Latch Once, Wire Twice

By LCdr. Ron Dennis

Talk about a good deal: seven days on the beach in the middle of deployment! The squadron det consisted of 10 aircrew, eight maintainers, and one E-2C Hawkeye. We were part of a larger air-wing detachment to Tunisia in support of a combined exercise. Unfortunately, the good deal turned a little sour on the second day of the detachment.

The propellers on our Hawkeye were winding down after the crew secured the engines following a short training flight. An AD2 we had "borrowed" from a C-2 detachment stood beside the aircraft shaking his head in disbelief. He had noticed a solid white line on the cuff of the starboard propeller blades, and the problem became obvious as the prop slowed to a stop. The white foam inside each blade clearly was visible. A .75-inch-deep by 1.5-inch-wide gouge was dug in the cuff of each blade. Only one thing could have caused the damage: A cowling latch on the forward part of the engine must have opened while the propeller was spinning. The damage would require a propeller change.

A small latch that opens at the wrong time can take a big bite out of a prop.

Engineers had foreseen this hazard, and they designed the E-2C and C-2A forward cowl latches with a safety mechanism to prevent them from opening with the propeller spinning. However, this device has a history of vibrating loose. Data gathered by the Naval Safety Center revealed 22 reported incidents of failed cowl latches since 1980.

Each of these incidents is expensive. The cowl latch only costs $209.35, but each time one fails, a squadron's AFM balance takes a $320,000 hit for a new propeller or $162,000 for a rebuilt one. The squadron also faces an operational cost in lost sorties. If the cost to

repair damage from the failed latch is added to the absorbed labor and lost-sortie costs, it approaches the level of a Class A mishap.

Luckily, our propeller was repairable and will find its way back into the supply system. But this incident still cost our squadron approximately 80 man-hours, which we could have used for other maintenance, and 119 hours of aircraft availability. That's a lot of time and money riding on a $209.35 part.

Three years ago, NavAirSysCom took steps to eliminate this hazard. In February 1998, they directed the forward latches secured with safety wire to prevent them from opening in flight. This backup step was added in case the safety mechanism vibrated loose. However, the change did not provide specific procedures on exactly how or where to attach the safety wire. Because of a lack of guidance, some squadrons use two strands of safety wire around the latch, while others (ours included) use only a single strand.

You can over-tighten the safety wire to the point it breaks underneath the cowl latch where it is invisible during inspections.

The 1998 change was an intelligent and necessary first step. Statistics show it has reduced the number of damaged propellers but has not eliminated the hazard. A second strand of safety wire is a good idea, and we have implemented the procedure, but it is only a stopgap measure. With propeller assemblies in short supply, it may be time to revisit the design table and to develop a new latch as a permanent fix.

LCdr. Dennis is the safety officer at VAW-124.

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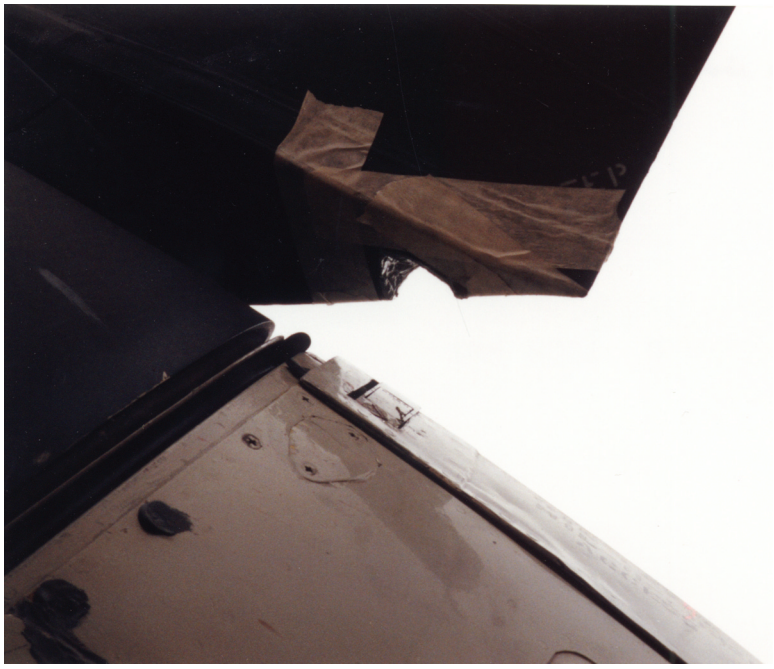

The close proximity of the forward cowl latch to a spinning blade is evident in this photo.

A single strand of safety wire on the latch sometimes works, but two strands are better.