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**Space systems — Early operations —**

**Part 3:**

**Commissioning report**

*Systèmes spatiaux — Opérations initiales —*

*Partie 3: Rapport d'engagement*

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Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 10784-3 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

ISO 10784 consists of the following parts, under the general title *Space systems — Early operations*:

— *Part 1: Spacecraft initialization and commissioning*

— *Part 2: Initialization plan*

— *Part 3: Commissioning report*

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## Introduction

The three parts of ISO 10784 provide spacecraft (SC) manufacturers and operators with a specific form and format for writing SC commissioning reports required to configure and verify the SC to perform normal mission operations. Often, SC manufacturers and operators have defined these reports uniquely for each programme, or regional, national and corporate organizations have unique commissioning reports. The three parts of ISO 10784 aim at establishing a common language and form for SC stakeholders. The use of one form and format will simplify stakeholder understanding and comprehension of initialization and commissioning activities.

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# Space systems — Early operations —

## Part 3: Commissioning report

### 1 Scope

A general definition of initialization is that it begins at separation of the spacecraft (SC) from the launcher. In some cases, a more exact definition will be that initialization begins in flight, upon planned change in mode or state of the SC from the launch configuration. Commissioning is completed when the SC, including its payload, is certified for initial mission operations. Prior to certification for mission operations, the SC is described as a test article in the three parts of ISO 10784. ISO 10784 does not include a requirement for contingency plans, but does include a statement of the need for contingency planning.

This part of ISO 10784 outlines general descriptive information for SC initialization and commissioning as might be appropriate for programme management, project engineering or programme test documentation. Since the SC is considered a test article at this phase of its operational life, ISO 17566 is used as a normative reference in constructing the commissioning report. It provides SC manufacturers, SC operators and other stakeholders with a common language and form to verify and document spacecraft initialization and commissioning prior to normal SC mission operations.

### 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 10784-1, *Space systems — Early operations — Part 1: Spacecraft initialization and commissioning*

ISO 17566, *Space systems — General test documentation*

### 3 Terms, definitions and abbreviated terms

#### 3.1 Terms and definitions

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

##### 3.1.1

##### **commissioning**

certification of a spacecraft as ready for mission operations

##### 3.1.2

##### **early operations**

period from initialization to commissioning for mission operations

##### 3.1.3

##### **initialization**

Initial functional and operational checkout of a spacecraft following separation from the launch vehicle

### 3.2 Abbreviated terms

- LV launch vehicle
- PL payload
- SC spacecraft

## 4 Introduction clause of the commissioning report

### 4.1 General

This clause shall provide general information about the technical content of the commissioning report of interest. It shall include a brief description of the initialization sequence events. The overall initialization objective shall be described, and the criteria for SC certification shall be stated.

### 4.2 Overall sequence of events

This subclause shall summarize the overall sequence of tests conducted to demonstrate the acceptance status of the SC with respect to the launch environment and shall explain how the test in question fits into this sequence.

The following types of test shall be considered, if applicable to the SC initialization programme: functional tests and operational tests.

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## 5 Referenced documentation clause of the commissioning report

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### 5.1 General

This clause shall contain a list of documents to which reference is made in the commissioning report of interest. The documentation list may include normative references, applicable references or informative references.

### 5.2 Normative references

Normative references are published standards and specifications which provide requirements or constraints for initializing the SC. The required format for the list of normative references is shown below.

Document number	Document description	Revision level/Release date

### 5.3 Applicable references

Applicable references are programme-related documents which provide requirements or constraints for initializing the SC. The required format for the list of applicable references is shown below.

Document number	Document description	Revision level/Release date



## 5.4 Informative references

Informative references are documents included for information only. Such references amplify or clarify the document content but do not contain requirements applicable to initialization or commissioning. The required format for the list of informative references is shown below.

Document number	Document description	Revision level/Release date

## 6 Nomenclature

The terms and definitions subclause shall define the specific terms used in the commissioning report. In some cases, a project dictionary or glossary may be referenced.

The symbols subclause shall give a list of the symbols used in the commissioning report. Unless there is a need to list symbols in a specific order to reflect technical criteria, all symbols shall be listed in alphabetical order.

The abbreviations subclause shall define the abbreviations used in the commissioning report.

## 7 Objective

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### 7.1 General

This clause shall detail the general and specific initialization sequence objectives in the context of the SC design and launch environment test requirements of the launch service provider.

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### 7.2 Initialization strategy matrix

The required format for the strategy matrix is defined in ISO 10784-1. The commissioning report shall contain the strategy matrix as executed during initialization.

Event	Time	Operational requirement	SC or PL procedure	Prerequisites or constraints	Notes

## 8 Spacecraft configuration

### 8.1 General

This clause shall describe the general spacecraft article configuration, including the corresponding reference frame definition and mass properties, and provide relevant figures or the references of relevant drawings. When necessary, it shall document how the configuration supports the overall initialization objectives.

### 8.2 Identification and general configuration matrix

All major pieces of hardware, software and equipment, and all the critical launch-environment structural elements (including, but not limited to, the primary structure, platforms, supporting struts, propellant tanks and associated support structures and fastenings, pressure vessels, solar panels and related mechanisms, battery