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Stronger Federal Aviation Administration Requirements Needed To Identify and Reduce Alcohol Use among Civilian Pilots.
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During the period from 1965 to 1975, the National Transportation Safety Board, an independent agency responsible for investigating and determining the probable causes of aircraft accidents, cited alcohol impairment of pilot judgment and efficiency as a probable cause or contributing factor in 485 general aviation accidents, of which 430 resulted in fatalities. General aviation involves all civilian flying except by U.S. airlines. Findings/Conclusions: Studies by the Federal Aviation Administration (FAA) show that the consumption of alcohol adversely affects pilot performance. However, the FAA does not routinely check the pilots' State traffic conviction records for alcohol-related motor vehicle convictions. Instead, pilots are relied on to disclose these convictions in their medical histories and often conceal them. The establishment of minimum blood-alcohol levels and implied consent regulations to test the presence of alcohol would: help the FAA to more precisely identify alcohol's role in accidents so that appropriate measures can be taken, improve enforcement to enable better identification of violators, reduce the investigatory time required to obtain evidence to sustain violations of FAA regulations, and serve as a deterrent to pilots who may consider drinking before and during flight. Recommendations: The FAA should: establish minimum blood-alcohol levels so that "flying under the influence of alcohol" can be clearly defined; and require pilots to submit to mandatory sobriety tests or have their licenses suspended the same as required for motorists in every State. The Congress should make the National Driver Register accessible to the FAA. (RRS)

3754

BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Stronger Federal Aviation Administration Requirements Needed To Identify And Reduce Alcohol Use Among Civilian Pilots

Alcohol intoxication is the cause or contributing factor in many general aviation accidents; that is, all civilian flying except by U.S. airlines. Use of driving conviction information of pilots and improved medical examination procedures could help reduce the incidence of alcohol-related accidents. Minimum blood-alcohol levels and mandatory testing of pilots suspected of drinking likewise are needed to deter pilots from drinking and flying.



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MARCH 20, 1978



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-164497(1)

To the President of the Senate and the
Speaker of the House of Representatives

Alcohol intoxication is the cause or contributing factor in many civilian aviation accidents. This report discusses the Federal Aviation Administration methods to detect pilots with alcohol problems, medical examination procedures, and educational efforts directed at the effects of alcohol on flight safety and makes recommendations to improve these efforts.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Acting Director, Office of Management and Budget, and to the Secretary of Transportation.


Comptroller General
of the United States

D I G E S T

In every State, regulations on alcohol use among automobile drivers are stricter and more effective than the Federal Aviation Administration's regulation on alcohol use by pilots (see p. 2) despite the fact that

--greater coordination and skill is required to operate an airplane than to drive an automobile and

--alcohol's effect on the human body increases with the altitude. (See p. 6.)

The following case provides a graphic example of the significance of alcohol in general aviation accidents.

In May 1975 a 27-year-old pilot crashed shortly after takeoff from a Florida airport; he was intoxicated. His blood-alcohol level was almost 200 milligrams per 100 milliliters of blood. A passenger was killed, and the pilot and a second passenger were injured seriously. Alcohol impairment of efficiency and judgment was cited as a probable cause of the accident.

At the time of the Federal Aviation Administration's last medical certification--approving the pilot's license to fly--his State traffic conviction records showed that he had three driving-while-intoxicated offenses, one license revocation for 90 days, one for 6 months, another for 1 year, and still another for 5 years for habitual violations. However, the agency was not aware of the pilot's driving convictions.

This example of misuse of alcohol by a pilot may be significant because agency medical officials conceded that they did not know the extent that alcohol use contributed to general

aviation accidents; that is, all civilian flying except by U.S. airlines. Official figures state that alcohol use contributed to 1 out of every 16 fatal general aviation accidents. Analysis of Federal Aviation Administration data indicates that about one out of every five fatal accidents may be a more accurate figure. Between 1965 and 1975 U.S. airlines were not involved in any alcohol-related accidents.

There are over 700,000 civilian pilots, and the Federal Aviation Administration has the responsibility for licensing the technical and medical fitness of these pilots.

The Department of Transportation maintains the National Driver Register containing the names of individuals who have had their driving licenses denied, suspended, or revoked by States for drinking and other offenses. A previous GAO report recommended that the Federal Aviation Administration be provided with access to the Register to aid the agency in its licensing functions. Legislation is now pending that would accomplish this objective. (See p. 12.)

The agency should have access to the Register to check the accuracy of information provided by pilots, some of whom often fail to disclose alcohol-related traffic convictions by them on their medical histories.

In one State 98 percent of the pilots with alcohol-related traffic convictions failed to disclose this fact in their last medical history. Failure to disclose such information may constitute a Federal criminal offense, and these cases have been referred to the agency for further investigation.

Federal Aviation Administration regulations prohibit pilots from flying while under the influence of alcohol, but the agency has not established minimum blood-alcohol levels to define what constitutes "under the influence." Nor has it issued regulations requiring mandatory sobriety tests for those suspected of

flying while drunk. Pilots can and do refuse such tests even after an accident. The Florida accident was unusual because a test was performed providing the pilot's blood-alcohol level. (See p. 7.)

In this report GAO makes two major recommendations:

1. To better assess alcohol's influence in aircraft accidents, identify violators of the agency's alcohol regulations, and deter pilots from drinking and then flying, the Federal Aviation Administration should

--establish minimum blood-alcohol levels so that "flying under the influence of alcohol" can be clearly defined and

--require pilots to submit to mandatory sobriety tests or have their licenses suspended the same as required for motorists in every State.

2. The Congress should make the National Driver Register accessible to the Federal Aviation Administration.

The report also discusses and recommends revisions in the agency's required medical certification examination and review procedures (see p. 9) and its alcohol education efforts for pilots. (See p. 20.)

AGENCY COMMENTS AND OUR EVALUATION

In response to GAO's legislative recommendation, the Department of Transportation believes the Congress should first authorize access to the National Driver Register to conduct a limited study of its usefulness before a permanent change in the law is made because of the Department's uncertainty whether it is appropriate or practical to obtain and use driving conviction records to evaluate pilot medical qualifications. GAO emphasized that, because many pilots conceal information from their medical histories, the Department needs to obtain information contained in the Register in making judgments about the medical fitness

of pilot applicants and to be more sure of the integrity of the certification process.

The Department also is examining into the legal aspects of implied consent testing. It generally concurs with GAO's other recommendations and is taking appropriate action.

