



Assessing Pilot Fitness by Modern Techniques

by

Stanley R. Mohler, M.D.

and

Melchor J. Antunano, M.D.

Introduction

A previous issue of this bulletin describes cardiovascular conditions that initially resulted in loss of medical certification, but which, following appropriate treatment or assessment, were found, in individual cases, to be compatible with safe flight (1). Each of the 502 pilots had one or more disqualifying cardiovascular conditions but received a special medical issuance for a first or second class medical certificate from the U.S. Federal Aviation Administration (FAA) during the period August 1, 1985 to March 31, 1988. The pilots were determined to be medically safe to perform their prescribed flight duties.

During the same 32 month period, 324 pilots were awarded special medical issuances for noncardiovascular conditions that included psychiatric, neurologic, endocrinologic, neoplastic, ophthalmologic, gastrointestinal, genito-urinary and other miscellaneous disorders (see Tables One, Two and Three). A grand total of 370 noncardiovascular conditions were evaluated among these 324 pilots.

Note that the cases described in this article represent medical conditions not compatible with basic medical standards, and that at the time of their development were sufficiently serious to preclude medical certification. Some examples are: alcoholism, psychosis, severe personality disorders, seizures, loss of consciousness, diabetes requiring hypoglycemic medication, and diplopia (2). However, through the special issuance procedure established in the standards, medical certification based upon new developments in medical science, clinical

evolution of the patient (postdisease and posttreatment), operational (flight) experience, or a successful medical flight-test, the pilots can be recertified (3).

Increases in Special Medical Issuances

A previous issue of this bulletin (4), contained an analysis of noncardiovascular and cardiovascular medical conditions for which special medical issuances were provided by the FAA from January 1, 1982 to July 31, 1985. By comparing that data to the data from the period of August 1, 1985 to March 31, 1988, it can be seen that, with the exception of alcoholism, the number of special medical issuances provided by the FAA for Class I and II Medical Certificates has increased significantly during the latter period. (Table Two)

However, the second period is 11 months shorter than the first. It is anticipated that by including the special medical issuances given, and expected to be given, by the FAA from April 1, 1988 to February 28, 1989, the difference in the number of waivers given between these two time periods will be even more significant. This reflects the utilization of new technology and medical advances by the FAA in the pilot certification program.

Table Two also shows that the number of special issuances given to pilots who recovered from alcoholism decreased by 39 cases as compared to the previous number. However, by waiting one more year this negative difference most likely will disappear and follow the same upward trend observed among the other medical conditions.

The growing number of cases of cardiovascular and noncardiovascular conditions requiring special medical issuances reflect the application of modern medicine, and the increasing number of pilots in the U.S. who are willing to report their medical conditions to Aviation Medical Examiners. The positive benefit of the U.S. approach to special issuances is a constructive attitude from aircrew members who feel that they will be given the opportunity, if warranted, to fly again. The aircrew member, the airlines, other operators and the public, all benefit from this enlightened approach.

Alcoholism

The condition of alcoholism is of special significance in regard to certifying aircrew members who do not meet the medical standards (5,6). The United States leads the world in pioneering the return of pilots to flight status who have been diagnosed as suffering from alcoholism. In fact, more than 1,000 alcoholic airline pilots who have maintained sobriety, have been returned to flight status. In order to be recertified, these pilots ceased alcohol consumption, received inpatient medical treatment for alcoholism, participated in follow-on programs, had no evidence of pathology from their bouts with alcohol, and were able to perform at the degree of skill required for professional flight operations. Based on this criteria, 254 pilots with a diagnosis of alcoholism received a special medical issuance from August 1, 1985 to March 31, 1988. During the same period, seven pilots required medical reevaluation and were grounded because they resumed drinking alcohol. In one other case, the pilot showed evidence of alcohol-induced chronic brain syndrome, as shown by significant cognitive decrements and was therefore disqualified.

Concluding Comments

It is emphasized that flight safety is the basic reason for the existence of regulated flight medical standards. In its review of the civil airman medical standards, the American Medical Association states, "The principal concern of this review was to enhance the safety of all those who are affected by the performance of an airman's duties" (7). Accordingly, should a pilot develop one or another of the conditions that are contrary to the basic medical standards, it is perfectly logical that a medical and operational performance assessment regarding a return to flight status can reasonably be made. This modern approach conserves valuable aircrew experience. It also widens the opportunities for talented individuals who wish to enter aerospace activities but who do not meet the basic standards. Some of these candidates can be medically judged to be compatible with safe flight and can be certified by the special issuance procedure.

The evolution of the modern approach to pilot aeromedical certification derives from the combination of scientific prog-

ress in the field of medicine and the rise of the speciality of aerospace medicine. In this combination, highly specialized physicians in clinical medicine provide an accurate assessment of the status of a person having a specific disease. Then, aerospace medicine specialists, with their in-depth knowledge of the aerospace environment and the work requirements of aircrew, can integrate the clinical and work environment data, and make a judgment relative to whether or not an individual with a given condition can be returned to duty with no impairment of flight safety.

