1. THE NATO CODIFICATION SYSTEM

1.1. INTRODUCTION

The NATO Codification System (NCS) is a uniform and common system for identification, classification and stock numbering of Items of Supply of user nations. It is designed to achieve maximum effectiveness in logistics support and to facilitate materiel data management. The System has been agreed by all signatories of the Alliance and sponsored non-NATO countries for use in identifying equipment and supplies.

The principal document of the System is the Allied Codification Publication No 1 (ACodP-1), also known as the NATO Manual on Codification, which describes the system operating procedures. In its military application the System has been accepted under two NATO Standardisation Agreements (STANAGs) - STANAG 3150 (Uniform System of Supply Classification) and STANAG 3151 (Uniform System of Item of Supply Identification). The System, which is based upon the United States Federal Catalogue System, is also used by the Civil Departments of some NATO nations. It is governed by the NATO Group of National Directors on Codification (AC/135) and implemented by the National Codification Bureau (NCB) of each user nation.

1.2. OBJECTIVES

The principal objectives of the System are :

- To facilitate interoperability between user nations.
- To increase the effectiveness of user nations logistics systems.
- To facilitate data handling.
- To minimise logistics costs of user nations.
- To increase efficiency in user nations logistics operations.

To achieve these objectives the System provides for each "Item of Supply" (see Paragraph 1.5) to be assigned with :

- A unique Item Name.
- A unique classification.
- A unique identification.
- A unique NATO Stock Number.

These concepts are further described in Paragraph 1.6.

The data so collected is stored in national databases for immediate retrieval. Additional Technical Characteristics Data of Items of Supply is also held for use as a reference library against which all new Items of Supply may be screened to reveal those which have already had a NATO Stock Number assigned, thus avoiding IoS duplication in NATO inventories.

1.3. <u>USE OF THE NATO CODIFICATION SYSTEM</u>

The establishment, operation and maintenance of the NATO Codification System provide a uniform identification language for use within national activities (e.g. supply management, standardisation etc.) and among member nations, including non-NATO nations that are sponsored members of the NCS.

Its use is based on the principle that responsibility for codification of an IoS rests with the nation that controls the design of the IoS, even if the IoS is not used within that nation. In these circumstances the purchasing nation has to request codification action from the design control nation.

For codification of IoS produced by manufacturers not located in a NATO nation or Tier 2 Sponsored nation, special rules apply (as detailed in ACodP-1).

1.4. <u>BENEFITS OF THE NATO CODIFICATION SYSTEM</u>

The NATO Codification System provides accurate information as to the identity of an IoS, it permits recording of the sources of supply and provides other management data. It enables the solution of supply management problems by providing data users with ready access to a single up-to-date source.

1.4.1. OPERATIONAL ADVANTAGES

- Enhanced opportunities for standardisation, by recording and revealing the unique characteristics of Items of Supply in user nations supply systems, allowing parts from a number of weapons systems to be used efficiently and effectively.

- The NCS provides access to the full range of information on all Items of Supply in the inventories of user nations. This allows users to pool resources and share the burden in regard to the acquisition of spare parts and the maintenance of common equipment. During operational deployment the NCS also facilitates minimisation of the supply requirement in terms of spares and consumables.

- An accurate description of the IoS permits users to readily identify spares and or substitute Items of Supply which meet the requirement for a given weapon system thus reducing downtime and supporting force multiplication.

- The use of a common supply language understood by all users simplifies the technical dialogue between participating nations and other users.

- The use of computer technology allows the recording, processing and transmittal of IoS identification data and related management support data in an efficient and user friendly manner.

1.4.2. ECONOMIC ADVANTAGES

- The data base allows the designer and project manager to screen for parts which are already stocked in the supply system and which could be utilised rather than producing a new IoS concept. This practice reduces the variety of Items of Supply to be managed and eliminates unnecessary costs for identification, storage and other related supply functions. Nearly 50% of the components used in the design of new equipment are already codified in the NATO inventory.

- Improved determination of materiel requirements and budgeting through greater knowledge of Items of Supply in stock.
- Effective co-ordination in procurement by enabling the elimination of concurrent acquisition and disposal of the same IoS, consolidating orders from several users to benefit from price reductions on bulk purchases and having visibility of several potential sources of supply.
- Effective use of assets by enabling supply support interchange between linked organisations and between nations.
- Reduction of national and NATO inventories, warehouse space, data maintenance and personnel through the elimination of duplication of an IoS.
- Improved surplus and excess materiel disposal operations through the uniform identification of each Item of Supply, including the prevention of erroneous disposal.

