ASPECTS OF NATO

Series 1 No 12

Infrastructure and Logistics

Introduction

Responsibilities

It is a basic tenet of the Alliance that each nation is responsible for the continuing support of its forces, but it is recognised that adherence to the letter of this principle would lead to considerable and uneconomical duplication of effort by nations. The Major NATO Commanders are responsible for coordinating the support planned and provided for the Alliance forces allocated to their command, and, in so doing, help to ensure economy and efficiency. It is also the Major NATO Commander's responsibility to state the capabilities that he requires of the forces assigned to him to meet his operation commitments.

Apart from the operational aspects of coordination covered by the Major NATO Commanders, other bodies such as the Conference of National Armaments Directors, the Senior Civil Emergency Planning Committee, and the Senior NATO Logisticians Conference, all of which include NATO Military Authority representation, have advisory, coordinating and planning responsibilities within their own fields of endeavour which contribute to Alliance infrastructure and logistics.

Common Requirements

Inevitably, there are many areas where requirements are common to more than one nation. In such instances, a cooperative approach will usually be more economical than individual effort by each nation. The scope for cooperation is limited by such restrictions as nations feel they must apply to protect their other national interests. Within the Alliance, it has been extended profitably to cover many fields, ranging from the provision of commonly used facilities to the joint procurement or support of systems. Wherever a requirement is established as applying to more than one nation, it is profitable to examine the possibilites of a joint solution.

Coordination of Effort

The need for a common NATO infrastructure programme quickly became apparent in 1950. The limited infrastructure programme adopted by the Western European Union, formed under the Brussels Treaty, led directly to the present commonly-funded NATO Infrastructure Programme.

Much cooperative action is also being undertaken under the aegis of the Conference of National Armaments Directors, which has facilitated coherent logistics support by agencies such as the NATO Maintenance and Supply Agency. In addition, the need for closer cooperation over the use of logistics resources, to achieve greater efficiency and thereby improve combat effectiveness within the Alliance, has been recognised, and the establishment of the Conference of Senior NATO Logisticians, as a joint civil-military advisory body, approved.

NATO Common Infrastructure

Definition

Infrastructure in the NATO context means those fixed installations, within the agreed limits for common funding, which are necessary for the deployment and operation of the armed forces, e.g. airfields, signals and telecommunications installations, military headquarters, fuel pipelines and storage, radar warning and navigational aid installations, port installations, missile installations, forward storage sites and support facilities for reinforcement forces. Because of the requirements of modern weapons, certain mobile facilities closely associated with these fixed installations are classed as an integral part of infrastructure.

Installations set up at the request of Major NATO Commanders for the training of international forces in peacetime, and for their operational use in wartime, rank as "common infrastucture". Such installations are financed collectively by member governments, and may be used by each of them, but acquisition of sites and provision of certain local utilities remain a national responsibility.

National infrastructure, that is installations set up solely for the use of national forces, or those portions of NATO installations exceeding NATO common-funding criteria, are paid for out of national budgets.

Western European Programme

At the time the Western European Union was formed, the forces available were limited and an infrastructure programme of only some £ 32 million was envisaged. Most of the installations, consisting of airfields and signals networks, were to be set up in France and the Netherlands for the use of the five Brussels Treaty Powers – the United Kingdom, France, Belgium, Luxembourg, and the Netherlands. These powers agreed to share the cost of the programme which, when it was inherited by NATO, came to be known as Infrastructure Slice I.

NATO Programmes

The principle of cost-sharing, or common-funding, as it has become known, was adopted by NATO for the following Slice (Slice II), and the principle was perpetuated for the subsequent Slices or Programmes.

Up to and including Slice IV, the NATO Military Authorities submitted infrastructure programmes annually to the Council for approval, and a cost-sharing formula had to be devised for each.

To avoid over-frequent discussions on cost-sharing, the Council requested the submission of cost estimates and a general outline of programmes designed to cover several years, so that a single cost-sharing formula could be applied throughout the duration of these longer-term programmes, referred to as a "Group of Slices". The military authorities are still required to submit to the Council detailed programmes and estimates for each annual slice. The first of the longer-term programmes was drawn up for the three years from 1954 to 1956 (Slices V to VII), the second for four years from 1957 to 1960 (Slices VIIb[1] to XI).

