APPENDIX C

UPPER AGE LIMITS FOR FLIGHT CREW MEMBERS
ANSWERS AND COMMENTS OF STATES AND INTERNATIONAL ORGANIZATIONS
IN RESPONSE TO STATE LETTER AN 5/16.1-03/110

Note: —All references are to the questionnaire attached to State letter AN 5/16.1-03/110 unless indicated otherwise.

REFERENCE: General

STATES AND INTERNATIONAL ORGANIZATIONS' COMMENTS

Four international organizations, the Aerospace Medical Association (AsMA), the International Academy of Aviation and Space Medicine (IAASM), the International Air Transport Association (IATA), and the International Federation of Airline Pilots' Associations (IFALPA) have replied to the State letter. They have all abstained from filling in the attached questionnaire but have submitted comments by letter.

Aerospace Medical Association (AsMA)

... there is insufficient medical evidence to support restriction of pilot certification based on age alone.

International Academy of Aviation and Space Medicine (IAASM)

... the Academy fully supports ICAO reviewing the continuing validity of the 60 year upper age limit for airline pilots.

International Air Transport Association (IATA)

IATA agrees with the conclusion of the Aerospace Medical Association (AsMA) that there is insufficient medical evidence to support restriction of pilot certification based upon age alone. Furthermore, many Contracting States already apply either a higher than 60 or no age restriction, with no evidence of reduced levels of safety.

Based on the above, IATA would recommend:

That the age 60 rule in ICAO Annex 1, Chapter 2, paragraph 2.1.10 should be replaced by "age 65" with the following associated measures:

· To operate in multi-crew aircraft only
· Other pilot(s) must be younger than 60 years
· To be subject to medical examinations every 6 months

IATA suggests, however, that criteria and methodology for determining continued fitness be developed.

International Federation of Airline Pilots' Associations (IFALPA)
The upper age limit for professional pilots has always been a controversial subject, as would be expected from a limit which seeks to determine a reasonable and justifiable "cut-off point" for commercial pilots. Numerous studies have been carried out over many years, and it has ultimately been determined that safety considerations and scientific research dictate that no change to the 60-year upper age limit is warranted at this time. The current limit is a safety-based standard and should not be changed for current economic, political or legal factors. The ICAO Annex 1 age limit of 60 has stood the test of time and proven to be a sensible cut-off point.

Although the European Joint Aviation Authorities (JAA), through JAR-FCL 1, have agreed to implement an age limit of 65 in their National Regulations, it has not brought about harmonisation within Europe as many States have opted to implement several different lower age limits. Not all Member States have implemented JAR-FCL 1 at this time despite the applicability date of 1st July 1999. The JAA rule also imposes age restrictions on the other crew member/s if one pilot is over the age of 60, and one could argue that this implicitly recognises the wisdom of age 60 as a limit for commercial pilots. Also the JAA generally have stricter requirements on medical fitness than those prescribed by ICAO. It should also be noted that the retirement age of pilots in many major airlines of those JAA Member States which have implemented JAR-FCL 1 remains well below the age of 65, as pilots of the major airlines generally retire at an earlier age than permitted by national regulations in accordance with agreements between the pilots and the airlines.

There is also evidence to suggest that many pilots struggle to retain their licences due to medical conditions and competency requirements before the age of 60. While there have been remarkable advances in medical science, it has been found that these advances have not yet provided adequate predictors of which older pilots are susceptible to an increased risk to certain types of subtle or sudden incapacitation. In the last twenty-five years, operational research conducted by NASA and other international agencies on the effects of jet lag, fatigue and circadian disruption in long-haul flying has consistently demonstrated that older pilots suffer more from physiological effects.

Any changes made to SARPs must preserve or improve upon existing flight safety levels, and there is no evidence to suggest that increasing the upper age limit for pilots will achieve this requirement. Therefore, IFALPA believes that the upper age limit for pilots must remain at 60.

