

NATO Security Investment Programme

is the

SHARING

of

Roles, Risks, Responsibilities, Costs and Benefits





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This commemorative publication is issued to celebrate the 50th anniversary of NATO's Infrastructure Committee on 15 May 2001. It is a small tribute to the men and women who have contributed to the success of the NATO Security Investment Programme.

*Editorial Board: Drawn from Members of the Infrastructure Committee
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The Rt. Hon. Lord Robertson of Port Ellen, PC
Secretary General

When our predecessors in 1949 decided to fund jointly some defence infrastructure, they would most certainly not have anticipated that their initiative would grow into such an important cornerstone of Alliance activity. What they created became a flexible tool that has served the Alliance well: in rebuilding European Defence Infrastructure after World War II; by responding to the threats posed by the peaks of the Cold War; and through providing support for Peace Support Operations outside Alliance territory.

This book has been written to commemorate 50 years of cooperation in the NATO Security Investment Programme. Of course, apart from looking back with pride, we must also look into the future. NATO continues to face many challenges. I am confident that the Programme will contribute to improving NATO's Defence Capabilities, and will continue to play a key role to the Enlargement of the Alliance.

I consider the NATO Security Investment Programme to be a unique example of member nation solidarity. Not only does it act as a force multiplier, it also provides the opportunity for nations to share roles and responsibilities.

I would like to take this opportunity to thank those who dedicated their working life to making the NATO Security Investment Programme a story of success.



General Joseph W. Ralston, US AF Supreme Allied Commander Europe

We are today celebrating the 50th Anniversary of the Infrastructure Committee only a few weeks after the official 50th Anniversary of SHAPE.

Throughout those 50 years, the Infrastructure Committee has always sustained SHAPE in its military mission to keep stability and freedom in Europe.

The focus of NATO Common Infrastructure Programme during the four decades of the Cold War was mainly oriented on heavy static installations for which the locations and the design were directly related to the adversarial relationship between East and West.

At the end of this era the following years have seen the transformation of the Infrastructure Programme to a more appropriate NATO Security Investment Programme (NSIP) driven by the rapid changes in the new political world and taking into account the extensive technical evolution in Communications and Information Systems (CIS).

In addition, SHAPE must now prepare for crisis-response and expeditionary operations and consider new disseminated threats.

Therefore SHAPE generously thanks the Infrastructure Committee for the authorisation of the current implementation of the deployment related projects, the new global Air Defence based on a robust Backbone Radar Network, an Air Command and Control System (ACCS) and a New Command Structure that will benefit from the most recent Command and Control facilities.

We also must not forget the success of the NATO Operations in the Balkans is certainly due in part to the consistent responsiveness of the Infrastructure Committee.

The coming years will see the consolidation and the completion of very important NSIP projects and the implementation of investments to meet challenging requirements generated by new initiatives in support of increased flexibility and mobility of NATO deployable Headquarters.

SHAPE will continue to work closely together with all members of the Infrastructure Committee and is convinced that this co-operation will reinforce the Alliance's ability to respond to any crisis situation.



General William F. Kernan, US A Supreme Allied Commander Atlantic

It is with great pleasure that I congratulate the NATO Infrastructure Committee on the occasion of its 50th anniversary.

As one of the oldest permanent committees within the NATO Alliance, the Infrastructure Committee has consistently been at the forefront of change. From its humble beginnings in the aftermath of World War II, NATO emerged as the most successful military alliance in modern history. Much of its success is due to the diligent efforts of the professional men and women comprising the Infrastructure Committee, for they turn evolving military requirements into reality.

Over the last decade, the strategic landscape has changed markedly, driven by dynamic shifts in the threat environment and the rapid advance of technology. These developments posed obvious challenges to the Strategic Commanders. In typical fashion, the Infrastructure Committee responded quickly, ensuring the delivery of facilities and equipment to sustain and improve Alliance military capabilities.

NATO's modern and capable airfields, port facilities, POL storage and distribution networks, radar, communications and information systems, and strategic headquarters stand as testimony to the Infrastructure Committee's resolve and effectiveness.

Again, let me congratulate the Infrastructure Committee and all the supporting staffs and agencies, on 50 years of outstanding service to the Alliance.

Øivind Bækken
Assistant Secretary General
for Security Investment, Logistics & Civil Emergency Planning

It gives me great pleasure to have the opportunity to contribute to this commemorative publication. I am the Assistant Secretary General for Security Investment, Logistics and Civil Emergency Planning, and the Staff support for the Infrastructure Committee forms part of my Division. That the Infrastructure Committee has been a Council Committee for 50 years is in itself a statement of the enduring importance that the programme has been to the Alliance.

Towards the end of this small book are lists of the hundreds of members of the Infrastructure Committee who have represented their nation in this unique endeavour. These are the men and women who, on an almost weekly basis, have contributed to the continuing work of this vibrant Committee. Indeed, these people are the Committee. Very many returned to the Headquarters to join the 50th anniversary celebrations.

The publication has been put together with the hope to catch your interest and to pass on the strong sense of family which abounds in the Infrastructure community. It is not a textbook and it is not designed to address all the minutiae of managing a complex programme.

All branches of the family have contributed to our publication. First and foremost, the Nations have provided a wealth of text and pictures from which we had the very difficult task of selecting what we hope is a good cross section of material. We have had equally fine inputs from the Strategic Commands, the Agencies, the International Military Staff and, from my own Division, the International Staff. The production of the publication would not have been possible without the advice, assistance and hard work of the Office of Information and Press, the Translation Service and the Graphics Studio. Julian Astbury, Head of Signals Section, led the Editorial Board, which selected the style, tone and content. I commend their efforts.

Kenneth N. Peltier
Deputy Assistant Secretary General
for Security Investment, Logistics & Civil Emergency Planning
and Controller, Security Investment Programme

On this the 50th Anniversary of the NATO Infrastructure Committee, I wish to express my congratulations to the Committee for the contributions it has made to peace and security in Europe over the last fifty years. During this period, the Infrastructure Committee, working through the Nations and the supporting Staffs, has provided NATO the necessary structure for the effective functioning of its integrated military command system. No other Alliance has such a command system and no other Alliance has a Committee managing a common funded capital investment programme. Working together in the Infrastructure Committee, Nations through the NATO Security Investment Programme, have come together to share in real terms, the risk, benefits, and costs of the Alliance. In the past 50 years the Infrastructure Committee has implemented over 13,000 projects valued in excess of NAU 7,875,000,000 (BF 1,100,000,000,000) including NAU 133,000,000 approved for Crisis Response Operations. This visible manifestation of NATO's solidarity extends from Jacksonville in the west to Van in the east from North Cape in Norway to Porto Santo in south and directly benefits all members of the Alliance. This expression of co-operation is impressive by any standards but even more so when you consider that each project authorised by the Infrastructure Committee was done the NATO way with unqualified agreement.

Over the past ten years, we have seen a major reorientation of the Programme to meet the strategic objectives of the Alliance. During this time, the Infrastructure Committee has implemented these changes ensuring that the Strategic Commands have the necessary infrastructure for long-term Article 5 programmes as well as meeting the fast paced needs of Crisis Response Operation. The Infrastructure Committee is positioned and ready for the future to carry on the tradition of excellence and co-operation that was established over the preceding 50 years.

Dr Shun Ling

Dean of the Infrastructure Committee

I have had the honor of being the Dean of the Infrastructure Committee (IC) since July 1999 and the U.S. Representative to the IC since June 1996. This short note reflects on my experiences while serving in the IC family, but I expect that many colleagues - past and present - will recognize much of what I have to say. Perhaps, it will ease some anxieties of future members. I want to put into this book a memento of what it was like to be a part of the infrastructure family, both the human and work aspect.

Most of us experienced degrees of cultural shock when we came to Brussels. We left behind existing family, work, and social support systems. Our families made major adjustments. If the spouse had prior employment, it was difficult to obtain comparable work. When we ventured out to shop for food or other necessary items, the articles on the shelf seemed foreign to you. When you recognized the food items, you had difficulty associating the names and prices with the items you wanted. Cuts of meats were different so we had to adjust accordingly. Eventually, it became exciting to try the different items and we quickly found different varieties and freshness of fish and meats became interesting challenges and delightful additions to our eating tables.

What about our work place? For me, this was our first encounter in a multi-national environment. The experiences of my first meetings remain with me. I remember a room of new faces; formal proceedings with strange acronyms; an ear piece for interpretations; an IC book full of documents requiring action; subject matters that ranged from simplicity to politically, economically, and scientifically complex; and an agenda that seemed to go out the window upon the lowering of the gavel. You find the obvious became instantly obscure as discussions languished; quick agreement on what you expected would be protracted deliberations; you look around and are convinced you are the only lost one; the terms confirmation and reservation suddenly have new connotations and strong significances; strong, minimum and normal warnings leave you in bewilderment; etc. After a half-year you begin to see the light and identify with a rhythm in the work from one meeting to the next. You find predictability in your colleagues' reactions to selective issues either due to their personal perspectives or national positions. You finally realize each of you represent your nation's triad of foreign, defense, and industrial policies. You realized at the end of the day you are not the only one that is mentally washed out and can not remember exactly what decision was taken on a specific agenda item when you leave the room.

Socially you get involved with coffee breaks, joint lunches, representational dinners, informal meetings with coffee and national goodies. You find common ground outside the formal atmosphere that often results in mutually beneficial compromises. Achieving consensus and a way ahead becomes a professional challenge and joy to achieve. You quickly learn our

positions often come from cultural misunderstandings and once realized you find they are not insurmountable. It just takes more work to find a mutual way through the maze of differences. The reward however comes when you find all members can indeed move ahead together when at an earlier point in time you thought the effort had reached a stalemate. You find the camaraderie of these activities have resulted in many enduring friendships.

For some of us, we wondered why NATO. We found our answers by visiting the nearby battlefields, remains, and cemeteries of the two world wars. You can read all you want and see all the film footage available, however, the impact really hits home if you are in a receptive mode, when you see the death toll on all sides and realize the economic and social devastation and disruption caused by not finding resolutions at the conference tables. The effort may be painful and require much time, resources and effort but you quickly realize that all the deliberation, compromise and finding the way ahead at a table provided peace for the last fifty plus years. In a small way, what we decided at the infrastructure table helped spread the benefits of peace into our respective countries through extensions of our respective military infrastructure and overarching systems and sharing in the collective common funding provided by our nations.

Finally we come to the end of our tours and realize that we made it. NATO is a great place in which to work, raise our families, develop international friends and contribute to the better good of the alliance for all of us. When we leave we expect and trust that those that follow will continue to enhance the role of common infrastructure to help keep the alliance on the high ground and moving ahead together. We leave with sadness and fond memories of NATO and our host nation Belgium. We look forward to reunions like the one commemorated by this book.

NORTH ATLANTIC COUNCIL DEPUTIES
SUPPLEANTS DU CONSEIL DE L'ATLANTIQUE NORD 204

DECISION SHEET OF
THE FIRST MEETING
OF THE INFRASTRUCTURE
PAYMENTS AND PROGRESS
COMMITTEE

DOCUMENT
AC.4(PF)-D/1
OR. ENG.
18th December, 1951.

SPECIAL COMMITTEE ON INFRASTRUCTURE
PAYMENTS AND PROGRESS SUB-COMMITTEE

INTERIM ADVANCE PAYMENTS TO FRANCE
UNDER THE OTTAWA AGREEMENT

Note by the Secretary

1. At their meeting held on 17th December, 1951 (AC.3(PP)R/2), the Payment and Progress Sub-Committee of the Special Committee on Infrastructure agreed to invite nations parties to the Ottawa Agreement to pay immediately to France the sum of FR 5,112,000,000 as an interim advance.

2. It was furthermore agreed that the nations should contribute towards this advance on the basis of the percentages corresponding to the portions set forth in the Ottawa Agreement (AC.4-D/27). The sum required by France will therefore be paid as follows:

United States	%	48.10	=	FRS.	2,458,872,000
France	"	21.52	=	"	1,100,102,400
United Kingdom	"	17.72	=	"	905,846,400
Canada	"	4.43	=	"	226,461,600
Netherlands	"	2.91	=	"	48,759,200
Belgium and Luxembourg	"	5.32	=		271,958,400
		100.00			FRS. 5,112,000,000

3. The Committee took note of the fact that Belgium, the Netherlands and Luxembourg will pay their contribution at a later date. The United States Representative stated that, pending the outcome of bilateral negotiations between France and the United States on the question of taxes, the United States would hold back 30% of their contribution.

