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Case Study

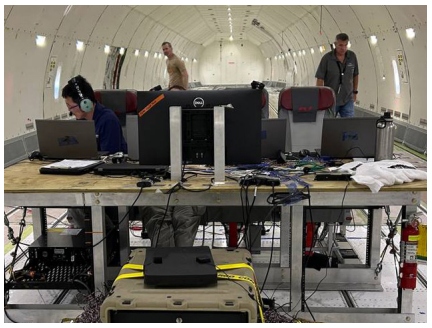
Image credit: Mammoth Freighters LLC

777-200LRMF Mammoth Freighter Aircraft Modification

OVERVIEW

Mammoth Freighters LLC (Mammoth) converted a 777-200LRMF (Long Range Mammoth Freighter) aircraft from a passenger aircraft to a large cargo freighter aircraft and successfully attained FAA certification, representing a significant milestone in their widebody freighter conversion program. To support this conversion and certification, ATA Engineering, Inc., (ATA) worked closely with Mammoth over the course of two years to support a series of ground and flight tests consisting of pre- and post-modification ground vibration tests, static bending and pressurization tests, and unloaded and fully loaded flight flutter tests on the post-modification configuration per FAA Supplemental Type Certification (STC) requirements. ATA also provided, installed, and removed all instrumentation in support of these tests.

The planning and execution of these test efforts required close collaboration between ATA, Mammoth, an ATA subcontractor, and multiple designated engineering representatives (DERs). With these test campaigns successfully completed, FAA certification of the aircraft modification was attained in 2026.



Flight Test Setup

TASKS PERFORMED & KEY OUTCOMES

- Developed test planning documents—including test plans, procedures, and wiring diagrams—for ground vibration, structural, and flight testing.
- Procured and built strain gage, accelerometer, and thermocouple cabling with a combined length of over one mile.
- Provided all required accelerometers, strain gages, sensor data acquisition, and flight data acquisition hardware.
- Executed ground vibration tests and supported ground bending, pressurization, and onboard flight flutter tests.
- Provided real-time data and results for onboard flight tests to ensure that flight test points verified the flutter clearance envelope.
- Performed all posttest data analysis for ground and flight tests.
- Worked closely with DER and FAA representatives to ensure that all test objectives were achieved.

"ATA continues to be one of the most efficient and skillful teams we work with. So much so that our program has slowly transitioned to using ATA's team for all of our upcoming flight vehicle tests in lieu of other third-party providers. The team at ATA are incredible communicators and collaborators, but when it comes down to it, the execution of the test and the quality of the data are most important for us. The quality and accuracy of the data ATA provides instills us with the confidence we need to evaluate and validate our models and achieve certification."

—Johnny Froehlich (FEA Lead, Mammoth Freighters)

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