The National Transportation Safety Board agrees fully with the main thrust of this report and has made recommendations to the Federal Aviation Administration similar to GAO's concerning the establishment of minimum blood-alcohol levels and implied consent.

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ABBREVIATIONS

FAA	Federal Aviation Administration
GAO	General Accounting Office

CHAPTER I

INTRODUCTION

When an aircraft accident occurs, it most often involves general aviation. For example in 1976, the accident rate for general aviation was 1.06 accidents per million miles flown compared to 0.01 accidents per million miles flown by U.S. airlines. A significant number of general aviation accidents are caused by pilot drinking. During the 11-year period 1965-75, the National Transportation Safety Board, an independent agency responsible for investigating and determining the probable causes of aircraft accidents, cited alcohol impairment of pilot judgment and efficiency as a probable cause or contributing factor in 485 general aviation accidents, of which 430 resulted in fatalities. During this period there were no alcohol-related accidents involving U.S. airlines.

In 1977 general aviation pilots carried over 90 million people, about one-third of all intercity air passengers. General aviation consists of all civilian flying, except that by airlines. It includes the transport of cargo and personnel by business in company-owned aircraft and air taxi operations.

This report discusses Federal efforts to (1) identify civilian pilots having alcohol-related problems and (2) enforce pilots' compliance with the Department of Transportation's Federal Aviation Administration (FAA) regulations prohibiting the use of alcohol before and during flight. Also discussed are Federal efforts to determine the scope and magnitude of alcohol use as a cause in general aviation accidents and methods of reducing it.

In an earlier report entitled "Improved Controls Needed Over Private Pilot Licensing" (RED-76-65, Feb. 26, 1976), we reviewed FAA's pilot technical skill requirements. In another report, "The Federal Aviation Administration Should Do More To Detect Civilian Pilots Having Medical Problems" (CED-76-154, Nov. 3, 1976), we reviewed FAA's medical requirements for civilian pilots.

FAA REQUIREMENTS

Under the Federal Aviation Act of 1958, as amended (49 U.S.C. 1301), FAA is responsible for promoting flight safety by insuring that only technically qualified and medically fit airmen are issued licenses to fly.

According to Federal Aviation Regulations, all pilots must be medically certified by a designated aviation medical examiner at least every 6 months for an airline transport pilot (class I), every 12 months for a commercial pilot (class II), and every 2 years for a student or private pilot (class III). There are over 700,000 active general aviation and airline pilots.

To determine an applicant's medical fitness, the physician makes a general examination which focuses on the condition of the applicant's eyes, ears, nose, and throat and a check for abnormal heart rhythms. In addition, the physician must conduct various vision tests, a hearing test, blood pressure and pulse readings, a urinalysis to identify kidney disease and diabetes, a resting electrocardiogram for certain applicants, a review of the applicant's medical history, and any other test the physician considers necessary. After completing the medical examination, the physician can issue or deny the applicant a medical certificate or defer issuance to FAA.

Federal Aviation Regulations also specify that a medical certificate will mandatorily be denied if an applicant has a medical history or clinical diagnosis of alcoholism, a personality disorder which repeatedly manifests itself in overt acts, and several other serious conditions.

FAA defines alcoholism as a diagnosable disease in those persons whose alcohol intake is great enough to damage physical health, personal or social functioning, or when it has become a prerequisite to normal functioning.

An important part of the medical certification is the physician's review of the applicant's medical history in which the applicant is asked to answer such questions as to whether he has an excessive drinking habit or has had traffic and other convictions which may be attributable to various medical conditions, including alcoholism. Because medical histories are an important part of the medical certification process, it is important that applicants provide accurate information. Concealing information is a criminal offense.

To reduce alcohol's role in aircraft accidents and promote flight safety, FAA has promulgated regulations which provide that

--no alcohol be consumed by a pilot within 8 hours of a flight and

--no pilot fly under the influence of alcohol.

These provisions serve as the basis for FAA's alcohol enforcement program.

In addition, FAA sponsors the General Aviation Accident Prevention Program in which safety-related information is conveyed to pilots through seminars and the dissemination of educational material. Information concerning the hazards of alcohol on flight safety are sometimes covered in this program.

ACCIDENT INVESTIGATIONS

The National Transportation Safety Board, an independent Federal agency, whose primary function is to improve safety in various modes of transportation, is responsible for investigating all accidents involving civil aircraft. Accidents are investigated to determine the probable cause and to make recommendations intended to reduce the likelihood of their recurrence.

FAA also investigates accidents to determine

--whether its regulations were violated and

--what changes or improvements are needed in either its regulations or standards to improve safety.

The Safety Board has authorized FAA to investigate most nonfatal light-plane accidents and helicopter accidents, but it retains statutory duty to determine the probable cause in each case.

SCOPE OF REVIEW

We evaluated (1) FAA and Safety Board efforts to identify alcohol's role in aviation accidents, (2) FAA efforts to identify civilian pilots with alcohol problems through its medical certification and accident investigation procedures, and (3) FAA efforts to educate pilots about the use of alcohol and flying.

We interviewed FAA and Safety Board officials and reviewed their records. We also reviewed studies on alcohol's effects on pilot performance and obtained data from the National Council on Alcoholism, Inc.; the National Highway Traffic Safety Administration; the Oklahoma City Alcohol Safety Action Project; the National Institute on Alcohol Abuse and Alcoholism; and from the United Kingdom and Canada.

We also obtained data from State motor vehicle departments, the Department of Transportation's National Driver Register, the Navy, and the Air Force.

We interviewed FAA medical examiners, airline medical directors, volunteer counselors in FAA's accident prevention program, and flight instructors and examiners.

We made our review at FAA's Southwest and Central regional offices; FAA's Aeronautical Center in Oklahoma City, Oklahoma; and FAA and Safety Board headquarters in Washington, D.C.

CHAPTER 2

NEED TO BETTER IDENTIFY PROBLEM

DRINKERS WHEN LICENSING PILOTS

Research studies conducted by FAA showed that the consumption of alcohol adversely affected pilot performance. However, FAA needs to improve its procedures to better identify pilots who may jeopardize flight safety through alcohol use. FAA does not routinely check the pilots' State traffic conviction records for alcohol-related motor vehicle convictions. Instead, pilots are relied on to disclose these convictions in their medical histories, but pilots often conceal this information. Also, FAA has not provided in its pilot medical examination guidelines criteria for diagnosing alcoholism.