4. The Sub-Committee therefore agreed to call on:

The United States of America to pay
FRS 2,458,872,000 (less 30%)

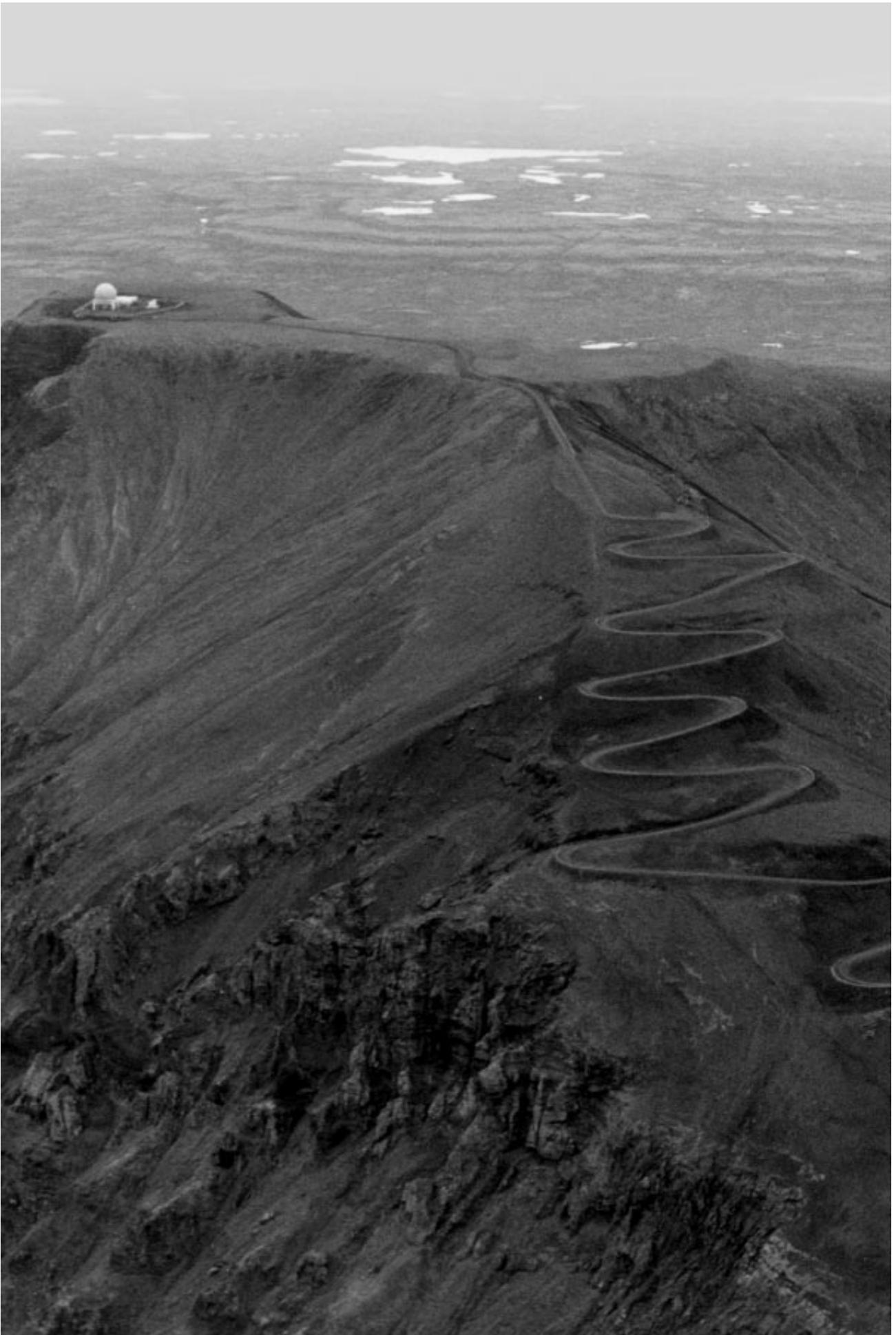
The United Kingdom to pay FRS 905,846,400

Canada to pay FRS 226,461,600.



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NATO Air Defence Radar in Iceland
The NATO Security Investment Programme funds the access roads as well !

Thoughts from the editor...

The sharing of roles, risks, responsibilities, costs and benefits: these words, much loved by Manfred Wörner, encapsulate what has become the spirit of NATO Infrastructure, now the Security Investment Programme.

That spirit, now so easily accepted, was born slowly and painfully in the early years. The main cause of the pain was, of course, money. How could one go about financing international co-operative enterprises? In the 1940s and 1950s this was a new and difficult idea. The need for such “common funding” was recognised by the Western Union Defence Organisation in 1950. This led to what became known as the First Slice of what was to become the NATO Infrastructure Programme. It is hard to look back half a century and grasp the wisdom and vision

of those who launched this Programme. There was no money. Food and clothing were rationed. The physical and economic scars of war were universal. Poverty, by the standards of today, was endemic. Within this climate, our predecessors persuaded the Benelux countries, France and the United Kingdom to fund, in common, some 30 airfields, mostly in France and the Netherlands, in order to lay the foundations of their future defence.

It was clear that the issue of cost sharing would be complex. The factors in play included (as they still do today) the capacity to pay, the use of the facilities, the benefits to the Host Nation (such as labour), and the costs to the Host Nation (such as provision of land and utilities). Relatively stable cost shares, in a form we would recognise today, were agreed for the Fifth Slice.

(It is said that Lord Ismay, the Secretary General at the time, invited Council members to write down what they thought their country's share should be. The total was, unsurprisingly, less than 100%. Lord Ismay increased every share in proportion such that the total was exactly 100% and the nations agreed.) Common funding is a powerful and far-reaching international concept. A Turkish taxpayer contributes to a naval base in the Azores. A Luxembourger helps to finance a weapon storage site on a Greek airfield. The Canadians pay a share of a submarine broadcast station in Sardinia.

But how big is a share? No nation pays more than 1% of its defence budget to the programme. The United States, while paying the largest cost share of

the programme, pays less than 0.1% of its defence budget. This means that the contributions are as much a political statement as a financial burden. It has been described as the NATO membership fee. However, when all the contributions come together in the programme we can do some very useful things. It is also of note that a programme is not a budget. This means that the national contributions are demand driven. Should the nations wish to fund some major new programme, they can, should they so agree, use common funding with appropriate and proportional adjustments to national contributions. The bureaucratic mechanisms are all in place.

The programme has no bank account. Nations make their contributions through the device of the Pay Sheet. A Host Nation, in implementing a project, will pay the contractor in full. Depending on the Host Nation's cost share of the programme, the Host Nation may then receive funds from other nations or pay other nations in compensation for their projects. All this is monitored and controlled by the NATO International Staff.

The original currency of the programme was the £ sterling. This was in part the legacy of the Western Union Defence Organisation, and in part because the £ sterling had the largest unit value of the currencies of the contributing nations. In the late 1960s the £ sterling suffered high inflation and eventual devaluation. In January 1968 the programme switched its base currency to "pre-devaluation £s", under the new denomination of the "Infrastructure Accounting Unit". The IAU was used for 29 years until, in 1997, in the wake of the renewal of the Infrastructure Programme, we moved to the NATO Accounting Unit, to allow all NATO finances to be aligned. On 1 January 1999, the NAU was locked to the Euro, together with the currencies of eight of the member nations. The NAU is presently valued at about €3.

Traditionally, we spent the money on projects of mutual benefit to the community of NATO nations. This brings us to the concept of eligibility. A project is said to be eligible for common funding if it provides a capability for common use, or offers common benefits, amongst the members of the Alliance. This means it should be available for use by all and, in practice, used by many or most nations. Eligibility is



In-rock fuel storage as part of NATO's vast storage capacity

often backed by technical criteria to ensure equal treatment for all. Case history was also used to establish eligibility - if we have done it before, we can do it again. Apart from those parts of the programme covered by accepted criteria, no precise definition of eligibility has ever been agreed. With the renewal of the Infrastructure Programme in 1993 we tried yet again to define eligibility. In an attempt to introduce a more selective approach to common funding, it was agreed that, in principle, NATO common funding would focus on the procurement of infrastructure requirements which are over and above those which could reasonably be expected to be made available from national resources. ("Over and above" is an excellent example of NATO-speak. Why not just "over", or just "above"?) Precision remained as elusive as ever, and case history and criteria are the guides as before. In reality, eligibility for common funding can be whatever the nations agree is eligible. The lack of a rigid definition is actually one of the strengths of the programme. There is a flexibility and diversity to the programme which has served the Alliance very well.

Strongly linked to the concept of eligibility is the Minimum Military Requirement. The purpose of the Infrastructure Programme always was, and the purpose of the Security Investment Programme still is, to satisfy military requirements. Only the NATO military authorities can determine military requirements. Thus the Minimum Military Requirement is a necessary but not a sufficient condition for eligibility. For example, ships, aircraft, rifles and uniforms are certainly requirements, but they are not eligible for common funding. Even the "necessary" condition merits a little discussion. Communications architecture, feasibility studies, pollution clean up, television and radio stations, and conformity with national laws concerning safety and the environment have all been funded from infrastructure common funds. The link to a military requirement is sometimes a little tenuous.

"Sharing" is one of the key words of this commemorative publication. Sharing implies fairness to all concerned. Fairness means that we must have a set of rules for the protection and guidance of all. The procedures for NATO international competitive bidding are enshrined in a document known as AC/4-D/2261. The rules have been modified over the years. The first of the guiding principles is to assist in the

timely implementation of NATO Security Investment Programme projects which meet NATO's military needs. The second principle is to foster an environment conducive to maximising the participation of qualified firms. The third principle, a corollary of the second, is to avoid discrimination against firms interested in participating in the programme. Within that broad - and fair - framework the nations have almost boundless scope to propose alternative bidding arrangements. The most successful variant is the NATO C3 Agency's "Basic Ordering Agreement". This is a web-based tool used for the straightforward purchase of hardware, software and services. It is international. It is competitive. It is also very quick, not only in comparison to traditional NATO international competitive bidding, but also when compared



The International Staff check progress on the structure of a static war headquarters

to equivalent national procedures. The Infrastructure Committee has recently agreed that a “best value” competition should be conducted by the NATO C3 Agency. This is a most powerful method for the selection of modern, software intensive projects or project such as studies, which are based on intellectual activity.

In some ways AC/4-D/2261 is the common factor of all national procurement rules. For example, in some nations a company can be disadvantaged in the selection process if it has performed badly on earlier contracts. In other nations this is illegal. However, the flexibility of the NATO rules for international

competitive bidding has proved very useful to the Alliance (in a similar manner to the absence of any rigid definition of eligibility).

Having looked at the cost sharing, the eligibility, the minimum military requirement criterion and the rules, it is high time to talk about what we have bought and what we will be buying in the future. As we have seen, it all started with airfields. The “common” use of airfields is a readily acceptable and understandable concept. Airfields are used by aircraft that require fuel, so the NATO pipeline system evolved. Communications in support of the airfields and the pipelines were seen as being in the “com-



Ships from several NATO nations using naval base facilities supported by the NATO Security Investment Programme

mon” good. This led to the need for simple headquarters to house ever increasing communications and the control function. The airfields had to be defended, which introduced missile systems. The air defence systems of NATO followed. Air defence is perhaps the most natural capability to be funded in common. Air defence is indivisible. To provide air defence for a single geographically small nation is not possible. A modern missile or aircraft could cross the whole of Belgium in less than five minutes. Co-operation between all the nations which might be involved is essential. Common funding supports such co-operation in a cost effective and interoperable manner.

Peace Support Operations in the Balkans have been served well by the NATO Security Investment Programme. Special rules and streamlined procedures have ensured that funds, equipment and services have been provided in support of SFOR and KFOR in a timely and cost effective manner.

The emphasis has moved beyond airfields and other forms of infrastructure into information systems, interconnecting transmission systems, and the static and mobile facilities in which to house them.

Elsewhere in this publication are lists of the national members who have served the Infrastructure Committee over the years, together with the chairmen, secretaries, agency and military representa-

tives. This is perhaps a suitable place to mention the members of the International Staff whose roles complement the roles of the national representatives and who support the Infrastructure Committee. Many have devoted a major part of their career to this fascinating work. Some have devoted the whole of their working life to it. To support the nations, in and out of Committee, requires knowledge, tact, diplomacy, persuasion, patience, communication skills, tolerance, pachydermia and an unquenchable sense of humour.

INFRASTRUCTURE

A term used in NATO to mean “static buildings and permanent installations required to support military forces” or “the static items of capital expenditure which are required to provide the material support for operational plans necessary to enable the higher command to function and the various forces to operate with efficiency”.

Examples are headquarters, pipelines, airfields, signal communications, information systems, air defence systems, storage depots, port facilities and maintenance bases.

The joint efforts of both the national representatives and the international officials are what make the programme successful. The result is that by co-operating within the NATO Security Investment Programme, each nation of the Alliance, shares the burdens and the responsibilities which are an integral part of being a Host Nation, and each nation shares in the benefits that the Programme brings.



Maritime Patrol Aircraft leaves a NATO airfield



The History of the NATO Security Investment Programme

The NATO Infrastructure Programme has been one of the major achievements in the history of NATO. It has been a visible sign of NATO's resolve to work in unison, a signal to nations both inside and outside the Alliance. Within the Alliance, it has been a symbol of effective sharing of roles, risks and responsibilities. Outside the Alliance it was, and still is, a demonstration of our dedication to common defence. Now, in the context of an evolving NATO, the Programme remains a prerequisite for our efforts to maintain political and military stability.

The word 'infrastructure' comes from France, where it has long been used to denote all the work that is necessary, for example, before a railway track can be laid, such as embankments, bridges and tunnel. In

NATO parlance, the word was adopted as a generic term to denote all those fixed installations, which are necessary for the effective deployment and operations of modern armed forces. In this modern context, "infrastructure" includes airfields, port facilities, communication and information systems, military headquarters, fuel storage and distribution systems, radar warning and navigational aid stations, and many other facilities.

Installations, which are set up for the maintenance and training of national forces in time of peace, and for the defence of the homeland in time of war, are called 'national infrastructure'. These are, of course, paid for out of national budgets. Installations, which are set up at the request of NATO Strategic Commanders for the maintenance and training of



Laying pipe lines as part of NATO's extensive supply network

NATO international forces in time of peace, and for their effective operation in time of war, are referred to as “common infrastructure.” This is one of the many expressions that have now passed into everyday-use in NATO. Installations and equipments so designated are financed collectively by the governments of participating countries within agreed limits for common funding. They may be used by one or more NATO nations, but the acquisition of the sites themselves and the provision of certain local utilities remain a “Host Nation” responsibility. Planning in this field has given rise to problems that at times seemed almost insoluble and to arguments that seemed interminable. On the other hand, it has resulted in one of the most outstanding achievements of the Organisation. The number of nations participating in this common Programme has increased over the years, and presently includes 18 nations contributing to the entire Programme, and one nation contributing to selected categories.

Today, NATO's Security Investment Programme is the product of evolving military requirements, but

still based upon NATO's overall needs. Current issues, in no particular order of importance, are presented:

- Intra-European theatre and transatlantic mobility of NATO Immediate Reaction Forces, and Reinforcing Forces;
- Flexible command and control of land, air and maritime forces;
- Surveillance, reconnaissance and intelligence;
- Logistic support and re-supply;
- Control of Lines of Communication;
- Training support and exercise facilities;
- Nuclear capabilities;
- Consultation.

