DEP SPECIFICATION

INSTRUMENTATION DOCUMENTS AND DRAWINGS

DEP 32.31.00.34-Gen.

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DESIGN AND ENGINEERING PRACTICE

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

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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and give recommendations for instrumentation documentation and drawings, including the organization, naming, formatting, electronic delivery and requirements for as-built accuracy.

This DEP addresses instrumentation under the following categories:

- general instrumentation (group 30);
- analyzers and field instruments (group 31, 32, 33, 34, 35 & 36), and;
- instrument installation

Within the above categories, various documentation and drawing types are covered, including:

- instrumentation requisitions
- instrument engineering data sheets
- composite instrument manuals
- instrumentation schematic diagrams
- instrument loop diagrams
- logic diagrams
- narratives
- alarm system documentation
- cause and effect drawings
- system cabinets/auxiliary cabinets
- instrument/electrical interface cabinets
- distributed control system (DCS) configuration
- instrumented protective function (IPF) configuration

This is a revision of the DEP of the same number dated December 1995; 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 authorization 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 should 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.

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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

Term	Definition
Distributed Control System	A configurable microprocessor based control system
Instrumented Protective System	The (electrical and/or electronic and or programmable electronic) logic solver component of the Instrumented Protective Function complete with input and output equipment.

1.3.3 Abbreviations

AC	Alternating current
CCTV	Closed circuit television
DC	Direct current
DCS	Distributed Control System
DVD	Digitital video disc
ESD	Emergency shutdown
FAT	Factory Acceptance Test
IPF	Instrumented protective functions
IPS	Instrumented Protective System
LNG	Liquid natural gas
MDF	Main Distribution Frame
PEFS	Process Engineering Flow Scheme
SAT	Site Acceptance Test
SPI	SmartPlant Instrumentation
SRS	Safety Requirements Specification
USA	United States of America
WOUSA	World outside USA

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 (4).

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1.5 SUMMARY OF MAIN CHANGES

This DEP is a revision of the DEP of the same number dated December 1995. The following are the main, non-editorial changes.

Old section	New section	Change
Several		Several parts of sections that provided informative or practice content were moved from this DEP to DEP Informative and DEP Practice.
1.3.3		Updated
2.1.1		Updated.
2.2		Deleted reference to DEP 40.10.01.11-Gen
2.3		Updated with documents sizes used in WOUSA and USA
2.4		Updated
2.5		Updated.
2.6		Deleted
2.7		Updated and moved to section 2.6
2.8		Updated and moved to section 2.7
3.1		Updated.
3.2.1.1		Deleted.
3.2.1.2		Updated and moved to 3.2.1.1
3.2.1.3		Updated and moved to 3.2.1.2.
3.2.1.4		Updated and moved to 3.2.1.3.
3.2.2.1		Updated to include requirements for Foundation Fieldbus installations.
3.2.2.2		Updated.
3.2.2.3		Updated.
3.2.2.4		Deleted
3.2.2.5		Updated and moved to 3.2.2.4
	3.2.2.5	Added to include reference to DEP 32.80.10.10
3.2.2.6		Updated.
	3.2.2.7	Added to include C&E matrix requirements.
3.2.2.7		Updated and moved to 3.2.2.8
3.2.2.8		Updated and moved to 3.2.2.9
3.2.2.9		Deleted.
3.2.2.10		Updated.
3.2.2.11		Deleted
3.2.2.12		Deleted
3.2.2.13		Deleted

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Old section	New section	Change
	3.2.2.10	Added to create reference to DEP 32.80.10.10 for IPS configuration..
3.3		Updated.
3.4		Deleted
3.5		Deleted
3.6		Deleted
3.7		Deleted
3.8		Deleted
3.9		Entire section with sub-sections updated and moved to 3.4
References		Updated.
Appendix 1		Updated.
Appendix 2		Deleted and moved to informative DEP
	Appendix 2	Added to illustrate a typical Process C&E matrix

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://sww.shell.com/standards and on the main page of the DEPs DVD-ROM.

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2. GENERAL REQUIREMENTS

2.1 GENERAL

A set of instrumentation documents and drawings shall be prepared for each project, which shall include the items specified in this DEP.

These documents and drawings shall be issued such that sufficient time is allowed for instrumentation design and engineering, purchasing and installation, taking into account the procedures and the time required for review and comment by the Principal.

