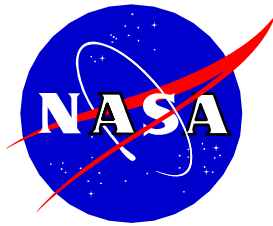


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DoD Maintenance Symposium & Exhibition

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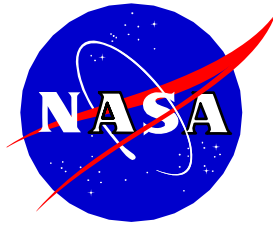


Obsolescence & Post-Production Support

Obsolescence can happen at any phase in the acquisition cycle, from design and development through post-production.

Material obsolescence may occur at the part, module, subsystem or system level. Parts obsolescence, resulting from Diminishing Manufacturing Sources and Material Shortages (DMSMS), has been a growing problem impacting mission readiness, not to mention costing the government millions of dollars every year. These factors make it difficult, if not impossible, to provide reliable, long-term Post-Production Support for the military's fielded systems. This session explores what the Government and Industry is doing to proactively manage the risk of Obsolescence.

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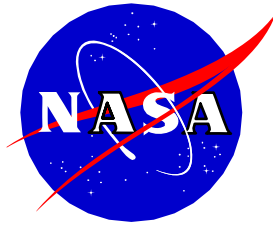
Aircraft Operations

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- NASA - JSC's Aircraft Operations Division
 - Most people do not associate aircraft operations with JSC
 - Fly 75% of all flight hours flown by NASA
 - Complex and unusual missions
 - Unique aircraft - Unique environment - Routine basis
 - JSC's Guidelines for Aircraft Operation
 - Safety
 - Common Sense
 - Cost Effectiveness

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Aircraft Operations

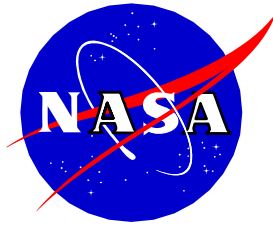
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- Shuttle Carrier Aircraft (SCA)
 - Boeing 747 modified to carry the Space Shuttle



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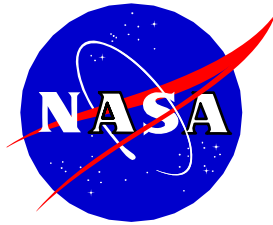
Aircraft Operations

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- Shuttle Training Aircraft (STAs)
 - Modified Gulfstream GII used as Space Shuttle landing trainer

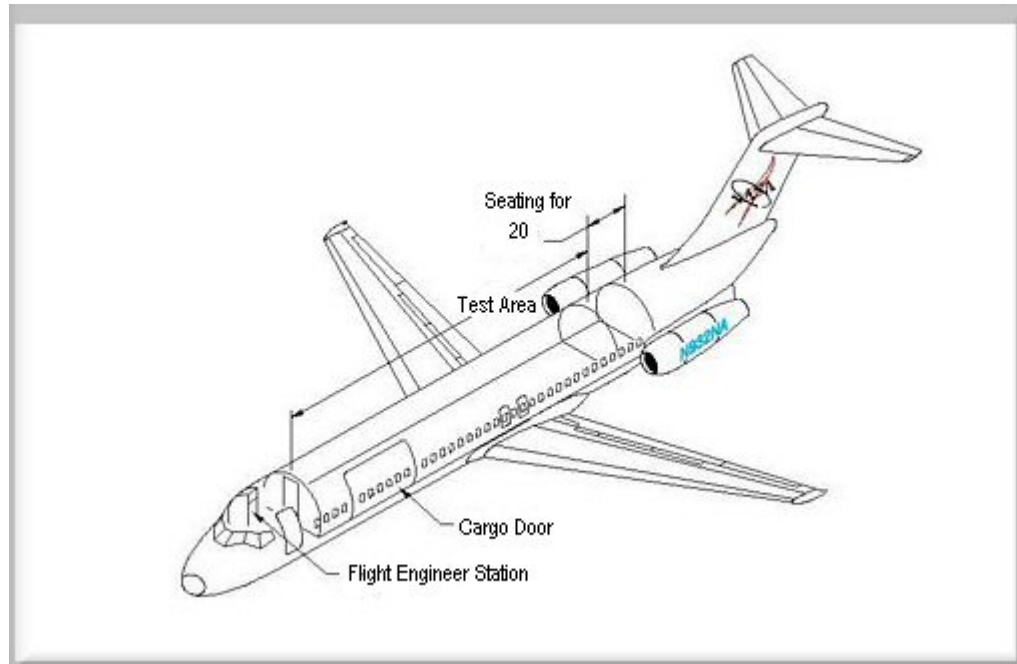




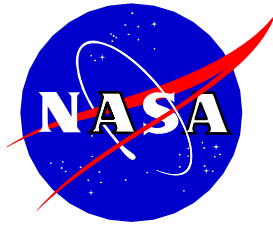
Aircraft Operations



- C-9 Microgravity Research Aircraft
 - Modified Douglas DC-9
 - Modified to support onboard in-flight research



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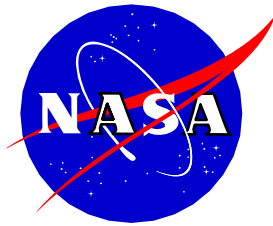
Aircraft Operations

