PERSPECTIVES

The NATO Codification System:

A Bridge to Global Logistics Knowledge

By

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The NATO Codification System (NCS) has been in place since the mid-1950s. It provides standards for the use of a common stock identification system throughout the NATO alliance. We tend to take this "common language of NATO logistics" for granted in field operations. The NCS is quickly appreciated, however, when the operational commander finds himself in a joint environment with partner countries each using something different.

In his address to the 8th NATO Symposium on Codification, in May 1997, General de Brigade Jean-Marc Renucci, Chief de la Division "Organization et Logistique," Etat-Major des Armees France, spoke of his experience during the peacekeeping operations in the former Yugoslavia. He explained how multinational coalitions have been increasingly used for peacekeeping since the fall of the Berlin Wall. In the former Yugoslavia, for example, more than 30 nations were involved under the framework of the United Nations. Gen. Renucci described the patchwork of UN battalions, Non-Governmental Organizations (NGOs), and other charitable agencies. The experience of the French Forces was that the lack of a common technical language led to an intolerable waste of resources. With the transfer of authority and responsibility from the UN to NATO, the forces were able to set up a very efficient system of cross-support, specifically through the use of the NCS.

The NCS is an "invisible partner" in the day-to-day business of logistics. Beginning in the United States, and then expanding to NATO, multinational use of the NCS today is growing at a faster rate than ever before. This article provides an overview of this little publicized aspect of international logistics support.

ORIGINS AND GOVERNANCE

The NCS provides NATO countries with a uniform and common system for the identification, classification, and stock numbering of items of supply. It is based on the U.S. Federal Catalog System (FCS), which is operated by the Defense Logistics Information Service (DLIS), a field activity of the Defense Logistics Agency (DLA) located in Battle Creek, Michigan. The foundation for this system within NATO rests in two NATO Standardization Agreements (STANAGs). STANAG 3150, "Uniform System of Supply Classification," adopts the U.S. system of classifying supplies as the standard within the Alliance. STANAG 3151, "Uniform System of Item Identification," adopts other basic standards for identification of supply items and sets the governing structure in place for the NCS.

The NCS is governed by the Allied Committee 135 (AC/135)—"NATO Group of National Directors on Codification." This committee is composed of representatives from each NATO member nation and a participant from the NATO Maintenance and Supply Agency (NAMSA). The AC/135 functions under the authority of the Conference of National Armament Directors

(CNAD) at NATO and normally meets twice per year. The committee is committed to increasing the effectiveness and efficiency of defense global logistics systems and operations within participating nations and providing the bridge to facilitate global logistics operations.

COMMON RULES AND DATA STANDARDS

The system provides NATO allies with a common identification language for use within national activities and between member countries. Non-NATO countries that are "sponsored" members of the NCS also benefit from the system. The foundation of the NCS is the principle that the responsibility for the codification of an item rests with the country that manufactures it and controls its design. This is true even if the item is not used within the military forces of that country. Common rules and data standards (including a Data Element Dictionary) allow for improved communication between members. Using coded data allows for automatic translation into national languages through decode tables.

Item Identification

Item identification is the most important element of the codification system because it establishes a unique identification for every item of supply. The identification consists of the minimum data required to establish clearly the essential characteristics of the item, i.e., those characteristics that give it a unique character and differentiate it from all others.

The NCS identification process is based on the "Item of Supply" concept. The term "item of supply" refers to an item required for acquisition in order to satisfy a logistics need. It can consist of one or many "items of production" (i.e., a product of a specific manufacturer) having equivalent "fundamental characteristics".

The system employs rules for "naming" each item of supply using standard naming conventions to ensure uniformity among users. The NCS controls these naming conventions using a dictionary of Approved Item Names. Each approved name is given a five digit numeric code. After an item has a name, a suitable supply classification is determined.

