

Supplier's documentation of equipment

This NORSOK standard is developed with broad petroleum industry participation by interested parties in the Norwegian petroleum industry and is owned by the Norwegian petroleum industry represented by The Norwegian Oil and Gas Association and The Federation of Norwegian Industry. Please note that whilst every effort has been made to ensure the accuracy of this NORSOK standard, neither The Norwegian Oil and Gas Association nor The Federation of Norwegian Industry or any of their members will assume liability for any use thereof. Standards Norway is responsible for the administration and publication of this NORSOK standard.

Standards Norway
Strandveien 18, P.O. Box 242
N-1326 Lysaker
NORWAY

Telephone: +47 67 83 86 00
Fax: +47 67 83 86 01
E-mail: petroleum@standard.no
Website: www.standard.no/petroleum

Copyrights reserved

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Abbreviations	4
5 General guideline.....	5
5.1 General.....	5
5.2 Acceptance of documentation	5
5.3 Alteration of accepted documentation	6
5.4 Document lists	6
5.5 Documentation of standard equipment and tools.....	7
6 Bid documentation	7
6.1 General.....	7
6.2 Design and operation	8
6.3 Data concerning installation, operation and maintenance	8
6.4 Exemptions from specifications and other requirements in the inquiry	8
6.5 Reference list	8
6.6 Production plan.....	8
6.7 Quality plan	8
6.8 Health, safety and environment (HSE).....	8
7 Engineering documentation	8
7.1 General.....	8
7.2 Master equipment list.....	9
7.3 Data sheets.....	9
7.4 Calculations, curves and tables	9
7.5 Flow diagrams.....	9
7.6 Piping and instrumentation diagrams	9
7.7 Consumption data	10
7.8 Data for health, safety and environment	10
7.9 General arrangement.....	10
7.10 Foundation drawings	11
7.11 Pipe connections	11
7.12 Block diagram	11
7.13 Termination diagram for external connections	11
7.14 Single line diagram.....	12
7.15 Instrument index	12
7.16 Installation drawings for instruments	12
7.17 Logic diagram	12
7.18 Loop diagram	12
7.19 Cable list	13
7.20 Functional description	13
7.21 Circuit diagrams.....	13
8 Documentation for dispatch, receipt, storage and installation	13
8.1 General.....	13
8.2 Documentation available to the customer prior to dispatch.....	13
8.3 Documentation available to recipient prior to delivery.....	13
8.4 Documentation available to recipient at delivery (dispatch dossier).....	14
9 Installation, operation and maintenance (IOM) information.....	14
9.1 General.....	14
9.2 Standard IOM information.....	14

9.3	Specially prepared IOM information	14
10	Manufacturing, test and verifying documentation	15
10.1	General	15
10.2	Manufacturing record book	15
10.3	Design, fabrication and installation résumé	16
10.4	Certificates	16
10.5	Test procedures and reports	17
11	Preparation and handling of documentation	17
11.1	Formats	17
11.2	Document review	17
11.3	Document quality	17
11.4	Units	17
11.5	Language	17
11.6	Identification	17
11.7	Document transmission	18
11.8	Final documentation	18
Annex A (informative)	Structure of IOM information	19
A.1	IOM documentation guideline	19
A.2	Main data	19
A.3	Technical description	19
A.4	Preparation	19
A.5	Operation instructions	19
A.5.1	Start, normal operation, stop and emergency stop	19
A.5.2	Disturbance of operation	20
A.5.3	Corrective measures	20
A.5.4	Hazards and protective measures	20
A.5.5	Qualification requirements and training program for operators	20
A.6	Maintenance	20
A.6.1	General	20
A.6.2	Structure and content	21
A.6.3	Maintenance instructions	21
A.7	Spare parts list	22
A.8	Additional documents and drawings	23
Annex B (informative)	Document requirement list	24
Bibliography		27

Foreword

The NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for petroleum industry developments and operations. Furthermore, NORSOK standards are, as far as possible, intended to replace oil company specifications and serve as references in the authorities' regulations.

The NORSOK standards are normally based on recognised international standards, adding the provisions deemed necessary to fill the broad needs of the Norwegian petroleum industry. Where relevant, NORSOK standards will be used to provide the Norwegian industry input to the international standardisation process. Subject to development and publication of international standards, the relevant NORSOK standard will be withdrawn.

The NORSOK standards are developed according to the consensus principle generally applicable for most standards work and according to established procedures defined in NORSOK A-001.

