

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Mars Exploration – missions current and future (3A)

Author: Mr. Stefano Voglino  
Thales Alenia Space Italia, Italy, stefano.voglino@thalesaleniaspace.com

Mr. Franco Ravera  
Thales Alenia Space Italia, Italy, franco.ravera@thalesaleniaspace.com  
Mr. Maurizio Capuano  
Thales Alenia Space Italia, Italy, maurizio.capuano@thalesaleniaspace.com  
Mr. Bruno Vinai  
Thales Alenia Space Italia, Italy, bruno.vinai@thalesaleniaspace.com  
Mr. Vincenzo Giorgio  
Thales Alenia Space Italia, Italy, vincenzo.giorgio@thalesaleniaspace.com

ROSALIND FRANKLIN MISSION RECOVERY OF EXOMARS 2022 MISSION

**Abstract**

Due to the geopolitical crisis following events in Ukraine, by decision of the ESA members states, the cooperation with Roscosmos on the Exomars mission was suspended and consequently the planned launch in September 22 from Baikonour Cosmodrome with a Proton launcher cancelled.

The Project completed anyway successfully the System Qualification and Flight Acceptance Review and the Spacecraft was ready for transportation to the launch site on the verge of starting the packing activities.

Following cancellation of the launch, a study phase of three months was initiated by ESA and performed by Thales Alenia Space-Italy to identify the most effective way to complete anyway the mission considering the various possible launch opportunities. The possibility to launch still with Roscosmos in 2024 was considered, but then cancelled following the decision to end the cooperation. The study indicated as preferred launch opportunities a long transfer (baseline) and a short transfer (backup) both in the second half of 2028; the dates were after refined by mission analysis to October (T3 transfer ) and December (T1 transfer).

For the new Mission two main elements of the Spacecraft Composite are available and will be re-used with limited modification due to age sensitive elements; this includes the Carrier Module supporting the Cruise phase of the Mission and the Rover Module responsible for the Mars Surface mission, having as main objective the search for traces of past life. The Rover to accomplish its own mission includes a 2m depth Drill, the on-board Analytical laboratory and the set of nine Instruments installed on board.

Also the surface mission Rover Control Centre (ROCC) is already available in ALTEC.

The Descent Module and the Landing Platform require instead an almost complete development, with the exclusion of the European contribution consisting in part of the Avionics and the Parachutes that will be re-used.

For the new Mission ESA is counting on the support of NASA that, according to the co-signed Statement Of Intent, will provide the Launch Service, the Radioisotope Heater Units and the propulsion system Throttleable Braking Engines and Flow Control Valves.

The paper will synthetically describe the new mission and the maintenance/design and development of the new spacecraft composite.