The content of each document or drawing shall be such that it will allow associated activities, such as purchasing, installation of all instrumentation at the construction site, and will serve as reference for future maintenance, changes and/or extension to the instrumentation.

The content of the documents and drawings, the number of copies required, the need for additional documents, and the procedures for commenting and/or approval shall be in accordance with requirements of the Principal.

Commercially available instrumentation electronic design and drawing (software) tools shall be used for documents and drawings produced by the project, however, for exchangeability reasons, the specific software package, version and format shall be approved by the Principal.

Self-documenting facilities in the DCS and IPS should be used to their fullest capabilities.

All parts and sections of any form, sheet or other document which requires filling in shall be completed. Where a particular part of any document is not applicable it shall be so indicated.

All Instrumentation documents and drawings shall be issued for comments and/or approval to the Instrument design engineer of the Principal.

2.1.1 Software formats

The following software for instrumentation documentation shall be used for greenfield projects:

- SmartPlant Instrumentation (SPI - version as defined by the Principal) for instrument index, instrument data sheets, instrument loop drawings.
- SmartPlant P&ID (version as defined by the Principal) for CAD drawings such as system architecture drawings, panel drawings, cable routing drawings, etc.
- Microsoft Visio (version as defined by the Principal) for system block diagrams and other simple drawings.
- Microsoft Word for all project documents including narrative descriptions, IPF-RS, etc.
- Microsoft Excel for calculations, Cause and Effect diagrams, and list based documents (equipment lists, load lists, etc.).

For additional acceptable formats refer to DEP 82.00.10.30-Gen.

The use of SPI (hosting of the database and third party access, audit tools and audit frequency, minimum fields during various stages of the project) shall be as specified by the Principal. If an operating site has an instance of SPI, then that instance shall be used for all data entry; the merging of SPI databases shall be avoided.

The compatibility with the computer equipment used for the software and supplied with the project shall be verified by the Principal. If not compatible, the required computer equipment shall be included in the scope of the project supply.

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2.2 IDENTIFICATION

All documents and drawings shall be provided with a registration number from the series of numbers allocated to the project, together with a code number for classification and identification. The code number shall consist of a prefix, project number, group number and a symbol.

Documents and drawings prepared for a specific indent shall also bear the relevant complete indent number.

All documents and drawings shall bear proper references to related documents, construction drawings, and indent numbers for the materials required. The documents and drawings shall bear the titles as indicated in this publication. In addition, all instrument related layout drawings of control rooms, auxiliary rooms and analyser houses, shall indicate the building and room number as appropriate.

Where multi-sheet drawings (2.4) consist of a large number of sheets, revisions shall be inicated for each sheet. For each revision, the cover sheet and the revision index sheet shall be re-issued together with the revised sheets. All the revised sheets shall bear the same revision letter irrespective of the last revision letter on the individual sheets, i.e. all revised sheets shall bear the same revision indicator as the cover sheet.

For multi-sheet drawings where signatures are applied for approval or checking, these shall be indicated on the cover sheet only. Where a full title block is applied this shall be used on the cover sheet only. Continuation sheets shall be sufficiently titled to link them clearly to the cover sheet and include project title, drawing title, project, drawing number and sheet number.

2.3 DRAFTING TECHNIQUES AND DRAWING SIZES

The drafting techniques, drawing sizes, preparation and, where applicable, microfilming of technical drawings shall be in accordance with DEP 02.00.00.10-Gen.

In this DEP, reference is made to size A1 through A4. For North American application, the appropriate paper sizes noted in the table below shall be used.

The drawings size shall be determined taking into consideration the ultimate use for the document, e.g. for on-site day-to-day maintenance. Documents and drawings shall be on A4 size sheets as minimum. The actual size is dependent on the subject matter (e.g. A3 for cause and effects). The project may include larger drawing sizes where these would be beneficial. Drawing size A0 shall not be used for instrument documents and drawings.

The basic format of each type of document produced by the project shall be submitted for review by the Principal prior to large scale application.

Special attention shall be paid by the project to ensure a consistent drawing and documentation package, particularly for those documents which are associated with equipment package units; see (2.7).

Copies of drawings issued for comments or information shall have a maximum size of A3. Where the size of a standard form is A3, consideration shall be given to size reduction by copying to A4 size before dispatch. Drafting techniques shall take into account clear readability of the reduced size document.

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