

**NTSB Suspects
Design Flaw in Denver Crash**

By Dave Higdon And Michael Sweeney MONTEREY, California - Singer John Denver may have lost control of his Long-EZ because of a nonstandard fuel-selector valve in a nonstandard location.

"It could be as simple as that," said George Petterson, the National Transportation Safety Board's lead investigator in the crash that killed the popular entertainer last month.

Working from wreckage that he said "shattered into millions of pieces," Petterson is headed toward the conclusion that Denver lost control of his experimental airplane and died on impact when he crashed into Monterey Bay Oct. 12.

Petterson is a 7,000-hour pilot, IA, EAA member, and owner of a Beech A36 Bonanza and a pristine Piper J-3 Cub. He has investigated hundreds of aircraft accidents, including the fatal crash of another Burt Rutan design, the Pond Racer, in September 1993. Petterson told GA News & Flyer Nov. 7 that evidence is mounting from examinations of Denver's wrecked N555JD, comparisons with Mike Mellville's globe-circling Long-EZ, and meetings with Long-EZ designer Burt Rutan.

"The fuel-selector control was located by the original in a nonstandard location, behind the pilot's left shoulder instead of in front of the pilot, as originally designed," Petterson explained. In that position, Petterson said, Denver had to release his right hand from the Long-EZ's control stick, reach across and behind his left shoulder, and find the fuel-selector control to change tanks.

"Denver had borrowed a pair of vise grips, either to give himself additional reach or to give himself additional leverage," said Petterson, who has in-

terviewed other pilots who flew N555JD. Adding to the scenario Petterson is developing, questions remain as to how much fuel was on board the Long-EZ when Denver departed Monterey Peninsula Airport.

"The best we can determine, there were about 15 gallons in the plane when John left Santa Maria Airport (where John purchased the airplane) on his hour flight to Monterey the day before the crash," Petterson said.

"John declined fuel before he took off (Oct. 12), saying he was going out only for about an hour. He didn't have much fuel." Furthermore, the location of the EZ's simple fuel-quantity indicators - two sight gauges located on the cockpit sides and behind the front seat - may have contributed to the accident, Petterson explained.

"The mechanic who helped Denver before takeoff loaned him a mirror so he could see the sight gauges," Petterson said.

"We have some known problems: the fuel was what I would consider to be low; the location of the fuel-selector valve made it difficult to manipulate the selector valve; the fuel-quantity gauges were out of sight, maybe out of mind; and John was reported to be between 300 and 500 feet, so he was very low."

Could Denver simply have run a tank - or the airplane - dry; fumbled with the mirror, the vise grips and fuel selector; lost control and plunged into the shallow water?

"It could be that simple, that John was so focused and was so low that it got away from him," Petterson said.

Supporting Petterson's developing view of the crash are multiple eyewitness accounts of the plane changing direction during its rapid descent.

And given the complete disintegration of the airframe, any fuel on board should have left a light slick on the water's surface.

"But divers who were on the scene almost immediately found no slick to indicate there was any gas left," Petterson said.

There are some caveats to go with Petterson's scenario, details he hopes to settle when some parts of the wrecked plane are analyzed by the NTSB's laboratory in Washington, DC.

Lab tests should help determine whether the selector control broke before the crash or because of it. Other tests should show whether an identical engine will develop power with the fuel flow constrained by the selector valve's half-open position.

Theories of a bird strike or canard failure can be neither confirmed nor refuted, even though divers recovered 95% of the shattered plane's remains.

"We recovered no canopy, no leading-edge surfaces, and without those surfaces, it's hard to confirm a bird strike - or eliminate it," Petterson said.

But Petterson has come to some conclusions about experimental aircraft, and he wants to share them with other pilots, owners and builders. "This fuel-selector question points out how important it is to stick with the blueprints," Petterson said.

"I can't stress enough the importance of builders complying with the designer's intents, particularly with something critical that's out-of-sight, out-of-mind."

This much is known so far:

* Denver died on impact, Deputy Chief Coroner Joe Grebmeier of the Monterey County Coroner's Office told GA News & Flyer.

* The Long-EZ plunged into Monterey Bay and struck rocks that are submerged just below the water's surface, according to Petterson.

* Denver was not decapitated, as earlier reported, Pacific Grove Police Lieutenant Carl Miller told GANews & Flyer. Miller is also a member of the

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Monterey County search-and-rescue unit that recovered Denver's body.

