



CUSTOMER:
NASA Johnson Space Center

INDUSTRY:
Aerospace

PROJECT NAME:
Support for WB-57F Gross Weight Increase Program

CUSTOMER LOCATION:
Houston, Texas

OVERVIEW

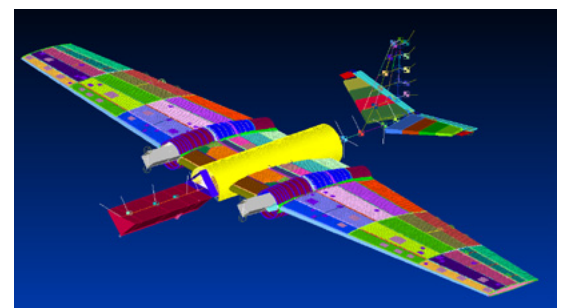
NASA operates a fleet of three WB-57F Canberra aircraft for high-altitude research and development missions. Recognizing an opportunity to greatly increase the utility of these aircraft, NASA contracted ATA to provide support for a gross weight increase program. Rather than perform a time-intensive complete recertification effort involving detailed stress analysis of the entire airframe, ATA developed a series of flight envelope restrictions to allow the aircraft to be operated at increased weights without exceeding the original design loads of the aircraft. NASA now operates these aircraft at gross weights up to 14% higher than the previous limits, allowing for numerous combinations of increased payloads, longer loiter times, and longer ranges.

ATA SUPPORT:

- ▷ Performed detailed configuration audit of the aircraft, including review of maintenance programs, repairs, and available drawings.
- ▷ Developed system-level finite element models.
- ▷ Planned and conducted ground vibration and static testing to characterize the structure and provide a basis for model tuning.
- ▷ Correlated structural models to ground-measured modes.
- ▷ Developed detailed panel-method aerodynamic models.
- ▷ Performed aeroelastic analyses, including flutter, discrete gust, random turbulence, and static and dynamic maneuver analysis.
- ▷ Developed flight envelope restrictions for increased gross weight operations.
- ▷ Supported flight flutter testing with instrumentation, data acquisition, planning, and in-flight and post-flight data reduction and analysis. ATA also provided an FAA-qualified designated engineering representative for additional oversight.
- ▷ Provided all relevant substantiation documentation.



▲ WB-57F undergoing ground vibration testing



▲ System-level finite element model

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