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Robinson R44 Design Defect Leads to Post-Crash Fires

Posted on December 11, 2010 by [Mike Danko](#)

Robinson Helicopter Company has long touted the crashworthiness of its helicopters. An excerpt from [Robinson Safety Notice SN-10](#), which dates back to 1982:

“ The R22 and R44 have demonstrated excellent crashworthiness as long as the pilot flies the aircraft all the way to the ground . . . ***The ship may roll over and be severely damaged, but the occupants have an excellent chance of walking away from it without injury.*** ”

That's turned out to be not quite true. Sure, occupants may survive the initial rollover without injury. But because of the way it is designed, the helicopter is prone to catching fire and burning the occupants before they have a chance to get out. There has been a string of such accidents, the

most recent being the [September 16 Robinson crash at Mammoth, California](#).



The R44 helicopter involved in that accident, N2153S, experienced a problem on takeoff. The pilot "flew the aircraft all the way to the ground," just as he was supposed to. When the helicopter touched down, it rolled over. As advertised, the two occupants survived the rollover uninjured. But almost immediately, fuel rushed into the cabin, a fire erupted, and both occupants were badly burned.

As I explained [here](#), there is no reason for an occupant to be burned in that sort of mishap. Technology has existed since the 1970's that can almost completely eliminate post-crash fires in otherwise survivable helicopter accidents. The technology is not particularly expensive, fancy, or heavy.

In the case of the Robinson helicopter, the biggest problem is the aircraft's transmission. In any type of rollover accident, the transmission can puncture the fuel tank. The fix is simple: replace the rigid fuel tank with a soft bladder tank that won't rupture.

Robinson has known about the problem for years. But instead of fixing it, Robinson tried to dodge liability by putting the problem back on the owners. While continuing to tout the aircraft's crashworthiness, in 2006 it posted on its website a "[safety notice](#)" advising that anyone flying in one of its aircraft should wear fire retardant clothing head-to-toe.

“ To reduce the risk of injury in a post-crash fire, it is strongly recommended that a fire-retardant Nomex flight suit, gloves, and hood or helmet be worn by all occupants. ”

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Robinson didn't seriously expect any occupants to wear that kind of clothing. It's hot, uncomfortable, and generally inconvenient. The "strong recommendation" was strictly a "CYA" move. If Robinson was serious about it, it wouldn't have posted on its [website](#) pictures of people flying Robinson helicopters in shorts and t-shirts. (One such picture right.) Rather, it would show everyone wearing head-to-toe Nomex. But that sort of "advertising" would kill sales.

The unnecessary burn injuries continued. Finally, in December 2009, Robinson conceded that there was indeed a better way and announced that **all new R-44's will be equipped with bladder tanks.**

“ In a continuing effort to improve the R44 fuel system's resistance to a post-accident fuel leak, current production R44s now feature bladder-type fuel tanks, flexible fuel lines and other modifications.

Great news. But what about the thousands of Robinson helicopters produced before last December *without* bladder tanks? They are, without a doubt, **defective**. The defect has caused, and will continue to cause, needless burn injuries. The defect and the resulting injuries are Robinson's responsibility.

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Gavin - May 2, 2011 7:52 PM

This has been addressed with Service Bulletin SB-78 from Robinson.
<http://www.robinsonheli.com/srvclib/r44sb78.pdf>

Mike Danko - May 3, 2011 9:23 AM

Gavin-

Thanks for the update. Certainly Robinson has taken a step in the right direction. But who should pay to fix this particular defect, the owner or the manufacturer?

Mike

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