

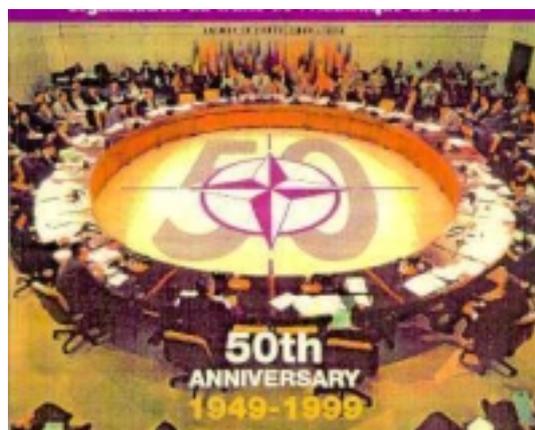
## 50 years of NATO: Codification plays a vital role

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### INTRODUCTION

People rightly consider anniversaries as occasions for celebrations. However, these are also times to reflect, review and make an assessment of the current situation. Should the result of the review and assessment be positive, then anniversaries can be considered as a starting point for further developments and goals.

Every alliance can be seen from differing perspectives. In NATO, the political perspective is the most important as it provides the foundations and the structure around which all NATO activities take place. My own review and assessment lead me to the conclusion that NATO has demonstrated its vitality, flexibility and effectiveness in all missions undertaken during the last 50 years.



I would like to highlight how the NATO alliance has influenced national logistics activities and how the consensus decisions made by NATO Cadre Groups are reflected in the daily tasks of NATO logisticians. In highlighting this influence, I will leave aside the political and military aspects, which are necessarily left to the “experts” and concentrate on the logistics issues.

### NATO STANDARDIZATION

At the birth of the NATO Alliance, the early contacts between members quickly revealed the cultural differences between the defence organisations involved. The then members agreed on the priority need for common logistics tools and a common language, as this was considered essential to allow interoperability of member forces

The tool used by NATO to steer member countries' efforts was the **Standardisation Agreement (STANAG)**. An agreed STANAG is the final result of contributions from all members. A STANAG defines a common solution to a shared problem or need. This approach ensures that there is no duplication of efforts and results in economies of scale and improved joint effectiveness. Compliance with STANAGs is the venue for interoperability in procedures and material for the member nations of the NATO Alliance.



## BASIC STANAGs ON CODIFICATION

To meet the need for a common method of Item Identification and exchange of the information generated by the Item Identification process, STANAGs 3150 and 3151 were agreed to, ratified and implemented by all members. The use of a common language was essential in the sense that, it would simplify the exchange of technical and operational information between the allied partners. However, the purpose of the NATO alliance is wider than the exchange of information. It also includes procurement and management of weapon systems and military assets / resources.



As the alliance evolved towards logistics integration, it became increasingly clear that unambiguous Item Identification avoided unnecessary procurement for a specific user when another user held stocks of that particular item. It also allowed economies of scale as procurement requests for an item with multiple users can be consolidated and competitively tendered using the Item of Supply concept, thus reducing monopoly and promoting competition in defence procurement.

Use of the NATO common supply language also promotes the rationalisation of national defence inventories. The benefits of the use of STANAGs 3150 and 3151 are realised at every stage of the acquisition and management of resources, from initial purchase through reprovisioning to warehousing, distribution, redistribution, maintenance, repair/overhaul and finally disposal.

## THE BASIC PRINCIPLE OF NATO CODIFICATION

The NATO Codification System is based on a “One Item of Supply, One NATO Stock Number” concept, where Item of Supply (items that physically enter the logistics chain) are identified according to specific technical and management characteristics or attributes as defined in the appropriate Item Identification Guide (IIG). Each IIG covers families of similar Item of Supply concepts. This common way of identifying items ensures that Items of Supply having the same essential attributes of form, fit and function, to satisfy specific requirements and manufactured by more than one producer, are assigned a single NATO Stock Number. Codification of Items to a common standard also allows equipment designers to screen the NATO database, using either the manufacturer’s reference number or the technical characteristics of the item, for items that are already in use. Between 40 and 50% of all items requested during the initial provisioning stage are found to already be in use in one or more NATO countries.

General George Patton in 1944 defined effective logistics as, “Obtaining the appropriate equipment, in the required place, at the right time”. With this definition in mind and the contents of STANAGs 3150 and 3151 as a goal, NATO has developed the NATO Codification System, or NCS as it is called by many users, to enable interoperability between the member nations’ logistics and supply chains.



