For more than 20 years, Southwest Research Institute® (SwRI®) has conducted static and fatigue testing for full-scale aircraft structures and major components. Technical staff members use their extensive knowledge of aircraft structures and in-flight loading to produce cost-effective and timely test programs. These test programs use state-of-the-art equipment to provide hydraulic load and fuselage pressurization control combined with data acquisition hardware for high channel count monitoring and recording of loads, deflections, strain and crack growth.

Capabilities

SwRI develops comprehensive aircraft structures test programs tailored to client needs that can include loads development, test procedures, test fixtures, load frame, test setup, instrumentation, test monitoring, nondestructive inspection (NDI), data analysis, teardown and post-test documentation. The Institute routinely designs and fabricates the load frame, whiffle trees, and hydraulic load systems. Customized software and data processing are also developed to meet clients’ unique monitoring and measurement reporting needs.

Experience

T-37  ■ Full-scale fatigue testing
T-38  ■ Full-scale fuselage fatigue testing
    ■ Wing fatigue testing
    ■ Flap testing
    ■ Horizontal tail testing
T-39  ■ Wing fatigue testing
C-130 ■ Skin panel fatigue testing
    ■ Landing gear attachment frame fatigue testing

Facilities

■ Temperature and humidity controlled structures test building with 7,000 square feet of completely unencumbered test floor

■ Total test floor coverage by 30-ton bridge crane with 30-ft hook height plus 10-ton independent secondary hook

■ Hydraulic power supplies of up to 80 gpm at 3,000 psi

■ Air pressurization system up to 375 cfm at 150 psi

■ MTS AeroST hydraulic controller supported by customizable LabVIEW® data acquisition systems
Southwest Research Institute is an independent, nonprofit, applied engineering and physical sciences research and development organization using multidisciplinary approaches to problem solving. The Institute occupies 1,200 acres in San Antonio, Texas, and provides more than 2 million square feet of laboratories, test facilities, workshops and offices for more than 3,100 employees who perform contract work for industry and government clients.