



FLYING OBSERVATORY SOFIA RETURNS TO HAMBURG FOR A C-CHECK

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Stratospheric Observatory for Infrared Astronomy, a modified Boeing 747SP, is due for another "pit stop": For a routine check at Lufthansa Technik, the flying observatory of the US space agency NASA and the German Aerospace Center landed at Hamburg Airport on 30 September 2020. During this layover, which is equivalent to a C-check taking place approximately every three years, the Boeing 747SP is put through its paces.

"We are looking forward to the renewed cooperation with Lufthansa Technik," says Heinz Hammes, SOFIA Project Manager at DLR's Space Administration branch. "The special circumstances this year require cooperation and increased flexibility from all parties involved. We are convinced that we are in the right place for the tasks ahead."



New air conditioning for the research instruments

In the special case of SOFIA, the aircraft will be repaired in accordance with NASA regulations, which also defined the exact work packages for this layover. During the extended maintenance visit the aircraft structure undergoes extensive inspections before necessary repairs are carried out. Therefore, engines and cabin, including the panelling and floors, are removed in order to be able to subsequently carry out the test and maintenance work and to check all cabling and ducts.

In addition, the air conditioning system is given an upgrade. "This will enable us to adjust the temperature in the cabin very finely in future," explains Hammes. "This is particularly important in the instrument zone, because every research instrument requires a precisely fitting ambient temperature."

The final checks at Lufthansa Technik - for instance on the engines and the cabin's internal pressurization - are scheduled for mid-December. The maintenance work should be completed by the beginning of February when SOFIA should resume its scientific operations.

University of Stuttgart carries out telescope maintenance

The telescope on board of SOFIA, the German contribution and the heart of the observatory, will also be thoroughly overhauled during its stay at Lufthansa Technik. This work will be carried out exclusively by the staff of the German SOFIA Institute (DSI) at the University of Stuttgart, who are very familiar with this globally unique system. "With this extensive maintenance, we pay particular attention to those work packages that, due to their complexity, are only carried out every three or six years," says Michael Hütwohl from DSI, who is responsible for the telescope at SOFIA. "Moreover, a large number of smaller jobs, from the inspection of the 2.7 meter primary mirror to software updates of the electronic telescope systems, are also on the agenda."

Exceptionally good cooperation

At present, more than 10,000 working hours are already earmarked for the scheduled work alone, so that the activities of all those involved must be well coordinated. "In 2014 and 2017 we have already experienced an exceptionally good cooperation with our colleagues from DSI, DLR and

NASA and we are now looking forward to continuing this cooperation," says Sven Hatje, the project manager at Lufthansa Technik responsible for SOFIA's C-Checks. "It is great that we can now welcome SOFIA back again."

Unlike SOFIA's other visits to Hamburg, this time its scientific instrument (GREAT - German REceiver for Astronomy at Terahertz Frequencies) is mounted on the telescope. It will be disassembled after landing and brought to the Max Planck Institute for Radio Astronomy in Bonn for maintenance and an upgrade.

Special safety precautions in times of the global coronavirus pandemic

All work on the aircraft is carried out under strict safety precautions due to the global coronavirus pandemic. Both Lufthansa Technik and NASA have developed and coordinated comprehensive procedures for working in and on the aircraft. These include the rule that no more than 15 people may be on board at the same time. The technicians are also obliged to wear a mouth-and-nose protection during the entire work, and only the absolutely necessary personnel have access to the aircraft.



04 OCTOBER 2020

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