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Safety Study - Statistical Review of Alcohol-Involved Aviation Accidents

National Transportation Safety Board
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NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

SAFETY STUDY

STATISTICAL REVIEW OF ALCOHOL-INVOLVED AVIATION ACCIDENTS

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16. Abstract

During the years 1975-1981, more than 10 percent of the toxicological tests on deceased pilots were positive for alcohol. However, no pilot of a U.S. certificated air carrier operated under 14 CFR 121 was found to have a positive alcohol test since at least 1964. Toxicological tests were positive for alcohol in 6.4 percent of the tests taken from fatally injured scheduled 14 CFR 135 (commuter) pilots and in 7.4 percent of fatally injured pilots in nonscheduled 14 CFR 135 (on demand air taxi) operations. In general aviation, 10.5 percent of toxicological tests on fatally injured pilots were positive for alcohol. The extent to which alcohol is involved in nonfatal accidents is not known because there is no Federal authority to test surviving pilots for alcohol. Positive toxicological tests were obtained from pilots of all certificate levels and all levels of flight-time, indicating that experience cannot and does not compensate for the performance degradation caused by alcohol.

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WASHINGTON, D.C. 20594

Adopted: May 1, 1984

SAFETY STUDY
STATISTICAL REVIEW OF ALCOHOL-INVOLVED AVIATION ACCIDENTS

INTRODUCTION

On November 5, 1981, four persons boarded a single-engine airplane for a local sightseeing flight. A later interview with one of the passengers revealed that the commercially rated pilot and his passengers had been flying for a half hour or so when they decided to return to the airport. Before reaching the airport, the engine quit, and the pilot attempted to restart it by switching fuel tanks. The engine started for a moment and then quit again. The next thing the passenger remembered was being tossed around inside the airplane. The wrecked airplane was located by rescue parties the following morning in a heavily wooded area about a mile from the airport. The pilot and one passenger had been killed; two other passengers were seriously injured. An investigation revealed that the pilot's blood alcohol concentration (BAC) was 0.16 percent. The reason the engine had stopped was that the fuel tanks were empty. The Safety Board determined that the probable cause of this accident was inadequate preflight preparation, mismanagement of fuel, fuel exhaustion, physical impairment of the pilot, and alcoholic impairment of the pilot's efficiency and judgment. Contributing to the severity of the occupants' injuries was the fact that none of the persons had their seatbelts fastened.

It is the Safety Board's position that the presence of any alcohol in a pilot's blood jeopardizes safety. This Safety Study was prepared to provide information on the extent to which alcohol has been found to be involved in aviation accidents, to analyze selected aspects of the alcohol-involved aviation accident circumstances, and to suggest methods which would reduce the numbers of these accidents. For the purposes of this review, an alcohol-involved accident is one in which alcohol was cited by the Safety Board as a cause or a factor; or one in which the tests of the pilot for alcohol were positive; or one in which the witnesses established that alcohol had been used by the pilot.

Federal aviation regulations 1/ prohibit the use of alcohol by crewmembers within 8 hours of flight time and also prohibit a person from acting as a flight crewmember while under the influence of alcohol (the text of this regulation is presented as Appendix A). During the years 1975 through 1981, more than 10 percent of the toxicological tests on deceased pilots from general aviation accidents were positive for alcohol. 2/ In the accidents in which pilot use of alcohol was found, nearly 800 persons were killed. To put this report in perspective, it is useful to compare the accident experience in aviation to the accident experience of highway transportation. During the period covered by this report, there were 4,947 fatal aviation accidents. At least 414 of these involved alcohol. In the same period there were more than 300,000 fatal motor vehicle accidents and as many as 50 percent may have involved alcohol.

1/ 14 CFR 91.11.

2/ A "positive" toxicological test is one in which the sample was adequate for testing, and the testing revealed the presence of any amount of alcohol.

The reader should understand that the data in this report represent the lower limit of alcohol use in aviation; that is, it is likely that other accidents have involved alcohol, but the Safety Board has no evidence of alcohol use. The reasons for this are that the Safety Board does not have the authority to require testing of surviving pilots and that in some cases contamination of tissues or destruction of the remains prevent testing. There have been a few instances in which religious restrictions have prevented the conduct of autopsy and toxicological tests.

Scope of the Problem

As shown in Table 1, in the 7 years 1975 through 1981, there were 28,849 aviation accidents in the United States; of these, 4,947, or 17 percent, were fatal accidents. A total of 460 accidents (414 involving fatalities) were found to have involved alcohol.

Table 1.—Alcohol involvement in all aviation accidents: 1975 through 1981

	Total	1981	1980	1979	1978	1977	1976	1975
All accidents	28,849	3,715	3,820	4,061	4,498	4,306	4,217	4,232
Fatal accidents	4,947	707	675	687	794	706	704	674
Conclusive toxicology tests*	3,536	524	481	500	553	506	494	478
Positive alcohol tests	358	55	60	39	54	48	52	50
Percent positive	10.1	10.5	12.5	7.8	9.8	9.5	10.5	10.5
Other known alcohol-involved accidents**	102	9	5	8	18	24	19	19
Total alcohol-involved accidents	460	64	65	47	72	72	71	69

*"Conclusive toxicology tests" are those in which samples were adequate for testing for alcohol, and appropriate testing was performed. Toxicological tests are not always possible.

**The category "Other known alcohol-involved accidents" comprises fatal and nonfatal accidents in which alcohol involvement was determined from witness statements.

When all 1975–1981 accidents were grouped according to the operating rules under which the flights were being conducted, differences in frequency of alcohol involvement became apparent. For example, none of the accidents involving major U.S. air carriers operating flights under 14 CFR Part 121 were found to have involved alcohol. In fact, no fatally injured pilot operating a U.S. certificated air carrier in scheduled service under 14 CFR 121 has had a positive alcohol test since at least 1964. 3/

As shown in Table 2, carriers operating scheduled flights under 14 CFR Part 135 (commuter operators of small aircraft) had four alcohol-involved accidents; six persons were killed in these accidents. Carriers operating nonscheduled flights under 14 CFR Part 135 (on-demand air taxis) had 16 accidents which involved alcohol and in which 43 persons were killed.

3/ In 1977, a Japan Airlines cargo airplane crashed in Anchorage, Alaska, killing all 5 crewmembers. Toxicological tests on the pilot revealed a BAC of 0.21 percent. Although this accident occurred in the United States, Japan Airlines is a foreign carrier and is therefore not counted as a "U.S. certificated" carrier.

