



A36-WP/355  
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## **ASSEMBLY — 36TH SESSION**

### **REPORT OF THE EXECUTIVE COMMITTEE ON AGENDA ITEM 17**

(Presented by the Chairman of the Executive Committee)

The attached report on Agenda Item 17 has been approved by the Executive Committee and is submitted for consideration by the Plenary.

*Note.— After removal of this covering sheet, this paper should be inserted in the appropriate place in the report folder.*

(37 pages)

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**Agenda Item 17: Environmental protection**

17.1 At its fourth, fifth, ninth, tenth and eleventh meetings, the Executive Committee considered the subject of environmental protection on the basis of a progress report by the Council on the Organization's work on aircraft noise and engine emissions (WP/34) and two other Council reports, one updating Appendices B through G of Resolution A35-5, *Consolidated Statement of continuing ICAO policies and practices related to environmental protection* (WP/35), and one on ICAO's aviation emissions policy updating Appendices A, H and I of Resolution A35-5 (WP/39). In addition, there were 17 papers presented by States and Observers: WPs 70, 75, 85, 88, 116, 130, 131, 132, 137, 166, 172, 182, 235, 236, 240, 251, 285.

17.2 The Committee noted that the Council's Committee on Aviation Environmental Protection (CAEP) and its various expert groups continued to undertake most of the Organization's environmental work and that CAEP had met in February 2007 (CAEP/7). In March, the Council reviewed and approved, with comments, the Recommendations of CAEP/7. Highlights of the progress achieved in aircraft noise and aircraft engine emissions are described in the paragraphs below. These are followed by interventions of States and other organizations.

**17.3 AIRCRAFT NOISE**

17.3.1 The Council submitted a report (WP/34) on progress made by ICAO since the 35th Session of the Assembly on aircraft noise, including activities carried out by the Secretariat and CAEP-related activities.

17.3.2 The Recommendations of CAEP/7 for amendments to Annex 16 are currently under consideration by States and are envisioned for applicability in November 2008.

17.3.3 As requested by the 35th Session of the Assembly, material had been developed for inclusion in the ICAO's *Guidance on the Balanced Approach to Aircraft Noise Management* (Doc 9829) on the subjects of "people issues" and airport case studies. Work was still in progress in CAEP on encroachment analyses.

17.3.4 No increase to the current levels of noise certification standards had been proposed at CAEP/7, but additional technical information for inclusion in Annex 16 — *Environmental Protection, Volume I — Aircraft Noise* and the *Environmental Technical Manual on the use of Procedures in the Noise Certification of Aircraft* (Doc 9501) was agreed. A correlation study of noise levels around airports with certification noise levels had been conducted by CAEP, with the conclusion that there was a reasonably high degree of correlation and there was no need to change the current certification scheme. Three noise certification workshops had been conducted to enhance awareness of the current certification-related SARPs and guidance material.

17.3.5 Guidance material had been developed providing general information on the assessment of noise (and emissions) benefits accruing from the implementation of noise abatement operating procedures. This material will be published as an ICAO Circular.

17.3.6 An updated edition of the *Airport Planning Manual, Part 2 - Land Use and Environmental Control* (Doc 9184) recommending land use planning and environmental practices at airports, was soon to be published.

17.3.7 New guidance material on recommended methods for computing noise contours around airports had been developed to replace ICAO Circular 205. The latter document was published in 1988 and the material contained therein has been overtaken by technological developments.

17.3.8 As requested at the 35th Session of the Assembly, CAEP had undertaken a study of airport noise curfews. The study had been limited to a review of current curfews, including their types, the reasons for them and their global scope and scale. Work on this subject was continuing.

17.3.9 The 35th Session of the Assembly had also requested that the Council regularly assess the present and future impact of aircraft noise and engine emissions and continue to develop tools for this purpose. Regarding the assessment of aircraft noise, a revised noise trend had been developed using the AEDT/MAGENTA model. This model had been updated since the last Assembly in order to reflect the latest international noise modelling standards. The results of this assessment are presented in Appendix C of WP/34. Appendix D presented the list of ICAO publications on the environment.