In May 1960, the Council agreed on a single cost-sharing formula for Slices II to VII (1951–1956) to replace the four formulae previously applied to these slices. In July 1960, a third four-year programme was approved for the years 1961–1964 (Slices XII to XV).

On September 7, 1966, the French Permanent Representative told the Council that his country would not in future take part in either planning or financing the common infrastructure programmes. With respect to the already agreed Slices – up to and including Slice XVII – France would only maintain her participation in those individual projects for which funds had already been authorised by the Infrastructure Payments and Progress Committee. It would withdraw completely from projects in those slices for which funds had not yet been authorised.

France, however, decided to continue to participate in the NATO Air Defence Ground Environment (NADGE) programme which constituted a special case, as well as in certain warning installations, under special agreements for cooperation in these fields. In this way, France has continued to participate in a certain number of projects concerning early warning installations.

In 1975, France reaffirmed her interest in projects and works relating to alert and long-range detection, with the reservation that the procedure for discussion and decision should be made in the framework of the fifteen nations and according to the normal rules, described later in this chapter.

Following the adoption of this position, France participated in the financing of a part of the warning installation projects in Slice XXVI and has participated fully in this category since Slice XXVII.

As a result of the French decision, the programme for Slices XVI–XX had to be reduced by almost the whole of France's share, which originally stood at £ 30 million.

In February 1970, the Defence Planning Committee approved a new five-year plan amounting to IAU 250 million[2] for the period 1970–1974 (Slices XXI to XXV).

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[1] Slice VIIb was devoted entirely to works to be carried out in the Federal Republic of Germany, which had just joined the Alliance. The Federal Republic has financed 50 % of this slice.

[2] IAU – Infrastructure Accounting Unit, used as base for the conversion of different currencies (Note: 1 IAU = £ 1 at the rate prevailing before its 1967 devaluation).

In December 1973, the Defence Planning Committee agreed to an additional amount of IAU 55 million being provided for the financing of Slice XXV, since the funds previously approved were not sufficient to cover the needs beyond the first four slices of this five-year programme.

In December 1974, the Ministers approved a ceiling of IAU 400 million for the years 1975–1979 (Slices XXVI to XXX). Since this amount was insufficient, an additional sum of IAU 140 million was approved by the Ministers in December 1977 (see Table IV).

French participation in the early warning projects has enabled the ceiling of this group of slices to be increased by some IAU 6,7 million.

In May 1979, the Ministers approved the ceiling of IAU 1,000 million for the new five-year programme, 1980-1984 (Slices XXXI-XXXV). At the same time, the Ministers revised the existing cost-sharing to take into consideration the Turkish and Portuguese economic situations. The new cost-sharings for this slice group are shown in Table V).

The total cost of NATO Common Infrastucture from 1951 to date, including the first slice planned by the Western European Union, the projects in Germany before the latter became a member of NATO, and the European Defence Improvement Programme is approximately IAU 3,530 million (see Table VI).

Cost-sharing formulae

Since common installations can be used by the forces of each member country of the Alliance, the country on whose territory installations are set up, the "host country", cannot and should not bear the cost of these installations alone. Furthermore, for geographical and strategic reasons, certain member countries are required to act as host to a greater number of installations than others. Contributions from the other countries, some of which may be users of the infrastructure installations, represent the only fair way of paying for these projects.

The common financing of the installations is worked out on the basis of a cost-sharing formula drawn up by NATO and agreed by all. This is based as far as possible on three criteria: the contributive capacity of the member countries; the advantage accruing to the user country or countries; and the economic benefit to the host country.