Table 2.--Alcohol involvement in accidents with aircraft operating under 14 CFR Part 135: 1975 through 1981

Commuter	Total	1981	1980	1979	1978	1977	1976	1975
All accidents	311	33	38	52	61	44	35	48
Fatal accidents	77	10	8	15	14	9	9	12
Conclusive toxicology tests	47	5	5	9	6	4	7	11
Positive alcohol tests	3	-	1	1	-	-	-	1
Percent positive	6.4	-	20.0	11.1	-	-	-	9.1
Other known alcohol-involved accidents	1		-	1	-	-	-	-
Total alcohol-involved accidents	4	-	1	2	-	-	-	1

On-demand air taxi	Total	1981	1980	1979	1978	1977	1976	1975
All accidents	1,130	155	170	160	198	158	137	152
Fatal accidents	254	39	45	30	54	31	31	24
Conclusive toxicology tests	162	33	29	24	34	23	15	14
Positive alcohol tests	12	2	2	2	2	3	-	1
Percent positive	7.4	8.7	6.9	8.3	5.9	13.0	-	7.1
Other known alcohol-involved accidents	4	-	1	1	2	-	-	-
Total alcohol-involved accidents	16	2	3	3	4	3	-	1

The symbol "-" represents zero.

General aviation, which makes up the largest segment of civil aviation in the United States, had the greatest number of alcohol-involved accidents as well as the highest percentage of fatal accidents which were alcohol-involved (Table 3).

Table 3.—Alcohol involvement in general aviation accidents: 1975 through 1981

	Total	1981	1980	1979	1978	1977	1976	1975
All accidents	27,249	3,502	3,597	3,825	4,218	4,083	4,023	4,006
Fatal accidents	4,596	654	622	638	721	663	662	636
Conclusive toxicology tests	3,256	487	438	455	502	469	462	443
Positive alcohol tests	343	53	57	36	52	45	52	48
Percent positive	10.5	10.9	13.0	7.9	10.4	9.6	11.3	10.9
Other known alcohol-involved accidents	97	9	4	6	16	24	19	19
Total alcohol-involved accidents	440	62	61	42	68	69	71	67

Of the 440 general aviation accidents that involved alcohol, 394 were fatal accidents in which 742 persons died.

Level of Blood Alcohol

A sample of the accidents in which alcohol was involved was reviewed in detail, and data for alcohol levels were collected. The sample was composed of 119 randomly selected cases from the years 1977 through 1981. (The results are depicted in figures 1 and 2.) The sample showed that about 86 percent of the pilots in the alcohol-involved general aviation accidents had BAC levels of 0.04 percent or higher. This level has been shown to bring about measurable diminution of attention and skills, exacerbated in aviation by the physiological effects of reduced atmospheric pressure. This phenomenon will be dealt with more extensively in the Analysis section of this report.

SELECTED ACCIDENT CHARACTERISTICS—GENERAL AVIATION

As noted earlier, almost all of the accidents for which information on alcohol involvement is available are fatal, because there is no Federal authority to require surviving pilots to submit to alcohol tests. Thus, the data presented in this report should not be considered representative of nonfatal accidents.

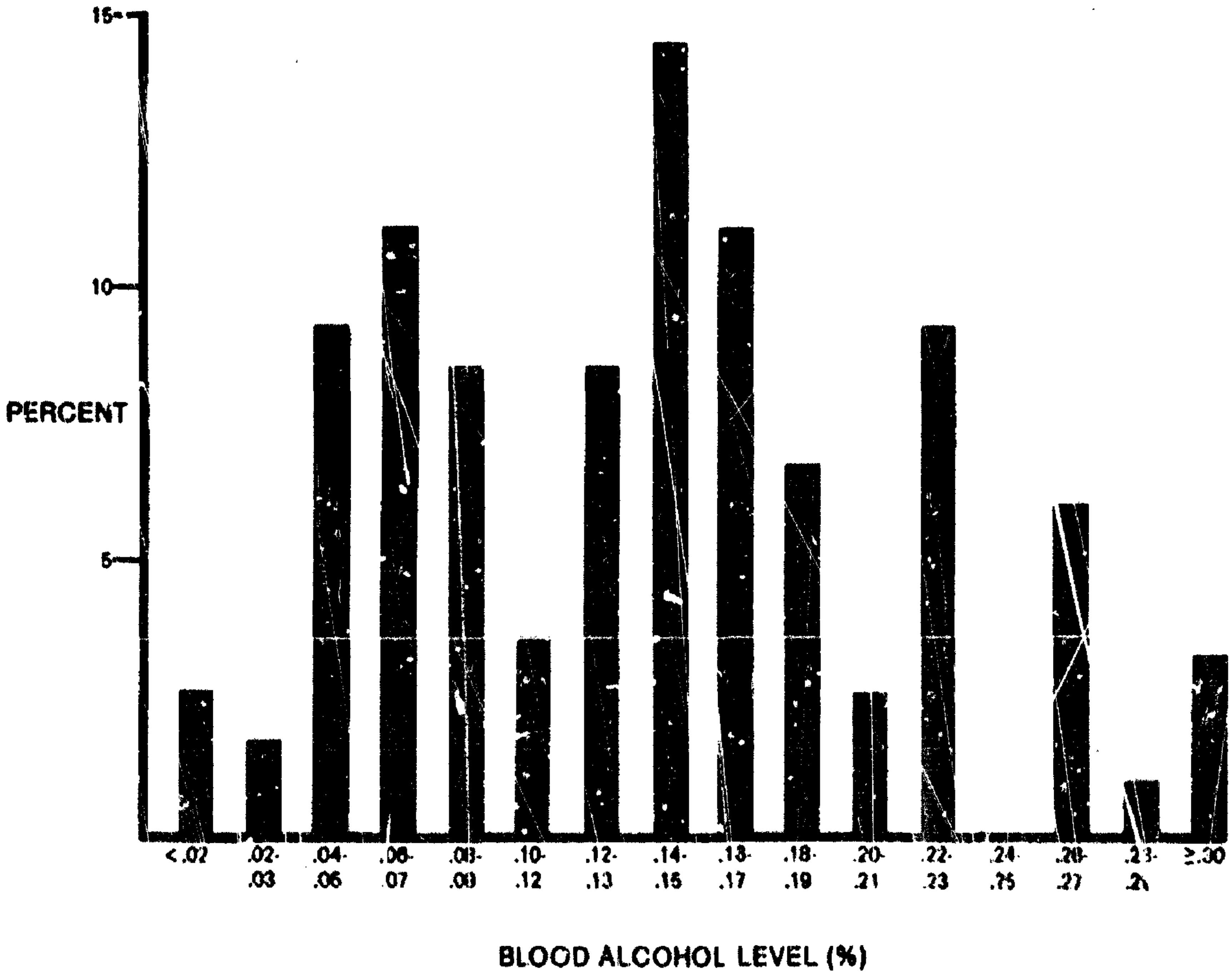

Figure 1.—Percentage of pilots with specified BAC: 1977-1981 (from 119 randomly selected general aviation accidents involving alcohol).

