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Ministry  
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## JSP 886 DEFENCE LOGISTIC SUPPORT CHAIN MANUAL

### VOLUME 2 INVENTORY MANAGEMENT

### PART 1 POLICY AND PROCESS FOR INVENTORY MANAGEMENT

VERSION RECORD..		
Version Number	Version Date	Version Description
2.7	18 Jul 12	Chapter 2, Paras 21 and 22 and new Annex B: PT Arrangements for Silent / Out of Hours Release of Inventory Items.
2.8	15 Oct 12	Transfer old Chapter 8 to JSP 886 Volume 3 Part 404 and addition of <a href="#">Chapter 11: Stock Segregation Policy</a> .
2.9	12 Feb 13	Chapter 12: Trident Low Stock (TLS), added.
2.10	19 Feb 13	<a href="#">Chapter 12: new Paragraph 16</a> inserted. Extensive changes to Chapters 4 and 9 affecting Algorithms, Segmentation and addition of new <a href="#">Chapter 13: Inventory Segmentation</a> .
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2.12	04 Feb 14	<a href="#">New Chapter 14 – Inventory Volumetric Data</a> .
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## **CHAPTER 1: INTRODUCTION TO INVENTORY MANAGEMENT**

1. This Chapter describes the end to end Inventory Management (IM) procedures necessary for Project Teams (PTs) to follow from the initial stages of planning and sourcing of requirements to the in-service support and management of inventory, culminating in eventual disposal of surplus materiel no longer required for MOD use. Recognising the stakeholder benefit of applying the 'one stop shop' approach, JSP 886 Volume 2: Inventory Management has been designed to provide ready access and authoritative reference to all aspects of policy and procedures governing the effective and efficient management of inventory across Defence.
2. One of the key recommendations from the Inventory Management Diagnostic Study, which was undertaken in 2007, is to implement clear IM policy and process ownership, together with the review and regeneration of authoritative IM policy. Clearer policy direction and corporate governance is particularly crucial in respect of innovative Contractor Logistic Support (CLS) solutions to ensure that wider Joint Supply Chain (JSC) coherence is factored into the design of support solutions from the earliest (Concept) stage through life.
3. Deputy Head Supply Chain Management - Supply Chain Optimisation (Dep Hd SCM-SCO) is responsible for IM policy and process and for ensuring the coherence of other policy and processes that affect the IM role. This document provides a fully integrated set of policy that fits seamlessly with the other processes that form part of the overall Acquisition Operating Framework (AOF), including the Logistics Coherence Information Architecture (LCIA).

### **DEFINITION**

4. The IM Diagnostic Study, endorsed by the Joint Supply Chain Board (JSCB) and DE&S Board, defined IM as follows:

"IM comprises the management and control of the full range of processes involved in defining, maintaining and disposing of the totality of the Defence inventory at stockholding points and throughout the life of all equipment and projects in order to provide the required level of operational capability with the minimum necessary level of resources".

### **INVENTORY MANAGEMENT POLICY AND PROCESS GUIDE**

5. The policy and process guide at Figure 1 provides a top-level illustration of the constituent functions within the overall end to end IM process. It is supported by lower level work flow processes covering the inputs, value-added activities and outputs. The overarching principle is that the complete set of IM policy and processes will cover every IM function described in the guide. The guide is a living document which will be reviewed and updated regularly to maintain its currency and value.

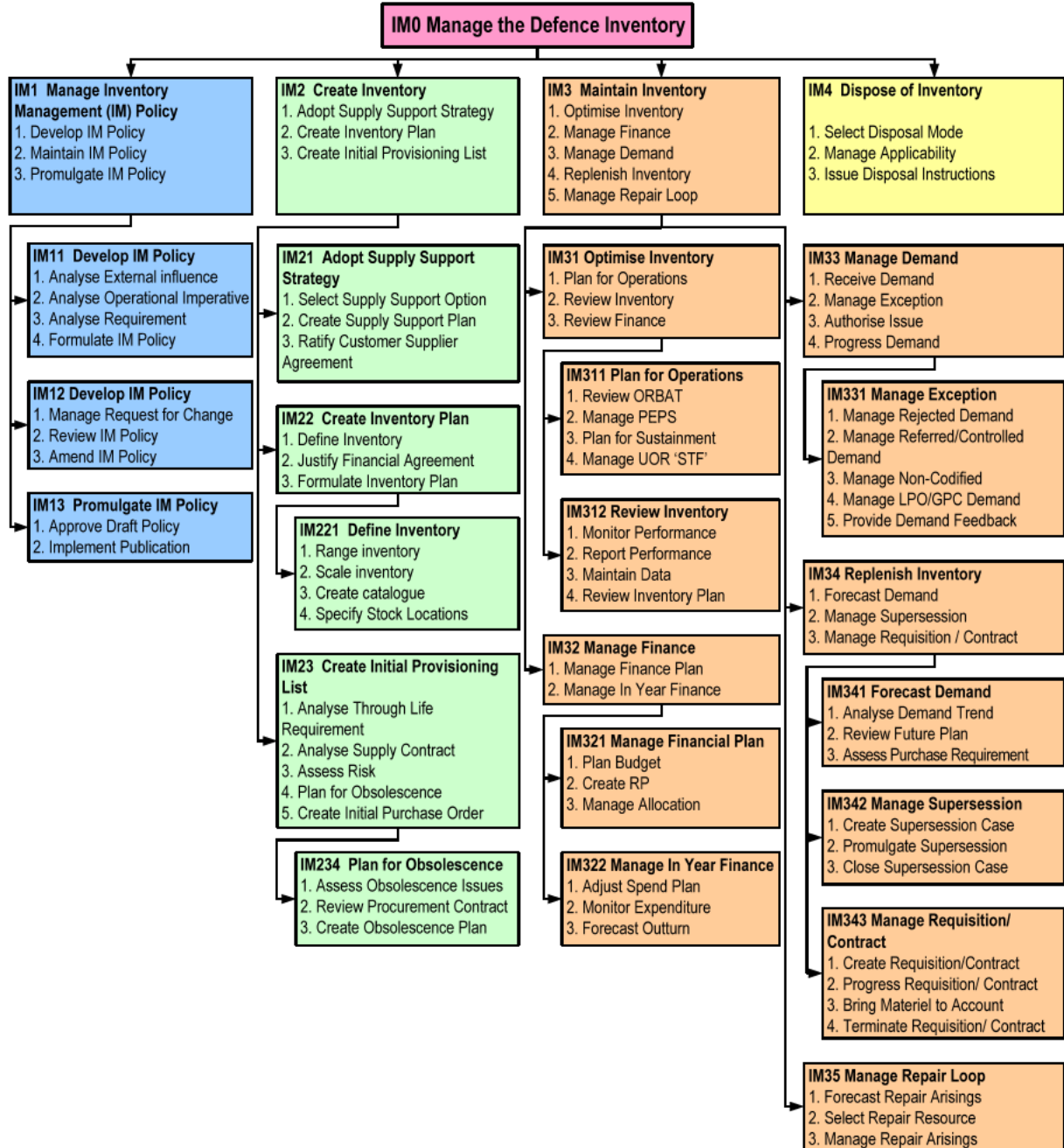
### **APPLICATION**

6. IM forms an essential part of all through-life platform, equipment and commodity support solutions delivered by PTs and other authorities, including Industry where the management of certain IM functions may be covered by CLS arrangements. To ensure effective, fit for purpose governance and overall JSC cohesion, compliance with JSP 886

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IM policy and procedures is a mandatory requirement to be met by all PTs and other stakeholders, including suppliers within Industry.

**Figure 1: Inventory Management Policy and Process Guide**



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1. The policy, processes and procedures described in JSP 886, the Defence Logistics Support Chain Manual are owned by ACDS LOGOPS. ACDS LOGOPS-Log Strat and Pol DH is responsible for the management of JSC policy on behalf of ACDS LOGOPS. This instruction is sponsored by DES IMOC SCM-SCO.

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**LINKED PUBLICATIONS**

7. Further IM guidance is contained within the following publications:

- a. JSP 462: Financial Management Policy Manual.
- b. JSP 472: MOD Resource Accounting Policy Manual.
- c. JSP 886 Volume 1 Part 2: Introduction to the Joint Supply Chain Blueprint.
- d. JSP 886 Volume 2 Part 4: NATO Codification in the UK.
- e. JSP 886 Volume 3 Part 2: Contractor Logistic Support.
- f. JSP 886 Volume 3 Part 8: Reverse Supply Chain.
- g. JSP 886 Volume 4: Materiel Accounting.
- h. JSP 886 Volume 9: Disposal of Materiel.
- i. Support Solutions Envelope (SSE).
- j. Acquisition Operating Framework (AOF).
- k. DEFSTAN 00-600: Integrated Logistics Support.



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## **CHAPTER 2: KEY PRINCIPLES AND KEY ELEMENTS OF INVENTORY MANAGEMENT**

### **PURPOSE**

1. This Chapter provides a summary of the key aspects of IM policy and process as described in the Policy and Process Guide for IM by PTs at Figure 1 above. The intent is to draw attention to the key stages and elements of IM, from the initial stages of planning and sourcing of requirements, through the in-service management phase, to eventual disposal of surplus materiel no longer required for MOD use.

### **SCOPE**

2. This general policy guidance applies to all IM arrangements that are covered either directly by the MOD PT or by its suppliers in Industry under Contractor Logistic Support (CLS) arrangements. Policy for inventory aspects of CLS solutions is contained in Chapter 3, this is in addition to the Supply Chain aspects contained in JSP 886 Volume 3 Part 2: Contractor Logistic Support.

### **KEY PRINCIPLES OF DEFENCE INVENTORY MANAGEMENT**

3. In order to manage the full range of Defence Inventory successfully IMs are required to adopt and apply the following four Key Principles as an essential contributor to effective and efficient Through Life Capability Management of platform, equipment and commodity support solutions:

- a. **Plan for Success.** Effective and efficient inventory planning, which involves close engagement with the customer and other key stakeholders within the supply chain network(s) is a critical success factor. Demand forecasting must take into account not only current and previous demand rates but be capable of predicting future trends. The use of Sales and Operational Planning (S&OP)<sup>1</sup> or similar methodology (eg. Operational Support Planning) is vital to enable customer expectations and inventory affordability to be balanced with realism. Each PT is responsible through their Head of Inventory<sup>2</sup> for ensuring that a comprehensive Inventory Plan is developed and maintained through life in accordance with JSP 886 Volume 2, Part 2: PT Inventory Planning.
- b. **Source for Success.** Effective and efficient sourcing and supplier management is a critical success factor for optimisation of inventory acquisition and it is vital to get this right from the very beginning of the CADMID process. Negotiation of **Specific; Measurable; Achievable; Realistic; Time (SMART)** based objectives, key targets and performance measures covering inventory cost, availability and supply performance is an essential element of every platform, equipment and commodity support solution. It is the IM's direct responsibility to ensure that robust inventory

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<sup>1</sup> S&OP is the set of business processes and technologies that enable an enterprise to respond effectively to demand and supply variability with insight into the optimal market deployment and most profitable supply chain mix. S&OP strategies help companies make "right timed" planning decisions for the best combination of products, customers, and markets to serve. *Source: Muzumdar and Fontanella, Supply Chain Management Review 4 September 2006.*

<sup>2</sup> The Head of Inventory for this purpose is the senior individual within the PT with responsibility for IM. Arrangements will vary between PTs and Clusters, but typically will be at about C1 or equivalent Service Rank. In cases of doubt the PTL is to give appropriate direction.

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performance metrics are included in the Statement of Requirements (or 'requisition') for all contracts with suppliers<sup>3</sup>.

c. **Manage for Success.** Effective and efficient through life management of inventory is a critical success factor for ensuring that the range and scale of inventory items is sufficiently lean and agile to meet the minimum military requirement specified within the platform, equipment and commodity support solution. It is the IM's direct responsibility to ensure that range<sup>4</sup>, scale, value and availability of inventory is optimised through life in accordance with JSP 886 Volume 2, Part 2, Section 4.

d. **Deliver for Success.** Effective and efficient delivery of end to end inventory outputs and performance is a critical success factor for through life platform, equipment and commodity support solutions. In this respect delivery spans 'factory to foxhole and vice versa', and it is the direct responsibility of the IM to monitor and measure inventory cost and performance, rectifying shortfalls against target in conjunction with key stakeholders. It is the IM's direct responsibility to ensure that the through life performance of inventory is measured and managed in accordance with Chapter 6 of this document. The detailed policy and authoritative guidance contained elsewhere in JSP 886, Volume 2 underpins these four Key Principles.

## **KEY ELEMENTS OF DEFENCE INVENTORY MANAGEMENT POLICY**

4. The **Inventory Management Policy and Process Guide** in Chapter 1, Figure 1, above, provides an illustration of the end to end inventory functions that must be performed in order to achieve desired outcomes, objectives and performance targets. Each box in the process guide covers one of the many actions that need to be taken by IMs, either directly or in association with stakeholders. IM is a key component of the JSC, and in order to perform the role to the highest standards the IM must have the knowledge, skills and experience to balance financial, commercial, project management and operational factors, to ensure that the right item is in the right place at the right time (and at the right price and right quality).

5. Therefore this policy direction has been structured in four separate Sections, to deal with what can be complex subject areas as simply and clearly as possible, for the benefit of IMs and their suppliers and other stakeholders. All are required to understand and comply with this Defence policy without exception. A brief synopsis of the scope and contents of each is provided below.

### **Section 1: Managing Inventory Management Policy (IM1)**

6. The need for inventory stems from the selected Support Solution to meet the capability / operational requirement as developed through the Integrated Logistics Support (ILS) methodology described in JSP 886 Volume 7: Integrated Logistic Support. Inventory is expensive in terms of both initial and through life costs, and Project approvals at all stages (Initial Gate (IG), Main Gate (MG) and Investment Approval Board (IAB)) must justify the need for this investment. The Inventory Plan, described in JSP 886 Volume 2 Part 2: PT Inventory Planning, is a key document in the approvals process to ensure that the (proposed) inventory is optimised through life to maximise availability and equipment sustainability within available financial resources. It is a living document and directly

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<sup>3</sup> It is of course the Commercial Branch that takes the lead in negotiating the contract at tender stage.

<sup>4</sup> Ranging is a joint process involving the appropriate Technical / Engineering authority, Industry and SCS Inventory Optimisation staffs.

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supports the financial Planning Round (PR), as it communicates the PT's justification for its inventory-financing requirement.

7. The selected Support Solution must adhere to the Governing Policies (GP) contained in the Support Solutions Envelope (SSE). The SSE mandates GPs and constraints that PTs must adhere to when developing a support solution. In the JSC's Key Support Area (KSA3) of the SSE these include IM and other supply chain requirements to ensure coherence and effectiveness of support to Operations. Conformance to the GPs (or an approved excursion) must be demonstrated as part of the Project approvals and assurance process.

8. Recognising that inventory availability (right item, right place, right time) is one of the critical success factors for a lean, agile and responsive JSC, inventory performance management is an integral element of the overall JSC Performance Management Board (JSC PMB) regime. The JSC PMB covers end to end JSC performance review, reporting up within DE&S to the 2\* JSC Board, the 3\* Chief Operating Officer (COO) Board and the 4\* ECMB (Executive Committee of the DE&S Management Board) as part of the Directorate Corporate Approvals Performance & Risk (DCAPR) reporting process.

9. Management of IM policy must reflect related functional policy guidance owned by other specialisms, particularly commercial and finance in relation to acquisition and resource management of inventory.

## **Section 2: Create Inventory (IM2)**

10. IM aspects of the overall ILS process are summarised in JSP 886 Volume 7, Part 5: Supply Support Procedures, and reflected in the Project's Through Life Management Plan (TLMP). An essential element of the TLMP is the Inventory Plan, which provides clear guidance on the factors to be considered in the creation of inventory. A crucial aspect is the range and scale of Initial Provisioning (IP). Faults made here, either procurement of too much or too little stock of the wrong items, cannot easily be corrected, and can seriously hinder the project for many years. The inventory scope is defined by Ranging, and the level of inventory quantified through Scaling. It is crucial that these are determined through an appropriate level of Inventory Analysis including Logistics Modelling, against credible and approved Operational scenarios and assumptions. The Sponsor and Customer must both be closely involved with this exercise. Particular attention must be given to the management of 'Repairables' and the Reverse Supply Chain, including the use of realistic Reverse Supply Chain Pipeline Times, JSP 886 Volume 3 Part 1: Standard Priority System refers. It is reiterated that the Inventory Plan is a living document and must be maintained through the life of the equipment.

11. It is MOD policy that all items managed in the JSC are codified; detailed policy and procedures are given at JSP 886 Volume 2 Part 4: NATO Codification in the United Kingdom.

12. The PT Inventory Plan must cover obsolescence from the very outset at the design stage and follow this through life. Managing obsolescence is primarily an engineering process but IMs must be closely involved, both to avoid procurement of obsolescent items and where unavoidable to consider life-of-type buys to cover to the out of service date of the platform or equipment concerned.

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**Section 3: Maintain Inventory (IM3)**

13. The need to optimise inventory continues through life and PTs must keep this under constant review. Planning for Operations remains paramount and a close dialogue must be maintained with both Sponsor and Customer, the former particularly to keep the funded availability under review. Inventory performance against the approved Performance Management for IM (PM4IM) objectives and key targets must be continually monitored as mandated in JSP 886 Volume 2 Part 2, Section 5. Since the introduction of DE&S Stock Accounting Collation System (DSACS) described at JSP 886 Volume 2 Part 6: Financial Accounting for Inventory, PTs have a single stock accounting management information system and can monitor and control the financial aspects of their inventory enabling reporting and adjustment in year. Proper financial management in this respect is not an 'overhead' but should be regarded as an enabler to effective management of the inventory.

14. In the ideal situation, demands from authorised customers are dealt with automatically without the intervention of PT inventory staff. However there is an unavoidable need for some demands to be referred to PT staff for action / authorisation, for example Controlled Items (previously known as Provision Bans or Referrals). The need to set such items is to be kept under continuous review, and in particular items so designated must be lifted as soon as the need has passed. To avoid artificially depressing immediate off the shelf availability demands referred to PTs must be dealt with expeditiously within 24 hours of receipt. Local monitoring must be undertaken to ensure that this target is achieved (or bettered).

15. The key task of the IM is to ensure proper stock management, particularly the Reprovisioning / procurement of Consumable items and the management of Repairable items. This task is covered in Chapter 4: Reprovisioning Policy. The following points are emphasised:

- a. It is ineffective to try to provide the same degree of attention to all items in the inventory, from complex assembly to simple nut, bolt or washer. PTs must therefore segment their inventory range to ensure that resources are focussed and prioritised accordingly. Advice and guidance on Inventory Segmentation is given in Chapter 13: Inventory Segmentation.
- b. Key to effective IM is the proper maintenance of data management and avoidance of erroneous or corrupt data. This task has hitherto attracted insufficient attention; much poor inventory performance in the past, leading to sub-optimal support to Operations, has been traced back to poor provisioning based upon corrupt or inaccurate basic data. PTs must carry out appropriate checks to ensure that this task is not neglected.

16. The PT IM has final responsibility for providing Supply Response, Demand Progression and where appropriate EQUIPSENT<sup>5</sup> information; this responsibility can not be delegated to contractors. The majority of responses can be either automated or provided by other agencies on behalf of the PT. This includes information on items provided against a CLS contract. Additional details on Supply Response, Demand Progression and EQUIPSENT requirements are contained in JSP 886 Volume 3, Part 1: Standard Priority System

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<sup>5</sup> Units making issues to RN and RAF units are to provide EQUIPSENT messages.

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17. **No Item Record Items.** The management of No Item Record (NIR) demands (IM331) is at [Annex A](#).

#### **Section 4: Disposal of Inventory (IM4)**

18. Disposal of surplus MOD owned spares and equipment is the responsibility of the Disposal Services Authority (DSA), whether in the form of open sales or part of Government to Government sales (principally the support of ex RN warships and auxiliaries). Disposal must comply with legislation covering Health and Safety, Hazardous Waste and similar topics. Advice on disposals is contained in JSP 886 Volume 2 Part 404: Disposals of Inventory. Responsibility for deciding what is disposed, obtaining appropriate approval and initiating disposal action lies wholly with the IM, thereafter DSA is responsible for actual physical disposal by the most appropriate and cost effective means.

19. From the IM perspective, disposal is straightforward in respect of single-applicability items where the “last of class” equipment or platform is going out of service, but care must be taken to ensure that the financial aspects of disposal are properly addressed. Where either multi-applicability items are involved or equipment / platform populations are reducing over a period of time, a more complex calculation of disposal quantities is required, but as a matter of principle excessive stock should be disposed as soon as it is identified. The retention level of stock in these circumstances needs to be assessed taking account of both Out of Service Dates and the charge on capital for stock and likely storage overheads.

20. Even where equipment or platform populations are static, a regular (at least annually) surplus review is to be undertaken to ensure that excessive quantities of stock and / or assets are not building up, perhaps due to change of usage or other factors that the PT is unaware. Unexpected changes of usage identified by inventory staff should be brought to the attention of PT Technical staff, as it may be evidence of a departure from prescribed maintenance routines. Wherever excess stock is detected it should be subject to full investigation and, if appropriate, disposal action initiated.

#### **PT ARRANGEMENTS FOR SILENT / OUT OF HOURS RELEASE OF INVENTORY ITEMS**

21. The introduction of Single Item Ownership (SIO) policy at JSP 886, Volume 2, Part 3 has resulted in items previously managed on differing Base Inventory Systems (BIS) now being managed on a single system. Consequently, PT Inventory Managers (IM) may have transferred the management of items of their concern to alternative PTs. This may result in them being unfamiliar with the procedures for dealing with controlled item demands in the silent hours on the alternative BIS and how to make suitable arrangements for their processing.

22. Arrangements for the differing environments and BIS for out of hours support for inventory are therefore detailed at [Annex B](#).

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## **ANNEX A TO CHAPTER 2: MANAGEMENT OF NO ITEM RECORD (NIR) ITEMS**

(Introduced at [Paragraph 17](#))

### **Introduction**

1. This annex deals with the procedures to be followed by PTs for managing demands for No Item Record (NIR) items. NIR is shorthand to indicate those items that are not managed on JSC LogIS and therefore the unit has to place demands 'manually' to a Customer Services location. NIR items can be:

- a. Codified<sup>6</sup> but not mounted on the JSC LogIS.
- b. Not codified but identifiable from Technical Documentation.

### **No Item Record Demands**

2. Units that require an item where the NSN is not known or where the item has not been codified are to place a NIR demand in accordance with their local Supply Chain instructions. The demand will be routed through the JSC to the appropriate PT, initially the PT managing the equipment stated in the NIR demand, for action. The demand must contain the following information, as a minimum, for the PT to identify the item:

- a. The Equipment designation and sub system details.
- b. The Technical Documentation details, page, item number and item references.
- c. Any details from the unfit item; Manufacturer's Part Number, etc.
- d. Why the item is required. This is needed by the PT to assess the future support for the item.

### **Action by Inventory Manager**

3. **NIR Demand Satisfaction.** The PT is to maintain a register of NIR demands, the action taken and the responses to the demanding unit. The Inventory Manager (IM) is to use the following procedures to determine the action required. The process is illustrated at Figure 2.

- a. Has there been a demand for this NIR item before? If there has, then the reply to the previous request is to be reviewed and the same action, if still considered appropriate, should be taken.
- b. The NIR item is to be identified and a technical investigation carried out by the IM and other relevant PT staff to determine if the NIR demand can be satisfied by:
  - (1) An existing item in the Defence Inventory. The PT is to inform the unit of the NSN of the item and demand procedures.
  - (2) If the NIR item is part of an equipment hierarchy, the PT is to determine whether the requirement can be met by higher or lower assemblies within the

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<sup>6</sup> The MOD codification policy is that all Items of Supply procured by the MOD, which are to be demanded, managed or tracked, using JSC LogIS, are to be codified. Further detail is contained in JSP886 Volume 2 Part 4: NATO Codification in the United Kingdom.

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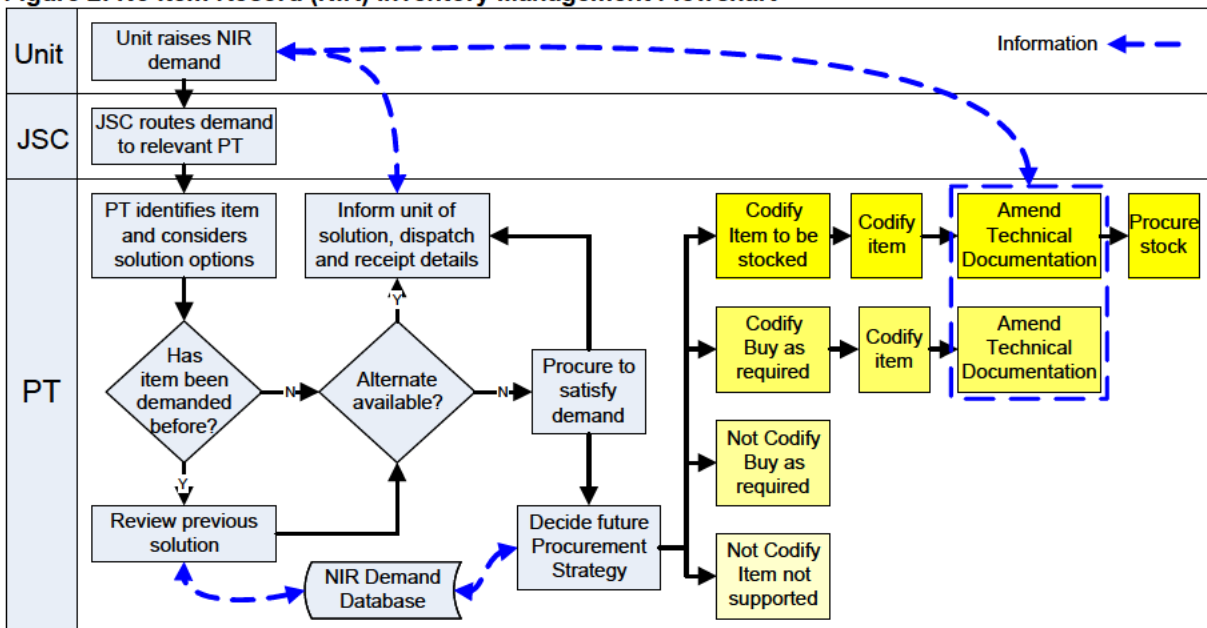
Defence Inventory. The unit is to be advised what item(s) to demand. The original demand is to be recorded in the NIR register.

(3) Availability from other equipments (see relevant cannibalisation policy), prototypes and other military sources; is to be determined. If the item is available then the IM is to initiate the acquisition, suitable packaging and dispatch of the item to the unit. If cannibalisation has taken place the procurement of a replacement item should be considered.

(4) Availability of the NIR item from industry. The priority is to satisfy the demand, if the item is not codified; its codification is to be considered after the demand has been satisfied.

4. **Demand Feedback.** The IM is responsible for providing demand feedback to the unit and where appropriate, the Chain of Command. The initial response is to match or be better than the Supply Chain Pipeline Time (SCPT) corresponding to the Standard Priority System (SPS) code of the demand. The demand feedback is to be updated regularly to give progress on satisfying the demand and is to include dispatch details. The PT is to advise the unit of the receipt action that the unit is to take.

