JSP 886
THE DEFENCE LOGISTIC SUPPORT CHAIN MANUAL

VOLUME 7
INTEGRATED LOGISTIC SUPPORT

PART 1
INTEGRATED LOGISTIC SUPPORT POLICY

VERSION RECORD		
Version Number	**Version Date**	**Version Description**
1.0	31 Jul 08	Initial Issue
2.0	27 Apr 10	Revised to incorporate DEFSTAN 00-600.
2.1	27 May 10	Revised to incorporate LPWG, JTLSSG, SME & Editor comments.
2.2	15 Jul 11	Updated Contact Information.
2.3	14 Nov 12	Introduction of Support Maturity Levels.
2.4	27 Nov 12	Revised to Incorporate SIT Name Change at Chap 1, Para 17 and Removal of Reference to DE&S SI 10.
2.5	21 Feb 14	POC Changed, Guidance Portal Link Changed, JSP reference amended.
2.6	23 May 14	POC Changed in Paragraphs 23,24 and 25.

Contents

Figures

CHAPTER 1: INTEGRATED LOGISTIC SUPPORT POLICY

CONTEXT

1.   This document introduces the principles and concepts underpinning Integrated Logistic Support (ILS) and its application within the Ministry of Defence (MOD). It provides an understanding of the responsibilities and tasks to be undertaken to enable the benefits of ILS to be realised.

2.   ILS is a comprehensive discipline that is applicable to all acquisition activity through life. However, the cost-effective application of ILS requires that there is a balance between benefit and cost.

3.   Research shows that over the whole life cycle of a product, the cost of acquisition is small compared to the cost of support, both financially and in unavailability of assets during operations. Reliability and Maintainability have large implications on the overall cost of ownership. Thus investment during development or production in these areas will be saved many times over the whole life of the product.

4.   DEFSTAN 00-600 is applicable to Acquisition and Support contracts.

POLICY

5.   It is MOD Policy that Integrated Logistic Support (ILS) will be applied to all product acquisition. ILS is a disciplined approach that influences the product design and develops the Support Solution to optimise supportability and Though Life Finance (TLF). It delivers the Initial Support Package and ensures continued optimisation of the Support Solution in light of product modifications and changes in operational use and requirements.

PRECEDENCE AND AUTHORITY

6.   The authority to apply ILS is promulgated in D&S Corporate Governance Portal Index – Support Solutions Management.

MANDATED REQUIREMENTS

7.   There are no legal or safety requirements arising from applying ILS. Project Teams (PTs) are required to demonstrate that they have applied ILS to influence the design of their support solution.

ASSURANCE AND PROCESS

Assurance

8.   ILS assurance[1] is achieved through the appropriate application of ILS principles, and is based on individual projects' interaction and compliance with advice and guidance from the TLS Support Solution Improvement Team (SSIT).

9.   ILS contributes to Support Assurance (SA), which is one of the principal Through Life Investment Assurance pillars. SA is described in JSP 886 Vol 7 Part 3.

---

[1] The emphasis of the Support Improvement Team is on continual engagement throughout the life of a project and facilitating the relationship between the PT and SMEs so that issues can be identified and resolved as early as possible. The Support Improvement Team will analyse the impact of individual projects across environments and wider Defence interests in order to ensure coherency and reduce operational risk. The Support Improvement Team advice is based on the Governing Policies (GPs) contained in the Support Solution Envelope (SSE).

10.   The details for assurance are described within the Support Solutions Envelope (SSE) in the Acquisition Operating Framework (AOF).

Process

11.   ILS is applicable throughout the whole life of a project. The focus changes as the project progresses through the Concept, Assessment, Demonstration, Manufacture, In-Service and Disposal (CADMID) phases of the product life-cycle. Figure 1, below, shows the high level ILS process through CADMID.

12.   To assist the PT in the assessing the support maturity of a project, the life cycle can be divided into nine Support Maturity Levels (SML).

