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ExoMars 2020 is Blossoming: Integration and Test is Underway

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Abstract

The ExoMars programme has a long history, and demonstrated a key milestone with the 2016 mission [1,2]. The next mission for the ESA-Roscosmos cooperative endeavor is the launch in 2020 of the long-awaited Rover with its Pasteur Payload [3] which will be accompanied by a science payload on the Surface Platform of the Descent Module.

1. Introduction

This presentation will report on the status of the ExoMars 2020 development at the time of the meeting, given that significant progress is being achieved during 2018.

2. ExoMars 2020 Integration and Test

This year, 2018, is planned as a very busy year for ExoMars 2020. The project completed its Critical Design Review in early May, and the year will include:

- Rover Structural and Thermal Model mechanical and thermal testing to qualify the Rover design, in France
- Rover electrical and software verification tests performed on the Avionics Test Benches in U.K. and Italy
- Completion of the Descent Module (DM) and Spacecraft Composite Avionics Test Bench assembly, and software testing, in Italy Entry,
- Descent and Landing comprehensive simulation and verification campaign, supporting DM software development, and responding to the recommendations of the Schiaparelli Investigation Board Report [4]
- Parachute qualification testing with drop tests in Sweden
- Rover Locomotion Verification Model integration, and start of mobility system qualification in Switzerland
- Completion of all Rover subsystems and equipment qualifications and Flight Model unit assemblies
- Delivery of all (and integration of most) flight models of the Pasteur Payload instrument
- Integration and test of the Rover's Analytical Laboratory Drawer Qualification Model and Flight Model in Italy
- Most of the integration of the Rover Flight Model in U.K.
- Most of the integration of the Carrier Module (CM) Proto-Flight Model in Germany
- Most of the integration of the Surface Platform Flight model in Russia and Italy, and start of Descent Module Flight Model integration in Italy
- Spacecraft Composite (DM+CM) mechanical qualification test campaign on structural model in Russia
- Descent Module thermal qualification with a test campaign on thermal model in Russia

3. Summary and Conclusions

With its very full programme of activities during 2018 (and more in 2019), the ExoMars 2020 mission development is on track for the opening of its 3-week launch window on 25 July 2020.

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The ExoMars developments reported here would of course not be possible without the enormous efforts of the entire ExoMars Team, which in addition to the ESA personnel, and in addition to the science teams of the Pasteur Payload and Surface Platform instruments, includes a wide-ranging industrial consortium in Europe and Russia and beyond. All of those partners are actively contributing to the dedicated, rapid progress towards the launch in 2020, and the authors most heartily thank them all!

References

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[4] Tolker-Nielsen et al., Schiaparelli Inquiry Board (SIB), 2017, http://exploration.esa.int/jump.cfm?oid=59176