The contributive capacity of member countries is calculated on the basis of the national product, i.e. the best available indication of the wealth of a country and of its capacity to pay. The contribution of the user countries is justified in part by the extent to which their forces will employ the installations in question. In many cases, the economic benefits to the host country are by no means negligible. The influx of foreign exchange, employment for local labour, improvements to the local transport system and arrangements for facilities such as pipelines and telecommunications, all subsequently strengthen the host country's economy. However, these economic benefits are in part counter-balanced by the obligation of the host country to bear expenditure not eligible

Infrastructure Cost-Sharing Formulae – *Table I*

Slices I to XV

Country	Slice I Cost-sharing approved in 1950 (Brussels Treaty Powers) %	Slices II to VIIa Cost-sharing approved in June 1960 (Paris)[3] %	Slices VIII to XI Cost-sharing approved in February 1957 (Paris)[4] %	Slices XII to XV Cost-sharing approved in February 1961 (Paris) %
Belgium	13.18	5.462	4.39	4.24
Canada	–	6.021	6.15	5.15
Denmark	–	2.767	2.63	2.87
France	45.46	15.041	11.87	12.00
Germany	–	–	13.72	20.00
Greece	–	0.750	0.87	0.67
Italy	–	5.681	5.61	5.97
Luxembourg	0.45	0.155	0.17	0.17
Netherlands	13.64	3.889	3.51	3.83
Norway	–	2.280	2.19	2.37
Portugal	–	0.146	0.28	0.28
Turkey	–	1.371	1.75	1.10
United Kingdom	27.27	12.758	9.88	10.50
United States	–	43.679	36.98	30.85

[3] This formula replaces the shares previously applied in Slices II, III, IVa and IVb to VIIa.

[4] Expenses up to 50 % of cost of Slice VIIb (entirely devoted to Germany) are paid entirely by the Federal Republic.

for common funding, such as the purchase of land and the provision of public utilities.

Tables I to V show how the cost-sharing has been broken down between the different member countries in the groups of slices approved to date.

The cost-sharing formula agreed by the member countries for Slices I–XV are shown in Table I. In Table II, the contributions by countries for Slices XVI to XX are shown, not in percentages, but in fixed sums agreed upon by the nations.

Table III shows the cost-sharing formula agreed in February 1970. The revised ceiling amounted to IAU 305 million. In addition to this amount, due to lack of funds to cover the necessary military requirements for this period, certain European nations agreed to the financing of an additional IAU 150 million under the European Defence Improvement Programme (EDIP), which was originally intended to finance the Aircraft Survival Measures (ASM) programme and the first phase of the NATO Integrated Communications System (NICS). In view of the extent of the survival programme and its cost, it has only been possible to cover a portion of the ASM programme under EDIP.

Table IV shows the cost-sharing formula agreed in 1974. The revised ceiling amounting to IAU 546.7 million takes into consideration French participation in this Slice Group. A special programme covering installations used by United

States forces in Europe, and for which the eligibility criteria have been extended, is also included.

Table V shows the current cost-sharing formula. It takes Into account the Portuguese and Turkish reductions, but at present is only applicable for the first slice of this group.

Table II

Slices XVI to XX
(in thousands of £s)[6]

Country	Total
Belgium	10,500
Canada	12,500
Denmark	7,000
France	30,000[5]
Germany	49,850
Greece	1,500
Italy	15,000
Luxembourg	400
Netherlands	9,650
Norway	5,900
Portugal	700
Turkey	2,500
United Kingdom	23,750
United States	58,750

Table III

Slices XXI to XXV
(Programme of IAU 305 million)

Country	%
Belgium	5.3031
Canada	6.3132
Denmark	3.5354
Germany	25.1767
Greece	0.7576
Italy	7.5757
Luxembourg	0.2020
Netherlands	4.8738
Norway	2.9798
Portugal	0.3535
Turkey	1.2626
United Kingdom	11.9950
United States	29.6716
	100.000

[5] This amount is the initial amount. It was revised by decision of September 7, 1966.
[6] At the rate prevailing before the 1967 devaluation of the pound.

Table IV

Slices XXVI to XXX
(Programme of IAU 546.7 million)

Country	% at "14"	% at "15"
Belgium	5.5025	4.8215
Canada	6.3132	5.4825
Denmark	3.7012	3.2142
France	–	13.1580
Germany	26.3585	22.8902
Greece	0.7932	0.6888
Italy	7.9313	6.8877
Luxembourg	0.2115	0.1837
Netherlands	5.1026	4.4312
Norway	3.1197	2.7092
Portugal	0.3701	0.3214
Turkey	1.3238	1.1497
United Kingdom	11.9950	10.4167
United States	27.2279	23.6452

Table V

Slices XXXI to XXXV
(Programme of IAU 1,000 million)