13.   Definitions of the 9 levels are in Volume 7 Part 2 Chapter 2 and suggested success criteria at each is given in Volume 7 Part 8.xx relevant to the support element being assessed.

14.   Lower level ILS processes are shown in individual Documents within JSP 886.

Figure 1: CADMID Cycle
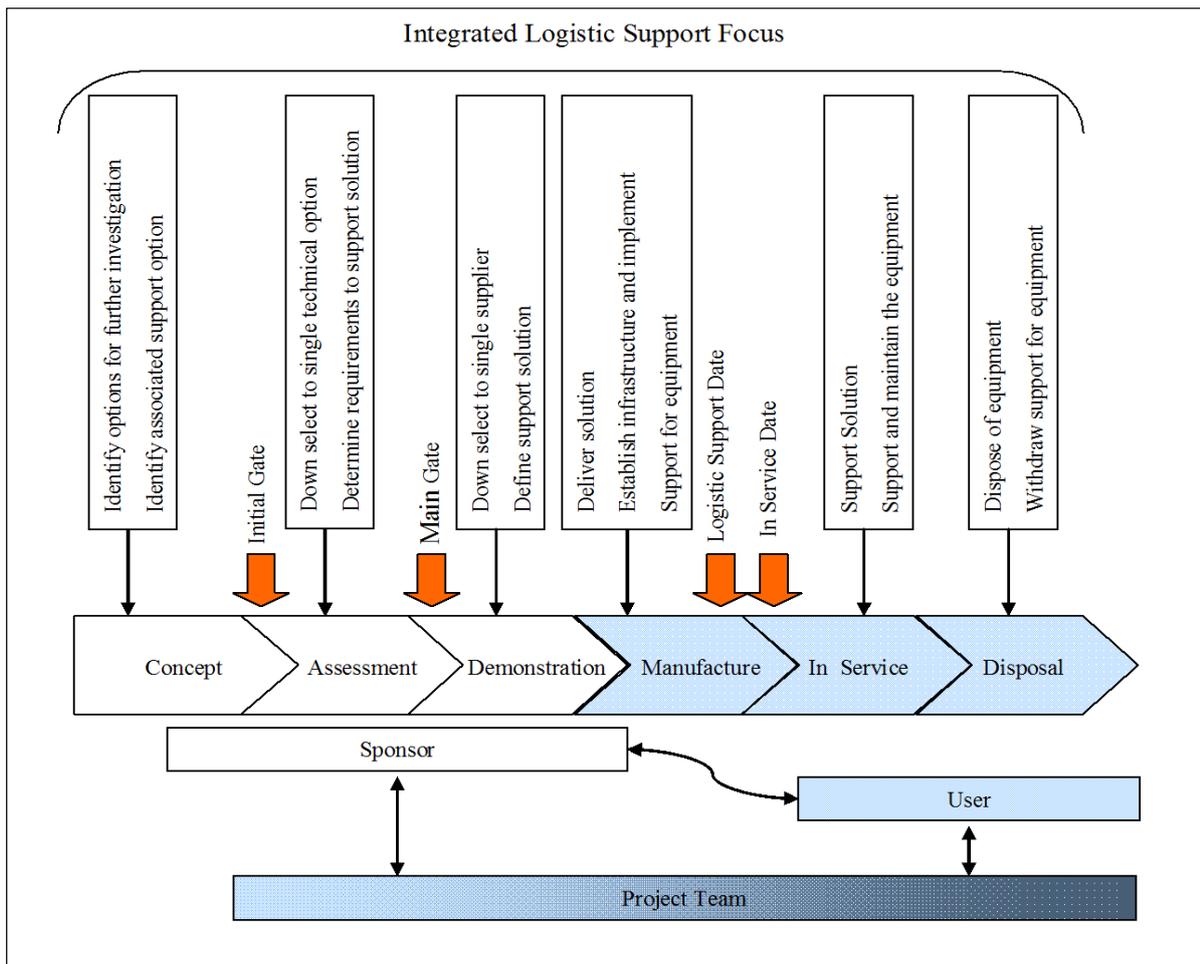
REQUIREMENTS

15.   The Investment Approvals Board (IAB) requires that the Support Strategy for any new project, including Urgent Operational Requirements (UORs), shall be developed and formulated using ILS and included as a mandatory part of each Business Case submission for both Initial and Main Gate Approval.

