Karen,

Here are some pieces of information for use in a Researcher article on the General Aviation Stall/Spin Program:

Stalling and spinning have always represented a serious safety hazard to pilots since the advent of heavier-than-air flight. Langley has traditionally been a national leader on research to solve or minimize these problems, and the early research here dates back to the 1930's when a 15-foot spin tunnel was put into operation in the East area. The tunnel was enlarged to 20-feet in 1941, and has been used throughout the years to test over 400 airplane designs. It is currently the only operational spin tunnel in the U.S.

Other specialized testing techniques, such as free-flight tests in the full-scale tunnel, drop-model tests, and piloted simulator studies have been developed at Langley in recent years to augment this research.

Stall/spin research conducted by the NACA during World War II benefitted both military and civil aircraft designers, because these airplanes tended to be similar in important geometric and mass features, resulting in similar spin characteristics. Following World War II, however, military designs began to incorporate swept-back wings and other radically different features, which markedly changed stall and spin characteristics. Langley research efforts following World War II were necessarily directed at high priority military designs, and as a result, the technology required for the design of light general aviation airplanes was neglected, and is now severely lacking.
Currently, the stall/spin problem for light general aviation airplanes is very severe. Stall/spin accidents are the largest single factor in fatal accidents, and they account for about 30-percent of the fatalities. The NASA Research and Technology Advisory Committee (RTAC) Panel on General Aviation Technology has stated that the stall and spin represent the most important problems facing the light plane designer.

In response to outside requests for an expanded, aggressive research program on the problem, Langley has formulated a program fashioned after the highly successful research programs conducted for military designs such as the F-4, F-111, F-14, F-15, and F-16.

The objectives of the program are directed toward aerodynamic characteristics of such designs at high angles of attack, concepts for stall avoidance or "stall proofing," design guidelines for ensuring satisfactory spin characteristics, testing techniques (such as radio-controlled models) which can be used by the industry, emergency spin recovery systems, and consultation for the industry. The studies will include several low-and high-wing designs as well as single- and twin-engine configurations.

In one project, researchers are attempting to determine the effects of tail design on spin characteristics. Model and full-scale airplane tests are being conducted for a typical low-wing single-engine design which has been modified for tests of several tail configurations. From the results of such tests, researchers hope to develop design guidelines which can be used by the general aviation industry.
Key research personnel involved in the program include: Jim Bowman, Tod Burk, and Joe Johnson of STAD, Jim Patton and Paul Stough of FRD, Don Hewes and Tom O'Bryan of FDCD, Dave Robelen of OSD, and Charlie Bradshaw of SED.

Organizations supporting the program are: STAD, FRD, FDCD, SED, FAB, OSD.

Joe Chambers, STAD, Dynamic Stability 2184

I'll be in Europe next week, however if you desire more information, please contact Jim Patton, Jim Bowman, or Joe Johnson. I will be back May 4.