

DEP SPECIFICATION

SPARE PARTS

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DESIGN AND ENGINEERING PRACTICE



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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the identification, selection, purchase and setting of stock levels for spare parts in new projects, modifications and single equipment orders. This DEP defines the responsibilities of the Manufacturer/Supplier, Contractor and the Principal.

This DEP defines the following categories for spare parts, and addresses requirements for each category:

- Insurance Spares (3)
- Commissioning Spares (4)
- Initial Operating Spares (5)
- Operating Spares (6)
- Other Spares (7)

This is a revision of the DEP of the same number dated September 2002; see (1.5) regarding the changes.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them. Any authorised access to DEPs does not for that reason constitute an authorisation to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to oil and gas production, gas handling, oil refining, chemical processing, gasification, distribution and supply/marketing. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases, the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

1.3.2 Specific definitions and abbreviations

Term	Definition
BoM	Bill Of Materials – a complete, formally structured list of components representing the spare parts listings for a piece of equipment.
EFA	Enterprise Framework Agreement – an agreement between the Principal and a Manufacturer/Supplier, outlining an agreed set of legal and commercial terms which the Principal-contracting entities can then use to call off goods or services. The only variations are to reflect local legal or fiscal requirements, or a specific JV requirement.
Equipment	A physical object designed to perform a specific function.
E-SPiR	Electronic – Spare Parts and Interchangeability Record. An application to support the Spare Parts identification process and workflow. For details, see www.e-spir.com .
FA	Framework Agreement – an agreement similar to an Enterprise Framework Agreement but covering commodities that are specific in nature to one business (e.g., Oil Country Tubular Goods).
Goods	Materials or equipment, and any part or component thereof incorporated or to be incorporated therein.
ITT	Invitation To Tender
MESC	Material and Equipment Standards and Codes. A materials and products catalogue designed to describe commodities (primarily piping, fittings and flanges) in a standardised fashion to allow the efficient specification and procurement of these items.
Penalty Cost	The total cost per day of not having the equipment running due to waiting for spare parts.
PO	Purchase Order
RAM Study	Reliability and Availability Model Study
RFQ	Request for Quotation
Spare part	A piece of material, identical to the original, which can be used to replace a part of equipment during its economic life-cycle, subject to degradation. For definitions of different spare parts categories, see (2.2).
SPEP	Shell Pre-Engineered Package
TAG	Tags are created to decompose a "high level" Process Unit function into more granular "sub-functions". Tags are assigned a unique project identifier according to the Principal's Tagging Specification.
TAMAP	Technically Approved Manufacturers and Products

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section number is shown in brackets. Other documents referenced by this DEP are listed in (8).

1.5 SUMMARY OF MAIN CHANGES

This DEP is a revision of the DEP of the same number dated September 2002. This is a major rewrite; the following are the main, non-editorial changes.

Old section	New section	Change
3.1	2.4	Updated to reference Shell initiatives to improve standardization (e.g., Framework Agreements, SPEPs and TAMAP).
4	N/A	Detailed sections covering use of E-SPIR removed for inclusion in E-SPIR manual.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be sent to the Administrator at standards@shell.com, using the DEP Feedback Form. The DEP Feedback Form can be found on the main page of "DEPs on the Web", available through the Global Technical Standards web portal <http://www.shell.com/standards> and on the main page of the DEPs DVD-ROM.

2. GENERAL

2.1 OBJECTIVES

The objective of spare parts management in projects is:

- a) To ensure standardization of Goods chosen in such a manner that the variety of types is restricted as far as possible.
- b) To identify duplicate spare parts; enabling initial procurement to be reduced, optimization of the stock holding, and the promotion of standardization.
- c) To ensure availability of sufficient spare parts during the commissioning and the operations phases to prevent project delays and loss of production.
- d) To avoid surplus procurement of spare parts.
- e) To optimise procurement timing to avoid the need for rush orders.
- f) To ensure spare parts are suitably packaged and preserved to be fit-for-use in the required commissioning and operating timescale.
- g) To collect quality data about spare parts and the equipment they belong to and to load it into the Operating Units Materials Management System prior to start-up, enabling a smooth transition to operations.

To achieve these objectives this DEP describes:

- Definitions of different categories of spare parts and information to support their identification.
- The spare parts identification process, deliverables and roles and responsibilities per category of spare parts.

Application of this DEP will optimize the quantity of spare parts, and hence reduce capital and operating expenditure, as well as delivering considerable savings in procurement and logistics operations after completion of the project.

2.2 SPARE PART CATEGORIES

The following categories shall be used to distinguish between different types of Spare Parts:

- Insurance Spares (3)
- Commissioning Spares (4)
- Initial Operating Spares (5)
- Operating Spares (6)
- Other Spares (7)

Subsequent sections of this DEP define these categories and the different processes expected to be followed to identify, select and procure them.