The NORSOK standards are prepared and published with support by The Norwegian Oil and Gas Association, The Federation of Norwegian Industry, Norwegian Shipowners' Association and The Petroleum Safety Authority Norway.

NORSOK standards are administered and published by Standards Norway.

Supplier's documentation of equipment

1 Scope

This NORSOK standard specifies the documentation process and deliverables for petroleum industry equipment.

This NORSOK standard defines life cycle documentation such as

- describing/evaluating a bid,
- engineering a plant which the equipment shall be a part of,
- receiving, handling, preserving, installation and commissioning,
- start, operation, maintenance, decommissioning and removal,
- verifying that the delivery is according to specified requirements.

This NORSOK standard gives an overall description of different types of documents and a way to group these. It describes deliverables at different phases of a delivery. Further detailing is foreseen, where suitable.

This NORSOK standard applies to documentation on any media.

This standard is based on NS 5820 and will replace the standard within the petroleum industry.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NS-EN ISO 12100, *Safety of machinery – Basic concepts, general principles for design – Part 1: Basic terminology, methodology*

NORSOK Z-008, *Risk based maintenance and consequence classification – Rev. 3, June 2011*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply:

3.1

as built

last revision of a life cycle information item updated to reflect the true status of completed work

Note 1 to entry: A limited amount of information stored on various types of media.

3.2

can

verbal form used for statements of possibility and capability, whether material, physical or casual

- 3.3
certificate**
document which confirms that a product conforms to a given standard or specification information prepared for a special purpose, e.g. to describe, specify, report or verify
- 3.4
certificate of conformity**
document issued under the rules of a certification system, indicating that adequate confidence is provided that a duly identified product, process or service is in conformity with a specific standard or other normative document
- 3.5
contractor**
provider of one or more of the following services directly to customer: Engineering (E), Procurement (P), Construction (C), Installation (I) and Hook-up (H)
- 3.6
customer/client**
contract party which in its own name or on behalf of others, issues an inquiry or places an order
- 3.7
DFI, design, fabrication and installation résumé**
documents only applicable for permanently installed load bearing structures to provide a concentrated summary containing the most relevant data from the design, fabrication and installation phase, including which areas are the most critical and a general description of the installation at the start of the operational phase
- 3.8
dispatch dossier**
documents relevant for handling, transportation and preparation prior to commissioning and start up
- Note 1 to entry: To be physically shipped with the equipment.
- 3.9
document**
A limited amount of information stored on various types of media
- 3.10
documentation**
information prepared for a special purpose, e.g. to describe, specify, report or verify
- 3.11
final documentation/documentation for operation**
documentation that consists of the latest revision of the documentation required to operate maintain the delivery
- 3.12
International System of Units
SI**
system of units, based on the International System of Quantities, their names and symbols, including a series of prefixes and their names and symbols, together with rules or their use, adopted by the General Conference on Weights and Measures (CGPM)
- [SOURCE: ISO 80000-1:2009, *Quantities and units-Part 1: General*]
- 3.13
LCI, Life cycle information**
all information necessary in all phases of the project execution and equipment life span including both information delivered to customer and information retained on behalf of customer
- 3.14
may**
verbal form used to indicate a course of action permissible within the limits of this NORSOK standard

3.15**native format**

original editable file format used to produce and update the document/drawing

3.16**packaged units**

system consisting of equipment, components, instruments and structure elements pre-assembled into a functional unit on a transportable skid or frame

3.17**recipient**

person or organization who receives, unpacks and installs the equipment

Note 1 to entry: The recipient may also take responsibility for intermediate storage, preservation and preparation of the equipment and documentation prior to take over by user.

Note 2 to entry: The recipient to be defined by the customer.

3.18**retained documentation**

documentation which is not submitted to the customer, but available on request for information purposes for an agreed period of time

Note 1 to entry: This does not include supplier or contractor internal documents which can be reviewed on suppliers or contractors premises.

3.19**shall**

verbal form used to indicate requirements strictly to be followed in order to conform to this NORSOK standard and from which no deviation is permitted, unless accepted by all involved parties

3.20**should**

verbal form used to that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required

3.21**standard documents**

documents which supports standard equipment/products, and general documents that support tailor made equipment/products

Note 1 to entry: The information should not include any plant/project specific identification/information.

3.22**standard equipment and tools**

Manufacturer's equipment/unit typically ordered from manufacturer's catalogue

Note 1 to entry: Standard equipment is identified with a unique type/model identification built up by the manufacturer. Standard equipment may include reused part numbers from previous delivery without being a part of a standard catalogue.