Country	% at "14"	% at "15"
Belgium	5.5912	4.8446
Canada	6.3578	5.5087
Denmark	3.7273	3.2296
France	–	13.2209
Germany	26.5446	22.9996
Greece	0.7932	0.6888
Italy	7.9873	6.9206
Luxembourg	0.2130	0.1846
Netherlands	5.1386	4.4524
Norway	3.1417	2.7222
Portugal	0.2011	0.2011
Turkey	0.8045	0.8021
United Kingdom	12.0797	10.4665
United States	27.4200	23.7583

Financial arrangements

NATO neither holds nor administers funds allocated to infrastructure. The member countries enter into mutual financial commitments and through offset or net payments make their contributions in advance for each stage of construction, as called for by the host country. Actual payments for projects are made by the host country, using contributions from the other member countries, to which it adds its own. A record is kept of all these transactions by the NATO International Staff, which keeps track of the account situation of each host country on the basis of advance contributions paid and actual expenditures reported.

Programme formulation

The formulation of programmes is initially and principally the responsibility of the military authorities. Once a long-term programme proposed by the NATO Military Authorities has been accepted by the Council or the Defence Planning Committee, the most urgent work is started as soon as possible in the different subordinate command areas.

The first step in formulating a yearly programme or slice is for the subordinate commands, after consultation with nations, to inform their Supreme Commander of infrastructure work needed in their assigned areas. The Supreme Commanders coordinate these requests, after ensuring that the proposed installations are indispensable to the support of forces and that they are available for common use or have a common interest.

Examination of proposals

After a general examination carried out in cooperation with experts from all countries, the Supreme Commanders propose an infrastructure slice for the year in question. The proposed slice is examined by the Military Committee which, in its turn, makes recommendations to the Council or the Defence Planning Committee from the military point of view. Simultaneously, the financial and technical aspects of the proposal are examined by the Infrastructure Committee, with the assistance of the International Staff before the slice is sent to the Council or the Defence Planning Committee for approval.

Once an infrastructure slice has been approved, the execution phase begins. The entire responsibility for implementation of individual projects is assumed by the host country or by NATO agencies acting as host nations

Implementation and control of works

The host country must decide, in consultation with the NATO Military Authorities, upon sites for the works to be carried out. It must acquire the necessary land at its own expense and draw up a plan which is then sent to the relevant Supreme Commander for approval.

After the plan has been approved, the host country authorities and user country prepare a detailed estimate of construction costs, which must be approved by the Infrastructure Payments and Progress Committee before any funds can be committed. The host government then invites bids for the contract from firms of participating member countries and notifies national delegations of the opening and closing bid dates.

Expenditure authority for all approved projects is in the hands of the Infrastructure Payments and Progress Committee, made up of members of the national delegations, which has technical assistance from experts on the International Staff. The Committee's terms of reference call for close examination of the estimates submitted and, where necessary, suggestions for alternative or more economical methods of carrying out the work to the required specifications. These estimates are called "requests for authorisation to commit funds", and they constitute the basis for calculating the amount due to host countries. The Infrastructure Payments and Progress Committee also examines the financial reports submitted by host countries carrying out the works and, each quarter, endorses the amount of contributions due to host countries by the other participating countries.

International competitive bidding

A system of international competitive bidding, restricted to the member countries participating in the financing of the project, has been introduced to ensure that the work is awarded to the lowest compliant bidder.

Upon completion, a project is inspected by a team consisting of representatives of the host country, the user country, and the military authorities. The team, which is chaired by a member of the International Staff, inspects all the projects and, when it is satisfied that contract specifications have been met, draws up a report for the Infrastructure Payments and Progress Committee, recommending that the completed project be accepted by NATO.

Both throughout execution, and on completion of the works, an International Board of Auditors, entirely unconnected with the host country and responsible only to the Council, examines the financial statements made out by host countries, thus ensuring the correctness of expenditure charged to NATO common funds.

