphs will briefly describe how and when:

a. **Initiation.** The development of movement plans in support of NATO-led operations will be an iterative process and may begin with limited military guidance or political clearance. ADAMS can assist in identifying critical infrastructure bottlenecks and in providing advice on overall deployment timelines, while CORSOM can provide an overall evaluation of RSOM capabilities of a given area of operations. The results of the initial LOGFAS M&T tools assisted simulation and analysis can be integrated in a “fact-finding report” and/or as input to the Commander’s Initiating Directive. It is at this stage that the relevant M&T data feeding these LOGFAS tools, such as POD throughput and transportation networks, need to be updated from trusted sources to ensure that the results presented in the initiation phase and later on are as accurate as possible.

b. **Orientation.** This phase is the one where mission analysis is conducted, resulting in one or potentially many mission analysis briefs (MAB) to the Commander. The result of this phase is the Commander’s Planning Guidance (CPG). ADAMS and CORSOM can be used as described above for the *Initiation* phase, in the production of an M&T analysis report to support the MAB and CPG.

c. **Concept development.** This phase is one where various potential courses of action (COAs) are developed for the Commander’s consideration, and assessed. ADAMS and CORSOM can again be used to assess the

feasibility of considered COAs and to provide input on related considerations such as on the selection of strategic LOC, M&T organizations and manning requirements. The chosen COA will be further developed into a Concept of Operations (CONOPS) to which the M&T specialists will be expected to contribute.

The CONOPS should be supported by a Statement of Requirements (SOR, often referred to as Combined Joint (CJ) SOR in the NATO context), identifying all forces required to fulfil the operational requirements established in the CONOPS. The SOR should ideally identify the Commander's priorities and timelines in terms of desired order of arrival (DOA), of Commander's Required Date (CRD), and the planned final destination (FD) for each of the requested forces or capabilities. While the SOR should be generated from the Tool for Operational Planning, Force Activation and Simulation (TOPFAS) by J5 staff and imported in LOGFAS tools, it can be produced in ADAMS directly if deemed necessary to allow for timely deployment planning.

From the SOR, an initial MNDDP could be generated with ADAMS by M&T planners using generic forces and assets, so as to provide a gross feasibility estimate of the movement concept resulting from the CONOPS, or to simulate various potential scenarios. CORSOM could also be run with the MNDDP data for a similar simulation of the RSOM process.

Another LOGFAS M&T tool, the Trade-Offs Wizard (TOW), has recently been developed to assist in the development and evaluation of various deployment courses of action. TOW allows for the conduct of rough order of magnitude (ROM) movement planning simulations, using changing parameters such as airlift to sealift assets ratio, to establish deployment LOC options, timelines and costs. TOW will not be further described in this document as it is not a software for which the use will be mandated, but rather constitutes an additional tool to assist high-level, strategic movement planners in the conduct of their duties.

d. **Plan development.** Through the Force Generation (FG) process, the nations will offer force contributions against the requirements listed in the SOR. An Allied Force List (AFL) will be created, listing all potential forces at the Commander's disposition to meet its CONOPS, potentially showing some gaps in some capabilities and surpluses in others. Through the iterative process of *Plan development*, the plan will firm-up to include only those available forces deemed required to realize this plan, as well as all national units planned to be deployed in support to the offered capabilities (such as National Support Elements (NSEs)), to form the Allied Disposition List (ADL). The ADL then constitutes an expression of the time-phased requirements for deploying the contributed forces. It is imperative at this time that the ADL include all necessary deployment parameters such as the DOA, CRDs, PODs, and FDs, as well as all forces to be included in the overall movement plan. The development of the ADL should take into account, to the extent possible, time phasing limiting factors such as length of LOC, strategic lift availability, and

throughput capacities, amongst others. It must be noted at this time that the production of an ADL may occur later in the OPP when a SOR containing the necessary movement information mentioned above (except for force profiles and holdings) is produced, and where nations are asked to produce their DDP to match their planned contribution to such SOR. The ADL is then built from the amalgamation of all the DDPs received from TCNs, rather than being provided to nations for them to build their DDPs.