**Figure 2: No Item Record (NIR) Inventory Management Flowchart**



**Review of the NIR Demand**

5. **Procurement Strategy.** After the resolution of the NIR demand, the IM is to conduct a review to determine the Procurement Strategy for the item, options are:

- a. **Codify, item to be stocked.** A record for the NSN is created on the JSC LogIS. An initial buy of the item is initiated based on predicted usage and economic buy guidance.
- b. **Codify, buy as required.** A record for the NSN is created on the JSC LogIS. No stock held.

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- c. **Not codify, buy as required.** This option should only be selected for irregular and infrequent requirements or when a parent equipment(s) are approaching its Out of Service Date (OSD) where the time and expense of amending the Technical Documentation and mounting the NSN on the JSC LogIS may be nugatory. The criteria used by a PT to justify the adoption of this option are to be recorded in the NIR Register to allow the Inventory Management Continuous Improvement Team (IM CIT) to scrutinise the decision.
- d. **Not codify, item not supported.** Requirements to be met from higher or lower assemblies, cannibalisation, uneconomic repair or other alternative solutions.
6. **Codification.** The item is to be codified in accordance with JSP 886 Volume 2 Part 4: Codification in the United Kingdom. All items supplied to resolve an NIR demand that are Hazardous, Classified RESTRICTED or above, are Accounting Class P or L, or may need to be back-loaded in the future using the JSC LogIS are to be codified regardless of the Procurement Strategy for the item. PTs must be aware that all non-codified items returned by units, including Ships and RFAs, are likely to be disposed without reference to the PT regardless of hazard, classification, apparent utility, repairability, scarcity or value of the item.
7. **Technical Documentation.** The user has to be able to identify the NSNs of the items they require. This is only possible if the PT routinely amends the Technical Documentation to show the relevant repair task(s) and the relevant NSNs in the Illustrated Parts Catalogue (IPC). If the item is not equipment based then the IM should ensure that the PT has a method of 'advertising' the item so that users are made aware of the codified item. If the user is unable to identify the correct NSN they will have no alternative than to submit a NIR demand.



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**ANNEX B TO CHAPTER 2: OUT OF HOURS SUPPORT FOR INVENTORY**

(Introduced at [Paragraph 22](#))

<b>Base Inventory System</b>	<b>SCCS (Primarily Air Fixed Wing Items)</b>	<b>SCCS (Primarily Air Rotary Wing Items)</b>	<b>CRISP (Primarily Maritime Items)</b>	<b>SS3 (Primarily Land Items)</b>
Co-ord POC	DE&S, CST(Air) Enablers 1 SO2, Abbey Wood x71291	DES Hels-SCMST1, Yeovilton x 2345	FLEET-CAP LOG OPS FSCC PO, Northwood x 56171	Logistic Services Helpdesk – Team Leader – Bicester 94240 2052
Role Title	Abbey Wood Supply Duty Officer (AWSDO)	Yeovilton Supply Duty Officer (YSDO)	MOD Logistics Duty Officer (MLDO)	SS3 Duty Clerk
Depth of Cover	Processing only D or C states for Management Controlled items, deferring all other demands, plus inabilities and signals until the next working day.		Processing all IMMEDIATE or PRIORITY SPC requirements.	Priority 01, 02 and 05 demands received by signal or FAX
Method of Operating	The Duty Officer will complete duties using a designated mobile phone and can verbally release items through the LCS Helpdesk. They will work from Release Instructions provided by the PTs	This duty is combined with the Yeovilton Duty Officer, so it is carried out by service personnel with mobile phone and PT Release instructions. Items are authorised for release from LS depot and units.	Conducts CRISP issues out of hours as authorised by FOMO Needs to be called out to conduct issues on the CRISP Inventory System	Duty NCO actions above. If item has to be 'referred to provisioner', will contact Duty Provisioner. Also liaise with Reject Help Desk (RHD) and Rejected Demands Section (RDS) where appropriate
Overall out of hours period covered	1700 to 0800 weekdays. 1700 Fri to 0800 Mon weekends, and to 0800 the next working day for Bank Holidays		Mon to Thu: 1630 to 0730 1545 Fri to Mon 0730 All public and privilege holidays.	SPC 01 and 05 Weekends, holidays and the night hours SPC 02 Weekends and holidays
Role Contact Numbers	07881 518819	07768 007383	Portsmouth NB Mil: 23054 Civ: (023) 9272 3054 Mob: 07990 530508 Devonport NB Mil: 66061 Civ: 01752 286061 Mob 07899 067378 Clyde NB Mil: 6364 Civ: 01436 674321 6364 Mob: 07714 227531	Civ: 01869 256052 Mil: 94240 2052 Fax: 94240 2269 E-mail: DESDSDA-Bic- DOCShelpdesk@mod.uk
Process for managing PT Release Instructions update	POC coordinates 6-monthly update with PTs, but PTs can ask for items to be added, deleted or amended at any time		No PT Release Instruction as such. For urgent OPDEF demands, Duty Officer may release depending on reason for control, or seek advice from FOMO	
General Comments	Access to Log IS not required. Staffed by military and civilian volunteers	Access to Log IS not required. Staffed by service personnel		Documented at SSBP 17/06 Customer Services – Duty Clerk located on DSG website under Trove Documentation Web, Stores System Basic Procedures

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## **CHAPTER 3: INVENTORY MANAGEMENT AS PART OF CONTRACTOR LOGISTIC SUPPORT**

### **PURPOSE AND SCOPE**

1. This Chapter focuses on the policy and associated process for effective IM within Contractor Logistic Support (CLS)<sup>7</sup> solutions. It should be read in conjunction with JSP 886 Volume 3 Part 2: Contractor Logistic Support which details the wider supply chain policy, processes and procedures within the overall context of CLS.
2. As part of the Defence Industrial Strategy (DIS) and the Defence Acquisition Change Programme (DACP), CLS type arrangements are becoming the preferred Through Life Management (TLM) support solution from the range of options illustrated within the Support Options Matrix (SOM)<sup>8</sup>. Under CLS the IM role transforms primarily from “Provider” to “Intelligent Decider” as the responsibility passes from the MOD to Industry to undertake traditional in-house functions.
3. This policy applies to all IMs who, in the Intelligent Decider role, are responsible for ensuring the effective through life management of inventory by suppliers contracted to manage CLS support solutions.
4. Further detailed guidance on CLS-related stock and materiel accounting matters, and in particular the key “on or off balance sheet” issue, is published in the Partnering Handbook by the MOD Partnering Support Group (PSG).

### **KEY PRINCIPLES IN RELATION TO CLS TYPE ARRANGEMENTS**

5. CLS arrangements incentivise industry to deliver specified levels of equipment and system availability. On behalf of the Logistics Policy Working Group (LPWG), D Def Log Pol conducted a review of CLS<sup>9</sup> that highlighted the need to halt the adverse, cumulative effect of CLS support solutions failing to comply with support policy mandated within the Support Solutions Envelope (SSE), which includes elements of JSP 886. Whilst the entire CLS issue is much broader in scope than IM the review findings included a number of generic principles that are directly relevant.
6. In order to implement and maintain effective and efficient IM within all CLS solutions the following Key Principles are to be adopted:
  - a. **Inventory Requirements.** The Inventory Requirements expressed in terms of performance, time and cost, must be clearly specified within initial project / contract documentation, including the Master Data and Assumptions List (MDAL) and Statement of Requirement (SOR). This documentation must be reviewed regularly to reflect changes in operational tempo and consequent changes in support requirements.
  - b. **Roles and Responsibilities.** Respective PT and supplier roles and responsibilities for IM must be clearly stated to ensure that all of the functions within

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<sup>7</sup> CLS is defined as “The methodology by which responsibility for provision of an agreed level of support is transferred to an industry provider. CLS can cover a wide spectrum of industry involvement ranging from minimal transferral under traditional product based support solutions to maximum transfer of responsibility to a Contractor”

<sup>8</sup> The location and ownership of the SOM is in flux. Ownership is currently vested in ESCIT but there is an intention to pass responsibility to DES SETLS-PC in the future.

<sup>9</sup> CLS Sub Working Group Report dated Jan 08.

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the end to end process are covered from both an intelligent decider (PT) and service provider (Industry) perspective.

- c. **Governance.** The PT intelligent decider role covers not only a governance function but also close involvement in the co-ordination of output delivery, including a robust contractor monitoring and supplier performance management regime.
- d. **Flexibility.** All CLS arrangements must seek to promote flexibility and make change easy and cost effective. It is not always easy to avoid being tied into fixed arrangements but gain share mechanisms can be built in to promote behaviour that will allow the contract to adapt to changing requirements.
- e. **Visibility.** CLS arrangements must promote our ability to retain full visibility of the Supply Chain so that all parties can exercise a level of intelligence in a spirit of open partnership. The concept of “hole in the wall”, where the MOD may have no interest in what happens on the Industry side of the wall constrains our ability to perform the role of intelligent customer.
- f. **Joint Supply Chain Synchronisation.** CLS must promote rather than undermine the synchronisation of the JSC and be able to adapt to evolving technical and support arrangements. Arrangements must address the wider needs of the whole JSC rather than be exclusively tailored to single system solutions.
- g. **Management Information.** CLS contracts must include a clear statement of the Management Information (MI) required for effective IM, including demarcation of roles and responsibilities for maintaining / updating and providing MI. Closely allied to this is the need to specify the requirement for a seamless interface between Information Systems (IS) used by Industry and MOD to ensure compatibility and coherence, to facilitate two-way exchange of data and MI throughout the E2E JSC.
- h. **Standard Priority System.** CLS contracts must reflect a full and clear understanding of the Forward and Reverse Supply Chain processes to ensure that demands for inventory reflect the timelines covered within the Standard Priority System (SPS) for world-wide, operational and non-operational demands. In order to achieve effective and efficient management of the end to end repair loop stretching from the Front Line Command (FLC) holding unit back to Industry, it is imperative that inventory demands are subject to best practice Sales and Operational Planning (S&OP)<sup>1</sup> techniques, to optimise the Supply Chain through time compression, forecasting and accurate assessment of realistic repair and return lead times for all unserviceable equipment.
- i. **Stock Accounting.** The respective PT and Industry roles and responsibilities for stock accounting must be clearly specified from the outset to satisfy Government (National Audit Office (NAO)) audit requirements. The degree of PT involvement will vary significantly, depending upon whether the overall CLS solution is to be managed on or off the DE&S Balance Sheet.

## **KEY POLICY OBJECTIVES**

7. The above key principles must be reflected in the IM objectives, plans and performance management requirements enshrined within the overall CLS contract. The scope and coverage of each objective, which represents the minimum military requirement

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and is therefore not intended to be prescriptive, is covered in detail below, for use by IMs to optimise the through life management of inventory within CLS solutions.

#### **STATEMENT OF REQUIREMENT / PLANNING ASSUMPTIONS**

8. IMs must ensure that the MDAL, SOR and associated contract documentation fully covers all IM functions, performance objectives and targets to reflect JSP 886 policy and ensure SSE compliance as part of overall end to end JSC coherence. A detailed reference and checklist of examples of the key elements for inclusion is at [Annex A](#). It is crucial that those setting the requirement have a sound understanding of the Operational Requirement of the platform / equipment / commodity to be able to articulate properly the risks associated with provisioning, as reflected in the performance metrics.

#### **THE INVENTORY PLAN**

9. The IM must ensure that the CLS arrangement covers the policy requirement to develop and maintain effective and efficient inventory planning throughout the life of the support solution. Full details of the Inventory Plan policy are at JSP 886 Volume 2 Part 2: PT Inventory Planning. [The PT must ensure that the contractor is able to meet the CLS specific policy standards set out in JSP 886.](#)

#### **MATERIEL ACCOUNTING**

10. Materiel Accounting policy and procedural requirements are detailed in JSP 886 Volume 4: Materiel Accounting. These must be followed or the lack of a disciplined and well informed joint approach by the PT and its CLS contractor will potentially affect operational capability and attract adverse comment and criticism from the NAO.

#### **DATA STANDARDS / QUALITY**

11. The IM must ensure that the CLS arrangement clarifies and specifies the data standards to be maintained in accordance with those being developed by DES SCS-Progs<sup>10</sup>. This aspect of IM business represents a significant risk if data standards are not monitored regularly. PTs must have data cleansing and updating processes in place to prevent sub optimisation of the quality of provisioning, demand forecasting and supply management arrangements due to inaccurate data and management information.

#### **SUPPLIER PERFORMANCE MANAGEMENT**

12. The IM must ensure that the CLS contract specifies the performance management arrangements in terms of performance metrics that reflect Specific Measurable Achievable Realistic Timely (SMART) objectives as detailed in [Chapter 5: Supplier Management](#). Based upon lessons identified from earlier CLS contracts a template / framework of CLS performance metrics is included at [Annex B](#) for information and reference purposes. This template reflects the minimum recommended requirement in all cases.

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<sup>10</sup> DES SCS-Progs-Data-Management-Team, in conjunction with ACDS (Log Ops) Log Info Data Management, is developing guidance for inclusion in JSP 886 on Data Management and Data Quality.

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**ANNEX A TO CHAPTER 3: STATEMENT OF INVENTORY RELATED REQUIREMENTS**

(Introduced at [Paragraph 8](#))

**Supply Chain Assurance**

13. The SOR needs to be compliant with support policy mandated within the SSE, which includes elements of JSP 886, particularly Key Support Area (KSA) 3 Joint Supply Chain (JSC), to maintain and develop JSC coherence. Additionally, there needs to be a mechanism to ensure that any variations developed during the life of the contract remain compliant. Particular emphasis needs to be given to adherence to the 'Contractor Time' element of the Supply Chain Pipeline Time tables contained in JSP 886 Volume 3 Part 1: Standard Priority System (SPS) including the Reverse Supply Chain (RSC) and end to end repair loop.

**Ranging & Scaling (R&S)**

14. The need for the contractor to agree the range and scale of spares to be held forward, including how changes during the duration of the contract will be managed to reflect both experience of actual usage and changes in the operational requirement, equipment fit etc. R&S data for stock held forward has to be included in standard MOD systems and documentation, to ensure transparency to the operational user.

**Inventory Optimisation**

15. The Optimised Support Planning ('OSP') Output Management role to deliver agreed performance using the optimum mix of technical solution, Front Line Command (FLC) manpower, maintainer / operator training, R&S of spares and inventory spend. This task has to be performed by MOD as it includes the balancing of inventory spend (whether at MOD or Contractor expense) against other solutions at MOD expense, including FLC manpower.

**Supply Systems AND Procedures**

16. Agreement to the mechanism to manage changes and developments to the supply system and procedures to ensure arrangements work effectively from both the MOD and the contractor's perspective. The reality is that there are always evolving developments in the supply system and other initiatives that will impact on the CLS contract, including those as a result of changes to operational requirements.

**Data Management**

17. Need to specify the Contractor's responsibility, covering not only requirements directly in support of the CLS task but any others required by MOD and that the CLS contractor is to provide. In essence, if the particular task is not to be retained in house it must be specified in the SOR in sufficient detail as a Contractor responsibility.

**Interface with the Joint Supply Chain / Purple Gate**

18. Need to specify the arrangements for the interface between the Contractor and the (physical) JSC described in JSP 886 Volume 3 Part 3: Purple Gate. As well as procedures for routine supplies this includes liaison for priority / critical supplies and otherwise on an exception basis; out of hours responsibilities of both parties need to be defined. Arrangements must include the need for the Contractor to forewarn of late delivery to

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either the JSC and / or to the end customer if (exceptionally) using a bespoke arrangement.

**Stock Accounting (On Balance Sheet Only)**

19. Arrangements need to be specified for stock accounting adherence and reporting, and for authorising of equipment loans / task issues. The PT needs an assurance that MOD owned assets are properly managed and reported and there is audit assurance. The Statement of Requirement (SOR) also needs to address provision of appropriate instruction and training for the Contractor.

**Supplier Performance Management**

20. Supplier Performance Management is defined in detail in [Annex B](#).

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**ANNEX B TO CHAPTER 3: CLS PERFORMANCE METRICS RELATED TO INVENTORY**

(Introduced at [Paragraph 12](#))

**Introduction**

1. Inventory performance metrics form part of the overall CLS performance management approach to ensure that the ultimate output – platform, equipment or commodity availability / capability provided by Industry to Defence – is measured in terms of performance, time and cost. Lessons identified from previous CLS contracts indicate that during the process of transformation from traditional to CLS arrangements there is a risk that inventory (“spares”) is deemed to be a subordinate or intermediate output that will no longer concern the PT now looking at the bigger picture of output-based availability / capability.

2. There is thus a danger that the detailed business requirements and implications of IM are considered to be more a matter for the CLS contractor than the PT. This is a dangerous fallacy, bearing in mind that while it may be feasible to transfer elements or all aspects of financial risk this is not the case for operational risk – the responsibility remains with the PT and ultimately the FLC, dependent upon equipment support to maintain operational capability.

**Inventory Performance – An Integral Part to Play**

3. Comprehensive performance management of inventory is equally if not more important for CLS solutions than traditional support arrangements. Performance management for IM (PM4IM) metrics must form an integral part of the overall CLS performance management regime. There is a danger however in being over prescriptive, and room must be left for manoeuvre at PT / Cluster / Industry sector level. Key Performance Indicators (KPI) for CLS contracts typically measure equipment or platform availability, flying hours, track miles or similar, and unless the contract is to specifically manage logistics functions it is not usually appropriate to include inventory measures as KPIs.

4. However it is essential to establish lower level Performance Indicators (PIs) to measure inventory performance, noting that this can be an advance indicator of impending drop in platform or equipment availability – or of promised improvement. The different stakeholders (PT, Corporate DE&S and PJHQ / FLC) each have a different view of the inventory related management information (MI) required of CLS arrangements, and for clarity these are summarised in Figure 3. These requirements inform the needs for MI specified in Figure 4, although tempered by the need to avoid an over complex reporting regime. It is important to strive for a single version of the truth, with common MI shared by the Contractor and MOD and accessible to all including the FLC / user.

5. In order to achieve the output target the CLS contractor will typically be required to co-ordinate the provision of skilled people (the maintenance / repair agent), available infrastructure (maintenance / repair facilities) and available spares or replacement equipments. In principle it is as simple as that, in practice it becomes more complex due to the chain of dependencies, interfaces and networks required to bring all of this together in an effective, efficient and value for money (VFM) support solutions package.

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**Figure 3: Management Information for CLS**

ON PT	PT VIEW		DE&S VIEW
	ON FLC	ON INDUSTRY	ON PT
Does the Inventory meet the needs of current operations and FE@R?	Does the FLC correctly place demands and manage Inventory held forward?	Does Industry properly manage their supply chain?	Does the investment in the Inventory deliver value for money?
Responsiveness of Inventory to demands for Stock from Ops Op Days lost for spares Off Shelf Satisfaction Rate (deployed stock) Immediate Satisfaction Rate Customer Wait Time (CWT) Responsiveness to RDDs Responsiveness of Inventory to demands for Stock from FE@R Op days lost for spares Off Shelf Satisfaction Rate Immediate Satisfaction Rate Customer Wait Time (CWT) Responsiveness to RDDs Readiness for future Ops DSP / PEP fill rates (non-deployed) Validity of current scaling Cost to FLC of shortfalls Cannibalisation costs Backlog of Demands Dues Out	Demands Cancelled demand rate RDD profile Stock Held Value of Damaged or Written off Stock Returns Unserviceable Asset Return Times	Adequacy of Industry Inventory Plan Sub-contractor performance monitoring Supply chain risk management	Does Inventory planning match Defence Planning Assumptions (DPAs)? Value of Inventory Stock Turn Ratio for major segments Runners Repeaters Strangers IP Stock Repairables Working Asset Level (WAL) (months) Ratio of Repair Loop to In Use.

6. The third component (available spares and / or replacement equipment) of the support solution is IM business that must be integrated with the other two components to achieve success. Great care needs to be taken to ensure that both KPIs and lower level PIs are well chosen to ensure that they do not drive perverse behaviour by either party that might distort this balance of resources. PM4IM metrics for CLS must form an integral part of the DE&S Performance Management strategy and process.

7. Under the terms of the DE&S Service Delivery Agreement, Chief of Defence Materiel (CDM) is required to manage the performance of the TLB. A number of KPIs and Business Performance Indicators (BPIs) have been developed to satisfy CDM's management of performance remit against which performance is reported to the DE&S Management Board (which considers performance and risk). The DE&S Main Board sets the levels of performance required and therefore receives the outcome of Management Board deliberations, including any issues escalated for consideration. In addition, DE&S provides discrete performance and risk data to a number of external stakeholders (e.g. Defence Management Board (DMB), HM Treasury for Public Service Agreement targets).

8. Therefore the PM4IM policy covering CLS solutions has been written to dovetail with the requirements specified in the DE&S Performance Management Handbook sponsored by Director Corporate Approvals, Performance & Risk (DCAPR) and within DE&S Standing Instruction No 2 (Performance & Risk Management), whilst recognising the need not to be over prescriptive. The PM4IM metrics for CLS solutions are a sub-set of those defined for "in house" managed support solutions defined in the Inventory Plan, (see JSP 886 Volume 2 Part 2, Annex B).



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**PM4IM Metrics Required for CLS Solutions**

9. The PM4IM metrics that must be specified within CLS solutions to ensure that the DE&S fully discharges its intelligent decider role and responsibilities within the contractual relationship with Industry are listed at Figure 4. This is designed to ensure provision of the required levels of platform, equipment or commodity availability / capability measured in terms of performance, time and cost within the CLS contract.

**Figure 4: Performance Indicators**

Serial	Performance Indicator
1	Platform / equipment available days lost due to lack of spares (days).
2	First demand availability of spares – off-the-shelf fill rate broken down between repairable inventory and consumable items (See Note 1).
3	Spares delivered to customer by Required Delivery Date (RDD) .
4	Number of Dues-Out / Back Orders (cumulative).
5	Repair Pools – proportion of equipment serviceable.
6	Stock Turnover Performance (stock / issue ratios for Repairables and consumables.
7	MOD manpower hours used on cannibalisation for spares (See Note 2).
<b>Notes:</b>	
1. PTs may wish to break this down further between Depth (UK Base) and Forward.	
2. This is not a true measure of output but a critical balancing measure; to expose and / or manage the extent that cannibalisation may be hiding poor spares performance.	

10. The metrics feature a conventional approach to the assessment of the state / status of performance based upon a DE&S approved standard of four colours; Red, Amber, Yellow, Green. The PM4IM metric specifies the colour rating according to levels of performance achieved against target. Note that Blue (over achievement) is not to be used to ensure that the DE&S approach remains consistent with the DMB assessment regime. An illustration of the PM4IM metric and associated colour codes is provided at Figure 5.

**Figure 5: PM4IM Metric**

<b>GREEN</b>	> 98% of Outputs achieving Green and remainder all Yellow
<b>YELLOW</b>	96% – 97.9% of Outputs achieving Green or Yellow and remainder all Amber.
<b>AMBER</b>	92% – 95.9% of Outputs achieving Green, Yellow or Amber.
<b>RED</b>	< 92% of Outputs achieving Green, Yellow or Amber.
Degree of accuracy: 0.1%	

**Figure 6: Summary of Performance**

Year	08 / 09	09 / 10	10 / 11	11 / 12
Target	>98%	TBD	TBD	TBD
Performance	-	-	-	-

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## **CHAPTER 4: REPROVISIONING POLICY**

### **PURPOSE**

1. This chapter covers all aspects of Reprovisioning policy for effective and efficient through life IM as a key element of platform, equipment and commodity support solutions. Reprovisioning is the process of using data on spares usage and notified fleet activity to predict the range and quantity of items to be procured to meet equipment availability targets.

### **SCOPE**

2. This Reprovisioning policy applies to all IM arrangements covered either directly by the MOD PT or by its suppliers in Industry under Contractor Logistic Support (CLS) arrangements.

### **GOVERNANCE**

3. Overall authority for governance of inventory reprovisioning methodology, including computer-based algorithms, parameters and off-line Reprovisioning tools, is vested in Director Joint Support Chain (Dir JSC) in the role of end to end JSC policy / process owner. Dep Head Supply Chain Optimisation (Dep Hd SCO) is the policy and process owner for IM, including Reprovisioning, across Defence. Periodic performance reports on inventory Reprovisioning are submitted via the JSC Performance Management Board (JSCPMB) and the 2\* Joint Supply Chain Board (JSCB) up to 3\* and 4\* Board level within DE&S.

4. The policy covering the requirement for the governance of LogIS inventory algorithms is at Chapter 9: Algorithm Policy.

### **KEY PRINCIPLES OF REPROVISIONING OF DEFENCE INVENTORY**

5. In order to carry out effective and efficient Reprovisioning of Defence Inventory, IMs are to adopt and apply the following five Key Principles to contribute cost effective and efficient spares support to all platform, equipment and commodity support solutions:

a. **Inventory Reprovisioning is a Through Life Process.** It is essential that IMs understand and influence the range, scale and cost of inventory at every stage in the through-life management cycle. Decisions made at the Initial Provisioning (IP) stage of procurement are likely to have a significant and enduring impact upon off-the-shelf availability and stockholding levels of inventory. It is therefore imperative that IMs are fully involved in the decision-making process and understand the implications. Equally importantly IMs are directly responsible for ensuring that all Reprovisioning-related actions are undertaken as accurately and expeditiously as possible throughout the life cycle of inventory items, otherwise there is a significant risk of stock-outs and back orders in the case of under-provisioning and excess stock levels in the event of over-provisioning.

b. **Inventory Segmentation is a Critical Success Factor.** The Defence Inventory covers a large catalogue of items ranging from consumable spare parts (eg. nuts, bolts and washers) to capital equipment (eg. gearboxes, engines and other propulsion systems). Segmentation of the inventory by type, characteristic and

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behaviour is essential to avoid a 'one size fits all' approach to Re provisioning that is not tailored to take account of criticality, cost and transaction rates.

c. **Forecasting is primarily based on Future Customer Demand.** Forecasts based upon computer generated Base Inventory System (BIS)<sup>11</sup> calculations must take into account not only current and previous demand rates but also reflect future consumption trends to enable Re provisioning and procurement decisions to be based on future, rather than previous, consumption trends.

d. **Off-line Re provisioning Tools / Techniques are Important.** IMs must make best use of the range of off-line tools that are designed to provide extra assistance, including data analysis and 'what if' functionality, to determine the most accurate Re provisioning outcome.

e. **The Benefits and Risks of Over / Under Provisioning Must Be Managed.** IMs must operate within a proactive benefits and risk management regime. Benefits and risk registers, supported by clear mitigation action plans, must be maintained at all times (these will need to be complementary rather than duplicate related risk registers, eg. those maintained by Vendor Category Teams).

## KEY REPROVISIONING OBJECTIVES

6. The following six key Re provisioning objectives are to be achieved without exception:

a. **Segmentation.** Defence Inventory is to be segmented by type, characteristic and behaviour for the purposes of demand forecasting, Re provisioning and through-life management. Segmentation analysis is to be undertaken regularly (Annex A to Chapter 13: ABC Pareto Segmentation Process for suggested monthly, quarterly and yearly analyses), to determine any changing trends and other influencing factors that affect the criticality, cost and activity rates upon which inventory segmentation and Re provisioning is tailored.

b. **Process.** IMs are to adopt the appropriate Re provisioning process. Schematic diagrams that illustrate the formal Re provisioning process related to each BIS are included at [Annex A](#).

c. **Review.** Defence Inventory re provisioning algorithms and associated parameters embedded within BIS are to be reviewed annually to test fitness for purpose in relation to any changing trends. Further guidance is included and tests for algorithm fitness can be sought from JSC SCM SCO **Error! Reference source not found.** (see Chapter 9: Algorithm Policy).

d. **Off-Line Tools.** Appropriate off-line Re provisioning tools are to be used without exception by IMs to provide extra forecasting data and management information to optimise Re provisioning decisions. Further guidance is at [Annex B](#).

e. **Modelling.** Re provisioning of more complex (system / equipment related) inventory must be supported by appropriate modelling techniques that take into account through life repair loop management and other key factors. The principle is Multi Indenture Multi Echelon (MIME) modelling described in JSP 886 Volume 2 Part 2: PT Inventory Planning.