The narrative that follows traces the origins of the NATO Security Investment Programme from its beginnings in 1949, arising out of the aftermath of the Second World War, through the Cold War era and into today's quite different strategic environment. Along with the historical context and the evolution of the Programme we examine the most significant of its procedural mechanics and guiding principles.

Chairman: “Can you provide a report on what has been spent?”

Staff member: “I have nothing to report. No funds have been spent.”

Chairman: “That is a report. You said you had nothing to report, but you reported that nothing had been spent. Therefore, you did have something to report. A report of nothing is not nothing to report.”

THE ROOTS OF NATO SECURITY INVESTMENT PROGRAMME:

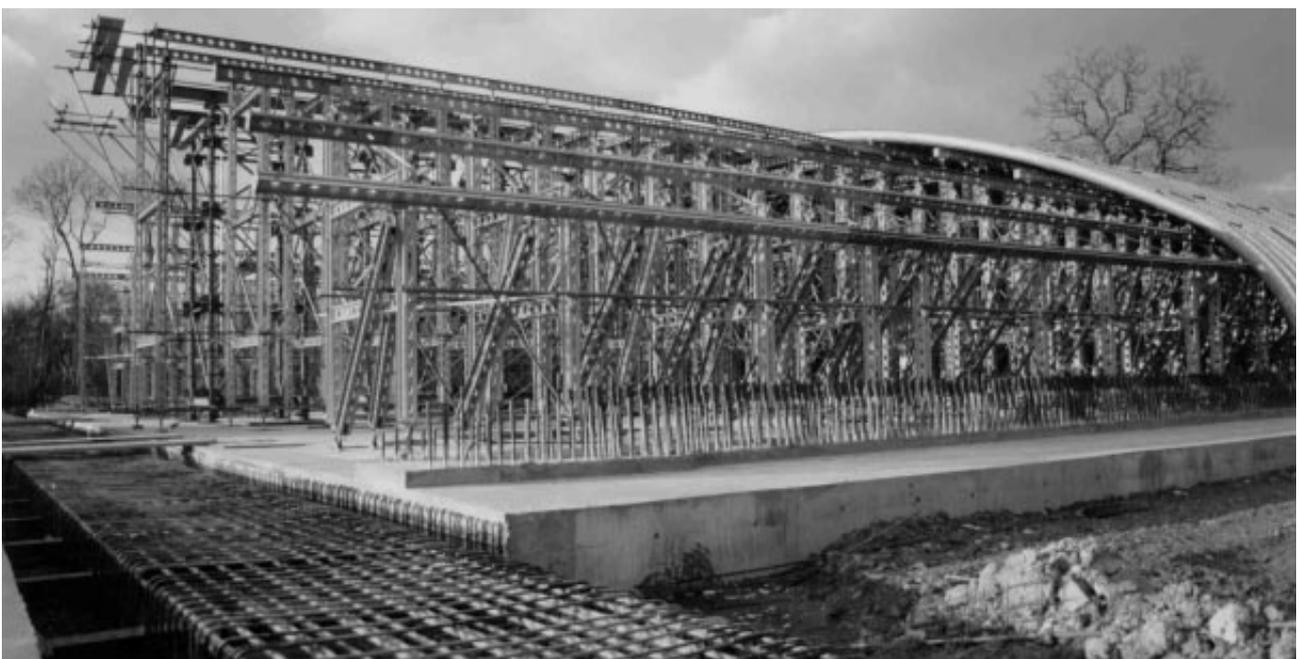
Rarely in the history of military alliances have nations agreed to contribute to a common fund as the basis for their co-operative approach to meeting a shared threat. In the 5th century BC, ten Hellenic city-states formed the Delian League in response to the Persian threat and agreed to contribute to a common-funded treasury with disbursements by unanimous agreement. Until 1949, this was the only example of common funded defence in recorded history.

In 1949, the five members of the Western Union Defence Organisation, Belgium, France, Luxembourg, the Netherlands and the United Kingdom, assessed the task of rebuilding critical defence installations following the devastation of the Second World War. Within this assessment, it was apparent that the burden would fall more heavily on some nations than others, as a consequence of their geographical positioning. By 1950, the need for some form of common infrastructure became apparent.

Because very few forces were available or required at that juncture, infrastructure requirements were correspondingly small. At an estimated cost of £32 million, the five Western Union Powers agreed to share

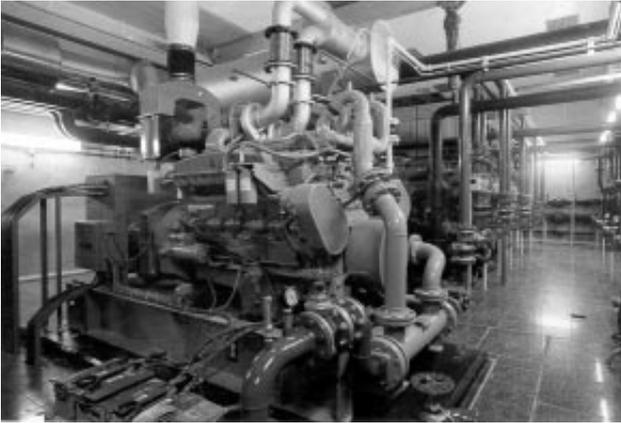
the cost of a programme, which included 30 airfields, one headquarters complex and about 34 signal communications projects. This programme would become known in the NATO vocabulary as 'the First Slice' of what subsequently became the NATO Infrastructure Programme. Most of these installations were to be set up in France and the Netherlands. But, since they were also intended for use by the forces of all countries which had signed the Brussels Treaty, it would have been unfair to saddle those two countries with the whole cost of the construction to be undertaken on their territory. This was the origin of the principle of cost sharing, which NATO would henceforth use as the basis of all Infrastructure Programmes.

Subsequently, planning for the next programme - the "Second Slice," began. Undertaken initially by the Western Union Defence Organisation, this was eventually taken over by SHAPE, which had become operational on 2 April 1951. By that time, countries felt they had probably gone very near their financial limit in providing for the raising, paying, training and equipping forces, and for the national military infrastructure which those forces would need. Under these circumstances it was clearly not going to be an easy



Hangar construction on a NATO airfield

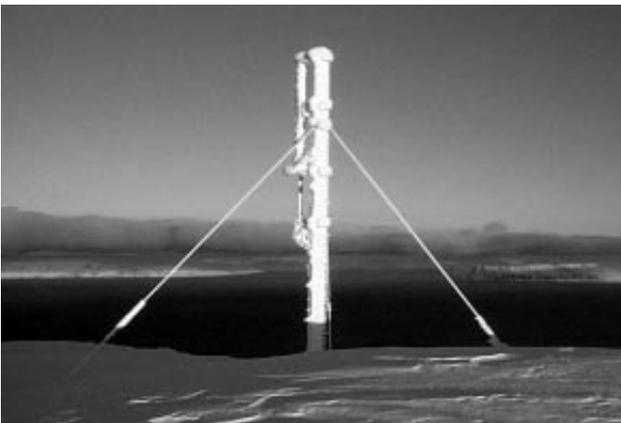
Staff member: "These gentlemen and ladies, when engaged, will be in SHAPE, so there should be no problem"



Pump station powering NATO's pipelines



NATO hangar funded by the Programme



An ice encrusted radio mast for NATO communications

matter to find additional funds for common infrastructure. The cost of the Second Slice - 13 new airfields, 8 airfield extensions, and 53 signal communications projects - was estimated at £79 million.

The problem of sharing these costs was referred to the Council Deputies (forerunner of today's Council of Permanent Representatives) in March 1951. There were many different ideas as to how it should be done.

The Council Deputies, after protracted discussions, failed to agree on criteria and the problem was still unsolved when the Council met in Ottawa in September 1951. After much hard bargaining, a cost-sharing formula for the Second Slice was negotiated. Since the infrastructure provided by this Slice would also to be used by the United States and Canadian forces assigned to SACEUR, the United States and Canada were invited to pay their share, along with the nations, which had financed the First Slice. Seven of the twelve member countries of the Alliance were now contributing to the costs of infrastructure.

The Third Infrastructure Slice submitted by SHAPE at the beginning of 1952 was a much larger one. It consisted of 53 new airfields, 27 extensions to airfields already under construction, about 58 separate schemes for improving communications facilities and the construction of 10 war headquarters. The estimated cost was £152 million. Since some of the new installations were to be built in Denmark, Italy and Norway, these three countries became liable to bear a share of the cost, thus increasing the number of contributing countries to ten.

During the Lisbon Conference of February 1952, the Council reorganised the structure of the Alliance and NATO emerged as a permanent organisation, with its headquarters to be located in Paris. As a consequence, infrastructure planning had to take into account several new factors:

- (1) The establishment of the Supreme Allied Command, Atlantic, with the provision of new air bases and improved fleet facilities;
- (2) The accession of Greece and Turkey to NATO, which would involve the provision of installations of all kinds in these two countries;
- (3) The realisation that immense quantities of fuel were required by air forces equipped with jet aircraft, necessitating construction of pipelines and storage systems throughout the alliance;
- (4) The necessity for provision of training bases for NATO ground and air forces, and aids to air navigation. With the accession of Greece and Turkey, twelve countries were now sharing the financial burden of the Programme.

The Council eventually agreed to a cost-sharing total in the amount of £80 million for what were considered essential projects, leaving the financing of the remainder of the Fourth Slice to be settled when the Annual Review was completed. All member coun-

tries contributed towards the cost of the Fourth and subsequent Slices. The contribution of Iceland, which has no military forces, was “zero-rated.”

At its Ministerial sessions in Paris in April 1953, the council was able to reach agreement on the cost-sharing, not only of the three years' programme, but also of that portion of the Fourth Slice which had been left over from their previous Ministerial Meeting - this figure having been scaled down to £67 million. The cost-sharing ghost, whose lugubrious presence had haunted previous ministerial sessions, had at last been laid.

The Council approved the first instalment of the three-year programme, or Fifth Slice, of common infrastructure amounting to about £90 million in December 1953. A considerable part of this Slice was devoted to the completion of the jet fuel pipeline system by connecting it to ports of entry. Other features of the Slice were the improvement of naval bases, particularly in the Mediterranean, the extension of signals projects, particularly in Belgium, Greece, Italy and Turkey, and the provision of long-range aids to navigation in the Eastern Atlantic.



Squadron personnel briefing facility at a NATO airfield

PROGRESS TOWARD A COMPREHENSIVE STRATEGY FOR RESOURCES

Recognition by Allied Governments of the gravity of the economic problems facing their countries heightened awareness of the need to reinforce the economic basis on which Alliance cohesion and defence capabilities rest. Many of the initiatives set in motion to address this problem were brought into sharper focus as economic constraints became more severe. One field offering scope for a concerted effort within the Alliance was resource development and allocation.

At the December 1983 meeting of Defence Ministers, strong emphasis was placed on more effective use of available resources. Additionally, there was acknowledgement of the potential benefits to be had from exploiting NATO's ever-growing technological strength. Of seven specific areas, where it was agreed to pursue greater co-ordinated efforts, four were directly linked to the infrastructure Programme. These were:

- Improved co-ordination of infrastructure planning to bring support facilities more into line with the projected needs of NATO forces, while at the same

time providing adequate funding to ensure their operational effectiveness;

- Greater emphasis on exploiting available or emerging commercial technologies to enhance the conventional defence aspects of the Alliance;
- The establishment of priorities based on the application of rigorous criteria of military value and cost effectiveness;
- Adequate use of the inherent industrial capabilities of member countries in the field of defence technologies.

A year later, in December 1984, Defence Ministers published a full statement on resource guidance at the conclusion of their meeting. The statement included strong emphasis on the urgency of devising appropriate methodology for measuring output performance on which to base supplementary ministerial resource guidance. This marked a further stage in efforts being made within the Alliance to pull together all the various elements needed to facilitate the progress called for in the field of conventional deterrence. Nevertheless, it took almost ten years before existing resource structures within the Alliance were to be significantly modified.

At their meeting in Brussels in May 1988, Defence Ministers reviewed other work that had been set in hand, including measures to improve the effectiveness of conventional forces and efforts to broaden Alliance participation in the provision of assistance to Greece, Portugal, and Turkey. Several other important topics were also addressed, including progress being made on the participation of Spain in Allied defence planning under guidelines which had been approved for the development of co-ordination agreements between the Major NATO Commanders (later renamed NATO Strategic Commanders) and the Spanish Military Authorities. These addressed Spain's military contribution to the common defence outside NATO's integrated military structure. Under decisions taken on infrastructure financing, it was agreed to provide additional funding to accommodate the relocation of the United States 401st Tactical Fighter Wing from Spain to Italy.



Instrumented Scraper (known as the "intelligent pig") which measures the wall thickness of steel pipelines and detects all defects such as corrosion and other damage

A NEW STRATEGY

At their meeting in London in July 1990, NATO Heads of State and Government agreed on the need to move the Alliance in the direction of a fundamental strategic review.

The Strategic Concept adopted at the 1991 Rome Summit proposed a broader approach to the maintenance of NATO's collective defence capabilities. The new strategic concept provided for reduced dependence on nuclear weapons and introduced major changes in NATO's integrated military forces, including substantial reductions in their size and required states of readiness. In order to offset the force reductions, the new concept called for corresponding improvements in force mobility, flexibility and adaptability to different contingencies, with increased emphasis on multinational formations. It also provided for the creation of a multinational Rapid Reaction Corps and the adaptation of defence planning arrangements and procedures to address potential future requirements for crisis management and peacekeeping.

Another significant and welcome development within the Alliance was the recent enlargement initia-

tive, which resulted in the accession of three new nations into NATO in March 1999. When NATO Heads of State and Government at the 1997 Summit Meeting in Madrid decided to invite the Czech Republic, Hungary and Poland to join the Alliance, each nation took steps to integrate into every aspect of NATO including, of course, the complex business of joining the Infrastructure family



NATO Air defence radar



Air Defence operator's console from the 1960s. NATO Air Defence is integrated across Europe.