The ADL (or SOR containing information on capabilities, DOA, CRDs, PODs, and FDs) is the starting point for the combined, joint movement planning of NATO-led operations. The ADL and the national databases of forces allow the nations and other contributing organizations to develop their own DDP for consolidation by the lead headquarter, normally SHAPE J4 Allied Movement Coordination Centre for major operations and exercises, into a MNDDP. Through further bilateral exchanges with nations and the conduct of Movement Planning Conferences (Mov PCs), the lead movement coordination organization will deconflict the MNDDP to best meet the Commander's operational requirements, taking into account individual limitations. In this phase LOGFAS M&T tools will assist the Joint Operational Planning Group (JOPG) M&T representatives in developing flexible and robust movement plans and will assist movement planning staffs at all levels to exchange critical movement information and data in a timely manner. The Plan Development phase will conclude by the production of the Operation Plan (OPLAN), and the outline of the MNDDP should be reflected into a Movement Support Plan (SUPPLAN) as an appendix to the OPLAN's Movement annex (annex S).

e. **Plan review.** The *Plan review* phase begins as soon as the OPLAN is written and any part of its contents changes and needs to be modified. This phase also covers the *Execution* phase of the operation, where the plan will need to be updated regularly to meet the evolving situation. As the first movement of an operational deployment occurs, the use of ADAMS can no longer keep up with the multiple changes that will affect the planned schedules, loads, and sometimes shifting priorities. The MNDDP is converted to an EVE multinational FEP, for this software to be used to coordinate the actual movements of specific strategic lift assets through the authorisation, scheduling and monitoring of missions. The tool then provides, through the FEP, visibility over all planned missions over a given period of time, allowing the overall movement plan to be adjusted as movements occur.

Similarly, CORSOM will be used to adjust the initial RSOM plan to meet any unforeseen obstacle to its realization, allowing simulation of the use of alternate routes or any other changes that would affect ground transport operations. Concurrently with EVE, CORSOM will be used to issue movement credits to coordinate the vehicle and train movements in a theatre of operations, will provide visibility on ongoing movements, and when the proper interfaces are established will display movements in a real-time fashion using compatible force tracking systems.

E110 LOGFAS M&T software support to ongoing operations

1. As described in the previous sub-section, once a deployment has started in support of a given operation, ADAMS leaves the way to EVE and CORSOM to allow the accurate forecasting and updating of forces and materiel flow to, form and within theatre. These tools allow the existing plans to be updated or changed quickly to enable flows to be managed and de-conflicted during execution. They provide situational awareness concerning critical nodes and links along theatre LOC and are able to pass timely warnings of potential problem areas to users and decision-makers. LOGFAS M&T software enable commanders at the strategic, operational and theatre level to gain visibility over the strategic deployment (SD) & RSOM of a joint force into theatre. They allow users to update discrete elements of data to enhance reporting activities and to request services and clearances. Furthermore, both systems provide statistics and reports on movement data, allowing further analysis that can be used to improve the related plans and processes.

2. ADAMS can still be useful to ongoing operations, for example to conduct movement planning for the rotation of troops and/or significant quantities of equipment, to plan over a longer horizon and de-conflict expected peak movement activity periods, to plan the deployment of high readiness reinforcement units, or to contribute to contingency planning for various scenarios towards which the situation in a theatre could evolve.

E111 LOGFAS M&T software support to NATO exercises

1. Real-life NATO exercises involving movements of troops and cargo should follow the same operational and movement planning process as describe above, and should be supported by the use of LOGFAS M&T software in a similar fashion as for operations.

2. NATO computer-assisted exercises (CAX) should fully integrate the use of LOGFAS M&T planning tools and processes such as ADAMS and CORSOM, to ensure realistic movement input in the development of the exercise OPLAN, and to provide adequate training to M&T planners. Furthermore, when the execution of the plan is exercised, M&T staff at all involved levels should be challenged to use the same tools as they would be expected to use in support of a real operation, namely EVE and CORSOM.

3. The integration of LOGFAS M&T software in NATO exercises should not be done in isolation or as an afterthought; a movement plan done in ADAMS and showing that a specific COA is unrealistic should lead to the design or choice of a new COA, rather than to ignore the results of proper movement planning for the benefit of completing the rest of the OPP. Moreover, the simulated management of all movements into and within an area of operations require a high level of coordination and efforts to generate sufficient injects and incidents to maintain an acceptable level of activity for the training audience. The level of effort and related resources and expertise required to support the integration of the proper use of LOGFAS M&T tools should not be underestimated.

4. When designing an exercise involving movement planning and execution, the lead agency (such as SHAPE or the subordinate headquarters' J7 staff, or NATO's Joint Warfare Centre) should consider all products and processes that would normally be part of the movement management process, and ensure that they are replicated by either the training audience or the proper exercise support, control, or directing staff. For example, while the production of an MNDDP for a CAX may be entrusted to SHAPE J4 Allied Movement Coordination Centre (AMCC) in a similar fashion as for an operation, the actual production of the underlying national DDPs need to be given as a task to one or more separate entities that would play the role of troop contributing nations. Finally, the level of LOGFAS M&T software support to NATO exercises should be consistent with the level at which support would normally be expected to be provided for an operation of the same scope; an operational deployment of 1,000 troops would normally be coordinated by the responsible Joint HQ, and not SHAPE as NATO's strategic movement coordinating authority.