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<sup>11</sup> The main BIS are the Comprehensive RNSTS Inventory System Project (CRISP), Stores System 3 (SS3) and the Supply Central Computer System (SCCS).

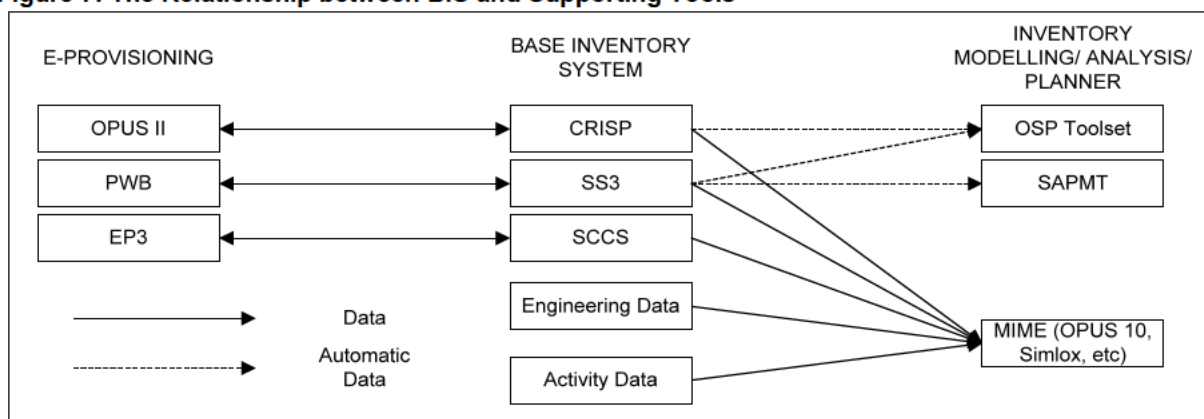
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7. **Signing Powers.** Requirement and financial approval of inventory reprovisioning decisions is to be undertaken only by IMs and their senior line managers, at the level appropriate to their delegated signing powers. Policy on delegated signing powers, letters and associated responsibilities of budget holders and managers can be found at JSP 462: Financial Management and Policy Manual, Chapter 5.

**POLICY REGARDING THE CURRENT BASE INVENTORY SYSTEMS (BIS)**

8. IMs are dependent upon a range of Information systems for day to day business. Primarily, but not exclusively, this involves the three major legacy BIS (CRISP, SS3 and SCCS), plus separate systems for managing munitions, fuels and equipments. The BIS, which were originally designed for single-Service purposes, do not provide the optimum functionality required for the new era of end to end JSC convergence and coherence. BIS Reprovisioning capability is supplemented by associated (off-line) e-provisioning and modelling, analysis, and planning tools; a schematic of the relationship between BIS and supporting tools is at Figure 7.

**Figure 7: The Relationship between BIS and Supporting Tools**



9. The future strategy and plan is to replace the three separate BIS with the joint business capability encapsulated within the Base Inventory and Warehouse Management Services (BIWMS). BIWMS will provide a joint set of logistics processes supported by IS applications that significantly improve the current functions of end to end IM, linking Base / Depth seamlessly with the business / IS solutions operated in the Forward / Deployed space.

10. In order to improve the end to end information flow of supply and engineering data, enhance our knowledge management capability and also dispense with various offline data tools, DSCS sponsored the SC Information Exploitation initiative. This involved the further development of end to end logistics information architecture, supported by the use of middleware and data mining tools that transform the availability of data. The Defence Stock Accounting Collation System (DSACS) assists IMs and other Stakeholders by simplifying and streamlining inventory accounting processes, adopting a single approach to key issues such as consumption, depreciation and pricing.

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**ANNEX A TO CHAPTER 4: BASE INVENTORY SYSTEM OVERVIEW**

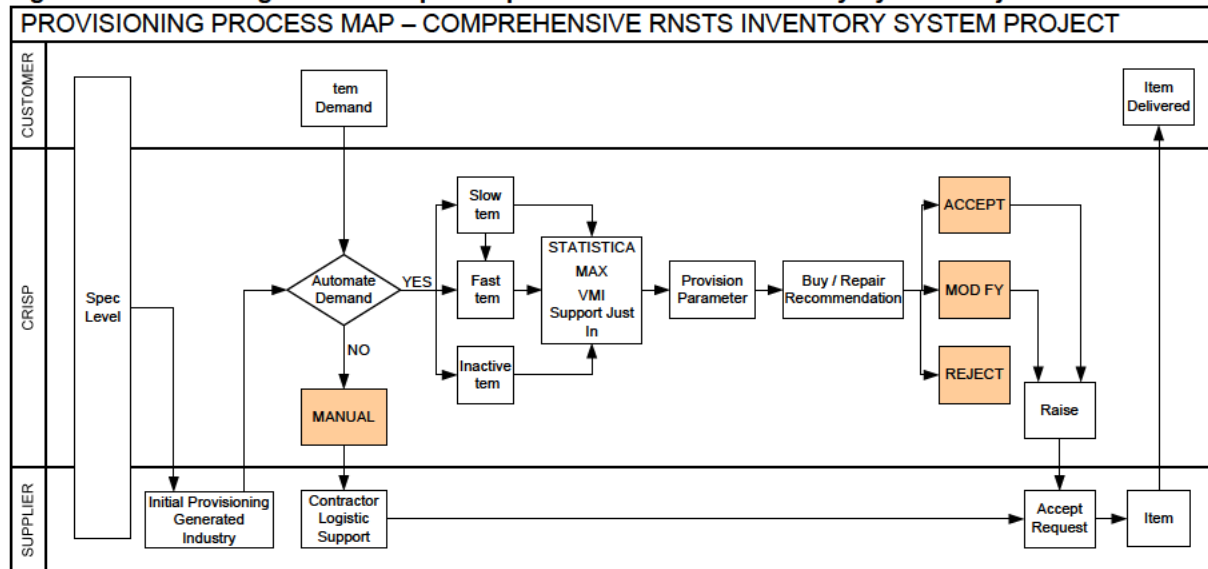
(Introduced at [Paragraph 5b](#))

**COMPREHENSIVE RNSTS INVENTORY SYSTEM PROJECT (CRISP)**

**System Overview**

1. CRISP is the Base Inventory System (BIS) that historically provided support to the Maritime Environment. The functions provided by CRISP are item introduction and initial provisioning, demand management (issues, returns, and receipts), provisioning, procurement, repair and returns management, stock review, liabilities and on-board documentation (OBD).
2. A Management Information System (MIS) provides interactive on-line enquiries and scheduled or one-off enquiries. CRISP maintains visibility of stocks up to the point of issue and allows IMs to monitor usage and to manage Re-provisioning.
3. CRISP is a distributed system and is predominantly used by Maritime PTs. Users gain access to the system through the Restricted LAN Interconnect (RLI). The maximum protective marking of the RLI is RESTRICTED. BR1029(14) is the CRISP user manual.
4. A Provisioning Process Map for CRISP is at Figure 8. CRISP users are provided with an automated on-line system called OPUS II that produces paperless Provisioning Review Statements (PRS), for details see [Annex B](#).

**Figure 8: Provisioning Process Map: Comprehensive RNSTS Inventory System Project**



**CRISP Provisioning Algorithms**

5. The re-provisioning calculation is based on Dual Exponential Smoothing of the Monthly Demand Rate (MDR), of recurring demand quantities where positive, and the intervals between demands. The Forecast Monthly Demand Rate (FMDR) is calculated as follows:

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$\text{FMDR} = \frac{\alpha \text{CurrentDMD} + (1 - \alpha)(\text{SmoothedDMD})}{\alpha \text{CurrentInterval} + (1 - \alpha)(\text{SmoothedInterval})} * \frac{2 - \alpha}{(2 - \alpha)(\text{CurrentInterval} + (1 - \alpha)(\text{SmoothedInterval}))}$
---

6. The value of  $\alpha$  is hard-coded as 0.1 which heavily weights the calculation towards historic usage. If the current interval is unclosed, ie. no demand since the last calculation, then it is only included in New Smoothed Interval if it is longer than the previous interval. In this case the value of Current Interval would be the Unclosed Interval + 1. Dual Exponential Smoothing calculations do not apply to Obsolescent or Obsolete items; these attract Single Exponential Smoothing based on demand quantities.

7. Each item can have up to 4 'Service Levels' defined. These are known as 'Superior', 'Higher', 'Common' or 'Lower'. The choice of service level depends on demand activity and / or turnover value with cut-off points defined in provisioning database records. Service Level can be defined either as numbers of demands (Activity) or value of demands (Turnover). Service Level is sourced from the Item Management Code (IMC) Provisioning parameter database record using the item IMC as the key field. If the IMC does not have Service Levels set then PT level Provisioning Parameters are used. This has entries for all IMCs, arranged in 26 groups.

8. The quantity proposed for re-provisioning is calculated as:

$$\text{Quantity Proposed} = \text{MaxAssetLevel} - \text{FreeAssets}(\text{StockOnHand} + \text{DuesIn} - \text{DuesOut})$$

9. The CRISP provisioning calculation is handled by a separate application known as the "CRISP Black Box". In addition to the Max Asset Level (MAXAL) for each line item this also calculates values of Re-Order Level (ROP), Economic Order Quantity (EOQ), Safety Stock (SS) and Forecast Availability (FA).

### **CRISP 'Black Box' - Overview**

10. The CRISP 'Black Box' is an application which calculates the Re-provisioning quantities for the majority of items. There are 2 types of calculation; Periodic items are considered at fixed intervals at 3, 4, 6, 9 or 12 months, with the order quantity set accordingly. Continuous items are processed monthly and a re-provisioning recommendation is triggered if stock is down to the Re-Order Level (ROL). Any changes in provisioning parameters, such as price, will trigger a review of an item.

11. Once the Global Forecast Demand Rate (GFDR) has been calculated, it and other required parameters, such as the Required Service Level, are passed to the Black Box. The Forecast Requirement is based on:

- a. The numbers of Recurring Demands; a Poisson distribution is assumed.
- b. The Demand Quantities; a Geometric distribution is assumed.
- c. The availability is taken to be the proportion of demands satisfied in the chosen interval.
- d. The Lead Time is assumed to be constant in most cases.
- e. The Lead Time-Demand is assumed to have a Normal distribution.

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12. The Safety Stock (SS) requirement is calculated as the quantity of additional items to achieve the Required Service Level (RSL) through the Demand-Lead-Time based on a Normal Distribution.

13. **Required Input Values.** The following are required input values:

- a. Global Forecast Monthly Demand Rate (GFMDR). This value is factorised by a Population Provisioning Factor (if set). Length of Demand Record in months.
- b. Total Recorded Recurring Demand Quantity.
- c. Total Recorded Number of Recurring Demands.
- d. Average Demand Size.
- e. Shortage Cost.
- f. Holding Cost.
- g. Order Cost.
- h. K Factor (represents Order / Holding Cost ratio where explicit costs are not used).
- i. Procurement Lead Time.
- j. Procurement Price.
- k. Percentage Availability Target (PAT).
- l. Percentage Availability Minimum (PAM).
- m. IPER (Interval between reviews of Periodic items – in months).
- n. Safety Stock (SS) Constraint.
- o. Price Breaks.
- p. ISSNUM (Upper limit imposed on number of months' usage).
- q. ISSVAL (Upper limit imposed on Purchase value of replenishments).

14. **Periodic Items.** Economic Order Quantity (EOQ) is then the product of the Forecast Monthly Demand Rate (FMDR) and the Interval between Periodic Reviews (IPER). In the case of repairable items the Global EOQ is reduced to represent the proportion of items Beyond Economic Repair.

15. **Continuous Items.** CRISP holds 2 EOQ constraints defined in months, MAX and MIN. Maximum and minimum limits on EOQ quantities are calculated as:

- a.  $\text{MAXEOQ} = \text{Min Months} * \text{FMDR}$ .
- b.  $\text{MINEOQ} = \text{Max Months} * \text{FMDR}$ .

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16. **Items sourced from USA and K Factor Items.** The Global EOQ is constrained to MINEOQ and MAXEOQ.

- a. USA Items have annual reviews where EOQ is: Global EOQ = FMDR \* 12.
- b. Items with a positive K Factor then: Global EOQ =  $K * \sqrt{(12 * FMDR / PRICE)}$

17. **Items with Order and Holding Costs.** The EOQ is calculated as the quantity between MIN and MAX EOQ having the lowest total cost of buying, ordering and holding the item. The calculation takes safety stock into account.

- a. **Calculation.** The EOQ calculation is implemented as an iterative loop which tests the order costs at the upper and lower bounds (initially MIN and MAX EOQ) and 2 equally spaced values between, creating 4 segments. The next iteration does the same with the segment which has its lower boundary value below the optimum EOQ, and its upper boundary value above the optimum EOQ. The process stops when the difference between the upper and lower values of the chosen segment is less than 1.

b. **Processes.**

(1) **Safety Stock.** Set the MAX value to MAXEOQ, MIN value to MINEOQ. Calculate two intermediate segment boundary values, making four boundary values in all. The calculations is stopped if (MAX value – MIN value) < 1.

- (a) Calculation of the Cost associated with the Order Quantity represented by each segment boundary.
- (b) Calculation of Safety Stock (SS), Asset Availability and SS Truncation Indicator.
- (c) Lead Time variance (LTVAR) is calculated, or set to 1% of LT if 1 or less LTs recorded.
- (d) Maximum Allowed Safety Stock =

$$Usage\ Restriction(in\_months) * GFMDR + \frac{Value\ Restriction}{Pr\ ocurement\ Pr\ icePerItem}$$

- (e) If the item has a shelf life then safety stock is constrained to half the shelf life if necessary.

(2) **Variables.**

- (a) SdDpO = SD of LT-Dem + Overshoot.
- (b) Ratio of EOQ and Std Dev of LT Demand plus overshoot:

$$E = \frac{EOQ}{SdDpO}$$

$$R1 = \frac{SDofLTDem}{SdDpO}$$



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$$GSize = \frac{Total\ RecordedDemandQty}{TotalNumberof\ RecordedDemands}$$

(c) Forecast number of Demands = GFMDR / GSize

(d) Variance of Lead-Time Demand (DLTVAR)

$$DLTVAR = GFMDR * LT * (2 * GSIZE - 1) + GFMDR^2 * LTVAR.$$

$$SD\ of\ DLT = \alpha\ DLTVAR$$

(e) Demand Overshoot is noted as W where  $W = 0.5 * \text{Forecast number of Demands}$

(f) (VarDpO) is Var LTDmd plus overshoot (VarDpO).

(g) (Overshoot looks like 1.5 times forecast demand number).

$$VarDpO = DLTVar + GSize * (GSize * (1 + W * (2 + \frac{W}{3})) - W - 1)$$

$$SdDpO = \alpha\ VarDpO$$

$$E = OrdQty / SdDpO$$

$$R1 = SD\ of\ DLT / SdDpO$$

(h) Ratios E and R1 are used in the calculation of the Max Constrained SS (TMAXSS).

(i) Max Constrained SS is calculated to meet the probability of a shortage based on back-orders using the Unit Normal Loss Function. The number of Backorders resulting from a shortage is assumed to be normally distributed, based on the SD of Lead Time Demand. A copy of the SS quantity is incremented, and the back-order probability re-calculated, until the probability of a shortage has fallen to, or below, the target availability.

(j) If the item is not lifed then TMAXSS is adjusted upwards to meet Target Availability if necessary (to value of SS copy).

(k) If the TMAXSS already gives Target Availability then it is reduced to minimise cost.

(l) If necessary TMAXSS is adjusted for Trident and Fixed Reserves stock, and Forecast Availability is calculated.

(m) Annual cost of meeting GFMDR + SS is calculated.

(n) From the 4 boundary values find the one with the cheapest Total Cost.

(o) Set the MIN value of the range to the one with the cheapest Total Cost, and the MAX value of the range to the next boundary value above it.

(p) Exit if the new MIN value is the cheapest of all possible EOQs. MIN Value is the Order Quantity.

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- (q) If a price break is available for the item, and it is not repairable, then recalculate EOQ to find optimum EOQ in the best price band.
- (r) Re-run the SS calculation again using the Order Quantity.

18. **Calculation of Max Asset Level (MAXAL).** If the item is repairable then calculate the expected Proportion Lost (PLOST) as:

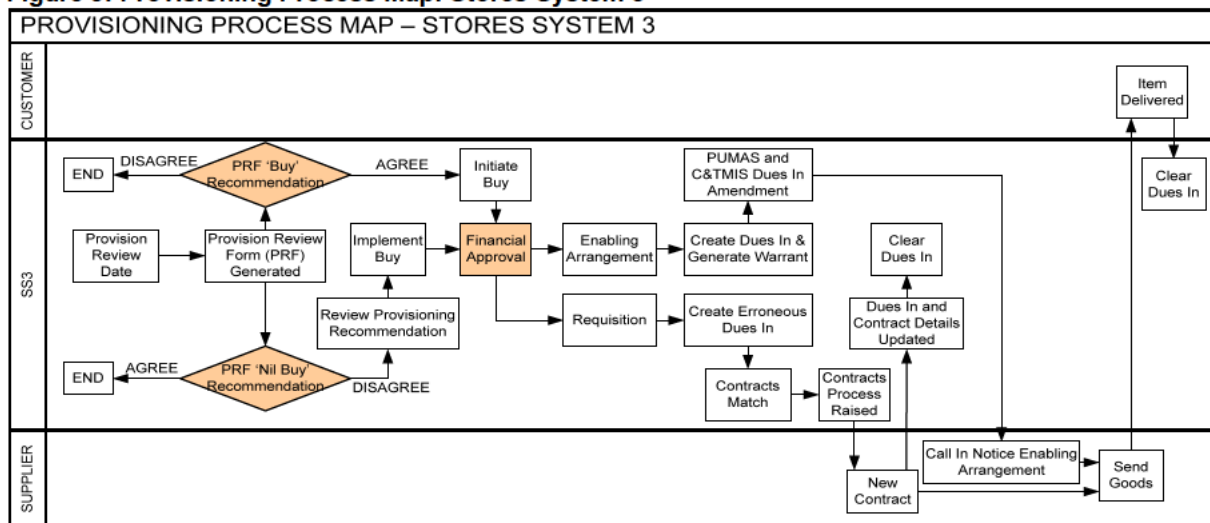
- a.  $PLOST = BER + (1 - BER) * (1 - RRR)$  where BER = Beyond Economic Repair and RRR = Repair Recoverability Rate.
- b. Calculate REPAIRED as the number of items expected to return from repair during new manufacture LT.
- c. Re-calculate average demand size (GSize).
- d. Calculate overshoot as  $0.5 * GFMDR + GSize - 1$ .
- e. If overshoot > GEOQ - 1 the overshoot = GEOQ - 1, otherwise overshoot = 0.
- f.  $MAXAL = GFMDR * LT + Order\ Quantity + SS - REPAIRED + Specified\ Reserves$ .

**STORES SYSTEM 3 (SS3)**

**System Overview**

19. SS3 is the BIS which historically managed Land materiel. It has been identified as the Target Base Inventory System (TBIS) that will provide the principle BIS in the future. Principally SS3 provides supports to reprovision and repair management. Buy recommendations are generated on Provision Review Forms (PRF) based upon historical demand modified by Simple Exponential Smoothing. The supporting systems, PUMAS and PWB are described in [Annex B](#). A Provisioning Process map for SS3 is at Figure 9.

**Figure 9: Provisioning Process Map: Stores System 3**



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### **SS3 Provisioning Calculation**

20. The SS3 re-provisioning calculation is carried out quarterly. In addition a check for shortfalls is made after each stock movement, eg. after issues. Investigations are in hand to examine the feasibility of changing the SS3 re-provisioning calculation to monthly.

Action following transactions which result in a change of stock level:

- a. The stock level is re-calculated:
  - (1) Assets = Total current Stock + Dues In – Dues Out.
- b. The Re-order Level is re-calculated:
  - (1)  $ROL = SafetyStock + OperationalStocks + EarMarks + (Lead\ Time * AQF/3)$ .
  - (2) AQF = Actual Quarterly Forecast.

### **Phased Review**

21. Most items are subject to phased review; however exceptions, which can be defined using identifiers such as DMC, can be excluded from the process. The review compares current assets with demand rate. The demands included in the calculations are recurring demands, non-recurring demands with a control over-ride (Control Code 2 – Non-Recurring Demands Referred to range manager, or 3 – All unit demands to be considered recurring). No demands issued from Secondary Depots to units are considered.

22. Actions:

- a. If there have been less than 2 recurring or replenishment demands in any of the last 4 quarters then the item is flagged as “Slow Moving” and an alpha constant of 0.2 will be used in Exponential Smoothing, otherwise the item is classed as “Fast Moving” and a constant of 0.1 will be used.
- b. A new smoothed value of the Forecast Quarterly Usage (FOS) is calculated.
- c. Forecast Quarterly Demand (FQD) is calculated from current quarter’s demand (D) and previous FQD as:
$$NewFQD = (\sigma * D) + (1 - \sigma)(oldFQD)$$
- d. Quarterly Maintenance Forecasts (QMFs) for Computer Controlled Items (CCI) are held for the last 4 quarters. Each value is moved back one quarter and a new QMF calculated for the most recent. The SQD (ISR) is the sum of the 4 QMFs.
- e. For CCIs an Actual Quarterly Forecast (AQF) is calculated as:

AQF = FQD + Scaled Quarterly Forecast. It must be zero or greater.

Economic Order Quantity (EOQ), calculated as  $\sqrt{\frac{8 * Co * AQF}{Ch * Price}}$

Where Co is Cost to Order, Ch is Cost to hold as % of Price and P is the Price.

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- f. Constraints on EOQ. For most items the default constraints are a lower Economic Order Period (EOP) of 3 months demand, and an upper EOP of 12 months. Some types of item also attract other constraints, eg. Shelf Life, Cyclic Buy items, NAMSA items and lifed items. The EOQ cannot be lower than 1.
- g. Forecast Error (E) = old FQD – (Current quarterly demands).
- h. Mean Absolute Deviation (MAD), used in the safety stock calculation:  
New MAD =  $\beta * |E| + (1 - \beta) * \text{oldMAD}$ . Beta is normally set to 0.1
- i. Safety Stock is calculated as:
- (1) Standard Deviation of Demand within Lead-time (TSD) is calculated using a standard approximation as:  $\text{MAD} * \sqrt{(\pi * \text{LT} / 6)}$ <sup>12</sup>
  - (2) The product of the TSD and EOQ (C) is used with the Required Service Level (RSL) P to create a factor, k. This factor is input to a function which calculates Safety Stock. P is represented by a value between 0 and 1, e.g. P = 0.8 for a RSL of 80%.
    - (a)  $k = (1 - P) * \text{EOQ} (C) / \text{TSD}$ .
    - (b)  $K = f(k)$ . There is a table in the SS3 User Guide, Section 15, giving the output values of K for input values of k. If k is large, up to a maximum of 4, then K is small, down to a minimum of -4. Their relationship is inversely proportional until k is down to a value of 0.4, after which k flattens out, reaching zero as K hits 4.
  - (3) From this it appears that a high EOQ ( C ) and / or a low TSD (predictable demand) yields a high value of k, and hence a low value of K.
  - (4) Safety Stock =  $K * \text{TSD}$ . Safety Stock will be comparatively high where there is a small EOQ (C), high RSL and high TSD.
  - (5) Re-order quantity = Shortfall + Safety Stock + EOQ (C).

### **Improvements to the Calculation of Safety Stock**

23. It may be difficult to make changes to calculations in SS3. An alternative could be to calculate offline and feed the results back into SS3. Therefore, SS3 provisioning is ignored or calculations need to be done "offline" and the results fed back to SS3. SS3 allows for management set Reorder Level by setting the forecast demand rate and / or lead time.

24. How the safety stock is calculated depends largely upon what data is available about the pattern of demands. There appear to be three main options:

- a. Use the safety stock (and EOQ) calculations from the Maritime CRISP "Black Box", which requires no factual information about demand variability.

---

<sup>12</sup> This calculation must be based on the assumption of Normal distribution, which means that  $\sigma = \sqrt{(\pi/2)} * \text{True MAD}$ . Secondly using the Law of Large Numbers means converting from a MAD linked quarterly Lead Time to a monthly requires division by  $\sqrt{3}$ . Dr Rutherford's Thesis indicates that the assumption of a Normal Distribution is questionable for MOD used items. This approximation for  $\sigma$  also breaks down for the distribution of low volume items.

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- b. Use the 12 quarterly counts of demands and demanded quantity shown on the SS3 Provisioning Review Form to derive an actual standard deviation of demand in lead time; and use the other applicable calculations from the CRISP "Black Box".
- c. Use the records of individual demands for each item to give a direct conversion of service level and safety stock for each item; and use the other relevant calculations from the Maritime CRISP "Black Box".
  - (1) (Option 1 is the "quick fix" that solves three of the identified problems and requires the least data.
  - (2) Option 2 uses what should be readily available data to solve one problem.
  - (3) Option 3 uses the available data to give the best answer. In particular, it will give notably better answers for items with low demand.

**SUPPLY CENTRAL COMPUTER SYSTEM (SCCS)**

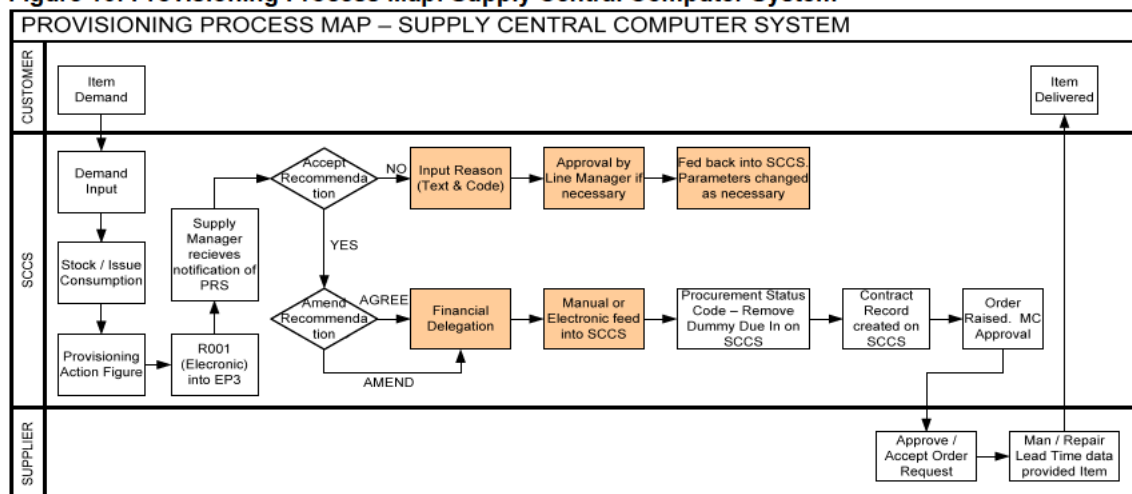
**System Overview**

25. SCCS provides the Air environment with a 'real time' picture of global stock at units, in DSDA storage, a provisioning and contract management tool, stock accounting and demand satisfaction functionality. A Provisioning Process Map for SCCS is at Figure 10.