SECRETARIAT'S COMMENTS

While IAASM fully supports ICAO reviewing the current upper age limit for pilots at this time and AsMA simply states that available medical evidence is insufficient to support restrictions based on age alone, IATA recommends that the age limit be increased to 65 years for pilots engaged in multi-crew operations with the proviso that the other member/s of the flight crew are younger than 60 and that older pilots undergo medical examinations every six months. IFALPA, however, believes that the upper age limit for pilots must remain at 60, because this limit has stood the test of time and no change is currently warranted. IFALPA argues that the upper age limit of 60 is a safety requirement and [therefore] should not be changed for current economic, political or legal reasons. In principle, the Secretariat is in agreement with this position, but considers that the age limit should not normally be changed or maintained for reasons other than technical reasons related to flight safety. However, if desirable for social, economic or other reasons and if possible without adverse effect on safety, a change may well be considered. IFALPA further argues that it has been determined that safety considerations and scientific research dictate that no change to the 60 year upper age limit is warranted at this time. The Secretariat is not aware of any study indicating a significant increase in risk to flight safety posed by older airline pilots. On the contrary, both the previous (from 1995) and the present ICAO survey of relevant experience accumulated in recent years in Contracting States indicate that older pilots do not present any particular risk to flight safety. Neither is the Secretariat aware of scientific research that dictates the maintenance of the current upper age limit. On the contrary, studies conducted in Japan (1990) and United States (1993) both gave indication that pilots' retirement age could safely be increased by several years, and a very recent study of 165 commuter aircraft accidents in the United States between 1983 and 1997 points to no notable differences between the age groups except that the percentage of crashes involving pilot error decreased somewhat with age, being lowest for pilots between 58 and
63. The over-all conclusion was that neither the prevalence nor the pattern of aircraft accidents change significantly as age increases from the 40s to the 50s and early 60s. In another recent study in the United States, a cohort of more than 3,300 commuter and air taxi pilots, who were between 45 and 54 years old in 1987, were followed for eleven years. No age-related increase in crash risk was shown, but the risk of crash decreased by half among pilots with more than 5,000 flying hours at baseline. In Japan, in a study of its 60-63 year-old airline pilots, it was found that none had been involved in an accident during the ten-year study period (1992-2001) while during the same period 323 accidents including twenty-seven airline accidents had been reported to the authorities. The purpose of simulator checks, line flying checks and regulatory health examinations is to contain the risk of pilot ‘failure’ during the period of validity of the rating or medical certificate; it appears from available evidence that such checks do ensure adequate protection of flight safety for those aged under 60 years. The Secretariat knows of no reason to believe that they will fail to do so for those aged 60 to 64 years. Moreover, there is still today, as stated by AsMA, insufficient medical evidence to support any restrictions based on age alone. In the JAA countries, the upper age limit of 60 has been maintained for pilots in single-crew operations, but since 1 July 1999, the JAA regulations have allowed airline pilots to continue flying until age 65 with limitation to multi-crew operations and with the proviso that no other member of the flight crew is older than 59. However, the Secretariat is aware that this proviso was not based on medical grounds but rather the result of a compromise between the different parties. Although recommended by IATA, the Secretariat does not consider this proviso safety relevant for the following reason: For the individual pilot engaged in multi-crew operations, it is today generally accepted that a medical incapacitation risk of one percent per annum ("The 1% Rule") is fully compatible with the desired flight safety level for airline operations. This risk level corresponds to one medical incapacity per 100 years or approximately one million hours. Male pilots from Scandinavia, United Kingdom and North-America are likely to approach this risk level when they are around 65, female pilots three to four years later. The risk of two older pilots becoming medically incapacitated at the same time, during the same one-hour flight, is thus one per trillion hours (1 trillion = 10\(^{12}\) or one million × one million), a risk so low that it can safely be disregarded.

**REFERENCE:** Initial statement of the questionnaire

**STATES' INITIAL STATEMENT**

Of the 112 Contracting States that have replied, thirty-six (32.1%) indicate that they do not allow licence holders who have attained their 60th birthday to continue flying as airline pilots. Further three States (Croatia, Georgia and Morocco) as well as the Eastern Caribbean States indicate a distinction between captains (pilots-in-command) and first officers (co-pilots) in that they currently apply the 60-year upper age limit to pilots-in-command only. It is interesting to note that of the thirty-six States, currently enforcing an upper age limit of 60, more than half (twenty-two States) indicate in their reply to question #7 that they consider an upper age limit higher than 60 years appropriate as a global standard for airline pilots.