16.   In Service projects shall make any changes and developments to their support solutions in accordance with ILS processes. In-service, the achieved performance shall be monitored and compared with predictions. In-service management decisions will be made on a TLF basis and any modifications to the product or its support shall employ the structured approach of ILS.

17.   The Project Team Leader is responsible for execution of ILS Policy, aided by their Business Managers, Integrated Logistic Support Managers (ILSMs) and Front Line Commands (FLCs). They are to ensure that they engage with both the Through Life Support (TLS) Support Solution Improvement Team (SSIT) and the Assurance process in the design, development and review of their Support Solution.

KEY PRINCIPLES

18.   ILS is a disciplined approach that influences the product design and develops the Support Solution to optimise supportability and Though Life Finance (TLF). Key principles are:

a.   **Influence on Product Design.** Ensure where appropriate, that product design (including associated packaging), and the use of facilities, services, tools, spares and manpower are optimised to maximise product availability at optimal TLF.

b.   **Design the Support Solution.** Create an integrated Support Solution to optimise TLF. Ensure that the through life use of facilities, services, tools, spares and manpower is optimised to minimise whole life costs. Use of standard and / or common facilities, tools, spares and manpower shall be encouraged where appropriate.

c.   **Deliver the Initial Support Package.** Decide and procure the facilities, services, tools, spares and manpower required to support the product for a given period. Ensure that the physical deliverables of the Support Solution are in position to meet the Logistic Support Date (LSD) requirements. Ensure through life support is in place where appropriate.

d.   **Acquisition of Product.** ILS applies to the acquisition of all product for the MOD including Technology Demonstrator Programmes, major upgrades, software projects, collaborative projects and off-the-shelf procurement.

e.   **Supportability of Product.** ILS will be applied to ensure that product is designed to be supportable, that the necessary support infrastructure is put in place and that TLF is optimised.

f.   **Requirement for ILS.** ILS is still required even when the product selected is already developed, is Commercial Off the Shelf (COTS) or Military Off the Shelf (MOTS), and design decisions cannot be affected, on the grounds of supportability and TLF.

TRAINING AND COMPETENCIES

19.   The ILS functional competences lye within the Logistics functional areas of the DE&S Single Skills Framework. The competencies are designed to enable ILS job performance to be measured and assessed and thereby used to develop training requirements for ILS staff. Training to develop skills in the ILS functional competences has been identified by TLS. The MOD has developed a range of training, and training is also available from Industry.

ASSOCIATED STANDARDS AND GUIDANCE

Standards

20.   **DEFSTAN 00-600.** This document is the current standard for those concerned with contracting for ILS deliverables from Industry[2]. Users should seek advice from TLS Policy Co-ordination for contentious matters.

Guidance

21.   **JSP 886 Volume 7 Part 2: ILS Management.** Provides guidance on ILS and its application.

22.   **Acquisition Operation Framework (AOF).** The Integrated Logistic Support section of the AOF provides an authoritative source of policy and best practice on ILS aspects for all members of the UK MOD and our Industry partners concerned with Defence Acquisition.

23.   **General Advice and Guidance.** Advice and Guidance on the application of ILS is available from:

   a.   Support Chain Policy ILS Subject matter experts.

   b.   Support Solution Improvement Team.