SECTION III – DATA AND SOFTWARE MANAGEMENT

E112 General

1. LOGFAS M&T software use the common Logistics Functional Area Services (LOGFAS) database, LogBase, for storing and retrieving movement related and other logistical data. LogBase is a federated database system, providing services spanning multiple geographically distributed databases as opposed to a single central database. LogBase uses a single scheme that is identical for all local databases. Unlike distributed database systems that presume every site is under the control of a central database administrator, LogBase supports a substantial level of autonomy for each constituent site.

2. LOGFAS components are designed for cooperative use on a common database server. Each application is, however, capable of operating on a local database in a stand alone configuration. A single LOGFAS installation is capable of working to a number of databases, whether local or on a network server, and can address each by means of a connection manager, which is a part of the installation package.

E113 Data management principles

1. **Local autonomy data.** All national and organization-specific data such as for owned transportation assets, force profiles and their holdings, and geographical locations that can be of potential national use in relation to NATO operations, are to be maintained locally by local database managers, who are responsible for the standard of data within their own database. Thus, local database administrators are responsible for the correctness and accuracy of national data, which should be constantly updated as any change occurs, especially if the data might potentially be used further for NATO movement planning purposes. The importance for nations and deployable NATO organizations to dutifully populate and maintain their LogBase database with relevant and up-to-date data cannot be over-emphasized, as the availability of such data will play a significant role in reducing planning timelines.

2. **Shared data**. Data structures and certain key data elements should be common to all users to avoid data corruption and to ensure proper coordination of multinational operations, to meet integration and interoperability objectives. SCs are responsible for maintaining and co-ordinating the shared data across functional areas as well as within LOGFAS. Implementing this concept is dependent on establishing a common data dictionary with clearly defined standard data elements, and a control system for enforcing those standards. Work to clarify, streamline and refine data requirements and standards is being conducted by the various LOGFAS communities and the Logistics Functional Services Information Management Working Group (Log FS IM WG). Such shared data may be provided to all LOGFAS users as part of the baseline dataset to be used by everyone, or only to troop contributing nations (TCNs) and concerned NATO command structure (NCS) organizations for a specific operation or exercise. Current data elements, which are being centrally managed and distributed to all users are presented below, while the specifics about shared operational data requirements are presented in the following section:

a. Commonly used geographical Locations (GeoLocs) data ("AA"), updated and maintained by Joint Forces Command HQ Brunssum (JFC HQ BS) on behalf of SHAPE J4 AMCC;

b. Reportable item codes (RIC), updated and maintained by NATO Consultation, Command and Control Agency (NC3A) on behalf of SHAPE J4;

c. Standardised transportation asset data, updated and maintained by JFC HQ BS on behalf of SHAPE J4 AMCC;

d. Standardised geographical map sets, updated and maintained by NC3A on behalf of SHAPE J4 AMCC;

e. Default real-world air and sea transportation networks for general use; and

f. Other general use generic data and exercise GeoLocs ("ZZ") being made available to users to support training, exercises, contingency planning and requirements analysis.

3. **Data access rights.** Proper data access rights should ensure that each user at the national and HQ levels is able to safeguard and maintain their own data. NATO military HQs responsible for coordination of deployment require access to national deployment data for coordination and de-confliction purposes. Such HQs can only release this data to other participating nations and HQs with the permission of the owner nation. The indication of whether the information is releasable will be indicated by the NATO security classification system, which is integrated in LOGFAS M&T tools. Need-to-know principles will be observed at all times.

4. **Data exchange.** The timely exchange of data is a critical issue in the use of LOGFAS M&T tools. During the planning phase of the deployment, rapid data

communications capability is required between the planning nations and the responsible NATO military HQ for prompt coordination. During the execution phase, rapid data communications capability between monitoring nodes in theatre of operations is necessary, due to near-real-time requirements for movement updates. Communication of data will normally be conducted over the NATO SECRET WAN (CRONOS) for classified operations, where data will be exported in LOGFAS format and sent via e-mail to be imported into the LOGFAS M&T tools by the intended recipient. When the nations and/or ADAMS, EVE or CRONOS users do not have direct access to CRONOS the data transfer ability is to be ensured via national secure lines of communication, combined with the use of the data storage media (floppy disks, CDs/DVDs, pen-drives, etc.) if necessary, in whichever way is necessary to communicate data from one entity to the other, while respecting NATO and national security regulations. In theatres of operations, theatre networks at the required mission security level will be employed. Unclassified data may be exchanged and made available for general use on the password protected unclassified NATO LOGNET web site, or via any means that would respect the security classification of the exchanged data. Data must always be handled in accordance with NATO and national security directives.