IMPACT OF THE NEW STRATEGIC CONCEPT ON THE INFRASTRUCTURE PROGRAMME:



In the past, NATO funded many Surface-to-Air Missile sites

In 1991, a Fundamental Infrastructure Review Working Group was formed to conduct a complete review of the existing Infrastructure Programme and its procedures. The review was intended to bring the NATO Infrastructure Programme fully into line with NATO's new strategic concept and revised force structure.

On 25 May 1993, Defence Ministers accepted the Working Group's recommendations, which were subsequently issued under NATO Document C-M(93)38 (Final). One of the most significant outgrowths of the review was the adoption of "Capability Packages" as a more visible means of linking future infrastructure planning to operational needs. The Capability Package concept introduced a top down planning system focused on achieving a specific military capability utilising the traditional planning, implementation

and acceptance system without changing many of the post-approval procedures utilised in the annual Slice system.

Another significant decision provided for the establishment of a Senior Resource Board, which was given overall responsibility for common funded military resource management. Today, the Board is responsible for advising on matters on which major resource policy decisions are required, including the availability of financial and manpower resources; submitting recommendations for resource planning; resolving conflicts of resource priority; and providing broad guidance and direction on major resource policy issues to the Military Budget Committee and Infrastructure Committee. The Board endorses Capability Packages from a resource standpoint for final approval by the Council or Defence Planning Committee.

*Fax from a Ministry of Defence:
"As no discussion took place at the meeting held at NAMSA between 17 - 19 June...."*

THE NATO SECURITY INVESTMENT PROGRAMME TODAY

In late 1994, the NATO Infrastructure Programme was re-designated the “NATO Security Investment Programme”, in part to emphasise the fact that common funding was not only concerned with the provision of key Alliance infrastructure, but that at a political level it represented an investment in collective security. Thus, the phrase “Security Investment” refers to the overall common funding Programme whereas “infrastructure” is used to refer to the facilities, equipment and specifics of that Programme.

The NATO Security Investment Programme today covers the process and procedures from the conception of the Required Capabilities, through package definition, resource analysis, investment proposal, implementation, acceptance and management to deletion and removal from the NATO inventory. However, resource limitations necessitate a more selective approach to common funding than hitherto. Therefore, in principle, NATO common funding eligibility will focus on the provision of infrastructure

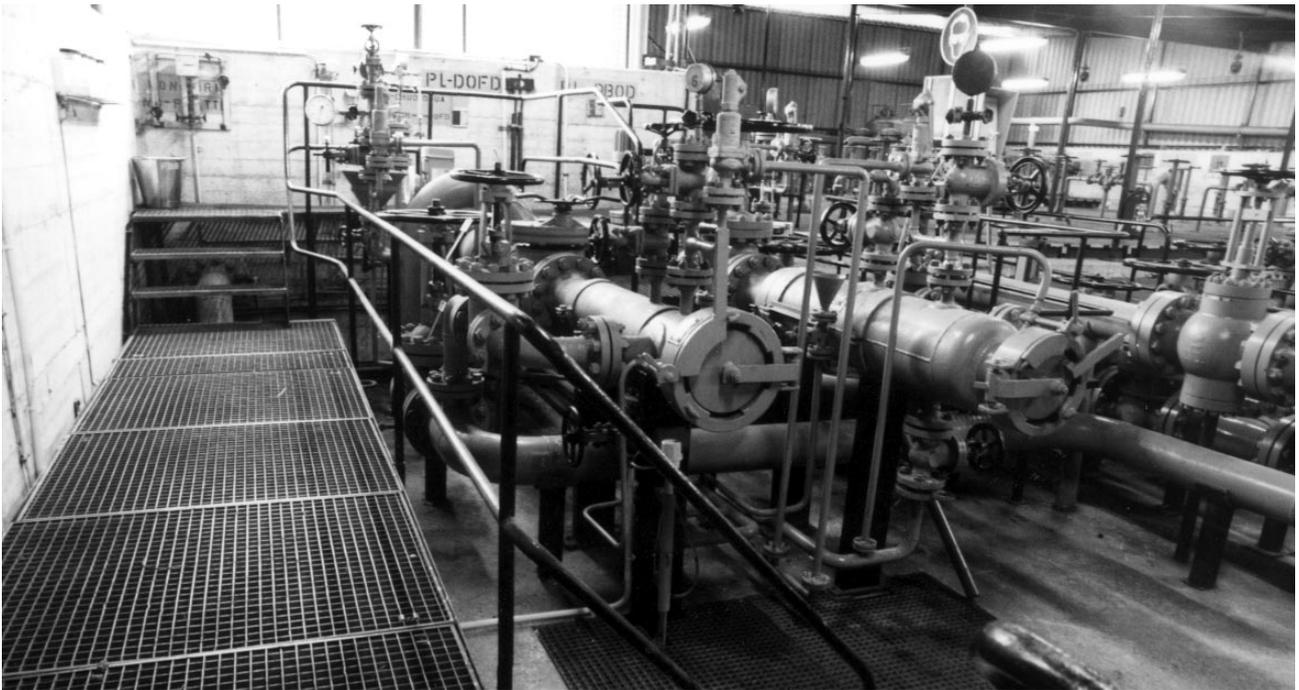
requirements which are over and above those which could reasonably be expected to be made available from national resources.

NATO-use, or contingency-use, of national civil and military facilities such as airfields, communications and harbours, is promoted to the maximum extent possible. Every opportunity is taken to exploit joint NATO/national civil-use of existing, similar NATO facilities, including pipelines, where this is a practical proposition. Where shared-use is impossible, new, essential NATO military infrastructure proposals are considered for possible common funding.

The NATO Security Investment Programme is implemented under the supervision of the Infrastructure Committee within annual contributions equivalent to approximately €746 million. The Programme finances the provision of the installations and facilities needed to support the roles of the Strategic Commands recognised as exceeding the



The NATO Security Investment Programme has made major contributions to operations in the Balkans



The starting point of a NATO pipeline



Jet fuel storage at a NATO airfield



A NATO war headquarters bunker takes shape

national defence requirements of individual member countries. The investments still cover traditional installations and facilities, such as airfields, fuel pipelines and storage, ports and harbours, communications and information systems, radar and navigational aids and military headquarters.

Another significant change to the Programme was the introduction of Peace Support Operations in Bosnia-Herzegovina and more recently, Kosovo. Funding for Peace Support Operations is split amongst the Military Budget and the NATO Security Investment Programme. For its share, the NATO Security Investment Programme covers infrastructure related to the development of Operational Command Headquarters, Airports of Debarkation, Seaports of Debarkation, material storage depots, mobility assets (rail, road and bridge repair), communications and information systems equipment, and commercial engineering/logistic support services.

But the most dramatic part of NATO's history, including that of the Infrastructure Committee was the formal invitation at the NATO Summit in Madrid in July 1997 for the Czech Republic, Hungary and Poland to begin talks on membership of the Alliance. Expert teams made up from the International Staff and national members of the Infrastructure

*Infrastructure Committee National representative:
"It is clearly not obvious that this is natural."*

Committee visited the aspiring member nations and with briefings and workshops explained what was involved in joining the Infrastructure Family. It was a complex business. Detailed costing were established for bringing the new members up to the same standard as the rest of NATO in terms of airfields, air defence, and other categories of infrastructure. Within the capitals, new laws were enacted to allow participation in International Competitive Bidding. Additionally, in the capitals, new organisational structures were established on the basis of what each nation believed best suited their own circumstances.

The size of the contribution to be asked from each new nation was an important part of the discussions. This applied to the Civil Budget, the Military Budget as well as to the NATO Security Investment Programme. All nations were involved - adding new contributors potentially reduces the contributions of existing members.

From the beginning of 1998, the Invited Nations (as they were known at this stage of the accession proceedings) were given observer status in the Infrastructure Committee. This proved of great value in giving the representatives of the Invited Nations first hand experience of the workings of the Committee. Four days after the Invited Nations became NATO members, the Infrastructure Committee, on Tuesday 16 March 1999, held a meeting with the new members present in their new capacity. The Infrastructure Family was now "at 19".

Capability Packages addressing enlargement were developed and approved. The first projects, some basic communications, were fully authorised before the date of accession which demonstrated the faith that the Infrastructure Committee had in the whole enlargement process. Many projects have been authorised since accession, and will continue for many years to come.

PURPOSE OF A CAPABILITY PACKAGE

"... identify the minimum required NATO and National funded infrastructure assets and costs which, together with the forces and other essential requirements, enable a NATO Commander to achieve a specific military capability, in support of a prescribed military function."



Infrastructure Committee 2001

Participants - Roles and Origins

O **verview:** Since 1992, major changes have taken place within NATO as a result of the new integrated force structure and revised Strategic Concept. These changes have been reflected in the policies and activities of all the bodies responsible for the organisation and management of NATO's resources. No overview of the NATO Security Investment Programme's history would be complete without mentioning the various participants, past and present, and the roles they have played in the process.

Infrastructure Committee: This is the most enduring permanent committee within the Alliance. Established in May 1951, the Infrastructure Committee advised and reported directly to the Council and the Defence Planning Committee on all

matters related to NATO's Infrastructure Programme, including the development of implementation policy and authorisation of investment projects. In 1994 it was merged with the Infrastructure Payments and Progress Committee. In its current capacity, the Infrastructure Committee:

- Screens projects included in the NATO Security Investment Programme, primarily from the technical and financial point of view. Eligibility for common funding is also assessed as part of the screening process;
- Grants authorisations to Host Nations to commit funds for approved projects;
- Decides on procurement issues;
- Formally accepts implemented projects;
- Manages the programme from a financial point of view within the overall limits set by the Senior

Staff member to Infrastructure Committee: "Corrosion at the airfield is not supported"

Resources Board and approved by the Council;

- Calls forward payments from contributing nations in accordance with approved expenditure forecasts.

Infrastructure Payments and Progress Committee. This was the pre-1994 standing committee dealing with the financial aspects of the Infrastructure Programme execution. In 1994, its duties were amalgamated with those of the Infrastructure Committee. One of the Infrastructure Payments and Progress Committee's key roles (with technical assistance from the International Staff) was to scrutinise project cost estimates and to suggest alternate methods of doing work, if they deemed them more cost effective.

The Standing Group of the Military Committee: The precursor to the International Military Staff, the Standing Group represented the Military Committee in the day-today liaison between nations and NATO activities. The Standing Group was disestablished in July 1966.

Senior Resource Board: Established as a subsidiary body of the Council and Defence Planning Committee in May 1992, the Senior Resources Board was given overall responsibility for common funded

military resource management. It is responsible for advising on matters where major resource policy decisions are required, including the availability of financial and manpower resources; submitting recommendations for resource planning, resolving conflicts of resource priority and providing broad guidance and direction on major resource policy issues to the Military Budget Committee and Infrastructure Committee. The Board endorses Capability Packages from a resource standpoint for final approval by the Council or Defence Planning Committee.

The Nations: All member nations are represented on the Infrastructure Committee by qualified military officers or civilian delegates. These national representatives, for all practical matters, are the committee. Each national delegate is entrusted with the stewardship of his or her nation's financial interests and has authority to commit funds for various common funding proposals.

Supreme Allied Commander, Europe (SACEUR): SACEUR's mission is to safeguard the area extending from the northern tip of Norway to Southern Europe, including the whole of the Mediterranean, and from the Atlantic coastline to the eastern border of Turkey.



Earthquake damage at a NATO naval base

Supreme Allied Commander, Atlantic (SACLANT): SACLANT's area of responsibility extends from the North Pole to the Tropic of Cancer and from the coastal waters of North America, to those of Europe and Africa.

As NATO's two Strategic Commanders, SACEUR and SACLANT are responsible for managing the resources of the Alliance's integrated military structure, a task which includes the framing of the minimum military requirement for projects. Thus the Strategic Commanders are the principle customers of the NATO Security Investment Programme.

The International Staff: The NATO Security Investment Programme is supported by qualified engineers, financial experts and support staff who are members of the permanent International Staff. They are directed by the Controller, Security Investment Programme, who also serves as the Chairman of the Infrastructure Committee. In supporting both the Senior Resource Board and the Infrastructure Committee, the International Staff performs a number of functions, including:

- reviewing costed project proposals for compliance with criteria and standards, conformity with agreed policy, satisfaction of the military requirement, consistency of costs, interoperability, cost sharing, legal and environmental requirements;
- preparing reports for the resource committees with appropriate recommendations for national agreement;
- chairing working groups of national technical experts;
- co-ordinating the management of Capability Packages including, in conjunction with the International Military Staff, screening Capability Packages from the technical, financial, and political points of view.
- chairing final inspection and acceptance of projects;
- chairing technical meetings, on site if appropriate, with military and civilian authorities both of

NATO and the nations to consider projects required by the Strategic Commands;

- providing secretarial support to the Infrastructure Committee including preparation of the agenda, finalising and issuing Committee documents and producing the decision sheets.
- maintaining NATO Security Investment Programme financial records, preparing the paysheets which control payment between nations and conducting financial analyses on all aspects of the Programme,
- developing NATO Security Investment Programme policy for procedural and funding issues.



The International Military Staff: Formally established in February 1967, the International Military Staff represents the interests of the Military Committee and provides a valuable link between the Strategic Commanders, nations and NATO staffs. The Logistics, Armaments and Resources Division within the International Military Staff was established in 1996 and is responsible for the development and assessment of NATO military policy and procedures in the area of manpower, resources, military budgets, infrastructure, armaments planning and co-operation, as well as standardisation.

Strategic Command representative: "A cost overrun of 20% should be considered normal."

MOBILITY SECTION

The MOBILITY Section, created in 1995, is, in NATO terms, a young section. It is, however, based on the merger of two of the most senior sections of the then Infrastructure Directorate, the AIRFIELDS and the MISSILES sections. The additional responsibility of Naval Bases Infrastructure has also been entrusted to the MOBILITY Section.