ALCOHOL'S EFFECT ON PILOT PERFORMANCE

Piloting an airplane is more difficult than driving an automobile because of the complex coordination requirements and multiplicity of tasks, such as maintaining course headings and level flight, monitoring power settings and fuel reserves, and communicating with air traffic control.

FAA has reported that, at blood-alcohol levels as low as 10 milligrams percent, 1/ decrements in vision and hearing first appear.

Even after 1 ounce of alcohol,

--the speed and strength of muscular reflexes decrease,

--the efficiency of eye movements during reading decrease, and

--the frequency of errors increases.

FAA has also reported that at 20 milligrams percent, complex coordination tasks, similar to those required of pilots, were measurably affected. This latter finding has been substantiated by the Navy. In addition, the Royal Air Force Institute of Pathology and Tropical Medicine has reported that any concentration of alcohol in excess of

1/ Blood-alcohol levels are frequently measured in percentage by weight in a given amount of blood; i.e., 10 milligrams per 100 milliliters of blood.

20 milligrams percent could be significant as a cause of an accident.

FAA's research also indicates that alcohol's effect on the skilled activities necessary to pilot an aircraft are accentuated at higher altitudes. According to FAA, the physiological effects of alcohol are twice as great at 10,000 feet and three times as great at 15,000 feet, compared to its effect at sea level.

PILOTS FAIL TO DISCLOSE ALCOHOL-RELATED DRIVING OFFENSES

Although FAA has the authority to obtain State traffic conviction records, it does not routinely use these records to identify pilots with a possible drinking problem. Instead, FAA relies on the applicant to disclose in his medical history whether he has traffic or other convictions and their nature. Use of State traffic conviction records, however, would disclose to FAA that pilots with alcohol-related driving convictions often fail to report such information on their medical histories. Without accurate medical histories, FAA medical examiners are unable to determine whether pilots are medically fit to fly.

According to an FAA medical official, one alcohol-related driving conviction is a sound basis on which to question an individual on the circumstances surrounding the incident to determine whether an alcohol problem exists. A record of one alcohol-related traffic conviction could be significant because sometimes drunk driving charges are modified to reckless driving or a lesser charge, according to the National Highway Traffic Safety Administration.

In addition, FAA has not established a time limit on convictions it will consider in reviewing pilot medical histories.

We tested the accuracy and completeness of driving conviction information in medical histories submitted by pilots of one State with the State's traffic conviction records. Of 72 pilots with alcohol-related convictions before their last medical history submission, 69 failed to disclose this fact.

In one case, a pilot answered "no" to traffic and other convictions on his last two medical histories furnished in connection with medical examinations conducted in 1973 and 1975. Information obtained from the State traffic conviction records showed that this pilot had the

following alcohol-related convictions:

<u>Offense</u>	<u>Date</u>
Refused chemical test (license suspended)	April 1970
Operator driving ability impaired (accident)	February 1971
Operator driving ability impaired	July 1971
Operating under the influence of intoxicating liquor or drugs	April 1972
Operating under the influence of intoxicating liquor or drugs	June 1972

In failing to report these driving convictions, the pilot was able to obtain a medical certificate.

Another pilot's driving conviction record showed that he had five alcohol-related convictions since 1970. As recent as August 1974, this person's license had been revoked for driving under the influence of alcohol. This pilot also failed to disclose any driving convictions on his medical history and was issued a medical certificate as recently as 1975.

Because failure to disclose a driving conviction or to disclose the true nature of a conviction may constitute a Federal criminal offense, we referred these 69 cases to FAA for further investigation. FAA could have requested and obtained these names from the State.

In 1975 there were 49 general aviation accidents which were attributable to the pilots' intoxication. State traffic conviction information obtained by us for 35 of the pilots involved in these accidents showed 9 had past alcohol-related driving convictions. Most of these accidents resulted in fatalities. For example, in May 1975 a 27-year-old pilot crashed shortly after takeoff from a Florida airport. The accident caused the death of one passenger. The pilot and another passenger sustained serious injuries while a third passenger received minor injuries. This was a rare case where a blood test was taken of a surviving pilot. The pilot's blood-alcohol level was 190 milligrams percent, and the Safety Board cited alcohol impairment of efficiency and judgment as a probable cause of the accident. A check of the pilot's State traffic conviction record at the time of his last medical certification would have disclosed that, in the

previous 5 years, the pilot had three driving-while-intoxicated offenses, one license revocation for 90 days, one for 6 months, another for 1 year, and still another for 5 years for habitual violations.

Another accident during May 1975 resulted in the death of the pilot and one passenger and seriously injuring a second passenger. A liquor bottle and several empty beer cans were found in the wreckage. A blood-alcohol analysis showed that the pilot had a blood-alcohol level of almost 270 milligrams percent. Alcohol impairment was cited by the Safety Board as a probable cause in this accident. If FAA had obtained this pilot's driving conviction record, it would have shown that in the 3 years prior to the pilot's last medical certification, he had two convictions for driving under the influence of alcohol. His driver's license was revoked 1 month before his last FAA medical certification.

FAA officials recognize the advantages of using State driving conviction records in identifying actual or potential problem drinkers. But according to one of these officials, FAA does not use this investigatory tool primarily because of the large workload involved. However, use of the National Driver Register could reduce the need for FAA to contact individual State motor vehicle departments to verify pilot medical histories.

NATIONAL DRIVER REGISTER

The National Driver Register established by an act of Congress in 1960 and maintained by the Department of Transportation's National Highway Traffic Safety Administration is an additional source of information used by States and various driver licensing groups, including several Federal agencies, to obtain information on persons with license withdrawals, including those for alcohol-related offenses.

In our previous report, "The Federal Aviation Administration Should Do More To Detect Civilian Pilots Having Medical Problems," we reported the results of two Register inquiries involving a sample of pilots involved in aircraft accidents during 1972-74 and another of about 11,000 pilots having valid medical certificates.

Our first sample consisted of 163 pilots involved in aircraft accidents in which the Safety Board concluded that pilot impairment was a contributory cause or factor in the accident; 103 of these accidents involved alcohol. Our comparison of these pilots with Register records showed that 13 pilots had their motor vehicle licenses withdrawn,

8 of which were withdrawn or denied for driving while under the influence of alcohol.

The second sample consisted of about 11,000 pilots. Our comparison of this sample of pilots with Register records showed that 269 pilots had their drivers' license withdrawn or denied, of which 144 (involving 119 pilots) were for driving while intoxicated. On the basis of this data, we reported that about 12,500 pilots could be expected to be found in the Register with records of driving while intoxicated.

