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Special Medical Issuances Go to Pilots With Cardiovascular Conditions

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Developments in aerospace medicine along with progress in medical technology, including diagnostic and therapeutic methodology, have made it possible to waive previously uncertifiable conditions in pilots who do not meet the basic medical standards (1). Waivers are made by the special issuance procedure established by the U.S. Federal Aviation Administration (FAA) (2). Due to these remarkable aeromedical regulatory advances, more pilots with medical conditions that were previously considered disqualifying are flying today than ever before. This retention in the medically certified airline and general aviation commercial pilot population is accomplished with no derogation of flight safety.

Airline and General Aviation Pilots Get O.K. to Fly

The concept of providing special issuances to pilots who do not meet the basic medical standards was derived from the approach used in regard to airframe airworthiness. For example, a specific airplane is noted to develop fatigue cracks at a certain point on the wing spar which makes the aircraft unairworthy. The regulatory authorities require certain periodic inspections and prescribe a fix at a certain point if the aircraft is to retain its airworthiness certificate. Similarly, pilots have time-limited medical certificates. If a problem with the cardiovascular system is noted, the pilot may be issued the certificate with the provision that certain additional clinical tests be obtained. If the results of the tests show a serious defect, the pilot may be grounded until adequate corrective measures are taken, or, since the pilot is a living being, healing through natural processes occurs.

Between August 1, 1985 and March 31, 1988, the FAA provided special issuances to 502 airline and general aviation commercial pilots who had developed disqualifying cardiovascular pathology (3). In 59 cases, the pilots had a single cardiovascular condition. In the remaining cases, the pilots had a combination of two or more medical disorders (cardiovascular and non-cardiovascular), concurrently. The cases with a single cardiovascular condition required a medical evaluation tailored to the modern understanding of cardiovascular physiology and pathology prior to the decision to certify. The cases of multiple pathology required an assessment and evaluation of each extant disorder, alone, and in combination, in order that the special issuance could be granted.

Some Pilots Disqualified

During the above period, 67 pilots who had previously obtained special issuances were reevaluated and disqualified by the FAA. The disqualifications were based on the development of adverse changes in the pilot's medical condition and/or adverse diagnostic tests. These adverse changes include: the recurrence of signs or symptoms, an abnormal treadmill stress test, an abnormal thallium 201 scan, an abnormal multiple uptake gamma angiography (MUGA) test, recurrence of dysrhythmia, recurrence of angina pectoris, another myocardial infarction, another bypass procedure and prescription of disqualifying antihypertension or other medication.

Coronary Artery Disease Leads List

Cardiovascular disorders observed among the 502 pilots during this period are grouped into nine categories and presented in three tables. These categories range from diagnosed diseases (e.g. coronary artery disease, myocardial Infarction), through the nature of the treatment used (e.g. bypass surgery, prosthethic valve replacement), to other categories including results from diagnostic tests (e.g. treadmill stress test, electrocardiogram). Because many pilots had more than one diagnosed cardiovascular condition, the number of conditions listed in the tables exceeds the absolute number of pilots included in this report. These categories are derived from the coding system used in the report obtained from the FAA Civil Aeromedical Institute, Oklahoma City, Okla., U.S.

The most prevalent diagnosis recorded during this time period was coronary artery disease. Of 227 cases, 193 (85 percent) had received coronary bypass surgery or coronary angioplasty to restore circulation. The remaining 34 cases (15 percent) were treated nonsurgically and involved advice for modification of the pilot's life style to lower the cardiovascular disease-promoting risk factors. Examples of life style changes are: elimination of tobacco use, achievement of reasonable exercise, institution of a low cholesterol, low saturated-fat diet, and loss of excess weight (4).

Myocardial infarction (impaired coronary artery circulation causing heart muscle death) occurred in 216 pilots. Among this group, there were 114 cases (53 percent) that required coronary bypass or angioplasty surgery following the myocardial infarction. There were 102 myocardial infarction cases (47 percent) that were treated by non-invasive means. Arterial hypertension is another category that accounted for 56 cases and agina pectoris accounted for another 12 cases. There were 21 cases of dysrhythmias that were a consequence of myocardial infarction. Prosthetic replacement of aortic or mitral valves was approved for special issuance in 20 cases. The approval, in each case, was based on aerospace medicine judgments in regard to the subsequent (post-operative) health status of the treated pilot.

Preventable Disease Stands Out

Recent advances in medical science have led to enlarged criteria for the special issuance certification process for pilots who do not meet FAA basic medical standards. The new criterion for certification benefits both airlines and pilots, yet do not compromise air safety. The airlines can retain highly experienced pilots who previously would have been grounded, and pilots can maintain their flight and earning status. It should be noted that atherosclerosis, the major medical condition underlying the coronary artery disease cited in this report, could very likely have been prevented by life style changes. Coronary artery disease is an example of an acquired medical disorder that can be largely prevented by pilots by instituting reductions in cardiovascular disease risk factors. This preventable disease was the most prevalent among all of the cardiovascular conditions described in this report. Once the disease is present, countermeasures, as shown herein, can still be taken to reduce its progression and prevent the need for coronary surgery. If coronary bypass surgery or angioplasty is performed, the reduction of those risk factors that promoted the onset of the disease will minimize further progression. Pilots should be aware that the vast majority of the cardiovascular conditions described in this paper can be prevented or minimized.

Table One. Classification of Coronary Artery Conditions for which Special Medical Issuances were Provided by the FAA, August 1, 1985 to March 31, 1988.

Condition	Number of Cases
1. Coronary Artery Disease	227
2. Coronary Artery Disease Requiring Surgery	
2.1 Bypass Graft	142
2.2 Angioplasty	51
3. Myocardial Infarction	216
4. Coronary Surgery Post-Myocardial Infarction	
4.1 Bypass Graft	82
4.2 Angioplasty	32
Total	750

Table Two. Classification of Certain Cardiovascular Conditions for which Special Medical Issuances were Provided by the FAA, August 1, 1985 to March 31, 1988.

Condition		Number of Cases
5. Dysrhythmias		
5.1 Atrial Fibrillation		6
5.2 Pre-Ventricular Complexes		1
5.3 Right Bundle Branch Block		2
5.4 Left Bundle Branch Block		1
5.5 Complete A-V Block		1
5.6 Other Dysrhythmias		10
6. Valve Disease		
6.1 Mitral Valve Prolapse		2
6.2 Prosthetic Valve Replacement	Aortic	12
	Mitral	8
7. Hypertension		56
8. Angina Pectoris		12
Total		111

Table Three. Classification of Other Cardiovascular Conditions for which Special Medical Issuances were Provided by the FAA, August 1, 1985 to March 31, 1988.

Condition		Number of Cases
9.1	Permanent Pacemaker	8
9.2	Aneurysm	3
9.3	Abnormal Electrocardiogram	3
9.4	Pulmonary Embolism	2
9.5	Syncope	2
9.6	Congenital Heart Disease	1
9.7	Cardiomyopathy	1
9.8	Pericarditis	1
9.9	Abnormal Treadmill	1
9.10	Cardiac Arrest	1
Total		23

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