17.3.10 In WP/132, India highlighted the need for a review of night curfew restrictions imposed in some States/airports. It considered that the practice of night curfews adversely affected the concept of free flow of air traffic and caused inconvenience to the travelling public. In addition, curfews at some airports during the night caused congestion at other times of the day, leading to an adverse impact on the environment and the economics of airline and airport operations. ICAO had taken initiatives in recommending use of the latest technology in aircraft engine design and refined operational procedures to minimise the impact of aviation on the environment, but curfews imposed in some States/airports were considered to have a retrogressive effect on ICAO's efforts. The present growth in aviation globally and its effect on the environment was one of the greatest challenges faced by ICAO. Therefore, it was considered that the restrictions imposed by night curfews should be reviewed to reduce their impact on the environment and the economics of airlines and destination airports. In addition, the removal of night curfews would help in making optimum use of airspace and infrastructure. India specifically suggested that ICAO should study the application of the balanced approach where night curfews had been imposed and evaluate the extent to which the balanced approach could contribute to solving the problem. It was also proposed that ICAO should conduct a case study at a major destination airport of the environmental and economic impacts of curfews at other airports.

17.3.11 In WP/251, Nigeria, on behalf of the African States, suggested that ICAO should look closely at the management of the interrelationship between noise and emissions. In this regard, it advocated removal of night curfews imposed on operations into airports, particularly in Europe, since aircraft noise levels have over the years reduced considerably. Retention of the night curfews further increased delays and congestion at those airports with great fuel burn and other operational penalties to airlines, as well as higher emissions.

17.3.12 In WP/172, Indonesia provided general information regarding its position on environmental management, , including noise, and also its efforts and achievements in dealing with international aviation safety and environmental requirements in the local cultural situation.

17.3.13 In WP/116, the Airports Council International (ACI) stated that it considered noise as the most important issue from an airport perspective and supported the guidance provided by ICAO in this regard. It proposed that noise certification standards should be reviewed on a regular basis (e.g. every six years) and also that any new noise Standards should require noise reductions at all three certification locations (approach centreline, departure centreline and departure sideline) as well as a cumulative reduction.

17.3.14 In discussion of the issues raised in these papers, it was stated that despite the progress made, noise remained the largest impediment to the expansion of existing airports and the construction of new airports. The significant reductions in individual aircraft noise that had been made in the past were unfortunately being offset by traffic growth and there was therefore a need to continue efforts to further reduce noise at source. It was cautioned however that the overall noise problem was unlikely to be solved by technical means alone; it should therefore continue to be addressed through the balanced approach. The value of land use planning was mentioned. Since CAEP routinely reviewed the noise stringency Standards, it seemed unnecessary to prescribe the intervals at which this should be done. The timing, magnitude, format and justification for increases in stringency of the noise Standards should continue to be based on the sound technical judgement of the CAEP experts, as in the past.

17.3.15 There was sympathy for the views expressed concerning curfews, however it was noted that further studies of the issue, including a case study, were already included in CAEP's work programme. The majority of speakers indicated that the subject was already being addressed as part of the balanced approach to noise management and that this approach should be continued.

17.3.16 Assembly Resolution A35-5 requested that the Council submit at each Assembly a consolidated statement of continuing ICAO policies and practices related to environmental protection. In A36-WP/35, the Council submitted a draft text of Appendices B through G of Resolution A35-5 updated to reflect developments since the 35th Session of the Assembly and, in particular, developments from the seventh meeting of the Committee on Aviation Environmental Protection (CAEP/7). It was noted that only Appendices B and C had been changed. Also, the Secretariat mentioned an editorial error in Appendix C which would be corrected. It was also noted that the remainder of the Appendices (A, H and I) of this Assembly resolution would be considered in connection with A36-WP/39.

17.3.17 The Committee accepted the proposed Appendices B through G of the *Consolidated Statement of continuing ICAO policies and practices related to environmental protection* without further comment.