The vast number of items of supply in the NCS has made it necessary to establish manageable commodity classifications of items, by family grouping. The NATO Supply Classification provides for discrete commodity groups and classes. Each group consists of items of the same physical or performance characteristics or the same application. Within each group, there are more specific classes which further define the specific commodity-type of items included. For example, one large commodity group of items is "Hand Tools," identified as Group 51. Within the large "group" of hand tools, there are sub-classes that differentiate the types of hand tools (i.e., non-powered, powered, tool boxes and kits, and sets of hand tools). A unique number identifies each of the sub-classes, for example:

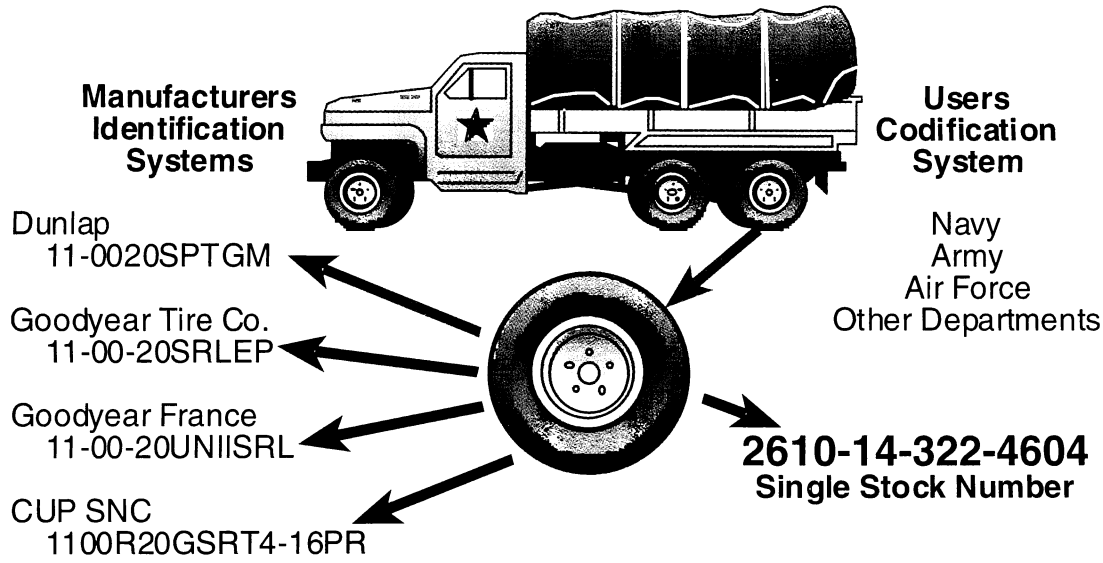
5110 - Non-powered, edged hand tools
5120 - Non-powered, non-edged hand tools
5130 - Power driven hand tools
5140 - Tool and hardware Boxes
5180 - Sets, kits and outfits of hand tools

To achieve the NCS objectives of (1) increasing the efficiency and effectiveness of logistics operations; (2) facilitating data handling; and (3) minimizing costs to user nations, it is essential that each item of supply be assigned a unique name, classification, identification and a NATO Stock Number (NSN).

The NATO Stock Number

Countries that participate in the NCS follow common standards and techniques to assign NSNs to items of supply in their defense inventory. The National Codification Bureau (NCB) within each country centrally assigns their national NSNs. The assignment of an NSN fixes the identity of each distinctive item of supply. All NSNs are uniform in composition, length, and structure. Each is represented by a 13 digit number, which can be divided into 3 unique parts:

- the first four digits are the NATO Supply Classification (NSC) code, which relates the item to the group and class of similar items
- the next two digits indicate the assigning NCB code (each country has its own two-digit NCB code—the United States uses "00" and "01")
- the final seven digits are assigned sequentially and have no inherent significance. However, this number relates to one and only one item of supply within the codifying country.



Within NATO, the NCS currently contains 15 million active NSNs (about 7 million U.S. and about 8 million assigned by other NATO countries). The items represented range from hand grenades to guided missiles, from propeller blades to space vehicles, and from soap dishes to washing machines.

Categories of Item Data

The data collected on supply items is stored in national databases for immediate retrieval and use. Users of the NSNs may access details of items. Common descriptive guides, available to all participating countries, allow for storage and exchange of coded physical and performance characteristics for each NSN. Using a suitable decoding tool, translation of these coded descriptions is possible. Management data may be stored for NSNs and supports all logistics disciplines, including such data as source of supply, unit of issue, packaging information, handling criteria, hazardous materials coding, and disposal information.

