

# NASA/JSC New Airborne Science Aircraft fleet of 5 Specialized Platforms Supporting Suborbital Research Programs Globally



National Aeronautics and Space Administration



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The NASA JSC Aircraft Operations Division provides a reliable highly configurable, airborne platforms to the science community and other customers in order to support research and advanced technology development or testing worldwide.

NASA maintains Airworthiness authority for the aircraft  
**No FAA or DoD airworthiness certification required!**

WB-57 engineering team is responsible for:  
 - Aircraft and payload airworthiness  
 - Aircraft repairs and modifications  
 - Payload integration support

We are able to reach back to NASA JSC Main Campus Specialized engineering can be quickly accessed through existing contract mechanisms

## All Suborbital Science JSC Aircraft:

- Dropsonde Launch Capable
- Mission unique Configurable
- Investigator Voice and Data Satellite Comms
- Experimenter Data Interface Systems
- International Deployments - "State" Aircraft Status

## Gulfstream III

GULFSTREAM III "NASA 2" (N992NA)	
Aircraft Ceiling	45,000 feet
Endurance / Range	7 hours / 3,650 nautical miles
Max Gross Weight	70,200 pounds
Engine Thrust	11,400 pounds per each Rolls-Royce Spey Mk 511-8
Max Airspeed	500 knots (Max Mach 0.82 with pod)
Aircrew	3 (2 Pilots, 1 Flight Engineer)
Passengers / Mission Crew	Up to 15 depending on internal cabin configuration
Max Pod Weight	1,200 pounds on MAU-12C/A external store rack
Cabin Payload Capacity	Configurable 19" equipment racks, 300 pounds max per rack
Experimenter Electrical Power	Up to 10 kW combined AC/DC



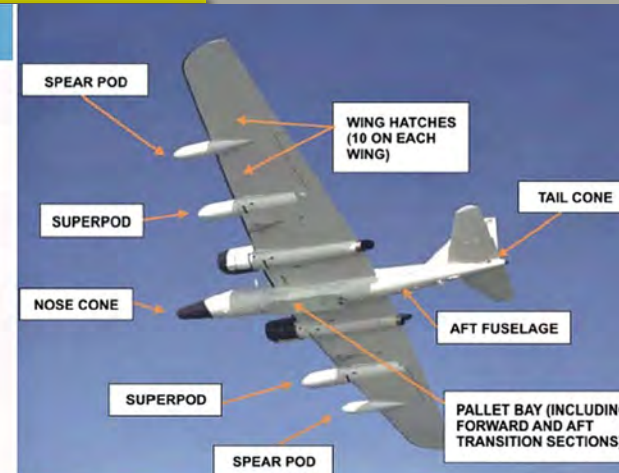
A Platform Precision Autopilot allows flying required course/altitude to within a repeatable 5 meter accuracy tube.

## Aircraft Operations at JSC:

- Highly experienced aircrew for orbital, suborbital, high altitude aircraft support/testing/monitoring and astronaut training.
- Expertise in Science mission planning
- Complex International Operations and Logistics
- All maintenance, back shop, life support, quality and Safety offices to perform unique aircraft ops.
- Controls W-147C airspace over the Gulf
- Experienced in coordinating/partnering with multi agencies to utilize these **unique national assets.**

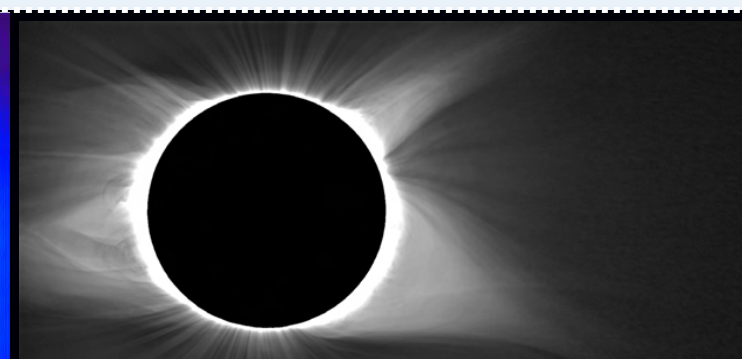
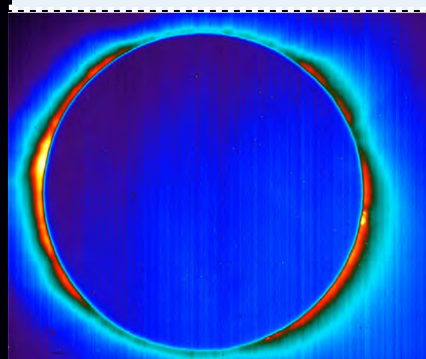
## 3 WB-57s

PERFORMANCE	
Aircraft ceiling	60,000+ feet
Endurance	6.5 hours
Range	2,500 miles
Max. payload	8,800 pounds
Airspeed @ 60kft	410 knots (Max: Mach 0.8)
Aircrew	2
Wingspan	123 feet



## Airborne Imaging and Recording System (AIRS) 2017 Eclipse Suborbital support

- Eclipse totality duration extension to 7.5 minutes
- No issue with weather: Observations in Stratosphere
- Observing Vis & IR bands - no IR blockage by water
- Real-time data sat link from aircraft to NASA channel



## Gulfstream V

GV Performance and Capabilities "NASA 5"	
Aircraft Ceiling	51,000 feet
Max Gross Weight	90,900 lbs
Mission Duration	10 hours / 12 hours (36,000 lbs / 41,300 lbs of fuel)
Range	> 5,000 nm
Cabin Payload Capacity	8,100 lbs / 2,800 lbs (36,000 lbs / 41,300 lbs of fuel)
Max Airspeed	507 knots at 41,000 feet (Max Mach .885)
Experimenter Electrical Power	115 VAC 60 Hz - 21 kVA 115 VAC 400 Hz - 20 kVA 28 VDC - 10 kW
Experimenter Interfaces	QTY 2 nadir portals, Inmarsat/Iridium Satcom, 10 Gbps onboard network infrastructure, NASDAT, NTP/PTP time, GPS, legacy navigation data



## Modifications

- Two, centerline, nadir-facing portals, 21 3/4" x 21 3/4"
- ~17.5" aperture window pack assemblies with interchangeable window materials
- 8 EIA-310B 19" equipment rack/seat cabin positions
- Experimenter power system:
  - 21 kVA, 115 VAC 60 Hz (single phase)
  - 20 kVA, 115 VAC 400 Hz (both single and three-phase)
  - 10kW, 28 VDC (regulated)
  - NEMA, SAE AS6129, or NASA Mk I/III EIP power interfaces available
- Satellite communications:
  - L-band Inmarsat (432 kbps max theoretical, software upgradeable to 650 kbps HDR service)
  - Iridium phone (voice and data)
  - NASDAT Iridium modem (data)
- Experimenter data system:
  - 10GBASE-T, OM1 and OM3 fiber rack-to-rack connectivity
  - NASDAT (navigation data recording and distribution)
  - Network Time Protocol (NTP) and Precision Time Protocol (PTP/IEEE 1582)
  - GPS/GLONASS L1/L2 RF distribution
  - Legacy data (IRIG-B, Arinc 429, GPS PPS, WOW, etc.)

## Points of Contact

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