**SCCS Provisioning Calculation**

26. SCCS runs a monthly calculation for consumable items to determine if, and how much, stock should be ordered to provide cover for expected demands. If the item is classed as inactive because no demands have been placed for it, then the calculation is carried out at 6 monthly intervals, in case there has been a change in any of its parameters since the last calculation. The calculation is of the Re Order Period (ROP) / Economic Order Quantity (EOQ) type, where ROP represents sufficient stock for the duration of the re-order period, and EOQ is an economic order quantity, defined as the quantity which represents the best balance between order costs and holding costs.

**Figure 10: Provisioning Process Map: Supply Central Computer System<sup>13</sup>**



<sup>13</sup> SCCS Inv Opt Task 1169 Report dated 30 Jun 06: MBIS Segmentation Final Report.  
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27. The SCCS calculation does not use a ratio of Order Costs to Holding Costs as such. Instead it substitutes a literal value, currently set at 43. This effectively represents:

$$\sqrt{\frac{2*Co}{Ch}}$$
 where Co = Cost to Order. Ch = Cost to Hold as a proportion of price.

28. The “Demand Rate” is used as the basis of the provisioning calculation. It is based on the product of the Recurring Demands for the previous month and a forecast factor. The forecast factor, called the Global Forecast Factor (GFF), represents known changes in future requirement, such as a change in fleet size, calculated as follows:

$$\text{GFF} = \text{Average Fleet-size over Re-Order Lead-Time.} \\ \text{Weighted Average of Previous Fleet-size (10\% smoothing).}$$

29. A Global Forecast Demand Rate is created by exponentially smoothing the current month’s recurring demands and GFF with the previous Global Forecast Demand Rate (GFDR) value as below. Replenishment demands should never be recorded as recurring demands, as this would cause double-counting when a demand is placed at a unit.

$$\text{GFDR} = 90\% \text{ old GFDR} + 10\% \text{ current Recurring Demands} * \text{GFF}$$

30. A number of checks are carried out before the calculation to see if the item requires special processing. Examples are:

- a. The item is ‘High Value’, ‘P’ class or has a ‘Type of Value’ code which precludes it from normal re-provisioning.
- b. It is in a precluded DMC group.
- c. Under management control or Initial Provisioning.
- d. Classed as obsolete.
- e. A check is also made of suffix (quarantined) stock and whether it is to be included in the assets.

31. A recommended order for stock is generated when the balance of ‘Stock on Hand’ (available stock, dues-in and dues-out) falls below the quantity needed to cover the period before the arrival of the next order. This quantity is termed the ‘Provisioning Action Figure’ (PAF), and is defined as:

a. ‘Provisioning Action Figure’ = “Demand Rate” \* (Re-order Period + DWSL) + UHR

(1) Where:

(a) DWSL = “Depot Working Stock Level”. Normally 2 months of stock representing safety stock.

(b) UHR = “Unit Holding Requirement”. Calculated from each unit’s requirement, depending on location and the type of item. Normally based on the unit’s consumption rate for the item.

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(c) "Stock on Hand" = Assets – Dues Out + Dues In.

32. If the "Provisioning Action Figure" is greater than zero and greater than the 'Stock on Hand' then the shortfall is calculated as:

- a. "Shortfall" = "Provisioning Action Figure" - "Stock on Hand".
  - (1) An upper and lower constraint on the order quantity is calculated as:
    - (2) "Lower constraint" = ("Demand Rate" \* "Interval between orders") + "Shortfall".
    - (3) "Interval between orders" is currently 3 months for most consumables, but varies for other items.
    - (4) "Upper Constraint" = Absolute ("Demand Rate" \* 24 - "Stock on Hand").  
(No negative values allowed).
    - (5) If  $(12 * \text{"Demand Rate"} / \text{Price})$  is greater than zero then:  
"Economic Order Quantity" =  $43 * \sqrt{(12 * \text{GFDR} / \text{Price})}$ .
    - (6) Else "Economic Order Quantity" = zero.

33. If the EOQ falls outside one of the constraints the order quantity is set to that constraint, otherwise the order quantity is set to the EOQ. Therefore for most items the order quantity will be sufficient for 6 months, but no more than 24 months, at the current demand rate.

34. The logic of the buy quantity decision is as follows:

- a. If the Lower constraint is less than the EOQ then.
- b. If the EOQ is greater than the Upper constraint then.
- c. If the Upper constraint is less than the Lower constraint.
- d. Final Buy = Lower Constraint.
- e. Else: Final Buy = Upper Constraint.
- f. Else: Final Buy = EOQ.
- g. Else: Final Buy = Lower Constraint.

35. The final buy is compared with the Primary Packed Quantity and Contractor's Minimum Batch Quantity for the item, and rounded up if necessary.

36. For some items the PAF is fixed rather than calculated. In such cases the GDR is calculated as:

- a.  $\text{GDR} = 10\% * \text{Current Month's Recurring Consumption} + 90\% \text{ old GDR}$ .
- b. In all cases GFDR is set to zero if it falls below 0.05.

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37. **Repairable Items.** Order quantities of repairable items first take into account the number which could be repaired, the Forward Repair Potential, calculated as:

$$\text{FRP} = \frac{(\text{MRP} - (\text{Global RD Stock} * \text{Recovery Factor})) * \text{Interval between orders}}{\text{Lead Time} + \text{DWSL} - \text{RP}}$$

- a. Where MRP = Estimate of number of items which can be repaired during the Re-Order Period, RD = Repairable at Depot, IBO = IBO and RP = Recovery Potential.
- b. FRP represents the number of items expected to be returned from repair during the IBO. The Recovery Factor is the proportion of RD stock expected not to be beyond economic repair.
- c. The provisional order quantity (POQ) of the repairable item is then calculated as:  $\text{POQ} = (\text{IBO} * \text{GFDR}) - \text{FRP}$ .



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**ANNEX B TO CHAPTER 4: OFF-LINE PROVISIONING TOOLS**

(Introduced at [Paragraph 5d](#))

**On-Line Provisioning Update System (OPUS II)**

1. OPUS II<sup>14</sup> is a web based on-line paperless system producing Provisioning Review Statements (PRS) as illustrated below, and offers improved 'front-end' operation for CRISP users. OPUSII is used by Commodity Managers in Maritime PTs located at Abbey Wood. CRISP data is updated to OPUS II monthly to produce the PRS. This tells the Commodity Managers when they need to consider re-provision of stocks and the resulting proposed buys are transmitted to the CRISP procurement system daily. The data is mainly "read only" although certain fields can be updated, such as the recommended purchasing quantities, by Commodity Managers with the appropriate authorisation.

**Figure 11: OPUS Provisioning Review Statement**

QUANTITIES:	PROPOSED	ACTUAL	STOCK NUMBER	CYCLE	DESCRIPTION	MOP	DofQ
EAGLESCLIFFE	0	0	W899 004376443	04 07	STEP ATTENUATOR	A1	EA
DONNINGTON	1	1					
BEITH	0	0					
COPENACRE	0	0					
NEW BUY TOTAL:	1	1	354.38	354.38	ITEM PRICE	354.38 B	URGENT? Y
REPAIR:	0	0	0.00	0.00	REP PRICE	0.00	PACKAGING 07
GRAND TOTALS:			354.38	354.38	R/CONTRACTS	0	REASON FOR AMEN/CAN
AUTH LIMIT:	20000.00		AUTH LEVEL:	E1	E1 R/C HUM		SCRUTINY N

**SUMMARY**

PPF	ISC	SL	APPs	ALTs	RESV	TLT	REP	TRLT	RRR	PPQ	Returns	UCR	Stk
0.4	1	00	Y	N	N	P	22	R	P	12	P	40%	1
												2	0

Susp Stk	Disc Stk	Serv Stk	Due-In	Serv Ass	Prov Req	Free Ass	Rec Dem	NRec Dem
0	0	0	0	0	0	0	2	1

HDR	ROL	SS	EQQ	MAXAL	MOQ	PU	QDF
0.01	0	0	1	1	1	1	N

Max Min	DMI	RAC	Prog Price	Monitor Item
N	N	DJA000	354.38 B	N

STATUS : UNACTIONED

**Optimised Support Planning (OSP)**

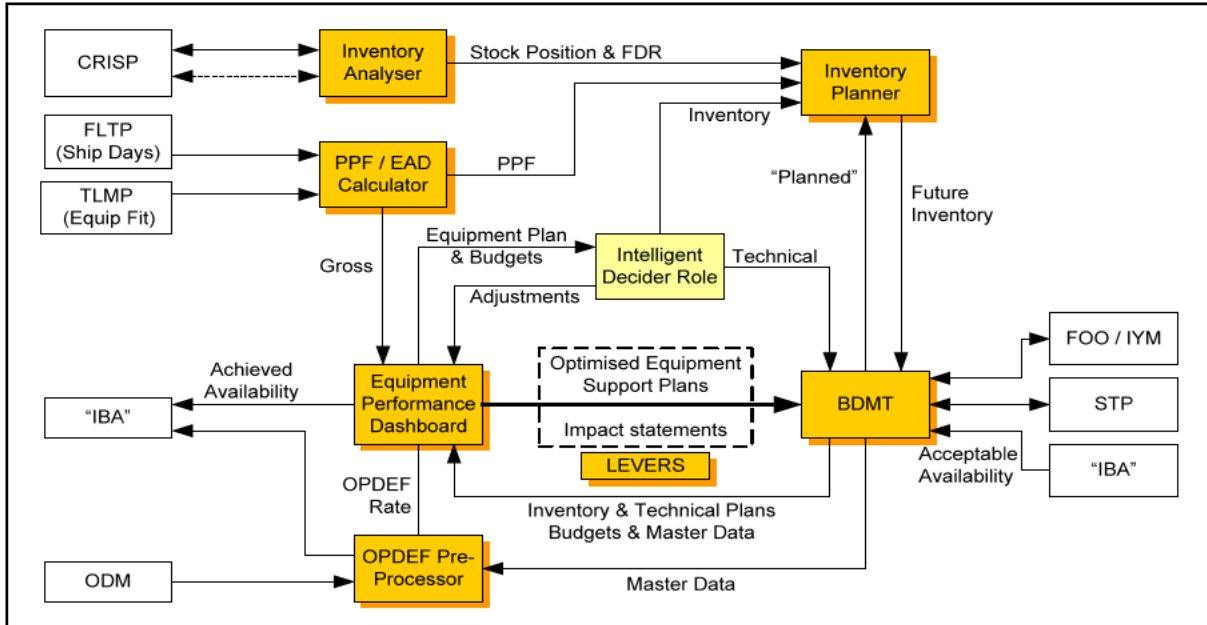
2. **Overview.** Optimised Support Planning is a planning process that provides Equipment PTs with the ability to make best use of their resources by providing the appropriate level of support for each equipment. The process relies on a simple priority framework that, when populated, indicates where the Customer is willing to accept risk against individual equipment support plans.

<sup>14</sup> Note OPUS II should not be confused with the OPUS modelling tool used in Multi Indenture Multi Echelon (MIME) modelling; they are completely different tools.

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3. Within OSP there are a series of tools built in Excel to compliment the underlying IM systems. Regardless of which system is being used the look and feel of the tool is similar, as is the functionality. It was designed to assist IMs to ensure that the underlying inventory system functionality is exploited and enables inventory optimisation. An example<sup>15</sup> of the system is shown at Figure 12.

**Figure 12: The Optimised Support Planning (OSP) Process**



4. The system is also able to identify 'D' and 'R' errors.<sup>16</sup> A 'D' error arises when the demand is outstripping supply and where a stock out is likely that will impact directly upon the customer. Such errors can be identified and eliminated with continued focus but they are a symptom of not having the correct inventory profile and settings within the respective Log IS. 'D' errors should be addressed in conjunction with 'R' errors, as by reducing 'R' errors 'D' errors will be virtually eliminated. The mathematical formula for 'D' Errors is:

$$\text{'D' Error} = \text{Dues Out} > A1 \text{ stock} + \text{Dues In.}$$

5. An 'R' error occurs when the Re-Order Level (ROL) is greater than the sum of the A1 stock and Dues In. Thus the level of stock held will never rise above the ROL and no purchase orders (PRF / PRS) will be raised by the Log IS. A snapshot of the inventory will contain 'R' errors; however by monitoring them continuously they can be significantly reduced. The mathematical formula for 'R' errors is:

$$\text{'R' Error} = \text{ROL} > A1 \text{ stock} + \text{Dues In}$$

6. **Algorithms within OSP.** OSP replicates the algorithms within the BIS that it supports but enables the IM staff to run 'what if' scenarios without corrupting raw data.

7. **Significant Upgrades.** This system is not yet fully rolled out across all PTs; a pilot study has been successfully conducted. A project has been initiated to replace the current ad-hoc and work-around tools with a Permanent Tools Set.

<sup>15</sup> Source: OSP Training Presentation Version 2.0 dated 28 Nov 06.

<sup>16</sup> Source: IM Diagnostic Report dated 31 May 07, Annex S, Appendix 1.

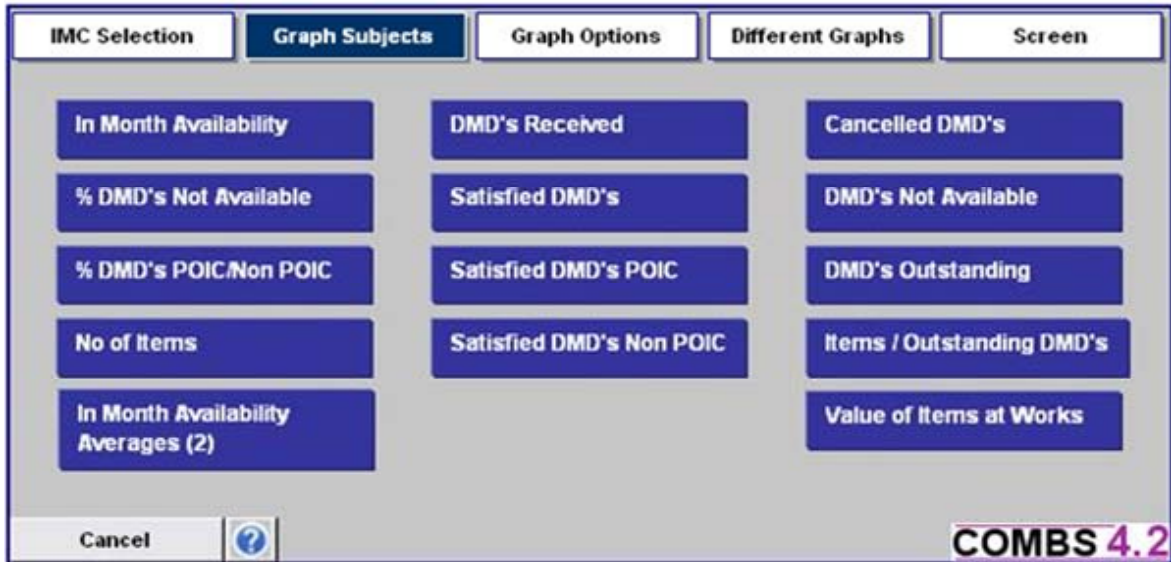
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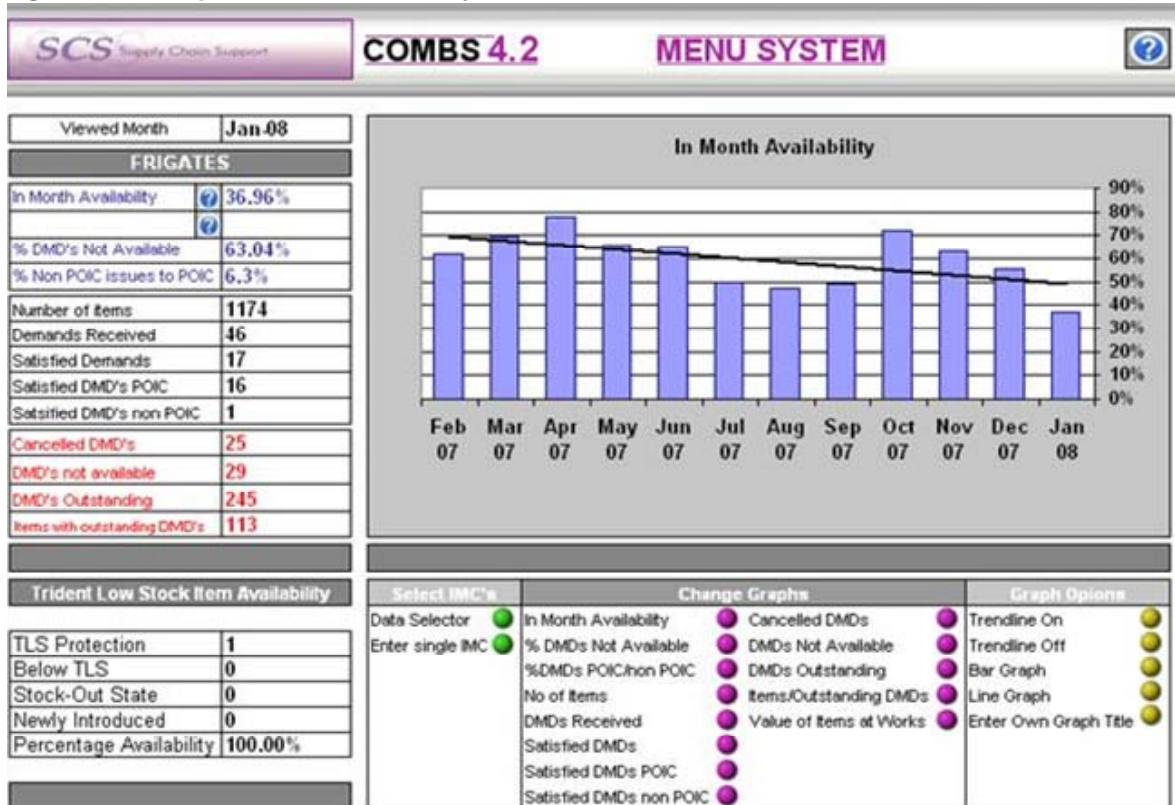
**Commodity Management Business System (COMBS)**

8. This is a data management tool that enables Maritime PTs to analyse 3 years of rolling data by Domestic Management Code (DMC)<sup>17</sup>. COMBS is fed from CRISP on a monthly basis via Defence Technical Information Centre (DTIC) reports. The range of analysis that can be conducted and an example of in month availability are shown at Figure 13 and Figure 14.

**Figure 13: Examples of a Range of Analysis (COMBS)**



**Figure 14: Example of COMBS Menu System**



<sup>17</sup> Also known as Inventory Management Code (IMC)  
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**Provisioner's Workbench (PWB)**

9. **System Overview.** Document Workflow management to support decisions related to Provision Review Forms (PRF), Equipment Review Forms (ERF), Disposal Review Forms (DRF) and to maintain an accurate record of such decisions.

10. PWB has replaced paper based provisioning, incorporating additional fields. The automatic provisioning has allowed for manpower reductions, has provided visibility of current and historical provisioning data. PWB has reduced the administrative lead times for spares procurement resulting in lower stock holding. An example of the PRF screen is at Figure 15.

**Figure 15: Example of Provisioner's WorkBench PRF Screen**

**Purchase Management System (PUMAS)**

11. **System Overview.** PUMAS is a Workflow Management system for the purchase of spares and Repairables and for the stockholding requirements for Land PTs and contract management purchasing and progress.

**Expert Provisioner 3 (EP3)**

12. **System Overview.** The system is designed to download master provisioning recommendation (R001) documents electronically primarily from SCCS. Each R001 can be accessed on line by the Supply Manager, and must be run against a rule base to check that all the factors are correct prior to determining the appropriate buy quantity. Any provisioning actions or parameter changes are updated electronically to the Master Provisioning Record Card, an example of which is at Figure 16.

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**Figure 16: Example of a Master Provisioning Record Card.**

**MPRC - Master Provisioning Record Card [STEP MOBILE ] SM0461D**

Nato Stock Number  
 MC  NC  IIN  NSC  Item State  
 Live  Dead

Item Detail | Repair | Modifications | Contractors & Alternatives | General Info | Repair & Purchase History | Demand History

Prov & Proc Parameters

Admin Lead Time	<input type="text" value="2"/>	PAF Code	<input type="text" value="0"/>
Production Lead Time	<input type="text" value="1"/>	ACD Code	<input type="text" value="1"/>
Class of Store	<input type="text" value="L"/>	DWSL	<input type="text" value="2"/>
Interval Between Orders	<input type="text" value="3"/>	CMBQ	<input type="text" value="1"/>
Degree of Control	<input type="text" value="4"/>	PPQ	<input type="text" value="1"/>
Type of Value Code	<input type="text" value="B"/>	D of Q	<input type="text" value="EA"/>
Management Group	<input type="text" value="MS"/>	Amalgamation Code	<input type="text" value="2"/>

Item Flags

<input type="checkbox"/> High Hit Item	<input type="checkbox"/> Mission Essential
<input type="checkbox"/> High Cost Driver	<input type="checkbox"/> RAF Manufactured
<input type="checkbox"/> CRSP	<input type="checkbox"/> Life Of Type Buy
<input type="checkbox"/> MASL	<input type="text" value="0"/> MASL Quantity
<input type="checkbox"/> SHARE	<input type="text" value="0"/> SHARE Quantity

SCCS Pricing Data

SCCS Price (£)	<input type="text" value="389"/>
APL/BPL	<input type="text" value="0"/>
Finance Branch	<input type="text" value="34"/>

Other Basic Item Information

Range Identification Code	<input type="text" value="0"/>	MEOQ	<input type="text" value="0"/>
Frugal Code	<input type="text" value="0"/>	Global Retn Period	<input type="text" value="44"/>
TMA Code	<input type="text" value="3813"/>	Obsolescence Code	<input type="text" value="0"/>

Storage Information

<input type="checkbox"/> Shelf Life	<input type="text" value="0"/>	Shelf Life (months)
Storage Category	<input type="text" value="0"/>	
MPRC Packaging Info	<input type="text"/>	

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## **CHAPTER 5: SUPPLIER MANAGEMENT**

### **PURPOSE**

1. This chapter describes the policy and associated process covering the requirement for effective supplier management by IMs.

### **SCOPE**

2. This policy applies particularly to all IMs who are directly responsible for ensuring that the sourcing and procurement of inventory from suppliers is effective and efficient in terms of performance, time and cost. Further guidance can be found on the AOF Commercial Toolkit.

### **GOVERNANCE**

3. Overall authority for governance of supplier performance is vested in Director General Commercial, supported by project and supplier engagement teams that are responsible for managing the supplier interface at corporate / Industry level. Below that, at Cluster / PT level DG Commercial exercises functional authority over all commercial staff embedded within each business area. It is imperative that IMs, who have delegated requirement and financial powers, work very closely with DG Commercial staff to maximise supplier engagement and influence Industry performance at all times.

### **KEY PRINCIPLES OF SUPPLIER MANAGEMENT**

4. In order to implement and maintain highly effective supplier management within the Defence Inventory the following five Key Principles are to be adopted:

- a. **Understand the Supplier Base.** It is imperative that IMs have sufficient understanding and awareness of their supplier base to enable them to leverage contractor performance, timeliness and cost throughout the life of platform, equipment and commodity support solutions. They must also understand and actively manage risk within the supply chain. Understanding the market, particularly to determine whether or not there is scope for competition, is vital. Data should be gathered on suppliers to create the knowledge to be able to exert influence where necessary.
- b. **Work Closely with Suppliers.** IMs are, together with Commercial staff, to work closely with suppliers to achieve performance, time and cost targets in accordance with contract terms and conditions. Every opportunity must be taken to achieve further improvement in output effectiveness and cost reductions through joint, mutual working. Front Line Commands (FLC) must be closely involved to ensure that the totality of every cost reduction is understood throughout the life of the platform or project.
- c. **Regularly Assess Supplier Performance.** IMs must ensure that outstanding contract Dues In is regularly reviewed to ensure that delivery dates agreed with the supplier are met without delay. Failure on the part of the supplier to deliver to promise will increase the risk of stock-outs, back orders and ultimately failure to meet customer demand for inventory. Spurious dues in data will also increase the risk of stock-outs and back orders, hence the importance of regular checking of inventory overdue for delivery. Regular analysis of supplier performance data is essential to

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determine trends, draw conclusions and present recommendations for corrective / recovery action and / or improvements.

d. **Regularly Review Total Lead Time Data.** IM staff must ensure that the total lead-time data recorded in Base Inventory Systems (BIS), principally CRISP, SS3 and SCCS is accurate and up to date. Accurate lead-time data is a critical component of effective forecasting and safety stock calculations. The overarching principle is to achieve compression of the length of total lead-time based upon reliable sources of information at all times.

e. **Work Closely with Commercial / Contracts Authorities.** IMs must liaise closely and often with PT Commercial staff and other stakeholders, including category management teams, to ensure that every opportunity is taken to leverage supplier performance, rationalise the supplier base and encourage competition.

### **KEY OBJECTIVES OF SUPPLIER MANAGEMENT**

5. IMs are to achieve the following key objectives in respect of supplier management:

a. **Supplier Management Database.** Develop a supplier management database to provide key elements of management information covering details (by IMC / DMC) of range and scale of inventory, value and delivery performance of suppliers against performance, time and cost measures of effectiveness and efficiency. In cases where there are too many suppliers to maintain a full database then the Pareto principle (80% of inventory value / transaction volume generated by 20% of the supplier base) must be applied to enable appropriate prioritisation of resource effort. This database must be available for periodic inspection and use by line managers.

b. **Identify Poor Performance.** Maintain a shortlist of poor supplier performance to support further pro-active supplier engagement and energise improvement in performance, time and cost as appropriate. This short-list must be available for use by line managers to intercede in conjunction with DG Commercial staff where appropriate.

c. **Supplier Reviews.** Undertake face-to-face supplier performance reviews with contractors at quarterly intervals, or more frequently if specified in the contract. The purpose of the reviews is to assess supplier performance against that required by the contract, identify shortfalls and initiate and monitor recovery action as appropriate. A formal record of supplier performance reviews must be maintained for audit purposes.

d. **Lead Time Data.** Carry out the systematic review of total lead-time data maintained on the BIS to ensure that it is completely accurate and up to date. This systematic review should be undertaken on a continual basis with particular emphasis on active inventory items. In cases of very large scale inventory Pareto principles must be applied to achieve focus and priority of treatment according to the value / volume of inventory.

e. **Dues in Reconciliation.** Undertake the systematic reviews of outstanding 'Dues In' that are overdue for delivery. Expediting action must be taken with suppliers on every occasion of their failure to meet promised delivery profiles. In addition the overall situation at IMC / DMC level must be reviewed periodically

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(quarterly or more often if possible) to detect downward trends in levels of service and initiate remedial action with suppliers.

f. **Supplier issues.** Liaise regularly with Logistics Commodities & Services (LCS) and other JSC stakeholders to resolve any outstanding issues and problem areas related to supplier performance, and the knock-on effect upon off-the-shelf availability of inventory. Common problems, such as mismatch of quantity or quality of deliveries, inadequate documentation, packaging and condition of material upon receipt, must be dealt with expeditiously, otherwise there is risk of stock-outs and back orders because receipts of inventory have not been brought to account, and are therefore not visible on BIS to meet customer demand.

6. In all cases the IM must maintain up to date records, in the form of an Outstanding Issues Log (OIL) or similar, to enable regular review and action in conjunction with stakeholders to remove barriers to inventory availability.