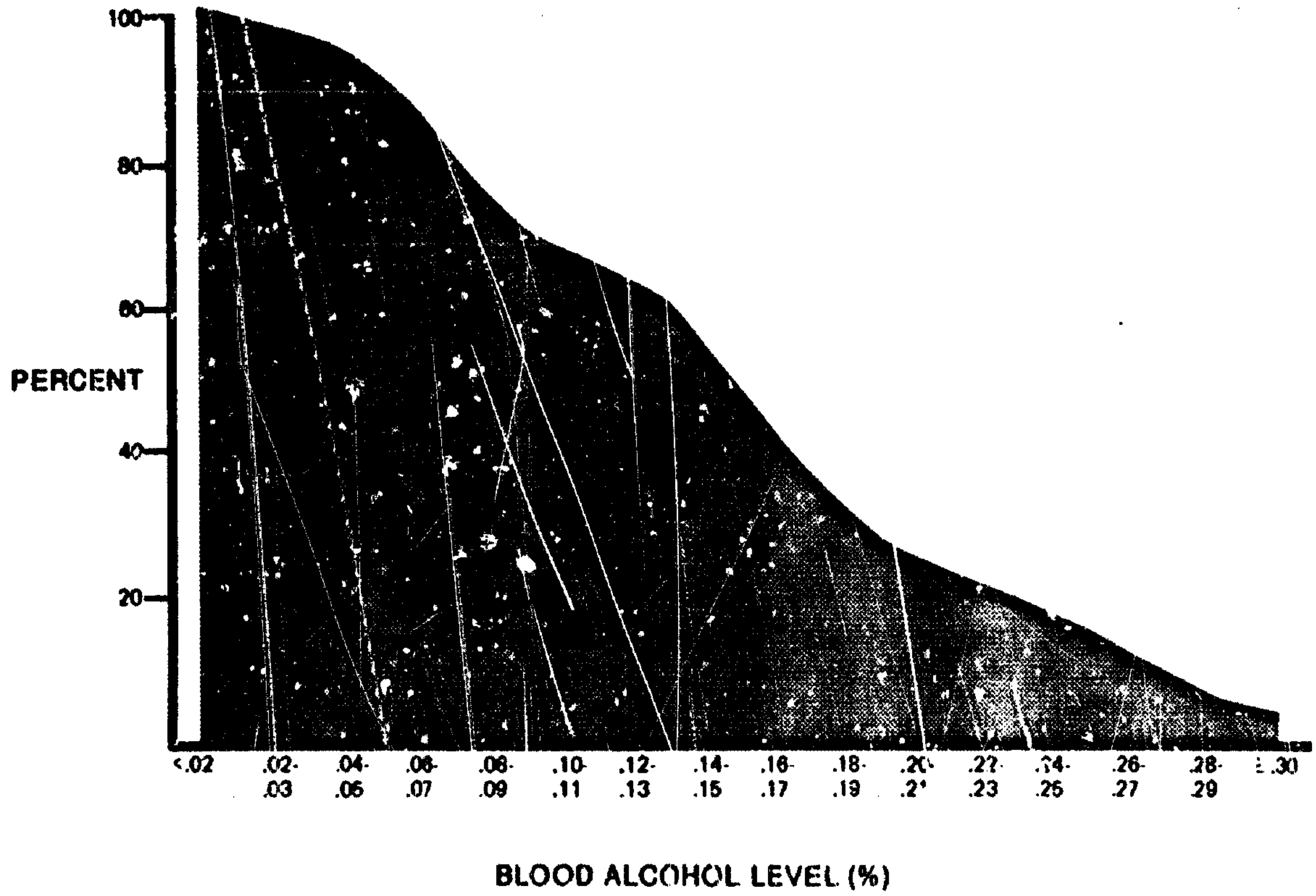

Figure 2.--Percentage of pilots with specified or higher BAC: 1977-1981 (from 119 randomly selected general aviation accidents involving alcohol).

Causes of Accidents and Contributing Factors

The general aviation portion of this report was based on analysis of the 440 alcohol-involved general aviation accidents noted in Table 3. The efficiency and judgment of the pilot was found to have been impaired by alcohol in 70 percent (310) of these accidents. This impairment was found to have been either a direct cause of the accident or a related factor.

A substantial number of factors in addition to alcohol were found to cause or contribute to these accidents. The most frequent causes and factors are summarized in Table 4.

Table 4.— Most frequently cited causes/factors in 440 general aviation alcohol-involved accidents: 1975 through 1981*

Causes/factors	Number of times cited
Alcohol impairment of efficiency and judgment	310
Physical impairment	279
Failed to obtain/maintain flying speed	91
Unwarranted low flying	80
Spatial disorientation	76
Low ceiling	69
High obstructions	55
Fog	54
Continued VFR into adverse weather	51
Inadequate preflight preparation or planning	40
Rain	29
Failed to see and avoid objects, obstructions	27
Misjudged altitude	26
Stolen or unauthorized use of aircraft	26
Misjudged altitude and clearance	24
Exercised poor judgment	23
Unqualified to operate aircraft	16

*The Safety Board frequently assigns more than one cause/factor to an individual accident. In the 440 alcohol-involved general aviation accidents, 1,276 causes and factors were assigned.

Injuries

One way of classifying accidents is by the distribution of injuries to all occupants of the aircraft (Table 5.)

Table 5.—Injury distribution in general aviation accidents: 1975 through 1981

	Occupants in fatal accidents		Occupants in alcohol-involved accidents	
	Number	Percent	Number	Percent
Total occupants	10,610	100	925	100
Fatal	9,093	86	742	81
Serious	999	9	95	10
Minor	265	3	47	5
None	253	2	41	4

The distribution of injuries for all aviation accidents involving alcohol (especially those which are not fatal) is not known, since the Federal Aviation Administration (FAA) has not issued any "implied consent" regulations that permit testing for alcohol in nonfatal accidents. 4/

4/ "Implied consent" regulations would provide that consent to alcohol testing is an implied condition to issuance of an airman certificate.

Pilot Factors

Age—The distribution of pilot age in alcohol-involved general aviation accidents did not appear to be substantially different from either the age distribution of all licensed pilots 5/ or from the age distribution of pilots involved in fatal accidents (Table 6).

Table 6.—Pilot age

Pilot age	All pilots (percent)	Pilots in fatal general aviation accidents (percent)	Pilots in alcohol-involved general aviation accidents (percent)
15-19	4	2	2
20-24	11	8	7
25-29	14	12	15
30-34	16	14	11
35-39	14	13	14
40-44	11	13	14
45-49	9	13	14
50-54	8	11	10
55-59	7	8	9
60 or more	6	6	4
Average	38 years	39 years	40 years

A chi square test was used to compare the three age distributions shown above (for explanation of this test, see Appendix B). This test was used to determine whether the age distribution of pilots in alcohol-involved accidents was statistically different from either of the other two distributions shown. The distributions were not significantly different at the 0.05 confidence level.

Medical Certificate--Pilots are required to possess a valid medical certificate while exercising the privileges of an airman certificate. The following tabulation showed that, despite this requirement, many pilots involved in accidents did not have valid medical certificates (Table 7).