**STATES' ANSWERS TO QUESTIONS 1 TO 5**

**REFERENCE:** Question # 1

This question was answered by sixty-one States (54.5%). The majority of States that allow older pilots to continue flying as airline pilots have done so since the late 1990's. The average year for relaxation of the upper age limit indicated in the replies is 1996 (range from 1953 to 2004) and the most frequently cited year is 1999. One State (Japan) indicates two years, 1992 for non-revenue flights and 1997 for revenue flights. Two States (Austria and Cameroon) indicate that they have never applied any upper age limit, whereas three States (Australia, Brazil and Canada), which currently apply no upper age limit to airline pilots, have provided no answer to this question.

**REFERENCE:** Question # 2

This question was answered by seventy-five States (67.0%). Nine States (Australia, Austria, Brazil, Canada, Costa
Rica, New Zealand, Russian Federation, Senegal, and Ukraine) have no upper age limit, whereas fifty-five States have an upper age limit higher than 60 years, ranging from 62 to 72 years. The most common upper age limit in force is 65 years, applied by forty-seven States (42.0%). The average age limit for all States with age limits above 60 years is 64.8 years.

**REFERENCE:**  Question # 3

Sixty-four States (57.1%) gave an indication of the number of older pilots currently licenced to fly as airline pilots. Based on these replies, the total number of older pilots, currently flying as airline pilots, is about 3 150 worldwide. When the replies to this question are combined with the replies to question # 1, it can be estimated that the global experience with older pilots is based on at least 15 000 pilot-years.

**REFERENCE:**  Question # 4

Seventy-four States replied to this question. Seventy-one States indicated in their reply that certain limitations (restrictions or special conditions) are currently applied to older pilots. These limitations are detailed in Graph A. The dominating limitations are restriction to multi-crew operations only, that other crew-members must be younger than 60, and that all medical requirements must be fully met (i.e. no medical flexibility permitted). Three States (Australia, Costa Rica, Greece), while allowing airline pilots to fly beyond age 60, apply no restrictions or special conditions.

**REFERENCE:**  Question # 5

Seventy-three States replied to this question. Fifty States require flight crew members flying together with older pilots to be younger than 60. Thirty-nine States do not impose any other restrictions while seventeen States have a variety of different restrictions, mostly about technical qualifications and minimum flying experience. Two States (Philippines, Trinidad and Tobago) require the other crew members to meet all medical requirements in full (i.e., no medical flexibility permitted).

**REFERENCE:**  Question # 6

### STATES' ANSWERS AND COMMENTS TO QUESTIONS 6

Seventy States (62.5%) answered this question, fully or in part. Of these, forty-two States indicated that their experience with older pilots was good whereas twenty-two States answered that it was difficult or impossible to evaluate their experience with older pilots. Only one State (Mongolia) indicated that its experience with older pilots was not good. Eighteen States (Azerbaijan, Brazil, Chile, Denmark, Gabon, Malaysia, Mexico, Mongolia, Nigeria, Norway, Philippines, Romania, Russian Federation, Samoa, Serbia and Montenegro, Sri Lanka, Sweden, and Togo) indicated that older pilots had fewer incidents and accidents than younger pilots, whereas twenty-seven States indicated that older pilots had the same number of aviation incidents and accidents as others, and one State (Slovakia) was of the opinion that older pilots had more incidents and accidents. Fifty-three States indicated that the incidence of medical problems in older pilots was the same as in younger pilots. However, two States (Cyprus and Turkey) indicated that they had experienced a higher incidence of medical problems in older pilots. Thirty-five States have insufficient statistical data to allow their opinion about older pilots to be based on accidents and incident rates, even so twenty-two of these States considered their experience with older pilots good. Twenty-seven States had sufficient statistical data to allow an assessment based on accident and incident rates and seventeen of these considered their experience with older pilots good whereas the remaining ten States, in spite of the available statistical data, considered this question difficult or impossible to answer. Nine States abstained from answering part or all of question #6, citing insufficient statistical data or lack of relevant experience.
Australia

... with respect to whether the [older] pilots have significantly more medical problems ...., we would say a qualified yes. The qualification is that incidence of medical problems rises from about the age of 45, not from 60. CASA medical certification data do not show that incapacitation as a medical problem is more significant for pilots older than 60 years compared to those under 60 years.