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## **CHAPTER 6: PERFORMANCE MANAGEMENT OF DEFENCE INVENTORY**

### **PURPOSE**

1. This Chapter describes the policy and associated process covering the periodic review and reporting of inventory performance against **Specific, Measurable, Achievable, Realistic, Time (SMART)** based objectives and key targets.
2. Recognising that inventory availability (right item, right place, right time) is a critical success factor for a lean, agile and responsive JSC. Inventory performance management is an integral element of the overall JSC Performance Management Board (JSC PMB) regime. The JSC PMB covers end to end JSC performance review, reporting up within DE&S to the 2\* JSCB, the 3\* Chief Operating Officer (COO) Board and the 4\* Executive Committee of the DE&S Management Board (ECMB) as part of the Directorate Corporate Approvals Performance & Risk (DCAPR) reporting process. For ease of reference at JSC PMB and higher level the term PM4IM (Performance Management for Inventory Management) has been adopted to cover all IM metrics.

### **SCOPE**

3. This policy sets out the minimum PM4IM requirements and actions required by the MOD (PTs and other JSC stakeholders) to satisfy DE&S policy standards. The corporate level PM4IM metrics may be supported by more detailed performance measures and indicators at PT (platform, equipment, commodity) level and as part of any Contractor Logistic Support (CLS) arrangement to meet more detailed (operational level) business needs. Further guidance on performance management requirements of inventory aspects of CLS solutions is in Chapter 3: Inventory Management as part of Contractor Logistic Support.

### **KEY PM4IM PRINCIPLES**

4. In order to implement and maintain an effective PM4IM governance regime across the full range of Defence Inventory, the following five Key Principles are to be adopted by all IMs, as an essential contributor to effective and efficient through life capability management of platform, equipment and commodity support solutions:
  - a. **IMs Cannot Manage What Is Not Measured.** While the extraction of reliable and accurate data and supporting analysis is often a challenge every reasonable effort must be made to achieve the optimum balance of PM4IM to enable MOD stakeholders to understand what good looks like and highlight the need for pro-active recovery action where appropriate.
  - b. **IMs Must Use a Single Set of Numbers.** DE&S policy states, logistic performance management is based on the principle of 'one set' of questions asked, one accepted source of data, collected once<sup>18</sup>.
  - c. **IMs Must Provide a Single Version of the Truth.** The PM4IM process is integrated within the JSC PMB and higher level reporting regime have been

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<sup>18</sup> Legacy Customer Service Agreements (CSAs) and disparate CLS arrangements have generated a plethora of different service levels and performance targets. Furthermore legacy Base Inventory Systems (BIS) designed for single rather than joint Service purposes do not provide a complete and common data set for PM4IM. These constraints will be removed as new Log IS capability is delivered as part of the Defence Logistics Programme (DLP).

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established to prevent duplication of effort that would otherwise occur were individual Clusters, PTs and other JSC stakeholders to set up parallel review and reporting arrangements; this must be avoided at all cost in the interest of lean and 'smarter not harder' ways of working.

d. **PM4IM - Part of Defence Logistics Performance Management.** PM4IM metrics will complement (not replicate) the higher level performance metrics prescribed by Defence Logistic Performance Management (DLPM) for END TO END performance review and reporting of Force Elements (FE).

e. **PM4IM – Based upon SCOR Methodology.** The Supply Chain Operations Reference (SCOR) Model, originated by the Supply Chain Council, is widely regarded as a “best of breed” approach to SC design, process improvement and PM4IM. SCOR is based upon a simple but highly effective grouping of individual activities and / or functions under the broad categories of Plan, Source, Make, Deliver. PM4IM is designed in principle to follow the SCOR model to achieve full coherence, including E2E back into Industry, as part of best practice.

5. PTs are required to adhere to the above principles in relation to all forms of support solutions including CLS arrangements, to ensure that PM4IM metrics form a part of the overall performance management of support solutions managed on their behalf by contractors and their suppliers. Best practice Sales and Operational Planning (S&OP)<sup>1</sup> techniques are to optimise the Supply Chain through time compression, forecasting and accurate assessment of realistic repair and return lead times for all unserviceable equipment.

## **GOVERNANCE**

6. Overall authority for governance of end to end inventory performance is vested in the Chief Operating Officer (COO) at 3\* level within DE&S. In the role of in-service manager, DG JSC attends monthly COO Performance Board meetings to advise on JSC business, including PM4IM.

7. Under the auspices of the JSC PMB, AD SCS (IM), as the policy and process owner for Inventory across Defence, is the lead authority for all PM4IM business. As a full member of the JSC PMB, AD SCS (IM) is required to provide an overview of inventory performance at each quarterly meeting, together with input to the monthly PM4IM reporting packs for the JSC PMB and higher-level boards.

## **KEY PM4IM PERFORMANCE MEASURES**

8. All of the PM4IM metrics are encapsulated within the Inventory Plan; see JSP 886 Volume 2 Part 2: Inventory Planning, Chapters 3 and 5 for full details. The full table of PM4IM metrics, standard reporting procedures and periodicity of reports is covered in Annex B of the Inventory Plan<sup>19</sup>.

9. To emphasise the business benefit of regular reporting of inventory performance up through the chain of command within DE&S, a set of three Key PM4IM metrics are reported to, and reviewed by, JSC PMB stakeholders and up to 3\* and 4\* Board level on a

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<sup>19</sup> The Defence Inventory Effectiveness Transformation (DIET) project is continuing to develop PM4IM strategy, implementing the best practice within legacy IS and other constraints. The set of PM4IM metrics covered by the Inventory Plan and this policy are categorised as “interim but in place forthwith” and therefore extant until further update.

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monthly basis. The key PM4IM metrics (from Annex B of the Inventory Plan) are illustrated in Figure 17.

**Figure 17: Three Key PM4IM Metrics – Monthly Report to JSC PMB, 3\* and 4\* Level**

PM4IM METRIC	MARITIME	LAND	AIR	COMMODITIES
<b>EFFECTIVENESS:</b>				
S1a Overall Immediate Availability	GREEN XX%	YELLOW XX%	AMBER XX%	RED XX%
S1e Due Out Backlog	YELLOW XX%	AMBER XX%	RED XX%	GREEN XX%
<b>EFFICIENCY:</b>				
S2a Raw Materials and Consumables Stock Turn Ratio	GREEN XX%	YELLOW XX%	AMBER XX%	RED XX%
<b>Note:</b> Specific targets are published separately to JSC PMB and higher stakeholders.				

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## **CHAPTER 7: CONTINUOUS IMPROVEMENT**

### **PURPOSE**

1. This Chapter describes the policy and associated process for adoption of continuous improvement (CI) methodology to enhance the effectiveness and efficiency of inventory performance, availability and cost / value.

### **SCOPE**

2. This policy applies to all IM staffs that are directly responsible for Performance of Defence Inventory. This includes inventory managed by suppliers under Contractor Logistic Support (CLS) arrangements but which remains on the MOD Balance Sheet, to ensure that Industry is applying the same or better approach to achieve best value for money for Defence.

3. This instruction should be read in conjunction with related parts of JSP 886 Volume 2 Part 2: PT Inventory Planning, covering the Inventory Plan (Section 2) and Performance Management (Section 5).

### **KEY PRINCIPLES OF CONTINUOUS IMPROVEMENT**

4. In order to energise and maintain a pro-active CI culture across the vast range of Defence Inventory the following five Key Principles are to be adopted:

- a. **Through Life.** IMs must adopt a pro-active approach to CI, otherwise waste will not be minimised and the risk of over / under provisioning and supply of spares will not be negated or mitigated.
- b. **Systematic.** In order to apply continuous improvement successfully a systematic approach is essential. Based upon 'total quality' principles, this is a four step process to baseline current performance, analyse and scope improvement opportunities, implement change improvements and finally review results – which then represent the baseline for the next phase of CI activity.
- c. **Target Based.** Effective CI requires a formal process to establish objectives and targets monitor and review performance against targets, and intervene and / or escalate action where necessary.
- d. **Integrated.** CI must be implemented within an overall process of benefit and risk management to provide a balanced and controlled approach.
- e. **Pro-Active.** CI is a pro-active (self starting) aspect of successful enterprise leadership and management, supported by internal ensurance<sup>20</sup> or external assurance of results as a part of good governance.

### **GOVERNANCE**

5. Overall governance of CI of inventory performance is vested in the Chief Operating Officer (COO), supported by Director General Joint Supply Chain (DG JSC) in the roles of in-service adviser and IM policy / process owner.

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<sup>20</sup> Ensurance is the MOD term used to describe assurance carried out internally by the PT.

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## **CONTINUOUS IMPROVEMENT POLICY OBJECTIVES**

6. IMs are to achieve the following key objectives in respect of CI:
  - a. Participate in CI initiatives at Cluster, Project Team (PT) and Domestic Management Code (DMC) level as appropriate. As part of the Defence Inventory Effectiveness Transformation (DIET) project this should be as part of a CI Team (CIT) formed at PT / Cluster level.
  - b. Participate in DIET Health Check assessments and follow up management action to baseline inventory performance, identify shortfalls and improvement opportunities, implement CIs and deliver benefits.
  - c. Maintain a Benefits Tracking system to log, monitor and report results from CI initiatives.
  - d. Maintain a Risk / Issues Management system to log, manage and mitigate risks and issues that otherwise would hinder or prevent the achievement of CI. The details of the risks, their proposed mitigation are to be recorded in accordance with the Risk and Opportunity Management Plan associated with the Through Life Management Plan (TLMP).
  - e. Contribute best practice knowledge of successful CIT results, together with lessons learned from experience (LFE), to the DIET inventory knowledge base, to spread situational awareness and build corporate knowledge across the IM functional specialisation. The mechanism for disseminating best practice is through their inclusion in IM course content, IM Cluster forums and IM communication.

## **THE DIET HEALTH CHECK ASSESSMENT POLICY AND PROCESS**

7. The DIET Health Check assessment of inventory performance is to be undertaken annually by AD SCS-IM and his team in conjunction with DE&S Cluster / PTs. The health check provides an independent, evidence-based assessment of IM performance to provide a baseline for further CI.
8. The DIET health check assessment is a 4 step process that comprises:
  - a. **Step 1.** Initial customer engagement between the SCS-IM team and the Cluster / PT stakeholder, to establish a common understanding of the process and the overall IM situation within the business area.
  - b. **Step 2.** Undertake the DIET health check in conjunction with the Cluster / PT stakeholder. The health check is an evidence-based bi-lateral assessment that involves the use of the DIET maturity matrix tool.
  - c. **Step 3.** SCS-IM team prepares the draft health check assessment for agreement and sign off by the Cluster / PT stakeholder.
  - d. **Step 4.** SCS-IM and Cluster / PT stakeholder jointly convene to address CI opportunities and deliver benefits.

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**DEFENCE INVENTORY EFFECTIVENESS TRANSFORMATION (DIET) HEALTH CHECK**

9. The DIET Health Check is an assessment of the IM condition of a PT. It is conducted as a check of the PT's preparedness against a variety of headings. The headings and related questions are below. The results are recorded on the Assessment and Assessment tool (maturity matrix), an Excel based tool which allows the answers to be weighted and analysed in a consistent manner. The annual programme of DIET health check assessments is promulgated on the DIET Intranet web page.

**PLANNING**

10. The aim is to see what IM related plans the PT has in place and jointly constructed with stakeholders including industry. Typical areas are:

- a. Has an Inventory Plan (IP) been produced and included in the relevant project Through Life Management Plan (TLMP)? Is the IP integrated with the other segments of the TLMP? How mature is the IP and has it been reviewed to reflect project changes? Has the IP been endorsed by the FLC(s) with an interest in the project?
- b. Where CLS support solutions are in place, who controls and monitors stock levels and what steps are in place to reduce inventory levels?
- c. Has Inventory analysis been conducted using a Verified and Validated methodology for the appropriate stages of CADMID? Are existing projects being modelled to review stockholdings and placement?
- d. Has a Disposal Plan been produced and included in the TLMP? Does the Disposal Plan cover IM aspects? What targets been established for stock management, particularly the disposal of surplus inventory? When was the disposal plan last updated?

**SEGMENTATION STRATEGIES**

11. Does the PT understand the segmentation of the project inventory and integrate the segmentation into the management of their inventory? Is an Inventory Segmentation strategy in place?

- a. How many items have Management bans / controls in place? As a total of the inventory and by segmentation areas? Why are the items on Management bans?
- b. What Stock Segmentation reviews take place and what tools are used (ABC-contract type, Pareto, criticality, movement, etc)? Is the segmentation only by IMC / DMC / Weapon code etc?

**PROVISIONING**

12. This examines how the PT manages the physical provisioning process.

- a. What percentages of items are on Auto provisioning / with no interventions? Has the assignment of Auto-provisioning / auto acceptance of recommendations been reviewed?

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- b. What percentage of procurement recommendation (PRS / PRF / R001) recommendations are accepted without amendment by the PT / Project? As a percentage of all recommendations and also by IMC / DMC / SMBI<sup>21</sup>? This includes passing data direct to contractor IS without manual "Swivel Chair".
- c. What is the availability of these items? As a percentage of all recommendations and also by IMC / DMC / SMBI?
- d. What is the lead time of these items? As a percentage of all recommendations and also by IMC / DMC / SMBI?

### **LEAD TIME CALCULATIONS**

13. The accuracy of the lead times used in provisioning are a significant factor in maintaining availability and avoiding surplus stock.
- a. Are lead times used in provisioning calculations updated regularly and efforts made to drive improvements? Have Admin lead times used / assumed in provisioning calculations been reviewed?
  - b. What is the assumed time between output of the procurement recommendation (PRS / PRF / R001) and the item going to contract? Have Contract lead times used in provisioning calculations been reviewed?
  - c. Has the assignment of Management / calculated Lead Times been reviewed?
  - d. Have excessive lead times recorded on the provisioning system been reviewed?
  - e. Have aged Lead times been reviewed / amended?
  - f. Where items have not been procured for years, are the lead times amended in line with current "acceptable" thinking?
  - g. Have manufacturing and supply lead times been reduced in the last three years? On average is there a reduction in lead times that can be demonstrated?

### **CONTRACTING PERFORMANCE AND DUES-IN PERFORMANCE**

14. Does Contracting and Dues-in performance follow parameters and forecasts held on system and the guidance promulgated by DG Commercial?
- a. How many demanded dues-in (previous provisioning system recommendations) are extant beyond Administrative Lead Time (ALT) (outstanding PRFs / S / R001)? Are all provisioning recommendations being acted upon within target schedule?
  - b. How many requisitions are outside of Administrative Lead Time (ALT) months? (Qty & % outstanding requisitions)? How many requisitions have not gone to contract yet after; 3 / 6 / 9 / 12 months?
  - c. How many Trade Dues-in are overdue?

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<sup>21</sup> IMC - Inventory Management Code used on CRISP, DMC - Domestic Management Code used on SS3 and SCCS, and SMBI - Supply Management Branch Indicator also used on SCCS for segmentation.

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- (1) What is the number of late deliveries?
  - (2) What is the effect on outstanding demands?
  - (3) What patterns exist? Particular vendor?
  - (4) What types of contracts are involved?
- d. Are there regular reviews of contractual arrangements / incentives with suppliers to achieve targets for CLS in Inventory? Is this part of the formal condition of the contract? Is this a two way process? Are there Gain shares involved?
- e. Are communications with suppliers fit for purpose, routine; both electronic and face to face?

### **DATA CLEANSING**

15. Data Cleansing is a regular and essential task performed by IMs.
- a. How often is data cleansing carried out? Is this part of a continuing process or done as adhoc exercises? Who prompts these actions?
  - b. What levels of data conflict exist? eg. unserviceable consumables (recorded on the systems as E0 etc), Obsolete stock, Obsolete dues-in, Accounting class C but greater than value thresholds? Number of items involved? % of items in range?

### **INVENTORY LEVELS**

16. Stock Turn Ratios (STRs) and total value conforms to targets agreed in Inventory Plan and are reviewed regularly.
- a. What analysis has been done on STRs? Does the IM know what their achieved STR is? Do they report on it, and if so, to whom?
  - b. What is the current stock turn ratio performance against Inventory Plan targets?
  - c. Do they have SMART targets to improve it?
  - d. What is the total Gross Book Value of the Inventory against the target inventory levels as published in the Inventory Plan and agreed with the FLC? Or with Contractor(s)? By Consumable. By Rotable. By Repairable (EO) stock.
  - e. Has the inventory been reduced in the last 3 years? / in the process of reduction? By how much (Value / % overall)? Who prompted the reduction?
  - f. What Disposals have been achieved against the disposals plan target?
  - g. What % of active items within the PT is non-codified against the target agreed in the Inventory Plan and agreed with the FLCs / Industry? What is the value of non codified purchases against targets agreed in Inventory plan with FLCs? / contract agreements? How significant is this in terms of business? What processes are used to bring them into contract cover for future buys?
  - h. Non-conformance? What delay does this cause? What is the significance in terms of availability?



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- i. Value of Suspect / Suffix stock? Number of items with Suspect / Suffix stock?
- j. Number of obsolescent (Fitted but can't buy) items as a percentage of total inventory? This needs to be managed in accordance with the Obsolescence Plan which is included in the Through Life Management Plan (TLMP).
- k. What percentage of total Inventory is made up of Safety Stock and reserves (buffer stock / war stock etc)?
- l. What is the current consumable performance ratio against target?

#### **DELIVER - AVAILABILITY PERFORMANCE**

17. Achieved performance of the Inventory reflects target laid out in the Inventory Plan especially in terms of off the shelf availability.

- a. What is the current achieved 'overall immediate availability' performance of the PT against the target? At PT level? At IMC / DMC / SMBI level?
- b. What is the immediate availability of the top 10 items by movement? Are these the same items each month? Are there any outstanding demands? What contract cover is involved?
- c. What is the immediate availability of the known top 10 "critical items"? Are these the same items each month? Who assigns the criticality? What contract cover is in place?
- d. What is the number of Dues out by demands? How does this compare with the Inv Plan Targets? As a total? By IMC / DMC / SMBI?
- e. What is the number of dues out by number of items? How does this compare with the IM Plan Targets? As a total? By IMC / DMC / SMBI?
- f. What is the value of Dues Out? How significant is this in terms of total turnover?
- g. Number of items with demands outstanding which are over 12 months old? As a total? By IMC / DMC / SM? What contract provision is involved?
- h. What % of items under management ban / control fail to meet their demand processing time target? As a total? By IMC / DMC / SMBI?

#### **GOVERNANCE**

18. Controls, checks, reporting systems with appropriate measures and appropriate tools are being used for governance.

- a. Are there controls in place to ensure consistency across common processes across the team? What management checks exist to comply with current regulations?
- b. What tools does the PT use to assist and report effectiveness of output?

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- c. Are performance measures weighted towards short lead times and quick response with minimal inventory levels? Is this working and driving the right behaviours? Is the balance between Lean and Agile being achieved?
- d. What Inventory accounting arrangements exist for items under CLS including Contracting for Availability (CfA) and Contracting for Capability (CfC) arrangements? Is Inventory held on or off Balance-sheet? How often are figures reported? Is this a contractual condition? Is it verified?
- e. What approaches are evident in the IM function to addressing problems?

## **RESOURCES**

- 19. Is the IM team appropriately resourced for both manpower and finance?
  - a. What measures are in place to assess In-year funding availability against the inventory plan? What financial management controls exist? What FOOs are done? What contracting mechanisms are in place to cope with surge? What tradeoffs occur to stay within budget?
  - b. How much time is spent on expediting? (% of effort within team)? Is this because requirements have changed or poor delivery performance? What tradeoffs occur to bring some forward but delay others? What capacity is made available by contractors to cope with surges?
  - c. What barriers are there to increasing customer service and reducing costs of inventory? (Resource constraints et al).

## **TRAINING AND DEVELOPMENT**

- 20. Staff to be fully trained and take advantage of Continuing Professional Development (CPD) opportunities.
  - a. What is the size of the IM team? By number. By rank. By Job title. How does this compare to MCTs?
  - b. What methods exist to share best practice across the teams? Internally, across the Cluster and across DE&S.
  - c. When was the training requirement and Professional Posts last assessed? What level of training and CPD is required?

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## **CHAPTER 8: MANAGEMENT OF SAFETY RELATED ITEMS OF SUPPLY**

### **INTRODUCTION**

1. In recognition of the safety and operational implications of component failure, system integrity has traditionally been protected by establishing a close working relationship between provisioning and engineering staff within PTs to ensure that purchasing decisions are managed down to Manufacturer Part Number (MPN) level, not just NATO Stock Number (NSN). The move to a Single Defence Inventory alongside the growing complexity of the defence inventory and associated range of purchasing and support arrangements now in place, require a clear and auditable process for the management of safety related Items of Supply.

### **PURPOSE**

2. The purpose of this instruction is to provide a framework to ensure that the purchase and subsequent in-service management and upkeep of safety related Items of Supply is undertaken to a standard that maintains the integrity of the associated equipment / weapon system / platform safety case, protecting all relevant attributes and ensuring that all stakeholders' interests are identified and protected. This instruction does not replace existing Configuration Management (CM) procedures; it ensures that these principles of configuration management are applied at every stage in the supply chain.

### **SCOPE**

3. This Chapter applies specifically to the situation where an item of supply is procured by a single authority and fitted to more than one platform or equipment irrespective of the environment.

### **OWNERSHIP AND POINTS OF CONTACT**

4. The sponsor of this chapter is DES JSC SCM-SCO who should be contacted if clarification of the policy or procedures is required.

### **LINKED PUBLICATIONS**

5. The following publications are linked to this instruction:
- a. JSP 886 Volume 2, Part 3: Single Ownership of Items of Supply in the Defence Inventory.
  - b. JSP 886 Volume 2, Part 4: NATO Codification in the United Kingdom.
  - c. DEFSTAN 05-57: Configuration Management of Defence Materiel.
  - d. DEFSTAN 05-123: Technical Procedures for Procurement of Aircraft, Weapons and Electronic Systems.
  - e. DEFSTAN 05-130: Maintenance Approved Organisation Scheme.
  - f. JSP 553: Military Airworthiness Regulations.
  - g. MAP-01: Military Aviation Engineering Policy and Regulation.

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- h. SCMI 2.6: Submarine First Level Quality Assured Material.
- i. Sea System Publication No 25 (SSP 25): Policy for the Management of Safety Related Items of Supply - Quality Assurance for Safety in Submarines.

#### **NOMINATION OF SAFETY RELATED ITEMS OF SUPPLY**

6. **Safety Related Items.** The term 'Safety Related' is here used to denote an item considered by a customer PT to be related to the safe operation of that PT's equipment. Examples include (but are not restricted to) items deemed safety related for airworthiness and hull integrity considerations. Responsibility for defining Safety Related rests with the Safety & Engineering organisations within each environment, whilst responsibility for nominating an item as Safety Related rests with the Engineering & Safety organisations within each PT; Definitions of Safety Related for each environment can be found:

- a. **Air:** JSP 553: Military Airworthiness Regulations.
- b. **Land:** JSP 454: MOD System Safety and Environmental Assurance for Land Systems.
- c. **Sea:** JSP 430: MOD Ship Safety Management.

#### **PROCESS APPLICABILITY**

7. **General Applicability.** The procedures detailed in this instruction are applicable to any item of supply within the defence inventory nominated as Safety Related; regardless of ownership, application and the use of in-house or commercial support arrangements. Additionally, for items of supply sourced through or provided in support of multi-national and collaborative programmes, the managing PT must also comply with agreed multi-national and programme specific procedures.

8. **Multiple Users.** This instruction has been specifically developed and introduced to support the case where, in accordance with the principles of the Single Defence Inventory, an Item of Supply is managed by a single PT on behalf of the wider defence community.

9. **Item Ownership.** The policy for determining ownership of an Item of Supply where there is a shared interest is detailed in JSP 886 Volume 2 Part 3: Single Ownership of Items of Supply in the Defence Inventory.

#### **COMMUNITY OF INTEREST**

10. **Community of Interest.** For the purposes of this document the community of interest for an item of supply is defined as being represented by the Procurement Authority, all PTs on whose platform/equipment the item is fitted and, where nominated, the designated item engineering authority. The Item of Supply Information System (ISIS) database identifies the Procurement Authority<sup>22</sup> of the item of supply and the base inventory systems the item is managed on. ISIS does not enable the wider community of interest to be identified against the item record therefore the Procurement Authority is to maintain a list of those Project Teams which constitute the Community of Interest.

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<sup>22</sup> Regardless of the contractual arrangements under which the item is procured, for the purpose of this document the Procurement Authority is defined as the MOD authority responsible for the contract.

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**SPECIFICATION OF THE ITEM OF SUPPLY**

11. The accurate and comprehensive identification of an Item of Supply is an essential element in the management of safety related items particularly where an item is used on more than one platform or equipment.

12. Policy for the codification of Items of Supply is detailed in JSP 886 Volume 2, Part 4, NATO Codification in the UK. The master database of item attributes is ISIS. The quality and integrity of ISIS data is dependent on data feed from PT and industry sources.

13. It is the enduring responsibility of PTs to ensure that all relevant attributes of an item of Supply are correctly identified and communicated. Not all characteristics required for effective pan-defence management of safety related items are contained within ISIS. Therefore, the managing PT is to maintain additional management controls and records as appropriate to ensure that all essential characteristics are identified and managed. Figure 18 gives the minimum data required by the provisioning PT to support the management of the integrity of the Item of Supply:

**Figure 18: Minimum Data Requirements**

Requirement	ISIS Y / N	Comment
All relevant Manufacturer/Part Number combinations for a given NSN.	Y	
Full Item of Supply specification, Design Authority / Design Organisation and original Equipment Manufacturer (OEM) (where known) details <sup>23</sup> .	Y	Enforces the responsibility of the PT to provide totality of data iaw JSP 886 Volume 2, Part 4, Chapter 3 Para 4c. Need to identify for Record Purposes, all other PNs that have been used under this NSN but are no longer valid for purchase.
All current users by Equipment Applicability Code (EAC) <sup>24</sup> .	N	To identify the platform(s) / equipment(s) using an item.
Nominated EAC Engineering Authority (EA) with delegated authority for decision making for each user PT.	N	This identifies the decision making community of interest.
Source Control Items of Supply.	Y	Should be reflected in the Item of Supply definition within the codification process.

14. Where a PT considers a specific characteristic that can not be included in the ISIS record to be essential to the management of an Item of Supply for its application, then it is the responsibility of the PT requiring the additional characteristic to document the requirement and agree suitable administrative procedures with the owning PT to manage the additional characteristic. Examples where this may be required include (but are not restricted to) items supplied under a multi-national agreement or otherwise non-UK codified.

**IDENTIFICATION OF SAFETY RELATED ITEM ON ISIS**

15. When nominating an item ‘safety related’, the nominating PT is to ensure that the part number is prefixed with “QCA” on the ISIS record, this annotation to be undertaken through UK NCB. The ISIS record may contain other part numbers which are retained for record purposes only.

<sup>23</sup> Need further reference to Maritime QCA procedure

<sup>24</sup> The Equipment Applicability Code (EAC) is used in the Air Environment to identify equipments using an item in a many to one relationship; it is analogous to the Inventory Management Code (IMC) and Domestic Management Code (DMC) that indicates the lead PT / equipment on a one to one relationship.