Although information maintained in the Register could be useful to FAA in certifying pilots, FAA is precluded by legislation from obtaining these records.

We recommended in our previous report that, to improve FAA's ability to identify medically unfit pilots, the Congress provide the Secretary of Transportation with the authority to furnish FAA, upon request, information contained in the Register with respect to an individual's application for an FAA pilot medical certificate.

In commenting on this recommendation, the FAA Administrator stated that FAA neither opposed nor supported it since FAA did not know whether access to the Register would significantly improve its ability to detect applicants with alcohol or psychiatric problems. FAA suggested, however, that it be given access to the Register in order to conduct a limited study to determine its usefulness before changing the law.

DETECTION OF ALCOHOLICS THROUGH MEDICAL EXAMINATION PROCEDURES

FAA's medical examination guidelines do not suggest any criteria for diagnosing alcoholism, and FAA medical examiners confirmed that examination procedures are inadequate to diagnose alcoholism. Weaknesses in the certification examination include

- the absence of any type of laboratory blood analysis,
- vague guidelines for determining the psychological condition of the applicant, and
- the reliance on unverified medical histories provided by the applicant.

Although physicians we interviewed said that no single test could be completely relied on to identify alcoholism, most said that there were various tests and behavioral and social questionnaires that could be administered during the medical examination which might serve as indicators of problem drinkers. However, once a potential problem drinker is identified, a more detailed assessment would be required to make a correct diagnosis.

According to Jon Weinburg, Ph.D., at the Meadowbrook Treatment Center, Minneapolis, gross screening for alcohol problems usually requires only a few minutes' review of the medical history if three or four standardized questions are consistently used. Most patients can thus be grouped as: (1) nonalcoholic, (2) early stage-alcoholic, or (3) middle-stage alcoholic. A more detailed assessment is then required, covering such areas as family life, social life, occupational functioning, and legal involvement. The most typical legal involvement uncovered is driving while intoxicated. A record of two or more such charges is virtually presumptive evidence of alcoholism.

In addition, the National Council on Alcoholism, Inc., has published suggested criteria for diagnosing alcoholism. These criteria identify specific areas where possible alcoholism may be found. Also appropriate laboratory tests are suggested to help the physician to better identify the correct nature of the problem. Although these tests are valuable indicators of a possible alcohol problem, none are sufficient in themselves to diagnose alcoholism.

In addition, FAA medical officials, FAA medical examiners, and three airline medical directors told us that there may be a reluctance on the part of some FAA examiners to diagnose an alcohol problem and to deny or withhold issuance of a medical certificate.

An FAA medical officer said there was a reluctance because:

- The medical examiner, a member of his family, or a close friend may have an alcohol problem. This could consciously or subconsciously bias the examiner's diagnostic ability.
- Alcoholism is a mandatory disqualifying condition; consequently, the medical examiner may be hesitant to deny issuance of a medical certificate based on a possible alcohol problem not fully confirmed by the examination.

--Medical examiners may be confused in distinguishing between social and problem drinking because of their own personal drinking habits, religious beliefs, and family background.

However, this is not to say that suspicious cases of alcoholism and problem drinking are not brought to FAA's attention.

For example, in one case we reviewed, the FAA medical examiner had noted on the examination form that the applicant had a strong odor of alcohol on his breath and a tremor of both hands. These two manifestations when observed during a medical examination are considered by the National Council on Alcoholism, Inc., to be indicative of an alcohol problem. However, the examiner deferred certificate issuance to FAA on the basis of glaucoma. In deferring issuance, the examiner noted his suspicion, and it was then up to FAA to decide whether further investigation would be warranted.

FAA obtained a report from the pilot's personal physician on his glaucoma condition, but there was no evidence in the files indicating that FAA had questioned the pilot concerning a possible alcohol problem. A medical certificate was issued to the pilot by FAA.

A review of the pilot's State driving conviction records would have disclosed that only 2 months before his medical certification examination he was convicted for an alcohol offense. An FAA medical official later told us that, if the FAA had been aware of this information, a psychiatric evaluation probably would have been requested.

Since the issuance of the medical certificate, the pilot was convicted for refusing to submit to a chemical test for alcohol and had his driver's license suspended. As of October 1976 the pilot held a valid FAA medical certificate.

CONCLUSION

To better identify pilots with alcohol-related problems, reduce the incidence of aircraft accidents, and more accurately assess an applicant's physical qualifications, FAA needs to obtain more reliable information. The use of driving conviction records would greatly aid FAA in obtaining this information and in verifying information supplied by applicants in their medical histories. The use of tests and questionnaires during the medical examination could also assist FAA in identifying problem drinkers.

RECOMMENDATION TO THE CONGRESS

We recommend that the Congress provide the Secretary of Transportation with authority to furnish FAA, upon request, information contained in the National Driver Register with respect to an individual's applying for an FAA medical certificate. This could be done by further amending section 401 of Public Law 89-563, 80 Stat. 730, to read as follows:

"Only at the request of a State, a political subdivision thereof, or a Federal department or agency, shall the Secretary furnish information contained in the register * * * and such information shall be furnished only to the requesting party and only with respect to an individual applicant for a motor vehicle operators' license or permit, or a Federal Aviation Administration airmen medical certificate."

It could also be done by passing H.R. 10612 (95th Cong., 2nd sess.). Section 101 (2) (c) of this bill, which proposes certain changes in the use of the Register, would give FAA access to the Register. If such access is provided, the Department should develop and implement adequate controls over the use of data to insure that the privacy rights of the individuals are protected and that such information is used solely for the purpose of improving the level of aviation safety.

RECOMMENDATION TO THE SECRETARY OF TRANSPORTATION

We recommend that, to better identify problem drinkers before aviation accidents occur and thereby improve the level of flight safety, the Secretary direct the FAA Administrator to:

- Review appropriate medical research on diagnosing and identifying the alcoholic and, based on these findings, if appropriate, revise the pilot medical certification examination to include additional laboratory tests and psychological screening techniques, such as questionnaires.

AGENCY COMMENTS AND OUR EVALUATION

The Department stated (see app. I) its position regarding our recommendation that the Congress provide the Secretary with authority to furnish FAA, upon request,

information contained in the National Driver Register was the same as that taken in response to our November 3, 1976, report; i.e., the Congress should authorize FAA access to the Register for making a limited study of its usefulness before making a permanent change in the law to provide FAA access to the Register. The Department questions whether it would be appropriate or practical for FAA to obtain and use State driving conviction records for use in evaluating pilots' medical qualifications. The Department points out, correctly so, that convictions under State driving laws, by themselves, would not be sufficient bases for pilots' medical disqualifications and that careful, thorough investigations of each case would have to be made. The Department said these investigations would be expensive, time consuming, and probably result in only a few disqualifications.

