



July 31, 2006

Volume 3, Number 12

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Full-Scale Structural Testing Lab conducts cell phone tower tests



Until recently, the Full-Scale Structural Testing Laboratory at Wichita State University’s National Institute for Aviation Research only had experience in conducting full-scale testing for aircraft. Now the lab is conducting full-scale testing on monopoles to support cellular phone towers.

BCI Wireless of Boulder, Colo. specializes in cell phone tower reinforcements. The company recently realized a need to test the structural integrity of its products. After researching, they found no prior evidence of full-scale structural testing for cell phone towers.

In recent weeks, the Full-Scale Structural Testing Lab began tests on 20-ft monopole sections. The test set-up simulates high-speed wind gusts by applying a 15,000-lb load to each end of the pole. In additional tests BCI will add reinforcements and field components to the pole to determine how they affect strain.

BCI also plans to do future testing at NIAR’s Full-Scale Structural Testing Lab on latticed tower sections also used to support cellular services.

Liberty Aerospace puts composites to the test in Full-Scale Structural Testing Lab

The Full-Scale Structural



Testing Lab also recently began structural fatigue tests on a Liberty XL2.



During production of this particular aircraft, parts of the composite fuselage were intentionally manufactured with defects. Liberty Aerospace is requesting the tests to determine how long the aircraft will remain safe and flyable with these various composite delaminations.

The fuselage of the Liberty XL2 is constructed from carbon fiber and the welded tubular 4130 steel chassis takes the primary loads of the engine, nose gear, main gear and wing attachment. It also carries the control system assembly, fuel tank system and seat harness attachments.

During the test, the aircraft will be inspected every 1/10 of a lifetime for crack growth using NDI equipment. Significant crack growth will be measured and noted during each inspection.

The Liberty tests began in mid-July and will extend until the aircraft has sustained three simulated lifetimes (an equivalent of about 15,000 flight hours).

Results from the test will be used to develop guidelines for Liberty XL2 maintenance manuals.

For more information about NIAR's Full-Scale Structural Testing Lab visit the [website](#).