## NATO CODIFICATION AND INTEGRATED LOGISTICS SUPPORT (ILS)

In the global scenario which will characterise NATO activities in the 21<sup>st</sup> century, General Patton’s definition, although still completely valid, falls short of true “world class” logistics support. The natural enhancement to the logistics support model developed since World War 2 is Integrated Logistics Support (ILS). Identification and codification play a central role within the ILS concept. ILS seeks to maximise the effectiveness of any system from both the operational and financial perspective, through a total life cycle concept, by ensuring that the system is ready for use for the maximum amount of time whilst using the minimum amount of resources. The result of identification and codification, the NATO Stock Number, is used throughout the ILS concept procedures, from design to disposal.

With the addition of strict Quality Assurance procedures to the ILS concept and the use of the latest computer technology, the NATO Codification System is a vital component of the NATO logistics support chain, acting as a virtual partner in daily activities. The end result is a flexible tool which enhances and enables common operational and maintenance requirements of NATO members that I am sure General Patton would approve of.

The NATO Codification System is a dynamic system. It has evolved over the last 50 years from a paper system into a sophisticated computer based system with a standard structure for the exchange of Codification data by the NATO nations called the "NATO Data Exchange system" (NADEX). Each advance in computer technology presents a new solution to old problems, and the NATO Codification System is continually adapting to these changes.

**NATO CODIFICATION AND CONTINUOUS ACQUISITION AND LIFE CYCLE SUPPORT (CALS)**

For the future, one of the major challenges facing the NATO Codification System will be the integration of the NATO Codification System with the NATO CALS strategy (Continuous Acquisition and Life-cycle Support). CALS is at the forefront of future military procurement and management of equipment. The strategy seeks to create a transparent flow of information and documentation between military customers and commercial providers. This exchange of data is to be accomplished using commercial software and standards where possible. Eventually this will lead to a commonality of standards between military users and the commercial market. In turn, this will lead to an enlarged user group operating with common dual use standards. Indeed, due to its structure, NATO codification can play the role of a special carrier to cross reference data from various sources such as bar codes, STEP data, etc.



**NATO CODIFICATION – A TOOL FOR LOGISTICS INTEROPERABILITY BETWEEN NATIONS**

During its existence, many Non-NATO countries including several PfP countries have adopted the NATO Codification System. Allied Committee 135 (AC/135), The Group of National Directors on Codification is a Cadre Group under the auspices of the Conference of National Armaments Directors (CNAD) and has recently developed a corporate sponsorship procedure as well as specific projects to introduce to, educate new countries in, the use and benefits of the NATO Codification System. These procedures allow and encourage the expansion of the user group whilst ensuring the integrity of the system.

Reference Data							Users	
NSAGE	PART NUMBER	ENVC	ENEC	ENAC	ENAC	ENSC	YR	WIDE Code
72160	86-258164-836	9	5	5	HE	D		
30184	122280-901040	2	5	2	9Z	D		
85860	4171402-620	2	5	6	IX	D		
98214	418295-40	1	5	5	HE	D		
F2427	99004052	2	5	4	ZB	D		
F2663	C67H0-338UJ	2	5	4	ZB	D		
81849	M22804-01-8048	2	2	3	HE	D		
91249	MILR21564-1	1	4	3	HE	D		
F1621	ROM25-320UJ	2	5	4	ZB	D		

As NATO celebrates its 50 birthday, the NATO Codification System is celebrating the application of its 21<sup>st</sup> sponsored country. Presently this will bring the total number of authorised users to 40 (there are a number of countries that use the NATO Codification System but have not yet applied for sponsorship). These figures bring home the fact that the NATO Codification System is the recognised global military logistics language, with users in Europe both east and west, North and South America, the Middle and Far East and the Pacific Rim.

In common with every other military activity, the NATO Codification System has to continue to produce consistent high quality output, and this with a shrinking budget. Increased automation and integration with other disciplines such as standardisation and quality assurance counter smaller budgets and reducing human resources. Increased synergy allows users to utilise standard processes, databases, electronic documentation and data exchange in building new organisations at a lower cost with higher efficiency.

## NATO CODIFICATION – THE EVOLUTION HAS JUST BEGUN

The global market needs a uniform cataloguing system to be used in both military and civilian logistics operations. AC/135 has recently added a cross reference between the NATO Codification System and manufacturers references created using Bar Code technology. Links with the United Nations identification system have been created, too. Electronic commerce is one of the major challenges facing AC/135. With the advent of teleprocessing procedures, web based enquiry systems, prototype intelligent identification and codification tools, it is clear that AC/135 is responding to the changing needs of the customer logisticians.

The changes which are currently taking place are not being driven by emerging technology. They are more a reflection of the changing culture, where co-operation between the equipment designers and manufacturers (commercial) and the procurement, logistics and materiel managers (military), is actively encouraged. A good example of this co-operation is the use of AECMA Specification 2000M: under this procedure the prime contractor is responsible for the screening of the existing inventory (NATO Master Cross Reference List NMCRL and national codification database). The result of this process - in line with the "Common Project" procedure of the ACodP-1 - is the production of an Initial Provisioning List (IPL) which identifies the parts already codified by their NSN and prepares initial codification for all new parts. This active participation of the manufacturer in the development of codification offers drastic reductions in both costs and timeframes and an increased quality of the codification data available for logisticians. As an example, according to the domestic codification contractual clause, Italian manufacturers carry out identifications as a part of the codification process and in the near future they will be allowed to use on-line driven and expert tools to produce near real time codification: this approach will offer drastic reductions in both costs and timeframes.