1.4.3. BENEFITS TO INDUSTRY

- Improved government-industry understanding and relations, through the use of a single identification system and common language.
- Descriptions of Items of Supply by characteristics enable design engineers to accurately search for and select components or equipment meeting technical or functional characteristics more efficiently than with any commercial catalogue.
- The accurate descriptions recorded in the NATO Codification System including form, fit and functional dimensions, material and surface treatment for Items of Supply facilitates the work of military and civilian standardisation agencies responsible for developing guidelines.
- The in-depth knowledge of the composition of Items of Supply, through detailed recording of hazardous and precious materials, promotes recycling activities which will assist in the recovery of precious materials and assist in the protection of the environment whilst contributing to the avoidance of prohibitive reclamation costs of returning polluted sites to civilian use.

1.5. ITEM OF SUPPLY –IoS-

The NATO Codification System is based on the "IoS concept" and requires a unique IoS Identification of each IoS. An IoS is an Item of Production which a responsible supply management authority has determined as being required to meet a specific logistics requirement.

Within the limits set by the concept, an IoS may be :

- A single Item of Production with a single NATO Stock Number.
- Two or more interchangeable Items of Production from one or several manufacturers all with a single NATO Stock Number.
- A quality controlled, precise tolerance IoS, selected from a normal production run allocated a discrete NATO Stock Number to differentiate it from the normal item in the production run.
- A production line IoS with a special modification and with a discrete NATO Stock Number to differentiate it from the normal item in the production run.

The various operational requirements which frequently cause an Item of Production to be used for differing purposes may validly, but not necessarily, cause an Item of Production to be referenced to more than one NATO Stock Number, due to a broader or narrower IoS concept.

1.6. ELEMENTS OF THE SYSTEM

1.6.1. CLASSIFICATION

Military inventories are complex and comprehensive in their content. To enable efficient management of these complex inventories in the NCS the components of the inventory are split into a hierarchical structure of discrete Groups and Classes. Each Group is formed by Items of Supply of the same physical or performance characteristics or utilisation in the same application, and is indicated by a 2 digit code (NATO Supply Group) NSG.

Within each Group, Items of Supply are further divided into Classes. These Classes are indicated by an additional 2 digit code forming, together with the Group code, a 4 digit NATO Supply Classification (NSC). The NATO Supply Classification System is uniform throughout all nations and each IoS concept identified using this System will be assigned a unique 4 digit Classification code.

The Multilingual NATO Classification structure of all groups and classes and their definitions, is published online on behalf of the Group of National Directors on Codification (AC/135) by the NATO Support Agency (NSPA) as ACodP-2 (Allied Codification Publication No 2). Website: https://eportal.nspa.nato.int/ac135public/

It is also included on the NATO Master Catalogue of References for Logistics (NMCRL).

1.6.2. ITEM NAMES

To ensure uniformity the System employs rules for naming each IoS using Approved Item Names (AIN). These AINs are defined in National Codification Handbooks (H-6) and ACodP-3. Approved Item Names are published together with their definitions and Item Name Codes (INC) and are used for classification of Items of Supply (see Paragraph 1.6.1) and descriptive identification of IoS and, where applicable, for reference identification of IoS (see Paragraph 1.6.3). The H-6 also defines colloquial names which are cross-referenced to Approved Item Names. When a manufacturer's Item Name cannot be related to an Approved Item Name, it may, exceptionally, be used as a Non-Approved Item Name (NAIN). The naming and nomenclature of an IoS is crucial to future linkage between the NCS and emerging international standards such as ECCMA, UNSPSC, PLib, STEP and PLCS.

AC/135 has published online a Multilingual NATO IoS Name Directory, known as Allied Codification Publication No 3 (ACodP-3), a comprehensive and internationally agreed dictionary of Approved Item Names required in the preparation of all IoS identifications. A National Codification Bureau having a requirement for an IoS Name not included in ACodP-3 must request its assignment in accordance with prescribed rules. However, H-6 handbooks are still maintained by several nations to serve as guides for IoS identification in their own language. Approved Item Names and related codes in the national H-6 handbooks conform to ACodP-3.