OWNERSHIP AND POINTS OF CONTACT

24.   The ownership of ILS policy lies with ACDS LOG OPS.

25.   The author of this ILS policy is DES IMOC SCP-ILS2

Contact Details For Content Issues:	**Document Editor for Presentational Issues**:
DES IMOC SCP-ILS2	ACDS LOGOPS-Def Log Pol-JSP886
Tel Mil: 9679 Ext 82689	Tel Mil: 9679 Ext 80953
Tel Civ: +44(0) 3067982689	Tel Civ: +44(0) 103679 80953
E-mail: DESIMOCSCP-ILS2@mod.uk	E-mail: ACDSLOGOPS-JSP886ET1C2@mod.uk

---

[2] Contracting for ILS outputs and deliverables can be achieved through the application of Def Stan 00-600. Subject Matter Experts (SMEs) can be contacted for specific policy and guidance on each ILS element.

CHAPTER 2: INTEGRATED LOGISTIC SUPPORT ELEMENTS

1.   ILS addresses a wide range of support processes in an integrated manner. In the ILS methodology these distinct processes are termed ILS Elements. A list of the ILS Elements is at Figure 2. This list may not cover all the support aspects for any given project.

2.   To ensure the cost effective application of ILS, both the scope and depth of these elements need to be tailored to meet the specific requirements of each project. This can mean disregarding some elements, with justification, or adding in supplementary elements.

CURRENT ILS ELEMENTS

Figure 2: ILS Elements

Serial	Description
1	**INTEGRATED LOGISTIC SUPPORT PLANNING** All projects require an Integrated Logistic Support Plan (ILSP) which is a live document that is maintained throughout the project life and will form part of the Support Concept document. It needs to include subordinate plans covering specific project activities and to define all interfaces between the delegated authorities. The ILSP is the MOD's statement of the total ILS Programme for the project. It is the implementation plan for logistic support. It includes the requirements, tasks, interfaces and milestones for the current phase and plans for the succeeding stages. It shall provide all necessary support inputs to other project documents and papers. It will contain supportability goals, support strategy and all associated plans.
2	**MAINTENANCE PLANNING** Maintenance Planning comprises the identification of hardware, software, materiel, facilities, personnel, processes and data needed to enable maintenance services to be competently provided for the product and its support. The process develops and establishes maintenance concepts and requirements, resulting in a detailed maintenance plan. This involves the following business processes: Define repair policy; Determine probable repair tasks; Identify spares, tools, facilities, documentation, techniques and staff required for repair tasks.
3	**SUPPLY SUPPORT** Processing of the Maintenance Planning data to identify the spares to be included in the Technical Documentation. To identify those that need codification. To determine the quantities of spares to be procured. This involves the following business processes: Identification of Items for Codification: Codification; Transfer of Item data to Supply System; Identification of Items for inclusion in Technical Documentation; Cooperate with Technical Documentation to ensure appropriate standards are met; Identification of Items for Initial Provisioning (IP); Iterative determination of range and scale of spares; including appropriate modelling; Screening against existing Defence Inventory to prevent duplication of supply; Procurement of IP and transfer of Contract data to Supply System.
4	**SUPPORT AND TEST EQUIPMENT (S&TE)** The equipment (mobile and fixed) required to support the operation and maintenance of a product. This includes associated multi-use end items, maintenance equipment, tools, metrology and calibration test equipment and automatic test equipment.
5	**FACILITIES AND INFRASTRUCTURE** The entire physical infrastructure and services required to integrate, operate and maintain a product.

6	**TRAINING AND TRAINING EQUIPMENT** Trained and qualified operators and maintainers are required to support a product in service. Requirements for training must be defined and the current skill levels and qualifications of Service support personnel need to be specified. Training needs of support personnel and data for Training Needs Analysis (TNA) will be developed through the SA process.

