



# Stratospheric Observatory for Infrared Astronomy (SOFIA)

## Airborne Telescope – Self-Guided Tour

Boeing 747SP (Special Performance)  
N747NA • *Clipper Lindbergh*  
One of 45 Boeing 747SPs built

185 feet

Fuselage length • nose to tail  
(48 feet shorter than a 747-100/200/300)

65

feet, 5 inches  
Height from ground to top of tail when parked.

4

Pratt & Whitney JT9D-7J turbofan engines rated at 50,000 pounds of thrust each

196

foot wing span

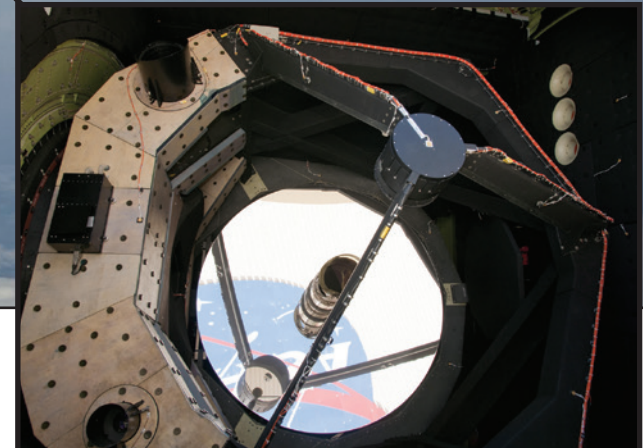
Range: 6,625 nautical miles

SOFIA flies at Mach 0.85  
(540 mph = 9 miles per minute)



Cockpit crew: 4  
pilot, copilot, flight engineer, and navigator

NASA/Tom Tschida



2.7-meter (106-inch) diameter telescope

NASA/Tom Tschida

NASA/Jim Ross

# SOFIA Self-Guided Tour • Observatory Interior

## Telescope Team seats

German SOFIA Institute (DSI) engineers occupy these seats to test and monitor the telescope's performance.

## Science Conference Table

Guest scientists use this area in flight to confer and communicate with the airborne science operations staff, the Science Flight Planner, and the Mission Director to discuss the ongoing observations and view real-time data.

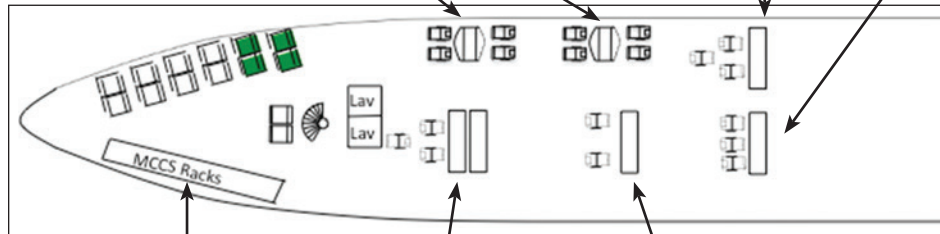


Telescope Operators' station



## HAWC+ Team Workstation

The High-resolution Airborne Wideband Camera Plus (HAWC+) collects infrared light at wavelengths between 50 and 140 microns. HAWC+ includes a polarimeter, a device that measures the alignment of incoming light waves to map magnetic fields in star forming regions and galaxies. (NASA/SOFIA/ Greg Perryman)



## Mission Controls and Communication System (MCCS) Racks

This is the backbone of the observatory that distributes power, collects data, and enables various on-board software suites and workstations to talk to each other.

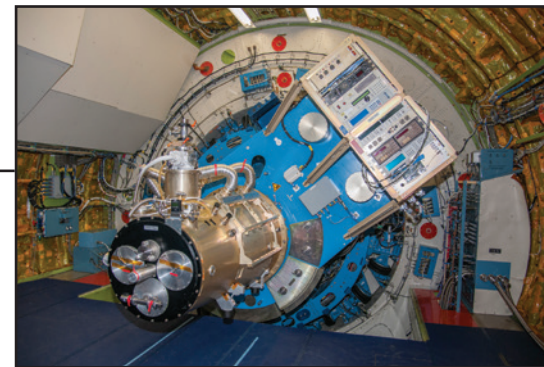


## Airborne Astronomy Ambassadors (AAA) Console

Educators who fly as part of the AAA Program observe science operations from a set of monitors located here. Since 2011, more than 30 educators have flown on SOFIA and are taking their flight experiences into their classrooms and communities to help promote interest in science, technology, engineering, and math.

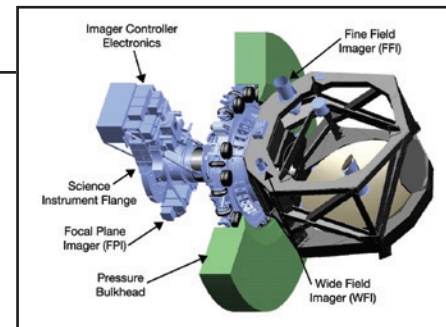
## Mission Director (left seat) Science Flight Planner (right seat)

The Mission Director (MD) has overall control of science operations during flight and works closely with the Science Flight Planner (SFP) to ensure that observations are on schedule and all systems function properly. The SFP and MD together can change observation targets and flight routes if necessary.



## Instrument Mounting Flange

The High-resolution Airborne Wideband Camera Plus (HAWC+) is shown mounted on the telescope. HAWC+ offers both total intensity imaging and imaging polarimetry in four bands ranging from 50 to 240 microns. HAWC+ measures dust grain alignment to infer the direction of magnetic fields, which can hold the key to star formation but are difficult to observe.



## SOFIA's 2.7 meter (106-inch) Bent Cassegrain/Nasmyth Telescope

The heart of SOFIA was built in Germany by MAN Technologie AG and Kayser-Threde GmbH. The telescope collects radiation with wavelengths between 0.3 and 1600 microns. The telescope has a full altitude range of +20 to +60 degrees above the horizon.

Except where otherwise credited, all photos this page: NASA/SOFIA/N. Veronico