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**Detailed disposal requirements for launch vehicle orbital stages**

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### Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is drafted with reference to ISO 20893.2021 "Detailed Requirements for Space Debris Mitigation at the Orbital Stage of Aerospace System Launch Vehicles". The consistency process

degree is not equivalent.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

### Introduction

The orbital stages of launch vehicles, their in-orbit disintegration, and the debris generated by collisions with other space objects are currently one of the main sources of space debris.

Therefore, it is necessary to put forward strict requirements for the disposal design and implementation of the orbital stage of the launch vehicle to reduce the number of operational debris and reduce its own

The possibility of in-orbit disintegration and shortening the stay time of the launch vehicle orbital stage in the earth's protected space area, thereby reducing the risk of contact with other space objects

reduce the probability of collision and slow down the growth of space debris. At the same time, when the orbital stage of the launch vehicle and its debris re-enter the atmosphere, they will have an impact on the earth.

Surface personnel, property and aerial vehicles pose certain threats. Therefore, the design

and implementation of re-entry into the atmosphere need to be clearly related

Require.

To this end, this document refers to the content of launch vehicle orbital stage deorbit and reentry in ISO 20893.2021, and combines my country's national conditions and national conditions.

Based on internal and external engineering experience, we propose detailed requirements for the design and implementation of deorbit and re-entry, and standardize related work as a launch vehicle track

A reference basis for relevant design, inspection, implementation, and post-test evaluation.

Detailed requirements for launch vehicle orbital stage disposal

## 1 Scope

This document stipulates the principles for the design and implementation of disposal activities for the deorbit and reentry of the launch vehicle orbital stage (hereinafter referred to as the "orbital stage").

rules, disposal planning, deorbiting detailed requirements, reentry detailed requirements, effect assessment and documentation.

This document is applicable to orbit-level disposal activities, and short-term program-controlled upper-level disposal activities shall be implemented accordingly.

## 2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 32295-2015 Design requirements for residual propellant discharge of launch vehicles

GB/T 34513 Space debris mitigation requirements

GB/T 38194-2019 Launch vehicle operational debris mitigation design requirements

## 3 Terms and definitions

The terms and definitions defined in GB/T 34513 and below apply to this document.

### 3.1

activedeorbitactivedeorbit

The orbital stage does not rely on external factors or equipment and uses its own power to achieve deorbiting.

### 3.2

Passive deorbit passivedeorbit

By optimizing the launch orbit design parameters in advance, the orbital stage's own corresponding devices utilize gravitational perturbation, atmosphere, solar activity, solar radiation,

Deorbiting can be achieved by using the force generated by external environmental factors such as the geomagnetic field or by using external equipment to capture and drag, momentum exchange, energy transfer and other functions.

### 3.3

Disposalorbit

The orbit where the orbital stage remains after completing the disposal maneuver.

Note. Including orbits with a perigee height less than 100km.

### 3.4

decay orbit decayorbit

Orbits leading to orbital stage re-entry into the atmosphere.

## 4 principles

The design and implementation of track-level disposal generally follows the following principles.

- a) It does not affect the reliability and safety of the launch vehicle's intended mission, or the risk it poses is acceptable after assessment;
- b) Does not conflict with the content of GB/T 34513 on evacuation from protected areas;