MANUAL

CAPITAL PROJECT CODING SYSTEM

DEP 40.10.01.11-Gen.

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DESIGN AND ENGINEERING PRACTICE

PREFACE

DEP (Design and Engineering Practice) publications reflect the views, at the time of publication, of:

Shell International Oil Products B.V. (SIOP)
and
Shell International Exploration and Production B.V. (SIEP)
and
Shell International Chemicals B.V. (SIC)

The Hague, The Netherlands,

and other Service Companies.

They are based on the experience acquired during their involvement with the design, construction, operation and maintenance of processing units and facilities, and they are supplemented with the experience of Group Operating companies. Where appropriate they are based on, or reference is made to, national and international standards and codes of practice.

The objective is to set the recommended standard for good design and engineering practice applied by Group companies operating an oil refinery, gas handling installation, chemical plant, oil and gas production facility, or any other such facility, and thereby to achieve maximum technical and economic benefit from standardization.

The information set forth in these publications is provided to users for their consideration and decision to implement. This is of particular importance where DEPs may not cover every requirement or diversity of condition at each locality. The system of DEPs is expected to be sufficiently flexible to allow individual operating companies to adapt the information set forth in DEPs to their own environment and requirements.

When Contractors or Manufacturers/Suppliers use DEPs they shall be solely responsible for the quality of work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will expect them to follow those design and engineering practices which will achieve the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own responsibility, consult the Principal or its technical advisor.

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1) Operating companies having a Service Agreement with SIOP, SIEP, SIC or other Service Company. The use of DEPs by these Operating companies is subject in all respects to the terms and conditions of the relevant Service Agreement.

2) Other parties who are authorized to use DEPs subject to appropriate contractual arrangements.

3) Contractors/subcontractors and Manufacturers/Suppliers under a contract with users referred to under 1) or 2) which requires that tenders for projects, materials supplied or - generally - work performed on behalf of the said users comply with the relevant standards.

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All administrative queries should be directed to the DEP Administrator in SIOP.

NOTE: In addition to DEP publications there are Standard Specifications and Draft DEPs for Development (DDDs). DDDs generally introduce new procedures or techniques that will probably need updating as further experience develops during their use. The above requirements for distribution and use of DEPs are also applicable to Standard Specifications and DDDs. Standard Specifications and DDDs will gradually be replaced by DEPs.

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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the coding system to be used in the administration of capital projects.

This is a revision of the DEP of the same number dated April 1983.

1.2 DISTRIBUTION, APPLICABILITY AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by SIOP and SIEP, the distribution of this DEP is confined to companies forming part of the Royal Dutch/Shell Group or managed by a Group company, and to Contractors nominated by them (i.e. the distribution code is "C", as defined in DEP 00.00.05.05-Gen.).

This DEP is intended for use in oil refineries, chemical plants, gas plants and, where applicable, exploration and production facilities and supply/marketing installations.

If national and/or local regulations exist in which some of the requirements may 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 as regards 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 with the object of obtaining agreement to follow this document as closely as possible.

1.3 DEFINITIONS

The **Contractor** is the party which 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 which manufactures or supplies the equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party which initiates the project and ultimately pays for its design and construction. The Principal will generally specify the technical requirements. The Principal may also include an agent or consultant, authorized to act for and on behalf of the Principal.

The word **shall** indicates a requirement.

The word **should** indicates a recommendation.

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 (7).

2. CODING SYSTEM

The system is applied for the following purposes:

Project identification (Section 3).

Coding of project and contract documents and drawings (Section 4).

Numbering of requisitions and indents for project materials procurement (Section 5).

Project cost allocation and cost analysis (Section 6).

The basis of the coding system is a project number and a group code number. The project number indicates the project, its location and the budget year.

The group code number categorizes project elements, and is used to refer materials, drawings, activities, cost centres, etc., to those project elements, e.g.

group 08 - Process flow schemes
group 11 - Site development (supply and construction)
group 19 - Concrete foundations (supply and construction)
group 22 - Vessels (supply)
group 29 - Pumps and compressors, including drives and accessories (supply)
group 62 - Offshore hook-up and commissioning
group 93 - Installation of instrument equipment and systems.

