INTERNATIONAL STANDARD

ISO
26870

Space systems — Launch pad and integration site operational documents

Systèmes spatiaux — Documents opérationnels pour aire de lancement et site d'intégration

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 26870 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

Introduction

This International Standard establishes a list of documents that personnel are intended to use during operation of the launch pad and the integration site, when multiple nations cooperate and participate in the development or operation of these sites.

This International Standard also establishes requirements for the structure and contents of operational documents and rules for their preparation.

The purposes of this International Standard are:

— to provide personnel with standardized documents containing the information and procedures necessary for effective and safe operation of the launch pad and integration site;

— to provide a procedure for applying these documents; and

— to provide organizations and corporations that develop the operational documents with the common rules of their development.

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Space systems — Launch pad and integration site operational documents

1 Scope

This International Standard establishes requirements for the nomenclature, structure and contents of operational documents used at a launch pad or integration site.

When there is international participation, partnership or cooperation in the design, development, installation, test, activation or operation of a launch pad or integration site, this International Standard applies to the development of the operational documents required for the following circumstances:

— installation, testing, activation or operation within the territory of one country of a launch pad or integration site manufactured in another country;

— joint installation, testing, activation or operation when the equipment designed and manufactured in one country is part of the launch pad or integration site designed by another country;

— training of the launch pad or integration site personnel of one country by the experts from another country.

The development and use of the operational documents described in this International Standard are applicable to the following international launch pad or integration site operations:

a) preparation of integration site equipment to receive space vehicles and spacecraft;

b) preparation of launch pad equipment and the space complex for the launch of space vehicles;

c) space vehicle launch;

d) post-launch maintenance of the integration site and launch pad;

e) periodic maintenance of the integration site and launch pad.

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.

ISO 23041, *Space systems — Unmanned spacecraft operational procedures — Documentation*

ISO/TR 17400:2003, *Space systems — Space launch complexes, integration sites and other facilities — General testing guidelines*

3 Terms and definitions

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

3.1
assembly, repair and regulation instruction
assembly, repair and regulation procedure
AI
document containing detailed descriptions of the complex, system operations or tests required for assembly, repair and regulation

3.2
complex
launch pad or integration site

3.3
customer
firm that awards the design specification or work task and finances the work

3.4
data log book
DLB
collection of documents that define the initial and current technical condition of a facility, system or item of equipment

3.5
hazard analysis
HA
document that identifies the hazards associated with the operation of a system or component, the likelihood and consequences of their occurrence, and the procedures for preventing their occurrence and mitigating their consequences

3.6
integration site
equipment and facility designed for launch vehicle storage, assembly, testing, preparation, maintenance, servicing and preparation for transportation to the launch pad

[ISO/TR 17400:2003, definition 3.1]

3.7
launch pad
equipment and facility designed to provide for the pre-launch and launch operations of spacecraft

[ISO/TR 17400:2003, definition 3.3]

3.8
main system
launch pad or integration site or components primarily responsible for providing preparation and launch of a launch vehicle or spacecraft

[ISO/TR 17400:2003, definition 3.6]

3.9
main system field testing
launch pad or integration site development phase including the testing of an assembled, fully equipped, and checked out (or factory tested) main system; the testing is conducted at the operational launch pad or integration site to determine the system readiness for further testing or operation

[ISO/TR 17400:2003, definition 3.8]

3.10
maintenance instruction
maintenance procedure
MI
document containing detailed descriptions of the maintenance procedures that are required for a complex or main system

3.11
operation and maintenance manual
O&M manual
collection of documents that provide the information necessary to familiarize the personnel with the operation and maintenance of a facility, system or item of equipment

3.12
operational instruction
operational procedure
OI
document containing detailed descriptions of the complex, system operations or tests required for space vehicle launch preparation and launch

3.13
operational document original
operational document containing the necessary original signatures, or electronic version containing personal codes of the officials signing the document and protected from unauthorized changes

NOTE   Copies are supplied to users.

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3.14
post-launch maintenance
activities required to repair damage to the launch pad caused by launch of a space vehicle

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3.15
preventive maintenance
activities required to maintain an item in a satisfactory operating condition

3.16
spare part
item, part, device, tool or material required to repair and maintain a facility, system or item of equipment

3.17
spare-parts list
SPL
document that identifies all spare parts

3.18
spare-part use instruction
spare-part use procedure
SPUI
document containing detailed descriptions of the operations or tests required to use spare parts

3.19
system documentation list
SDL
list of all operational documents necessary for a given facility, system or item of equipment

3.20
test, assembly and inspection record file
TAIR file
collection of test operations, maintenance, modification, problem report or inspection documentation of a facility, system or item of equipment

NOTE   Two or more TAIR files located in the same place can be referred to as a "TAIR station".

4   General requirements

4.1   Operational-document applicability

The operational documents in this International Standard are required for the following activities:

a)   personnel training;

b)   launch pad and integration site operation;

c)   recording the results of launch pad and integration site operation;

d)   launch pad and integration site maintenance;

e)   logistics.

Operational documents that are generally developed are included in Table 1, along with their applications.

Table 1 — Types of operational documents

Code	Name	Application	
		Complex	Main system
SDL	System documentation list	a	a
O&M	Operation and maintenance manual	a	a
OI	Operational instruction or procedure	a	a
MI	Maintenance instruction or procedure	b	a
AI	Assembly, repair and regulation instruction or procedure	b	b
DLB	Data log book	a	a
TAIR	Test, assembly and inspection record file	a	a
HA	Hazard analysis	b	b
SPL	Spare-parts list	c	a
SPUI	Spare-part use instruction or procedure	b	b
DWG	Drawing[d]	a	a
a The document is mandatory.			
b The document is optional and is developed, when required, by the customer.			
c The document is not required.			
d Drawings can be included in O&M, OI, MI or AI.			

Depending on the type of facility, system or item of equipment, the amount of information, operational conditions or national practice, the operational documents and applications listed in Table 1 may be changed as follows:

— to add other operational documents,

— to waive operational documents deemed unnecessary,

— to combine several operational documents into one document (e.g. OI, AI and MI may be combined as a single type of instruction or procedure),

— to divide an operational document into several separate documents,

    NOTE   The titles of the resulting separate documents can reflect their contents.

— to waive individual sections from an operational document, or

— to add indispensable sections.

The SDL and the contents of operational documents for all complexes and main systems shall be determined by the corresponding developers.

4.2 Overall content requirements

Operational documents shall include the exact parameters, characteristics and other properties included in the corresponding design documents. Parameters, characteristics or properties missing from design documents shall not be included in corresponding operational documents. Operational documents shall be clear and comprehensive, with no dependence on other documents, except as noted in 4.7.

The words "ATTENTION" or "FORBIDDEN" shall precede the description of security measures.

Spelling and appearance in operational documents shall comply with ISO 23041, except in relation to illustrations.

The operational document original shall be stored by the developer of the subject complex or main system.

Each operational document shall include a list of changes or revisions in accordance with Clause 6.

4.3 Publishing medium

Operational documents shall be published and distributed either on paper or electronically, depending on the intended use of the documents, their means of control, the skill of the personnel involved and the requirements of the customer.

The paper on which operational documents are published shall not exceed (210×297) mm, except as noted in 4.5.

The paper and stitching chosen shall have a long term of service. The customer shall determine the means of electronic publishing and distribution.

4.4 Approval and delivery

Operational documents shall be approved in accordance with national practice and shall be delivered to the operational site before field testing has begun. If the subject operational document contains references to other operational documents (see 4.7), those referenced operational documents shall also be delivered to the operational site.