

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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Forwarded to:

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SAFETY RECOMMENDATION(S)

A-85-72

Mr. John P. Reese
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In recent years, the Federal Aviation Administration (FAA) has worked closely with other government agencies and with manufacturers of general aviation airplanes in an effort to improve the crashworthiness of these airplanes. The National Transportation Safety Board continues to encourage these important efforts on the part of the FAA. Unfortunately, comparable efforts have yet to be undertaken for helicopters. Prompt action to upgrade helicopter crashworthiness standards for occupant protection will yield improvements in injury prevention and occupant survivability.

To understand the status of helicopter crashworthiness better, the Safety Board contacted members of the FAA's Helicopter Policy and Procedures Staff, helicopter manufacturers, occupant protection equipment suppliers, occupant protection researchers, military helicopter safety specialists, and helicopter owners/operators. The Board reviewed current regulations, accident data, helicopter occupant protection features currently available, and existing and projected developments in crashworthiness technology.

The Safety Board's review found that a considerable amount of research and analysis of helicopter crashworthiness has been accomplished and that the FAA already is in the process of amending the airworthiness standards for helicopters in such areas as stability, crew restraints, deicing, and fuel system design. However, all of the changes currently planned by the FAA will be applicable only to newly type-certificated helicopters. The Safety Board noted that approximately 60 percent of the civilian helicopters currently produced hold type certificates issued over 10 years ago. These helicopters can continue to be manufactured to the requirements that existed when the type certificates were applied for, unless a regulation is promulgated which applies retroactively to helicopters manufactured after a specified date. Since, according to the FAA, fewer than five requests for type certificates are expected in the foreseeable future, the FAA's new and proposed regulations will have a minimal effect on the helicopter fleet for quite some time.

The Safety Board has been aware of the substantial improvements in preventing postcrash fires that could be achieved by incorporating specific parts of a crash-resistant fuel system (CRFS) in specific helicopter models. By evaluating helicopters on a model-by-model basis, it would be possible to determine where the maximum benefit could be derived for the least cost or with the least amount of change to the existing design. For instance, if the accident data indicate that a particular model's fuel tank rarely ruptures in an accident but that the severing of the fuel lines at the engine is the recurrent source of a postcrash fire or fuel leak, breakaway fuel valves should be installed at that location. If the rupturing of the fuel tank is the problem, then crash-resistant fuel bladders should be installed. The Safety Board realizes that this approach initially requires a considerable amount of research to identify the most vulnerable components of each specific helicopter model. However, it would allow the modification of current and out-of-production models in a cost-effective manner with a minimum effect on performance. In the past, major improvements in safety primarily have affected newly type-certificated helicopters because of the costs involved in the reengineering of current production models. Models already in service have received little, if any, benefit from the latest advances in research or technology. The approach described above would provide increased occupant protection in a significant number of helicopters in a timely manner.

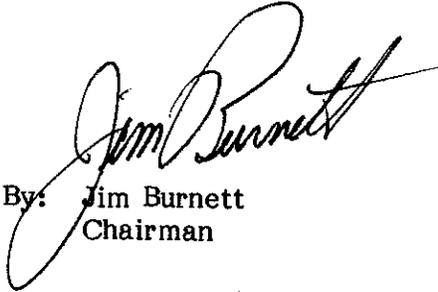
The Safety Board recognizes the difficulties involved in attempting to retrofit crashworthy components in existing models of helicopters. For instance, a new-design seat or shoulder harness may not always work acceptably with existing structures in current production helicopters. However, model-specific research can and should be undertaken so that existing technology, such as in the areas of fuel systems and seat/restraint systems, can be incorporated into current model helicopters.

Therefore, the National Transportation Safety Board recommends that the Helicopter Association International and the Aerospace Industries Association of America:

Undertake a program to review and analyze the accident data and the crashworthiness of each current helicopter design to develop specific occupant protection improvements compatible with the specific model. Based on this review, develop and disseminate model-specific occupant protection improvement versus cost information to each of your members and to owners/operators. (Class II, Priority Action) (A-85-72)

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "... to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations, and the Board would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, Member, concurred in this recommendation.


By: Jim Burnett
Chairman