5. **Data security.** Security is concerned with the application of security principles and measures for the protection from unauthorised access to, interference with, or destruction of, information stored and processed on the NATO and national systems. LOGFAS M&T software are designed to operate at the lowest authorised security classification level consistent with the intent stated above, while allowing the widest possible access to authorised users. Consequently, LOGFAS M&T software is classified as “NATO UNCLASSIFIED Releasable to PfP”, and is also officially released by NATO to a limited number of other nations and international organizations. It is only the data entered in a specific LogBase database that can make the LOGFAS M&T products of a higher security classification. Within NATO military HQs the security classification of the shared data may be up to and including NATO SECRET. As previously stated, data will be maintained and handled in accordance with NATO and national security directives. The security classification established by the lead NATO HQ for the exchange of movement data for a specific operation should, to the maximum extent, be respected by contributing organizations to ensure the completeness and usability of movement planning and execution products.

E114 Operational data management considerations

1. During the preparations for an exercise, or during the build-up to a crisis, when the use of ADAMS, CORSOM and or EVE is anticipated, the relevant planning HQs must consider the following to insure maximum use of the capabilities of LOGFAS M&T software:

a. **Geolocations.** It is possible that the potential deployment LOC will include GeoLocs that are not included in the current version of the LOGFAS software. Similarly, the provided “AA” GeoLocs may contain critical data that is no longer valid and that should be changed for all users to ensure proper

planning. It is important that these GeoLocs be added to the database in the coordinating HQ, and then exported and sent to the national or subordinate M&T planning cells. This will ensure that GeoLocs data is consistent in all national plans that will be developed, and that no outdated or wrong data overwrites the valid one.

b. **Networks.** Air, Sea, and most importantly Road and Rail networks should be created at the coordinating HQs and exported for use by national planners. Since the network data contain detailed infrastructure restrictions and throughput information, it is important that those data are researched and then included in the networks provided to subordinate entities.

c. **Maps and diagrams.** It is possible to prepare sets of maps and special drawings, charts and diagrams useful for deployment planners. Many such documents should be created if deemed necessary and sent to national planners to facilitate visualization of the common plan.

d. **Transportation Assets.** If special sets of transportation assets such as commercial ships or aircraft will be used for a deployment, for example if chartered by the coordinating HQ, the data related to the assets characteristics can be prepared and forwarded to the concerned national planners for their further movement planning needs.

e. **Naming conventions.** The lead coordinating HQ should provide to all involved data providing organizations, early at the start of the planning process, the necessary guidance on any naming convention. For example, the recognized plan name and the file name format for the exchange of DDPs or FEPs should be communicated early on to avoid confusion and potential incompatibility problems that could occur during the import process.

f. **Reference date and time determination.** A common reference date to be used for planning purposes should be defined in the use of LOGFAS M&T tools, particularly in ADAMS and CORSOM, be it by what is known to be the “C”, “G”-day or any other accepted qualifier, to ensure that all movement planners have a common reference in time with regards to any given planned movement activity, in reference to a major specific event such as for example to day on which a given operation is authorized. The reference date should be clearly identified and communicated, and its qualifier should be well defined to ensure it is well understood by all involved stakeholders. For the execution phase, the dates of the Julian calendar will normally be used. The time zone to be used in all communications and data exchange should also be declared to ensure proper coordination of any activity; normally the “Zulu” or Coordinated Universal Time (UTC).

E115 Software maintenance, distribution, compatibility and version control

1. **Software maintenance.** LOGFAS software management, maintenance and technical support is under the responsibility of the NATO Communication and

Information Systems Services Agency (NCSA). NCSA releases patches, service packs and new versions of the software to address problem areas, operational requirements, as well as to follow the normal software development cycle to integrate new functionalities and developing technologies, or improve existing ones.