Relationship between the NATO NCBs

Each NATO country and all non-NATO NCS sponsored countries have established

national codification bureaus (NCBs) or central operating organizations, to implement the NCS. The NCBs play an essential role in all logistics operations. The information, services and products provided by the NCBs support every facet of national and international logistics operations. The DLIS, located in Battle Creek, Michigan, serves as the NCB for the United States. Each NCB is the sole responsible authority within its country regarding codification data exchange and services. Functioning as the U.S. NCB, DLIS is responsible for liaison services to the NATO countries and to other countries that use the NCS.

NATO Stock Number Assignment and "User Registration"

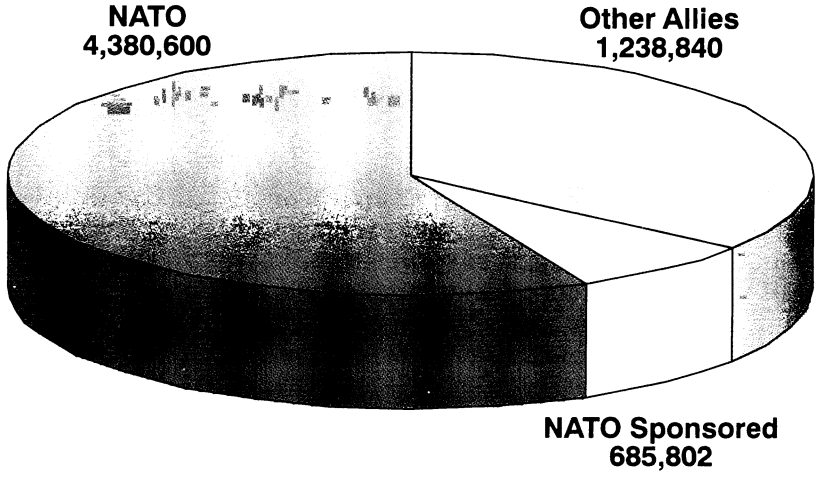
The U.S. NCB catalogs supply items used by our NATO partners and other foreign allies. More than 23,000 items were cataloged and assigned unique NSNs during calendar year 1997. These items represent supply materials manufactured in the U.S. but intended for use within NATO or by other allied forces supported under a Foreign Military Sales (FMS) case. For every NSN assigned, the responsible NCB must (a) verify that the item is procurable; (b) research each item to obtain supporting technical data; (c) name the item; (d) classify it; (e) describe each item; and (f) assign the NSN. The 23,000 new NSNs assigned by the U.S. NCB during the last year represent 26 percent of the total annual NSN assignments made by all Defense Logistics Agency (DLA) personnel.

On behalf of the U.S. military services, the U.S. NCB also processed over 8,000 requests to other NATO country NCBs for assignment of foreign (non-U.S.) NSNs. This total represents items of foreign origin (manufacture) incorporated into our U.S. operational force structure.

Over 6 million records of allied interest are contained in the U.S. FCS. By a process known as "user registration," allies may establish a record of their national interest in a U.S. NSN. Recorded users may elect to receive notification of changes made to the NSNs that they have an interest in. There are currently 49 separate foreign countries recorded as users on various NSNs in the U.S. catalog system. This high level of allied interest led to 23 million records of output data sent through electronic updates over the last year.

ALLIED USER INTEREST IN U.S. NSNs

NATO, NATO Sponsored and Other Countries



INTERNATIONAL LOGISTICS DATA EXCHANGE

Maintenance of Logistics Data Records

Internationally agreed methods and procedures have been established to facilitate the regular exchange of codification data and services among member countries. The NCB within each country is responsible for maintenance of the Total Item Record (TIR) for each NSN. Dissemination of logistics data to other NATO countries is the responsibility of each NCB.

The TIR for each NSN contains segments of data, each composed of separate types of logistics data. A segment is a group of related data elements, functionally categorized. The major data segments are:

Segment A - Identification data (including item name)
Segment B - Major Organizational Entity (MOE) Rule data (indicates NSN users)
Segment C - Reference number data (including manufacturer codes)
Segment E - Standardization data
Segment G - Freight data
Segment H - Management data
Segment K - Cancellation data
Segment M - Clear text characteristic data
Segment V - Coded characteristic data
Segment W - Packaging data

