



# FULL SCALE STRUCTURAL TEST LAB

The Full-scale Structural Test Lab is housed in NIAR's newest and largest facility, the Aircraft Structural Test and Evaluation Center. This immense facility encompasses 130,000 square feet (39,000 square meters), has a clear span of 265 feet (80 meters) and ceiling height of 48 feet (14 meters). Typical tests range from full airframe durability and damage tolerance testing with 70 or more load systems and hundreds of data channels to single channel coupon or component testing. In addition to aircraft and components, items tested range from wind generator blades to communication pole reinforcements.

## → CAPABILITIES

- Test load development from supplied aircraft loads
- Test fixture design and fabrication
- Load system design and fabrication
- Strain gage and miscellaneous transducer installation
- Data and load control system development and installation
- Testing services and data handling

## → EQUIPMENT

- 7 load control systems with 440 channels and 26 separate load stations
- Multiple data acquisition systems capable of recording 6,500 channels of data
- ARAMIS photogrammetry system, a 3D deformation measuring system to characterize displacements and strains in components
- CATIA V5 capabilities
- Load cells ranging from 50 lbs-200,000 lbs
- Load frames with stroke and load control for material and component testing up to 200,000 lbs.
- Large durability test base fixtures for rapid development of durability test setup for aircraft up through business-size jets
- Pressure control equipment for fuselage cyclic and static pressure testing including a 6" shop air supply and a stand-alone 655 cubic foot per minute 125 HP air compressor
- Hail gun

## → R&D, CERTIFICATION OR QUALIFICATION

- Full-scale and component testing (static, durability and damage tolerance)
- Pressure cyclic testing
- Hail strike testing
- Material testing

## → PROJECTS

- Bombardier Learjet 200 Full Scale certification testing
- Spirit G250 and G650 Flap certification testing
- Spirit composite panel static and pressure testing
- Airbus A350 Pylon development testing
- Sikorsky composite panel testing
- KC135 Wing Joint Fit testing
- FAA, DoD, NIS research

## → CONTACT

**Tim Hickey, Director**  
(316) 978-8204  
thickey@niar.wichita.edu



WICHITA STATE  
UNIVERSITY

NATIONAL INSTITUTE  
FOR AVIATION RESEARCH