2. **Software distribution.** New LOGFAS M&T software versions will be distributed by NCSA via LOGFAS DVDs to authorised users, as per the list of national LOGFAS Office of Prime Responsibility (OPR) identified to SHAPE J4, and as per the list of LOGFAS M&T Point of Contact (POC) maintained by SHAPE AMCC's Operational Manager (OM) for LOGFAS M&T software. The DVDs will include the latest versions of the common and shared data, such as "AA" Geolocs and RICs for example, and supporting documents such as tutorials, RIC SOPs, and information on the included software changes. The latest authorized versions of LOGFAS M&T software modules will also be posted and downloadable from both the NATO Secret and the password protected NATO unclassified LOGNET sites. Between the release of LOGFAS versions, software patches and upgrades will normally be posted on the LOGNET sites and known users, LOGFAS OPRs and LOGFAS M&T POCs will be advised via e-mail on the release and availability of such software changes.

3. **Software compatibility.** NCSA, as the technical management authority for NATO Automated Information Systems (AIS) is to ensure that, ultimately, operational software that are part of the same business process are compatible and complementary. For example, SORs produced in TOPFAS should seamlessly feed into ADAMS, and both EVE and CORSOM execution data should be able to be displayed on JCOP. LOGFAS modules should all feed from a common database, namely LogBase, and collectively support all logistics and movement planning, execution and reporting requirements.

The current version of LOGFAS M&T software should normally be **"**backward compatible" with the previous version, i.e. be able to import and process data exported from the last version, unless the most recent version constitutes a major re-engineering of the said software. In such a case, a conversion mechanism will be devised and provided by NC3A to ensure data can be transferred from the old to the new version.

As mentioned earlier in the sub-section on *Policy* of the present document, nations are responsible to establish the adequate data transfer mechanism from national software into LOGFAS and to provide it to NATO in LOGFAS format. NCSA or NC3A may assist nations to do so, but the cost of such support is to be born by the requesting nation. When nations establish such interfaces from national system to LOGFAS software, they should ensure both NC3A and NCSA are formally made aware so these organizations can fully consider the potential impact of planned software changes, and endeavor to minimize the negative effects they could have on the affected nations' capability to produce the required data.

4. **Version control.** The current version of LOGFAS M&T software will appear on NCSA's Approved Fielded Product List (AFPL), authorizing their installation on NATO systems and computers. While a version of the software will normally be **"**backward compatible" with the previous version, some modules may reject data or create problems with key data that has not been updated, such as for earlier versions of RICs lists. Any responsible HQ receiving data produced in an outdated version of LOGFAS M&T software should promptly advise the concerned data provider and assist the latter in obtaining the current version of the specific modules involved.

E116 Tasks and responsibilities

1. The following list depicts the expected involvement of the listed stakeholders in the routine management process of LOGFAS M&T software and data, and in their support. It also highlights the major tasks and responsibilities related to the use of LOGFAS M&T software in support of operations and exercises. While this list is not exhaustive, it nevertheless provides valuable guidance on "who does what" with regards to the use of and support to fielded LOGFAS M&T software:

a. **NATO Troop Contribution Nation (TCN).**

- Provides updated Geolocs data for locations of strategic significance located on their territory for inclusion and maintenance of the "AA" Geolocs list.
- Maintains sufficient number of trained staff LOGFAS M&T to meet determined national and NATO requirements.
- Identify a national OPR for LOGFAS matters, and a LOGFAS M&T POC (the two may be the same), to act as a conduit for information and software distribution and to represent national interests when input is requested.
- Develops and provides national DDP in LOGFAS format for forces being deployed on NATO operations and exercises.
- Provides requested data to feed into LOGFAS M&T execution software such as EVE and CORSOM, in LOGFAS format or as required and accepted by the concerned movement coordination organization.

b. **Non-NATO TCN.**

- Non-NATO nations to which LOGFAS has been released are encouraged to adhere to the list of tasks and responsibilities mentioned above for NATO TCNs.
- Obtain assistance from a NATO TCN, the lead Joint Headquarters (JHQ) or SHAPE J4 AMCC to provide their DDP in LOGFAS format.

c. **Host Nation (HN).**

- Provides data and information on transportation infrastructure for strategic movement and RSOM planning purposes to the responsible planning HQ.
- Can also act as the RSOM Command and Control Authority (C^2A) and in this capacity can exchange data with TCNs, integrate national DDPs in the overall RSOM plan, and monitor and coordinate the execution of RSOM activities using the relevant LOGFAS M&T software.

d. **Lead Nation (LN).**

- Assists non-NATO nations, for which responsible, in the development of LOGFAS data for deployments.
- If named the RSOM C^2A, updates infrastructure data in areas for which responsible in the Theatre of Operations (TOO) and plans, monitors and coordinates RSOM activities using the relevant LOGFAS M&T software.