Over the years, more than 220 airfields, 430 Missile sites, 320 Forward Storage, Ammunition and Reinforcement Support sites, as well as more than 200 Naval Bases have been constructed, restored or modified through NATO common funding. Aircraft pavements, protective and support facilities for fighter aircraft, waterfront facilities (piers, quays), battle damage repair and ship maintenance and support facilities, missile maintenance, control and launch

areas are some of the most characteristic facilities that NATO has built at these sites.

The MOBILITY Section is now extending its activities to the three new NATO nations, where similar facilities, in support of reinforcing forces, have just started being implemented.

The Section is also actively involved in the support of the PfP programme, especially with regard to the development of airfields in the PfP countries for potential use by NATO-led PfP operations. Site visits have been carried out so far to four PfP countries (Moldova, Slovenia, Romania and Latvia), where NATO has been requested to assess the technical requirements for developing an airfield for such use.



One of NATO's 220 airfields

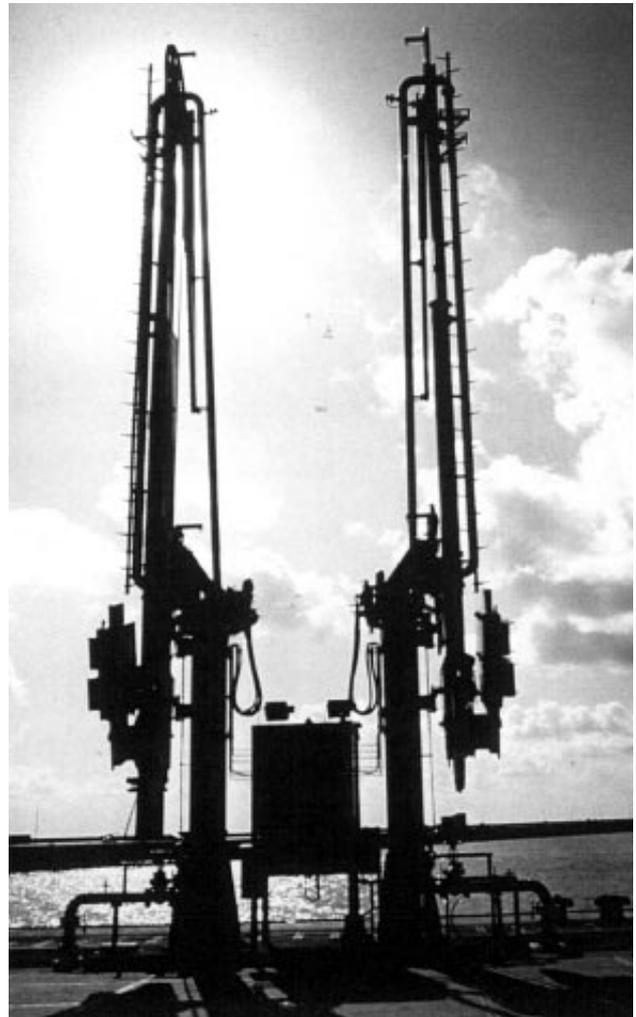
SUSTAINABILITY SECTION

The SUSTAINABILITY Section, formerly the POL, Naval base and War Headquarters Section, emerged from the restructuring of the Infrastructure Directorate in 1995. While the responsibility for Naval base infrastructure has been transferred to the Mobility Section, new responsibilities for Reinforcement Support, Forward Storage Sites and Training Installations, previously handled by the former Missiles Sites Section, have been assigned to the Section.

Staff member:

*"The drainage problem
must be seen as a (w)hole."*

The major areas of responsibility of the Section include POL (Petroleum, Oil and Lubricants), with works related to the construction and restoration of 12,000 km of pipeline networks, 3 million cubic meters of fuel storage, associated pump stations and reception and dispatching facilities. All Airfield and Naval Base related fuel installations throughout the Alliance, have recently been added to the Section's responsibilities. The Section also deals with war headquarters covering all protected wartime headquarters facilities and, more recently, the peacetime headquarters facilities of the new NATO Command Structure. The Section is heavily engaged in supporting civil works for communications, air defence and command and control systems.



Naval base fuel point funded by NATO

Additionally, the Section plays a key role in the commonly funded activities of Peace Support Operations and in the Partnership for Peace programme.

SIGNALS SECTION

The SIGNALS Section retained its ancient and honoured name when the Infrastructure Directorate was renamed Security Investment Directorate. It was the only section to keep its old name and it was not without a struggle. Its responsibilities also remained basically the same. It has three sub-sections dealing with Air Defence, Communications and Information Systems. Within Air Defence, the maintenance of existing systems is continuing until the Air Command and Control System (ACCS) is ready. This applies to all of Allied Command Europe, including the three new member nations. Similarly, provision or replacement of air defence radars continues. The Communications sub-section is engaged with the

replacement of TARE and IVSN and with the complex business of replacing satellites. The Information Systems sub-section is engaged in the provision of the NATO-wide command and control information system. This is probably the biggest step forward in truly integrated communication that the Alliance has ever undertaken. When completed there will be an internal NATO network interconnecting some 10,000 users.

In addition, there is a steady stream of work for the Peace Support Operations in Bosnia and Kosovo. The Section has recently started to work in support of the Military Budget Committee - a major new and challenging task.

Strategic Command letter:

"...the new concept for Air Defence...requires multiple Ground based Air Defence Units to work together in different configurations...to engage multiple targets under electronic conditions in a safe and absolutely controlled environment."



One of a number of static satellite ground stations providing communications across all of NATO

PROGRAMME CONTROL SECTION

Staff member: "We should not expect too much wisdom from the Senior Resource Board"

The PROGRAMME CONTROL Section is responsible for maintaining NATO Security Investment Programme policies and procedures. The main focus of the section is ensuring consistency throughout the Directorate in supporting the work of the Infrastructure Committee. Over time, an important role for the PROGRAMME CONTROL Section has been to act as the custodian of the Security Investment Directorate's institutional memory and combined experience. The Section further serves as the link between the work of the Infrastructure Committee with that of the Senior Resource Board.

In the daily operations of the Section, three distinct elements of work can be identified. Firstly there is Plans and Policy, including Automation. This element ensures that the approved NATO Security Investment Programme policies and procedures are adhered to and that the management and implementation of projects is performed in line with the Alliance's policies on common-funded resource management. As a separate responsibility, automated management tools are updated and new tools are introduced. The second element is the financial management of the NATO Security

Investment Programme. Here, responsibilities range from financial control of project implementation as reported by host nations, to forecasting of future liabilities resulting from approved programme elements and estimating financial implications of future military requirements. Thirdly, there is the Infrastructure Committee Secretariat which manages the Infrastructure Committee's daily operations. More specifically, it is responsible for committee related policy issues, document quality control and preparation, agenda management and recording Infrastructure Committee decisions.

MINIMUM MILITARY REQUIREMENT

The most austere facility (or minimum asset characteristics) required to meet a specific NATO military need, as determined by the NATO Strategic Commander.



Baby, it's cold outside

Mechanics of the Programme

As a general rule, NATO common funded infrastructure was originally defined as covering expenditures which conformed to the following criteria:

- They applied to fixed buildings or installations or non-fixed facilities used as a means of satisfying the same operational requirements;
- They applied to buildings or installations essential to the training of NATO forces or to the implementation of NATO operational plans;
- They applied to buildings or installation having a sufficient degree of common use or interest.

If these criteria were met, it remained a matter of negotiation as to whether member countries agreed to finance works in common. These negotiations took into account all aspects of the matter (military/economic/political).

Where doubt existed as to whether expenditures met the above criteria, subject to negotiation, they could be admitted for common financing provided they could be suitably financed under infrastructure procedures and were closely akin to common infrastructure as defined above. Works that had a national interest, as well as a NATO common interest, have been financed partly from NATO Common Infrastructure Funds and partly from national funds.

The ceiling and cost share of Slices I to IV were negotiated annually. It was then agreed that an annual reiteration of this burdensome task was not in the best interest of the Alliance. Consequently, it was agreed that for Slices V-VII, the Slice Group as a whole would be cost-shared. Eventually, Slices II to VII were bundled together. The duration of Slice

Groups increased to 5 years in 1965 (Slices XVI-XX), and to six years in 1985 (Slices 36 (1985) to 41 (1990)). [Note: Roman numerals were used for Slices I through XXXV, after which nations found it more practical to use Arabic numerals.]

Within Slices XXVI through XXIX, the “United States Special Programme” was employed as an arrangement whereby the financial burden of infrastructure on the United States was eased by allocating

a portion of the infrastructure funds to special United States projects. These projects did not normally qualify for NATO common funding, although they were closely related to conventional infrastructure projects and made a direct contribution to the defence posture.

The annual slice funding levels for Slices II-VII averaged approximately £107 million, but then steadily decreased over the following years. By 1970, the nominal funding levels began to increase again, but the rate of increase did not maintain the required purchasing power until about 1979. Subsequently, a 5% slice weighting factor was applied to each Slice to compensate for the disparity between its nominal value and real value. From Slice I to 41 (1950-1990 inclusive), nations made available 6.592 billion IAUs (or € 23 billion) for infrastructure investments. The last slice was approved in 1993 as Slice 44.

Staff member:

“We don’t need SHAPE support for toilets.”



Typical NATO semi-buried fuel storage tank

THE SLICE PROGRAMME IN MORE DETAIL

Staff member: "A study of bunkers would lead to no concrete results."

The term "Slice" referred to a single Programme year in which NATO had reviewed, approved and ultimately funded projects. Later, "Slice Group" was used to designate a block of time (varying from 3, to 4, 5, to 6 years, as time went on) for which the nations provided commitments for short to medium term funding of yearly slices.

To illustrate the basic procedure followed and parts played by the various agencies responsible for getting common infrastructure Programmes under way, let us trace briefly the sequence of a typical Programme.

Step 1: The Subordinate (Regional/sub-regional) Commanders submitted annual proposals for infrastructure improvements within their Area of Responsibility to their respective Supreme Commander.

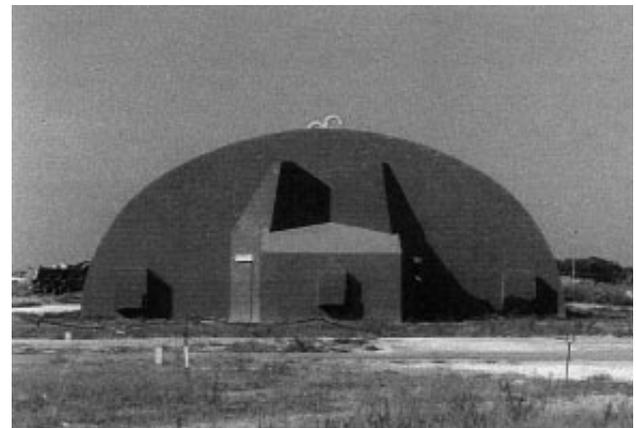
Step 2: The Supreme Commanders co-ordinated these proposals within their master plans and assessed whether individual projects were essential to support the forces, in accordance with the NATO Annual Review and with established criteria. In the course of preparing their consolidated Programmes, the Supreme Commanders solicited guidance from International Staff experts in order to ensure that:

- Cost estimates submitted by Host Nations were complete and reasonable;
- Projects were sound from a technical point of view;
- Military requirements were being met at the least possible cost to NATO.

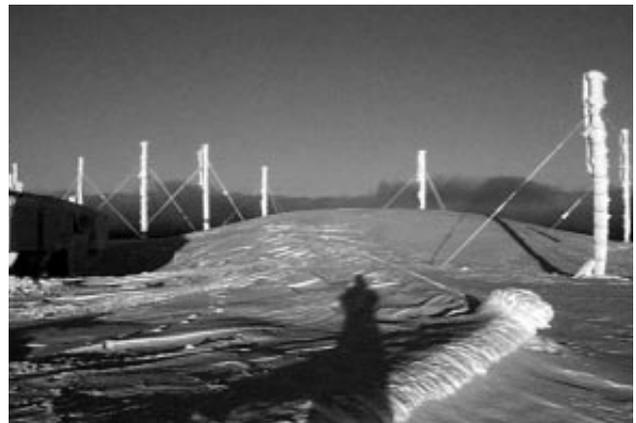
Step 3: The Programme was then submitted to the Standing Group (now subsumed by the International Military Staff) and to the Infrastructure Committee. The Standing Group examined it from the standpoint of military necessity and relative urgency. Once satisfied, it then forwarded the Programme with its comments to the Military Committee. Concurrently, the



Earthquake damage at a NATO naval base



Modern protective aircraft shelter



Antenna field in northern Norway

Infrastructure Committee examined it from the financial and technical point of view, and verified that the projects were in fact for common-use and therefore qualified for common financing. Final reports from both the Military and Infrastructure Committees were then placed before the Council and considered simultaneously.

Step 4: Once financial approval had been granted, responsibility for execution of individual projects rested with designated Host Nations. This included determining specific project locations, preparation of engineering master plans and co-ordination of necessary land acquisition measures. Once complete, the master plan was forwarded to the Supreme Commander for approval.

Step 5: After being cleared by the Supreme Commander, the Host Nation prepared a detailed construction cost estimate and submitted a project package to the Infrastructure Payments and Progress Committee before funds were committed.

Pounds Sterling (£) were used as the basis for estimates and funding of NATO infrastructure projects from 1950 through 1967. The Infrastructure Accounting Unit (IAU) replaced the pound in 1968, when the latter was devalued. The IAU was then pegged to the Belgian franc and periodically adjusted by NATO in relation to other national currencies. The NATO Accounting Unit (NAU) subsequently replaced the IAU on 1 January 1997, and is currently pegged at the value of the "Euro" (€).