The data in this and the preceding paper, continue to substantiate the practice of retaining, in a productive flight capacity, aircrew members who have required a special issuance for return to flight status. ♦

References

1. Mohler, S.R. and Antunano, M.J. 1988. "Recent Special Medical Issuances to Pilots With Cardiovascular Conditions." *Human Factors and Aviation Medicine* bulletin Flight Safety Foundation. Arlington, Virginia, U.S. July/August 1988.
2. Federal Aviation Administration. 1988. Medical Standards. Part 67.13, and 67.15. Code of Federal Regulations. Title 14, Washington, D.C., U.S.
3. Federal Aviation Administration. 1988. Special Issue of Medical Certificates. Medical Standards and Certification. Part 67.19. Code of Federal Regulations. Title 14, Washington, D.C., U.S.
4. Mohler, S.R. 1986. "Special Issuances To Pilots Who Do Not Meet Basic Medical Standards." *Human Factors Bulletin*. Vol. 33, No. 3. Flight Safety Foundation. Arlington, Virginia, U.S. May/ June 1986.
5. Mohler, S.R. 1980. "Pilots and Alcohol: Mix With Caution." *Human Factors Bulletin*. Flight Safety Foundation. Arlington, Virginia, U.S. September/October and November/December 1980.
6. Mohler, S.R. 1987. "Recent Significant Findings On Alcohol." *Human Factors and Aviation Medicine* bulletin. Vol. 34, No. 5(8). Flight Safety Foundation. Arlington, Virginia, U.S. September/October 1987.
7. Engelberg, A.L., and Doege, T.C. 1985. Review of Part 67 of the Federal Air Regulations and The Medical Certification of Civil Airmen. Report of Contract No. DTFAO1-83-C-20066. Vol. 1, Page v. American Medical Association, Chicago, Illinois, U.S.

Table One
Medical Conditions In Pilots for Which Special Medical
Issuances were Provided by the FAA,
August 1, 1985 to March 31, 1988

<u>MEDICAL CONDITIONS</u>	<u>NUMBER OF CASES</u>
PSYCHIATRIC:	
Additions: Alcoholism	254
Drug Abuse	10
Depression	6
Psychotic Episode	6
Disturbance of Consciousness	5
Personality Disorders	4
Bipolar Disorder	3
Acute Transient Amnesia	1
Other	3
TOTAL	292
<hr/>	
NEUROLOGIC:	
Seizures	9
Brain Surgery	4
Cerebral Vascular Accident	3
Craniotomy	3
Cerebral Infarction	2
Subarachnoid Hemorrhage	2
Head Injury	2
Brain Injury	2
Brain Tumor	2
Meningioma	1
Multiple Sclerosis	1
Loss of Consciousness	1
Others	2
TOTAL	34
<hr/>	
ENDOCRINOLOGIC:	
Diabetes	9
Diabetes Requiring Medication	4
Hyperthyroidism	1
Myxedema	1
TOTAL	15
<hr/>	
CANCER:	
Hodgkin's Disease	2
Bladder Cancer	2
Melanoma	1
Larynx Cancer	1
Lymphoma	1
Colon Carcinoma	1
Other	1
TOTAL	9
<hr/>	
OPHTHALMOLOGIC:	
Visual Loss: Complete One Eye	2
Incomplete One Eye	1

(Table One continues on next page.)

(Table One continued from page 3.)

Lens Implant	2
Glaucoma	2
Diplopia	1
TOTAL	8
<hr/>	
GASTROINTESTINAL:	
Gastric Ulcer	3
Gastritis	1
Regional Enteritis	1
Hemochromatosis	1
TOTAL	6
<hr/>	
GENITOURINARY:	
Kidney Transplant	1
Kidney Stone Surgery	1
Nephrectomy	1
TOTAL	3
<hr/>	
MISCELLANEOUS:	
Anemia	1
Arthritis	1
Glucose Intolerance	1
TOTAL	3

Table Two
Special Medical Issuances Provided by the FAA During
Two Subsequent Time Periods Covering the Last 5 Years

<u>MEDICAL CONDITIONS</u>	<u>TIME PERIOD</u>		<u>CHANGE</u>
	January 1, 1982 to July 31, 1985	August 1, 1985 to March 31, 1988	
Alcoholism	293	254	-39
Psychiatric	14	38	+24
Neurological	18	34	+16
Cancer	2	9	+ 7
Myocardial Infarction	20	216	+196
Coronary Artery Bypass Surgery and Angioplasty	50	193	+143
Other Cardio- vascular Conditions	17	134	+117

HUMAN FACTORS & AVIATION MEDICINE

Copyright © 1988 FLIGHT SAFETY FOUNDATION, INC. ISSN 0898-5723

Articles in this bulletin may be reprinted in whole or in part, but credit must be given to Flight Safety Foundation and *Human Factors & Aviation Medicine*. Please send two copies of reprinted material to the editor. • The suggestions and opinions expressed in this bulletin are those of the author(s); Flight Safety Foundation does not necessarily endorse or agree with the author(s). Bulletin content is not intended to take the place of information in company policy handbooks and equipment manuals, or to supercede government regulations. • Unsolicited manuscripts must be accompanied by stamped and addressed return envelopes if authors want material returned. Reasonable care will be taken in handling manuscripts, but the Flight Safety Foundation assumes no responsibility for material submitted. • Subscriptions: \$50 U.S. (U.S., Canada, Mexico), \$55 U.S. Air Mail (all other countries), six issues yearly • Staff: Alisa Joaquin, editorial assistant; Jacqueline Edwards, word processor. • Request address changes by mail and include old and new addresses. • Roger Rozelle, Editor, Flight Safety Foundation, 5510 Columbia Pike, Arlington, VA 22204-3194 U.S. Telephone: 703-820-2777 • Telex: 901176 FSF INC AGTN • Fax: 703-820-9399