e. **SHAPE J4 AMCC.**

- Develops procedures and co-ordinates LOGFAS M&T software implementation in support of NATO-led military operations.
- Assists in the development of the overall strategic plan through simulation and analysis using LOGFAS M&T tools.
- Prepares and issues the LOGFAS M&T initiating planning data (Plan, SOR, ADL or draft MNDDP).
- Prepares the required common input data for a specific operation (GeoLocs, transportation networks, etc.) and distributes to TCNs and other concerned organizations.
- Facilitate the provision of LOGFAS M&T data by non-NATO TCNs through the assistance from LN, JHQ, or SHAPE J4 AMCC if required.
- Develops the MNDDP and hosts Movement Planning Conferences as required to de-conflict and coordinate the final MNDDP.
- For a specific operation, coordinates with and provides support to the lead JHQ and other involved M&T organizations with regards to required data exchanges on forces deployment, redeployment, RSOM and transportation operations for sustainment.
- Supports NATO exercises within means and capability, most often providing advice as Subject Matter Expert (SME) on movements planning, or amalgamating DDPs into an exercise MNDDP in cases where SHAPE AMCC would normally be expected to produce such for an operation of similar scope.

f. **Operational Manager for LOGFAS M&T software (SHAPE J4 AMCC).**

- Coordinates with the developing (NC3A) and maintenance authorities (NCSA) to ensure the improvement of and proper support to the LOGFAS M&T software, on behalf of all existing and potential users.

- Maintains good liaison with existing users for the distribution of LOGFAS M&T software and dissemination of relevant information.
- Ensures the software developments are aligned with established NATO M&T policies and directives, and that conversely the policies and directives reflect the established processes related to the use of these systems.
- Represents the needs and considerations of the NATO Movement community in relation to LOGFAS and other functional area services, especially towards any effort for database harmonization and software compatibility.
- Acts as “AA” GeoLocs Executive Officer and leads the related management process.

g. **Joint HQ.**

- Assists in the development of the operational plan through simulation and analysis using LOGFAS M&T tools.
- Provides DDPs for the deployable HQ elements and subordinate NATO units assigned for a specific operation (such as the Deployable Joint Staff Element components and NATO Signals Battalion).
- Provides input on operational requirements in the MNDDP de-confliction process, taking part in Mov PCs.
- Is responsible for the development of the RSOM plan, either as the designated HQ to act as the RSOM C^2A, or in a lead/oversight role to any other entity nominated to act in this function, be it a HN, LN, or other organization.
- Builds up the theatre infrastructure data for operations for which they are responsible.
- Represents the operational and training needs of their supporting missions with regards to LOGFAS M&T systems.
- For exercises conducted at JHQ level, when SHAPE J4 AMCC is not part of the training audience nor specifically identified as a supporting agency, assumes the roles and responsibilities of that organization.

h. **Component Command HQ.**

- Provides the DDP for the deployable CC HQ element and assigned subordinate NATO units, if applicable.
- Provides input on CC operational requirements in the MNDDP de-confliction process, taking part in Mov PCs.
- Acts as RSOM C^2A (applicable mainly to CC Land), if so nominated.

i. **NC3A.**

- Conducts scientific analysis and modelling in support of SHAPE J4 AMCC and within means and capability to other NATO movement organizations.

- Develop further functionalities and software prototypes, when tasked, to meet emerging operational requirements.

j. **NCSA.**

- Responsible for the maintenance and management of the NATO AIS systems once fielded. As such, arranges for the testing and certification of LOGFAS M&T software, their release and distribution, the development of supporting user documentation, and the provision of technical support as required for their implementation and use.
- Oversees the provision of training through the NATO Communications and Information Systems School (NCISS) located in Latina, Italy.

k. **NATO Communications and Information Systems School (NCISS**). Coordinates the establishment, documentation, delivery and review of LOGFAS M&T software courses to ensure the efficient provision of sufficient, relevant and high-quality NATO approved training for these systems.