Table 7.--Pilots without valid medical certificates involved in general aviation accidents: 1975 through 1981

	Total number of accidents	Accidents involving pilot without valid medical certificate	
		Number	Percent
All general aviation accidents	27,249	1,030	4
Fatal general aviation accidents	4,596	298	6
Alcohol-involved general aviation accidents	440	53	12

5/ These are limited to "active" pilots, i.e., those with a pilot's license and a current medical certificate. These data were obtained from reports of the Federal Aviation Administration. Current data regarding the number of active airmen and certificates held may be obtained from the FAA Statistical Handbook of Aviation.

The data showed that the percentage of pilots without a valid medical certificate was considerably higher for alcohol-involved pilots than for pilots in all general aviation accidents or for pilots in all fatal general aviation accidents.

Pilot Experience—Fifty-seven percent of the pilots involved in all fatal accidents held only private pilot 8/ or student pilot certificates; 68 percent of the pilots in alcohol-involved accidents held these certificates (Table 8). Four percent of the pilots in alcohol-involved accidents had no pilot certificate at all, while 2 percent of the pilots in all fatal accidents had no certificate. However, a chi square test indicated that these differences were not statistically significant at the 0.05 confidence level.

Table 8.--Class of certificates for general aviation pilots: 1975 through 1981

Class of Certificate	Active pilots (percent)	Fatal accident pilots (percent)	Alcohol-involved fatal accident pilots (percent)
None	-	2	4
Student	24	7	10
Private	45	50	58
Commercial	22	33	22
Airline Transport	9	7	5
Unknown	-	1	1

When total flight time was used as a measure of experience, pilots in alcohol-involved accidents appeared to be slightly more experienced than pilots in all fatal accidents (Table 9). About 30 percent of the pilots in alcohol-involved accidents had more than 1,500 flight-hours, while 16 percent of all pilots involved in a fatal accident had more than 1,500 flight-hours. To determine whether the distributions of flight time were statistically different, a chi square test was performed. This test showed that the two distributions were statistically different at the 0.05 confidence level.

Table 9.--Total flight time for pilots in general aviation accidents: 1975 through 1981

Flight Hours	Fatal accidents (percent)	Alcohol-involved fatal accidents (percent)
0-99 hours	14	24
100-199	14	14
200-299	11	9
300-399	8	7
400-499	7	2
500-999	19	12
1,000-1,499	11	6
1,500-1,999	7	5
2,000-2,499	6	3
2,500 or more	3	18

8/ Most of the pilots in fatal alcohol-involved accidents who held commercial or airline transport certificates were not performing commercial or airline transport activities at the time of the accident. In fact, 65 percent of these more advanced pilots were flying for practice or for personal reasons.

The fact that about 30 percent of pilots in alcohol-involved accidents had 1,500 or more hours of flight time indicated that pilot experience alone could not compensate for the influence of alcohol on judgment and motor skills. Of pilots with more than 1,500 hours, 66 percent had certificate levels of commercial pilot or higher. Not shown in Table 9, but of particular interest, is the fact that between 1975 and 1981, 19 pilots with more than 10,000 hours of flight time were in alcohol-involved accidents. This further underscores the observation that even very high numbers of flight-hours could not be relied on to compensate for the performance degradations resulting from alcohol. Nearly two-thirds (59 percent) of alcohol-involved fatal accident pilots who had 1,500 hours or more were flying for their own pleasure or for practice when the accident occurred. Flying for business and for aerial application accounted for another 13 percent and 9 percent, respectively.

Accident Circumstances

Kind of Flying--The majority (76 percent) of alcohol-involved fatal general aviation accidents were those in which the purpose of the flight was recreational or personal flying (Table 10). Another 9 percent occurred during business flights flown by nonprofessional pilots. The balance involved instructional flights, crop control, fire control, aerial advertising, or miscellaneous other operations.

Table 10.--Kind of flying in general aviation accidents: 1975 through 1981

	Fatal accidents (percent)	Fatal alcohol-involved accidents (percent)
Pleasure or personal flying	63	76
Business	8	9
Instruction	7	4
Aerial application	5	3
Corporate/Executive	3	2
Other	13	6

Type of Aircraft—Of the 440 fatal and nonfatal alcohol-involved general aviation accidents in 1975 through 1981, 430 involved airplanes, 5 involved helicopters, 3 involved gliders, and 2 involved gyroplanes.

Type of Accident—The accident types represented in all alcohol-involved accidents included most of the accident types common to general aviation accidents (Table 11). Included were 9 midair collisions, 176 collisions with either ground or water, and 82 collisions with obstacles such as fences, wires, trees, and ditches. Additionally, 84 were stall accidents.

Table 11.--Accident type for fatal alcohol-involved and fatal general aviation accidents: 1975 through 1981

Accident type	Fatal general aviation		Fatal alcohol-involved	
	Number	Percent	Number	Percent
Collision with ground or water	1,471	32	170	43
Collision with objects	735	16	75	19
Stall	873	19	76	19
Airframe failure	270	6	21	5
Engine failure	552	12	29	7
Other	689	15	23	7

In order to assess the role alcohol had in the fatal alcohol-involved accidents from airframe or engine failures, the probable cause and related factors of these accidents were examined separately. In more than half of these accidents, alcoholic incapacitation or physical impairment was determined to be a cause or factor. In almost all of the remaining airframe failure or engine failure accidents, the Safety Board cited either spatial disorientation or procedural errors such as improper inflight decision, operation beyond ability level, or fuel exhaustion or mismanagement, indicating that these were not simply mechanical failures.

Phase of Operation—The phase of operation in which the accident occurred was different in alcohol-involved accidents than in the general aviation accidents as a whole (Table 12). However, there was a similarity between the phase of operation during which fatal alcohol-involved accidents occurred and the phase of operation in all fatal accidents (figure 3). The distribution of phase of operation for fatal alcohol-involved accidents was similar to the distribution for fatal accidents. Chi square examination showed that these distributions were not statistically different at the 0.05 confidence level. However, the phase of operation distributions between fatal alcohol-involved accidents and all general aviation accidents were shown to be statistically different; the difference was significant at the 0.05 confidence level.