STANDARDISED CAPABILITY PACKAGE CONTENT

1. Commander's Mission
2. Principle Mission Elements
3. Operational Analysis
4. Required Capability
5. Required Resources:
 - Forces (concept of employment)
 - Armaments
 - Logistics
 - Infrastructure
 - Communications
6. List of Available Assets (NATO/National military & civil)
7. Analysis of Assets/Options (to meet Minimum Military Requirement)
8. Consolidated Resource Proposal
 - Capital Costs
 - Operating Costs
 - Manpower costs
9. Commander's Impact Statement
10. Commander's Remarks

THE CAPABILITY PACKAGE REPLACES THE SLICE PROGRAMME

In 1993, the Fundamental Review of Infrastructure led to the replacement of programming military requirements in annual slices with “Capability Packages,” which were intended to identify, capture and integrate all the resources needed for a specified military requirement.

The Capability Package is defined as a combination of national military and civilian and NATO-funded infrastructure, associated costs and manpower, which, together with the military forces and other essential requirements, enable a NATO Commander to achieve a specific Military Required Capability. Each Capability Package must link military requirements with current strategy and established force goals and identify all elements necessary for the package to function. A typical Capability Package is prepared in the following format:

Stage I - Packaging Definition

- Section: 1 - Commander’s Mission Area
- Section: 2 - Principal Mission Elements
(including primary Military Function)
- Section: 3 - Operational Analysis
- Section: 4 - Required Capabilities

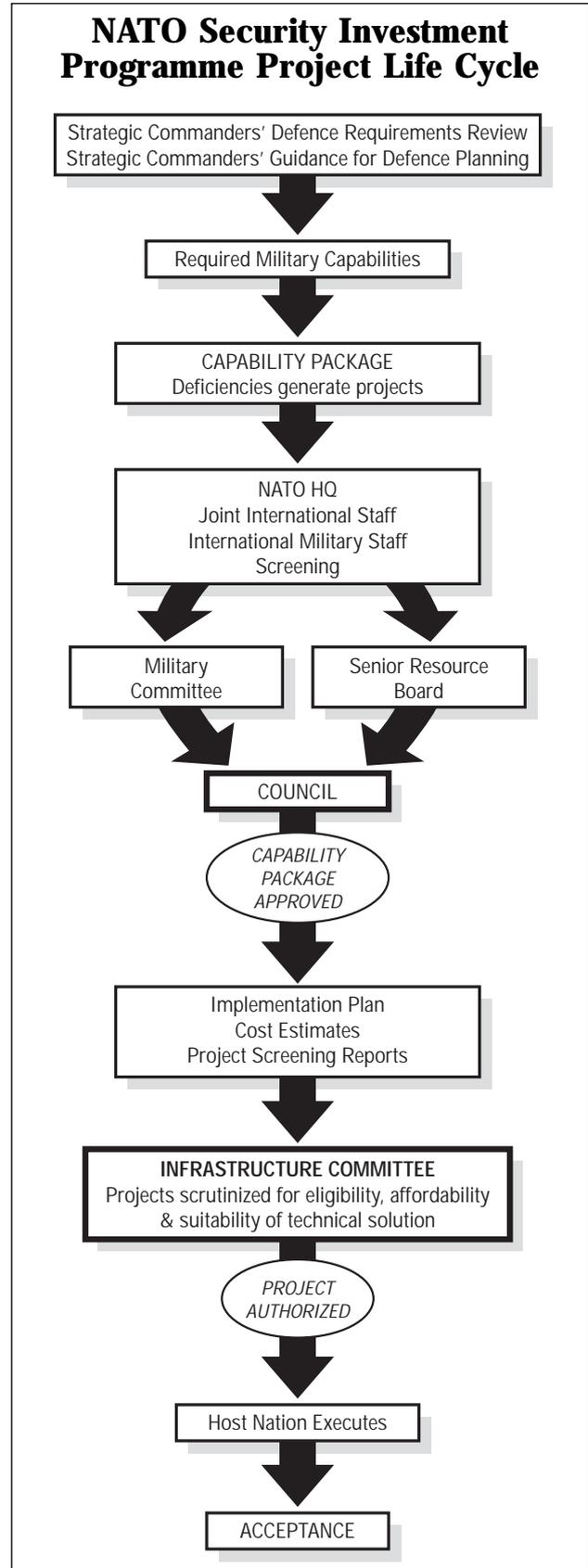
Stage II - Resource Analysis

- Section: 5 - Resources Required
(to execute mission)
- Section: 6 - Assets Available
- Section: 7 - Resource Options Analysis
(assets available versus assets required)

Stage III - Investment Proposal

- Section: 8 - Requested infrastructure projects, associated operations and maintenance, manpower
- Section: 9 - Operational Impact Statement
- Section: 10 - Commanders Remarks

Once a Capability Package has been developed by the sponsoring Strategic Commander, it is submitted to NATO headquarters, where it undergoes a compre-



*Strategic Command representative: statement on helicopter facilities
“...shall be capable of, but not limited to, day and night operations...”*

hensive screening by both the International Staff and International Military Staff. This can take anywhere from a few weeks to a year or more, depending on the complexity. A detailed report addressing the resource aspects and the military requirement aspects is prepared and submitted in parallel to the Senior Resource Board and to the Military Committee. The Senior Resource Board considers the report's comments on capital costs, operating costs and manpower implications. The Military Committee examines the requirements part of the report. When both bodies are satisfied, the report is forwarded to the North Atlantic Council for agreement. The projects within the Capability Package are then said to be “programmed”.

The country or agency that is “Host Nation” may now submit to NATO detailed fund requests for the projects within the Capability Package. The fund request is “screened” on behalf of the Infrastructure Committee by the International Staff, with the help of expert working groups where appropriate. This is the process by which the project is scrutinised for compliance with criteria and standards, conformance with agreed policy, satisfaction of the military requirement, consistency of costs, interoperability, cost sharing, legal and environmental requirements.

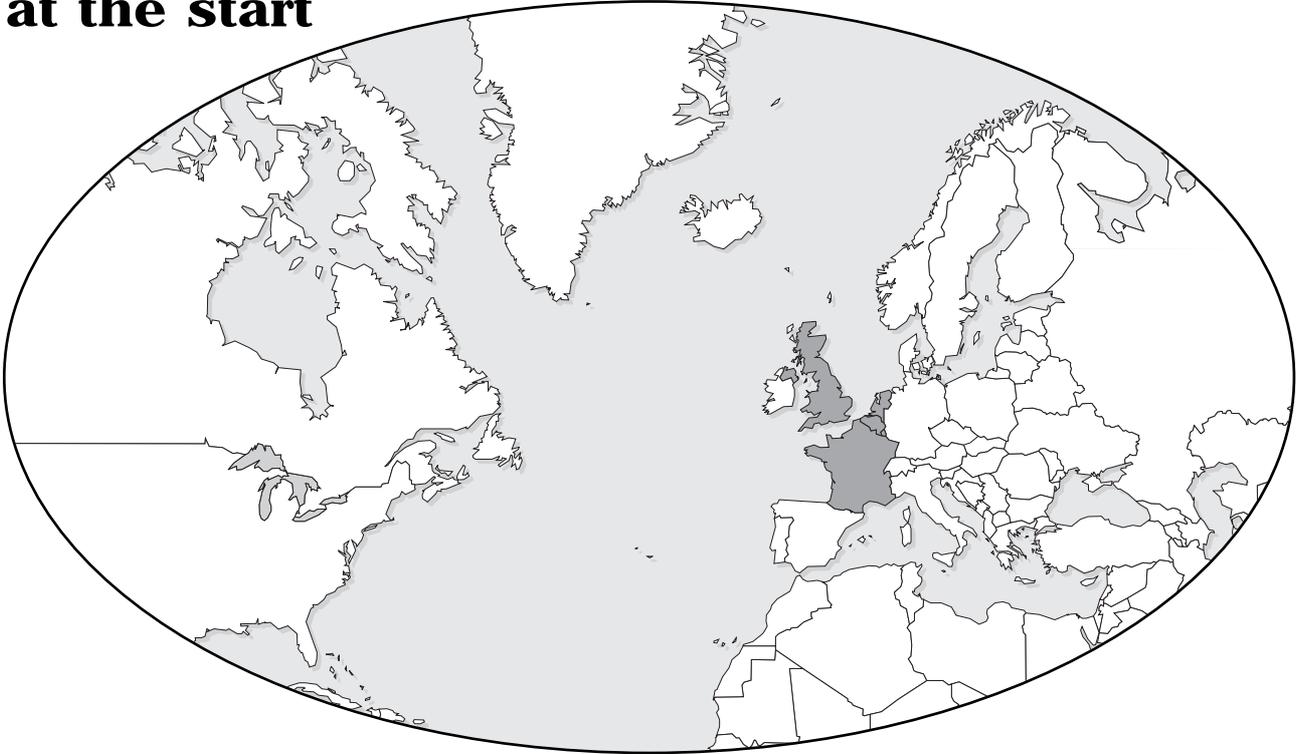
The International Staff also assumes the role of Capability Package Co-ordinator. This involves monitoring the progress of the Package to completion, processing changes and reporting periodically to the Infrastructure Committee on the levels of implementation that have been achieved.

SLICE versus CAPABILITY PACKAGE

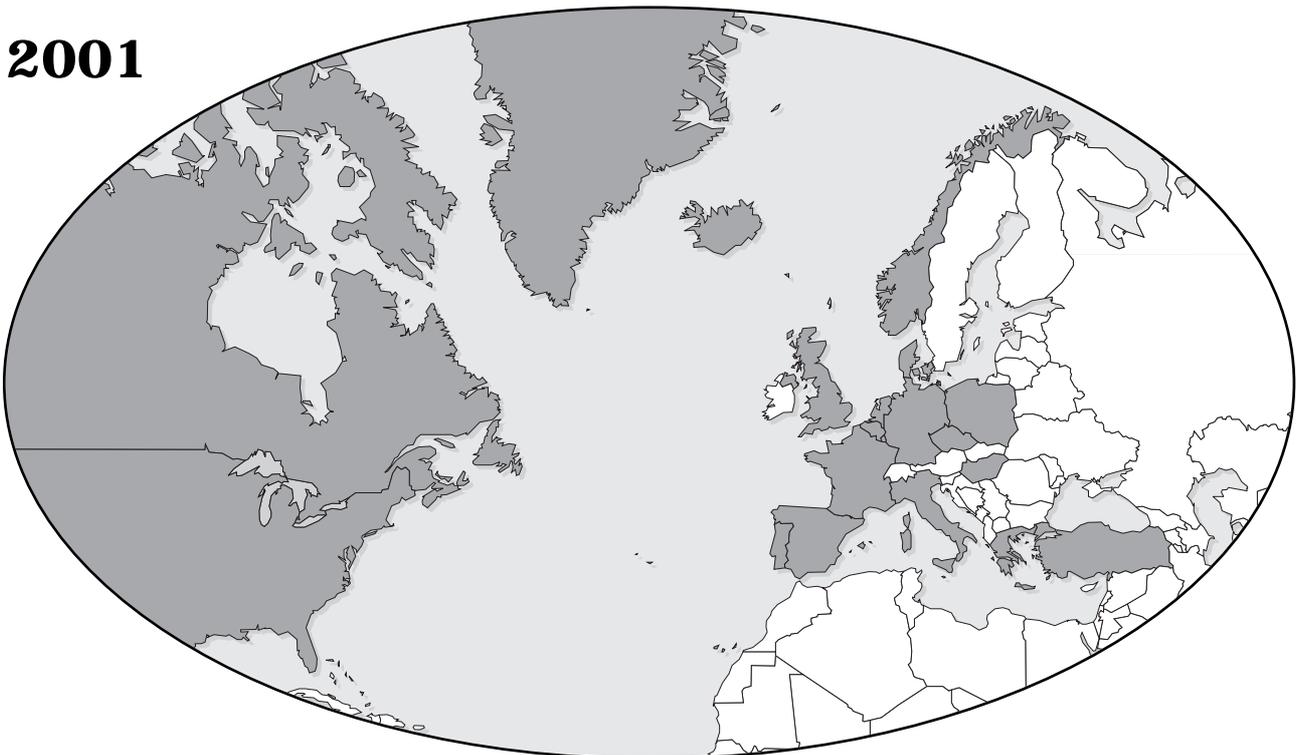
- “Slice” Programme utilized for common funding of infrastructure projects from 1950-1993. Bottom up process, driven by regional-level priority.
- Capability Package process replaced Slice Programme as a result of Fundamental Review of Infrastructure. Top down process, driven by strategic priorities

THE GROWING INFRASTRUCTURE FAMILY

at the start



2001





Hangar construction at a NATO airfield

Infrastructure Projects

From the onset, NATO's Infrastructure Programme has been based on those requirements deemed necessary to sustain the forces of the Alliance, both in peacetime and during crisis, should deterrence fail.

By December 1984 Defence Ministers were confronted with increasingly pressing needs to provide additional infrastructure resources for a large range of programmes. High on the list of priorities was the need for special provision to be made for programmes concerned with support for tactical air reinforcements for Allied Command Europe. The resulting decision to allocate three billion Infrastructure Accounting Units (IAU) for the next six-year period (more than double the funding agreed for the previous period) represented an important step forward.

Once the nations had agreed that infrastructure should be subject to common funding and had worked out the negotiated basis for shares and authorisation ceilings, the next task was to establish a system to identify, programme, authorise, and otherwise maintain control of the programme. The system established generally followed procedures in place in nations at the time. The nations originally agreed that common funds should be provided for:

- Military operational facilities;
- Facilities jointly required by two or more countries, or by one country, but with a high degree of common interest for other countries;
- Facilities essential to accomplish wartime missions of NATO assigned forces;
- Fixed buildings or installations, or non-fixed facilities, where these are considered to be preferable

to fixed facilities, as a means to satisfy the same operational requirements;

- Installations necessary for specialised research and for training of NATO forces.

