

A Stinson 108 Voyager with Explosive Wing Bolts

<http://www.westin553.net>

By Larry Westin - June 4, 1998

UPDATED - Rev B - 10/10/14 - Page 1 of 4

It's extremely rare for civilian aircraft to be equipped with electrically activated explosive charges. Such devices have long been used by the military and NASA as part of emergency egress systems, although I don't know of any designed to separate the wings of an aircraft. While I have not done in depth research, I am unaware of any other American general aviation airplane which used (or uses) such explosive devices. Ex military warbirds now flying as part of the general aviation fleet may be an exception. Thirty years ago one light, single piston engine, general aviation aircraft, a Stinson model 108 Voyager, was equipped with such explosive devices as part of an apparatus to lower a disabled airplane in flight, including the pilot and passengers, safely to the ground.

Two New York inventors, Angelo Raiti, and Dario Manfredi, were partners in the Aircraft Safety Release Corporation. Their intent was to create a system which would bring a disabled airplane safely back to earth.



BEFORE TAKE OFF --left to right, Angelo Raiti, Tommy Walker, Dario Manfredi. Stinson Voyager in background. Note plane's chute compartment at Tommy's right hand.

When the pilot decided his airplane was disabled he (or she) would pull a handle inside the cockpit which activated the explosive devices which would remove pins holding the wings on. With the wings gone (keep in mind this is in flight) then the main parachute deployed. The explosive charges having removed wing attachment pins allowed the wings to physically separate from the airplane. Once free the wings would free fall until their own parachutes opened to lower the wings to the ground.

As the fuselage, now free of wings, free fell toward earth, with pilot and passengers still aboard, a large parachute would deploy from the top of the fuselage. With all occupants still in the airplane (gives new meaning to the recommendation "keep your seat belt fastened at all times!"), the wingless fuselage would float down under the parachute to a safe landing.

A practical test to prove the theory was necessary. The two inventors modified and equipped a 1946 Stinson model 108 Voyager, serial number 108-13, registered

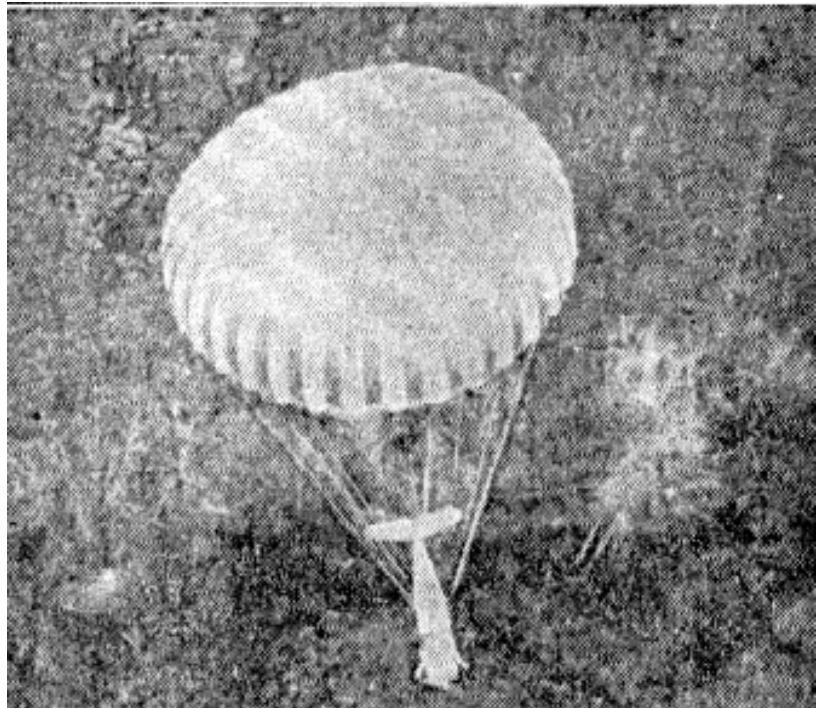
N39443, with electrically activated explosive charges, special wing attach pins, and parachutes. Although I can't locate a record of just how many explosive charges were incorporated, at least three were needed for each wing. Stinson 108's use two wing attach bolts which hold the wing to the top of the fuselage. In addition another explosive pin would be necessary at the lower fuselage point where the front lift strut attaches. Additional modifications were necessary - the control cables had to be altered so they would allow the wings to separate from the fuselage. Since the Stinson 108 uses wing tanks the fuel lines from each wing tank had to be severed. Unlikely explosive charges were used to sever the fuel lines!