A list of all group code numbers is given in Appendix 1.

3. PROJECT IDENTIFICATION

3.1 GENERAL

Projects shall be identified by

- a prefix (“P”)
- a four-digit project number (3.2)
- a three-letter suffix (hereafter referred to as the symbol) indicating the operating company and the location (3.3).

Examples of project identification are as follows:

P 6020 SPB
P 8005 UCC
P 2052 BRU

NOTE: If compatible with local computer administration systems, the four-digit project number may be alpha-numeric in order to accommodate a larger number of projects (3.2).

3.2 PROJECT NUMBER

The first digit of the project number is identical to the last digit of the year in which the definition of the project was started. The following three digits reflect the budget item number.

Examples:	Commencement year 1989	Commencement year 1984
	Budget item number 20	Budget item number 7
	Project number 9020	Project number 4007

A major budget item may consist of several processing units, utilities and general facilities, e.g. a platformer, hydrotreater, steam boiler, or jetty; or, for an offshore production platform, the platform substructure, topside facilities, living quarters or oil and gas pipelines to shore. In such cases a separate sub-project number shall be allocated to each identifiable part of the project for budget breakdown. For large projects therefore, it is necessary to select a budget item number ending with a zero to allow inclusion of the sub-project number.

Examples*:* 1996 Budget item 20 ‘Refinery extension’

Reference project number	6020	‘Refinery extension’
Sub-project number	6021	‘Platformer’, Unit 100
Sub-project number	6022	‘Hydrotreater’, Unit 200
Sub-project number	6025	‘Utilities and general facilities’, Unit 500

1995 Budget item 50 ‘Balinu offshore production complex’ Reference project number 5050 ‘Balinu offshore production complex’

Sub-project number	5051	‘Platform substructure’
Sub-project number	5052	‘Topside process facilities’
Sub-project number	5053	‘Living quarters'
Sub-project number	5054	‘Oil and gas pipelines to shore’

NOTES:
1 If a four-digit system is used to number capital budget items where the first digit indicates the year, the project number is identical to the budget item number.

2 If a different numbering system is used for capital budget items, e.g. 76/1, 78/25, the corresponding project numbers reflect these budget items for example: 6001 (or 6010 if sub-projects are incorporated) 8025 (or 8250 if sub-projects are incorporated)

3 There may be good reasons to deviate from the described numbering system, for instance if an Operating Unit has a very large number of projects or sub-projects on its programme, or if the numbering of sub-projects in a large refinery has to correspond to four-digit ‘Unit’ numbers.

4 Project and budget numbers may be alpha-numeric (3.1).

5 The above project numbering system may not be suitable for Operating Units which have implemented computerised systems such as SAP-R/3. For these Operating Units the Principal shall specify the required numbering system.

3.3 SYMBOL

The symbol is used to identify the Operating Unit (Company) and the location where the project will be constructed.

***Examples**:* PDO - Petroleum Development Oman
SPB - Shell Pulau Bukom, Singapore

4. CODING OF PROJECT AND CONTRACT DOCUMENTS AND DRAWINGS

To facilitate processing and handling, all project drawings which have to be provided with a drawing registration number in the T-series shall also be provided with a code number for classification and identification.

This coding is intended to classify these drawings per project and per subject and/or design and engineering category.

The code number on project and contract documents and drawings shall consist of the prefix (3.1), project number (3.2), group code number (5.2) and symbol (3.3). The group code number shall correspond to the subject of the document in question and shall be selected from Appendix 1.