Over the years, the details of precisely what is eligible for NATO common funding have changed. Some details remain to be agreed. In any case, all facilities provided must conform to the concept of Minimum Military Requirement defined as, “the most austere facility required to meet a specific NATO military need, as determined by the NATO Strategic Commander.”

220 airfields

AIRFIELDS

In April 1951, when General Eisenhower’s command became operational, there were only 15 airfields available for NATO use. By 1955, some 125 airfields had been completed. Today, more than 227



Parking apron at one of NATO’s airfields

airfields, with a full range of operational support facilities have been constructed throughout the Alliance. The aggregate pavement projects for runways, taxiways and parking aprons is equivalent to a 6-lane motorway from Brussels to Lisbon. On-base jet fuel storage capacity created through the infrastructure Programme is sufficient to support 3600 jumbo jet

JFAI Request:

“Taking into account the amount (NAU 9,240) and the fact that this project is too old (25 years), never activated and currently useless, a simplified procedure for the JFAI is proposed...”

aircraft. Since 1970, NATO has constructed semi-hardened shelters for all in-place or dual-based squadrons. Further, 2,400 semi-hardened magazines provide an ammunition storage area equivalent to 60 football fields. As a consequence of the new strategic environment, the number of airfields maintained in the NATO inventory has been dramatically reduced.

over 2,000 aircraft shelters



Shelters protect aircraft on the ground

POL (Petroleum, Oil, Lubricants) FACILITIES

By mid-1954, 1.3 million cubic metres of bulk fuel storage and 6,100 kilometres of pipelines had been authorised. Associated pump stations, bulk fuel storage depots, distribution points, civilian refinery interfaces and ship-to-shore off-loading points were incorporated into the system.

12,000 km of pipelines



The NATO pipeline network provides fuel to the airfields

During the next 46 years, total fuel storage capability grew to more than 3 million cubic metres, along with 12,000 km of pipelines, providing NATO forces with the world's most comprehensive strategic POL capability.

3 million cubic meters of fuel storage



Fuel storage tank under construction

NAVAL BASES

In the early fifties, 26 major projects were under construction to support the maritime requirements of SACLANT and SACEUR. Today, NATO has constructed numerous piers, maritime airfields, ship repair facilities and naval munitions storage depots at more than 200 naval bases. Munitions facilities alone provide approximately 180,000 square meters of secure storage for ammunition, torpedoes and mines.

200 naval bases



NATO naval base power station



NATO naval base in Canada

COMMUNICATIONS & INFORMATION SYSTEMS

Since the inception of the Alliance, this has probably been the fastest growing field within the infrastructure Programme. This can be attributed to rapid

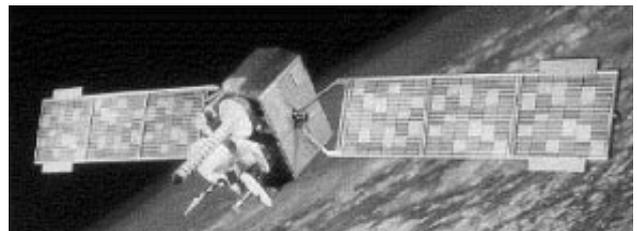


NATO Static Satellite Ground Station

advances in technology, coupled with a need for effective, integrated command, control, consultation, and information systems. By 1955, in excess of 300 projects had been completed, providing 16,000 kms of landlines, 10,000 kms of radio relay circuits and 1700 kms of submarine cable, augmented by supporting civilian circuits. Over the remaining years of the century, technology evolved rapidly, requiring the NATO Security Investment Programme to keep pace. Early innovative systems included the development of the ACE High System providing a multi-channel tropospheric scatter and line-of sight transmission system covering Europe from Norway to Turkey.

Satellite communication systems have been operational for 30 years, together with the associated fixed and transportable ground terminals positioned throughout the Alliance. The satellite systems are replaced and improved as required. Other early accomplishments included the provision of the Initial Voice Switched Network (IVSN) and Telegraph Automatic Relay Equipment Systems. Today, we are fielding a NATO-wide automated information system which will provide secure, controlled exchange of information between more than 10,000 NATO military and civilian users. The functionality of this system will be progressively increased as will its interconnection to national systems.

communications satellites



NATO IV Communication Satellite

NAVIGATIONAL AIDS

By 1990, the infrastructure Programme had provided Long-Range Navigation Systems (LORAN) at 8 separate locations. This capability was further expanded with the provision of 77 Tactical Air Navigation Systems (TACAN) to supplement the civil aviation network. NATO has also provided Ground Control Approach radars and TACAN at 15 maritime airfields.

Agency Technical note:

“The voice communications functions will handle the internal and external, secure and non-secure, voice traffic related to internal, external and radio communications.”

TRAINING, EDUCATION, AND EXERCISE FACILITIES

The NATO Security Investment Programme has funded major works at firing ranges at Bergen, Germany and at Decimomannu, Sardinia, as well as at



Mine hunting simulator in Belgium

the NATO Missile Firing Installation (NAMFI) in Crete. To provide a realistic electronic environment for air, land, and sea exercises, the Programme funded the Multinational Electronic Warfare Support Group (MEWSG) with deployable facilities based at Yeovilton, in the United Kingdom and at Anzio, Italy. MEWSG can simulate the electronic parameters of missiles and can provide radar and communications jamming. The Programme has also funded the NATO (SHAPE) School at Oberammergau, Germany, the NATO Communications and Information Systems School at Latina, Italy, and the NATO Mine Warfare School in Ostend, Belgium.

SUPPORT FACILITIES

The Infrastructure Programme has provided funding for the NATO Naval Forces Sensor and Weapons



Accuracy Check Sites (FORACS) located at three sites: Andros Island operated by the US, Stavanger in Norway, and Souda Bay in Greece. FORACS provides the

facilities needed to calibrate and maintain the sensitive electronic surveillance, navigation, electronic support measures, and communications equipment used on modern naval vessels.

COMMAND & WAR HEADQUARTERS

Underground hardened war headquarters, along with alternate and mobile headquarters have been provided for integrated NATO commands. These war headquarters are constantly being upgraded to meet evolving or projected threat scenarios, and are fitted with the latest command, control and communication systems. Following the Force Structure Review of 1997, new peacetime headquarters facilities have been authorised for each of the regional and sub-regional commands.



Bunker under construction for NATO in Greece

85 air defence radars



Air defence radars are normally protected by a radome

WARNING INSTALLATIONS

NATO's radar network provides sea and air coverage from northern Norway to eastern Turkey, includ-



The radar from inside the radome

ing installation of some 85 Early Warning Radars; Air Defence Command, Control, and Reporting facilities; coastal radar network; and underwater detection systems at major choke points. NATO has placed a contract for the Air Command and Control System (ACCS), which will serve NATO with an integrated Europe-wide capability.

SURFACE-TO-AIR & SURFACE-TO-SURFACE MISSILE SITES

Missiles sites, including launch pads, storage and support areas, administration buildings, and communications facilities, have been provided for NIKE, HAWK, and PATRIOT air defence missiles. Over 400 sites have been built. As weapons systems are modernised, some of these sites are being upgraded,



some are being closed, and some new sites are being built. Similar facilities are also being provided for several categories of surface-to-surface missiles. Some of the sites for early generation missiles have been closed.

430 missile sites



Ammunition storage funded by the NSIP

AMMUNITION STORAGE SITES

The types of weapons covered under this category are those requiring special protection. The number of weapons in this category is being reduced substantially. Remaining sites are being provided with significant protection upgrades.

FORWARD STORAGE SITES

When NATO adopted the forward defence policy, it was recognised that the peacetime location of forces

was not suitable for the implementation of the strategy. NATO agreed to establish a special category of Infrastructure to enable forward storage sites to be built for consumables in order to support rapid deployment to wartime positions. Today several hundred sites have been constructed and a similar number are planned or under construction.

320 forward storage, ammunition and reinforcement support sites

REINFORCEMENT SUPPORT CATEGORY

NATO recognised the need to pre-stock the bulk of its crisis support equipment. Only by airlifting troops to prepositioned equipment could timely reinforcement be achieved. Numerous Prepositioned Organisational Material Storage Sites, Theatre Reserve, and Ammunition Storage sites have been built. To further support reinforcement efforts, numerous emergency river crossing sites have been built to facilitate movement when bridges have been destroyed. NATO is also providing Wartime Host Nation Support storage sites.

National Agency calling a meeting:

"...the dress code for the...meeting...is "smart casual"...this is interpreted as meaning that jackets and ties are not essential. Shirts may be short-sleeved, but should have a proper collar. T-shirts with silly messages on the front and Hawaiian beach shirts are not recommended. And proper trousers - no shorts please."

CRISIS RESPONSE OPERATIONS

With the development of NATO's role in peace-keeping in the Balkans, Security Investment Programme assumed responsibility for facilities and for communications and information systems infrastructure of the NATO Multinational Headquarters tasked with the peacekeeping mission. This was the first time common funds had been expended outside the borders of the Alliance or in support of a real-world military operation with its associated urgency. Accordingly, the challenges were unique. The eligi-



A Balkan river crossing build by NATO



KFOR at home in the NATO facility in Pristina

bility concept of providing what is "over and above" what a nation would normally need for itself proved satisfactory and existing infrastructure principles and procedures were accelerated. The exceptionally responsive NATO Security Investment Programme support provided to Bosnia-Herzegovina and the numerous Crisis Response Operations since that time has been consistently praised by NATO's operational commanders.

National Statement:

*remplacer "task the..." par "to task the...".
Cela rendrait le texte (dans sa version anglaise)
plus compréhensible par nos autorités.*

Staff Member to Infrastructure Committee:

*"Lack of maintenance is
a national responsibility"*

The NATO Security Investment Programme has now funded headquarters infrastructure and communications and information systems infrastructure for Bosnia-Herzegovina, Kosovo and several other peace-keeping operations in the region since 1995. Total Crisis Response Operations support authorisations up to the end of the year 2000 have exceeded 58 Million NAU for facilities and 75 Million NAU for communications and information systems.

MINOR WORKS

- Small routine projects that do not warrant the application of full Capability Package submission procedures
- Projects must be discreet, straightforward, self-standing and completely useable
- Cost ceiling is NAU 125,000
- Projects must be non-controversial in application and have no manpower or operating costs falling to NATO



NASA launches the NATO-B communications satellite



The Agencies

There are two NATO Agencies whose activities have been intertwined with the work of the Infrastructure Committee throughout their existence.

The first was established in Brussels in 1971 by the North Atlantic Council as the NATO Integrated Communication System Management Agency, the NIC-SMA. In 1986, to reflect the boom of information technology and the resultant broadening of the Agency's responsibilities, it was reborn as the NATO Communications and Information Systems Management Agency, the NACISA. In July 1996, the NACISA was combined administratively with its sister

establishment, the SHAPE Technical Centre, in The Hague. Although dispersed on the same two sites, the new NATO Consultation, Command and Control Agency, the NC3A, has brought together the acquisition, planning and research and development functions of NATO's communication and information systems.

The second agency is a relative newcomer. Beginning in infancy as the ACCS Team, through childhood as the Interim Management Group, maturity was reached in 1991 with the establishment, by the North Atlantic Council, of the NATO Air Command and Control System Management Agency, the NACMA.

The NATO Consultation, Command and Control Agency, NC3A.

For the past 50 years NATO has always made full use of its members' technology in all fields to give the Alliance high quality military facilities. Nowhere is this more evident than in the field of communications and information systems. These technologies now give Alliance members the ability to consult and achieve consensus quickly and reliably, and then to pass the necessary orders and instructions to commanders throughout the NATO command structure.

Common funding through the Infrastructure Programme has been vital to this success. It has enabled the creation of an Alliance-wide network of systems that allow information to be collected, processed, transmitted, and then presented in a useable form to military commanders and decision makers. There have been many CIS Infrastructure Programme initiatives over the past 50 years. A few of the highlights are:

- The NATO ACE High System
- NATO Satellite communications.
- The Initial Voice Switched Network (IVSN).
- The NATO messaging system (TARE).
- The NATO Initial Data Transfer System (NIDTS)
- The Maritime Command, Control and Information System (MCCIS)
- Video Teleconferencing

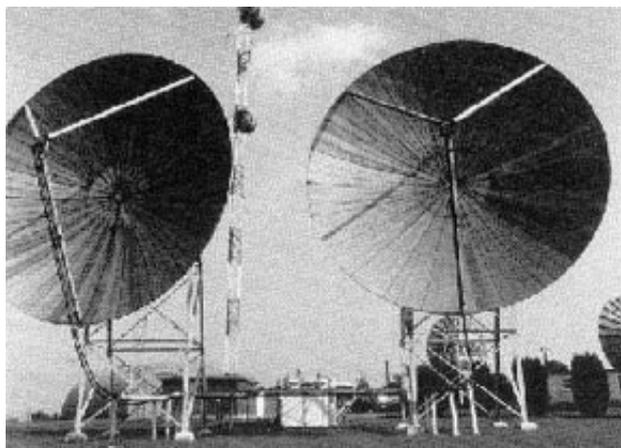
In addition, the 1995 NATO led peacekeeping operation in Bosnia-Herzegovina initiated many new Infrastructure projects. NATO commands were, for the first time, required to operate outside previously planned areas of operations. This required the rapid introduction by the NC3A and the NATO CIS Operating and Support Agency, the NACOSA, of new systems to extend existing networks to new sites such as Zagreb, Sarejevo and Split. This work later

expanded to support operations throughout the Balkans following the decision to deploy NATO forces into Kosovo. The NATO Security Investment Programme adapted quickly to authorise and implement numerous urgent projects.

NATO Communications Systems

In the early days of the Alliance, NATO's strategic communications were rudimentary and consisted of a series of point-to-point links using mainly leased commercial circuits. These circuits provided the interconnection of a number of manual branch exchanges at the various NATO Headquarters. Telephone communication between NATO Headquarters and National Ministries of Defence and Ministries of Foreign Affairs was also established by means of manual switchboard connectivity totally under the control of Public Telephone Companies.

