DEP SPECIFICATION

RECIPROCATING POSITIVE DISPLACEMENT PUMPS (AMENDMENTS/SUPPLEMENTS TO API 674)

DEP 31.29.12.30-Gen.

February 2013

ECCN EAR99

DESIGN AND ENGINEERING PRACTICE

DEM1

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DEP (Design and Engineering Practice) publications reflect the views, at the time of publication, of Shell Global Solutions International B.V. (Shell GSI) and, in some cases, of other Shell Companies.

These views are based on the experience acquired during involvement with the design, construction, operation and maintenance of processing units and facilities. Where deemed appropriate DEPs are based on, or reference international, regional, national and industry standards.

The objective is to set the standard for good design and engineering practice to be applied by Shell companies in oil and gas production, oil refining, gas handling, gasification, chemical processing, or any other such facility, and thereby to help achieve maximum technical and economic benefit from standardization.

The information set forth in these publications is provided to Shell companies 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 Units 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 such use, including the quality of their work and the attainment of the required design and engineering standards. In particular, for those requirements not specifically covered, the Principal will typically expect them to follow those design and engineering practices that will achieve at least the same level of integrity as reflected in the DEPs. If in doubt, the Contractor or Manufacturer/Supplier shall, without detracting from his own respons bility, consult the Principal.

The right to obtain and to use DEPs is restricted, and is typically granted by Shell GSI (and in some cases by other Shell Companies) under a Service Agreement or a License Agreement. This right is granted primarily to Shell companies and other companies receiving technical advice and services from Shell GSI or another Shell Company. Consequently, three categories of users of DEPs can be distinguished:

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2) Other parties who are authorised to use DEPs subject to appropriate contractual arrangements (whether as part of a Service Agreement or otherwise).

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 Shell GSI.

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PART I INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for reciprocating positive displacement pumps for use in oil refineries, chemical plants, gas plants and where applicable, in exploration, production and new ventures.

This DEP is based on API 674, Third Edition, December 2010. Part III of this DEP amends, supplements and deletes various clauses of API 674. Part III follows the clause numbering of API 674 for easy reference.

All clauses of API 674 not modified by this DEP remain valid as written.

This DEP contains mandatory requirements to mitigate process safety risks in accordance with Design Engineering Manual DEM 1 – Application of Technical Standards.

This DEP is a revision of the DEP of the same number dated December 1999.

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 (where applicable), gas handling, oil refining, chemical processing and gasification. 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

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.

NOTE: In API 674, the term **Vendor** is used. In this DEP, the term **Vendor** shall be understood to mean the Manufacturer/Supplier.

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.

NOTE: In API 674, the term **Purchaser** is used. In this DEP, the term **Purchaser** shall be understood to mean the Principal.

The word **shall** indicates a requirement.

The capitalised term **SHALL [PS]** indicates a process safety requirement.

The word **should** indicates a recommendation.

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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 (Part IV).

1.5 SUMMARY OF MAIN CHANGES

This DEP is a revision of the DEP of the same number dated December 1999.

With this DEP revision, this DEP is now restricted to reciprocating positive displacement pumps as amendment/supplement to API 674.

Refer to DEP 31.29.12.31-Gen. for positive displacement pumps–controlled volume (amendments/supplements to API 675).

As such, the changes are too numerous to list here.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the “Give feedback” link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://sww.shell.com/standards. Select “Submit DEP Feedback”, fill in the online form and submit.
DEP Standard Form (Other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com.

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

1.7 DUAL UNITS

This DEP contains both the International System (SI) units, as well as the corresponding US Customary (USC) units, which are given following the SI units in brackets. When agreed by the Principal, the indicated USC values/units may be used.

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PART II GENERAL INFORMATION

This DEP is written in four parts, of which Part III gives amendments and supplements to API 674, Third Edition, December 2010. Wherever reference is made to API 674, it shall be understood to mean API 674, Third Edition, December 2010, as amended/supplemented by this DEP.

Reciprocating positive displacement pumps, direct-acting and power frame types, shall conform to API 674, as amended or supplemented by this DEP.

Clauses in API 674 not mentioned shall remain valid as written.

A bullet (•) in the margin against certain clauses in API 674 indicates that a decision by the Principal is required. These decisions shall be indicated directly in data/requisition sheet DEP 31.29.12.93-Gen., when provisions are made for them; otherwise, they shall be indicated in the data/requisition sheet(s) under the heading 'Additional Requirements', or stated in the purchase order.

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PART III AMENDMENTS/SUPPLEMENTS TO API 674

1. Scope

Add the following clause:

1.1 Conflicting Requirements

In the event of conflict between documents relating to the inquiry or order, the following priority of documents shall apply:

- first priority: purchase order and variations there to;
- second priority: data/requisition sheets and drawings;
- third priority: this DEP.

2. Normative References

Add the following sentence to clause 2.1:

2.1 All publications referred to in this DEP are listed in (Part IV) of this DEP.

3. Terms and Definitions

Add new clause:

3.45 Continuous operation

Unless otherwise specified, the term continuous operation, when used on data/requisition sheets, shall mean: Uninterrupted operation for a period of at least 24,000 hours at the specified operating conditions.

Add new clause:

3.46 Intermittent operation

Unless otherwise specified, the term intermittent operation, when used on data/requisition sheets, shall mean: Any operation which is not classed as continuous operation. This definition may apply to such duties as:

- pumps started up and stopped automatically at intervals by process operated controls;
- pumps started up and stopped at intervals by manual control for the batch transfer of liquid.

Add new clause:

3.47 Hazardous service

Service comprising the following categories, which shall be specified on the data/requisition sheets:

Category 1

Liquids classified as "very toxic - acute", where single exposure via inhalation, skin or ingestion to this process stream can cause serious adverse health effects/fatality. Example: Strong acids (sulphuric acid, nitric acid, hydrogen fluoride, hydrogen chloride); Strong Alkalis (sodium hydroxide, potassium hydroxide, ammonia, phenol); tetra ethyl lead; tetra methyl lead; hydrogen fluoride; mercury; and hydrogen sulphide in concentrations at or above 600 mg/kg (600 ppm by weight). Liquids containing ethylene oxide.

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