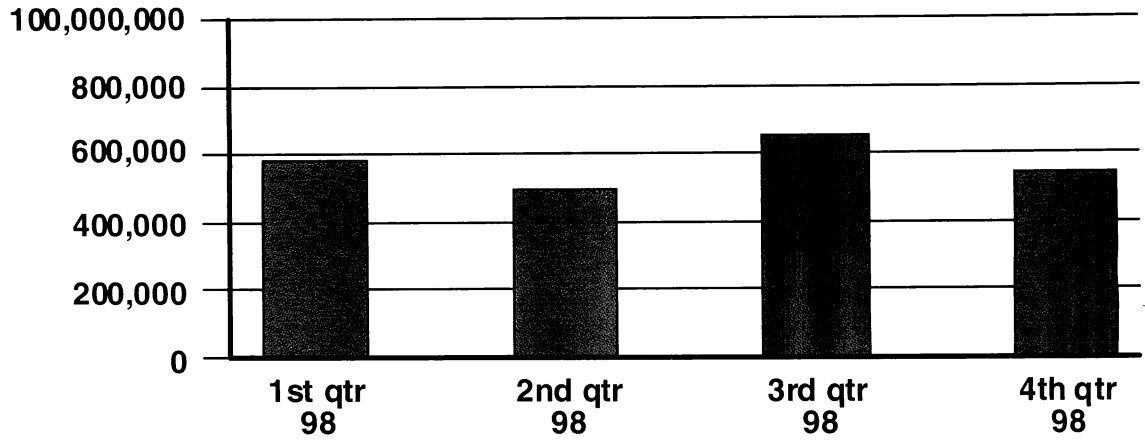
Output is normally generated as either informational or file maintenance updates. TIR file maintenance is any data addition, change, or deletion related to an existing NSN or the establishment of a new NSN. Each participating country specifies the type(s) of file maintenance output for which they want notification. Not all NCBs store all segments. Tailored output notifications send only the specific transaction results and specific segments of data required by each allied customer. The data they receive reflects the data they want sent to them, based on their specific requirements. Countries can change the type of output notifications they want at any time.

Because participating NATO nations and NCS sponsored non-NATO countries routinely exchange file data, there are standard procedures for doing this by the exchange of magnetic tapes or cartridges as well as through telecommunications. Currently, virtually all data exchange among NCS users occurs via telecommunications. The NATO countries also exchange general data, including national cataloging support records which contain the names and addresses of national manufacturers and cross-reference lists (CRLs) which contain nationally assigned NSNs cross-referenced to manufacturers reference numbers.

The NATO Mailbox System (MBS) provides for the telecommunication of codification data through an exchange station at NAMSA headquarters in Luxembourg. The system provides for:

- central hardware/software platform with various predefined connectivity options for the subscribers
- the handling of various protocol conversions

United States Cataloging Records Output Through The NATO Mailbox System (MBS)



NAMSA performs transmission control for all transactions included in the MBS and stores data in particular "electronic mailboxes" for retrieval by the destination activities (countries). Subscribers of the MBS can be NCBs, NAMSA, and sponsored non-NATO countries. U.S. cataloging information can also be received on a bilateral basis through the International Logistics Communications System (ILCS) which is administered by the Defense Automatic Addressing System Center (DAASC), Wright-Patterson Air Force Base, Ohio. The ILCS is provided to countries on a subscription basis financed by FMS cases. It is used to create and transmit requisitions, receive and process status documents, and transmit and receive narrative messages. The ILCS is also used for transmitting codification data. The Arms Export Control Act requires countries to pay for the transmission of requisition data; however, the Act permits the transmission of codification data and cataloging services to NATO and NATO member governments without charge if NATO and the member countries provide such data and services in accordance with an agreement on a reciprocal basis, without charge to the U.S. Government [§21(h)(2), AECA].

Cataloging Tools Maintenance

"Cataloging tools" are the supporting reference publication and data files which support operation of the NCS. The following list offers a few examples of the tools that are essential to the success of the NCS.

- Cataloging Handbook of the Federal Supply Classification (Groups and Classes) (H2)
  NATO Supply Groups and Classes (ACodP-2)

This cataloging handbook presents the classification structure of the NATO/Federal Supply Classification (N/FSC), showing numeric groups and classes listed in the arrangement of the four-digit FSC code-numbering system.

- Cataloging Handbook of Item Names (H6)/NATO Item Name Directory (ACodP-3)

This handbook contains an alphabetic index of item names, including a reference to the N/FSC following each Approved Item Name (AIN). Definitions of each name are also included.