Canada

In dealing with older (60 or better) pilots, the licence held may not correspond to the type of flying since many retired pilots continue to hold an ATPL (and submit medicals every one or two years). In addition to the lack of reported occurrence data categorized by age, there is also a skewing of the information from periodic medical examinations. Pilots are healthier than the average population of the same age (by elimination of serious disease), and the older ones that continue to fly and renew their certificates are a robust subgroup. Many who become unfit because of chronic or degenerative disease simply fail to renew their certificates. We have no information on those non-renewals - whether they are even living or dead.

New Zealand

The accident rates for aircraft, even if one considers aircraft 5 670 kg (12 500 lbs) and above carrying out revenue passenger and freight operations, are probably too low for the age of the pilot involved to be statistically significant.

Organisation of Eastern Caribbean States (Antigua and Barbuda, St. Christopher and Nevis, St. Vincent and The Grenadines, St. Lucia and Grenada)

... we have observed no difference in the safety record or competence of pilots who have attained the age of 60 years compared with those pilots who are less than 60 years old.

SECRETARIAT'S COMMENTS

Australia points to the well-known fact that the incidence of medical problems [in the population at large] increases with age and becomes significant much earlier than at age 60, usually already after the fourth decade. Canada emphasizes that airline pilots as a group are healthier than the background population owing to close medical surveillance and elimination from the group of those with serious diseases. New Zealand considers the accident rates too low for the age of the pilots involved to have any statistical significance. The Organisation of Eastern Caribbean States has observed no change in safety record and competence in older pilots when compared with their younger colleagues. The Secretariat agrees fully with the viewpoints presented by Australia, Canada and New Zealand. The information provided by the Organisation of Eastern Caribbean States is corroborated by the answers from a large majority of the States that have replied to the State letter. Mongolia is the only State indicating a "not good" experience with older pilots. This is difficult to understand as Mongolia also indicates fewer incidents and accidents involving older pilots and even state that their older pilots have the same incidence of medical problems as other pilots. Moreover, this State has currently no active pilots above the age of 57 years. Slovakia is the only State indicating that older pilots have more incidents and accidents than their younger colleagues. Even so, Slovakia states that its experience with older pilots is good.

REFERENCE: Question # 7

STATES' ANSWERS TO QUESTION 7

This question was answered by all 112 States and two international organizations. Eighty-Seven States and one international organization consider it appropriate to increase the upper age limit. Various age levels between 62
and 68 are considered appropriate, a significant majority favours 65 years - see graph B for details. In favour of maintaining the upper age limit at 60 years, i.e. not changing the current regulations, were eighteen States and one international organization. Six States indicated their preference for no upper age limit.

REFERENCE: Comments and additional information

STATES AND INTERNATIONAL ORGANIZATIONS' COMMENTS

Argentina
(Note.— See appropriate partial language version of this AN-WP for original text. )

1. It is our opinion that psycho-physiological capacitation can eventually be granted to pilots up to the age of 63, provided that the following conditions are met:

a) No medical history of chronic, metabolic, cardiovascular and/or neuropsychotic illnesses;

b) No aviation accidents and/or incidents involving a pilot's human factors in the last five years.

2. As such, pilots must undergo a bi-annual medical examination that should consist of the following components:

· Complete neuropsychiatric examination, including an electroencephalogram; echo-doppler of the neck vessels; Rey Complex Figure Test; MSG Test; Weschler Test;

· Clinical examination of the heart, including a graded ergometric test; an echocardiogram; and a rectal exam;

· Laboratory: Complete routine analyses including a creatinine test; serum lipid profiling; liver function test; PSA; fecal occult blood test (FOBT); and complete urinalysis;

· Ophthalmological examination, including fundoscopy;

· Audiometric test [the result of which should be] within normal limits.

Australia

Age discrimination is illegal in this country. CASA has implemented an enhanced surveillance program of aircrew medical incapacitation risk. The program primarily addresses the risk of cardiovascular disease which had been identified by the Australian Bureau of Statistics as the most frequent cause of mortality.