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## **MANAGEMENT OF SPECIFICATION**

16. **Contract Requirements** The purchase contract must address at least the following:
- a. Traceability requirements (e.g: Provenance and Traceability).
  - b. Contractor Applicable Quality Standards including, DEFSTAN 00-56, DEFSTAN 05 – 57, DEFSTAN 05-123, etc.
  - c. The requirement to specify that suppliers and repairers to be registered to specific Quality Assurance or other licensing schemes such as (for the Air Environment) the Design Approved Organizations Scheme (DAOS) and Maintenance Approved Organization Scheme (MAOS).
  - d. For Items of Supply procured under enabling arrangements the contract must reflect a 'no change / no substitution' policy.
  - e. For Items of Supply procured / managed under CLS see Paragraph 16.
  - f. Terms and Conditions imposed on the Prime contractor are cascaded to sub-contractors.
  - g. Only the QCA annotated part number is to be supplied.

## **CONTROL OF CHANGE**

17. Configuration Management (CM) is a project function defined in DEFSTAN 05-57 which is the application of control over a products form, fit or function. It details responsibilities and procedures associated with changes to the Configuration Status Record (CSR) which maintains an audit trail of CM documentation, the status of proposed changes and the implementation status of authorised changes and holds primacy in managing changes to specifications to Items of Supply. Of particular relevance is the requirement to seek concurrence to proposed changes by all members of the stakeholder community regardless of procurement authority.

### **Design Organisation Part Number Changes**

18. Where the supplier is also the Design Organisation (DO), the supplier may have the authority to amend item specifications and part numbers. While this is a logical situation within the DO's own equipment, items supplied through CLS arrangements for wider defence applications introduce the risk of contamination within another user's equipment. To control this, where an item is supplied under a CLS contract for general defence use (ie. beyond the particular platform or equipment supported by that CLS contract) the authority to supply an alternative MPN without formal approval from the managing PT following extant CM processes is to be denied.

19. Where an PT is considering a modification to an Item of Supply, or where a supplier proposes a specification or Part Number change that will not, of itself, lead to the definition of a new Item of Supply (new NSN), it is essential that the managing PT staff the proposed change with all stakeholders (including NCB) before accepting the new item. All proposed specification changes or modifications must be formally accepted by all user PTs and the UK NCB before the modified item can be accepted. Where all stakeholders can not agree that the post modification item is the same in fit, form and function then it will be necessary to create a new Item of Supply; normally against the new MPN.

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### **Management of Proposed Changes**

20. Responsibility for the staffing of any changes proposed within an NSN (e.g. changes to Manufacturer / MPN, addition of new MPN, changes to the MPN specification) rest with the PT proposing the change. The diagram of the indicative process is at Figure 19 below. Changes are to be staffed through the wider customer PT community of interest, including the UK NCB. The minimum information to be promulgated includes:

- a. Existing MPN.
- b. New MPN.
- c. Nature of change.
- d. Reason for change.
- e. Revised specification.

21. Change of manufacturer (where applicable - MAOS & equivalent scheme requirement):

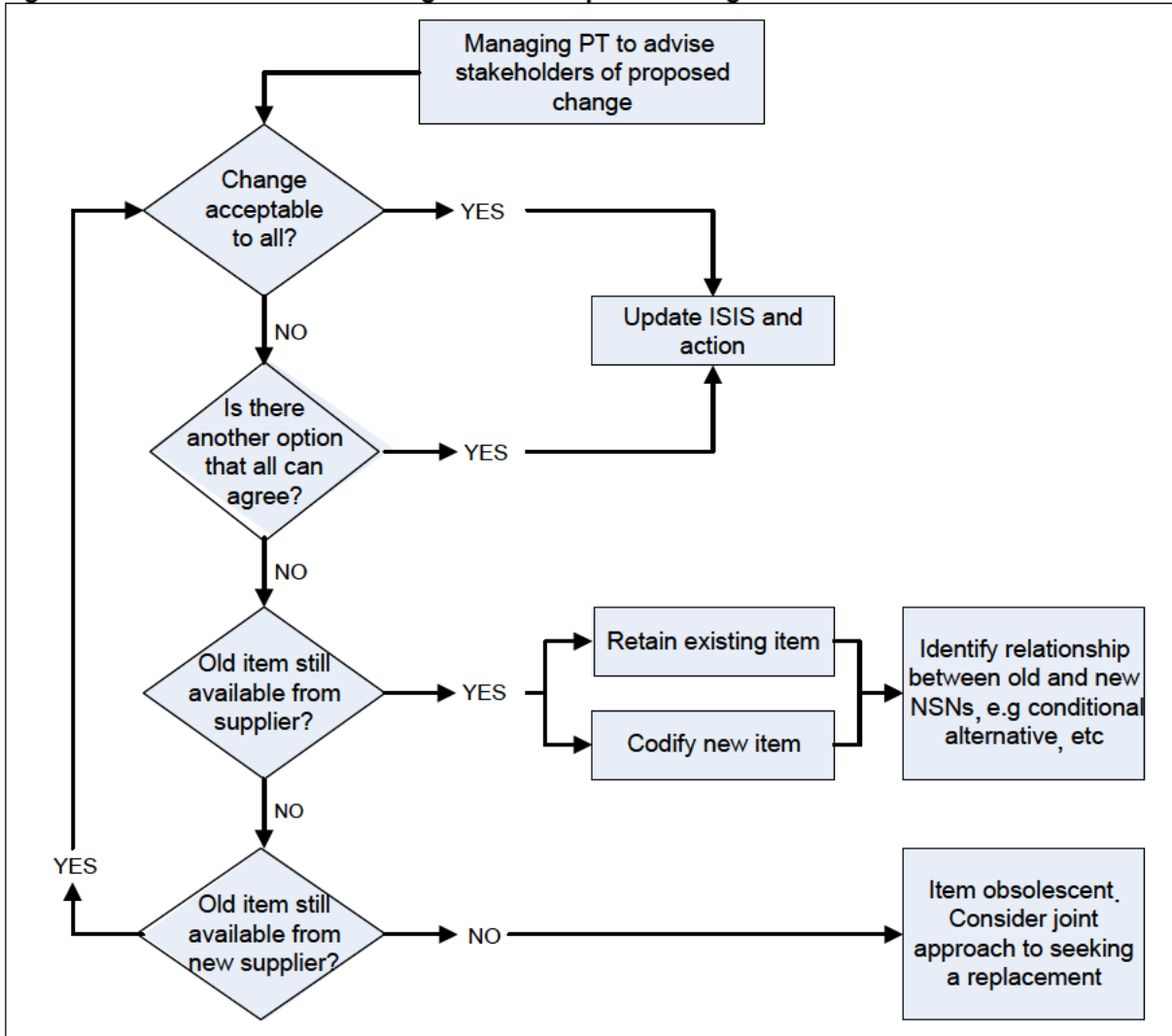
- a. Change of supplier.
- b. Timescales proposed for change.
- c. Availability of alternative supplier(s).
- d. Request for agreement / non-agreement to change.

22. If all domestic and international (through the UK NCB) users accept the proposed change then the following actions will be required:

- a. ISIS record changed (ensuring QCA annotation(s) correctly applied).
- b. New component procured.
- c. Old MPN made direct alternative (conditional / unconditional as appropriate).
- d. Notification to all PTs of MPN change and agreed timescales.
- e. Inform the DO(s) of change (if required).
- f. Retain all communication / correspondence for audit trail.
- g. Update all relevant documentation including Illustrated Parts Catalogues (IPC), Illustrated Parts List (IPL), Technical Publications, Books of Reference (BRs), inventory management, asset tracking and maintenance recording databases, etc.

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**Figure 19: Outline Process for Management of Proposed Change**



23. If not all PTs can accept the proposed change (i.e. the old and proposed new items are not identical in fit / form / function) then:

- a. Is there another option that all can agree on?
- b. Can old NSN still be procured from same supplier or same specification from new supplier?
- c. If new supplier, seek approval for change as per above.
- d. Codify the new item to ensure old and new specifications can be identified as separate Items of Supply.
- e. If old NSN obsolescent; can replacement activity be coordinated to minimise costs?
- f. Identification of relationship between 'new' and 'old' NSNs, conditional alternatives etc.



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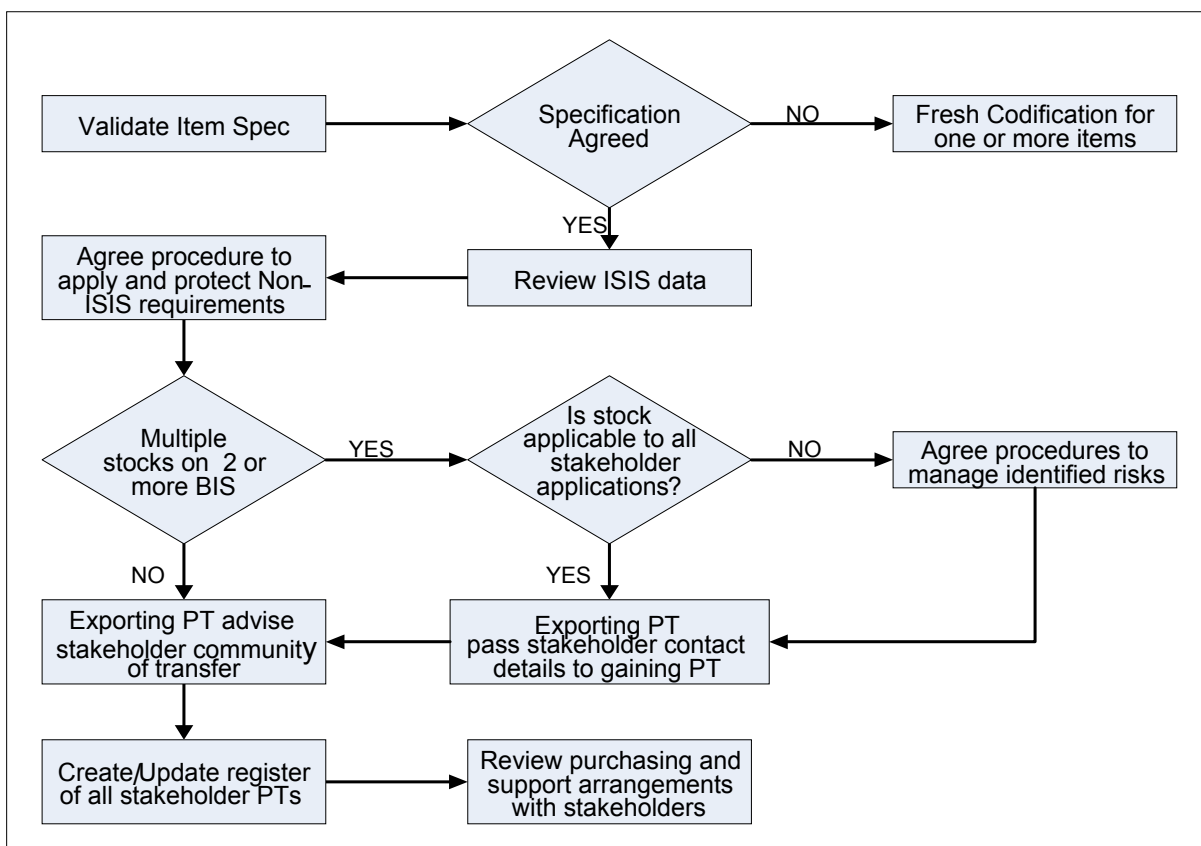
**TRANSFER OF OWNERSHIP**

24. The indicative process for the transfer of management of an Item of Supply between PTs is at Figure 20. This may occur either for:

a. **Multiple Interests.** Where 2 or more PTs currently manage an item on separate Base Inventory Systems and management is being rationalised on a single PT in accordance with the single defence inventory policy. In this instance both the gaining and losing PTs retain an interest in the subject Item of Supply.

b. **Transfer of Interest.** Where the managing PT no longer has a business interest in the Item of Supply and is transferring management either to a newly involved business area or to an existing stakeholder.

**Figure 20: Outline Process for Transfer of Ownership**



25. The following actions are to be undertaken by all stakeholders to affect the transfer of responsibility for procurement of an Item of Supply:

- a. **Joint Preparation.** The following actions are to be undertaken jointly by all user PTs and the UK NCB.
- (1) Validate and agree the item specification for the item being transferred.
  - (2) Where a common specification can not be agreed it will be necessary for one or more items to be freshly codified as new Items of Supply iaw JSP 886, Volume 2 Part 3, Single Ownership of Items of Supply in the Defence Inventory.

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- (3) Review ISIS Data in accordance with the requirements detailed in Paragraph 11. Particular interest should be placed on any specialist requirements (eg: Source Control). Any difficulties or queries should be addressed in the first instance to the UK NCB.
  - (4) Establish and agree procedure with managing PT to ensure that non-ISIS requirements are applied and protected.
  - (5) Identify where multiple stocks exist<sup>25</sup> under the same NSN, identify and agree actions to validate the applicability of stocks to all stakeholder applications. Where safety concerns are identified, PTs are to agree and implement joint procedures to manage identified risks with due consideration of the level of risk together with the associated costs and practicalities of implementation
- b. **Exporting PT.** Where the exporting PT has been managing the Item of Supply on behalf of the wider defence community.
- (1) Advise the stakeholder community of the proposed transfer.
  - (2) Pass contact details for all stakeholder PTs to gaining PT.
- c. **Importing PT.**
- (1) Create or update as applicable, the register of all stakeholder PTs.
  - (2) In consultation with other stakeholder PTs, review current purchasing and support arrangements to ensure that all identified stakeholder PT requirements are met or deviations agreed.

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<sup>25</sup> This situation can arise where an item is managed simultaneously on 2 or more Base Inventory Systems.  
JSP 886 Volume 2 Part 1: Policy and Process for Inventory Management: Chapter 8  
Version 2.15 dated 26 Aug 14

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## **CHAPTER 9: ALGORITHM POLICY**

### **PURPOSE**

1. This Chapter describes the policy and processes covering the requirement for governance of the algorithms used by Defence Logistics Information Systems (LogIS).

### **SCOPE**

2. This policy applies to project leaders and programme managers who are responsible for the development and integration of LogIS and management of the defence equipment inventory.

### **GOVERNANCE**

3. The sponsor and regulator for algorithm governance is Hd SCM on behalf of D JSC. Executive responsibility is vested in Dep Hd SCM-SCO with the functional execution delivered through an **Error! Reference source not found.** SCM-SCO-Analysis-SL is the process owner for Algorithms.

### **POLICY - ALGORITHM COHERENCE**

4. LogIS inventory optimisation requires the identification and use of the best algorithm for an item given its data characteristics. A greater understanding of inventory behaviour can be gained through the application of analytical techniques. These can range from simple segmentation analysis to more complex analysis; for example a test for the presence of seasonality in a time-series data set. As such JSC inventory policy and LogIS algorithms should be developed jointly to ensure supply chain coherence and that the algorithms employed are 'fit for purpose'. A Technical Vision of current and potential JSC Algorithms is available through the SCO **Error! Reference source not found.** (introduced **Error! Reference source not found.**).

5. Project Leaders and Programme Managers are to engage with the Algorithm Cell for advice on, and approval of the algorithms used within their LogIS. Advice and approval is to be sought when:

- a. Analysis is being undertaken on the efficacy of supply chain algorithms.
- b. Recommending Improvements are being considered to LogIS.
- c. A new LogIS is being designed and introduced.

### **KEY POLICY OBJECTIVES**

6. The key objectives of this policy are to:

- a. Improve inventory forecasting through the employment and endorsement of specific and accurate algorithms within LogIS.
- b. Ensure the use of "best of breed" algorithms, are selected and correctly aligned to inventory segments and for the appropriate purpose.
- c. Enable more effective cost benefit analysis and risk assessments to be undertaken in order to focus on improving equipment availability and JSC capability.

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- d. Develop and maintain a coherent and authoritative understanding of the algorithms that are contained within LogIS.

#### **ALGORITHM CELL**

7. The IMOC SCP Algorithm Cell provides a fast, in-house, one-stop service for PTs and programme managers who require mathematical and decision support analysis. Where such analysis is required in support of the Validation and Verification (V&V) of tools for forecasting Inventory requirement then it is mandatory for the Algorithm Cell, in their role within IMOC SCP, to be engaged for this purpose. The cell deals with the 'hard' quantitative science of inventory management, and as well as offering guidance and critical comment it can undertake complex simulation modelling. The sponsor's authority is exercised through the Algorithm Cell which has functional responsibility for:

- a. Evaluating algorithms employed in LogIS.
- b. Recommending changes to underlying LogIS algorithms or associated parameters. This may include simulation modelling to establish parameters or the effect of algorithm changes.
- c. Maintaining regular contact and dialogue with relevant projects and will offer guidance to develop, with the project teams, "best of breed" supply chain solutions.
- d. Establishing and controlling levels of user access for tools, both current and future, such that only personnel with an appropriate level of expertise are permitted to make changes to system parameters.
- e. Ensure algorithm coherence throughout the JSC and issue policy on behalf of the sponsor.
- f. Maintaining relationships with leading SCM academic institutions in order to incorporate leading academic thinking on forecasting algorithms and inventory management techniques into the JSC environment.
- g. Advise on the functional competences and the training of staff in SCM appointments on supply chain algorithm knowledge.

#### **PROCESS FOR REQUESTING AND RECEIVING ADVICE**

8. Requests for algorithm SME advice and guidance are to be directed to C2 Algorithms. Following initial discussion, a formal request is to be submitted which will be acknowledged. Submissions will be categorised as follows at the discretion of C2 Algorithms:

- a. **Category 1.** Algorithm review in support of an existing LogIS change request or future LogIS requirements. This may include complex simulation modelling to inform the decision making process. A formal report will be produced specifying the algorithm requirement or submitting potential options with accompanying recommendations based on the analysis.
- b. **Category 2.** Wider algorithm mathematical analysis. This could include advice on segmentation techniques, algorithm understanding or review of inventory analysis criteria for example. The output is to be agreed with the customer.

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9. Contact details for C2 Algorithms are:

Algo.

DES JSC SCM SCO Analysis Algo.

Cedar 2B NH3 #3246, Abbey Wood (South), BRISTOL BS34 8JH.

Tel: Mil: 9679 Ext 81349 Civ: 030 679 81349.

Email: DES JSC SCM-SCO-Analysis-Algo.

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## CHAPTER 10: MANAGEMENT OF NON-CONFORMING TRADE RECEIPTS

### CONTEXT

1. The MOD expects to receive satisfactory, fit for purpose and contractually conformant material from Industry. When this material is delivered to the MOD it is known as Trade Receipts. Trade Receipts that do not meet the required standards cannot be processed and are not available for use by the MOD. The lack of these items impacts on the MOD's ability to conduct operations. It is to the MOD's advantage that Non-Conforming Receipts (NCR) are identified and rectified promptly.

### POLICY

2. It is MOD policy is that NCR are to be identified and rectified promptly to allow stock to be used to support MOD operations and activities.

### PURPOSE AND SCOPE

3. This policy applies to all MOD units processing Trade Receipts and to the PTs responsible for their procurement except for Munitions that have separate instructions in JSP 886 Volume 6 Part 1: Munitions.

4. The mandatory implementation of this policy is currently restricted to LSC Depots although other MOD units processing Trade Receipts may use the same process.

5. A NCR is a deficiency with packaging, labelling or other shortcoming as indicated at Figure 21 below, which requires rectification before an item can be processed adequately through the supply chain and relates exclusively to items destined for shelf stock. It does not cover:

- a. Items which are **non-compliant** with Consignment Tracking policy contained in JSP 886 Volume 3 Part 7: Consignment Tracking.
- b. Item discrepancies, particularly where the quantity is deficient, are to be reported using MOD Form 445: Discrepancy Report (DR). DR procedures are contained in JSP 886 Volume 3 Part 15: Supply Chain Transactions.

**Figure 21: Categories of Non-Conforming Receipts**

Code	Category
CA	Incorrect DMC / NSN.
CB	Incorrect Description.
CC	Incorrect Part / Batch Numbers.
CD	Incorrect Serial Number(s).
CF	Incorrect PPQ.
CG	Incorrect D of Q or Unit of Issue.
CH	Incorrect Packaging Level.
CK	No Bar Code Labelling.
CL	Insufficient or No Certificate of Conformity / Test Certificate.
DA	Damaged in Transit.
IL	Incorrectly Labelled.

Code	Category
IM	Incorrect MATCON.
LN	No Logo (ISPM 15) Fail.
MN	Mixed NSN.
NC	Non-Codified Item.
NE	No Engineering Record Card.
NL	No Labelling.
NP	No Paperwork- MOD F640, 650 etc.
NW	No Weight Label.
SL	Inadequate Shelf Life.
UB	No Safety Data Sheet.
NS	Incorrect Quantity – Surplus.

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## **PROCESS**

### **ACTION BY RECEIVING UNIT**

6. **NCR Reporting.** The MOD receiving unit is to process all Trade Receipts within 5 working days. When an NCR is identified, regardless of operational imperative, the NCR is to be reported on either:
  - a. DSDA G 0013: Trade Receipt Non Conformance Notification, or
  - b. MOD Form 2249: Non Conforming Trade Receipt Proforma.
7. The NCR is to be registered with the local focal point where appropriate, and sent to the Inventory Management (IM) staff of the responsible PT and the responsible Operating Centre (OC) by email within the 5 working days. The responsible PT can be identified from the LogIS or the DMC / IMC the UKNCB database. Details of the NCR are to be recorded by the unit raising the NCR to allow for future reporting and analysis.
8. **NCR Recording.** The originator is to record:
  - a. Details of all NCRs raised and when sent to the PT. This will allow the determination of the percentage of all Trade Receipts that are NCRs and the percentage of NCRs not rectified within the 12-day window.
  - b. Details and timescale of the completion of the NCR.
9. **NCR Completion.** The NCR process is considered to be completed when the NCR item(s) is/are rectified, returned to stock and the PT informed accordingly.

### **ACTIONS BY THE PT**

10. The PT is to log the receipt of the NCR immediately. The NCR is to be investigated and rectification implemented within 12 working days of receipt of the email. PTs are to ensure that primary causes of NCRs, and not just the symptoms, are addressed by reviewing the validity of contracts and supplier performance in order to prevent recurrence of the NCR in future deliveries.
11. Deliveries from Trade must conform to mandated delivery criteria, as set out in relevant Policy documents and Defence Standards. It is the responsibility of the PT to ensure that contracts include the mandated packaging and labelling requirements in addition to the technical specifications. Non-conformance with these standards can be due to either:
  - a. A failure by the procuring PT to define and articulate adequately to the Supplier the required delivery standards; or
  - b. A failure by the Supplier to adhere to the agreed standards articulated in the relevant contract.
12. If there are Dues Out or a known urgent operational need for the item then the PT is to initiate rectification as a priority in order to meet these Dues Out.

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13. PTs are to annotate all NCR Proforma with details of how, by whom, and when the rectification will take place. The three options available to a PT for effecting rectification are:

- a. **Option 1.** Arrange for collection by the supplier of the non-conforming item from the MOD to effect rectification elsewhere.
- b. **Option 2.** Arrange in situ rectification by the supplier or their agent. The supplier is to provide all the required materials, tools and manpower. The supplier is to liaise with the MOD site to arrange security clearance, access and facilities.
- c. **Option 3.** Arrange the rectification utilising MOD resources. The PT is to investigate the resources required, budgetary implications and provision of funding. Except to meet urgent operational requirements this option should be considered as the last resort because it can fail to address the root cause of the NCR and can also be seen as encouraging bad behaviour by Industry. DSDA are to respond to all requests for quotes including 'Nil bid' where appropriate.

14. Where the NCR is wholly or partially due to the supplier, the PT is to formally notify the supplier, copy to the NCR originator, of the transgression and, where appropriate, state the rectification actions required. Where the NCR is not due in whole or part to the supplier, PTs are to ensure that corrective action and education is taken where necessary.

15. The PT is to notify NCR completion to the originator and the OC. The physical achievement of any of the three options above within the 12-day window for rectification will constitute success in adhering to this policy. The originator is to annotate the NCR record as completed.

#### **ACTION BY OPERATING CENTRE (OC)**

16. The OC is responsible for monitoring the PTs' adherence to this timescale, and ensuring the transfer of the Proforma back to the originator detailing how the NCR will be rectified.

#### **ACTION BY CONTINUOUS IMPROVEMENT TEAM (CIT)**

17. The CIT is to examine the management of NCRs by PTs as part of the routine scrutiny of Inventory Management. PTs are to note that their Inventory Plan should contain details of their NCR process, JSP 886 Volume 2 Part 2: Inventory Planning refers.



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## **CHAPTER 11: STOCK SEGREGATION POLICY**

### **PURPOSE**

1. The purpose of this instruction is to define the Defence Stock Segregation policy that will govern the segregation of all materiel within all defence storage facilities, including buildings and open storage areas, at depot facilities, static and deployed stock-holding units. This equally applies to all MOD stocks held by defence contractors under Contractor Logistics Support (CLS) arrangements and consequently, must be considered by PTs when entering into any such arrangements. This instruction is not intended for HM Ships, RFAs or Army units at first line.
2. In simple terms, this Pamphlet removes the financial ceilings imposed upon storage providers in the 1980s and in place introduces the duty for PTs and storage providers to agree and exercise appropriate business continuity and risk management plans to protect stock. In addition, PTs retain responsibility for requesting dual point holdings with necessary justification, for example, for items which are deemed to be of strategic importance or are in short supply or mission critical.

### **BACKGROUND**

3. Following two significant storage site fires in the 1980s, a policy was developed that segregated stock on a financial basis. This policy was aimed at protecting vital assets and reducing the risk of stock losses by ensuring that stocks were held in a number of locations prior to issue.
4. The previous policy also introduced several types of segregation, most notably:
  - a. **Depot Segregation.** A specific range of stock segregated between storage depots / centres. This affords the highest degree of safeguarding stocks from all perceived threats.
  - b. **Intra-Depot Segregation.** The depot stockholdings of a specific range segregated further between depot site, or dispersed buildings within a depot. This form of segregation is an effective means against all but the most widespread of major incidents.
  - c. **Building Segregation.** Fire compartments within the same building segregate the stockholdings of a specific range.
  - d. **Open Air Storage.** There are limited means of achieving segregation in open air storage but distance, shelter, and / or barriers provide some protection against losses which may occur as a consequence to fire, contamination or exposure to weather conditions or natural disaster.
5. The previous policy categorised stock as being in either Category A or B, predicated on strategic importance and value. In addition, an annually assessed value was set on the maximum value of stock that could be held in a single building.
6. With the introduction of modern supply chain initiatives which includes the reduction of the storage footprint and reducing inventories, a value based principle of segregation has proven unsustainable and therefore a fresh approach is required.

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## **AIM**

7. The aim of this policy is to establish a sustainable means of Stock Segregation that is pertinent to modern processes, strategic initiatives and revised Joint Supply Chain (JSC) methodology across all defence storage facilities.

## **CONSIDERING FACTORS**

8. In pursuance of the operational benefits and commercial efficiencies encompassed in the Future Defence Supply Chain Initiative (FDSCi), the JSC has:

- a. Reduced the storage footprint through closure of 3 major storage sites thereby reducing opportunity for routine segregation.
- b. Re-brigaded other sites in support of Whole Fleet Management and other procurement and support initiatives.
- c. Due to the rising cost of the Defence Inventory, linked to inflation and technology costs, provided storage to a higher value inventory within a smaller storage footprint.
- d. Reduced the overall cost of the storage footprint, through the reduction of the physical footprint and optimisation of the storage capacity.
- e. Committed to continued improvement within the defence inventory, in conjunction with PT, through improved delivery of coherent JSC performance and process.

