MANUAL

COMPILATION OF A SPECIFICATION FOR PIPING SYSTEMS

DEP 31.38.01.21-Gen.

December 1998

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.

The right to use DEPs is granted by SIOP, SIEP or SIC, in most cases under Service Agreements primarily with companies of the Royal Dutch/Shell Group and other companies receiving technical advice and services from SIOP, SIEP or SIC. Consequently, three categories of users of DEPs can be distinguished:

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.

Subject to any particular terms and conditions as may be set forth in specific agreements with users, SIOP, SIEP and SIC disclaim any liability of whatsoever nature for any damage (including injury or death) suffered by any company or person whomsoever as a result of or in connection with the use, application or implementation of any DEP, combination of DEPs or any part thereof. The benefit of this disclaimer shall inure in all respects to SIOP, SIEP, SIC and/or any company affiliated to these companies that may issue DEPs or require the use of DEPs.

Without prejudice to any specific terms in respect of confidentiality under relevant contractual arrangements, DEPs shall not, without the prior written consent of SIOP and SIEP, be disclosed by users to any company or person whomsoever and the DEPs shall be used exclusively for the purpose for which they have been provided to the user. They shall be returned after use, including any copies which shall only be made by users with the express prior written consent of SIOP and SIEP. The copyright of DEPs vests in SIOP and SIEP. Users shall arrange for DEPs to be held in safe custody and SIOP or SIEP may at any time require information satisfactory to them in order to ascertain how users implement this requirement.

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.

TABLE OF CONTENTS

1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the compilation of a "Specification for Piping Systems" to be made for each project (to assist engineering divisions during the engineering and construction periods and serve as an aid in subsequent maintenance of the piping system).

This DEP is a revision of the DEP of the same number dated January 1992; a summary of the main changes is given in (1.5).

1.2 DISTRIBUTION, INTENDED USE 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, 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 DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General 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 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 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

MESC (Materials and Equipment Standards and Code)	a system which assigns unique codes to specific items. The MESC system is now incorporated in the Catalogue Management Tool (CMT)
Piping class	an assembly of piping components in a piping system, suitable for a defined service and design limits. SIOP piping classes are contained in DEP 31.38.01.12-Gen. and SIEP piping classes are contained in DEP 31.38.01.15-Gen.

1.4 CROSS REFERENCES

Where cross references to other parts of this DEP are made, the referenced section

number is shown in brackets. Other standards referenced in this manual are listed in (4).

1.5 SUMMARY OF MAIN CHANGES

This is a revision of the DEP of the same number dated January 1992. Other than editorial changes, the main changes are as follows:

New DEP Section	Old DEP Section	
2.2.1		Text removed about project piping classes becoming standard piping classes.
3.3		Rules for continuation of sheets simplified.
	Appendices	Appendices removed (specimen Standard Forms)

2. SELECTION OF THE FORMS

2.1 PURPOSE AND CONTENTS

The "Specification for Piping Systems" shall provide complete information on all relevant data and for all required piping systems.

Copies of piping classes and standard forms shall be used for an orderly and uniform compilation.

A "Specification for piping systems" shall include the following fully completed sheets:

- cover sheet (3.2);
- index and issue sheet (3.3);
- design and engineering requirements (3.4);
- selection of piping classes for process and utility piping (3.5);
- description of piping classes deviating from DEP 31.38.01.12-Gen. or DEP 31.38.01.15-Gen. (3.6);
- all selected piping classes.

2.2 PIPING CLASSES

2.2.1 SIOP/SIEP piping classes

SIOP piping classes are contained in DEP 31.38.01.12-Gen. and SIEP piping classes are contained in DEP 31.38.01.15-Gen. The numbering system of the piping classes, additional technical information and a general explanation is given in DEP 31.38.01.10-Gen.

The SIOP/SIEP piping classes have been developed by using the most suitable materials in view of fitness for purpose, international/national/industry standards, availability and commercial aspects.

All piping components of the SIOP/SIEP piping classes are covered by the MESC system. The MESC system provides item descriptions, references to standards, technical specifications and levels of certification.

Using the MESC system standardises the materials ordered for the construction of new projects and for the maintenance during the lifetime of the plant.

If the project requirements are not covered by the SIOP/SIEP piping classes, project piping classes should be developed. The Contractor shall contact the Principal for availability of similar SIOP/SIEP piping classes and (if not available) obtain guidance for the development of project piping classes.