In the top of the fuselage just back of the rear seats, a compartment, covered with a rear hinged hatch, was built to house the main parachute. Pioneer Parachute Company provided parachutes and a field engineer, William G. Jolly. The main parachute, used to lower the Stinson fuselage with pilot and passengers, was a 64 foot conical canopy, orange in color, made of 1.1 nylon. It used regular 550 type suspension cords that did not go through the canopy channels. A pilot chute was used to help deploy the main parachute. In addition each wing was equipped with a smaller parachute.

With the Stinson 108 Voyager suitably modified a full scale live test was scheduled. Lakehurst Naval Air Station, in New Jersey, was arranged as the site of the test. Test pilot Tommy Walker, 52 at the time, was an experienced pilot and skydiver. Takeoff from Lakehurst was about 10 AM on November 9, 1967. Strong winds delayed the test while Walker flew the Stinson. At 12:38 PM while cruising at 4,600 feet, Walker activated the apparatus.

Both wings separated cleanly, however the small parachutes in each wing tangled and did not deploy correctly. Both wings crashed to the ground.

The fuselage parachute opened perfectly only a moment after the wings separated. Stinson Voyager serial number 13, minus wings, then began its parachute descent to the ground. Test pilot Walker remained with the airplane recording data about the descent.



About 1,000 feet above ground level Walker parachuted out of the Stinson. Interestingly Walker, using a standard 28 foot P9B emergency parachute, was descending faster than the Stinson. Minus wings the Stinson fuselage weighed about 1200 pounds. Both airplane and test pilot landed safely. Rate of decent of the airplane with parachute deployed was about 18 feet per second.



The test was witnessed by the FAA, the Navy, and several news agencies using some 8 helicopters to cover the event. As far as I can tell only a single full scale test was carried out, and it was successful. Rumors are a second Stinson 108 was also modified but never tested.

In 1946 Consolidated used NC39443 as a factory demonstrator. After the November 1967 test the plane was stored in derelict condition. During 1996 this airplane was completely restored and now flies again! Owner Ed Katzen flies from Bayport Aerodrome - N23!

My thanks to Ed Katzen, at <Eka2689950@aol.com> for sending me information about this unique Stinson 108.

UPDATE - 02/16/2009. Dario Manfredi, son of co-inventor Dario Manfredi, sent me an email to let me know that his company Aviation Safety Resources, continues to develop the system originally tested with the Stinson 108. Check his homepage at URL <http://www.aviationsafetyresources.com/> for current up to date information.

Bibliography for this article:

Bisson, Ev, "Would You Believe . . . A 64 Foot Conical?" - Sky Diver magazine, Jan. 1968, The International Magazine of Parachuting.

Martin, Henry, article in the Trenton Times newspaper. Nov. 10, 1967.

Email from Dario Manfredi 02/09/09 with updated information and a link to his homepage for the current status.

Stinson 108 with Explosive Wing Bolts by Larry Westin - Rev B - 10/10/14 - Page 3 of 4

If you have additional information, or photographs I scan and add to my homepage about this unique Stinson 108, please contact me.

Postal Address

Larry Westin
21721 Verde St
Tehachapi, California
U.S.A. 93561

E-Mail

Larry Westin
westin@westin553.net