Each Approved Item Name is referenced in the ACodP-3 to one or more NSC codes.

Website: https://eportal.nspa.nato.int/ac135public/

1.6.3. ITEM OF SUPPLY IDENTIFICATION

IoS identification is the most important element of the NATO Codification System, as it prescribes the characteristics required to uniquely identify an IoS Concept.

The IoS identification consists of the minimum data required to establish clearly the essential characteristics of the IoS, i.e. those characteristics which give the IoS its unique character and differentiate it from every other IoS. The basic rule of thumb is "One IoS, One NATO Stock Number (NSN)".

There are two methods of IoS identification, the descriptive method and the reference method. In both approaches, identification of the True Manufacturer or Design Authority for an IoS is essential for the proper application of the Uniform System of Item Identification (STANAG 3151). It is similarly important that all known manufacturers/suppliers of an IoS and their individual part or drawing numbers be recorded. This process ensures that codification data users in the logistics chain are aware of where the Intellectual Property Rights (IPR) of any given IoS lie and that all known sources of that IoS are known to Acquisition Officers in national procurement organisations.

DESCRIPTIVE METHOD. The descriptive identification of IoS requires the use of uniform Item Names and technical descriptions using Item Identification Guides (see following sub-paragraph). Also, each Approved Item Name is referenced in the National Handbooks H-6 to a specific Item Identification Guide.

An Item Identification Guide (IIG) is a document used to identify an IoS by describing its attributes or characteristics in order to differentiate it from other Items of Supply and to record the necessary supplementary data required for logistics management. Each IIG is a self-contained document containing a compilation of requirements plus decision making rules to establish the IoS's individual identification. Each guide covers a complete "family" of like Items of Supply and lists the requirement for the recording of the IoS's characteristics, ready-formatted for machine processing.

As an additional tool for use with the descriptive method, the use of reference drawings has been developed. The purpose of these drawings,

is to express, pictorially, characteristics of Items of Supply which cannot be adequately described by words alone. Relevant reference drawings are integrated in Item Identification Guides.

REFERENCE METHOD. The reference identification of an IoS is an indirect process of identification. In this approach, the Item Name is supported by reference data only, consisting of the manufacturer's name (encoded In Accordance With (IAW) the NATO Commercial and Governmental Entity Code (NCAGE) allocation and formatting rules see Paragraph 1.6.4), and the reference/drawing number by which the IoS is known and recognised by the manufacturer.

1.6.4. NATO COMMERCIAL AND GOVERNMENT ENTITY CODE - NCAGE

As indicated in previous Paragraphs, it is necessary to record manufacturers' names against codified Items. To meet this requirement, a 5 character NATO Commercial and Government Entity Code (NCAGE), is assigned to each manufacturer. The structure for NCAGE coding is set out in ACodP-1. Details of individual NCAGEs are published online in the NATO Master Catalogue of References for Logistics (NMCRL) and in various national codification publications.
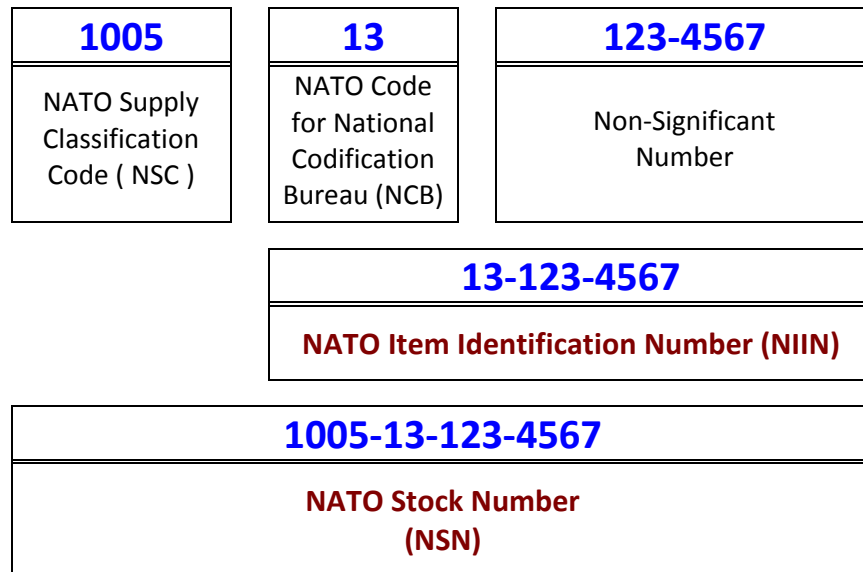
1.6.5. NATO STOCK NUMBER - NSN

When it is established that an Item of Supply is unique, its identity is fixed through the assignment of its own NATO Stock Number (NSN). NSNs are issued by NCBs.

