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NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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Forwarded to:

Honorable Donald D. Engen
Administrator
Federal Aviation Administration
Washington, D.C. 20591

SAFETY RECOMMENDATION(S)

A-84-45 through -50

Concerned about the continuing problem of alcohol involvement in transportation, the National Transportation Safety Board has undertaken activities in this area in relation to the highway, marine, rail, and aviation modes. To gain more information about the role which alcohol may play in aviation accidents, the Safety Board analyzed aviation accidents involving alcohol that occurred during the period 1975 through 1981 and prepared a Safety Study report on its findings. 1/ For the purpose of this report, an "alcohol-involved accident" is one in which alcohol was cited by the Safety Board as a cause or factor; one in which toxicological tests of the pilot for alcohol were positive, even at a low level; or one in which witnesses established that alcohol had been used. It is the position of the Safety Board that the presence of any alcohol in a pilot's blood jeopardizes safety and is, therefore, unacceptable.

The interest of the Safety Board in the relationship of alcohol to aviation accidents stems back well into the 1960's. In 1963, the Safety Board began a systematic effort to determine and record the BAC of fatally injured pilots. In 1967, 74 percent of the fatally injured pilots were tested for alcohol and 24 percent of those tests were alcohol-positive. During the mid-70's, toxicological tests were performed in about 70 percent of fatal accidents, as they are today; but the percentage of tests which were positive had decreased to about 10 percent.

In the Safety Board's recently completed study, positive test results were found among pilots of all ages and all certification levels who were involved in fatal accidents. Even pilots with high numbers of flight-hours had positive tests for alcohol, indicating that experience cannot compensate for the effects of alcohol. It also indicates that some pilots do not take the prohibitions against mixing alcohol and flying seriously, and that they may not understand the consequences of ignoring these prohibitions.

Twelve percent of the pilots in the alcohol-involved accidents reviewed by the Safety Board had no valid medical certificate--which could indicate that these persons either did not fear enforcement action or did not believe enforcement action was likely. Some of these pilots, of course, may have been concerned that a medical certificate would be denied on application.

1/ For more information, read Safety Study: "Statistical Review of Alcohol-Involved Aviation Accidents, 1975-1981" (NTSB/SS/84-03).

The accident data show that about 20 percent of the pilots in the randomly selected sample of 119 alcohol-involved accidents had a BAC level of more than 0.20 percent, and more than 45 percent of the pilots had a BAC level of more than 0.15 percent. The National Council on Alcoholism's major criterion for the diagnosis of alcoholism defines alcoholics as individuals with "more than 0.15 percent BAC without gross evidence of intoxication." Based on these data and the fact that 10 percent of the general United States adult population has drinking problems, it is not unreasonable to assume that some pilots are alcoholics or problem drinkers.

The FAA's "8-hour rule," which prohibits the consumption of any alcohol during the 8 hours before flight time, has the important virtue of providing the unmistakable guidance to crewmembers that the "under the influence" rule does not provide. Without an agreed-on BAC level that is considered to constitute "under the influence," it is up to each crewmember to judge whether he or she is "under the influence" of alcohol. The existence of the 8-hour rule provides an implicit guideline to reduce the possibility one is "under the influence" by flight time.

However, neither the 8-hour rule nor the "under the influence" rule—or the combination of these rules—in fact provides the best regulation of this important issue. The 8-hour rule is very difficult to enforce for the obvious reason that there is no practical way to monitor the activities of persons for 8 hours before they act as aviation crewmembers. Furthermore, in the absence of an implied consent regulation, there is no means by which a suspected violation of the 8-hour rule or the "under the influence" rule can be verified objectively by a test for the presence of alcohol in a living pilot or other crewmember--particularly if the behavior occurs before the person actually takes off (the point at which intervention would be most beneficial). The "under the influence" rule, of course, is undermined further by the lack of a specified level of alcohol concentration at which a person conclusively is legally considered to have violated the rule.

Beyond this, the advantage of the 8-hour rule in providing specific guidance to pilots as to the minimum period of abstinence they should observe before flight is somewhat offset by its implicit suggestion that 8 hours is sufficient time to recover fully from the effects of alcohol in all cases. In fact, it is now well documented that this is not the case. It can take longer than 8 hours to metabolize fully alcohol (depending on such factors as the amount of alcohol consumed, the metabolic rate of the drinker, the drinker's size, the amount of food consumed during the period, etc.). Moreover, performance decrements have been shown to persist for several hours even after all alcohol is metabolized fully (sometimes called the "hangover effect").

By defining a specific minimum detectable BAC as constituting operation under the influence, the FAA would be better able to enforce the existing regulation against such operation. The adoption by the FAA of an implied consent regulation permitting testing of living pilots would make possible collection of more data on the extent of alcohol use in aviation and might aid in the enforcement of the 8-hour rule. Implied consent to testing for alcohol in aviation would serve two purposes: to enhance accident prevention by making available more information about the extent and nature of alcohol involvement in aviation accidents and to provide the FAA with an additional enforcement tool. Ideally, to develop better knowledge on the extent of alcohol involvement in aviation accidents, all surviving pilots should be tested. This may not always be feasible, but whenever it is possible and practical to do so, all surviving pilots should be tested for alcohol. There may also be instances in which persons suspected of having violated the 8-hour rule or the "under the influence" rule should be asked to submit to alcohol testing before actually

operating an aircraft, just as the FAA has, in the past, intervened before flight and subsequently taken enforcement actions. Implied consent could also act as a general deterrent, since pilots would know that they could be requested to submit to an alcohol test.