(These two cataloging handbooks include both English and French text, the official languages of NATO. Many participating nations maintain versions of these handbooks in their own national languages. For example, Saudi Arabia has produced Arabic versions of both handbooks.)

- FIIG – Federal Item Identification Guide

A FIIG is a document used to identify an item by describing its attributes or characteristics (in coded format) to differentiate it from other items of supply and to establish the supplementary data necessary for logistics management.

- NCAGE – NATO Commercial and Government Entity Code

It is necessary to record each manufacturer's names against codified items. A 5-character NCAGE is assigned to each manufacturer to meet this requirement. The code reflects the source and location of technical documentation for an item. Each NCB assigns the codes for its national manufacturers and these are recognized and exchanged between NCS members.

The United States is the proponent for the official naming and classification standards. It maintains these codification system support files at each NCB by scheduled electronic update.

Benefits of the NCS

The NCS is an integral part of supply operations throughout the world. It furnishes accurate information to all participating countries on the characteristics of millions of items. It simplifies the solution of supply data management problems by providing quick responses from a single, up-to-date source. The NCS offers many significant advantages to NATO and non-NATO countries, as well as to private sector participants outside the defense community.

Operational Advantages:

- Enhanced opportunities for standardization, by revealing the different varieties, types, and sizes of items in supply systems, allowing parts from a number of weapons systems to be used in common

- A national and NATO-wide knowledge of all available military assets and resources allows for rationalization of inventory management by sharing resources on spare parts and maintenance activities, and a minimum distribution of essential spare parts during the deployment of forces in a theater of operation

- An accurate description of the items permits users to readily find equipment which meets requirements for replenishment without delay

- The use of a common language understood by everyone simplifies the technical dialogue between participating countries and users

- The use of computer technology allows the recording, processing, and transmittal of item identification data and related management support data in easily accessible databases

- Descriptions of items enable design engineers to accurately search for and select components or equipment meeting technical or functional characteristics more efficiently than with any commercial catalog

Economic advantages:

- The NCS database allows visibility of parts already stocked in the supply system and helps prevent the entry of duplicate items. This practice supports the standardization of managed items and eliminates unnecessary costs for identification, storage, and other related supply functions. Nearly 50 percent of the components used in the design of new equipment are already codified

- Effective use of assets by enabling supply support interchange between linked organizations and between countries

- Reduction in inventories, storage space, record keeping, and personnel through elimination of duplicated items

- Reduced equipment downtime by facilitating cross support between services and cross support between countries

- Reduced procurement expenses by consolidating purchases, allowing less frequent purchases in greater amounts

NCS SPONSORSHIP

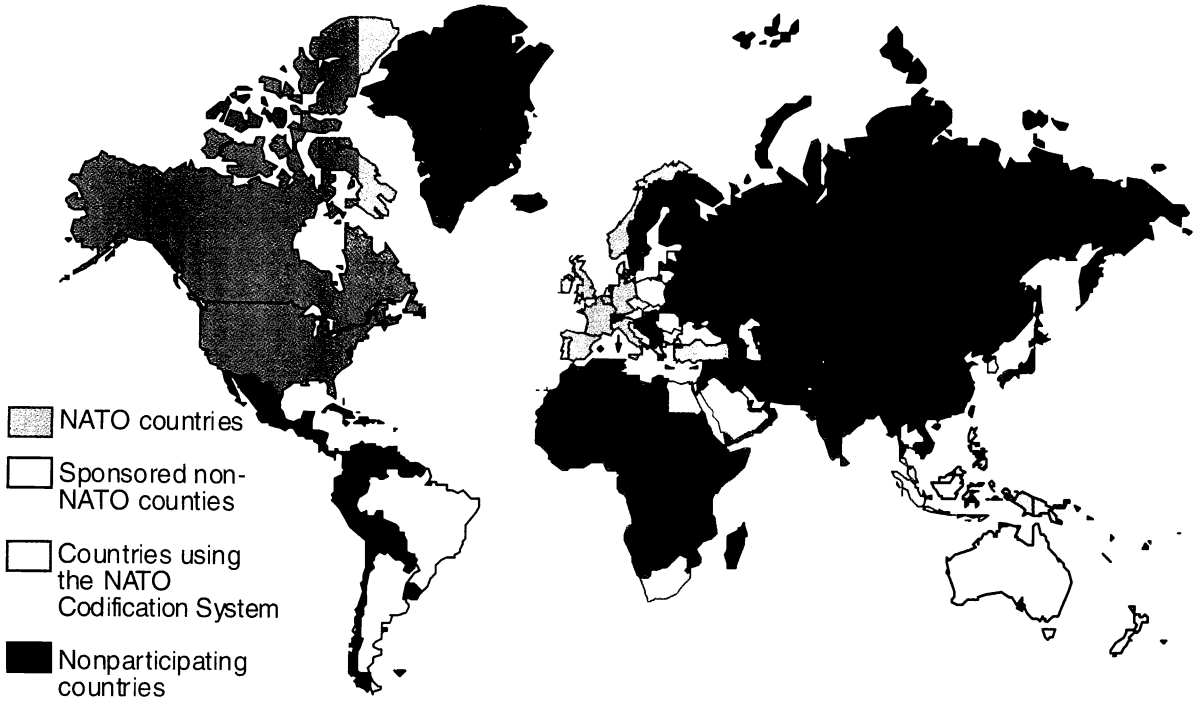
More and more countries are seeking and receiving sponsorship within the NCS. Sponsored countries sign an agreement to exchange codification data and to abide by the rules and procedures of the system. Among other things, the rules require countries to provide equivalent safeguards to protect sensitive and proprietary data.