* Suicide has been ruled out, according to Grebmeier, and Denver's body sustained severe trauma.

* Toxicology tests on Denver's remains found no traces of alcohol or drugs, not even legal prescription or over-the-counter medications, according to earlier coroner reports.

* The engine was running, or was at least in running condition, at the time of the crash, according to earlier NTSB reports.

* The fuel-selector valve was found frozen only half open from the left tank and half open to the engine, and the control linkage was broken, according to Petterson.

* Long-EZ N555JD did not fully comply with FAR 91.9, which dictates that placards in the cockpit identify systems and controls, according to Petterson.

* Neither Denver's remains nor airframe wreckage show any signs of a bird strike. No nonhuman blood was found on Denver, according to Grebmeier.

* Feathers found in the cockpit wreckage were determined to be goose down from a pillow Denver used to boost him higher in the front seat, according to Miller.

Next up for Petterson, after the lab tests, is further work with eyewitnesses and a reexamination of the Long-EZ wreckage. "We've still got a long way to go before anything is settled, and we're going to go until we're certain of what we've got," he said.

Velocity-IVO Prop Accident

Rick Lavoie- Velocity Views Newsletter - (FL) I urge everyone to please stick to the facts released either by the NTSB or the factory. In IVO's defense, my understanding is that IVO had approved their prop for the

Franklin engine powered Velocity only. Use on the Lycoming was experimental, as far as IVO and Velocity Inc. were concerned. A couple of Velocity builders (including Mark Ewart) had agreed to try the IVO on their Lycoming under this assumption. This was explained to me by Mark Ewart himself. If Mark were alive today, he would tell you how much he loved flying his Velocity!

Duane Swing Article: From V13 Velocity Views:

I just returned from the funeral of Mark and Nancy Ewart and their two teenage daughters. All were tragically killed when their Lycoming powered Velocity crashed into a heavy wooded area near Florence, South Carolina. This is the kind of thing that makes me want to give up anything that has to do with aviation and live out my life in a rocking chair. It is important, however, that you receive as much of the facts as we know them so that we can learn from their sacrifice. Keep in mind that the official NTSB report will not be available for some time and some of the things that have been said, that may be said in the future, will have to be reviewed, retractions made if necessary, and the facts presented accurately based on the official report.

For me, this story started on Wednesday afternoon, November 26th. At about 1:30 I received a call from Mark asking if I had an electric motor assembly I could ship to him to replace a defective one on his IVO prop. Mark said the pitch was stuck in the takeoff position and he couldn't make it change with the toggle switch. He said he was going to remove the prop and adjust the pitch to a neutral position and continue his flight as a fixed pitch. He wanted me to send the motor assembly to his destination and he would replace it on Friday. Thursday afternoon I received the news that Mark and his family died in the crash of his airplane at about 4:45 PM Wednesday near Florence, South Carolina. Mark had been in communication with the Florence airport and reported north of the airport that he

was experiencing engine trouble and then reported the engine was not running. There was some radar vectoring given to Mark, however, he never reached the airport. There was also little communication during his glide and no indication of any control problems.

The NTSB confirmed that Mark had removed the prop in Savanna Georgia, re-adjusted the pitch manually, re-installed the prop using a torque wrench, and safety wired the prop bolts. There is no way of knowing if the torque was adjusted properly. There was also, apparently, no testing of the torque after a 30-minute ground run as required by IVO. What we do know is that one of the blades of the 3 bladed prop was not found at the accident site. The engine was still attached to the engine mount and the mount to the firewall. The mount had, apparently, suffered some cracking due to the vibration when the blade departed the airplane. This is probably when Mark shut the engine down as the NTSB confirmed the engine was not turning when the plane struck the ground. The NTSB will be conducting tests on the IVO propeller to see if there are any serious problems with the design of the blades and/or the retention system.

So, where do we go from here? First of all, until all the facts are known, we shouldn't jump to any conclusions. I will, however, recommend that further flights using the Lycoming IO360 200 HP engine and the IVO propeller be terminated. It may be that your history with this combination and your ability to monitor the prop will give you the confidence that I lack at this point. For those of you with the Franklin engine using the IVO, I would strongly suggest you check your prop torque prior to every flight and use the REQUIRED metal tapes between the blades and check them often.

Mark, Nancy and their two daughters will be missed by all of us who knew them. They were all Godly people who have now found a new home in heaven. The angels rejoice.

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