7	**TECHNICAL INFORMATION**
	The information necessary to operate, maintain, repair, support and dispose of a product throughout its life. Identify the standard(s) to be used for the supply of data. It includes paper, fiche, drawings, Computer Aided Design (CAD) data, electronic text, non-textual data e.g. graphics, video, etc. for:
	
	    Illustrated Parts Lists / Catalogues (IPL / IPC);
	    System description and operation;
	    System servicing and maintenance;
	    Diagnostic support;
	    Repair information;
	    Supporting flow, system and wiring diagrams;
	    Software documentation;
	    Logistic Support Analysis reports;
	    Training data including documents, video and synthetic training data;

8	**PACKAGING, HANDLING, STORAGE AND TRANSPORTATION (PHS&T)** The resources, procedures, design considerations and methods necessary to ensure that all product and support items are packaged, handled, stored and transported properly and in conformance with appropriate legislation, particularly for hazardous materials. This includes environmental limitations, product preservation requirements for short and long term storage, the handling of items during repair tasks and transport requirements.
9	**HUMAN FACTORS INTEGRATION** Specific disciplines which evaluate Manpower and Human Factor considerations, across both operational and support areas of a product. The overall objective is to ensure that during product definition and acquisition, full account is taken of the capabilities and limitations of the military and civilian personnel required to operate and maintain the product or facility in-service.
10	**RELIABILITY AND MAINTAINABILITY** Reliability & Maintainability (R&M) are inherent properties which must be designed and built into a system during Development and Manufacture, as high levels of availability are to be achieved In-service. The requirement to use Reliability Centred Maintenance (RCM) to define the maintenance regime must be established in the Assessment phase. During Development, RCM must be included in the Invitation To Tender (ITT) and procurement contracts. Subsequently, RCM shall be used to revise maintenance programmes, in the light of experience and developments during the In-service phase.
11	**DISPOSAL AND TERMINATION** The efficient, effective and safe disposal of a product, together with its spares and consumables. The disposal of a product must be considered at the Design phase. At this stage, the reduction of the content of hazardous and potentially hazardous materials can be considered. The decision to dispose of a capability or part of a capability and therefore a product is made by the appropriate Equipment Capability (EC) branch; this authority may be delegated to a PT Leader under certain circumstances. Disposal must consider the possibilities of re-deployment, sale, waste disposal, the environmental impacts and the possible disposal of recovered material by sale.

ELEMENTS ASSOCIATED WITH ILS

3.   In addition to the ILS elements there are other disciplines associated with ILS and are listed in Figure 3, below. These will need to be considered when developing a support solution and detailed in the Supportability Assurance Plan.

Figure 3: Elements Associated with ILS

Serial	Description
1	**SYSTEM DESIGN INFLUENCE** The analysis of mission and support systems to ensure that product supportability is optimised and whole life costs reduced.

2	**QUALITY MANAGEMENT**
	Quality Management (QM) aims to establish and improve organisational performance at both the PT and DE&S corporate level and act as an enabler to:
	    Increasing confidence that products procured will satisfy Sponsor / User requirements;
	    Identification of improvement opportunities and determination of priorities;
	    Ensuring the availability of competent personnel.

3	**ASSET MANAGEMENT**
	In service, Asset Management (AM) is the effective allocation of assets, configured to task, supported through the planning and implementation of engineering support. In summary AM covers the following functions:
	    All aspects of the Maintenance, Repair, Modification and Overhaul (MRMO) of the product;
	    The management of product configuration;
	    The management of product in units (ownership, usage and tasking);
	    The management & tracking of repairable product in repair loops.

4	**RISK MANAGEMENT** Risk Management may be defined as the systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, planning and managing Risks in a way that will enable organisations to minimise threats and maximise opportunities in a cost-effective way. For the purpose of this guide a Risk is defined as the combination of the Probability of an Event occurring and its Consequences on objectives.
5	**SAFETY MANAGEMENT** MOD Policy requires those procuring, supporting and operating product to manage safety performance and reduce risks to tolerable and As Low As Reasonably Practicable (ALARP) levels in every lifecycle phase. Improving the safety of product helps the MOD reduce accidents, spend public money more effectively and comply with policy and legislation. A documented Safety Management System is the primary mechanism used to achieve these aims, through the production of a Safety Case and supervised by a Project Safety Committee.
6	**COMMERCIAL AND CONTRACT MANAGEMENT** Contracts are placed by commercial officers throughout MOD. Negotiating contracts can be a complex business because they regulate the relationship between MOD and its suppliers. If the contract is not right, the relationship will not be right and the quality of the supply to MOD will suffer.
7	**COMPUTER SUPPORT AND SOFTWARE SUPPORT** The facilities, hardware, software and manpower needed to operate and support computer systems.