The NSN is a 13 digit number and is divided into 3 parts :

- The first 4 digits are the NATO Supply Classification Code and relate the IoS to the group and class of similar Items of Supply (see Paragraph 1.6.1).
- The next 2 digits indicate the NCB assigning the NSN.
- The final 7 digits of a NSN are computer allocated and have no inherent significance other than to uniquely identify the IoS to which they are allocated. In practice, this means that no inference should be drawn by the logistician or other data user based on any apparent serial progression. These 7 digits are assigned to one IoS within the originating nation's codification database, they may be duplicated in the Total Item Record (TIR) of another NCS user nation. To enable user friendly reading of NSN data, it is common for a dash to be inserted at strategic points in the NSN e.g. (1005-13-123-4567), however, whenever a NSN is read in an Automatic Data Processing (ADP environment, the NSN will be represented in its true form, (i.e. 1005131234567) as a thirteen (13) digit string.

An example of a NSN and related terms is shown below :

1005	13	123-4567
NATO Supply Classification Code (NSC)	NATO Code for National Codification Bureau (NCB)	Non-Significant Number

13-123-4567
NATO Item Identification Number (NIIN)

1005-13-123-4567
NATO Stock Number (NSN)

The NATO Item Identification Number (NIIN) (Last Nine (9) Digits of an NSN) is the fixed part of the NSN, and it remains associated with the IoS concept throughout its life cycle. However, the NSC (First Four (4) Digits) may change if there is a revision of the IoS Classification structure.

The principal benefits of the NSN are :

- Uniformity. It is uniform in composition, length, structure and use.
- Adaptability. It supports the varied requirements of logistics management in a supply system, both nationally and internationally, from initial procurement to final disposal of the IoS.
- Simplicity. It is applicable without modification to all Items of Supply, it is unique, easy to assign, it is flexible to maintain and it is readily recognised throughout the user nations of the world.
- Stability. The NIIN is associated with only one IoS in perpetuity, it is never re-allocated to another IoS even if the original IoS is no longer in use.
- Compatibility. The NSN and its related data can be recorded and communicated manually or by all types of ADP systems (no two user nations have the same hardware / software configuration). Providing, through the fixed format rules of the NATO Data Exchange (NADEX) system, elegant solutions to the communications problems raised by the use of diverse operating, communication and supply systems in the current user nations.

Further the system provides for :

- Expandability. Ten million different Items of Supply may be recorded for each NCB code.

1.7. CODIFICATION SERVICES AND EXCHANGE OF CODIFICATION DATA

In order to obtain the maximum benefit from the NATO Codification System, internationally agreed methods, formats and procedures have been set up to facilitate the regular exchange of codification data and services among member nations.

Standard procedures for exchange of data by telecommunication means have been established and special input and output codes and formats have been agreed upon.

The NATO and Sponsored nations also exchange general data, including national NCAGE Data, which details the full names, addresses, telephone, fax, e-mail and industrial classification codes of all recorded national manufacturers and suppliers. The nations also supply the NSN Cross Reference Lists (CRLs), which contain nationally assigned NSNs cross-referenced to manufacturer's Refsets (Reference Sets), which are the identifying data string created by joining the manufacturer's NCAGE and reference/drawing numbers together, to NSPA in order to produce the NMCRL.

Some NATO nations are currently able to exchange Materiel Management Data (MMD) and other nations are planning to introduce this facility. MMD includes information necessary to acquire, account for and generally manage Items of Supply, such as price, source of supply, shelf life. The exchange of these data elements is accomplished on the basis of STANAG 4199 (Uniform System of Exchange of Materiel Management Data).

1.8. PUBLICATIONS ON NATO CODIFICATION

All international rules, operating procedures and forms are contained in the NATO Manual on Codification, published as Allied Codification Publication No 1 (ACodP-1), which is updated bi-annually.