Table 12.--Phase of operation in general aviation accidents: 1975 through 1981

Phase of Operation	All fatal general aviation accidents (percent)	Fatal alcohol-involved general aviation accidents (percent)
Static	1	1
Taxi	-	-
Takeoff	13	9
Inflight	68	77
Landing	18	13

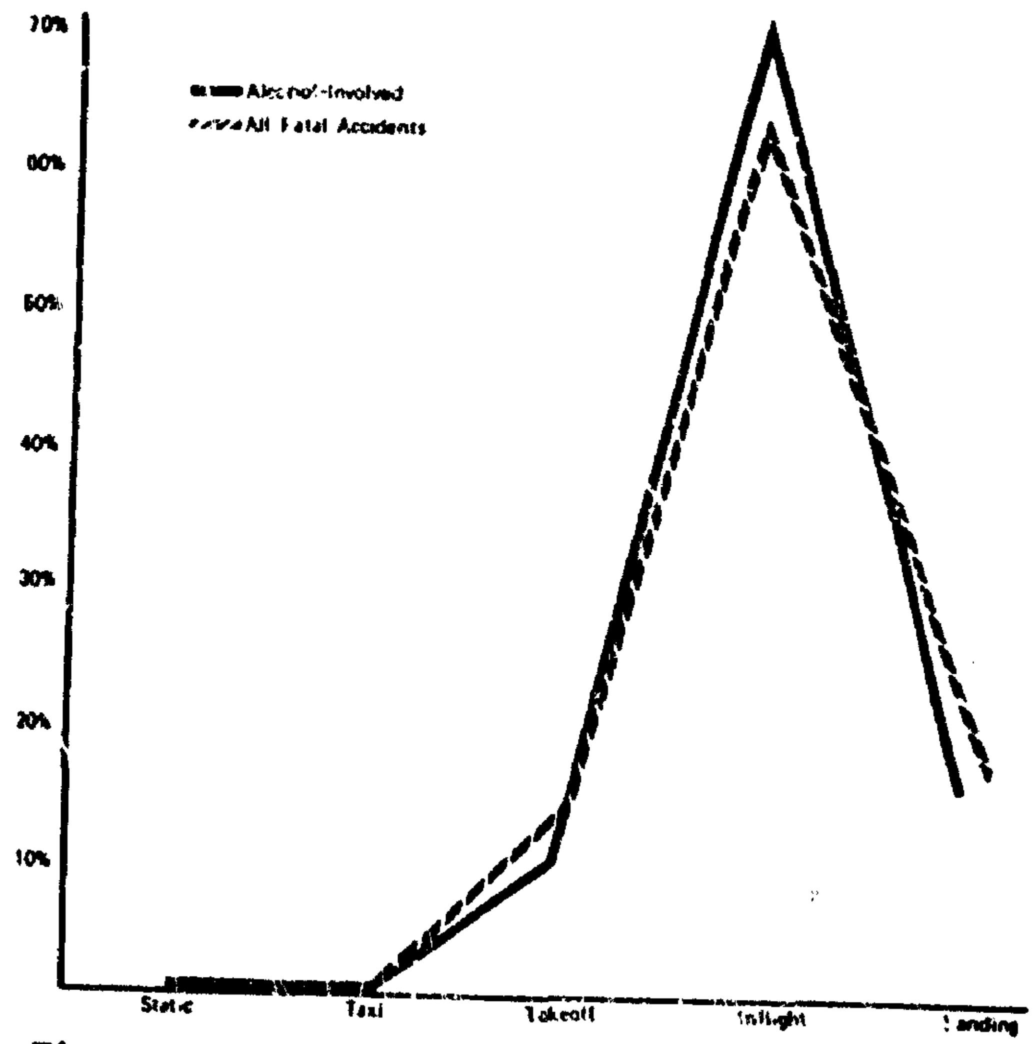

Figure 3.—Phase of operation, general aviation accidents: 1975 through 1981

Environmental Factors

Weather and Flight Plan—The percentage of fatal alcohol-involved accidents that occurred in instrument meteorological conditions was smaller than the percentage of fatal general aviation accidents that occurred in the same conditions. (Table 13). Twenty-one percent of the general aviation flights which resulted in a fatal accident were conducted under a flight plan; however, only 10 percent of the flights that resulted in a fatal alcohol-involved accident were conducted under a flight plan.

Table 13. --Weather conditions and flight plans in general aviation accidents: 1975 through 1981.

	Fatal accidents (percent)	Fatal alcohol-involved accidents (percent)
Weather conditions		
VFR	68	76
IFR	27	20
Unknown	5	4
Type of flight plan		
VFR	9	6
IFR	12	4
None	78	89
Other and unknown	1	1

Although flight rules dictate that, for nearly all flights conducted in instrument weather conditions, pilots must file instrument flight plans or have special VFR clearances, only about one-fourth of pilots involved in alcohol-involved accidents which occurred in instrument conditions were operating under appropriate flight plans or clearances.

Conditions of Light—Although 22 percent of fatal accidents occurred at night, 38 percent of the fatal alcohol-involved accidents occurred at night. This paralleled the experience in some other transportation modes.

ANALYSIS

The Safety Board believes the presence of any alcohol in a pilot's blood jeopardizes safety and, therefore, is 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.

As was shown in Table 1, the percentage has remained relatively constant through 1981. Some of this improvement may be due to more accurate testing methods. Some may be attributed to efforts of the FAA and pilot associations. The FAA widely disseminated to Aviation Medical Examiners (AME) an Advisory Circular and other information concerning the dangers of alcohol use. At the same time, several pilot magazines, in cooperation with the FAA, published articles to provide better pilot education in this area. A number of pilot associations, also with the assistance of the FAA, began to make efforts to alert their members to the consequences of alcohol use in connection with flying. While the intensity of these programs appears to have diminished somewhat in recent years, this topic is still occasionally the focus of articles in aviation periodicals, as well as the focus of safety seminars conducted by the FAA Accident Prevention Program and by various organizations.

Data presented in Table 2 showed that 6.4 percent of the conclusive alcohol tests made on fatally injured pilots involved in scheduled Part 135 accidents (commuter) were positive. However, because there were only 47 conclusive tests in this category, caution should be exercised in drawing conclusions about the extent of alcohol involvement in fatal commuter accidents. In the case of accidents involving nonscheduled Part 135 operations (on-demand air taxis), 7.4 percent of the conclusive alcohol tests made on fatally injured pilots were positive. Because the number of tests in this category (162) is substantially larger, it is not unreasonable to conclude that this proportion is fairly representative of the on-demand fatal accident experience.

More importantly, data in Table 3 show that 10.5 percent of the pilots fatally injured in general aviation accidents had some level of alcohol in their bodies. Although this percentage is significantly lower than the analogous proportion of alcohol involvement in fatal accidents in some other transportation modes, it is cause for concern. Any level of alcohol in aviation is unacceptable.

Positive alcohol 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 seriously the prohibitions against mixing alcohol and flying, and that they may not understand the consequences of ignoring these prohibitions. Further educational efforts by the FAA and other parts of the aviation community may improve pilots' awareness of the hazards of alcohol. This can be effected by adding specific material to the flight instruction curricula at all levels and by making additional educational materials available directly to pilots. In fact, a recent study by the FAA's Office of Aviation Medicine 7/ has concluded that an intensive pilot education program concerning the effects of even small amounts of alcohol is warranted.

In addition to stepping up its efforts to increase alcohol awareness and to stress the importance of its rules prohibiting flying while under the influence, the FAA also should increase its enforcement of its rule requiring a pilot to hold a valid medical certificate. The fact that 53 of the 440 pilots in alcohol-involved accidents had no valid medical certificate could indicate that these persons either did not fear the penalty of enforcement action or did not believe that enforcement action was likely. Some of the pilots, of course, may have been concerned that a medical certificate would be denied on application.

