SPACE EXPLORATION SYMPOSIUM (A3)
Interactive Presentations (IP)

Author: Dr. Sanjay Vijendran
ESA, The Netherlands, sanjay.vijendran@esa.int

Mr. Thomas Voirin
European Space Agency (ESA), The Netherlands, Thomas.Voirin@esa.int
Mr. Denis Rebuffat
European Space Agency (ESA/ESTEC), The Netherlands, denis.rebuffat@esa.int
Dr. Peter Falkner
European Space Agency (ESA), The Netherlands, Peter.Falkner@esa.int
Mr. Jonan Larranaga
Aurora Technology B.V., The Netherlands, jonan.larranaga@esa.int
Ms. Hilde Schroeven-Deceuninck
European Space Agency (ESA/ECSAT), United Kingdom, Hilde.Schroeven-Deceuninck@esa.int
Dr. Marcos Bavdaz
European Space Agency (ESA), The Netherlands, marcos.bavdaz@esa.int

STATUS OF ESA'S ON-GOING AND PLANNED TECHNOLOGY DEVELOPMENTS FOR A
PHOBOS SAMPLE RETURN MISSION

Abstract

ESA is studying a potential Phobos Sample Return mission as one of the post-Exomars missions being considered for the mid-2020's within the Mars Robotic Exploration Preparation (MREP) Programme.

This mission, currently being considered jointly with Roscosmos, is intended to retrieve a 100g sample of material from the surface of Phobos and return it to the Earth a few years later.

Sample return missions from extra-terrestrial bodies, while having been attempted by other space agencies, has not been performed by ESA before, thus an extensive technology development programme has been underway already for some years in order to bring the critical technologies needed for such missions to a sufficiently high technology readiness level prior to a potential mission adoption decision in the coming years.

The technology areas in development include: sampling technologies in the low-gravity environment, propulsion, landing system, Earth return capsule and guidance, navigation and control.

This paper will describe the mission concept as well as the status and results of the ESA-funded technology developments that have been recently completed, currently in progress, as well as those in the planning for this mission candidate.