Website: http://www.nato.int/structur/AC/135/main/links/acodp1.htm

2. CODIFICATION PROCEDURES

2.1. GENERAL REQUIREMENTS

2.1.1. INTRODUCTION

Logisticians in NATO and Sponsored user nations require that NATO Codification be undertaken for all Items of Supply prior to delivery to the user. A comprehensive series of actions is undertaken to achieve this end. These actions are detailed in this Chapter.

It is essential that arrangements be made for codification at the earliest possible stage in a project to ensure that codification data is provided in step with the production of Items of Supply. Whenever possible, the requirement shall be noted at the design stage and contractors encouraged to use Standard Components and Items of Supply which have already been codified and fully described.

2.1.2. CODIFICATION CONTRACT CLAUSE

In every case, invitations to tender, orders for prototype work, or other pre-production action shall contain the appropriate reference to the need for data in support of NATO codification. Contracts for major equipment and spare parts shall contain a clause specifying the supply of supporting data for codification.

However, the actual supply of data in support of codification (the list of existing NSNs and/or technical documentation relating to new items to be codified) will only be required after the final signature of the order or contract. In the early stages of the procurement process, companies will only be required to obtain an NCAGE code. The contracting authority may only require codification data from companies that win a bid or from whom goods are ordered.

The subject of the Codification Contract Clause and details of its meaning and use, as agreed by member nations, can be found in Chapter 4.

It is of primary importance that the Codification Contract Clause be included in all acquisition/procurement contracts. Prime contractors shall be made aware of the requirement to include the Codification Contract Clause in any contracts placed with sub-contractors so that technical data can be obtained for Sub-Contracted Components.

2.1.3. NATIONAL CODIFICATION BUREAUX - NCB

Codification work is undertaken under the supervision and control of the National Codification Bureau (NCB) of the codifying nation. Some nations utilise specialist codification contractors to perform the actual codification of Items of Supply.

Note: The acquisition/procurement contract shall not demand the delivery of NATO Stock Numbers for the procured IoS from the contractor. NSN assignment is the sole responsibility of the NCB of the codifying nation.

The acquisition/procurement contract shall detail the full address and contact details of the NCB in the country acquiring/procuring any given equipment/spares. All prime and sub-contractors shall obtain codification information, guidance, publications and national regulations from the NCB as the mandated authority for the provision of the above requirements.

For multi-national/NATO projects, close liaison shall be established between the NCBs of participating nations. The NCB of one of the nations participating in the project may act as co-ordinator, assisted by the project contractor or an international consortia of contractors.

2.1.4. THE NATO SUPPORT AGENCY - NSPA

The NATO Support Agency (NSPA) participates in the NATO Codification System on behalf of all other NATO Agencies. NSPA may be made responsible for the co-ordination and management of the codification of a common or NATO Project.

The Memorandum of Understanding (MoU) between AC/135 and NSPA was established to enable contact and interaction between AC/135 and NSPA. The MoU structures the provision of clearly defined services by NSPA to the AC/135 community.

2.1.5. TRAINING ON NATO CODIFICATION

Training courses for personnel engaged in NATO Codification work are conducted by some NCBs, and these are normally open to personnel of supply departments and industry. Enquiries on the type and duration of such courses should be addressed to the NCB.

2.2. FINANCIAL ASPECTS

2.2.1. INTRODUCTION

As in all other phases of logistics supply, codification is a cost element. It is vital that acquisition/procurement and budget management personnel are aware of the expenditure codification will entail. All acquisition/procurement contracts and financial budgetary plans shall ensure that adequate financial provision is included for full codification in acquisition/procurement projects and financial planning for such.

2.2.2. MANUFACTURER'S COSTS

Where an acquisition/procurement project has included the Codification Contract Clause, there will be no cost to the Main Equipment Supplier/Manufacturer for the provision of codification related technical documentation/drawings and/or draft item identification. The costs of the provision of Technical Documentation/drawings and/or Draft Item Identification shall be included in the contract under the sub-clauses set out in the Codification Contract Clause. It is the responsibility of the Main Equipment Supplier/manufacturer to ensure that all sub-contractors are aware of the requirement for supporting Technical Documentation /drawings and/or Draft Item Identification and to include the Codification Contract Clause in any contract let to a sub-contractor. The cost of the actual codification is the responsibility of the Government Defence Entity Acquiring/Procuring the equipment in question.