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 provide 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 objectively verified 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 fully metabolize 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 fully metabolized

7/ "The Current Role of Alcohol as a Factor in Aircraft Accidents," Office of Aviation Medicine, Federal Aviation Administration, Washington, D.C., May 1980, FAA-AM-80-4.

(sometimes called the "hangover effect"). Studies of postmetabolism performance effects have shown that even after the blood alcohol level returns to zero, performance of mental and physical tasks may remain deteriorated for as much as several hours. A 1982 study 8/ conducted in Sweden was designed specifically to test for hangover effects. This study utilized automobile driving tasks as a measure of performance and reported four very important results:

1. Impairment of performance was evident after all alcohol was metabolized.

2. Impairment persisted for at least 3 hours after all alcohol was metabolized.

3. Impairment of performance had little correlation with subjective reports of hangover symptoms.

4. Subjects could not generally estimate their own blood alcohol levels or calculate the time needed to become completely sober.

Performance impairment resulting from hangover has also been demonstrated with aviation tasks. In a 1979 article, 9/ Wise reported on a study in which common but serious procedural errors were preset into a flight simulator. Pilots were then asked to perform standard checklists, an instrument takeoff, enroute flight, and approach and landing. Each pilot conducted three such flights: the first before any alcohol ingestion, the second after reaching a BAC of 0.10, and the third 14 hours later. The study found that 10 percent of the pilots failed to detect and correct at least one of the errors during the first flight. At BAC levels of 0.10, 89 percent of the pilots were unable to detect and correct all of the errors. In the "hangover" condition, 68 percent of the pilots failed to make the appropriate corrections. This study concluded that, even in ground-based simulators, the effects of hangover produced significant performance deterioration.

Even small amounts of alcohol have been shown to affect judgment, performance, and reaction time. 10/ As a point of reference, a 150-pound person can reach a 0.035 percent BAC level by drinking as little as 1-1/2 ounces of 86-proof whiskey or 1-1/2 12-ounce cans of beer in a 1-hour period. Levels below 0.04 percent BAC were found to be detrimental to maneuvering skills in drivers and to response times required to react to surprise situations.

A 1972 study by the FAA 11/ examined pilot performance during actual instrument flight conditions. This study reported that as levels of alcohol were increased, the seriousness of procedural errors also increased. In fact, the study found that 0.04 percent BAC was enough to degrade pilot performance to an extent that did not permit safe flying.

Other studies confirm these findings. Research conducted as early as 1950 documented that the threshold of impairment in driving ability in expert drivers was at

8/ "Hang-Over Effects of Alcohol and Driver Performance," National Road and Traffic Research Institute, Sweden, Report 222A, 1982.
9/ "Flying the Morning After the Night Before," L. Wise, Approach, Vol. 25, No. 4. October 1979.
10/ "Effects of Small Doses of Alcohol on Driver Performance in Emergency Traffic Situations," Hans Laurell, Accident Analysis and Prevention, Vol. 9, 1977.
11/ "The Effects of Alcohol on Pilot Performance During Instrument Flight," Billings, C.E., Civil Aeromedical Institute, Federal Aviation Administration, 1972, FAA-AM-72-4.

BAC's of 0.035 to 0.04 percent. 12/ In a study conducted for the Coast Guard in 1975, it was concluded that "... by the time a boat operator's blood alcohol concentration reached 0.035 percent, the impairments in relatively normal boating operations were significant." 13/ Concerning moving objects, H. Honnegar stated that ".. the ability to distinguish close, but separated moving objects seems to be consistently impaired at much lower BACs, sometimes as low as 0.03 percent." 14/ These studies examined tasks used in surface transportation; the aviation environment tasks are of at least equal complexity, and the aviation environment produces special difficulties for the pilots. A 1982 study by the FAA's Civil Aeromedical Institute 15/ demonstrated significantly lowered task performance at simulated altitude as a result of alcohol ingestion. The study also showed that performance degradation of flight-related tasks was greater for any given alcohol level when the alcohol level was rising than when it was falling.

Alcohol impairment associated with aviation affects several skills. Information processing may be slowed, peripheral vision may be reduced, and the ability to exercise fine muscle control may be reduced as a result of degraded signals from the brain as well as inappropriate feedback. Furthermore, research demonstrates that these effects are magnified at higher altitudes because of lower partial pressures of oxygen. Even without the presence of alcohol, the reduction of partial pressures of oxygen reduces pilot performance. The effects of oxygen deprivation, known as hypoxia, are subtle and may manifest themselves as fatigue, headache, the making of small procedural errors, or a feeling of euphoria. As hypoxia becomes more pronounced, the symptoms become more pronounced, and the seriousness of errors increases. The insidiousness of hypoxia is a problem in itself, because a pilot may well not recognize that he or she has been affected. Even at fairly low, and commonly flown, altitudes, mild forms of hypoxia can occur, with the chief effect being reduced vision, particularly at night. The effects of altitudes and hypoxia are exacerbated by alcohol, because alcohol inhibits oxygen transfer between the hemoglobin molecule and the body cells. The net effect on performance is greater than the effect of either the alcohol or the hypoxia alone. A further danger is that alcohol inhibits the pilot's ability to detect performance degradations and thus prevents him or her from taking appropriate remedial measures.

There are a number of factors that affect pilot performance: the skill required to operate an aircraft, the increased stresses induced by noise and vibration, and the effects of reduced oxygen at altitude, including reduced night vision. Accordingly, pilots whose alcohol levels may not have been debilitating on the ground may climb to cruise altitudes and be unable to perform physical or mental tasks adequately. Even if a pilot recognizes these performance decrements, a descent to a lower altitude is not likely to produce immediate improvement because of the time needed for reoxygenization of body tissues. The cumulative message from these studies is that the presence of any alcohol in a pilot is inconsistent with safe operating practices.

12/ "Results of Practical Road Tests and Laboratory Experiments," K. Bjerver and L. Goldberg, Quarterly Journal of Studies on Alcoholism, Vol. 11, 1950.
13/ Wyle Laboratories, "Alcohol and Pleasure Boat Operators," Coast Guard Report Number CG-D-134-75.
14/ "Alcohol Disturbance of Visual Acuity for Moving Objects," H. Honnegar et al., Blutalkohol, Vol. 7, 1970.
15/ "Alcohol-induced physiological displacements and their effects on flight-related functions," Michael Lategola et al., Civil Aeromedical Institute, Federal Aviation Administration, 1982, FAA-AM-82-3.

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.
>
> 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.

In July 1979, before the FAA had published draft regulations for comment and following several accidents in which investigations were hampered by inability to obtain medical information from surviving pilots, the Safety Board recommended that the FAA (A-79-61):

> Amend 14 CFR 61.3 to include an implied consent clause which would be a condition of issuance of Class I and Class II airman medical certificates. The implied consent clause should require the holder to submit to any nonpsychiatric medical evaluation included in 14 CFR 67 if deemed necessary by the National Transportation Safety Board following any accident/incident and to such biochemical testing essential to establish the absence of alcohol, drugs, or suspected metabolic disorders. The medical examination should be performed by a Regional Flight Surgeon or by an Aviation Medical Examiner designated by a Regional Flight Surgeon.