The code number on drawings and documents is written as follows:

prefix	project number / group code number		symbol
***Examples**:*	A plot plan of project HP 6020 SPB at Singapore	:	P 6020/09 SPB
	A process flow scheme of the platformer section of sub-project 6021	:	P 6021/08 SPB
	Drawing of a vessel for sub-project 6021	:	P 6021/22 SPB
	Cable lay-out drawing	:	P 6020/68 SPB
	Mechanical erection specification	:	P 6020/26 SPB
	Instrumentation summary	:	P 6020/30 SPB
	Drawing list	:	P 6020/10 SPB
	Contract documents for piping installation work	:	P 6020/43 SPB

NOTES:
- It is important for the group code number allocated to the document or drawing to correspond to the subject with which the document deals. If more than one subject is covered or if the document is of a general nature, group 10 shall be used.
- For additional guidance on the grouping of documents and drawings for instrument engineering, see DEP 32.31.00.34-Gen.
- Manufacturers' or suppliers' drawings shall always be coded with their requisition/indent number (5.) since they have to bear a reference to the relevant purchase order.
- If several contracts in one project apply to the same type of construction work (i.e. to the same group code number) then these can be identified with serial numbers in the same manner as explained in (5.3) for procurement documents.

5. NUMBERING OF REQUISITIONS AND INDENTS FOR PROJECT MATERIALS PROCUREMENT

5.1 GENERAL

All requisitions and indents for project materials shall be provided with a code number, consisting of the prefix ("P"), project number, (3.2) group code number (5.2), serial number (5.3) and symbol (3.3) as follows:

Example : A requisition for a pump for a project in Petroleum Development Oman could be numbered:

P 6020/29/03 PDO

P	=	Project
6020	=	project number
29	=	group code number for pumps (selected from Appendix 1)
03	=	serial number; 3rd requisition under group 29
PDO	=	symbol for Petroleum Development Oman

5.2 SELECTION OF GROUP CODE NUMBER

For the purpose of numbering requisitions and indents, the two-digit group code number categorizes project elements.

The group code number shall be selected from Appendix 1.

Examples: group 21 - Heat exchangers
group 28 - Steel structure materials (for offshore refer to groups 52-56)
group 29 - Pumps and compressors
group 38 - Piping
group 67 - Switchgear

For attachments, accessories, structural elements, drives of rotating equipment, ancillary apparatus or installations, etc., forming an integral part of the 'main equipment' the group code number of this 'main equipment' shall be used.

For example, structural steel is numbered as follows:

Structural steel for buildings	-	group 17 (buildings)
Structural steel for air-cooled heat exchangers	-	group 21 (unfired heat transfer equipment)
Structural steel for furnaces	-	group 24 (furnaces)
Structural steel for column access platforms	-	group 28 (steel structures)
Structural steel for pipe bridges	-	group 28 (steel structures)
Structural steel for storage tanks	-	group 51 (tanks)
Structural steel for offshore platform jackets	-	group 53 (steel substructures)
Structural steel for boilers	-	group 75 (fired steam generators)

Similarly bolts are numbered as follows:

Bolts in foundations (anchor bolts embedded in concrete)	-	group 19 (foundations)
Bolts for columns	-	group 20 (columns)
Bolts for steel structures	-	group 28 (steel structures)
Bolts for piping	-	group 38 (piping)

Driven equipment and their drives are grouped under the group code number of the main (driven) equipment as follows:

Electric motors for air-cooled heat exchangers	-	group 21 (unfired heat transfer equipment)
Electric motors for forced-draught furnace fans	-	group 24 (furnaces)
Diesel engines for fire-fighting pumps	-	group 29 (pumps)

NOTE: When a project consists of one large item only, such as a new boiler or an additional furnace and the like, it is not necessary for the ancillary equipment to be numbered by the group code number of the main equipment. In those cases, the project number can be followed by the group code number of the individual ancillary parts, for example:

project	P 8011 SPB new boiler
boiler	P 8011/75/01
fans	P 8011/29/01 and 02
instruments	P 8011/30/01 etc.
piping	P 8011/38/01 etc.

5.3 SERIAL NUMBER

Each serial number consists of two digits and is used for sequential numbering of procurement documents such as requisitions, indents, purchase orders, etc., having the same project and group code number.

6. PROJECT COST ALLOCATION AND COST ANALYSIS

6.1 GENERAL

The group code number system can be applied for project cost allocation (i.e. cost coding) and collection, for cost estimating and control, and for asset breakdowns. For this purpose, the two-digit group code number, selected from Appendix 1 indicates a category of project cost elements.