2.3. <u>SEQUENCE OF CODIFICATION ACTIONS</u>

2.3.1. INTRODUCTION

While the detailed process of codification is not the responsibility of procurement or user authorities, it is desirable that users in particular are conversant with the codification requirement to facilitate proper introduction of the equipment being procured into service. The following paragraphs set out, in brief, the normal series of actions that make up the codification process. Flowcharts may be prepared by NATO Codification Sub-Groups established for the co-ordination of codification of major projects; however, they may also be used by any authority which sponsors or controls codification projects.

To ensure that the correct Items of Supply are codified for any given piece of equipment, the equipment designers and user community must decide on which IoS will be identified as potential spares to be eventually stocked in the inventory of the user nation. This is accomplished by the user group studying data such as the Logistics Support Analysis (LSA) and the Initial Provisioning List (IPL) created by the Main Equipment Supplier. The IPL shall be screened against the existing codification database to identify those Items of Supply which are already part of the user nations' inventory. Items of Supply which are not found in the existing database require codification. The result of this process will be a final list of Items of Supply, with NSNs and related data recorded, which are to be procured in order to support the equipment in service.

2.3.2. REQUESTS FOR CODIFICATION

These requests must contain the following information :

- The True Manufacturer's/Design Authority's fully identifying part number.
- The Approved Item Name (AIN) and the Item Name Code (INC) where it is known.
- The NATO Commercial and Governmental Entity Code -NCAGE- or name and address of the manufacturer.
- The proposed NATO Supply Class.

The name of the True Manufacturer/Design Authority is essential to the codification process. It is common practice for suppliers to allocate their own part numbers and where "Sub-Contracted Components" are included in equipment the supplier must quote the True Manufacturer/Design Authority's Part Number and provide all relevant data of the IoS for screening and recording in the national database.

Requests for codification are passed either to the appropriate NCB or the nominated co-ordinator of the project. This depends on the decision of the appropriate Sub-Group or the participating nations.

2.3.3. INITIAL SCREENING AND CODIFICATION

Initial requests for codification are input in electronic media, by telecommunication means, e.g. AECMA Specification 2000M, for screening against the databases to reveal, by comparison of the reference numbers (part numbers), any IoS with an existing NSN. After initial screening, the IoS with no matching NSN by reference, in the codification database shall be codified. The resultant "Embryo NIIN" with its technical characteristics will be screened against the full codification database, where no match by characteristics is found, the IoS will be allocated a new NSN.

2.3.4. PRIORITIES

The aim is to achieve "delivery of Main Equipment and supporting spares (IoS) with NATO Codification Data available".

NCBs have established timeframes for provision of codification data and services to each other or to the user. However, a necessary condition for meeting the agreed processing times is early provision of the technical documentation by contractors and suppliers (see Chapter 4).

2.3.5. FOLLOW-ON ACTIONS

An IoS may be subject to modification, change or correction, by the manufacturer during production, or at the request of the end user during production processing, or after field experience. Such modifications must be evaluated by the Configuration Manager to ascertain whether the modification or change is such as to warrant the creation of a new IoS with a different NSN.

It should be noted that the Codification Contract Clause (see Chapter 4) specifically caters to this requirement throughout the life of the contract. However, it should be acknowledged that use of an IoS may extend beyond the contract's time limit. As a result, the obligations of the original contract should be borne in mind and financial provisions made. Any Sub-Contracted Components or additional components added to a piece of equipment should be treated in the exact same manner.

2.3.6. **SUMMARY**

The following actions are required to ensure timely codification;

- To ensure that the Codification Contract Clause is included in the main contract, and in any sub-contracts as required.
- To inform, at the earliest possible stage in the procurement and design of equipment and selection of spares, the responsible NCB of the codification requirement.
- To assess, and budget for, any codification task not covered by the main contract.
- To make provision, if possible, for additional follow-on codification (e.g. modification) tasks after the main contract has expired.
- To advise the NCBs of the originating nations, as early as possible, of the future workload to enable them to plan for the provision of codification data before the planned delivery date of the Main Equipment and the supporting spares.
- To invite representation from the appropriate NCB(s) to attend provisioning conferences or any other meetings at which lists of IoS or spare parts and codification problems will be discussed.