(Class I and II medical certificates apply to Airline Transport and Commercial pilots, respectively.) When the FAA responded that it lacked legislative authority to require such sweeping examinations, the Safety Board closed the recommendation as "reconsidered" in late 1979. The two 1977 Safety Recommendations were left in an "open" followup status because they were still appropriate and because the Board assumed that satisfactory draft regulations would be issued. In July 1981, nearly four 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."

The proportion of fatal accidents which are alcohol-involved seems to have stabilized at about 10 percent--lower than it was 20 years ago, but still unacceptably high. We cannot know the extent to which alcohol use may contribute to nonfatal accidents, because current Federal regulations do not include implied consent to testing. Surviving pilots are not required to undergo screening.

Thirty-eight States have laws pertaining to alcohol use with specific reference to aviation. Most of these State laws are written in the context of either the Federal 8-hour rule, or the Federal under-the-influence rule, or both. Only 2 States, Minnesota and Nebraska, currently incorporate implied consent to testing as part of their aviation law.

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 pilots surviving accidents 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 in cases of evident intoxication and subsequently taken enforcement action. 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.

Another area that should be addressed is the problem drinker who is also a pilot. From the accident data available, it is not possible to determine the percentage of pilots in alcohol-involved accidents who are problem drinkers. However, experts in the field of alcohol abuse believe that BAC levels of 0.15 percent and greater are one of the major signs that a person is a problem drinker. 16/ For example, the National Council on Alcoholism's (NCA) major criterion for the diagnosis of alcoholism defines alcoholics as individuals with "more than 0.15 percent BAC without gross evidence of intoxication." The accident data showed 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. Based on these data, the NCA's criterion, and the fact that 10 percent of the general United States adult population has drinking problems, 17/ it is not unreasonable to assume that some pilots are alcoholics.

Since persons documented to be alcoholics 18/ cannot be issued a medical certificate and because some accidents involving alcohol may be attributed to alcoholics, additional steps appear warranted to identify and disqualify these persons from flying. Since these persons generally do not change their behavior based on awareness of the effects of alcohol, remedial measures other than education need to be considered.

16/ National Council on Alcoholism Criteria Committee, "Criteria for Diagnosis of Alcoholism" American Journal of Psychiatry, Volume 129, 1972.
17/ Alcohol and Health, Secretary of the Department of Health, Education and Welfare, 1978.
18/ Under 14 CFR Part 67, a person is not entitled to a medical certificate if he or she has an established medical history or clinical diagnosis of alcoholism, which is not in remission; alcoholism is defined as a condition in which a person's intake of alcohol is great enough to damage his physical health or personal or social functioning, or when alcohol has become a prerequisite to normal functioning.

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 AME that additional medical testing for detection or confirmation of alcoholism is advisable.

1. License record checks. Studies of the driving records of alcoholics and problem drinkers have repeatedly shown that they are more likely to be in motor vehicle collisions and other traffic offenses involving alcohol than are other drivers. A 1968 study of alcoholics found that 60 percent had had at least one drinking-related motor vehicle collision in the previous 10 years. 19/ Overall, the study found, alcoholics were about twice as likely as the average driver to have a drinking/driving offense or an accident involving alcohol on their driving record. State motor vehicle department records of individuals who have aviation accidents could be checked to identify those with an alcohol-related motor vehicle conviction or accident; further investigation could determine whether there is any evidence of a drinking problem. Another potential source of information for detecting problem drinkers is the National Driver Register (NDR). 20/ Under current legislation, the FAA is not authorized to use the NDR to check for potential problem drinkers. However, 1982 amendments to the NDR legislation 21/ permit employers or potential employers of commercial motor vehicle drivers to gain access to the NDR, but this NDR check may not be done without the consent of the driver or driver-applicant.

   In a 1980 report to Congress on the NDR, 22/ the Department of Transportation reported that the General Accounting Office checked two statistical samples of civil airmen against the NDR, and subsequently reported that the FAA could expect a 2.3 percent match with initial airman medical certificate applications; the GAO recommended that the FAA consider such an effort. As part of this study, the Safety Board checked all of the pilots in 1981 alcohol-involved general aviation accidents against the NDR. Of 62 names and birthdates submitted, 8 probable matches were found, indicating that those 8 persons had had their driving permits suspended or revoked at least once in the past 7 years. In this case, 4 had had their permits suspended or revoked for alcohol-related reasons. The FAA could seek authority to use the NDR in a similar way to check the driving records of pilots or pilot-applicants.

19/ 1968 Alcohol and Highway Safety Report, U.S. Department of Transportation.
20/ An explanation of the NDR is contained in Appendix C.
21/ Public Law 97-364.
22/ U.S. Department of Transportation, "The National Driver Register: A Report to the Congress," June 1980.

The NDR could be used to screen candidates for student pilot licenses and to screen certificated airmen when their medical certificates are renewed. One way to do this would be to have AME's issue temporary medical certificates and student pilot licenses which would be valid for only 30 days. The AME would send the results of the medical examination to the Airman Certification Branch of the FAA. This Branch would then access the NDR and ascertain whether there were probable matches. The AME would be informed of these matches and the pilot would be requested to return to the AME for further clarification or examination. This would permit the AME to secure additional medical tests or establish the pilot's fitness through interviews or other means. If the AME did not receive any adverse information about the pilot, the final medical certificate would be issued to the airman.

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. These tests can be administered either in questionnaire form to be filled out by the individual, as part of a structured interview, or as a combination of the two. These tests are constructed to account for possible misstatements supplied by the subject about his or her drinking. They are considered useful and significant in identifying those convicted drivers who can benefit from treatment for drinking problems as compared to those individuals who may benefit most from a simple alcohol education course. 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 analyses 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. The AME's already have authority to require the necessary medical tests, examinations, and evaluations to determine that a candidate meets the medical conditions provided in 14 CFR 67, Medical Standards and Certification. The Federal Air Surgeon may request any certificate holder to submit additional medical information and require additional testing to the extent necessary to determine an airman's qualification to continue to hold a medical certificate.

If enforcement of the requirement for possession of a valid medical certificate is to be more certain, and if aviation is to be purged of the influences of alcohol, the participation of the aviation industry itself is required. Fixed base operations and flying clubs are in a uniquely vulnerable position with respect to potential losses resulting from an accident involving a pilot who lacks a valid medical certificate by reason of invalidation of their insurance. At the same time, fixed base operators and flying clubs have a great deal of control over this facet of operation and should vigorously pursue a policy of checking every pilot with every rental or aircraft use. Moreover, fixed base operators and flying clubs, together with flight instructors who provide a continuing presence on the airport, can be encouraged to dissuade persons from flying who are believed to be impaired.

