1. (normative)  
   Specific mechanism specification (SMS) - DRD
   1. DRD identification
      1. Requirement identification and source document

This DRD is called from ECSS-E-ST-33-01, requirement 4.2.2a.

* + 1. Purpose and objective

The purpose of the specific mechanism specification (SMS) is to specify the mechanism requirements specific to the particular application. It is expected that a SMS is developed for each individual mechanism in a project.

The SMS is developed by the supplier, and propose to the customer for approval.

* 1. Expected response
     1. Scope and content

Introduction, references and terminology

The SMS shall contain a description of the purpose, objective, content and the reason prompting its preparation.

1. For example: “This document describes the application specific requirements of the <name> mechanism for the <name> project”.

The SMS shall list any applicable and reference documents to support the generation of the document.

The SMS shall include any additional definition, abbreviation or symbol used.

Customer specific requirements

The SMS shall include all the specific requirements expressed by the customer.

General requirements

The SMS shall specify or refer to the qualification procedure for parts and components.

1. See 4.2.4.2a.

If the mechanism is not maintenance free during storage and ground life, the SMS shall list the maintenance requirements, including for each of them:

number of operations,

frequency of operations,

special tooling and test equipment,

calibration and adjustments,

fault identification and repair, and

environment for maintainability operation.

1. See 4.2.4.4b.

The SMS shall include or refer to the method to demonstrate the mechanism reliability compliance.

1. See 4.2.5.1.

The SMS shall describe the redundancy concepts for the mechanism.

1. See 4.2.5.2d.

The SMS shall include the cleanliness requirements of the inert dry for flushing the critical parts of the mechanisms.

1. See 4.2.6a.

The SMS shall include the minimum functional performances to be conformed to, over the complete mission (including on-ground).

1. This minimum functional performance is used to ensure that the mechanism is not degraded over the mission. In particular, it is used to ensure that there is not unacceptable degradation due to:

* Radiation (see 4.5.2.8);
* Atomic oxygen (see 4.5.2.9);
* Degradation of the lubricant in the on­ground and in­orbit environments (see 4.7.3.1c);
* Migration of fluid lubricants that can cause a change of the lubricant amount on the parts to be lubricated. In this case, anti­creep barriers can be used (see 4.7.3.3.3c).

Constraints

The SMS shall include the specific climatic protection and environmental requirements.

The SMS shall include the sterilization requirements and the sterilization test procedure requirements.

The SMS shall include the stray light and emission requirements.

1. These requirements are used to select the materials and coatings (see 4.5.2.7).

Interfaces requirements

The SMS shall list the following interface definitions and requirements:

Structural

Thermal

Thermo-mechanical

Electrical

Data

Physical

Optical

Alignment

Access and stay-out zones

GSE

1. Examples of physical interfaces are: mass, geometry, MOI, COG, and I/F pattern.

Design requirements

The SMS shall list the handling, storage and operational requirements for all lubricated parts.

The SMS shall include the limits for outgassing, creeping and potential sources of contamination.

1. 1 This limits have a strong impact on the design of the fluid lubricated system.
2. 2 For generic requirements on outgassing limits, see requirement 4.7.3.3.2.b.

The SMS shall define the specific requirements for mission involving advanced optical instruments.

The SMS shall include the qualification temperature range under all ground, test, launch and in­orbit conditions.

1. This is used for the mechanism thermal design and sizing (see 4.7.4.2a).

The SMS shall list the shock load requirements for latches and locks.

1. For the derivation of such requirements, see 4.7.5.4.3i.

The SMS shall include the specified maximum positions of the mechanism.

1. These maximum positions are provided to design end stops in accordance with 4.7.5.4.4a.

The SMS shall specify the reliability requirements, to verify the conformity of the design, material and manufacture of elements to be cut used in release and locking.

1. See 4.7.5.4.12c.

The SMS shall specify the shock loads for release and locking devices.

1. For the derivation of such requirements, see 4.7.5.4.12g.

Verification requirements

The SMS shall list the requirements for shock generation and susceptibility.

1. See 4.8.2.11a.

The SMS shall list the limited­life items lifetime requirements.

1. See 4.8.2.15b.
   * 1. Special remarks

None.