The introduction of concepts like Integrated Logistics Support and electronic commerce has led members of AC/135 to consider other changes to the NATO Codification System which would enhance its flexibility. A more direct consideration of new data based on technical information managed by the manufacturer, such as the tree structures or technical characteristics recorded in component databases, will allow a more efficient implementation of the principle of the "Item of Supply" which is the main conceptual issue of the NATO Codification System. Indeed, an Item of Supply is defined in the NATO Codification System as an item which "is used by a military supply organisation to satisfy specific requirements of the armed forces". An Item of Production is defined as "any end product, material, component, sub-assembly or equipment identified by a manufacturer's reference number". Therefore,

an Item of Production becomes an Item of Supply when it is required by a logistician to support any piece of equipment in service. The change from Item of Production to Item of Supply also requires the recording of the item's unique characteristics and attributes.

This is the crucial difference between the NATO Codification System and a commercial identification system. Many commercial cataloguing systems use the Item of Production concept and do not record the differentiating technical characteristic data and attributes of the item nor do they allow the recording of all known providers of the catalogued item. This makes it impossible to avoid duplication, search for substitute items and prevents the user from seeking competitive tenders for the supply of material. The NATO Codification System, using the Item of Supply concept, allows all of the above activities to take place with relative ease. In fairness, it should be said that most commercial systems do not need to be able to perform these functions, as the system is unique to the individual user / manufacturer and is not used in the same fashion as the NCS.

## NATO CODIFICATION – AN INTERNATIONAL STANDARD?



One of the strategic aims of AC/135 is to have the NATO Codification System recognised as a global standard for civilian and military cataloguing and material management. Simplification of the codification procedure and rationalisation of the items which require characteristics to be recorded would also reduce the cost of running

the system. A larger use of technology and new organizational methods could supersede the classic way to consider a National Codification Bureau as an identification and codification entity, towards a control and managing activity. Some users have already divided their inventory into two types of item. The first group is, items which do require full characteristic data to be recorded i.e. ammunition and weapon system, flight or handling safety items and commonality items like screws, bolts, resistors, etc. The second group includes items that do not require full characteristics to be recorded but just Manufacturer code and Reference or Specification, i.e. Bulk materials like wood, non-repairable assemblies and the like. Interesting perspectives for automatic identification of this second group of items can be offered by existing bar codes already assigned to commercial items and for the items of the first group widely used in the civilian sector such as commonality items, descriptive data should be taken over more or less automatically in the component database. This policy has been domestically adopted by the four Nations of the EF 2000 consortium (UK, Germany, Italy and Spain) for the codification of Eurofighter Items of Supply. Its implementation enables the management of all items at the stage where they are still Items of Production and prevents the creation of duplicate stock holding in multi site production runs. Once the design of the Aircraft has been agreed and the maintenance levels have been established, production actually begins. The Items of Supply can then be identified and codification to terminal status can be completed. Any Items of Production codified during the design phase which are subsequently replaced by other items or are not selected as Items of Supply would stay in the database as inactive NATO Stock Numbers and be available for screening by the designers of future equipment. Provided a solution is found for Items of Production identification as well as their automatic codification, no obstacles can be envisaged to consider the NATO Codification System as a candidate for a world class international Standard applicable to logistics system.

## CONCLUSION

This is a snapshot of the NATO Codification System as it stands at the threshold of a new millenium, celebrating with the rest of NATO its 50<sup>th</sup> birthday. I hope I have demonstrated the system's dynamic flexibility and capabilities as we prepare to meet the challenges of the next century. The NATO Codification System is one of many success stories that the alliance has achieved to the benefit of all member nations. I would like to finish by paying tribute to all of the people who, over the last 50 years, have labored to make the NATO Codification System the superb logistics tool that it undoubtedly is, giving an example of how different knowledge and cultures can be efficiently shared. We should never lose sight of the fact that our human resources are our most valuable assets.

## BIOGRAPHY



Lt. Col. Mauro Pergolesi joined the Italian Air Force, aged 19, in 1971 as a junior engineer. He gained a degree in Commerce and Economics and served as a technical and procurement officer in armament and special vehicle branches of the Air Force. As a Cost Analysis and Public Contract specialist, he was assigned to the Italian National Codification Bureau and in 1996 was elected by his fellow national directors to serve as Chairman AC/135. In May 1998 he was asked by the same group to serve a second term as chairman.