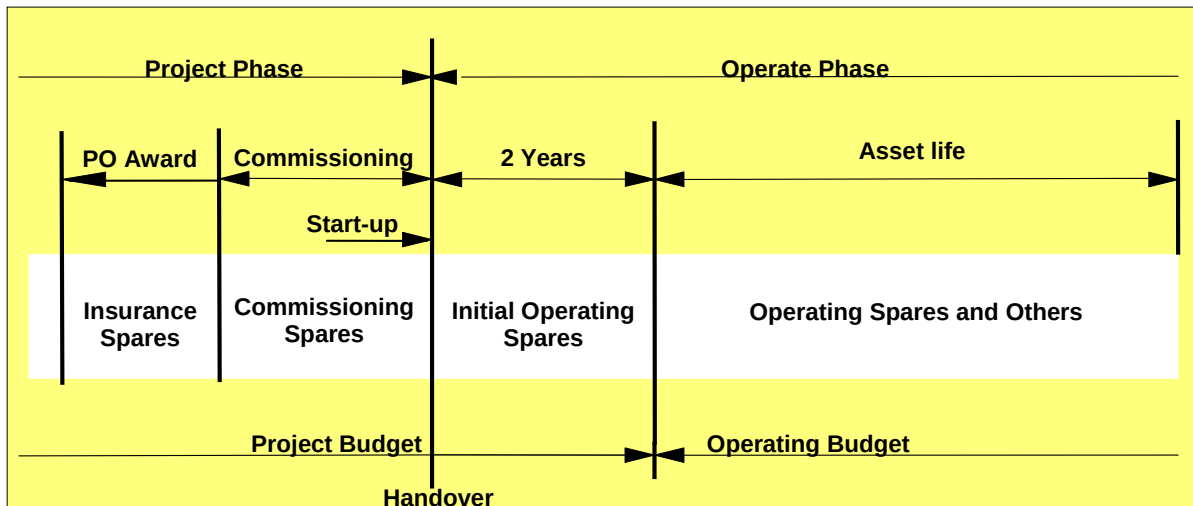


Figure 1 Overview of Spare Part Categories

Note: All categories of spares are expected to be handed over on one spare parts review form.

Typically, Initial Operating Spares should be procured as part of the Project Budget. The dotted line is shown on the diagram as in some circumstances Initial Operating Spares may be procured by the Operating Unit (OU) as part of the Operating Budget.

2.3 GOVERNANCE

This DEP specifies the mandatory requirements for spare parts management and may be supplemented with additional requirements by the Principal.

The Contractor shall be responsible for all or part of the requirements and processes described in this DEP.

The Contractor shall demonstrate that it has an organization in place to deliver the requirements of this DEP, including the appointment of a single Spare Parts Focal Point for all matters concerning spare parts including ordering (2.4.2).

The Principal shall develop a Spare Parts Strategy for all projects with a Capital Value above 100M USD.

The division of responsibilities between the Principal and the Contractors, for all or part of the requirements and processes described in this DEP, shall be clearly defined for each activity of the spare parts process including requisitioning, cost control, expediting, spare parts review, selection, coding, purchasing, labelling, receipt, storage and handling of surplus.

It shall be agreed in advance who is responsible for which category of spare parts (Insurance, Commissioning and Initial). In particular, the policies and responsibilities for the selection and final recommendation of ordered quantities of Insurance and Initial spare parts should be carefully reviewed and agreed. Normally, final responsibility should rest with the Principal. The basis on which the ordered quantities will be defined should be checked against the commissioning and maintenance practices of the Principal. Contractor-purchased spare parts should be checked against the inventories of the Principal (where applicable).

2.4 ROLES AND RESPONSIBILITIES

2.4.1 General

This section describes a typical allocation of roles and responsibilities for a Large Capital Project (over 100M USD) with an EPC Contractor.

2.4.2 Contractor Spare Parts Focal Point

The Contractor shall:

- a) ensure the appropriate spare parts clauses and specifications are included in the Contracts and Purchase Orders issued by the Contractor (2.5.5).
- b) technically verify that the spare parts recommendation matches the equipment supplied (correct models, equipment is actually fitted, etc.) including QA requirements and acceptance criteria.
- c) make recommendations regarding design, repair intervals and vital components, particularly for vital equipment (2.5.14) and Insurance spare parts (3).
- d) coordinate the review of Commissioning Spares with Contractor Commissioning Engineers and submit the recommendation to the Principal for approval (4.2.1).
- e) ensure that the Manufacturer/Supplier's spare parts recommendations and documents, including E-SPIRs, comply with the specifications, are received on time, and are distributed and actioned (2.5.13).
- f) liaise with the equipment Manufacturers/Suppliers to assure a robust preservation plan is in place, which includes required storage climate (indoor, outdoor, or humidity control), packaging, and any required routine verification.
- g) identify surplus materials and spare parts after commissioning, and ensure all unused spare parts are offered to the Principal for stocking after acceptance and review, or any surplus spare parts are disposed of .

2.4.3 Principal spare parts co-ordinator

The Principal's Spare Parts Co-ordinator should:

- a) establish and implement systems and procedures for the reviewing and progressing of all spare parts schedules to ensure availability in time for commissioning.
- b) review Goods chosen to identify opportunities for standardisation.
- c) refine cost estimates and monitor costs for all project spare parts activities.
- d) liaise closely with the Principal's project, maintenance and procurement staff to ensure that project related spare parts are purchased on time and within budget.
- e) ensure that the Contractor's spare parts recommendations and documents, including E-SPIRs, comply with the specifications (in liaison with the Standardiser and Maintenance Focal Point), and that they are received on time, distributed and actioned.
- f) ensure that proper action is taken on surplus materials and spare parts.
- g) review the responsibilities of the Contractor in relation to all spare parts activities.
- h) review spare parts schedules, co-ordinate technical responses, and follow up on the specification and purchase of Commissioning and Insurance spare parts.
- i) co-ordinate the review, selection and purchase of Commissioning and Initial spare parts, ensuring their availability at the time of commissioning.
- j) locate and check Commissioning spare parts in relation to main equipment.

2.5 KEY PRINCIPLES

2.5.1 General

The Contractor shall not subcontract the supply of spares without the prior written consent of the Principal. Any such permitted assignment or subcontracting shall not relieve the Contractor of its obligations under the Contract.