

MANUAL

THE USE OF SI QUANTITIES AND UNITS (ENDORSEMENT OF ISO 31 AND ISO 1000)

DEP 00.00.20.10-Gen.

September 1994



DESIGN AND ENGINEERING PRACTICE

USED BY

COMPANIES OF THE ROYAL DUTCH/SHELL GROUP



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PREFACE

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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.

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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, which replaces the DEP of the same number dated March 1985, specifies requirements for, and gives guidance on, the expression of quantities in SI units.

This DEP is based on International Standards ISO 31 (Parts 0 through 13) and ISO 1000, **both of which are adopted without amendment**.

ISO 31-0 gives general information about the principles concerning physical quantities, equations, quantity and unit symbols, and coherent unit systems, especially SI. Recommendations for the expression of quantities and units are included.

ISO 31-1 through ISO 31-13 give the names and symbols for quantities and units for use in various fields of science and technology, and include conversion factors where appropriate.

ISO 1000 describes the SI units, including the base units, derived units and supplementary units. It recommends selected decimal multiples and sub-multiples of SI units and includes certain other non-SI units which may be used with SI.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by SIPM, 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 and Manufacturers/Suppliers nominated by them (i.e. the distribution code is "F" as described 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 AND ABBREVIATIONS

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.

1.3.1 Abbreviations

SI The International System of Units

2. INTERNATIONAL STANDARDS APPROVED FOR USE

The following standards are approved for use, without any Group amendments:

ISO 31 (Parts 0 through 13).

ISO 1000.

NOTE: In the measurement of crude petroleum and its products, both liquid and gaseous, the standard reference conditions of pressure and temperature should be in accordance with ISO 5024.

3. 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 DEP Publications and Standard Specifications DEP 00.00.05.05-Gen.

INTERNATIONAL STANDARDS

Quantities and units -

Part 0: General principles	ISO 31-0
Part 1: Space and time	ISO 31-1
Part 2: Periodic and related phenomena	ISO 31-2
Part 3: Mechanics	ISO 31-3
Part 4: Heat	ISO 31-4
Part 5: Electricity and magnetism	ISO 31-5
Part 6: Light and related electromagnetic radiations	ISO 31-6
Part 7: Acoustics	ISO 31-7
Part 8: Physical chemistry and molecular physics	ISO 31-8
Part 9: Atomic and nuclear physics	ISO 31-9
Part 10: Nuclear reactions and ionizing radiations	ISO 31-10
Part 11: Mathematical signs and symbols for use in the physical sciences and technology	ISO 31-11
Part 12: Characteristic numbers	ISO 31-12
Part 13: Solid state physics	ISO 31-13

SI units and recommendations for the use of their multiples and of certain other units ISO 1000

Petroleum liquids and gases - Measurement - Standard reference conditions ISO 5024

Issued by:
International Organisation for Standardization
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