Planetary Protection at ESA

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ESA planetary protection policy

Rational for a policy

• Based on Article II of the ESA Convention, the Agency is acting on behalf of its Member States
• Execution of activities and programmes by ESA shall therefore be consistent with the Member States rights and obligations pursuant to international agreements, including the UN Outer Space Treaty
• The ESA Planetary Protection Policy is intended as an essential tool for ensuring that necessary means are made available to avoid interplanetary contamination when the Agency is carrying out activities in outer space, mindful of Member States’ corresponding obligations

Main policy statement

• This “ESA Planetary Protection Policy”, complies with the COSPAR planetary protection policy and the corresponding implementation guidelines
• Spaceflight missions carried out with any degree of ESA involvement shall comply with this policy and its associated requirements

Authority level

• Any revision is subject to approval by the ESA Council
ESA Planetary Protection Requirements, ESSB-ST-U-001
→ In line with the COSPAR Planetary Protection Requirements
→ Approved by the ESA Standardisation Steering Board

Scope of the document
• The overall planetary protection management requirements
• The technical planetary protection requirements for robotic and human missions (forward and backward contamination)
• The planetary protection requirements related to procedures
• The Document Requirement Descriptions (DRD) and their relation to the respective reviews

Applicability of the document
• ESA spaceflight missions
• Contributions to ESA spaceflight missions
• ESA contributions to non-ESA spaceflight missions
ESA planetary protection standards

Materials and hardware compatibility tests for sterilization processes, ECSS-Q-ST-70-53C
→ Describes how to test hardware compatibility and provides examples

Ultra cleaning of flight hardware, ECSS-Q-ST-70-54C
→ Describes procedures how to clean flight hardware, in particular for life detection

Microbial examination of flight hardware and cleanrooms, ECSS-Q-ST-70-55C
→ Describes procedures how to measure the biological contamination (bioburden & biodiversity)

Vapour phase bioburden reduction for flight hardware, ECSS-Q-ST-70-56C
→ Describes hydrogen peroxide sterilisation procedures

Dry heat bioburden reduction for flight hardware, ECSS-Q-ST-70-57C
→ Describes high temperature sterilisation procedures

Bioburden control for cleanrooms, ECSS-Q-ST-70-58C
→ Describes how to set-up and operate bioburden controlled cleanrooms
ESA planetary protection responsibility

Corporate responsibility
- Establish, maintain and act as custodian of the ESA Planetary Protection Requirements
- Advise and support relevant ESA programmes and projects on matters of planetary protection
- Approve planetary protection categorization and requirements for flight projects
- Perform assessments including inspections and reviews of facilities, equipment, procedures and practices as appropriate to ensure compliance with the planetary protection requirements
- Certify the planetary protection compliance in the course of flight projects (part of launch certification)

Project responsibility
The Project Manager is responsible for the correct identification and implementation of the planetary protection requirements at project level
- In particular, the Project Manager is responsible to:
  - Identify the planetary protection requirements specific to the project by tailoring this standard and relevant planetary protection standards in the list of ESA approved standards
  - Define the planetary protection implementation and management approach
  - Define the planetary protection responsibilities within the project
  - Prepare project-level planetary protection documentation
  - Consider the implementation of the recommendations of reviews with respect to planetary protection aspects

Supported by:
- DLR/Univ. of Graz for verification assays
- DSMZ for managing the culture collection
- Planetary Protection Working Group (PPWG)
- European Space Science Committee (ESSC)
Things to remember

- ESA is compliant with the COSPAR Planetary Protection Policy
- The corporate planetary Protection responsibility is with the Product Assurance & Safety Department
- The responsibility to correctly implement the planetary protection requirements is with the Project Manager
- A range of standards are available to support the implementation of the planetary protection requirements