We believe our report demonstrates sufficiently that many pilot applicants conceal from FAA their excessive drinking habits or driving convictions for alcohol-related offenses and that more efforts should be made to identify these persons. It is probably unrealistic to expect pilot applicants, even under the threat of a fine for giving false information, to report their driving convictions, knowing that such information could result in a denial or loss of a license. The Register provides an independent source of information that FAA should have in making judgments about the medical fitness of pilot applicants. The additional expense and time following up on the Register-supplied information should not be any greater than that required to investigate into such information when furnished by the pilot applicant on his medical history.

The Department agreed that research on alcoholism was beneficial and that it would continue to review research studies regarding the diagnosis and identification of alcoholics and will revise examination procedures as necessary. However, it said laboratory studies had not been identified which could be routinely used during certification examination to diagnose alcoholism. According to FAA, the use of questionnaires is being investigated.

CHAPTER 3

NEED FOR MINIMUM ALCOHOL LEVELS

AND MANDATORY TESTING

Minimum blood-alcohol levels and an implied consent rule--two investigatory and enforcement tools used by State and local law enforcement agencies to improve highway safety--are not used by FAA in its investigations of alcohol-related aircraft accidents and enforcement of antidrinking regulations. In addition, the minimum blood-alcohol levels used by the Safety Board to determine whether alcohol intoxication is a factor in accidents may be too high and, therefore, results in an understatement of alcohol's role in accidents.

FAA ACCIDENT INVESTIGATION AND ENFORCEMENT EFFORTS

During the 3-year period 1973-75, FAA investigated 10,379 general aviation accidents on behalf of the Safety Board.

To determine if alcohol is a factor in an accident or if its alcohol regulations are violated, FAA relies primarily on evidence obtained from pilots and witnesses and alcohol intoxication tests given pilots by local law enforcement agencies. In fact, in about 48 percent of the accident investigations, the FAA investigator did not go to the scene of the accident.

The laws of many States do not permit local law enforcement authorities to test pilots for alcohol intoxication. According to the National Association of State Aviation officials, 31 States have specific statutes prohibiting flying under alcohol's influence and 13 other States enforce laws for dealing with flight under the influence of alcohol. In addition, the Safety Board surveyed all 50 States to determine which ones could require a pilot to submit to a blood-alcohol test. Only 12 of the 33 States responding said that they could require testing and 4 have implied consent laws pertaining to pilots.

In addition, FAA has not defined what minimum blood-alcohol level constitutes flying under the influence of alcohol. As early as 1965, FAA officials had considered adopting minimum blood-alcohol levels. However, instead of minimum blood-alcohol levels, FAA proposed the 8-hour rule (see p.15) as a regulation in 1966. But this rule was not adopted until 1970 largely because of opposition from

various aviation interests groups. One of these groups, the Aircraft Owners and Pilots Association which represents general aviation, believed that the 8-hour rule (1) ignored many facets of our society, including religious customs and family traditions, (2) would require costly investigations to enforce, and (3) constituted unnecessary regulation without a showing that it would contribute to safety and the public's well-being.

In January 1970 the Association reversed its position and petitioned FAA to establish an 8-hour rule. It believed the 8-hour rule would enhance aviation safety by providing a guide to educate and deter pilots from drinking and flying and improve enforcement.

In reconsidering the 8-hour rule, FAA considered establishing an implied consent provision for testing pilots for alcohol. FAA's chief medical official stated that enforcement would be assisted by a set legal limit of alcohol designated as presumptive evidence, and he proposed that this limit be set at 30 milligrams percent. Other FAA medical officials also favored establishing implied consent provisions. FAA officials told us that, largely because of opposition from the Aircraft Owners and Pilots Association, minimum alcohol levels and implied consent provisions were not adopted when the regulations were revised in December 1970.

The 8-hour rule erroneously infers that 8 hours is a safe period to refrain from drinking before flying; however, studies have shown that the 8-hour rule is inadequate to determine a pilot's condition to fly. For example, alcohol is normally eliminated from the blood at a rate of about 15 milligrams percent each hour. Starting with 200 milligrams percent, the alcohol level would be about 80 milligrams percent after 8 hours. However, with only one drink 3 hours before flying, a pilot's blood-alcohol level could be back to zero before takeoff. In effect, a pilot could have a high blood-alcohol level and yet not be in violation of the 8-hour rule.

Most commercial airlines do not consider the 8-hour period as a true measurement and require their pilots to abstain from alcohol consumption for at least 24 hours. FAA's "Medical Handbook for Pilots" suggests that the wise pilot wait at least 12 hours. FAA also has reported that there are some indications that hearing and visual systems may continue to show the effects of alcohol beyond 24 hours. FAA is reviewing this hangover effect for the purpose of determining the reasonableness of its 8-hour rule.

In May 1977 the Safety Board recommended that FAA amend its regulations to include an implied consent clause and also to specify minimum alcohol levels at which a pilot is considered to be under the influence of alcohol.

USE OF MINIMUM ALCOHOL LEVELS
AND MANDATORY TESTING BY STATES

All States have recognized alcohol drinking as a serious problem in automobile accidents and have established laws prohibiting driving an automobile while intoxicated. These laws include minimum blood-alcohol levels and implied consent provisions to identify drivers who drive under the influence of alcohol and to deter others from drinking and driving. Under implied consent provisions, drivers agree as a condition for licensing to submit to alcohol testing when requested to do so by a law enforcement official who has reasonable grounds to suspect that the driver was operating an automobile while under the influence of alcohol. A driver's refusal to submit to such a test can result in suspension or revocation of his State driver's license. All States use 100 milligrams percent alcohol as the level for determining whether a driver is impaired or under the influence, except for Idaho and Utah which use 80 milligrams percent.

Before minimum blood-alcohol levels were established, the courts relied on the testimony provided by witnesses to prosecute persons charged with drunk driving. However, this evidence was considered unreliable because it was only a subjective observation of the driver based on the generally accepted signs of drunkenness, such as odor of breath, flushed appearance, slurred speech, and dizziness. Physicians recognized that these apparent signs of drunkenness were not conclusive evidence of alcohol intoxication but could be signs of over 100 pathological conditions which could produce similar symptoms, and only by further diagnosis could alcohol intoxication be determined. Faced with these conditions, prosecutions for driving while intoxicated were notably unsuccessful.

