

**Having flown** my wonderful Defiant in for a crash (forced landing?) the following shares both what happened and thoughts on why it happened. First, though, I congratulate Burt once again for a phenomenal design. I remember sitting in the audience at Oshkosh (1978?) and his telling us "I am designing an airplane where safety is the number-one parameter." I worked so many years building, then a year-and-a-half flying, and finally crashing it. I came to know in new ways how good a job he did.

**The Story:** Let me start with the ending, then go back to where problems started. On Saturday after leaving Oshkosh, taking off in Michigan, 500 feet above the runway the Defiant's canopy flew up. It rolled right, then left, then stabilized. In the plane were my 13-year-old daughter, 13-year-old niece, and myself. With my niece, I pulled the canopy back down for a short period. We had lost altitude — I had to keep flying the plane — so I turned to that. She could not hold it; the canopy flew back open.

With drag again greater than lift (both engines at full throttle) and struggling to keep level, I saw an old clearing ahead in the midst of white pines and turned to that. The landing site was amidst saplings about 2 inches in diameter. I flew the plane into those brambles — it stopped after about 50 feet.

I had loosened my shoulder harness to pull on the canopy. When the plane came in I went face into the firewall, knocking myself unconscious, but held by my seatbelt. Fire broke out at the fuel selector at my feet and started to burn around my legs. The two girls were unhurt. They took off their harnesses, stood up, screaming, then saw me. With quick thinking, once got out, the other stayed in the plane, and they pulled me out.

I have no memory now of events surrounding the crash, but they say I told them to walk us from the site. The plane rose into an ever taller column of flame and smoke. (Total injuries to them were a small foot cut and a sprained wrist; to me a broken collarbone, broken nose, and burns on feet and arms. Yes, we're very grateful).

**How Did it Happen?** On Saturday afternoon at Oshkosh many planes were queued up trying to take off before the air show. I was back on row 112 beyond the ultralights very much in the grass. Usually I taxi when on grass using the rear engine, but given the delays with other aircraft, I opted to use the front engine that has better cooling. (I should have taxied on the rear engine, probably it would not have heated up until I got onto hard surfaces; then switched to the front engine). In any case we departed Oshkosh thinking all to be normal.

Landing at Alma Michigan for refueling, the preflight inspection revealed nicks on the leading lips of each end of the

front prop. A friendly Bonanza owner lent me a hacksaw and sandpaper and I trimmed half an inch off of each end. (My memory is gone from this point on due to the concussion; what follows is what the girls tell me and reports from the ground). First I did a high-speed run-up on the ground, then inspected the prop. Then, with the girls on the ground, I did a test flight in which I meticulously checked everything. Everything was in order — in particular there was no uncommon vibration and no separation in woodgrain of the prop.

The girls got back in. The plane was well-loaded with baggage and almost topped up with fuel. The girls (who liked to read the check list out to me) tell me I said, "All's OK, I just did a test flight." (Mistake number two). In a departure from my normal procedure, I led with the front engine rather than the rear engine — I assume to attend to possible vibration problems. Had the

canopy been unlocked, this leading with the front engine would have opened it.

The plane took off normally; there was time for the girls to pass a snack to each other. At what ground observers tell me was at about 500 feet AGL the plane suddenly banked to the right, then over to the left, and the nose dropped, but did not go below horizontal. Then in a descent mode it turned slowly left and the observers watched it disappear into the forest.

The girls report that after the canopy opened, the plane banked right, then left. When I had it level, I loosened my shoulder harness and with the help of my niece in the back seat, pulled it down, but it slipped from her grip and flew up again. In any case, I do have one memory of the incident, the mantra "fly the plane, always fly the plane" running through my head. It seems that when it flew up the second time I concentrated on that,

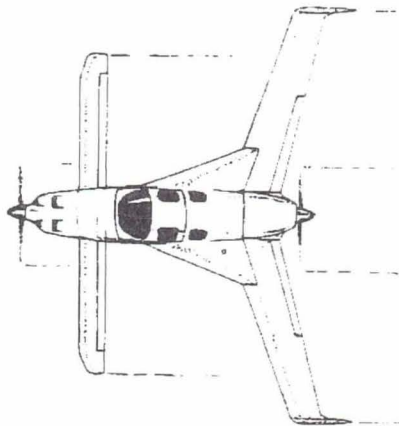
keeping wings level this time, picking the old clearing to settle it in on. The site was providential as on either side was a big forest of white pines, not the saplings.