Main elements of the Infrastructure programme

Airfields

In 1951, General Eisenhower, the first Supreme Allied Commander Europe, had at his disposal only a small number of airfields. Consequently, for many years, half of the infrastructure programme was directly devoted to airfields. At the present time, 220 NATO airfields are operational, or could be used by the NATO forces in an emergency. A new airfield costs between IAU 2 and 4 million, depending on geographical situation and the installations required. However, it has been possible, in many cases, to use existing airfields, modifying them as

necessary. The total estimated cost of airfields amounts to some IAU 749 million. All comply with standards laid down by the NATO Military Authorities; are suitable for different types of aircraft, and include such essential installations as fuel storage facilities and electronic devices which permit aircraft to operate night and day in all weathers. As a result of the 1971–1974 European Defence Improvement Programme, 70 % of aircraft at each base are protected by a hardened shelter.

As airfields are completed, communications are also established for full coordination between them and the different allied fighter commands.

Communications

At present, the signals networks represent an investment of more than IAU 460 million. It is estimated that about 31,000 miles (50,000 kilometres) of landlines, radio links and submarine cables will have been built to supplement existing civilian networks. However, in spite of the considerable number of available circuits, the military authorities were aware that this system did not provide all the safety measures necessary in time of war, particularly as regards security and speed of transmission, and as a result the NATO Integrated Communication System (NICS) was developed. This new communications system introduced the latest techniques, principally to enable Major NATO Commanders and political authorities to be informed rapidly of developments in any situation which may arise, and so help them to make timely decisions.

Phase I implementation covered the years 1974–1979, and Phase II, covering 1980–1984, has started.

The rapidly developing technology of automatic data processing (ADP) offered NATO and, in particular, the military authorities, opportunities to achieve significant improvements in their procedures. In order to implement these, the Council, in October 1970, agreed to establish a NATO Command, Control and Information System, which is being introduced into the infrastructure programme.

Petroleum Facilities

The petroleum portion of the programme covers the construction effort associated with the build-up of the regional networks of the NATO Pipeline System and other fuel storage and distribution facilities not directly linked to it. The first facilities were constructed under the Western European Union Programme in the early 1950s. Two decades later, more than 2 million cubic metres of storage, 10,000 kilometres (6,300 miles) of pipeline, and a host of entry and delivery facilities, had been brought on to the NATO inventory. The development of this important resource for the support of Allied forces continues. Throughout the whole of its history, this dynamic programme has benefited from improvements in pipeline technology, and from modern methods of environmental protection. As the older parts of the networks have

not been spared the process of ageing, greater emphasis is now being placed on restoration and modernisation. Many of the facilities constructed under this part of the NATO common infrastructure programme have a multi-product capability essential for providing the required support. This capability is continually in use and covers the day-to-day fuel requirements for Allied forces. In some areas, this has been extended to other than military purposes. The great potential of the pipeline networks was quickly realised by the civilian industry, and in the course of the last twenty years a large number of civil petroleum installations were built at specific locations, in order to take advantage of it. These developments highlight the cooperation that exists on a multinational basis, to ensure that the maximum benefit can be derived from the very large investment in petroleum facilities.

NATO Air Defence Ground Environment (NADGE)

This is by far the largest single defence construction project so far authorised by the Council, and is concerned with early warning of and response to hostile aircraft and missiles. NADGE, though not financed and managed in the same manner as the earlier NATO Infrastructure Programme, is a classic example of international cooperation in common defence.

With the exception of Iceland, all countries of the Alliance have taken part in this project [7] which is now complete and provides the air defence system for the whole of NATO Europe.

This complex system, involving a large number of locating sites, consists primarily of radars, computers and electronic data transmission facilities. It supplements and modernises air defence elements in nine European NATO countries, following a continuous north-south sweep that runs through Norway, Denmark, the Federal Republic of Germany, the Netherlands, Belgium, France, Italy, Greece and Turkey.

Other Projects

Besides these main categories of works, other important infrastructure projects include naval installations and missile sites, which are listed in Table VI. In addition, Slice Group XXXI–XXXV includes a significant new category of infrastructure projects designed to support external reinforcement by providing for storage of pre-positioned equipment, material and ammunition for reinforcing units, together with additional facilities for their movement, reception and maintenance support.

[7] France is integrated in the NADGE system only to the point where reporting ends and the control of retaliatory devices begins.