The establishment of minimum blood-alcohol levels by States defining what constitutes "under the influence" and mandatory testing has enabled the States to quickly and effectively identify the driver who drinks and has provided juries with objective scientific criteria on which to judge persons charged with alcohol violations. Most States use breath-alcohol tests and chemical analysis to determine alcohol intoxication.

ADEQUACY OF THE SAFETY BOARD'S MINIMUM BLOOD-ALCOHOL LEVELS

The Safety Board uses the following minimum blood-alcohol levels to determine whether alcohol is a factor or a cause in aircraft accidents.

<u>Blood-alcohol level</u>	<u>Role in accident</u>
Less than 50 mg. percent (note a)	None
50 mg. to 120 mg. percent	Factor
Above 120 mg. percent	Cause

a/ To reach a blood-alcohol level of 50 mg. percent, a 160-pound person would have to drink about 3-1/2 ounces of 86 proof whiskey within 2 hours after eating.

Using this criterion, the Safety Board has cited alcohol impairment of pilot judgment and efficiency as a contributing factor or probable cause in 430 fatal accidents, or about 10 percent of all fatal general aviation accidents in which toxicological tests ^{1/} were made for alcohol, during the 11-year period 1965-75.

However, alcohol may have been a factor in more accidents than indicated by the Safety Board's investigations. Toxicological tests made under the auspices of FAA's Civil Aeromedical Institute on 4,164 pilots involved in fatal general aviation accidents during 1965-75 showed that alcohol was actually present in 818 pilots, or about 20 percent of those tested. Although 312 of the 818 pilots had alcohol levels less than the 50 milligrams percent used by the Safety Board for citing alcohol as a factor in aviation accidents, research (see p. 5) indicates that levels much lower than 50 milligrams percent can adversely affect pilot flying ability.

On the basis of this research, a Safety Board official told us that the blood-alcohol levels used by the Board were probably too high and understated alcohol's role in aircraft accidents. He said that the Safety Board was

^{1/} Include tests for the presence of toxic substances including alcohol and the level of toxicity. Samples for toxicological tests can not be taken in all fatal accidents because of the victim's condition, inability to locate the victim, or the presence of embalming fluid.

considering a change to its criteria but that no official action had been initiated.

CONCLUSION

FAA's establishment of minimum blood-alcohol levels and implied consent regulations, as suggested by the Safety Board, to require alcohol testing of pilots suspected of being under the influence of alcohol would:

- Help FAA to more precisely identify alcohol's role in accidents so that more appropriate measures can be taken to eliminate alcohol as a cause of aviation accidents.
- Improve enforcement and thus enable better identification of violators.
- Reduce the investigatory time required to obtain evidence to sustain violations of FAA's regulations.
- Serve as a deterrent to pilots who may consider drinking before and during flight.

In addition, blood-alcohol levels used by the Safety Board may be too high to identify alcohol's true role as a cause or factor in aviation accidents.

RECOMMENDATIONS TO THE SECRETARY OF TRANSPORTATION

We recommend that, to quickly and effectively identify violators of FAA's alcohol regulations and to deter pilots from drinking and flying, the Secretary direct the FAA Administrator to

- revise Federal Aviation Regulations to include a minimum blood-alcohol level;
- adopt implied consent provisions whereby a pilot, as a condition of licensing, consents to sobriety tests if an airport official, FAA medical examiner, local law enforcement official, or other designated FAA representative has reason to suspect that the individual had been drinking before or during flight; and
- seek the cooperation of law enforcement authorities to administer, on behalf of FAA, sobriety tests.

AGENCY COMMENTS AND OUR EVALUATION

The Department agrees that a minimum blood-alcohol level should be established. (See app. I.) It stated that FAA had conducted a study of available literature, and, as a result of the Safety Board's recommendations, FAA was drafting proposed rules recommending the establishment of a blood-alcohol level of 40 milligrams percent. Also it stated that it was examining the legal aspects of implied consent testing and that appropriate consideration would be given to the Federal role in this area, including seeking the cooperation of law enforcement authorities to administer sobriety tests.

The Safety Board said it would review its blood-alcohol levels to determine whether some modification was needed. (See app. II.)

CHAPTER 4

NEED FOR IMPROVEMENTS IN FAA'S

EDUCATIONAL EFFORTS

FAA has no assurance that alcohol-related information disseminated through its programs reaches or is understood by all pilots. Participation in FAA's General Aviation Accident Prevention Program is voluntary, and the coverage given to the effects of alcohol on pilot performance in accident prevention seminars and meetings is sporadic. Literature distributed to pilots through this program pertaining to the effects of alcohol is not distributed to all pilots, and there is no certainty that those mail-outs that are made are read and understood by the pilot. FAA suggests that alcohol be covered during pilot biennial flight reviews, but this is often not done.

ACCIDENT PREVENTION PROGRAM

The General Aviation Accident Prevention Program is specifically for the general aviation pilot. Its purpose is to reduce general aviation accidents through the application of effective accident prevention methods and techniques and to motivate the aviation public in adopting positive safety attitudes and techniques. The program is carried out through safety seminars, meetings, clinics, and the dissemination of educational material.

At each FAA region, an accident prevention coordinator has been assigned to implement and coordinate the program. At each FAA district office, an accident prevention specialist is responsible for providing educational seminars and safety clinics to interested individuals and recruiting volunteer accident prevention counselors. These volunteers

- counsel pilots who exhibit unsafe acts;
- offer assistance and provide information to pilots in establishing local safety programs; and
- provide assistance in conducting safety meetings, clinics, and seminars.

According to an FAA official, there are currently about 3,300 counselors.

Reports on specialists' activities show that they held 3,306 safety meetings in 1976, with 222,373 persons

attending. Although counselors are not required to report on their activities, FAA encourages them to report periodically to the specialist to help determine effectiveness of the program. In 1976 counselors reported they conducted 8,496 safety meetings for 190,657 attendees. An FAA official told us that because meetings held by specialists and counselors are open to all interested persons, there was no way to determine how many attendees were pilots or how many were attending a safety meeting for the first time.