6.2 COSTS OF 'SUPPLY' AND 'CONSTRUCTION'

For many project elements, the costs of materials and equipment supply can be segregated from the costs of construction (or fabrication, installation) as shown by the examples below.

group 22 - costs of supply of process vessels
26 - costs of installation of plant and equipment

38 - costs of supply of piping materials
43 - costs of field fabrication/installation of piping

53 - costs of supply of structural steel for offshore platform substructures
59 - costs of onshore fabrication
61 - costs of offshore installation

63 - costs of installation of electrical equipment
65 - costs of supply of generators, transformers, etc.

NOTE: - For costs of design and engineering, see groups 01-04.

6.3 'SUPPLY-AND-CONSTRUCTION' CONTRACTS

Some project work falls in the 'Supply-and-construction' category ('supply-and-erect' contract), i.e. the construction contractor usually supplies most or all project materials for the job.

In such cases the contract is primarily a construction contract and the cost of materials and work both provided by the contractor is combined in a lump sum or unit rates.

Examples of 'supply and construction' cost elements are:

groups 11 - 19 - civil engineering
28 - steel structures
46 - insulation and sound-proofing
47 - fireproofing
51 - tankage

In groups 52-56 and 58 (structural materials for offshore platforms), onshore fabrication is often included as well.

NOTES:
- In a 'supply-and-construction' contract, the costs of materials may be segregated from those of work by allocating different serial numbers to them.
- Costs of 'free-issue' materials provided by the owner company for jobs that are classified as 'supply-and-construction' shall normally be allocated to the same group code number as the 'supply-and-construction' contract. If there is a need to segregate the costs of these materials, allocate different serial numbers to them.
- If a 'supply-and-construction' contract includes the provision by the contractor of substantial project materials that are classified in this manual as 'supply', then the costs of this contract - if the materials supply costs and construction costs cannot be segregated - shall be allocated to the group code number for the predominant project material. For instance:
  - for a contract for supply **and** installation of a compressor plant, use group 29
  - for a contract for materials supply **and** onshore fabrication of a jacket for an offshore platform, use group 53.

6.4 HOLDING ACCOUNT NUMBERS

A holding account is a cost account for recording certain project costs of various sub-projects each having its own project number.

It is used to collect cost elements which are not necessarily allocated to a specific sub-project number pertaining to a unit or sub-project.

A typical example of costs to be recorded in a holding account is 'bulk materials' if ordered under one purchase order for different sub-projects administered under different project numbers. Similarly construction supervisory cost or a piping erection contract can be reported under a holding account. This may be illustrated in the following example.

P 6001 - account to be used for identification of cost control items for Unit 100 only
P 6002 - ditto for Unit 200 only
P 6010 - holding account which is to be used for identification of cost control items in both Units 100 and 200 i.e.
  a. engineering done for Units 100 and 200 by one engineering contractor,
  b. bulk materials for Units 100 and 200 ordered under one purchase order number,
  c. etc.

After project completion, the costs in the holding account can be allocated to the specific units of the project in accordance with DEP 01.00.09.10-Gen.

6.5 COLLECTIVE ACCOUNT NUMBERS

There may be situations where, due to the type of contract, the costs cannot be broken down into the categories covered by the group code numbering system. In such cases 'Collective Account' numbers can be selected for costs covering more than one group, e.g.:

COSTS OF	COLLECTIVE ACCOUNT NO.	COVERING GROUPS
Design and engineering	00	01-04
Civil work	19	11-19
Multi-discipline construction contract, including e.g. civil, mechanical, piping, instrumentation, electrical, painting.	26	11-19, 26, 28, 42-43, 49, 63 and 93

7. REFERENCES

In this manual, reference is made to the following publications.

NOTE: The latest issue of each publication should be used together with any amendments/supplements/ revisions to such publications.

It is particularly important that the effect of revisions to international, national or other standards shall be considered when they are used in conjunction with DEPs, unless the standard referred to has been prescribed by date.