Table VI

The Infrastructure Programme (in millions of IAU)

1. NATO Common-funded Infrastructure

A. Slices II to XXXI:	
Airfields	749
Number of airfields: 220	
Communications Network	460
Landlines, submarine cables, radio links and NICS projects	
Over 50,000 km. (31,000 miles)	
Fuel Supply Systems	315
Pipelines: about 10,000 km. (6,300 miles)	
Storage: about 2 million cubic metres or 44 440 million Imperial gallons	
Naval Facilities	186
Radar Warning Installations	187
Air Defence Ground Environment	112
Special Ammunition Storage	53
Missile Sites	118
Other Projects, including War Headquarters, training installations, radio navigational aids	406
	2,586
B. Slices XXXII to XXXV	701

2. Infrastructure funded under other arrangements

A. Slice I (Western European Union Programme)	32
B. Infrastructure in Germany prior to the accession of the Federal Republic of Germany to the North Atlantic Treaty	95
C. European Defence Improvement Programme (EDIP)	150
	277
Total:	3,564

Logistics

Definition

Logistics within the Alliance is defined as the science of planning and carrying out the movement and maintenance of forces. In its most comprehensive sense, this means those aspects of military operations which deal with:

- Design and development, acquisition, storage, movement, distribution, maintenance, evacuation and disposition of materiel;

- Movement, evacuation and hospitalisation of personnel;
- Acquisition or construction, maintenance, operation and disposition of facilities;
- Acquisition or furnishing of services.

Within this definition, there are some areas which are closely related to the efforts of the Conference of National Armaments Directors, and for ease of identification these have been termed "production logistics" with the remainder termed "consumer logistics". It is often difficult to draw a fine line between the two.

Principles

As the continuing support of forces is a national responsibility, it can be argued that the provision of logistics resources to meet NATO operational plans is also solely a national responsibility. It must, however, be recognised that within the Alliance interdependence is of such importance that each nation has to be satisfied that the forces of its partners are equally well supported logistically. Furthermore, the Major NATO Commanders are responsible for ensuring that logistics plans are coordinated. It is thus a principle of Alliance logistics that, although the provision of logistics support is a national responsibility, such support must be seen to be adequate by the other members of the Alliance and the support plans must be coordinated by the Major NATO Commanders.

Economy in the provision of logistics support is as basic a principle in the Alliance as in national logistics. It predicates the closest cooperation and collaboration in the efficient and economical use of logistics resources and the regular exchange of information between nations.

Wherever possible, standardisation of materiel, procedures and services is the aim. Where this does not prove possible, interoperability is the next most desirable objective to enable logistics support to be flexibly applied in support of all NATO forces.

Logistics plans have to be kept up-to-date, and are tested in exercises to ensure common, and thus familiar, peacetime and wartime logistics practices.

Coordination and Cooperation

The requirement for coordination and cooperation has always been apparent and logistics conferences have long featured within the major subordinate Commands. In 1970, SHAPE formed the ACE Logistics Coordination Centre (LCC), and SACLANT has since set up a Logistics Coordination Board. Both these organisations meet regularly with national and international representation. The ACE LCC has defined emergency and wartime roles which are tested during exercises.

As greater focus came to be placed on Alliance preparedness, so the economical need to concentrate on cooperation and coordination in logistics at the highest civil and military levels of the Alliance has increased.

In July 1976, the first meeting of a Conference of Senior NATO Military Logisticians was held at NATO Headquarters, to seek ways to enhance wartime capability and effectiveness by providing the efficient use of logistics resources, and to promote greater cooperation within the Alliance.

In the following year, a Council study on a "Coherent Approach to Alliance Logistics" recommended the continuation of this Conference on a more permanent basis, with both a military and a civil session. To ensure close coordination, the chairman of the civil session attended the military session, and the chairman of the military session attended the civil session. Experience soon showed that so interdependent are the civil and military aspects of Alliance logistics that neither the problems nor their resolution could be dealt with adequately in this manner. In April 1979, as an experiment, a joint civil/military session was held. This proved to be so successful that it has been adopted as the permanent modus operandi for the Senior NATO Logisticians Conference (SNLC). It is significant, not only in that it is jointly chaired, on behalf of the Secretary General, by the Assistant Secretary General for Infrastructure, Logistics and Council Operations and the Deputy Chairman of the Military Committee, but also in that the staff work is undertaken jointly by members of the International Staff and the International Military Staff.