8	**IN-SERVICE MONITORING OF LOGISTIC PERFORMANCE**
	The gathering of Reliability, Maintainability and Support data realised in-service, which must be recorded and compared with predicted data. The comparison of anticipated and actual performance and in-service costs permits decisions to be made which may lead to changes in the support strategy, to manage TLF by improving the design and/or supportability characteristics as appropriate.
	The comparison of actual R&M data with the prediction shall be undertaken on a regular basis to identify:
	    Changes to spares policy.
	    Changes to maintenance philosophy.
	    Changes to logistic decisions.
	    Requirement for design changes.
	Additionally, the monitoring of trends will allow problems to be detected and eliminated before they become a major issue.

9	**LOGISTIC INFORMATION MANAGEMENT** Everybody involved in Defence Logistics needs information to do their job, whether they are serving in the front line, in the Supply Chain, the base, the office or the factory. They need to be able to get at this information quickly and easily, no matter where or when it was created and when they get it, it must provide a single, accurate view of the truth. In order to handle this information they need information technology – hardware, software, data structures – that is reliable and fit for purpose. AD Def Log Info is responsible for the formulation and enforcement of underpinning Logistic Information Management policy; reference KSA 4.
10	**CONFIGURATION MANAGEMENT** CM applied over the life cycle of a project provides control and visibility of the product's specification and its functional and physical attributes; it provides verifiable evidence that the product is capable of meeting with requirements and is identified in sufficient detail to aid supportability throughout the life cycle.
11	**OBSOLESCENCE MANAGEMENT** The process conducted to ensure that product obsolescence is managed throughout the life of a product. Obsolescence affects all product, software, tools, processes, support product, standards and specifications. It impacts upon all stages of the life of the product. It is inevitable, may be expensive and cannot be ignored, but its impact and cost can be minimised by forethought and careful planning. The objective of obsolescence management is to ensure that obsolescence is managed as an integral part of design, development, production and in-service support in order to minimise its cost and impact throughout the product life cycle.

CHAPTER 3: INTEGRATED LOGISTIC SUPPORT STRUCTURE

1.   The ILS methodology defines a structured approach to ensure that all necessary support resources are identified, analysed, optimised and are consistent with each other, the proposed product design and the existing, or proposed, support environment.

TOOLS AND TECHNIQUES

2.   The principle tools of ILS are:

      a.   Supportability Analysis (SA).

      b.   Failure Modes Effects and Criticality Analysis (FMECA).

      c.   Maintenance Task Analysis:

            (1)   Reliability Centred Maintenance (RCM); including Condition Based Monitoring (CBM).

            (2)   Level of Repair Analysis (LORA).

Supportability Analysis (SA)

3.   SA is a structured method of analysing the support implications of items of a product as they are being developed, with the aim of identifying features of the design that could result in excessive expense In-Service. Once identified, these areas can be the subject of trade-offs to revise the design in order to reduce later costs. SA helps identify the optimum support system resource requirements for the whole life of that system.

4.   SA consists of fifteen activities divided into five distinct groups. These activities are identified in DEFSTAN 00-600 and described in JSP 886 Volume 7 Part 3: Supportability Analysis. The activities are summarised below:

      a.   **Programme Planning and Control.** These activities concentrate on planning the most cost-effective way of applying the analysis. They determine what activities will be performed, when, by whom and on which product.

      b.   **Mission and Support Systems Definition.** These activities describe the SA `Front End' analysis processes that are appropriate to the Assessment and early part of the Demonstration stages. They are used to identify areas where there could be benefit in modifying the design, to aid the supportability of the product by identifying and consolidating all of the findings in a report. The activities cover:

            (1)   The way in which the product is going to be used and supported.