The ACE High System



An ACE High Station

It was soon realised that NATO needed a reliable communication system under its own control. This was especially necessary due to the urgent requirement for improving the air defence systems of the European NATO Nations. In 1955 the then SHAPE Air Defence Technical Centre (later SHAPE Technical Centre (STC) and now part of the NATO Consultation, Command and Control Agency (NC3A))

*Agency representative:
"Repairs to repairable assemblies
are not possible."*

was tasked by SHAPE to participate in the design and implementation of a system connecting the various Early Warning Radar sites to Command centres and headquarters. Tropospheric scatter communications had just been born through extensive work in the United States. For the first time non-line-of-sight multichannel voice communication over distances as large as six and even approaching seven hundred kms was feasible. The United States had started planning the Defence Communication System and NATO the ACE High System, both using revolutionary high capacity trunk systems based on troposcatter technology. The first part of the NATO tropospheric scatter was a test system built in Norway. This system was authorised in 1956 and called project "Hot Line". It consisted of three troposcatter links and a few Line-Of-Sight links in the northern part of Norway. The Hot Line system went into full operation in the autumn of 1958. In early 1957 SHAPE had already

decided to extend the tropospheric scatter system throughout the Allied Command Europe (ACE) Area and that system became the ACE High System. The system extended from the north of Norway to the eastern part of Turkey. From the Southern part of Norway the system branched out with one backbone link over the Shetlands through Scotland and England into France and another backbone link from Norway into Denmark and through Germany to France. The then combined backbone continued through France, Italy, Greece and all through Turkey.

The ACE High System was built with an expected lifetime of 15 years, but part of system remained in operation for 35 years. Considering how fast technology progressed during the lifetime of the ACE High system, it is amazing that it lasted so long, but maybe not a surprise for the people who maintained and cared for the system.

Joint Final Acceptance Inspection (JFAI)

A formal procedure whereby NATO funded assets are inspected by a joint team, to ensure that completed projects fully conforms to the military needs as initially programmed. Accepted projects become permanent assets within the NATO inventory.



Air Defence Radar funded by NATO



The NSIP's most northerly investment - coastal radar near North Cape



Transportable Satellite Ground Terminal in use with NATO's deployed forces

NATO Satellite Communications

In the late 1960s it became clear that a new approach was required to support the revised strategy of flexible response, with increased emphasis being placed upon crisis management. This required a much wider exchange of information amongst NATO nations, and the ability of all the nations to consult in peacetime and in a crisis situation. In addition, better communications were needed to enable the political and military authorities of the Alliance to exercise command and control of NATO forces throughout a wide spectrum of possible contingency situations.

In order to provide better voice and telegraph communications, especially to the more distant NATO areas, it was agreed that NATO should have its own satellite communications system. After a first, largely experimental programme in the mid 1960s NATO involvement in SATCOM began in earnest with the SATCOM II Programme. This consisted of two spacecraft and twelve static ground terminals. The planning for this system started in late 1967, with the objective of providing point-to-point voice and low speed data communications to all key NATO civil and military users. The Initial Operating Capability was achieved in late 1972.

Fund request:

"Extensive use of hardware has been used utilising software."

The SATCOM III system was launched in the mid 1970s with three satellites placed in geo-synchronous orbits between April 1976 and November 1978. Subsequently an additional satellite of the same series was procured and launched in November 1984.

During the implementation of the SATCOM III System, nine new static satellite ground terminals were specially constructed and the existing twelve static ground terminals modified to meet new requirements. One large and two small transportable satellite ground terminals were also procured

The SATCOM IV System consists of two satellites, which were successfully launched in December 1991 and December 1993. Additional transportable satellite ground terminals have been and continue to be procured.

The NATO Integrated Communications System (NICS)

In March 1971, the North Atlantic Council agreed to establish the NATO Integrated Communications System (NICS) and to create a special NATO Agency, the then NICS Management Agency (NICSMA), to be responsible for the planning and implementation of this new system.

The NICS concept was based on the development of a common user, automatically switched grid network, employing sophisticated computer-driven

switches for all forms of voice, telegraph and data traffic linking NATO capitals, NATO Headquarters, the Major NATO Commanders (later renamed the Strategic Commanders) and their subordinates and the highest levels of national command.

The connectivity for the switches was provided by the ACE High System, the NATO Satellite System, purpose-built Line-Of-Sight systems and rented carrier systems. The connectivity was based on analogue voice circuits. In 1979 the World Administrative Radio Conference re-allocated frequencies in the 900 MHz band to Public Mobile Radio. This decision meant that the ACE-High system would have to be closed. The NATO Nations offered to carry the ACE-High traffic on their National Defence Networks. Cross Border Connections to provide international connectivity were established and funded from the Infrastructure Programme. This combination of national and common funded communication bearers was called the NATO Terrestrial Transmissions System. The NC3A has been the "Host Nation" for this system, with overall responsibility for procurement of international connectivity and system engineering.

NATO Initial Voice Switched System (IVSN)

IVSN was one of the first examples of a successful "Commercial-Off-The-Shelf" based procurement to satisfy communications requirements. International Competitive Bidding was used to place the first IVSN contract in 1974. The network achieved full operational status in 1984. The system is still in use today providing both secure and non-secure telephony services to NATO subscribers across the nineteen nations. It will remain the corner stone of NATO telephony services until late 2002. A major expansion Programme was launched in 1986 and, at its peak, IVSN served seventeen thousand subscribers.

NATO Telegraph Automatic Routing Equipment (TARE)

In the early 1980's NATO deployed its own system for military messaging throughout the NATO command structure. The system used was named TARE. It pro-

vided NATO with a secure system for the rapid transmission and distribution of ACP 127 format messages.

Eighteen TAREs were installed throughout NATO in the period 1982 to 1985 and connected to more than 900 locations within NATO and NATO member nations. TAREs were interconnected at the then exotic speed of 1200 bauds, although many of the subscriber connections remained at 50 or 75 bauds. Each TARE typically required six people on shift during exercises and could handle in excess of 20,000 message per day.

In the light of rapid technological developments in recent years, TARE is now seen as manpower intensive and technically obsolete. NATO member nations have defined a new standard for interoperability of Military Message Handling Systems. A study conducted by NC3A in 1994 identified that considerable manpower savings could be achieved by replacing TARE with a Military Message Handling System based on the new standard. The first phase of this project and replacement efforts are now underway.

The new NATO Military Message Handling System will provide, to the desktop of all NATO staff, a secure, reliable and accountable formal military messaging system capable of exchanging digitally signed messages both within NATO and National Military Message Handling Systems. It will be fully integrated with the evolving Automated Information Systems which will support both of NATO's new Strategic Commands, ACE and ACLANT.

NATO Initial Data Transfer System (NIDTS)

In 1994 the Infrastructure Committee authorised the first phase of a project to provide wide area data network services for NATO's classified information systems. The system was implemented by the NC3A, and went operational for the first time in 1997. Further enhancements have taken place since then and the overall system now consists of 12 backbone and a large number of access nodes deployed throughout NATO. This system provides a common, secure environment for information exchange. Management and control is carried out by the NATO CIS Operating and Support Agency (NACOSA).

NIDTS will be further expanded to provide the packet mode services of the NATO General Purpose Segment Communications System. This will be done by the implementation of a homogenous NATO Wide Area Network (which will be known as NIDTS+), covering both backbone and access layers for the expanding NATO user community.

NATO's Maritime Command, Control and Information System (MCCIS)

NATO's Maritime Command, Control and Information System (MCCIS) exemplifies the successful implementation of a major project financed by the NATO Security Investment Programme. The original system, Alpha CCIS was first fielded in the early 1990s and has evolved through a series of incremental infrastructure projects. The MCCIS provides NATO Joint and Maritime commanders and staff with a common, NATO-wide recognised Maritime Picture. The system is based on the innovative use of commercially available hardware and software products. These are linked together by software segments developed by the SACLANT System Support Centre to present users with a seamless means of navigating through many different applications. The NC3A is now deploying MCCIS throughout the NATO command structure, including the newly formed Joint Sub-Regional Commands of Strategic Command Europe. The total Infrastructure cost of the system to date is approximately 8M NAU.

Several NATO nations have also chosen to use MCCIS for their own maritime forces.

The NATO Air Command and Control System Management Agency, NACMA

The NACMA was established in 1991 with a staff of 38 and with the primary purpose of implementing the Air Command and Control System (ACCS) Programme. The ACCS was initially envisaged during the Cold War to replace the largely static, manual, and increasingly obsolescent air defence systems

NATO Peace Support Operations

The NATO Infrastructure Committee authorised funds to provide CIS for NATO Peace Support Operations in the Balkans. The time delay from receiving the fund request for Peace support Operations from the NATO military authorities to fund authorisation is usually less than one week. Between 1995 and 2000 the NC3A executed 335 separate acquisitions providing a wide range of communications equipment and systems.

Video-Teleconferencing

The approval of funding by the Infrastructure Committee for the first video-teleconferencing network coincided with the start of the crisis in the former Republic of Yugoslavia. The system was used in support of the initial deployment of NATO into Bosnia-Herzegovina.

Within the following months the network was expanded to cover all primary locations in theatre. It was found to be ideal for interactive Command Briefings, in many cases conducted several times a day, with the participation of the Staff at the highest level from all sites. SACEUR and the North Atlantic Council at NATO HQ were updated through frequent live video-teleconferencing sessions, and the system was soon declared to be on the "Mission Critical Components List".

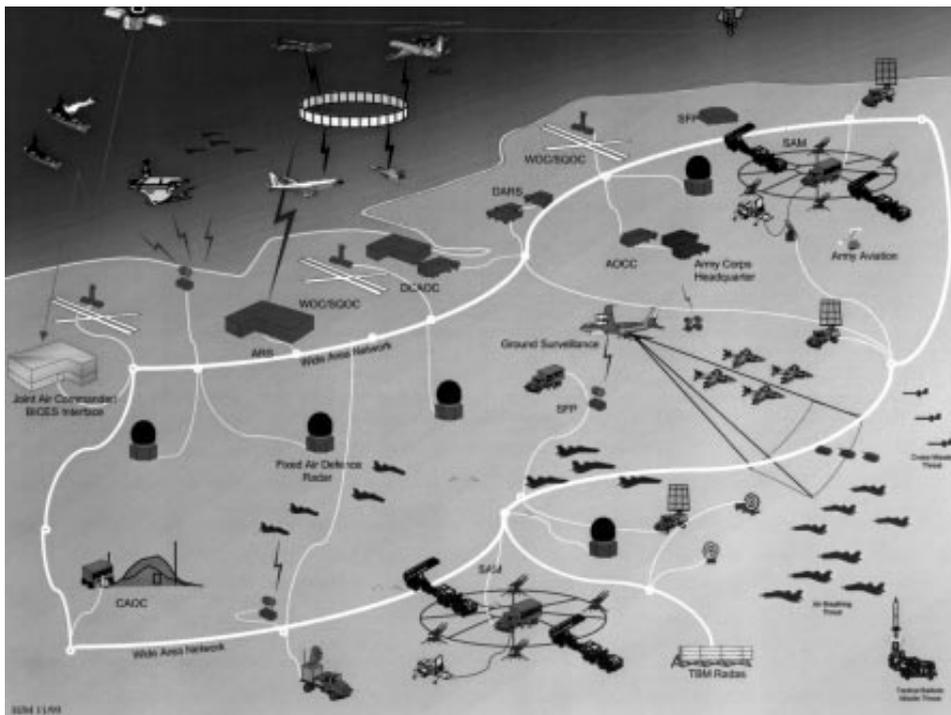
The video-teleconferencing network implemented by the NC3A in 1993 now extends to most NATO Commands, and further enhancement work of the networks is in progress.

in NATO Europe with a modern, integrated system designed to automate at the tactical level the planning, tasking and task execution of all air operations. The system would employ both static and deployable elements. However, the changing geo-strategic situation of the early 1990s together with increasingly

tight financial constraints necessitated considerable revision of the original Programme. As a result, whilst an overall air operations capability was retained, the concept was widened to include capabilities for Crisis Management, Peace Support Operations and the integration of non-NATO forces, together with the capability to accommodate emerging NATO requirements in such areas as Extended Air Defence and Alliance Ground Surveillance. The system would also be able to make a contribution to the command and control of joint forces. In addition, the user would benefit from further improvements in automation. The net effect of these changes was that the overall cost of the required ACCS software increased whilst the required number, and thus cost, of ACCS entities decreased. Subsequently, and following Council approval of the associated Capability Package, the Infrastructure Committee was able in July 1999 to authorise the development, testing and validation of the ACCS core software to an initial level of operational capability (known as LOC1). At some M170 NAU, it represented one of the largest authorisations, if not the largest, ever made by the Committee, and inter alia it enabled NACMA to sign a contract later that year with a US/French industrial consortium for the LOC1 software's development,

testing and validation, with completion scheduled in 2005.

NACMA's staff numbers have now grown to about 100. Approximately 40 personnel form the NACMA LOC1 Programme Management Organisation (PMO) to implement the LOC1 contract under the broad guidance of the NACMO Board of Directors. Further evolution of the Programme, including strategic planning and the development, and possibly implementation, of new Capability Packages, is one of the responsibilities of the 20 or so members of the Agency's Planning and Architecture Division. That evolution will include: further replication of the core software, for example, into the new NATO nations; additional deployable capabilities over and above those provided for in the initial contract; and additional operational capabilities such as Theatre Missile Defence and the receipt and handling of AGS information as indicated earlier. All will be required together with new sensors and communications to complete the ACCS Programme. When it is complete, around 2010, it will have cost in the order of 2000 MNAU with over half of this amount having been provided from the NATO Security Investment Programme, and the remainder coming from the Nations.



The ACCS is a complex of static and deployable sensors and communications providing Air Command and Control to NATO's commanders



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and
Infrastructure Payments
& Progress Committee
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Chairmen
and
Secretaries**

1951 - 2001



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