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- 377SG-201 Super Guppy
 - maximum payload of more than 26 tons
 - cargo compartment 25 feet tall, 25 feet wide and 111 feet long





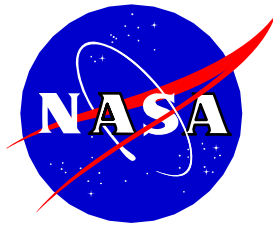
Aircraft Operations



- T-38N
 - NASA's version of the Northrop T-38 Talon
 - Primary flight proficiency trainer for astronauts



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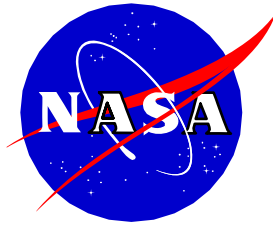
Aircraft Operations

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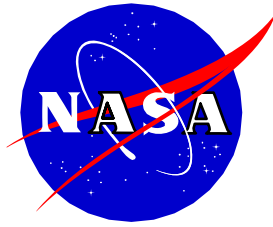


- **WB-57F**
 - Converted from B-57B/Ds by General Dynamics - 1963

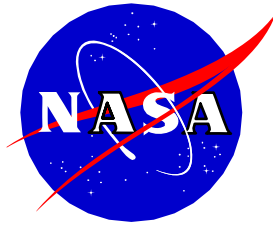




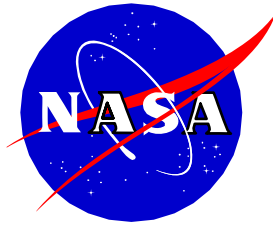
- T-38 Modifications
 - Glass Cockpit / Avionics Upgrade 1997
 - Second edition underway
 - Inlet Modification
 - Basis for USAF T-38C modification
 - Exhaust Ejector Modification
 - Developed at NASA/JSC, adopted by USAF
 - Ejection Seats replacement
 - Developed at NASA/JSC, adopted with modification by USAF



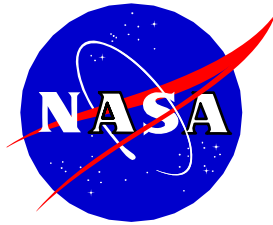
- WB-57 Modifications
 - Pallet System
 - Standardized payload integration
 - Wing Pods
 - Modified WB-57 wing pylon to accept U-2 pod forebody
 - Avionics Upgrade
 - Partial glass cockpit – adapted T-38N design
 - WB-57 Modified main landing gear
 - New piston-axle
 - F-15E tires, wheels, brakes, and antiskid



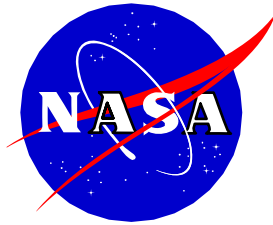
- WB-57 Planned modifications
 - Gross Take Off Weight Increase
 - Engineering effort to certify higher gross weight
 - U-2 Super-pods
 - Increased Payload
 - Payload portability between NASA Science aircraft
 - Autopilot replacement
 - Current system is '50's technology
 - Spinning mass gyros
 - Not RVSM capable



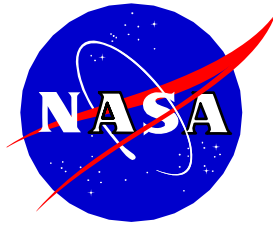
- **WB-57 Planned modifications (con't)**
 - **New Ejection Seats**
 - Current seat is ESCAPAC IC6
 - Planned replacement - F-15 ACES II
 - **New Engines**
 - Improved performance and engine life
 - Current engines TF-33-P11A
 - Planned replacement - C-141 TF-33-P7



- How JSC addresses Obsolescence:
 - OEM support for T-38, GII, C-9, B-747
 - Engineering, parts, and subsystems
 - DoD support for T-38, C-9, B-747
 - Engineering, parts, and subsystems
 - Commercial market
 - Engineering, parts, and subsystems
 - Aftermarket parts: new surplus, rebuilt, as - is

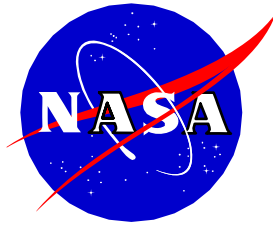


- How JSC addresses Obsolescence:
 - Reverse engineering
 - Make new parts using old parts as patterns
 - Works best for structural and mechanical components
 - Rebuild / overhaul / rework
 - Works best on mechanical subsystems and components
 - Electrical assemblies are challenging
 - New design
 - Redesign items for improved performance, improved materials, improved reliability



- How JSC addresses Obsolescence:
 - Adopt and adapt systems from other platforms
 - Works best for subsystems
 - Examples:
 - F-15E tires, wheels, brakes on the WB-57
 - A4 main gear tires on WB-57 nose gear
 - T-38N avionics in WB-57
 - U-2 Spear pods (old design pods) on the WB-57
 - Subject matter experts
 - Consultant Studies and Recommendations
 - Find, recruit, and hire, the right skills for the job

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Contact Information

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- <http://jsc-aircraft-ops.jsc.nasa.gov/wb57/index.html>
- <http://jsc-aircraft-ops.jsc.nasa.gov/guppy/index.html>
- http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/about.html

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