A study into the issue of ageing pilots is currently being conducted by the Australian Transport Safety Bureau (ATSB) and the Civil Aviation Safety Authority (CASA), full findings are expected to be published at www.atsb.gov.au in June 2004.

Azerbaijan
(Note.— See appropriate partial language version of this AN-WP for original text. )

... people's health depends to a great extent on good modern medicine and also on advances in aircraft technology which give pilots the possibility to fly also at an older age, making a significant contribution to the training of younger specialists. This will undoubtedly bring great benefits in the development of aviation.

Finland
The experience of older pilots compensates [for] the possible problems of medical fitness, and almost all problematic cases are prevented beforehand via normal medical examinations of the pilots or the pilot himself, if the problems arise before the medical examination.

France
(Note.— See appropriate partial language version of this AN-WP for original text.)

... France wishes to stress that if there were plans to abolish the age limit of 60, a detailed feasibility study on both health aspects as well as human and social factors would have to be carried out by the appropriate authorities.

Gabon
(Note.— See appropriate partial language version of this AN-WP for original text.)

Despite the fact that the established age limit is 60 years, it must be noted that each individual, depending on his or her lifestyle, may or may not maintain physical youthfulness beyond the age of 60. The rate of aging varies from one individual to another.

Lesotho

Lesotho has always felt that the existing ICAO Standards regarding [upper age limits for pilots] are adequate. Due to our very low civil aviation activity in recent years and lack of statistical data to base a different standpoint on, we are not in any position to propose a different age limit.

Libya

With the new generation aircraft where the technology is the predominant factor in flying the aeroplane, an experienced pilot has become a must on the flight deck, now that the medical science has achieved a pronounced progress in the field of diagnosis and medication in the aviation field.

Mexico
(Note.— See appropriate partial language version of this AN-WP for original text.)

Life expectancy has increased considerably in our country. Employees at the Instituto Mexicano del Seguro Social, one of the largest social security institutions in Mexico, retire at age 65, and experience to date indicates that no increased risk is incurred in raising the age from 60 to 65 years, which is applied in our country.

United Kingdom

From the medical point of view, any age limit is arbitrary. From a pragmatic viewpoint, 65 years seems a reasonable limit but cannot be justified in individual cases. It may be possible for pilots to operate at an old age if subject to additional testing (it is yet to be determined what such tests might include).

United States

BACKGROUND

ICAO regulations specify that a person over age 60 may not serve as a pilot-in-command in an air carrier operation. It is recommended practice that other pilots in such operations should not be over age 60.
The Joint Aviation Authorities have adopted an age 65 limit for one pilot so long as the other pilot is under age 60. Not all European members have implemented this rule. For example, France has indicated that it will retain the age 60 limit.

The "Age 60 Rule" went into effect in 1959 because of the growing complexity of commercial aviation and the recognition that aging is associated with a progressive deterioration of certain abilities necessary for flying. It is clear that there is progressive anatomic, physiological and cognitive decline associated with aging. While it is variable in severity and onset among individuals, impairment cannot yet be predicted in a specific individual.

In March 1993, the FAA assessed accident and incident data in respect to pilot age. The FAA released the report of an extensive study that correlated available accident data with the amount of flying by pilots, as function of age. After conducting a public hearing and considering thousands of written comments, it was again decided to retain the rule.

Because it is unacceptable to work as a pilot until failure or there is obvious impairment, the age 60 has served well as a regulatory limit.

**MAJOR POINTS**

The FAA's Age-60 rule, which was adopted on December 1, 1959, is based on the recognition that certain physiological and psychological functions deteriorate with age and that it is not possible to determine accurately *with respect to any individual* as to when incapacitation might occur.

The FAA does not have the objective information that it would require to amend the Age 60 Rule. Until it can be demonstrated that changing the rule will not adversely impact safety, the rule should remain in place.

The FAA has reviewed the rule multiple times over the years and on each occasion has decided to retain the rule.