A non-NATO country seeking sponsorship makes a written request to a NATO country or the Secretariat of AC/135. All NATO member nations then determine their national position on the sponsorship. Each member provides written concurrence or non-concurrence on the request. Within the United States, DLIS collaborates on the national position, through HQ DLA, to the Deputy Under Secretary of Defense (International and Commercial Programs) for official comment. The AC/135 Group of Directors grants the country NCS sponsorship upon agreement by all NATO member countries, and upon signing of the official sponsorship agreement by both the representative of the applicant country and the Chairman of the AC/135.

The AC/135 signs sponsorship agreements on behalf of NATO, and a responsible representative from the defense ministry of the sponsored country signs on its behalf. Countries currently sponsored in the NCS are as follows:

Australia	Czech Republic	Malaysia	Republic of Fiji
Austria	Estonia	New Zealand	Saudi Arabia
Argentina	Korea	Philippines	Singapore
Brazil	Kuwait	Poland	Tonga
Bulgaria	Lithuania	Romania	

An application is in process for Hungary, Slovenia, and Thailand at this time. Many other countries are likely to seek sponsorship in the next few years. Information about NCS sponsorship is kept up-to-date at Web site http://www.dlsc.dla.mil/nato.htm#Sponsor.



NATO COUNTRIES

Belgium
Canada
Denmark
France
Germany
Greece
Italy
Iceland
Luxembourg
Netherlands
Norway
Portugal
Spain
Turkey
United Kingdom
United States
NATO Maintenance & Supply Agency (NAMSA)

SPONSORED COUNTRIES

Argentina
Austria
Australia
Brazil
Bulgaria
Czech Republic
Estonia
Republic of Fiji
Hungary
Kuwait
Lithuania
Maliaysia
New Zealand
Philippines
Poland
Romania
Saudi Arabia
Signapore
Slovenia
South Korea
Thailand
Tonga
United Nations

COUNTRIES USING THE NCS

South Africa
Indonesia
Papua New Guinea
Solomon Islands

The benefits of sponsorship include the following:

- Use of a codification system that is fully designed and proven through many years of experience and worldwide use
- Improved interoperability with the NATO countries and other countries around the world
- Visibility of nationally manufactured items to all users of the NCS around the world
- Telecommunications data exchange with the NATO countries and other countries through the NATO MBS, of telecommunications data exchange
- Ability to influence further development of the NCS

Although the recent expansion of the NCS has reached each of the inhabited continents of the world, the primary focus has been in two areas:

- The Partnership for Peace (PfP) nations in Europe
- The Pacific Rim nations that are part of the Pacific Area Cataloging System (PACS) Forum

Partners for Peace (PfP)