In this program the coverage given to the effects of alcohol on pilot performance varies among FAA regions and districts. None of the specialists we contacted were offering a safety presentation on alcohol because they considered it to be adequately covered under broader areas of flight safety and aviation medicine. Specialists told us that alcohol was covered periodically at safety meetings but not on any regular basis because they did not consider it a major problem. Specialists told us also that the topics they presented were usually selected on the basis of accident-related subjects or requested areas of interest. One regional program coordinator said that, because alcohol and drugs were the cause of less than 5 percent of all accidents in the region, no more than 5 percent of the educational efforts should be devoted to the subject.

An FAA headquarters official told us that, when alcohol had been covered, an expert on the subject--such as an FAA medical examiner, FAA medical official, or local physician--had usually been called in to talk on the subject. However, according to an FAA medical official, this occurs in only about 50 percent of the safety meetings and seminars. This official also said that alcohol was not included in some safety meetings for fear of embarrassing or offending an individual who had an apparent alcohol problem and was participating in another aspect of the safety program.

According to an FAA headquarters official, safety and educational materials are rarely distributed to all pilots on a mass mailout basis because of cost. One FAA official told us, however, that literature pertaining to alcohol was available at safety meetings and seminars and at FAA district offices and was usually posted on bulletin boards at public airports. Generally, only airport operators, aviation organizations, and pilots who request information receive regular mailouts. An FAA district office official told us that in his district there were only 400 names on the district office's regular distribution list, although there were about 10,000 pilots in the district.

An FAA official indicated that mailouts were probably not as effective as personal contact (seminars, counseling, and meetings) because there was no assurance that the pilots read or understood them.

BIENNIAL FLIGHT REVIEWS

In 1974 FAA began a biennial flight review program to insure that pilots remain competent to safely exercise the privileges of their pilot licenses. The reviews consist of testing the pilot's awareness of the current general operating and flight rules and a flight test of the maneuvers and procedures which, in the discretion of the reviewer, are necessary to demonstrate that the pilot can safely fly. These reviews are conducted by FAA-licensed flight instructors and other designated examiners.

FAA has published a list of suggested subjects to be included in these reviews, but the specific content of the reviews are left to the discretion of the instructor. Although alcohol is one of the suggested subjects, three of the four flight instructors we interviewed said that they did not include questions on the effects of alcohol in the reviews given by them. Two instructors believed this subject was adequately covered during the pilot's initial training in flight school.

CONCLUSION

FAA's educational efforts with pilots concerning the effects of alcohol usage are minimal and sporadic and may not be reaching all pilots. A comprehensive program should be developed and initiated by FAA to point out the dimensions of the alcohol problem in aviation accidents and to make all pilots more aware of the dangerous effects of combining drinking with flying.

FAA's accident prevention program and biennial flight reviews provide an excellent opportunity to counsel and educate pilots on the hazards of combining drinking with flying, but a more effective utilization of these communication channels is needed.

RECOMMENDATIONS TO THE SECRETARY OF TRANSPORTATION

We recommend that the Secretary direct the FAA Administrator to broaden FAA's education program to provide consistent coverage of alcohol-related topics by

--requiring all pilots, as a condition for licensing, to periodically attend accident prevention seminars which include the hazards of alcohol on flight safety and

--requiring flight instructors to cover alcohol in biennial flight reviews as a means of following up on the effectiveness of accident prevention seminars.

AGENCY COMMENTS AND OUR EVALUATION

The Department agrees with our recommendation that its educational program should be broadened to insure consistent coverage of alcohol-related topics. (See app. I.) However, it does not agree with our recommendation that attendance at accident prevention seminars which would include alcohol-related topics be mandatory for all pilots. The Department stated that, if any requirements such as this were adopted, mandatory attendance should be applicable only to issuance of the first pilot certificate.

The Department sees no objection with our recommendation that alcohol be covered during biennial flight reviews.

It commented that a good educational effort is the key to reducing alcohol-related aircraft accidents.

Although mandatory attendance at safety meetings as a condition for issuance of the first pilot certificate would aid in educating individuals on the hazards of alcohol, mandatory attendance at periodic refresher courses would help even more in assuring consistent coverage of all safety-related material. According to the Department, safety-oriented education on a recurring basis is one of the most effective methods of updating knowledge and proficiency and thus is one of the most effective methods of accident prevention.

Because alcohol is not the sole cause of general aviation accidents, mandatory attendance at periodic refresher seminars would give FAA the opportunity to address all causes of accidents, including alcohol, in order to further reduce the total number of accidents.



OFFICE OF THE SECRETARY OF TRANSPORTATION
WASHINGTON, D.C. 20590

ASSISTANT SECRETARY
FOR ADMINISTRATION

January 18, 1978

Mr. Henry Eschwege
Director
Community and Economic Development Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in response to your letter of October 14, 1977, requesting comments on the General Accounting Office (GAO) draft report "Identifying and Reducing Alcohol Use Among Civilian Pilots." GAO found that alcohol intoxication is either the cause or a contributing factor in many general aviation accidents. GAO makes several recommendations which it believes would reduce alcohol use among civilian pilots and improve the level of flight safety.

Our comments on each recommendation follow:

[See GAO note, p. 27.]

Part 67 of the Federal Aviation Regulations (FAR) provides that a person is not eligible for any class medical certificate if there is an established medical history or clinical diagnosis of alcoholism. Conviction under the State driving laws for alcohol-related offenses would not per se constitute a disqualification under part 67. Before disqualification could be determined, a careful investigation into the applicant's drinking habits, prior and associated medical history, social history, arrests and convictions for other than drinking offenses, etc., would have to be conducted. It is anticipated that routine investigation into these matters would be expensive and time-consuming and would probably result in few disqualifications.

In response to a prio. GAO report, we recommended that the Congress authorize access to the National Drivers Register (NDR) to conduct a limited experimental study to determine its usefulness prior to making a permanent change in the law to provide FAA access to the file (a bill is now before the Congress that would give FAA access to the NDR). While we reaffirm that position, we must assert that we do not have sufficient personnel to conduct an ongoing State-by-State comparison of FAA certification records and State driving records with the resultant investigations that would be required. To do so would require diverting existing resources now being used to monitor other critical facets of the airmen medical certification program.

2. GAO recommends that the FAA review appropriate medical research on the diagnosis and identification of the alcoholic, and based on these findings, if appropriate, revise the pilot medical certification examination to include additional laboratory tests and psychological screening techniques such as questionnaires.

We agree that medical research on alcoholism is beneficial. We will continue to review research studies regarding the diagnosis and identification of alcoholics and will revise examination procedures as necessary. Laboratory studies that we believe could be used routinely in certification examinations to diagnose alcoholics have not yet been identified. The use of psychological screening techniques, such as questionnaires, is being investigated.