The SNLC is the senior advisory body in NATO on "consumer" logistics, and has the task of making the overall assessment of the Alliance logistics posture with the aim of ensuring adequate logistics support for Alliance forces. Its membership includes both the senior civil and military national representatives responsible for civil and/or military aspects of logistics. Iceland and Luxembourg are not represented. Senior representatives from the Major NATO Commands, the International Staff, International Military Staff, Military Agency for Standardisation and NATO Maintenance and Supply Agency also attend. Coordination and liaison with CNAD, SCEPC and their subordinate bodies is provided through International Staff representation.

Links Between the CNAD, SCEPC and the SNLC

It may at first appear difficult to differentiate between the various functions these bodies have in the fields of Alliance logistics. They are, of course, interrelated, and as a consequence close liaison between these bodies and their subordinate organisations is maintained. In addition, representation from the NATO Military Authorities is integral to these bodies. In essence, within the ambit of logistics, the role of the CNAD is in the field of procurement and production of arms and equipment; of the SCEPC in the planning for and provision of civil support; and of the SNLC in assessing the logistics posture of the Alliance to ensure the provision of the best possible logistics support for NATO forces. Certain logistics areas that have particularly close links are described below.

NATO Pipeline System

To facilitate the supply of fuels to Allied forces, the NATO pipeline system was constructed, and is being improved and extended under the NATO Common Infrastructure Programme (see page 195). It is regionally based and consists of seven networks of storage facilities inter-connected by pipelines, many of which have a multi-product capability. The largest of these is in Central Europe, where some 5,900 kilometers (3,680 miles) of pipelines have been laid in five countries. It is operated and maintained by an integrated multi-national organisation which is described below. The next largest network is in Turkey, where there are two separate parts, one in the East and the other in the West of the country. There are networks in Greece, Italy, Denmark (the Northern Europe system which reaches Into North Germany), Norway (mainly storage facilities) and the United Kingdom. Operation and maintenance of these networks are undertaken by national pipeline organisations, acting in consultation with the NATO Military Authorities. The host nations are the normal users, but other NATO nations can use the systems by arrangement.

In July 1956, the Council set up the NATO Pipeline Committee to act on its behalf, in consultation with the NATO Military Authorities and other competent bodies, on all matters connected with the control, operation and maintenance of the NATO pipeline system. One of the main problems of the Committee is to obtain sufficient use of the system in peacetime to maintain it at the desired state of readiness for emergency or wartime operation. With this in view, the Council agreed, under certain safeguards, to permit limited use of the system for other than NATO military purposes. Some movements of fuel have been undertaken on this basis.

Central Europe Pipeline System (CEPS)

The system in Central Europe lies in the territories of Belgium, France, the Federal Republic of Germany, Luxembourg and the Netherlands. In addition, Canada, the United Kingdom and the United States make use of it. It is maintained and operated by seven national pipeline divisions and a central coordinating and controlling body, the Central Europe Operating Agency (CEOA). This agency is a civilian body, under the direction of a general manager, who is responsible jointly to two central European bodies – one military, the Central Europe Pipeline Office; and one political and financial, the Central Europe Pipeline Policy Committee. These together form a multi-national NATO Production and Logistics Organisation under the North Atlantic Council, but staffed and directed by the eight user nations.

The network in Central Europe has been particularly successful in obtaining revenue from both military use and the transport of products for civilian companies. This has enabled it to cover a high proportion of its operating costs in recent years. Up to 1980, deliveries through CEPS for civilian oil companies has totalled some 80 million cubic metres. The volume of traffic is now some 12 times more than in 1959, but manning levels to operate the system have increased only 1.6 times.

As illustrations of the flexibility of the system, during one very hard winter, fresh water was passed through a section of line in the Netherlands for a few days to assist in an emergency; on several occasions heating oil has been pumped through the system; and there is regular movement of crude oil through a section of line in France.

Safety Aspects of Storage and Transport of Ammunition and Explosives

A more specialised logistic activity in which considerable success has been achieved on a NATO-wide basis is that of safety aspects of storage and transportation of ammunition and explosives. A group of experts has produced a comprehensive manual on safety principles for storage, which is the most authoritative work in existence on this important subject, and in demand worldwide. The same group has developed similar publications covering safety aspects of the various modes of transporting ammunition and explosives.

