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Space systems — Disposal of satellites operating at geosynchronous altitude

Systèmes spatiaux — Élimination des satellites opérant à une altitude géostionnaire

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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 26872 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 14, *Space systems and operations*.

Introduction

This International Standard prescribes requirements for planning and executing manoeuvres and operations to remove an operating satellite from geosynchronous orbit at the end of its mission and place it in an orbit for final disposal where it will not pose a future hazard to satellites operating in the geosynchronous ring.

This International Standard includes requirements related to the following:

— when the disposal action needs to be initiated,

— selecting the final disposal orbit,

— executing the disposal action successfully, and

— depleting all energy sources to prevent explosions after disposal.

End-of-mission disposal of an Earth-orbiting satellite broadly means the following:

a) removing the satellite from the region of space where other satellites are operating, so as not to interfere or collide with these other users of space in the future, and

b) ensuring that the disposed object is left in an inert state and is incapable of generating an explosive event that could release debris which might threaten operating satellites[1)].

For satellites operating in the geosynchronous belt, the most effective means of disposal is first to re-orbit the satellite to a super-synchronous orbit above the region of operating spacecraft and the manoeuvre corridor used for relocating operating satellites to new longitudinal slots, and then to discharge batteries and vent propellants and take other actions to preclude a debris-producing event.

1) Further information will be provided in the future International Standard, ISO 16127.

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1 Scope

This International Standard specifies requirements for the following:

— planning for disposal of satellites operating at geosynchronous altitude to ensure that final disposal is sufficiently characterized and that adequate propellant will be reserved for the manoeuvre;

— selecting final disposal orbits where the satellite will not re-enter the operational region within the next 100 years;

— executing the disposal manoeuvre successfully;

— depleting all energy sources on board the vehicle before the end of its life to minimize the possibility of an event that can produce debris.

This International Standard provides techniques for planning and executing the disposal of space hardware that reflect current internationally accepted guidelines and consider current operational procedures and best practices.

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 24113:2010, *Space systems — Space debris mitigation requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 24113 and the following apply.

3.1
inclination excursion region
region in space occupied either by a non-operational geostationary satellite or by an operational geosynchronous satellite without inclination station-keeping

3.2
re-orbit manoeuvre
action of moving a satellite to a new orbit