CONCLUSIONS

Findings

1. Any degree of alcohol involvement in aviation is unacceptable. However, a minimum definable level as constituting operation under the influence consistent with the ability measure very low levels of alcohol, needs to be established.

2. No fatally injured pilot operating a U.S. certificated 14 CFR 121 air carrier in scheduled service has had a positive alcohol test since at least 1964.

3. During 1975 through 1981, 6.4 percent of the conclusive alcohol tests made on fatally injured pilots involved in scheduled Part 135 accidents were positive. During this period, 7.4 percent of the conclusive alcohol tests made on fatally injured pilots involved in nonscheduled Part 135 accidents were positive. Because the number of tests taken in this latter group was sufficiently large, the Board considers the 7.4 percent to be representative of alcohol involvement in nonscheduled Part 135 fatal accidents.

4. During 1975 through 1981, 10.5 percent of the conclusive toxicological tests of fatally injured general aviation pilots were alcohol-positive. The Safety Board considers this a reasonable indication of the extent of alcohol involvement in fatal general aviation accidents.

5. The extent to which alcohol is involved in nonfatal accidents is unknown because there is no authority to test surviving pilots for alcohol. A regulation providing for implied consent to alcohol testing would provide such authority and make it possible to determine the extent of alcohol use in aviation. Furthermore, it could serve as a general deterrent to flying after or while drinking.

6. Four percent of the pilots in general aviation accidents did not have a valid medical certificate. Twelve percent of the pilots in alcohol-involved accidents did not have a valid medical certificate.

7. Some pilots do not take seriously the prohibitions against mixing alcohol and flying and they may not understand the consequences of ignoring these prohibitions. Additional and continuing educational efforts by the FAA and other parts of the aviation community might convince pilots of these hazards.

8. Lack of a specific alcohol level to define "under the influence" makes prevention and enforcement efforts more difficult.

9. Forty-five percent of a randomly selected sample of 119 pilots in alcohol-involved accidents had a BAC level of more than 0.15 percent, a level that experts consider to be an indication of alcoholism. This may indicate that a significant percentage of pilots in alcohol-involved accidents were problem drinkers.

10. The AME's, through the Regional Flight Surgeons, do not use the full testing latitude provided in the regulations in order to improve the process of identifying airmen who should be denied a medical certificate.

11. The aviation community, acting through pilot associations, fixed base operators, flying clubs, and flight instructors should cooperate in self-enforcement of the requirement for possession of a valid medical certificate and in assuring that pilots who are impaired by alcohol do not fly.

12. Even very low BAC levels can degrade pilot performance and may be considered by the Safety Board as a cause or a contributing factor to an accident, depending on the specific circumstances of the accident and other information, such as pilot history, that is developed in the accident investigation.

RECOMMENDATIONS

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)

> 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)

> 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)

> 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)

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)

Also based on the findings of this study, the Safety Board recommends that the Aircraft Owners and Pilots Association, the National Association of Flight Instructors, and the National Agricultural Aviation Association:

Disseminate to your members through articles in periodicals, seminars, workshops, and other avenues, information on the dangers of alcohol use in connection with flying. (Class II, Priority Action) (A-84-51)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JIM BURNETT
Acting Chairman

/s/ PATRICIA A. GOLDMAN
Member

/s/ G. H. PATRICK BURSLEY
Member

/s/ VERNON L. GROSE
Member

May 1, 1984

APPENDIXES

APPENDIX A

14 CFR PART 91-GENERAL OPERATING AND FLIGHT RULES

§91.11 Liquor and drugs.

(a) No person may act as a crewmember of a civil aircraft--
(1) Within 8 hours after the consumption of any alcoholic beverage;
(2) While under the influence of alcohol; or
(3) While using any drug that affects his facilities in any way contrary to safty.
(b) Except in an emergency, no pilot of a civil aircraft may allow a person who is obviously under the influence of intoxicating liquors or drugs (except a medical patient under proper care) to be carried in that aircraft.

APPENDIX B

USE OF CHI SQUARE TO DETERMINE SIGNIFICANCE

The comparison of the distributions of a variable in two populations or in a population and a sample is not as obvious as it may seem, since all observations involve some degree of uncertainty. The use of a procedure called chi square (X^2) permits the comparison of two distributions by making it possible to determine whether, at a particular probability level, the distributions are or are not the same. X^2 is particularly suited to situations where observed frequencies of a variable are to be compared to theoretical frequencies. It has extensive application in statistical work. X^2 is defined by

$$X^2 = \sum \frac{(O-E)^2}{E}$$

where O = an observed frequency
E = an expected frequency

If the discrepancy between the observed frequency and the expected frequency is large, X^2 will be large. As the number of observations increases, the critical value of X^2 (the point at which the differences between the two distributions is said to be significant) increase. A generally accepted level of confidence is chosen, and then the calculated values of X^2 are compared against those required to achieve the chosen level. In this report, a level of 0.05 was chosen as the minimum level at which the differences would be said to be signficant. This means that the chances are 5 in 100 (or less) that the differences in the distributions would occur randomly, even with no actual differences between the expected (fatal accident or all general aviation accident) distribution and the observed (alcohol-involved) distribution. Standard tables of the required values, as well as a more detailed explanation of this procedure, can be found in most introductory statistics texts.

APPENDIX C

NATIONAL DRIVER REGISTER

The National Driver Register (NDR) is a computerized file of persons whose driver permits have been suspended or revoked. The NDR is maintained by the National Highway Traffic Safety Administration of the U.S. Department of Transportation. While participation of permit-issuing jurisdictions is voluntary, it is a central contact point for Federal and State authorities in their efforts to ascertain possible problem drivers applying for original and renewal licenses.

The NDR is not a file on all licensed drivers in the U.S. but an index of adverse driver record files maintained by the States. It contains only data appropriate to its service as a clearinghouse for information pertaining to license actions. The National Driver Register contains information regarding any individual:

1. who is denied a motor vehicle operator's license for cause;
2. whose operator's license is cancelled, revoked, or suspended for cause;
3. who is convicted of:
    a. operation while under the influence of alcohol or a controlled substance;
    b. a traffic violation in connection with a fatal accident, or reckless driving;
    c. failure to render aid or provide identification when involved in an accident;
    d. perjury or false affidavits relating to motor vehicle operation.

The Chairman of the Safety Board may request information in the NDR concerning a person who is the subject of an accident investigation. Likewise, the Administrator of the Federal Highway Administration may request information about persons who are the subjects of accident investigations conducted by the Bureau of Motor Carrier Safety. Individuals may request information concerning themselves or they may request that their own information be sent to employers in specific circumstances. Appropriate measures exist to correct erroneous information.

At the present time, matches are made with first and last names and birthdates. Driver permit number, if known, may be used as a tie-breaker. Because there can be inauthentic matches resulting from incorrect names or very common names, matches returned are considered as only "probable" matches and further verification is sought.

Questions regarding the NDR should be directed to:

National Highway Traffic Safety Administration
U.S. Department of Transportation
Washington, D.C. 20590

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