2.2.2 Derived piping classes

The use of derived piping classes shall be avoided whenever possible. Derived piping classes may be created when a project needs to make "minor" changes to an SIOP/SIEP piping class (e.g. different gaskets or bolting). Deviations from the SIOP/SIEP piping class shall be scrutinised and the results reported for resolution by the Principal. Derived piping classes shall not change the piping material, wall thicknesses or ASME rating class of the SIOP/SIEP piping class. If such "major" changes are required, a project piping class shall be created (see 2.2.1).

Derived piping classes may not be supported by the MESC system, and therefore ordering future material for maintenance could be more difficult.

A derived piping class shall be given a prefix or suffix (e.g. an X, Y or Z) to distinguish it from the piping class from which it is derived.

3. COMPLETION OF THE FORMS

3.1 GENERAL

The Contractor is responsible for the completion of the "Specification for Piping Systems".

The forms shall be completed in the English language unless otherwise specified by the Principal.

When referring to drawings or similar technical documents, the drawing/document designation number and its latest revision indication shall be stated.

Each revision, including cancellation, shall be indicated by a capital letter and the date of this revision. The first revision letter shall be A; subsequent revisions shall be B, C, etc. (the letters I, J and O shall not be used). On the sheet concerned, the revision letter shall also be indicated in a triangle near the place where the revision has been made. A short description of the revision shall be given on page 1 of derived piping classes and project piping classes.

A "Specification for Piping Systems" may also be generated by means of a computer system. This specification shall contain at least the information as required by this DEP.

3.2 COVER SHEET

The cover sheet, DEP 31.38.01.40-Gen., shall be completed with all specified information. The first issue shall be dated and signed on the left of the revision column.

3.3 INDEX AND ISSUE SHEET

On 'Index and issue sheet', DEP 31.38.01.41-Gen., a compilation shall be given of all sheets which form part of the 'Specification for piping systems'.

Where applicable, the last line on an index and issue sheet shall be use for reference to its continuation sheet.

3.4 DESIGN AND ENGINEERING REQUIREMENTS

Standard Form DEP 31.38.01.42-Gen. shall summarise the design and engineering requirements for the piping systems of the project.

The date of issue of each publication referred to shall be stated in order to stipulate the valid DEP publications.

Form DEP 31.38.01.44-Gen. shall be used for:

- Deviations from and/or information additional to DEP 31.38.01.11-Gen. The heading of each sheet shall be 'Special Requirements'.
- Additional requirements to SIOP/SIEP piping classes. The heading of each sheet shall be related to the relevant subject.
- Special piping components which are not included in a piping class, complete with their purchase order reference and relevant piping class numbers. The heading of each sheet shall be 'Special Components'.
- The numbers and titles of all required special drawings. Each sheet shall bear the appropriate title.

3.5 SELECTION OF PIPING CLASSES FOR PROCESS/UTILITY LINES

Selected piping classes for process and utility piping shall be stated on separate Standard Forms (DEP 31.38.01.43-Gen.).
Full information shall be given on the service conditions and/or limits.
Sheets for process piping classes shall show 'Process' in the title block.
Sheets for utility piping classes shall show 'Utility' in the title block.

3.6 DESCRIPTION OF DERIVED PIPING CLASSES

Standard Form DEP 31.38.01.52-Gen., shall contain a list of all derived piping classes

(2.2.2). All modifications and/or additions to the piping class on which it is based shall be fully described.

4. REFERENCES

In this DEP, reference is made to the following publications:

NOTE: Unless specifically designated by date, the latest edition of each publication shall be used, together with any amendments/supplements/revisions thereto.

SHELL STANDARDS

Index to DEPs and standard specifications	DEP 00.00.05.05-Gen.
Standard Forms (binder)	DEP 00.00.10.05-Gen.
Piping classes - basis of design	DEP 31.38.01.10-Gen.
Piping - general requirements	DEP 31.38.01.11-Gen.
SIOP piping classes	DEP 31.38.01.12-Gen.
Compilation of bill of material for piping isometrics	DEP 31.38.01.13-Gen.
SIEP piping classes	DEP 31.38.01.15-Gen.
Pipe supports	DEP 31.38.01.29-Gen.

STANDARD FORMS

NOTE: Standard Forms are contained in binder DEP 00.00.10.05-Gen.

Cover sheet	DEP 31.38.01.40-Gen.
Index and issue sheet	DEP 31.38.01.41-Gen.
Design and engineering requirements	DEP 31.38.01.42-Gen.
Selection of piping classes for (process/utility) lines	DEP 31.38.01.43-Gen.
General purpose sheet	DEP 31.38.01.44-Gen.
Description of piping classes deviating from the standard piping classes	DEP 31.38.01.52-Gen.