Clearly the plane took off with the canopy only partially latched — then unlatched at about 500 feet. Clearly also the safety latch did not engage. (The safety in the plans seemed weak as well as unattractive, so I had developed my own). My latch would fail if it had latched, so, I assume that somehow it did not latch and that the main latch was only partial). Mistake number three — I needed a safety that was not only strong but guaranteed to latch even with pilot oversight.

**My Analysis:** This was virtually a stock Rutan Defiant. However I suspect every builder makes some changes. Mine were mostly in adding five windows in various places that greatly improved visibility in an already open airplane, particularly for the back seat. I also changed the attachment on the front deck, but after discovering the wisdom of Rutan's design there, went back to plan specs.

## The Demise of Defiant N20SR

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*See Defiant page 6*





Burt, Tonya and friends beat the thunderstorms July 3 when they landed the Boomerang at Cavern City Airport in Carlsbad, New Mexico. VariEze pilot Jerry Heine and EAA Chapter 833 kindly offered to house the Boomerang in a hangar overnight before Burt & Tonya continued on to Roswell, New Mexico the next morning.

Here Burt demonstrates the Boomerang's control panel for Jerry Heine and friends.

Jerry's first flight in his VariEze took place at Cavern City Airport in March '97.

## Defiant

Two other changes related to the canopy. As an earlier Defiant had its canopy rip off when the top was opened on a windy day, I tied two parachute cord guy lines from behind the pilot's seat to each outside end of the canopy. Not only did this provide a shock cord in case of wind, it also made the canopy much easier to reach up and close. These shock cords also kept the canopy from opening to a full 90 degrees, allowing it to open to what I guess was 70 degrees. Had those shock cords not been on, probably the canopy would have ripped off by the winds. (What a fully open cockpit would do for drag Burt would have to tell us).

A point here is critical. The head rest on the co-pilot side had become loose on the flight up to Oshkosh. In this condition it had twice before gotten a part of its padding jammed in between the seat back and the cross support bar in the canopy, making it difficult to close the canopy. I suspect that this happened again, that the jammed headrest prevented the canopy from coming fully down, preventing the latch from rotating around to its positive, fully-locked position, and (somehow I do not understand) preventing the safety latch from engaging. At 500 feet the incomplete latch system joggled open.

My diagnosis is that I was so fixed on attending to my propeller that I overlooked what I love about flying which is the interdependent process. Ever since a friend got into big trouble in Alaska with a damaged prop, I've been hyper

about mine. Focused on the propeller, I made four big mistakes: not fixing the headrest thinking that it was only a piece of loose foam; omitting the checklist for the final flight; omitting checking the latch; and when I changed Burt's safety latch system, not coming up with a design that was better.

A propeller is indeed a big deal. The above four mistakes are not flight critical. Any two of those mistakes I could have gotten away with and would not have lost my airplane, but I fixed on my propeller and then made all four mistakes.

**Epilogue:** I took an Apache up a few days ago for my first flight since the accident. It was 500 miles to Cape Cod. I had some meetings there, and then 500 miles back. We flew across mist-covered Appalachian mountains, around President Bill vacationing on Martha's Vineyard, then the lovely Connecticut coast at sunset, back down the Hudson River through New York City glittering at night 1,000 feet above the river, chatted with a host of controllers as they handed us off and vectored us through a tight 360 around the Statue of Liberty, and attended to all the systems in the plane. It was mighty good to be flying again. However, I was paying attention to the whole process, not any one of these lovely things.

But flying this in a borrowed Apache when once I could do this in my own Defiant? ●

*RAF thanks Daniel for sharing what must be a painful story to tell. We're thankful that he and the young girls survived to tell it.*