NATO Maintenance and Supply Organisation (NAMSO)

In April 1958, the North Atlantic Council approved the establishment of the NATO Maintenance Supply Services System (NMSSS). This centralised organisation was renamed the NATO Maintenance and Supply Organisation (NAMSO) in 1964, and is now one of several NATO Production and Logistics Organisations (NPLOs). It consists of a Board of Directors, subsidiary committees of the Board, and an executive element known as the NATO Maintenance and Supply Agency (NAMSA). The Board, which is composed of representatives from each of the fourteen participating nations, provides policy guidance to NAMSA and oversees the implementation of that policy.

The main task of NAMSA is to assist nations by supplying spare parts and by providing the maintenance and repair facilities necessary for the support of various weapons systems. This assistance is available whenever two or more nations have the same system in their national inventories and have made a conscious decision to use the facilities of NAMSA to provide support. The object of the Organisation is to achieve maximum effectiveness in logistical support, both in peace and war, at a minimum cost to NATO nations, both individually and collectively.

The headquarters of NAMSA was initially established in Paris. It was primarily concerned with procurement. The Organisation was expanded in March 1960 with the creation of the NATO Supply Centre (NSC) at Châteauroux, France – the first operational centre under NAMSA control. Early in 1968, both the Agency headquarters in Paris and the NSC in Châteauroux were transferred to Luxembourg.

In 1972, a depot was activated at Taranto, Italy, to stock spare parts for weapon systems for three southern region countries – Greece, Italy and Turkey. Three years later, a subsidiary of the Agency was established in Paris, respon-

sible for HAWK logistics management Finally, in early 1979, the NAMSA NIKE Training Centre (NNTC) was created at Fort Bliss, Texas, in the United States. The Centre provides maintenance training for the European configuration of the NIKE System.

Weapons systems and materiel currently supported by NAMSA include the NIKE, SIDEWINDER, HAWK, LANCE and TOW Missile Systems; the F 104 Aircraft; the Forward Scatter and Satellite Communications Station; the NATO Air Defence Ground Environment (NADGE) the NATO Missile Firing Installation (NAMFI); Mark 37/44 Torpedoes; Drone CL 89, FH-70 Howitzer; the NATO Airborne Early Warning and Control System (AWACS) and other conventional equipment.

NAMSA has an establishment of some one thousand personnel and stocks approximately 100,000 line items worth $ 120 million. In addition to providing spare parts from stock, NAMSA also satisfies requisitions by acting as an intermediary between nations. Multinational support between nations can also be provided in the form of mutual emergency support or through redistribution of materiel surplus to a nation's requirements.

Maintenance support is generally provided by NAMSA, either in the form of in-house maintenance programmes or through contractual maintenance. In-house maintenance is provided by NAMSA personnel and equipment, as, for example, in the case of calibration of field test equipment on site by mobile teams. Fixed workshops at Capellen, Luxembourg, provide for the repair of several systems, such as the LANCE and TOW Missile Systems. Contractual maintenance, as the term suggests, is provided by external contractors working under the guidance of the agency.

Procurement, the original mission of the agency, continues in support of supply and maintenance activities. It consits mainly of placing contracts for the acquisition of spare parts, services and quality assurance. Consolidation of requirements and international competitive bidding enable maximum cost effectiveness to be obtained on behalf of the user nations.

Technical support provided by NAMSA includes both technical assistance and configuration management. Technical assistance covers such activities as on-site assistance, the preparation of technical specifications for maintenance contracts and the monitoring of surveillance programmes. Configuration management includes equipment failure data collection and analysis, technical studies, evaluation of equipment modification proposals and updating of technical documentation.

NAMSA does not perform all of the foregoing tasks for all the weapon systems and equipment which it supports. User nations, in consultation with NAMSA, select those tasks which, in the interests of cost effectiveness and logistical readiness, can best be performed centrally. Apart from the advantages stemming from consolidation of requirements and centralised procurement, this selection takes into account the potential benefits to be obtained in

each case as a result of the reduction or elimination of duplicative inventories and the standardisation of procedures as well as materiel.

The availability of centralised, efficient and cost effective supply and maintenance support for all weapon systems developed or held in common by two or more nations is an important factor which nations are able to take into account at the planning stages of development or procurement.