SECTION IV - HUMAN RESOURCES CONSIDERATIONS

E117 Target users

LOGFAS M&T software are designed to provide data and information across a wide range of user sites. Not all locations will have access to all information and the aim of the LOGFAS M&T toolkit is to provide the minimum necessary information to each node in the movement information chain. The following user locations are seen as the most likely at present:

- Allies Command Operations (ACO), SHAPE J4 AMCC
- Joint Force Commands (JFCs) and Joint Command JFC (JC)
- National M&T Planning and Operations Staffs
- Component Command HQs
- Joint Logistic Support Group (JLSG) HQ (if established)
- Joint Theatre Movement Staff (JTMS) (if established)
- Land Component Rear Support Command (RSC) HQ
- Regional Air Movement Coordination Centre (RAMCC)
- Advanced Logistics Support Site (ALSS) or Forward Logistic Site (FLS)
- National Support Elements (NSEs)
- Airports and Seaports of Debarkation (PODs)
- Other major theatre entry points (road, rail or inland waterway)
- Locations established to control, support and regulate RSOM activities such as Marshalling Area (MA), Staging Area (SA), Convoy Support Centre (CSC) and Assembly Areas (AA)

E118 Manning requirements

1. To allow the various HQs of the NATO command structure and the TCNs to meet their responsibilities described in the previous section, consideration should be given to establish and maintain sufficient staff trained in the use of LOGFAS M&T software, consistent with the foreseen use of each ADAMS, EVE and CORSOM and potential staff contributions to NATO exercises and operations. Ideally, at least two positions should be created to fulfil the relevant tasks associated with the management of LOGFAS M&T software, as follows:

a. **LOGFAS M&T Manager.**

- Represents its nation's/organization's interests at LOGFAS M&T user group conference and related movement working groups, and provide input to the national/HQ LOGFAS OPR if established.
- Coordinates the creation, maintenance and provision of shared data under their responsibility, such as "AA" Geolocs.
- Coordinates the creation and maintenance of local data under their responsibility, for potential use in NATO movement planning and execution activities, such as force profiles and holdings, and owned transportation assets.
- Requests changes to established, centrally managed data such as RICs and "AA" Geolocs.
- Reporting and resolution of software and database problems with the competent authorities, normally NCSA or the OM for LOGFAS M&T software.
- Ensures that a sufficient number of trained LOGFAS M&T operators exist to meet determined national and NATO requirements.
- Coordinates for the acquisition, installation and local support to LOGFAS M&T software.

b. **LOGFAS M&T Operator.**

- Should be fully trained and maintain currency on the LOGFAS M&T tool(s) expected to be used at his organization's level.
- Creates and maintain local data under their responsibility, for potential use in NATO movement planning and execution activities, such as force profiles and holdings, and owned transportation assets.
- Identifies through its LOGFAS M&T Manager any issue and requirements related to LOGFAS M&T data and software management, as well as to software functionalities.

E119 Training

1. There are various training opportunities related to the use of LOGFAS M&T tools. Formal courses are provided by NCISS in Latina, Italy. Details on course contents, schedules, nomination, joining and administrative instructions for the available courses can be found on the school's website, at http://www.nciss-nato.it**.** The following courses are available:

a. **ADAMS Basic: 2 weeks, 4 courses a year, 24 students maximum;**

b. **ADAMS Advanced, 1 week, 2 courses a year, 24 students maximum;**

c. **ADAMS Staff Officer, 1 week, 2 courses a year, 24 students maximum;**

d. **EVE Users, 1 week, 4 courses a year, 24 students maximum; and**

e. **CORSOM Users, 1 week, 4 courses a year, 24 students maximum.**

2. All courses have one PfP serial scheduled each year, where PfP nations have priority for seat allocation, except if operational requirements dictate otherwise and as determined by the LOGFAS M&T OM.

3. Mobile Training can also be coordinated at the requesting nation and organization's preferred locations, as can be coordinated with NCISS and depending on instructors' availability. The cost of such courses is to be borne by requesting organizations, but the cost can often be less than to send a number of candidates to Latina.

4. There are also other training and information opportunities provided by LOGFAS M&T software events. The most notable ones are the annual Exercise STEADFAST MOVE and the LOGFAS M&T User Group Conference. STEADFAST MOVE normally lasts 5 days, and has historically been a movement planning exercise using mainly ADAMS, and conducted in May. Future iterations of this exercise will more than likely integrate the use of EVE and CORSOM. The LOGFAS M&T User Group Conference is normally held in the fall of each year, lasts 2 to 3 days, and convenes potential participants from all NATO and Partnership for Peace (PfP) nations, as well as NATO JHQs and their subordinate components commands and any nation or organization to which LOGFAS M&T software has been officially distributed. Target audience are movement planners and individuals working in movement co-ordination functions that are mandated to use or could benefit from using NATO LOGFAS M&T software. This event is aimed at briefing participants on the latest developments related to LOGFAS M&T software, and serves as a forum for the exchange of ideas on how these tools could be improved and how the related processed could be changed or adapted.

5. Other NATO exercises have integrated the use of LOGFAS M&T software to varying degrees, consistent with the level of implementation and maturity of each software. It is foreseen that the use of LOGFAS M&T tools in NATO exercises will increase significantly over the coming years.