The PfP countries include former members of the Warsaw Pact, former Soviet republics, and neutral countries. Participation in the NCS is an important first step toward interoperability with the NATO Alliance. About 20 countries are members of PfP. Several of these countries are already NCS sponsored (Lithuania, Romania, Czech Republic, Poland, Estonia, and Austria). Both Poland and the Czech Republic are developing NCS compliant defense cataloging systems. PfP countries are now participating in the on-going management meetings of AC/135. In 1995 in Hamburg, Germany, and in 1998 in Bulgaria and the Ukraine, NATO AC/135 held workshops for PfP countries to familiarize them with the full range of topics related to the NCS. Members of AC/135 have also made many bilateral contacts with PfP countries. Representatives of the U.S. NCB at DLIS have visited Slovakia and Slovenia to provide NCS orientation and consultation services under "Mil-to-Mil" programs. They have also hosted delegations from Estonia, Lithuania, Poland, Croatia, and Bosnia.

The Pacific Area Cataloging System (PACS)

The PACS is an initiative of the Pacific Area Senior Officers Logistics Seminar (PASOLS), sponsored by the Commander in Chief, U.S. Pacific Command. Its purpose is to establish common cataloging rules within the Pacific region based on the NCS. Twenty-one countries participated in a series of working group meetings beginning in 1995. This led to the establishment of the "PACS Forum" in 1997. The United States and Canada have taken a leading role in forming the group and have provided the link between PACS and NATO. Twelve countries have formally signed the PACS charter, and other nations, such as Japan and China, participate as observers. The following countries are signatories:

Australia	Canada	Republic of Fiji	Indonesia
Malaysia	New Zealand	Papua New Guinea	Philippines
Singapore	South Korea	Thailand	Tonga
United States			

The PACS Forum encourages members to seek formal sponsorship in the NCS by applying to the AC/135. Many PACS members have already done so.

Other Country Interest

In addition to the PfP and PACS initiatives, the NCS is used increasingly used in South America, with Brazil and Argentina taking the lead. Furthermore, south Africa is using the NCS, and the United Nations is considering use of the NCS and integrating it with its UN Common Coding System.

NATO Codification Products

NATO offers CD-ROM products containing data from all the NATO countries. Information about the NATO Ammunition Data Base (NADB) is available by consulting Web site http://www.king.igs.net/~ammo/ and information about the NATO Master Cross Reference List (NATO MCRL) can be found by contacting Web site http://www.nato.int/related /namsa/e_main/e_index.htm. The NATO MCRL contains NSN data from all the NATO countries. .

Products and Services from DLIS

As the United States NCB, DLIS provides an array of products and services which are available to support the international logistics customer. DLIS information products are available on CD-ROM and in other media. These products contain NSN data and codification support tools. A listing of the products and a brief description of each can be found at Web site http://www.disc.dla.mil/prodserv.htm.

DLIS NCB personnel are available to assist international partners in implementation of the NCS. In-country orientation and consultation can be arranged on a reimbursable basis through established programs such as "Mil-to-Mil," or as lines in an FMS Case.

DLIS also provides a wide array of formal training courses which are available to U.S., NATO, and other FMS customers each year. Standard courses, which are listed in the Military Article and Services List, provide classroom training on elements of the FCS and the NCS, as well as how to use various DLIS information products. Other offerings include On-The-Job training (OJT) and Computer-Based Training (CBT). DLIS training is available to logisticians around the world, with classes offered at many locations.

The Basic Cataloger Training Course (BCTC) is a course designed for entry level personnel and foreign governments not familiar with the NCS or FCS. It provides the fundamentals and technical knowledge necessary to improve basic cataloging skills. The course begins with the history and background of the FCS and allows students to understand the importance of cataloging in the logistics arena. Once students understand why cataloging is important, training continues with how the system works bv identifying the four steps in the Item Identification process: Item Name Selection, Classification, Reference/Characteristics data, and National Stock Number (NSN) assignment. Students perform exercises in the accomplishment of each of the four steps. They write simple Item Identifications and perform routine maintenance actions. To assist students in understanding management decisions, Major Organizational Entity (MOE) Rules and management data is covered. In addition, students learn various input transactions and the corresponding output results.

Formal classes, when held on-site, may be tailored to the particular needs of an organization. DLIS staff can do a "needs assessment" and can develop specialized training plans.

For general information on DLIS training classes, scheduling, course descriptions, and registration procedures, consult Web site: http://www.dlsc.dla.mil/training.htm.