Index to DEP publications and standard specifications	DEP 00.00.05.05-Gen.
Asset breakdown	DEP 01.00.09.10-Gen.
Instrumentation documents and drawings	DEP 32.31.00.34-Gen.

APPENDIX 1 NUMBERING OF GROUPS

I. GENERAL

01 Design and project services by SIOP/SIC/SIEP
02 Design and project services provided by contractors nominated by SIOP/SIC/SIEP
03 Design and project services provided by the Operating Unit
04 Design and project services provided by contractors nominated by the Operating Unit
05 Procurement services
06 Import duties, freight, transport insurance
07 Quality control, inspection, certification and permits
08 Process flow schemes and process engineering flow diagrams
09 Plot plans, lay-out drawings and area classification drawings
10 General engineering documents

II. CIVIL ENGINEERING (supply and construction)

11 Site development, including environmental assessment
12 Bund walls
13 Roads, paving and fencing
14 Drainage and sewerage, cooling water intake and effluent facilities
15 Harbour and associated marine facilities
16 Excavation and backfill
17 Buildings
18 Piling
19 Concrete foundations and structures

III. MECHANICAL/PROCESS MAIN EQUIPMENT AND ASSOCIATED STEEL STRUCTURES

20 Columns, including internals and accessories (supply)
21 Unfired heat transfer equipment and accessories (supply)
21.1 Heat exchangers, including accessories (supply)
21.2 Air coolers, including accessories (supply)
22 Vessels, including internals and accessories (supply)
23 Reactors, catalyst regenerators, catalyst strippers, rotating disc contactors (supply)
24 Furnaces and related facilities (supply)
25 Mechanical handling equipment (supply)
26 Installation of plant and equipment
27 Miscellaneous packaged and stationary plant equipment (supply)
28 Steel structures (supply and construction)
29 Pumps and compressors, including drives and accessories (supply)
29.1 Pumps, including drives and accessories (supply)
29.2 Compressors, including drives and accessories (supply)

IV. INSTRUMENT ENGINEERING

30 General instrumentation and SCADA/CAO (systems) equipment (supply)
30.1 Distributed control systems equipment (supply)
30.2 Instrument protective systems equipment (supply)
30.3 General instruments and SCADA/CAO (systems) equipment (supply)
31 Analysers and sundry instruments (supply)
32 Flow instruments (supply)
33 Level instruments (supply)
34 Pressure instruments (supply)
35 Temperature instruments (supply)
36 Final control elements (supply)
37 Miscellaneous instrument installation materials (supply)

V. PIPING AND PIPELINES

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39 Piping materials for field fabrication and/or installation (cont'd)
40 Piping materials for shop/yard fabrication (supply)
41 Piping materials for shop/yard fabrication (cont'd)
42 Piping (pre) fabrication/installation in shop or yard
43 Field fabrication/installation of piping and pipelines
44 Pipe supports and hangers (supply)
45 Flare and vent stacks/booms (supply)

VI. PRESERVATION

46 External insulation, incl. soundproofing (supply and construction)
47 Fireproofing (supply and construction)
48 Painting (supply)
49 Painting application
50 Cathodic protection (supply)

VII. TANKAGE (supply and construction)

51 Storage tanks, spheres, gas holders and accessories

VIII. OFFSHORE CONSTRUCTION

52 Topsides and decks (structural) (supply)
53 Steel substructures and subsea structural elements (supply)
54 Piling, conductors and anchoring (supply)
55 Offshore concrete structures (supply)
56 Riser top equipment (supply)
57 Control and maintenance equipment specific to subsea systems (supply)
58 Miscellaneous structural materials and equipment for offshore (supply)
59 Onshore/inshore fabrication, installation, hook-up and commissioning
60 Transportation to site
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62 Offshore hook-up and commissioning

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65.2 Transformers, (supply)
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68 Wires, cables and accessories (supply)
69 Lamps, lamp fittings and accessories (supply)
70 Conduits, fuses and house installation materials (supply)
71 Telecommunication equipment (supply)
72 Not used

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74 Cooling towers
75 Fired steam generators
76 Air conditioning, ventilation and space heating installations

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97 Reserved for special cases
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