Annex F

Movement and Transportation Training Matrix

F101 Movement Control staff

Task	Performance/training requirement	Individual	Collective
Define movement requirement	- Identify movement requirements for units, personnel, equip, supplies	Basic ADAMS (6.1), MLOPC, NATO Movement Course National staff training	Movement exercises
Movement recce	- Determine resource requirement - Determine capacity of terminals and LOCs - Report/brief recce report	National movement training	Movement exercise
Planning and scheduling	- Identify routes - Identify terminals - Determine MOTs - Develop movement plan - Knowledge of characteristics of MOTs	Basic ADAMS (6.1), MLOPC, NATO Movement Course, National movement courses,	Movement exercises, SF Flow
Develop DDP	- Develop DDP	ADAMS advanced course (6.0), National movement course	SF Flow
Directing movement	- Communication procedures - Use of EVE - Maintaining visibility - Reacting to changes	EVE, ADAMS Staff Officers Course, Basic military training (map reading, communication)	CPXs (all levels)

Coordinating movement at all levels within the command	- Deconfliction of priorities - Use of external co-ordinating bodies	EVE, ADAMS Staff Officers Course, National movement courses	CPXs (all levels)
Allocating available strategic military transportation resources and defining the requirement when the contracting of civilian resources is required	- Legal and contractual aspects of transport asset selection - Asset selection procedures - General load planning	National movement course	
Issuing of movement orders, procedures and instructions	- Convert planning to orders for moving units and MovCon units	National staff training	CPX (all levels)
Tasking the Movement Control Units	- Allocate tasks to MovCon units (terminals, LOCs, border cross., HNS)		Movement exercise, CPX (all levels)

F102 Movement Control line organisation

Task	**Performance/training requirement**	**Individual**	**Collective**
Implementing orders and instructions issued by the movement staff which may include the tasking of allocated transport resources	- Allocation Movcon personnel to task - Identification of resources needed for the line organisation	National movement course	Movement exercise
Conduct reconnaissance of terminals and lines of communications	- Conduct recce - Complete recce reports - Sourcing information (open sources)	National movement course	NATO and national movement exercises
Maintain current information including locations of units, installations and depots, movement requirements, changes in movement capabilities and the status of the local transport situation	- Ability to report - Communications - Reporting requirement (from higher HQ)	Reports and returns as mandated (no specific training required)	Movement exercise

Understand travel documents requirements	- Have knowledge of travel documents requirements - Be able to advise on documentation - Validation of travel documents	National movement course (in line with AMovP)	
Establish and maintain liaison with installations such as depots, representatives of transport units and relevant civilian agencies including host nation	- Mission specific - HNS regulations	Mission specific training	
Consolidate, arrange and task for transport services in connection with non-programmed movement requirements of local units, installations and depots	- HET/LET, busses, vehicles, containers - Prioritization - Task in time and space - Arrange civil/military transport	National movement course	Movement exercise
Ensure efficient utilization of transport resources allocated by the Movement Staff. Ensure movement is achieved by designated means in the right priority	- Detailed load planning	National movement course	Movement exercise
Detailed load planning	- Aircraft load planning - Ship load planning - Train load planning - Truck load planning (HET/LET)	National movement course	
Where appropriate arrange for the provision of customs and assist in customs and immigration clearances, when required	- Knowledge of custom and immigration regulation - SOFA, MoU's etc.	Mission specific training	
Complying with local regulation, where applicable	- Detailed knowledge of applicable regulation	Mission specific training	
Ensure all movement is properly documented	- Pro forma invoice - Custom papers - Airway bills - Veterinarian certificates - Bill of lading	National movement course	

	- Manifests		
Monitoring and reporting	- MOVASSESSREP, MOVSITREP - EVE reports - National systems	EVE training, CIS training	
Operate nodes & terminals	- Operating relevant MHE - Operating security equipment (X-ray, metal detectors, etc) - Establishing holding and marshalling areas - Establish a layout for nodes & terminals	National movement course	CPX (all levels), NATO and national movement exercises
Load preparation. Ensure that shippers and carriers comply with the regulations concerning dangerous goods and any material needing special handling and obtain the necessary approval for movements prior to shipment	- Dangerous goods - Vehicles - Personnel - Ammunition - Container stuffing - Load securing - Pallet building	National movement course	

F103 Transportation units

Task	**Performance/training requirement**	**Individual**	**Collective**
Conduct road reconnaissance	- Conduct recce - Complete recce reports - Sourcing information (open sources)	National transportation courses	NATO and national exercises