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**Space systems — Re-entry risk  
management for unmanned spacecraft  
and launch vehicle orbital stages**

*Systèmes spatiaux — Gestion du risque de la rentrée pour les étapes  
orbitales des véhicules spatiaux non habités et des lanceurs spatiaux*



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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 27875 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

## Introduction

According to international treaties, the “launching state” is liable for damage or injuries caused by unmanned spacecraft and launch vehicle orbital stages that re-enter the Earth's atmosphere. In addition, commercial operators are subject to the national safety regulations or laws of the launching country that relate to re-entry of spacecraft and launch vehicle orbital stages. In order to minimize damage and injury from re-entering spacecraft and launch vehicle orbital stages, it is the responsibility of all parties (developers, manufacturers, space service providers, satellite operators and launch service providers) to take preventive measures during spacecraft design and space operations.

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# Space systems — Re-entry risk management for unmanned spacecraft and launch vehicle orbital stages

## 1 Scope

This International Standard provides a framework with which to assess, reduce and control the potential risks that spacecraft and launch vehicle orbital stages pose to people and the environment when those space vehicles re-enter the Earth's atmosphere and impact the Earth's surface. It is intended to be applied to the planning, design and review of space vehicle missions for which controlled or uncontrolled re-entry is possible. Objects that separate during the ascent phase and impact the ground are addressed in ISO 14620-2. This International Standard complements ISO 14620-1 and ISO 17666.

This International Standard is not applicable to spacecraft containing nuclear power sources<sup>1)</sup>.

NOTE Useful background information for this International Standard is available in ISO 24113.

## 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 14620-1, *Space systems — Safety requirements — Part 1: System safety*

ISO 17666, *Space systems — Risk management*

## 3 Terms and definitions

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

### 3.1

#### **controlled re-entry**

type of re-entry where the time of re-entry is controlled and the impact of debris is confined to a designated ground zone

NOTE This International Standard does not cover specific design to be retrieved, such as the Space Transportation System.

### 3.2

#### **launch vehicle orbital stage**

stage of a launch vehicle that can be injected into orbit

1) Such spacecraft are controlled by the *Principles Relevant to the Use of Nuclear Power Sources in Outer Space*, (General Assembly resolution 47/68 of 14 December 1992), A/RES/47/68 47 U.N.