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Sent: Monday, October 21, 2013 6:40 AM
To: lml@lancaironline.net
Subject: [LML] HOW TO KILL YOURSELF IN A LANCAIR

The Lancair 235 that crashed near Hudson, Ky., on April 14, 2012, had given its owner and pilot fair warning that something wasn't right. About two months before the accident, he began having trouble getting the electrically operated landing gear to extend. A little trial and error led him to adopt the procedure of "turning off all non-essential electrical equipment" prior to gear extension, and then powering everything back up after the gear were down and locked. On the morning of the accident, he'd flown 55 nautical miles from his base at Louisville to a breakfast fly-in at Rough River State Park, only to find that the gear would not extend at all. Apparently reaching behind the seat to the battery box and "jiggling" the cables restored enough power to get the gear down. However, he acknowledged to a friend that he'd landed with the prop still at cruise rpm, as the electrically operated prop governor wouldn't work.

Things only got worse after breakfast. The Lancair's electric starting also refused to cooperate, so the owner recruited help to hand-prop the engine. Once it caught, he found that the prop still wouldn't come out of the low-rpm setting, so he shut it down again, removed the battery, and got a friend to fly him home to Louisville.

After he borrowed a battery charger and charged two batteries, the same friend ferried him back to Rough River. He installed one battery, intending to return to Louisville with the gear down. They planned to depart together; the Lancair owner said that if his radios stopped working, they'd continue as "a flight of two" through Louisville International's airspace. It took him three tries to get his engine started, after which he cycled the prop and was off the ground "in six or seven seconds." Witnesses noticed fuel dripping from the right wingtip vent.

Three or four minutes after takeoff, the Lancair pilot called to ask whether his friends were still on the frequency. The sound of the transmission suggested he was using a handheld rather than the airplane's radios. He advised that he'd be landing in a field a mile or two south of the Breckenridge County Airport, and then said, "I'm

going in hard." His companions, perhaps five minutes behind in a Cessna 172, were unable to find the wreckage, so they landed at Breckenridge County. By the time they'd called 911, other witnesses had pinpointed the accident site. The pilot's body was in the wreckage, still holding his portable transceiver.

Investigators found no discrepancies with the engine or flight controls. However, the header tank and its filter and strainer contained no usable fuel, while fuel was seen to have leaked from both wing tanks after impact. They also found that the positive cable from the battery was corroded and frayed at the connector to the master contactor; the contactor itself was "moist" and showed severe internal corrosion. It had been mounted on the bottom of the battery box, which displayed evidence of sulfuric acid leakage; "no precautions had been taken to prevent liquid from running down the cable into the base of the connector."

The engine ignition system could function without electrical power, but the fuel system could not. The Lancair depended on electric transfer pumps to move fuel from the wing tanks to the header tank, something its pilot—who was not the airplane's builder—probably didn't know when he decided to continue flying it with obvious electrical deficiencies. The header tank was the only one that supplied the engine directly, so fuel starvation was the predictable consequence of a loss of electrical power—while the inability to retract the electro-hydraulically operated gear did nothing to improve glide performance after the engine quit.

Systems knowledge is crucial to the go/no-go situation in any case, but the lack of standardization makes it especially critical for buyers of experimental aircraft. Later owners don't automatically inherit the builder's intimate familiarity with all the design decisions that could have unexpected implications. Operating these aircraft safely requires learning all their quirks while maintaining a healthy respect for risks that haven't been anticipated.

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