

ECSS standard on planetary protection requirements

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Since the beginning of Solar System Exploration, a lot of spacecraft have been sent towards other worlds, including landers, and one of the main goals of such missions is the search for extraterrestrial life forms. It cannot be excluded today that terrestrial entities could survive the cruise during space exploration missions and that they could be able to contaminate other bodies within our Solar System. At another level, possible extraterrestrial life forms are unknown and their ability to contaminate the Earth's biosphere, in the frame of sample return missions, remains also unknown.

The article IX of the OUTER SPACE TREATY (London / Washington January 27., 1967), ratified by all spacefaring nations, recommends consequently to preserve planets and Earth from contamination. The United Nations (UN-COPUOS) has delegated the COSPAR (Committee of Space Research) to take charge of Planetary Protection and to propose to spacefaring nations a planetary protection policy and a set of recommendations.

Using these recommendations, and with the CNES Planetary Protection Standard as a basis, a working group has been nominated in order to build ECSS (European Cooperation for Space Standardization) documents. The first level of ECSS will describe the main specifications in order to prevent the forward contamination of target bodies inside the Solar System (management of spacecraft systems crash probability, sterilization or biocleaning of spacecraft systems, microbiological control, integration in sterile environment, ...etc) and specifications in order to protect the Earth against backward contamination in case of return missions (return spacecraft systems crash probability avoidance, contact chain breaking with the explored body, sample containment and hermeticity control, sample quarantine...etc). The first document, concerning the back-contamination requirements, has been written and is presently in the review process. These ECSS documents on planetary protection requirements will help all spacefaring nations in Europe to be fully aware on planetary protection constraints and should allow to work with the same rules.