3.23**sub-contractor**

provider of services directly to Contractor(s)

3.24**sub-supplier**

provider of services directly to Supplier(s)

3.25**supplier**

party that is responsible for the product, process and/or service and is able to ensure that quality assurance is exercised

Note 1 to entry: The definition may apply to manufacturers, distributors, importers, assemblers, service organizations, etc.

3.26**traceability**

ability to trace the history, application or location of an item or activity, or similar items or activities, by means of recorded identification

3.27**user**

person or organization responsible for the equipment in operation

Note 1 to entry: The user to be defined by the customer.

3.28**user documentation**

all documentation required to lift, handle, install, operate and maintain the equipment

3.29**verification of conformity**

confirmation, by examination of evidence, that a product, process or service fulfils specified requirements

3.30**verifying documentation**

documentation which confirms that verification has taken place and that certain defined requirements or results have been achieved

4 Abbreviations

CDRL	contractor document requirement list
CMDL	contractor master document list
DFI	design, fabrication and installation
DFO	documentation for operation
DN	nominal diameter
DRL	document requirement list
EN	European Standard
ENS	Engineering Numbering System (ENS): defines clear and unambiguous document and tag coding in order to ensure that the user obtains documentation and equipment with the required document and tag code during all phases.
FAT	factory acceptance test
FRB	fabrication record book
HSE	health, safety and environment
IEC	International Electro technical Commission
IOM	installation, operation and maintenance
ISO	International Organization for Standardization
MRB	manufacturing record book
MSDS	material safety data sheet
NDE	non destructive examination
NDT	non destructive test
NS	Norwegian Standard
SDRL	supplier document requirement list
SMDL	supplier master document list
SPIR	spare parts interchangeability register
WPS	welding procedure specification

5 General guideline

5.1 General

The figure below describes relevant information required in the different project phases and when the information shall be started and released.

The figure emphasizes the importance of establishing a maintenance philosophy early, as this is the basis for determination of relevant content and information in all project phases.