            (2)   Opportunities for Standardisation.

            (3)   Existing and potential cost drivers.

            (4)   The applicability of new technology.

      c.   **Preparation and Evaluation of Alternatives.** These activities identify any detailed trade-offs that can be performed once the design is more defined and also

different ways of supporting the product. They are generally performed later in the Assessment stage, or early in the Demonstration stage.

d.   **Determination of Logistic Support Resource Requirements.** These activities identify in full the support requirements of the product and ensure that it will continue to be supportable throughout its life. They can be the most resource intensive to complete and must be initiated as early as possible, but cannot be completed until the design has been finalised. Consideration must be taken of the potential lead time to effect the support requirements.

e.   **Supportability Assessment.** These activities involve a review of the SA to determine whether it achieved its objectives and where lessons can be learnt. They also cover the analysis of supportability data as it becomes available from standard supply, maintenance and readiness-reporting systems.

Failure Modes Effects and Criticality Analysis (FMECA)

5.   A Failure Modes Effects and Criticality Analysis (FMECA) shall be performed on the product in time to influence design. The aim is to maximise availability, minimise maintenance requirements and thereby TLF; there is trade off between preventing failure and increasing TLF. FMECA indicates that potential failures may occur that either:

a.   Can be eliminated or reduced by redesign.

b.   Can not be mitigated but the maintenance load can be reduced by redesign.

c.   Can not be removed through re-design but can be avoided or reduced through preventative maintenance.

d.   Can not or need not be mitigated and therefore can be allowed to occur, with subsequent rectification through corrective maintenance.

6.   FMECA is a means of recording and determining:

a.   What functions the product is required to perform.

b.   How these functions could fail.

c.   What could cause these failures.

d.   What effects these failures would have on the product.

e.   The criticality of these failures.

Reliability Centred Maintenance (RCM)

7.   Reliability Centred Maintenance (RCM) Analysis is performed to assess the most cost effective maintenance methods. Combined analysis of RCM and FMECA avoids duplication of effort and potential inconsistency of data.

Level of Repair Analysis (LORA)

8.   Level of Repair Analysis (LORA) is the process of determining the most suitable maintenance level for repairing items of a product. There are two types of LORA:

    a.   Economic LORA, which is only used where cost of repair is the only variable.

    b.   Non-economic LORA is used wherever there are overriding factors affecting the repair location such as existing policy, accessibility, available skills and product size.

INTEGRATED LOGISTIC SUPPORT TAILORING

General

9.   Tailoring is the act of identifying the ILS Requirements, their scope and depth of application that will have the greatest effect on improving the supportability of the product through life.

10.   The Integrated Logistic Support Manager (ILSM) must consider how the Contractor will be expected to conduct the activities to meet the contracted requirements and how the MOD will monitor them within the project timescale. This tailoring may have to be conducted several times; the occasions will include:

    a.   Before Initial Gate business case submission to establish project resource requirements.

    b.   Before Main Gate business case submission to confirm project resource requirements.

    c.   Whilst preparing the Invitation to Tender (ITT) to indicate the Manufacturer's ILSM's requirements to the bidders.

    d.   During contract negotiations or immediately after contract award; to match the contractor's proposals to project resources.

11.   The ILS management techniques, levels of monitoring and audits, project organisation and programme schedule will be recorded in the ILS Plan.

Tailoring for Project Type

12.   Although every Project is different, they can be split into two basic categories dependant on the amount of design freedom:

    a.   **Development Items (DI).** Where the opportunity for design freedom exists, SA tasks will initially be used to identify cost drivers and potential design changes for supportability. Once the design has been fixed the SA tasks must concentrate on identifying the support resources required.

    b.   **Non-Development Items (NDIs).** These include items that are COTS or MOTS that, by their nature, have little scope for design influence. The emphasis will, therefore, be on tasks that identify the support resources required. If analysis was performed during the design period, the results can be studied for evidence of supportability trade-offs and design improvements to aid the product selection process.