DLIS Administers FMS Cases

DLIS products and services can either be provided through FMS cases written by the U.S. Military Services, or under direct cases written by DLIS. Most of the standard DLIS publications are available to FMS customers. Some examples of the CD-ROM publications that are available directly from DLIS are: H-Series, MED CAT, DEMIL, MCRD, MD/I&S and AMMO, FED LOG, FED LOG Characteristics Search, and FED LOG Drawings. FED LOG is the database on CD-ROM that contains the item records of all U.S. NSNs and some NATO NSNs. FED LOG contains proprietary data and the characteristic data of countries other than the U.S. This FEDLOG information is for limited distribution, and FMS customers should note that the FED LOG product is currently authorized only for distribution to U.S. government customers, the countries of NATO and NCS-sponsored countries.

An FMS case can be established for DLIS products/services by submitting a Letter Of Request (LOR) to DLIS. Although no specific format is required for a LOR, it must contain at minimum the name and address of the originator, products and/or services requested, and a shipping address. DLIS will then prepare the Letter Of Offer and Acceptance (LOA), which is the authorized document used by the United States Government (USG) as an offer to sell defense articles and services to a foreign country or international organization. LOAs represent a bona fide offer by the USG to sell the items described on the document. The offer becomes a contract when accepted by a representative of the purchasing country or international organization.

For additional information on DLIS FMS support, direct your request to:

Commander
Defense Logistics Information Service
ATTN: DLIS-CI (Ms. Mary Lloyd)
74 Washington Ave. N.
Battle Creek, MI 49017-3083

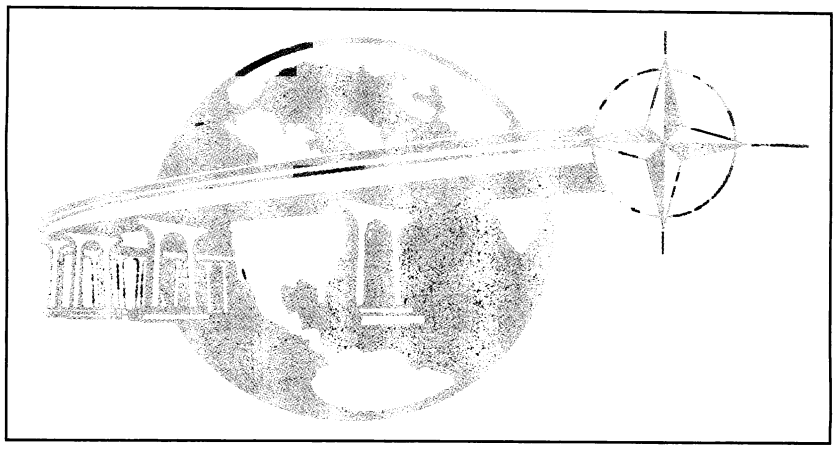
Telephone: (616) 961-4310/4328
FAX: (616) 961-4760
E-Mail: mlloyd@disc.dla.mil

The NCS - A Cornerstone of Defense Logistics Cooperation

The NCS is becoming the worldwide standard for codification, as shown by its widespread adoption by countries all over the world. This growth was symbolized by large and widespread attendance at the 8th NATO Symposium on Codification in 1997. That symposium, hosted by DLA in San Diego, California, was attended by over 400 people from 41 countries around the world.

While all armed forces must maintain their equipment in a perpetual state of operational readiness to ensure the sovereignty of their respective country, each must also realize savings by avoiding duplication and simplifying administration. The NATO countries have accomplished this need through their "invisible partner," a highly effective common system in the business of logistics—the NATO Codification System.

The NATO CODIFICATION SYSTEM
A Bridge to Global Logistics Knowledge



NOTE: For more information on the NCS, visit the AC/135 Director's Web site at: http://www.nato.int/structur/AC/135/NCS/index.htm; the DLIS Home Page at: http://www.dlsc.dla.mil/nato.htm; and the PACS Home Page at: http://logistics.spirit.net.au/pacs/pacindex.htm.. Points of contact for questions regarding this article are: Chris Yoder, Chief of the International Codification Division, Defense Logistics Information Service, DLIS-CI, 74 Washington Avenue N, Battle Creek, MI 49017-3084 , email: cyoder@dlis. dla. mil. PHONE: (616) 961-4286, or Mr. Steven Arnett, PHONE: (616) 961-4328, email: sarnett@dlis.dla.mil.