3. GAO recommends that the FAA revise the FAR to include a minimum blood alcohol level.

We agree that a minimum blood alcohol level should be established. In this regard, the FAA has conducted a study of available literature and recommended the establishment of a proposed blood alcohol level of 40 mg. percent. The proposal is now in the draft stage.

4. GAO recommends that the FAA adopt implied consent sobriety provisions whereby a pilot, as a condition of licensing, consents to sobriety tests if an airport official, FAA medical examiner or other designated FAA representative, or local law enforcement official has reason to suspect that the individual had been drinking prior to or during flight.

As a result of NTSB Safety Recommendation A-77-24 and 25, the FAA is initiating a rulemaking project related to the minimum blood alcohol level mentioned previously.

5. GAO recommends that the FAA seek the cooperation of law enforcement authorities to administer, on behalf of the FAA, sobriety tests.

We are also examining the legal aspects of "implied consent testing." Consideration will be given to the appropriate Federal role in this area seeking the cooperation of law enforcement authorities to administer sobriety tests.

6. GAO recommends that the FAA require all pilots, as a condition of licensing, to periodically attend accident prevention seminars which include the hazards of alcohol on flight safety.

We agree that FAA should broaden its educational program. A good educational effort is the key to reducing alcohol-related aircraft accidents. Alcohol-related topics could be used in accident prevention seminars, however, we do not agree that attendance should be mandatory. If any requirements of this nature are adopted as mandatory, we believe it should be applicable only to the first pilot certificate applied for under Part 61.

7. GAO recommends that the FAA require flight instructors to cover alcohol in biennial flight reviews as a means of following up on the effectiveness of accident prevention.

We see no objection to the subject of alcohol being covered during biennial flight reviews conducted under the requirements of Section 61.57. In addition, we are taking steps to improve training of our designated Aviation Medical Examiners in the identification and counseling of applicants with problems of alcohol abuse.

In addition to the preceding comments on the draft report, certain technical errors in its content were noted. These have been brought to the attention of the auditors for correction prior to issuance of the final report.

Please let us know if we can assist you further.

Sincerely,



Edward W. Scott, Jr.

GAO note: Portions of this letter have been deleted because they are no longer relevant to the matters discussed in this report.



Office of the
Chairman

National Transportation Safety Board

Washington, D.C. 20594

November 28, 1977

Mr. Henry Eschwege
Director
Community and Economic Development Division
General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

The National Transportation Safety Board appreciates the opportunity to review your draft report "Identifying and Reducing Alcohol Use Among Civilian Pilots."

The Safety Board fully agrees with the main thrust of your report. We call to your attention Board Recommendations which were issued on May 13, 1977, and were directed to the Federal Aviation Administration. The recommendations were:

"Amend 14 CFR 61.3 to include an implied consent clause which would be a condition for the issuance of a pilot certificate. (A-77-24) (Class II - Priority Followup)"

"Amend 14 CFR 91.11 to specify alcohol levels at which a pilot is considered to be under the influence of alcohol. (A-77-25) (Class II - Priority Followup)"

You will note that the Board did not specify levels in Recommendation A-77-25 but left this to the FAA which has the responsibility and resources to make such a determination. The purpose of establishing the levels is to provide a criterion for determining when a crewmember is "under the influence." Existing regulations specify that no person may act as a crewmember of a civil aircraft within 8 hours after the consumption of any alcoholic beverage or while under the influence of alcohol.

In making these recommendations, the NTSB had no intention of implying that drinking and flying are compatible at some level. It is our expectation that the FAA will set the criterion low enough so that the blood alcohol level 8 hours after cutoff would not be greater than that expected in the blood of a nondrinking person. Such a level would definitely identify violations and not carry any implication that drinking and flying is condoned.

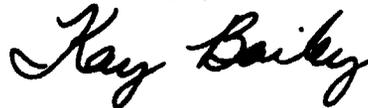
The Safety Board uses the stated blood alcohol levels to establish whether alcohol is a factor or cause in those cases where only toxicological data are available. If there are witness reports or other supporting evidence of intoxication, these are used in conjunction with the blood alcohol level. In such cases, alcohol would be reported as a factor or cause even when blood alcohol levels were well below the criterion levels.

The NTSB blood alcohol levels were selected about 10 years ago, based on values employed by State highway departments. These values are used to code the accident investigations undertaken by the field staffs and the FAA. Considering the effect alcohol has on judgment, especially self-evaluation, and the aggravation of these effects at altitude, these values may be low. The Board will review the criteria to determine if some modification is needed.

There are many accidents in which the pilot and crew survive. Almost invariably the Board is unable to obtain a blood alcohol reading. It is for this reason that the NTSB recommended an implied consent clause (A-77-24). If the FAA is able to satisfy this recommendation, the extent of alcohol involvement in general aviation will be more accurately reflected.

If the Board can assist you in any way in the completion of your effort on this subject, it would be pleased to do so.

Sincerely yours,



Kay Bailey
Acting Chairman

PRINCIPAL OFFICIALS RESPONSIBLE
FOR ADMINISTERING ACTIVITIES
DISCUSSED IN THIS REPORT

Tenure of office
From To

DEPARTMENT OF TRANSPORTATION

SECRETARY OF TRANSPORTATION:

Brock Adams	Jan. 1977	Present
William T. Coleman, Jr.	Mar. 1975	Jan. 1977
John T. Barnum (acting)	Feb. 1975	Mar. 1975
Claude S. Brinegar	Feb. 1973	Feb. 1975
John A. Volpe	Jan. 1969	Feb. 1973
Alan S. Boyd	Jan. 1967	Dec. 1968

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ADMINISTRATOR:

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Quentine S. Taylor (acting)	Mar. 1977	May 1977
John L. McLucas	Nov. 1975	Mar. 1977
James E. Dow (acting)	Apr. 1975	Nov. 1975
Alexander P. Butterfield	Mar. 1973	Mar. 1975
John H. Shaffer	Mar. 1969	Mar. 1973
David D. Thomas (acting)	Aug. 1968	Mar. 1969
Gen. William F. McKee	July 1965	July 1968
Najeeb E. Halaby	Feb. 1961	July 1965

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CHAIRMAN:

Kay Bailey (acting)	Sept. 1977	Present
Webster B. Todd, Jr.	Feb. 1976	Sept. 1977
John H. Reed	May 1969	Feb. 1976