**SECRETARIAT'S COMMENTS**

France and United States (and IFALPA, see page 2) propose to maintain the current upper age limit of 60 years, pointing to age changes in physiological and psychological performance and the lack of scientific studies demonstrating that a higher age limit will not have an adverse effect on flight safety. While agreeing that all physiological and psychological functions deteriorate with age, beginning in the early twenties and culminating in natural death, the Secretariat cannot agree that there is a lack of objective information in support of the feasibility of changing the upper age limit from 60 to 63 or 65 years. The experience accumulated in those States that allow airline pilots to continue flying until age 63 or 65, corresponding to a total of at least 15 000 pilot-years, indicates that a higher age limit is fully compatible with safe flying, even when it is taken into consideration that the age-related physiological decline becomes more pronounced in the seventh decade. In many countries there has been a marked reduction in the commonest cause of death (cardiovascular disease) of those in their seventh decade. In some major Contracting States, the male cardiovascular mortality rate in this age group has halved in the past two decades and continues to fall. It is worth noting that forty-two States indicate that their overall experience with older pilots is "good", only one State indicates "not good", and that forty-five States have found that older pilots are involved in fewer or the same number of incidents and accidents than younger pilots, only one (in the context very minor) State indicates more incidents and accidents. Of the remainder, twenty-four States indicate that available statistical information is insufficient to permit an answer. While this may be true for the individual States, the Secretariat holds the opinion that the available statistical information is sufficient when accumulated from all responding States.

The Secretariat agrees with United Kingdom and United States that statistical evidence cannot be used to predict
with certainty the medical future of the individual pilot. Such evidence only shows what risk group the pilot belongs to. An applicant, whose medical examination indicates that he/she belongs to the group of young and healthy persons, can safely be certificated although it is impossible to predict the medical future of the individual applicant. All that can be said is that he/she belongs to a statistically defined risk group where the probability - on average - of any incapacitating event is very low. For many years now, statistical grouping of applicants for medical certificates has been considered a reasonable way of evaluating and assessing those who do not fully meet the medical requirements for certification. Although it is impossible to predict the future for an applicant with a certain medical condition, it is possible, often with a high degree of certainty, to predict the outcome for a group of such applicants. Many Contracting States, accepting this viewpoint, have for decades certificated applicants with medical conditions that place the individual pilot in a group that has a higher than normal risk but still - on average - no greater than one percent probability per year for developing an in-flight incapacitating event (this is often referred to as "The 1% Rule" - when the 1% Rule is applied to airline pilots, the licence is limited to multi-crew operations). The experience accumulated in these States supports continued application of the 1% rule. Worldwide experience of fatal accidents indicates that physical incapacitation in two-pilot aircraft operations poses little risk to flight safety since the second pilot takes control and operates the aircraft to a safe landing. In one Contracting State, no accidents arose from 127 reported in-flight incapacitations in 19 million flying hours over a ten-year period. Since 1980, as far as the Secretariat is aware, there is no recorded fatal accident in the world with a two-pilot airliner that has had cardiovascular incapacitation cited as a contributory cause despite the occurrence of many such incapacitations during this period.

If certification of pilots, based on their membership of statistically defined risk groups, is acceptable for younger pilots with certain medical conditions, it is also acceptable for healthy pilots who because of their age belong in a higher risk group. The comments from Azerbaijan, Finland, Libya and Mexico all express confidence in the safety of a higher age limit for airline pilots and even that older pilots may enhance flight safety. Gabon points out that the rate of ageing varies from one person to another. The Secretariat agrees fully. This may be considered an argument for having more comprehensive and more frequent medical examinations of older pilots, as proposed by Argentina. The Secretariat has found no evidence that more frequent or more comprehensive examinations are required for the sake of flight safety and agrees with United Kingdom that the content of additional tests, if indeed necessary, still has to be determined. Australia mentions that national law does not permit age discrimination. Legal systems usually provide for safety exceptions to the general principles of non-discrimination. As the upper age limit is a safety specification, it may be assumed that it could make exception to the anti-discrimination laws and principles that may exist in some States. Lesotho points out the fact, most likely the case in many States, that available national data do not provide statistical information on which an upper age limit can be based. The Secretariat, however, bases its opinion on data compiled from sixty-four States, reflecting accumulated experience with well over 3 000 older pilots, totalling at least 15 000 pilot-years. These data indicate that a higher upper age limit is compatible with safe flying.

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APPENDIX A (105.34 KB)
APPENDIX B (16.62 KB)