9. Consequently, it can be seen that whilst there is an absolute need to protect the defence inventory, this must be considered alongside the operational need to ensure flow of stock and optimised performance. This will ensure the delivery of capability to the front line.

## **POLICY AND APPLICATION**

10. The stock segregation policy contained in this instruction is to be applied by all storage providers and places on them a duty to undertake appropriate business continuity, risk management and business planning to mitigate against risk or loss to their stock holding and facilities utilising appropriate advice. In support of this, equipment stock is to be classified as either:

- a. **Category A.** Items of strategic importance and items that merit special storage arrangement.
- b. **Category B.** Items that merit routine storage.

11. PTs are responsible for advising storage providers of all items for which Category A storage, Items of Strategic Importance, is justified. Items that are not deemed to be of strategic importance will default to routine storage, Category B, unless PTs direct otherwise.

12. The default stock-split for items identified as Category A is 70/30, however where less than 10 items exist within the Defence inventory a split of 50/50 may be requested by the stockowner.

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13. Items designated as strategically important should be identified on the appropriate item management system, using a specific Item Data field for the purpose. This data should also be held on warehouse management systems, operated by storage and distribution centres, to manage the Stock Segregation process. PTs will be required to review the process periodically to re-assess items designated for Category A storage and to inform storage providers of any subsequent alterations of status.

14. Storage providers are defined as any custodian of MOD materiel whether at depot or unit level, including deployed units<sup>26</sup> and CLS contractors, and are responsible for ensuring:

- a. Production of local Orders and procedures for implementation and maintenance of the Stock Segregation planning, execution and a safe storage environment.
- b. Implementation and exercise of appropriate business continuity and risk management, predicated on appropriate professional advice from providers such as the MOD Business Continuity and Risk Management focal points and the Defence Fire Risk Management Organisation (DFRMO) utilising the Resource Allocation Risk Management (ReARM) methodology to ensure the safety of stock coherent with JSC operations.
- c. Monitoring stored items to ensure customer requirements are met appropriately.

## **FUELS, LUBRICANTS AND INDUSTRIAL GASES**

15. Detailed guidance on the Stock Segregation for Fuels and Lubricants is contained in JSP 317: Joint Service Safety Regulations for the Storage and Handling of Fuels and Lubricants. Detailed guidance on the Stock Segregation for Liquid Petroleum and Industrial Gases is contained in SP 319: Joint Service Safety Regulations for the Storage and Handling of Liquefied Petroleum Gas (LPG) and Industrial Gases (IG).

## **MUNITIONS**

16. Detailed guidance on the Stock Segregation for Munitions is contained in JSP 482: MOD Explosives Regulations.

## **THREATS TO STOCK**

17. This policy is intended to protect vital assets and to reduce the risk of stock losses. JSP 503: Risk Management and Business Continuity Plans, are to take into consideration the numerous potential threats to stocks. Whilst not an exhaustive list, these threats may include the following:

- a. **Fire.** DFRMO advice is to be sought to determine appropriate levels of Fire Protection utilising the ReARM methodology. To inform this process fire risk management benchmarking guidance is below.
- b. **Criminal and Terrorist Activity.** A threat exists from disaffected employees, criminals and terrorists ranging from theft and fraud to losses caused by Improvised Explosive Devices (IEDs), including incendiaries. The possibility of criminal or terrorist activity preventing the MOD from completing its functions is countered by security measures at all stock holding points.

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<sup>26</sup> This does not include Army units at first line.

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- c. **Climatic Conditions.** The extent of damage as a result of extreme meteorological conditions such as flooding, heat and cold could be substantial. Therefore, the location of storage sites is an important factor in assessing the risk to stock.

## **FIRE RISK MANAGEMENT BENCHMARKING**

### **General Description**

18. **Fire Risk within Store Houses.** The National Audit Office published a report titled, 'Ministry of Defence: Management of Fire Risks' in 1996<sup>27</sup>. This report predates many of the advances made within the sphere of JSP 503: Business Continuity Management articulated in and as evidenced in academia<sup>28</sup>, however significantly the National Audit Office report agreed the need for established maximum financial limits on stores within compartments. Whilst this policy no longer agrees with the misplaced sense of security engendered through financial rather than operational risk management, it is considered that a single maximum compartment total of £300m<sup>29</sup> is appropriate for benchmarking purposes providing that this is supported with an appropriate business continuity and fire risk management plan.

19. Under Building Regulations, a Fire Protected Compartment or Building is a 'building or part of a building, comprising one or more rooms, spaces or storeys, constructed to prevent the spread of fire to or from another part of the same building, or an adjoining building'. However, for the purpose of this instruction it is necessary to differentiate between compartment and buildings with racking and non-racking storage systems. Therefore, following criteria applies:

- a. **Fire Protected Compartment and Building with Racking Storage Systems.** For the purpose of this instruction a Fire Protected Compartment or Building is a compartment or building which incorporates the following Fire Prevention Measures:

- (1) Automatic mechanical roof ventilators which can be actuated by the automatic fire detection system, fusible link and manual override controls.
- (2) Fire protected structural steel work.
- (3) In-Rack Automatic 'Fast Response' Sprinklers in high-rise racking.

b. **Additional Measures.** In addition to the above Fire Protection Measures, at least one of the following measures to provide early warning of a fire or reduce the spread of smoke / fire must also be incorporated noting that is preferable to incorporate all 3 measures where possible:

- (1) Automatic Smoke detection and alarm systems (additional National Audit Office criteria).
- (2) Storage in steel bins, sheet steel tops and bottoms to racks.
- (3) Tiered storage where mezzanine floors are steel.

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<sup>27</sup> London, HMSOO, HC 129 Session 1995-6 published 24 January 1996.

<sup>28</sup> Pattinson, I. H. (1999) Stores Sustainability (Its Measurement and Maximisation). Cranfield University.

<sup>29</sup> This demonstrates a 10% increase on the maximum storage value of £270m established in 2006.

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c. **Fire Protected Compartment and Building with Non-racking Storage Systems.** For the purpose of this instruction, in order for a compartment or building with a non-racking storage system to be considered Fire Protected, at least four of the following measures must be incorporated:

- (1) Load bearing elements of the structure are protected with Fire Resistance to prevent building collapse.
- (2) Sprinklers / automatic fire suppression fitted in accordance with Crown Fire Standards.
- (3) High level low temperature melting plastic panels provided in accordance with Crown Fire Standards or automatic roof ventilators which can be actuated by the automatic fire detection system; fusible link and manual override controls.
- (4) Automatic smoke detection and alarm systems (additional National Audit Office criteria).

#### **Assessment of Risk and the Business Continuity Plan**

20. Business Continuity plans should be cognisant of the higher security provided by military establishments, the alert military ethos and nature of the work force and the co-location of the Defence Fire Risk Management Organisation (DFRMO) support.

21. Each compartment or building, where the need applies, is to be individually assessed by the Local Fire Advisor to establish appropriate protection to assessed risk. JSP 426: MOD Fire Safety Manual also provides guidance.

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## **CHAPTER 12: TRIDENT LOW STOCK**

### **POLICY**

1. Naval Staff Requirement 7070 decrees that there be less than a one percent possibility of a Ship Submersible Ballistic Nuclear (SSBN) deployment being aborted or failing to sail due to lack of spares support. Trident Low Stock (TLS) is an associated management lever used to ensure that stock protection is in place thereby reducing risk to a break in Continued at Sea Deterrence (CASD). It is an enhancement to the standard provisioning parameters and stops issues to non Trident customers once the TLS level has been reached, however approval can be given by Fleet Operations Maintenance Officer, Submarines, FOMO(SM) to broach.

### **PURPOSE**

2. TLS provides assurance to the 2\* Chief Strategic Systems Executive (CSSE) that stock is available to satisfy demands for SSBNs and direct Support Services that underpin CASD. It reduces the risk that patrols are not aborted or do not sail due to lack of spare parts.

### **SCOPE**

3. The allocation of TLS, which is currently 42,000 items on CRISP, will only in general be applicable to the Platform. It will not apply to the supporting facilities, such as the Strategic Weapons Support Building (SWSB), Trident Training Facility, (TTF) unless deemed necessary by the Front Line Command (FLC) or PT.

### **RESPONSIBILITIES**

4. CSSE is the TLS policy owner and is supported by the CSSE logistic assurance team in DES SM Prog-CSSE (Tel: 030679 36513 / 37337). Additionally DES SM Prog-CSSE staff is responsible for policy enforcement.

5. Base Logistics Clyde (BLC) (Tel: 01436 674321 x 3514) is responsible for the creation and maintenance of TLS through the SSBN Onboard Documentation (OBD) process.

6. PT's are responsible for providing applicability data for SSBNs and for requesting TLS amendments or deletion.

7. FLCs can propose changes where stock protection is deemed essential to reduce risk of a break to CASD.

### **SPONSORSHIP**

8. This chapter is sponsored by DES SM Prog CSSE who should be contacted if clarification or amendment is required:

[DES SM Prog-CSSE-7](#)

Tel: Mil: 9352 Ext 36513. Civ: 011791 36513.

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**TLS MANAGEMENT UNDER SINGLE ITEM OWNERSHIP (SIO)**

9. Functionality for TLS management is only available on CRISP and therefore all items associated with TLS must remain and be managed on CRISP. Any item which has a TLS and is recommended for transfer to other Base systems (ie. SS3, SCCS) will require approval from DES SM Prog CSSE, prior to any transfer taken place.

10. It is recognised that a significant amount of items have already been transferred to SS3, under the SIO process. Where this is the case, a review will be undertaken by CSSE staff to ensure the SS3 PT's understand the SSBN requirement and a joint decision will be made on whether the item should be transferred back to CRISP or an Earmark / War Reserve established on SS3 to protect an agreed level of segregated stock.

**PROCEDURE FOR THE CALCULATION AND SETTING OF TLS**

11. For all Trident applicable items, the CRISP Trident Applicability indicator should be set to 1, which identifies the item as being in the SSBN Onboard Documentation (OBD).

12. PT's are responsible for providing applicability data, Establishment lists (E Lists) and Provisioning Schedules (PS) for the SSBNs to BLC. Following item introduction, it is the role of Equipment Project Manager (EPM) to decide what is to be fitted and carried onboard a SSBN. It is also the responsibility of the EPM/PT to:

- a. Maintain documentation - E Lists and PS.
- b. Carry out codification and scaling of equipment / items.
- c. Notify BLC, who will then update SSBN OBD.

13. TLS is calculated automatically by SSBN OBD based on onboard and base allowances. TLS is set on item introduction and reset when allowance changes. The TLS figure can only be changed via SSBN OBD or by approval of DES SM Prog CSSE. As TLS is principally applicable to SSBNs, the TLS stock should be held at HMNB Clyde, to ensure the immediate availability of material to meet SSBN readiness. With approval from DES SM Prog CSSE specific item ranges can be excluded, for example, M&GS and a PT is able to challenge TLS quantities by providing supporting data through DES SM Prog CSSE.

14. Where it is considered that stock protection is required to reduce supply chain risk to CASD and the item is fitted but is not carried as part of onboard allowances, inventory managers or the user can request DES SM Prog-CSSE (Tel 030679 36513 / 37337) or Base Logistics Clyde (BLC) (Tel 01436 674321 x 3514) to set a TLS on CRISP – this approval is needed to provide 2\* endorsement for additional stock holding (and hence additional costs). If supported, DES SM Prog-CSSE will then take action to update TLS. Stock protection may be needed due to anticipated demand changes, or long lead times (through manufacturing or reverse supply chain).

15. PT's should request amendments / deletion of TLS figures via DES SM Prog CSSE, (Tel: 030679 36513 / 37337) PT's will no longer be permitted to make changes to TLS transactions on CRISP.

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## **MANAGEMENT OF TLS FOR CONTRACTOR LOGISTIC SUPPORT ITEMS**

16. For items that are procured via Vendor Managed Inventory (VMI) / Contractor Stocked Inventory (CSI) contracts, the stock can be held at either the Naval Base as a “Stocked item” or with the Contractor as a “Non Stocked item”, providing the following rules are applied:

**a. For Naval Base Stock.**

(1) PTs are to ensure that TLS Quantities are maintained at the required levels.

(2) Where there has been no usage on an item, it is the responsibility of the Inventory Manager to inform the Equipment Project Manager (EPM). The EPM should then review the appropriate Provisioning Schedule or E List to determine the validity of the Trident allowances, requesting an amendment to SSBN OBD where appropriate.

**b. For Contractor Held Stock.**

(1) The item data record (IDR) is to remain on CRISP, to ensure visibility of the TLS. It is accepted that the stock will be permanently broached.

(2) It must be written into the contract that TLS items are to be available at all times, including Out-of-Hours, to satisfy any SSBN demand in accordance with the Required Delivery Date (RDD).

(3) The contract should clearly list all TLS applicable items, including the Class Group, NSN, Description and TLS quantity.

(4) On a quarterly basis it is the responsibility of the PT to provide assurance to CSSE that TLS levels are being maintained in order to negate any risk to the SSBN’s operational programme.

(5) Trident allowances will remain on OBD, to enable the SSBN’s to have visibility of their allowances.

(6) If there is a requirement to broach TLS for a non Trident customer, Paragraphs 19 and 20 (Procedure for a TLS broach) will apply.

## **TLS BROACHES**

17. TLS designated stocks should be maintained at agreed target levels at all times, to ensure maximum availability to satisfy demands for Trident SSBNs and Support Services.

18. When a customer other than a Trident SSBN or Support Service, demands an item where the stock level is both equal to or below the TLS, the demand is automatically rejected and a Demand Inability Report (DTIC 030) is produced.

## **PROCEDURE FOR TLS BROACH**

19. **Trident Customer:** If the demand is from a Trident SSBN or Support Service, CRISP will automatically broach TLS.



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20. **Non Trident Customer:** During normal working hours before approval can be sought to broach TLS, the inventory manager must carry out the following checks.
- a. Priority of demand, only Operational Defects (OPDEFs), Refit critical and high priority demands will justify TLS broach approval.
  - b. Delivery forecast of any dues in should be checked, to ensure stock is due in within a short timescale.
  - c. Check if alternative item is available.

21. On completion of above if a TLS Broach is still required, the Base Port or customer should contact Fleet Operational Maintenance Officer(Submarines); FOMO(SM) at Northwood (Tel 01923 9 (9360) 56140 or 07786856699) who will review the options and make a decision based on operational needs.

22. If TLS broach is not approved, the demand will remain on CRISP as unsatisfied until stock levels are increased above TLS level.

23. During silent hours the TLS will not be broached for Non Trident customers unless prior approval has been given by FOMO(SM) via the Duty Submarine Commander.

#### **REPLENISHMENT OF TLS**

24. Inventory Managers must ensure that stock levels are returned to TLS level as soon as possible to ensure the support to the SSBNs are not compromised. The following actions should be considered.

- a. Re-provision action.
- b. Hastening of dues in.
- c. Arrange prompt repair of defective stocks.
- d. Hasten delivery of defective stocks held at contractor.

#### **CASD / TLS QUARTERLY PERFORMANCE STATISTIC**

25. CSSE Logistics team produces monthly statistics for CSSE and PT leaders identifying performance and TLS availability.

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## **CHAPTER 13: INVENTORY SEGMENTATION**

### **PURPOSE**

1. This Chapter outlines the concept and related policy relating to ABC Pareto Segmentation. Process guidance is at Annex A to Chapter 13: ABC Pareto Segmentation Process.

### **BENEFITS**

2. Segmentation is an enabler to effective management of the inventory. Segmentation identifies key drivers of Support Chain activity and cost, permitting management focus on important subsets of the inventory.

3. Potential benefits include:

- a. Reduction in inventory investment.
- b. Improvement of warehouse capacity utilisation.
- c. Identification of main cost drivers.
- d. An increase in availability with a minimum investment in inventory.
- e. Better utilisation of resources.
- f. Reduction of obsolete and obsolescent stock.

### **POLICY**

4. Segmentation is a part of Key Elements of Defence Inventory Management. PTs must segment their inventory range to ensure that resources are focussed and prioritised accordingly. (See IM3 – Maintain Inventory, [Chapter 2](#)).

5. Inventory Segmentation is a Critical Success Factor to Reprovisioning of Defence Inventory. (See [Chapter 4](#): Reprovisioning Policy).

6. The use of Inventory Segmentation concepts is required as part of the Inventory Plan, and outlined in [JSP 886 Volume 2 Part 2](#).

7. Project Team Leaders and Inventory Managers are to use the Segmentation Tool<sup>30</sup> on a regular basis to:

- a. Identify highly significant items, focus management effort and determine procurement approaches.
- b. Review non and slow moving items.
- c. Evaluate the performance across the segment and improve inventory performance by investigating those items having a detrimental effect on the rest of the segment.

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<sup>30</sup> REP/EDW/0293 ABC Pareto Segmentation. Cognos account required to access EDW. For further details on access permissions contact Log NEC Information Exploitation (<http://www.edw-reporting.r.mil.uk/>)

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d. Assist workload management.

8. Recommended process steps for using the segmentation tool are contained in Annex A to Chapter 13: ABC Pareto Segmentation Process.

### EDW Segmentation Tool

9. A full User Guide is available from the Log NEC Information Exploitation EDW website: <http://www.edw-reporting.r.mil.uk/>.

10. The EDW Segmentation Tool's data is refreshed to a monthly schedule, although the date of the refresh (typically the 4th week of the month) is dependant on the receipt of data feeds. The status of the data feeds within the EDW can be found on the EDW website.

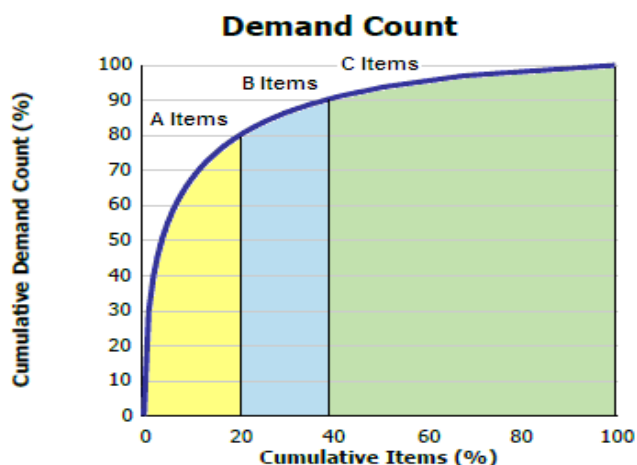
11. ABC Pareto Segmentation analysis is available to all Inventory staff with access to EDW<sup>31</sup> Cognos, for further details on access permissions contact Log NEC Information Exploitation.

12. Further advice on Inventory Segmentation should be sought from JSC SCM SCO  
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### BACKGROUND

13. A good starting point for solutions to supply chain problems is through the application of segmentation techniques. The aim of segmentation is to understand the real drivers that are contained within a data set. The simplest of these and most well known is Pareto Analysis<sup>32</sup> where 80% of the frequencies are associated with just 20% of the categories. The 80/20 proportions are not absolute values. The point is that a minority of any population often accounts for a disproportionate majority of a given parameter, "The Law of the Vital Few". This is clearly demonstrated by a Pareto Analysis of the defence inventory where approximately 20% of the (active) inventory accounts for 80% of the demands. This can be seen in Figure 22 below, which shows a Pareto chart of demands placed against all Operating Centres across DE&S over a 12 month period.

Figure 22: ABC Pareto Segmentation



<sup>31</sup> Enterprise Data Warehouse

<sup>32</sup> 19th century Italian economist Vilfredo Pareto made an observation that 80% of Italy's wealth was owned by 20% of the population. This 80/20 split has been observed in many different areas of life.

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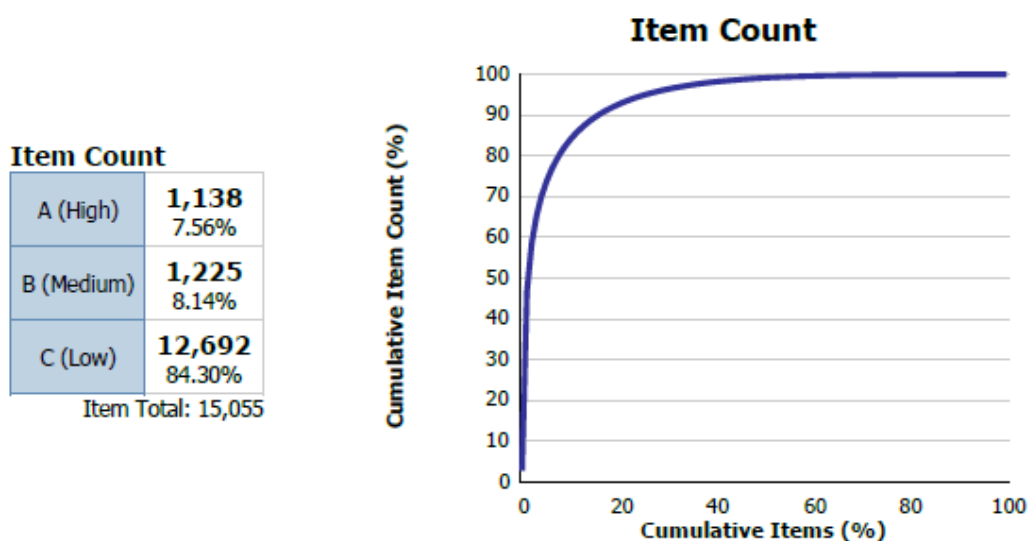
14. ABC analysis is a logical progression from Pareto and applies categories in order to designate management attention. Typically, category 'A' items account for 80% of activity, category 'B' 10% and category 'C' the remaining 10%. This will often approximate to 20% of items in category 'A', 20-30% in category 'B' and the remaining items in category 'C'. The actual values are somewhat arbitrary, but based upon the original Pareto findings a guide for defence is:

- a. Category 'A' items: Top 80% of activity.
- b. Category 'B' items: Next 10% of activity.
- c. Category 'C' items: Remaining 10% of the activity.

15. This information can be readily used to good effect. Identifying that 20% of active NSNs account for 80% of demand events immediately demonstrates where the primary inventory management effort should be placed. This provides the catalyst for optimisation and management techniques.

16. An example of an ABC Pareto analysis and "3 Box Model" is at Figure 23 below. Note how small the 'A' and 'B' categories are. These ABC categories were selected because of the demand frequencies of the data examined; 80% of the demand activity (in terms of Item Count – the quantity of an item demanded) was focused on only 7.56% of items.

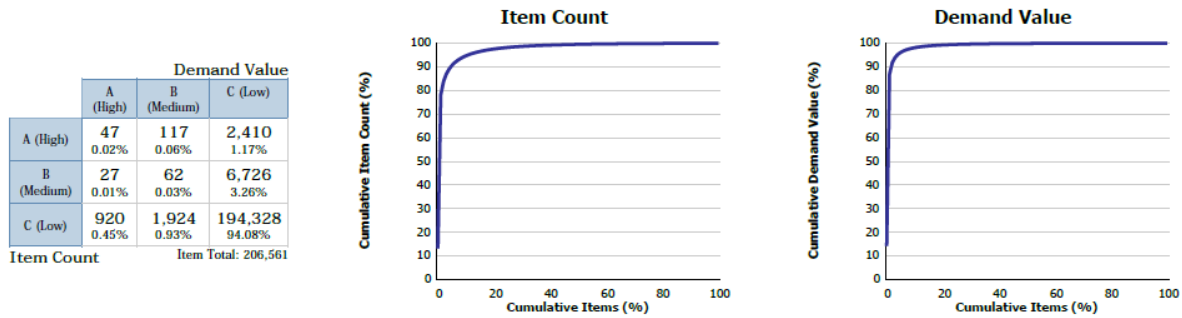
**Figure 23: 3 Box Model Example**



17. A 9 Box Model is a 2 dimensional Pareto style segmentation tool. Figure 24 below, depicts an example of a 9 Box model showing Item Count against Demand Value. A very small minority of items are identified as highly significant against both criteria.

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**Figure 24: 9 Box Model Example**



18. Again segmentation categories are applied to the data and then these are aligned to management strategies. Figure 25 provides an example of management strategies for a procurement model.

**Figure 25: 9 Box Procurement Model**

		Unit Cost		
		A (High)	B (Medium)	C (Low)
Annual Demand	A (High)	Held Centrally / Micro-Manage		Stock with User (Vendor Managed Inventory)
	B (Medium)			Auto Procure
	C (Low)	Make to Order	Held Centrally	Life-time Buy

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**ANNEX A TO CHAPTER 13: ABC PARETO SEGMENTATION PROCESS**

1. The purpose of this Annex is to outline recommended processes for using the EDW Pareto Segmentation Tool in support of the associated policy. Recommended Process flows are at Figure 26 to 31 below.
2. Four typical processes have been outlined below; Monthly, Quarterly, Yearly and Ad-Hoc reviews. In each case, the user should firstly establish the scope and level of granularity of analysis required, a user may wish to analyse a particular Operating Centre, Project Team or selection of Management Codes. Although analysis at DE&S level is possible, due to the large data sets involved, undertaking an exercise of this size will take significantly longer than a typical Project Team's analysis.

**Monthly Reviews**

3. Two ABC Pareto Segmentation analyses are recommended to be performed on a frequent schedule. Report Views with parameters already entered can be created to prevent the need to rebuild the query every month.
  - a. A 3 Box model of your inventory<sup>33</sup> by Demand Count (number of demand events), typically over a 1, 3 or 4 year period. This will identify the most frequently demanded items of your responsibility, and can be used as a guide for prioritisation of workload.
  - b. A 9 Box model by Item Count and Demand Value. This allows identification of those 'fast moving' items (a large quantity of items are demanded), and the value of each demand event<sup>34</sup> and can be used to influence the procurement approach and where most management effort should be applied.
4. The example priorities identified in Figure 27 below are a guide and not absolute. Item significance is subjective and dependant on the objective of the analysis and sort criterion selected. By taking action in a logical prioritised order, management effort should produce results efficiently. Effort within the lower priority segments is not likely to have significant impact to the overall range. For the example Monthly process 9 Box model based on Item Count vs Demand Value<sup>35</sup>:
  - a. **Firstly focus on 'AC' class items.** Over the period of analysis these items have a high issue quantity, but contribute little to overall demand value, ie. the items here are 'fast moving' and 'cheap'. Within appropriate limits, procurement of items in this space should increase item availability without excessive inventory investment. Since consumption has been high for these items, and assuming trends continue, any excess inventory is likely to be consumed in a short period of time.
  - b. **Secondly, 'AA' items.** These items have been issued in high quantity and have demonstrated a high demand value. These items require close management attention; they represent a significant amount of inventory investment and are amongst the most demanded items.

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<sup>33</sup> The scope of "your inventory" is deliberately vague. Users are able to perform analyses against one or more Operating Centres, Project Teams or Management Codes, and should select the scope of inventory which is of interest to them.

<sup>34</sup> Quantity of items demanded multiplied by basic price.

<sup>35</sup> Demand Value is defined as the sum across all demands for an item over the period of analysis, the quantity of items demanded multiplied by the item's Basic Price. For consumable goods, this broadly translates (excluding any price breaks etc) to the money spent on satisfying demands for the period evaluated.

