

NSTF Ariel Contract Signing Announcement - July 2024

The European Space Agency's (ESA) Ariel will be one of the first astronomy missions to use the UK's new National Satellite Test Facility (NSTF), operated by STFC RAL Space. An opening ceremony for the NSTF was held on 21st May 2024, where the UK Space Agency announced they have signed a contract to use the NSTF for testing the Ariel payload. Ariel will go through vibration and acoustic testing in the NSTF to ensure it will survive the violent conditions of launch, as well as thermal vacuum testing in RAL Space's smaller scale facilities.

The opening of the NSTF means that for the first time the UK will have a single, large-scale testing facility capable of conducting comprehensive testing. Testing is crucial to ensure that satellites can withstand the harsh conditions of space. The facility includes the UK's largest vacuum test chamber where satellites will be exposed to extreme heat and cold, and a dynamics suite where satellites will be exposed to vibration and sound to replicate the jarring conditions of a rocket launch.

Paul Eccleston, the Ariel Mission Consortium Manager at RAL Space, said "We're delighted to have formalised the agreement for Ariel to use the NSTF dynamics facilities for the payload module's vibration and acoustic testing. Using these fabulous new facilities alongside the other RAL Space cleanrooms and thermal vacuum chambers will allow us to seamlessly integrate, test and calibrate the complex payload for this exciting mission."

Dr Paul Bate, CEO of the UK Space Agency, said "The Ariel NSTF contract signing represents a major step forward for the Ariel exoplanet mission as the first hardware begins to take shape this year, ahead of launch in 2029."

"Once a satellite is in orbit, the options are limited if something goes wrong – that's why having world-class facilities that can simulate the harsh conditions of launching and surviving in space is so important."

"We're proud to be using the National Satellite Test Facility for the Ariel payload, and it's clear that satellite manufacturers across the UK will benefit from the suite of services now available to them, delivered by the expert team at STFC RAL Space."



Figure 1 – Left to Right: Dr Charly Knight (Principal Test Engineer, RAL Space), Dr Sarah Beardsley (Director, RAL Space), Dr Rachel Drummond (Ariel project manager), Professor Giovanna Tinetti (Ariel Principal investigator). Credit: STFC RAL Space.



Figure 2 – Prof Tinetti, Dr Drummond, Dr Beardsley and Dr Knight outside the NSTF! Credit: STFC RAL Space.



Figure 3 – The NSTF Vibration Suite undergoing construction. Credit: STFC RAL Space.

Ariel (Atmospheric Remote-sensing Infrared Exoplanet Large-survey)

Ariel, a mission to answer fundamental questions about how planetary systems form and evolve, is a European Space Agency (ESA) medium-class science mission due for launch in 2029. During a 4-year mission, Ariel will observe up to 1000 planets orbiting distant stars in visible and infrared wavelengths to study how they formed and how they evolve. It is the first mission dedicated to measuring the chemistry and thermal structures of exoplanet atmospheres, enabling planetary science far beyond the boundaries of the Solar System.

The Ariel mission is being led by a consortium of more than 50 institutes from 16 ESA member state countries, including the UK, France, Italy, Poland, Belgium, Spain, the Netherlands, Austria, Denmark, Ireland, Czech Republic, Hungary, Portugal, Norway, Sweden, Estonia –plus contributions from the US (NASA), Canada (CSA) and Japan (JAXA).

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