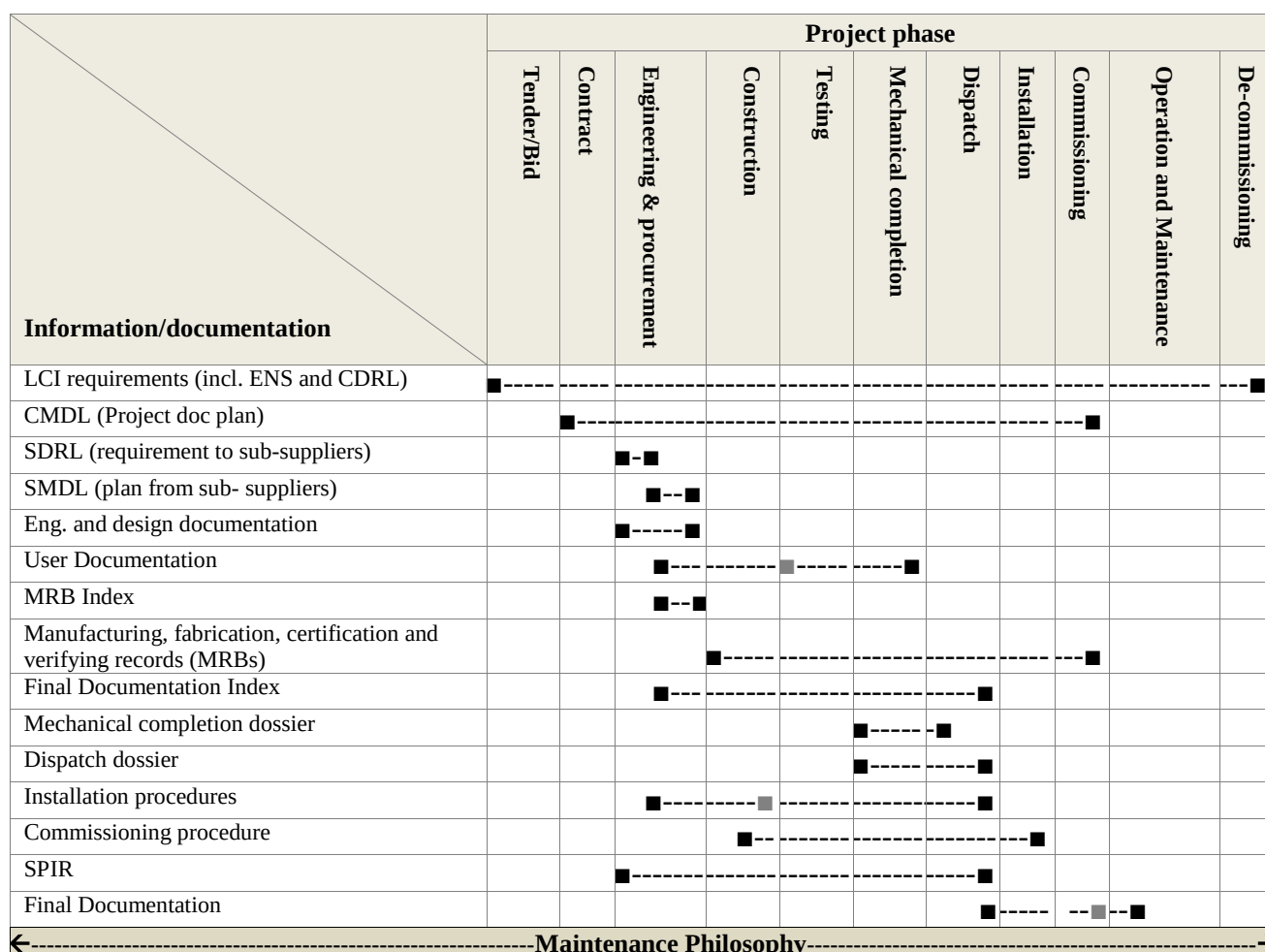


Figure 1 — Life cycle information

5.2 Acceptance of documentation

Documents not clearly marked “preliminary” or “for information only” etc. are binding.

The customer shall give an acceptance code to the documents submitted for review and acceptance. The following acceptance codes shall be used:

- Code 1: Accepted;
- Code 2: Accepted with comments incorporated. Revise and resubmit. For Code 2 documents the work can continue;
- Code 3: Not accepted. Revise and resubmit;
- Code 4: For information only. For Code 4 the documents shall not be resubmitted;

e) Code 5: Interface frozen.

Parts of final documentation shall be updated to "Final" or "As built" as agreed upon between the parties.

For equipment specially designed to suit the customer's plant the supplier shall await the customer's acceptance before the documents concerned can be released for manufacturing.

The customer's acceptance code for received documentation shall be submitted to the supplier within 10 working days after receipt, or within the time frame the parties agree upon.

10 working days shall also apply to all revisions for both the customer and the supplier.

5.3 Alteration of accepted documentation

If one of the parties wishes to alter documentation or data, which have been accepted, or if review is delayed, negotiations shall take place.

Critical errors in documents shall be corrected even if the customer has accepted the documentation.

5.4 Document lists

5.4.1 The document requirements and documents agreed upon between the different parties are handled by different types of lists.

5.4.2 The different lists applicable are included in the recommended process diagram in Figure 2.

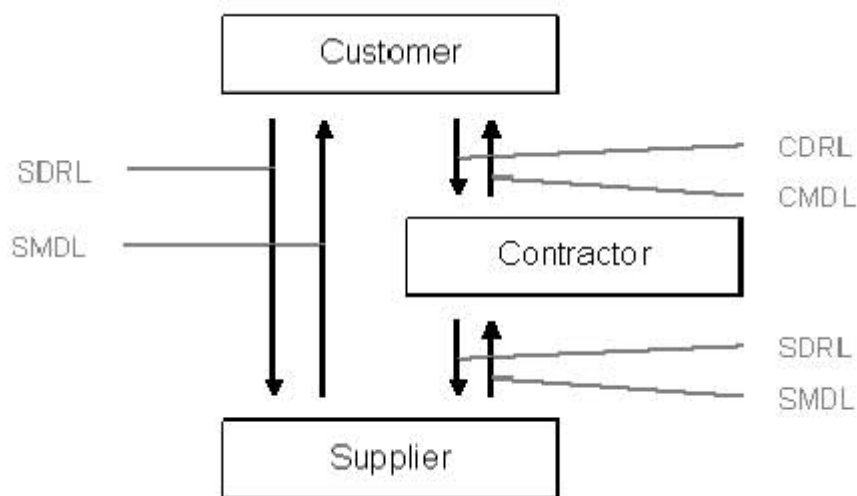


Figure 2 — Document lists

5.4.3 The master document list (CMDL, SMDL) shall contain:

- document title and number;
- documents submittal dates;
- documents to be included in the bid;
- documents to be submitted for acceptance, review or information to the customer;
- documents to be retained by supplier or contractor;