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- c. **Thirdly, 'AB' and 'BA' items.** These items have demonstrated significant contribution to one sort criterion, and moderate contribution to the other.
  - d. **'CA' items.** These items have seen little activity overall, but are associated to a high demand value. This implies that these are higher valued items. Even though demand for these items is low, they require regular review to avoid overinvestment. For items with a short Lead Time, a make / procure to order approach may be justified here.
  - e. **'BB' Items.** Although these items are not classed as highly significant in either sort criteria chosen, they still contribute to a greater extent over the 'BC', 'CB' and 'CC' items. Management effort here is still likely to offer greater return than in the lower segments.
  - f. **'BC' and 'CB' items.** These items are only moderately significant in one criterion, and have low significance in the other.
  - g. **Finally, 'CC' items.** These items have contributed little to either criterion across the period of evaluation. Management effort on items falling in other segments is likely to offer greater return against the objective.
5. Once segments of interest have been identified, a selection of performance metrics can be applied to evaluate the average performance across the segment for the period of analysis. By drilling through down to the NSN detail level, the user can identify which items are having a detrimental effect on the rest of the segment as a whole. Investigation and management effort here should then contribute to improved inventory performance.

### **Quarterly Reviews**

6. A simple quarterly review of stock holdings is possible with the Segmentation Tool. Reviewing stock holdings can be achieved by evaluating either the Stock Value, or Stock Item Count, of the inventory held. The process flow in Figure 28 below, focuses on Stock Value, identifying items with a large value invested, with potential for rationalisation.
7. Two separate approaches are required to analyse potential stock rationalisation options:
- a. **Slow Movers.** Perform an analysis of Stock Value and Item Count to identify those items slow moving items with high stock investment, but have demonstrated a low quantity of demands. Select Stock Value as the first criteria to ensure output is sorted in order of greatest stock investment to least (or alternatively, export to Excel and manipulate offline).
  - b. **Non Movers.** The main Segmentation Tool<sup>36</sup> only performs analysis on 'moving' inventory – those items which have been demanded in the last four years. To view items held on the Base or Forward Inventory Systems without recent demand, access the Non Movers report<sup>37</sup>. Navigate to the desired Project Team or Management Code and drill down to the list of Non-Moving NIINs.

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<sup>36</sup> REP/EDW/0293 ABC Pareto Segmentation

<sup>37</sup> REP/EDW/0317 ABC Pareto Segmentation Non Movers

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8. Once slow or non-moving items with high stock value have been identified, the Inventory Manager should evaluate whether or not the inventory investment is suitable, and investigate the potential for stock rationalisation.

### **Yearly Reviews**

9. By using the Segmentation Tool's performance metrics, a user can compare the performance of key segments of their inventory over time. A user should retrieve a previously saved copy of a segmentation analysis, or re-run the analysis for an earlier time period, and compare the results with those calculated on current data.

10. Naturally, items in a particular segment may not necessarily appear in the same segment in another time period: the demand characteristics of an item will change over time. For example, an item that was slow moving may well experience a surge of activity and be promoted into a higher segment.

11. Comparing the performance of key segments year on year will give an indication of whether the inventory range performance is improving, and may identify areas to target for the upcoming year.

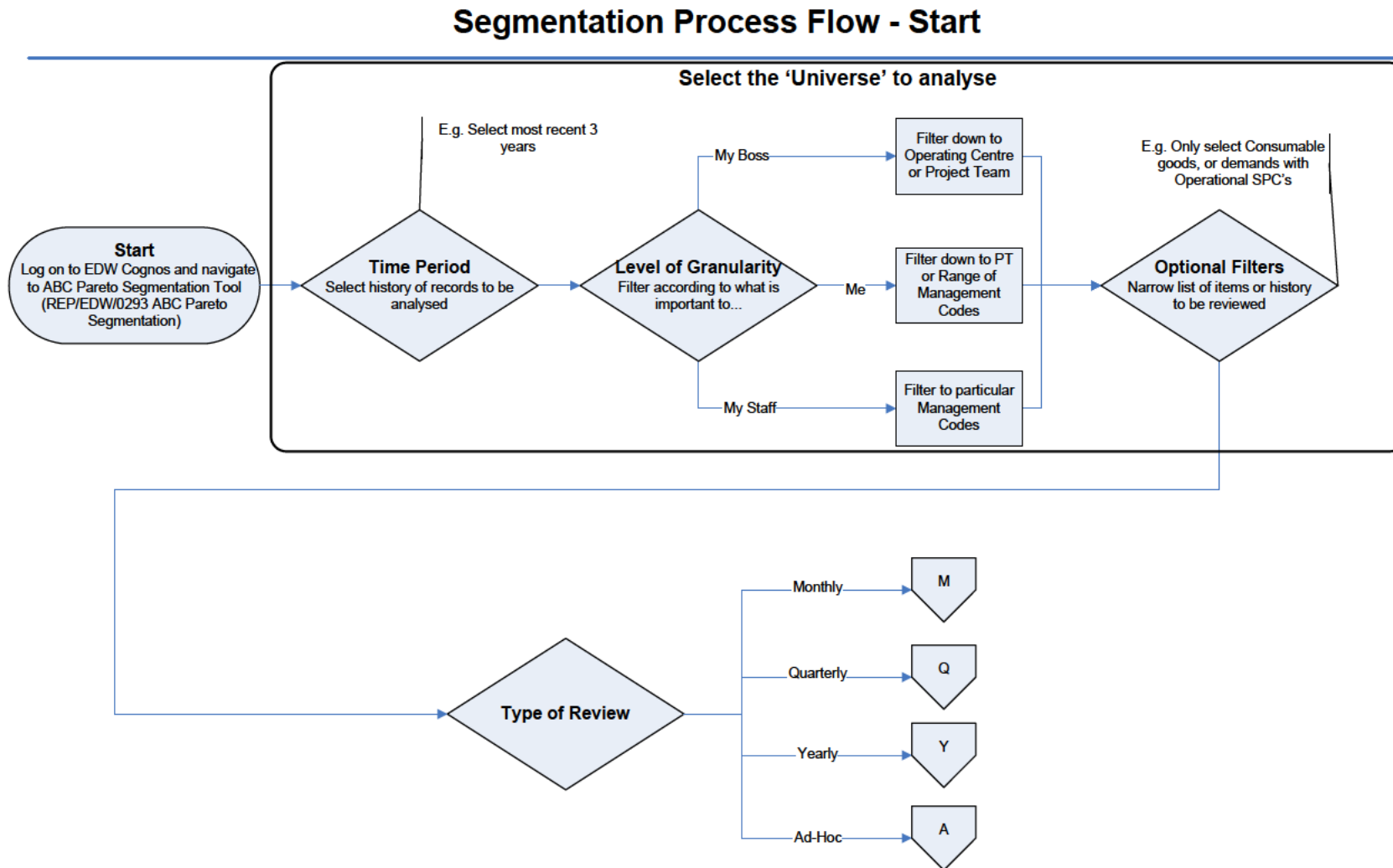
### **Ad-Hoc Reviews**

12. Users are encouraged to develop bespoke analyses over and above those recommended in order to answer questions relevant to their business perspective. Further details on optional filters and parameter entries are available using the in-line help menus, or found in the User Guide hosted on the EDW website. Useful information on Cognos functionality, including creating report views and setting schedules is also included in the User Guide.



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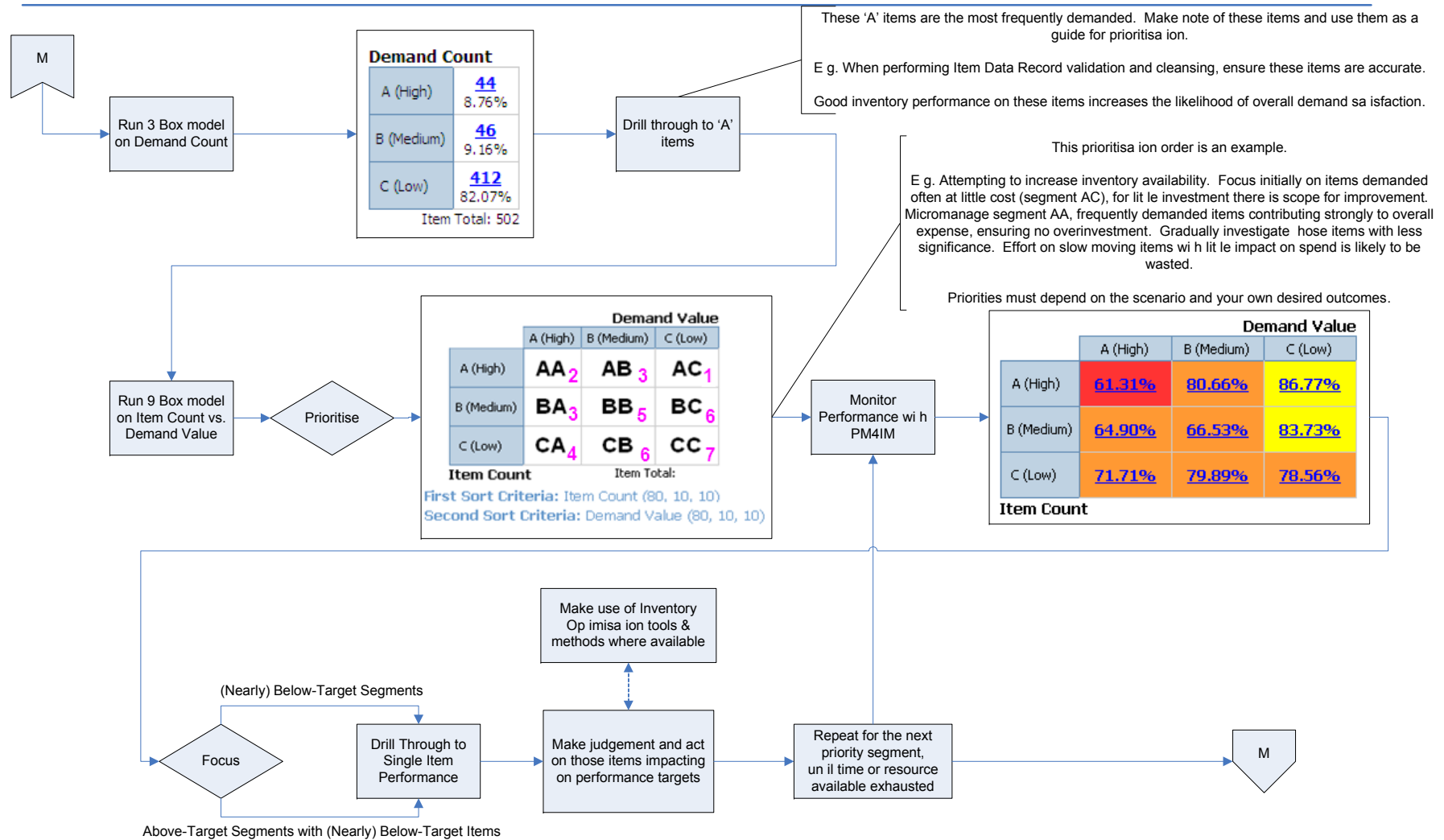
Figure 26: Segmentation Process Flow – Start



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Figure 27: Monthly Review Process

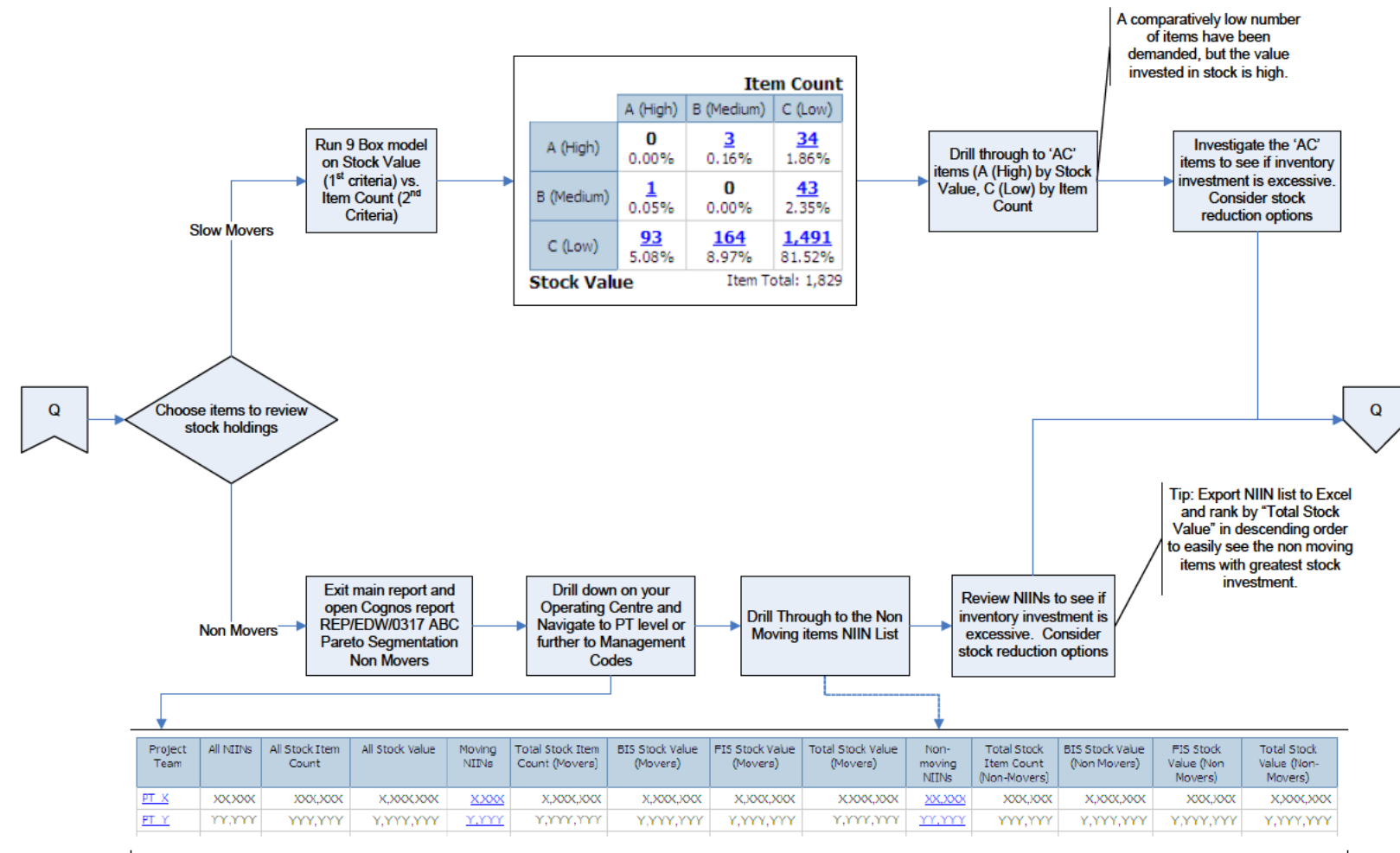
## Monthly Review Process



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Figure 28: Quarterly Review Process

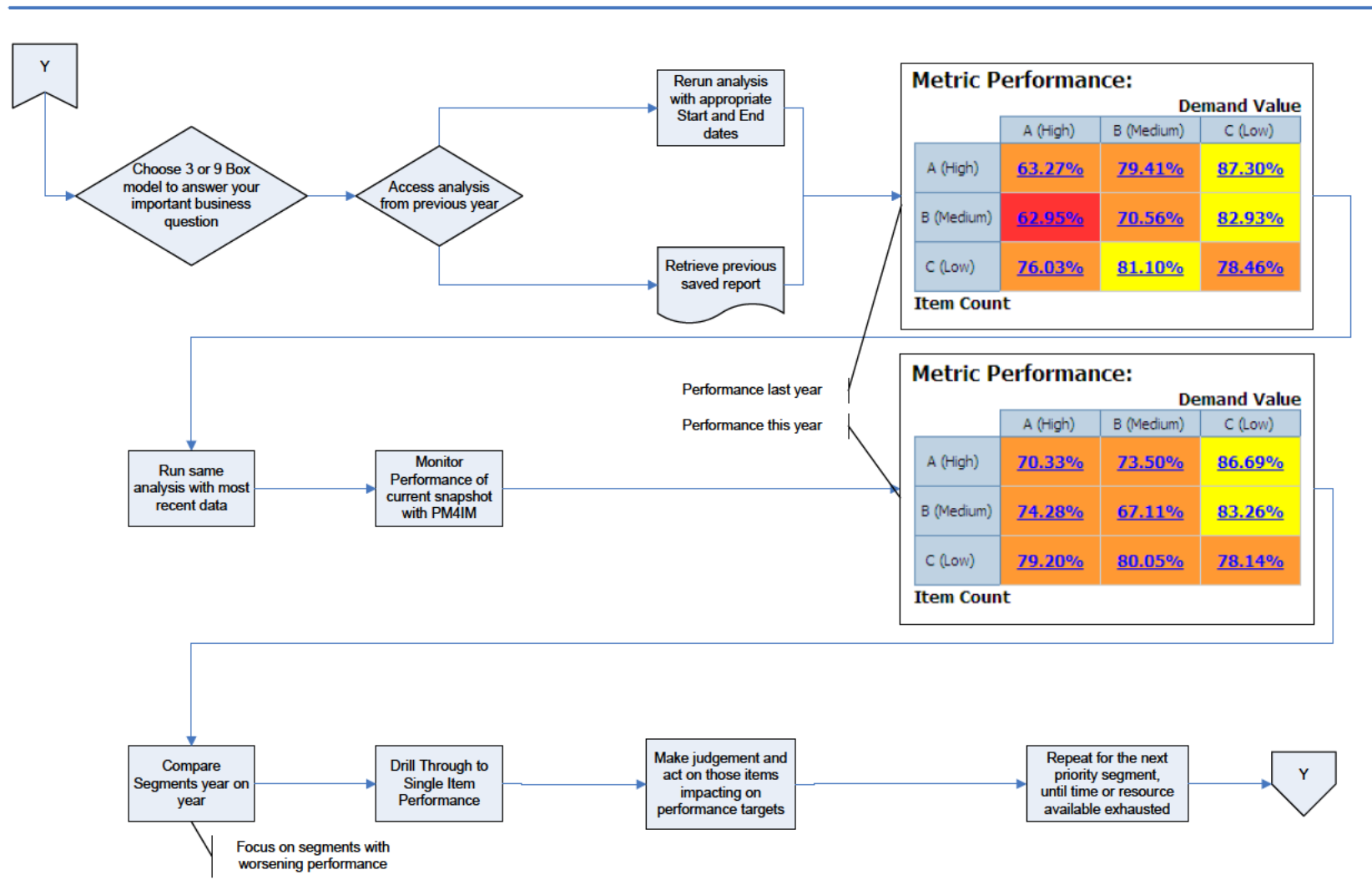
## Quarterly Review Process



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via [www.defencegateway.mod.uk/](http://www.defencegateway.mod.uk/)**

Figure 29: Yearly Review Process

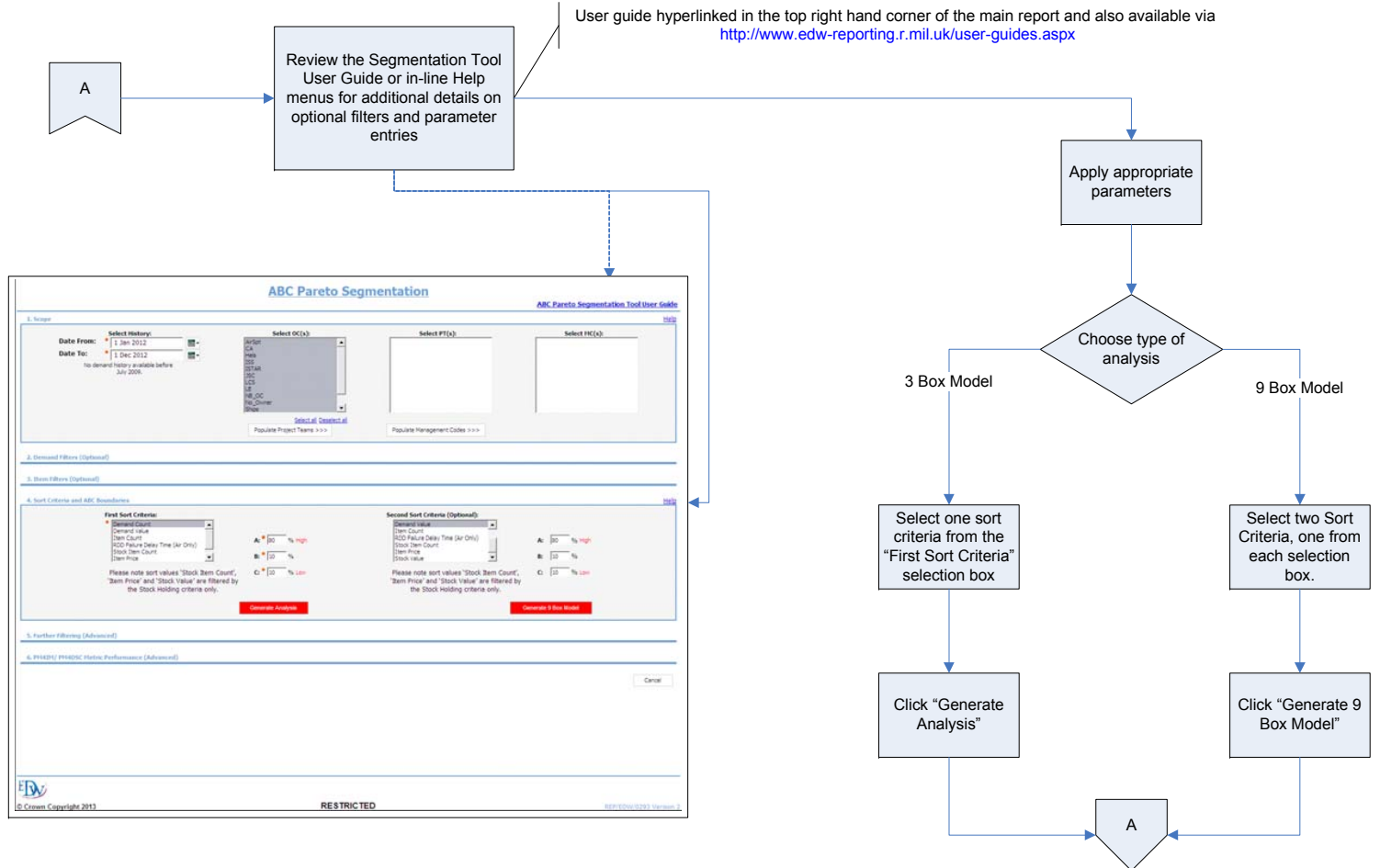
### Yearly Review Process



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Figure 30: Ad-Hoc Review Process

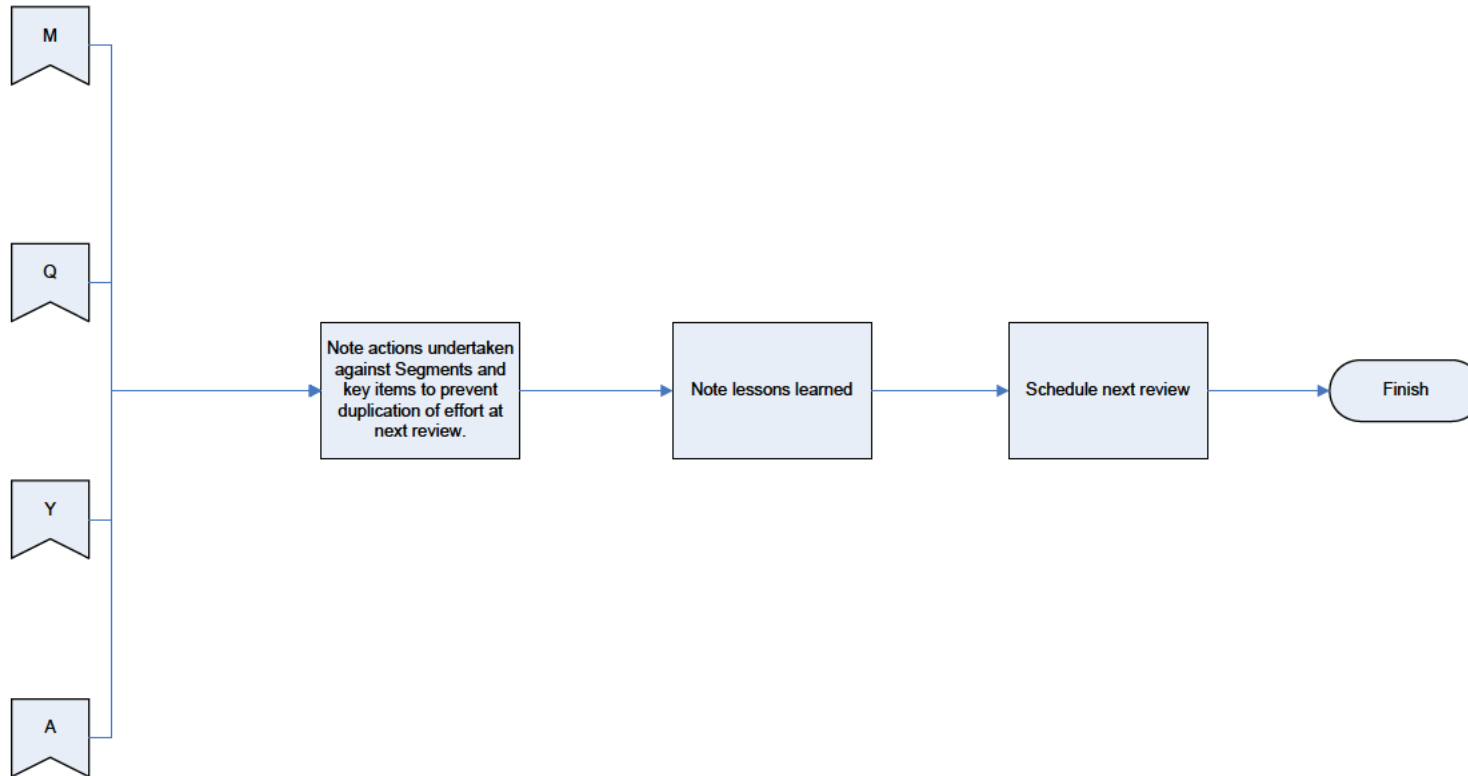
### Ad-Hoc Review Process



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Figure 31: Segmentation Process Flow – End

### Segmentation Process Flow - End



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## CHAPTER 14: INVENTORY VOLUMETRIC DATA

1. **Inventory Volumetric Data.** The future Base Inventory Warehouse Management Service (BIWMS) will hold materiel volumetric data which will provide accurate storage, distribution and costing information to LS, FLCs and PTs. The arrangements for capturing and storing volumetric data are as follows:

a. **Pre BIWMS.** Prior to the introduction of BIWMS R3, IMOC SCP STP will use various methods to capture volumetric data for existing items of inventory and arrange for the information to be recorded on the appropriate LS warehouse Log IS.

b. **Post BIWMS.** It is expected that Release 3 of BIWMS will introduce the ISIS to BIWMS feed of volumetric information from 2016 at the earliest. The volumetric data elements required by BIWMS are detailed in DEFCON 117: Supply of Documentation for NATO Codification processes and this condition should be specified in all contracts for the procurement of spares. This will result in the collection of volumetric data at point of codification through the e-tasking process. Once individual NSN volumetric data has transferred from ISIS to BIWMS, it will be archived in ISIS and BIWMS will become the master, updatable repository for the volumetric data.

2. **Size and Weight Volumetrics.** The required size and weight volumetrics are detailed below, which is an extract from AeroSpace Defence Industries Association of Europe (ASD) S2000M, which also details the format of the data requirements that industry is to provide.

- a. Size of Packaged Unit (SPU).
- b. Size of Unpackaged Unit (SUU).
- c. Weight of Packaged Unit (WPU).
- d. Weight of Unpackaged Unit (WUU).