In order to reduce the use of alcohol by pilots it will be necessary to approach the problem from more than one standpoint. A greater awareness by pilots of the dangers concomitant to the use of alcohol may increase self-enforcement of the alcohol rules. The Accident Prevention Program and other aviation community groups can be enlisted in support of efforts in this regard. Increased emphasis can also be placed in this area by flight instructors during initial and recurrent training.

Some approaches which can be considered by the FAA in addition to its current medical examination program are set out below. It should be noted that none of these approaches alone would necessarily disqualify a candidate for a medical certificate but rather would constitute additional elements in the total analysis. These methods, and possibly others, can be used to alert the Aviation Medical Examiners (AME) that additional medical testing for detection or confirmation of alcoholism is advisable.

1. License record checks. State motor vehicle department records of individuals who have aviation accidents can be checked to identify those with an alcohol-related motor vehicle conviction or accident. Another potential source of information for detecting problem drinkers is the National Driver Register (NDR). Under current law, the FAA is not authorized to use the NDR. However, appropriate legislation to permit this could be sought. The NDR could then be used to screen candidates for student pilot licenses and to screen certificated airmen when their medical certificates are renewed. AMEs can issue temporary medical certificates valid for 30 days, during which period the Airman Certification Branch can check the NDR for a possible match. When a match is found, the AME could be informed and the pilot can be requested to return to the AME for further examination. The AME may issue a final medical certificate if no request for rescreening is received within 30 days.

2. Self reports, questionnaires, and interviews. As part of a program to deal with the driver who may have a drinking problem, a number of screening devices and standardized interviews have been used over the past 10 years. Among these are the Mortimer-Filkins Inventory (MFI), the Michigan Alcohol Screening Test (MAST), the MacAndrew Alcoholism Scale (ALC), and various other specialized inventories which can detect problem drinking. Such measures can be added to the pilot medical examination at a minimum cost and can be used by the AME as another initial indicator of a potential problem drinker, which can then lead to a more detailed examination by the AME. The existing questions on the pilot medical form can be revised to probe for the extent of alcohol use as well as the occurrence of other circumstances that indicate the applicant is a problem drinker.

3. Extension of the current aviation physical examination. Recent progress in the study of the effects of alcohol on liver function has yielded some liver enzyme tests, such as the gamma globulin test, that appear to be useful in diagnosing the amount of drinking and the extent to which alcohol may be producing significant physiological changes in the body. The extent to which extended blood analysis and extended physical examination can detect problem drinking and alcoholism in applicants for licenses should be determined; and additional testing, where appropriate, should be specified for flight medical examinations.

In May 1977, as a result of its investigation of the Piper Cherokee accident at the Baltimore Memorial Stadium in Baltimore, Maryland, the Safety Board recommended that the FAA (A-77-24 and -25):

> Amend 14 CFR 61.3 to include an implied consent clause which would be a condition for the issuance of a pilot certificate.
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> Amend 14 CFR 91.11 to specify alcohol levels at or above which a pilot would be considered to be under the influence of alcohol.

In June 1977, the FAA agreed that the recommendations had merit and began drafting regulations for public comment. These two recommendations were left in an "Open—Acceptable Action" followup status because they were still appropriate and because the Board assumed that satisfactory draft regulations would be issued. In July 1981, nearly 4 years after the Board's recommendations were made, the FAA published a Notice of Proposed Rulemaking (NPRM) which included a provision for implied consent to test for the purpose of determining blood alcohol levels and proposed to establish 0.04 percent as the threshold at which a pilot would be considered to be "under the influence." No final rule has yet been issued. Because of the recommendations made in this study, Safety Recommendations A-77-24 and -25 are no longer needed and have been classified as "Closed—Superseded."

Based on the findings of this safety study, the National Transportation Safety Board recommends that the Federal Aviation Administration:

> Issue a rule defining the blood alcohol concentration level that constitutes "under the influence" at the lowest possible level consistent with the capability of testing equipment to measure any ingested alcohol. (Class II, Priority Action) (A-84-45)
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> Issue a rule which establishes implied consent to toxicological testing as a condition of issuance of an airman certificate. (Class II, Priority Action) (A-84-46)
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> Develop comprehensive educational and classroom materials on the effects of alcohol on airman performance and distribute them to appropriate FAA personnel and to individual pilots through the Accident Prevention Program and through fixed base operators, flying clubs, flight schools, and individual flight instructors. (Class II, Priority Action) (A-84-47)
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> Provide to appropriate FAA personnel, particularly Aviation Medical Examiners and Flight Surgeons, and to others within the aviation community, materials to improve their ability to detect airmen with alcohol problems for use in determining fitness for medical certification and in making referrals for counseling. (Class II, Priority Action) (A-84-48)
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> Seek legislative authority to use the NDR to identify airmen whose driving licenses have been suspended or revoked for alcohol-related offenses. (Class II, Priority Action) (A-84-49)

Develop and implement a plan for improved surveillance and enforcement of the requirement for possession of a valid medical certificate for the exercise of airman privileges. (Class II, Priority Action) (A-84-50)

BURNETT, Acting Chairman, GOLDMAN, BURSLEY, and GROSE, Members, concurred in these recommendations.

By: Jim Burnett
Acting Chairman