## 17.4 AVIATION EMISSIONS

### 17.4.1 General

17.4.1.1 The Council submitted a report (WP/34) on progress made by ICAO since the 35th Session of the Assembly on technical and operational aspects of engine emissions, including activities carried out by the Secretariat and by CAEP, as well as the main developments in cooperation with other UN bodies.

17.4.1.2 Liaison had continued with other United Nations (UN) bodies to obtain a better understanding of the environmental impact of aviation and to explore policy options for limiting or reducing emissions. Liaison has principally been focussed on the UN Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC). It was of note that since the last Session of the Assembly, the Kyoto Protocol had entered into force. At UNFCCC's request in May 2005, ICAO had presented a report to UNFCCC's Subsidiary Body for Scientific and Technological Advice (SBSTA) on the results of an aviation emissions and fuel consumption data comparison exercise. There had since been no further progress in the UNFCCC process on methodological issues related to aviation emissions, but cooperative dialogue between ICAO and UNFCCC was continuing. Most of the cooperative work with IPCC had centred on that body's preparations for its Fourth Assessment Report (AR4) and the 2006 Guidelines for National Greenhouse Gas Inventories. ICAO had requested that AR4 include an update of the main findings of the 1999 Special Report, in particular on the main areas of uncertainty (i.e. the influence of contrails and aerosols on cirrus clouds). WP/34 included a summary of these aspects in AR4.

17.4.1.3 CAEP/7 had not made any recommendations for changes to the stringency of the engine emissions Standards in Annex 16, Volume II - Aircraft Engine Emissions. However work was underway to determine the possibility of a future lowering of the NO<sub>x</sub> limits. A new development was the setting of mid-term (2016) and long-term (2026) goals for NO<sub>x</sub> limits to assist CAEP in its future activities. Progress on emissions reduction over the last four decades was illustrated. CAEP had also produced guidance material on airport air quality and work was continuing in this area.

17.4.1.4 Concerning operational measures, CAEP had produced information on the environmental benefits of implementing new CNS/ATM systems; however newer models were being developed to enhance this work. CAEP had begun studies of the environmental advantages of Continuous Descent Approaches (CDA) and although more work was needed, it was apparent that CDA showed significant benefits. Work on CDA and other operational measures that can provide important environmental benefits was continuing, with close cooperation between the Secretariat, CAEP and other bodies of the Organization.

17.4.1.5 An essential component of CAEP's work involved the use of models to predict the effect of technological and operational improvements on emissions reduction (as well as on noise). CAEP had undertaken substantial work to assess the models made available to it by States and to assess initial trends for local and global emissions. Results of this assessment were presented to the Committee.

17.4.1.6 The meeting was advised that ICAO had organized a Colloquium on Aviation Emissions in May 2007 which had provided a forum for the discussion of aviation emissions. It provided in-depth background information on emissions to assist in decision making at this Session of the Assembly. During the Session, the Organization also published the first edition of ICAO's Environmental Report. This new document was intended to serve as a periodic status report and an authoritative reference on aviation and the environment.

17.4.1.7 The Committee noted the achievements of CAEP and the comments of States. It expressed satisfaction with the work done as evidenced by the extensive body of published material arising from CAEP's work.

## 17.4.2 Market-based measures

17.4.2.1 In WP/39, the Council reported on its work with regard to ICAO's aviation emissions policy, including the application of market-based and other policy measures to limit or reduce the impact of aircraft engine emissions on the environment, both at the global (climate change) and the local (local air quality) levels. The paper recalled that actions taken to tackle emissions included three approaches, namely technology and Standards, operational measures and market-based measures. With respect to the latter, the work accomplished by ICAO since the last Assembly, largely undertaken through CAEP, had covered voluntary measures, emissions-related charges and emissions trading.

17.4.2.2 ICAO had collected and disseminated information on various experiences of voluntary measures. The Organization had also adopted policy and published guidance material on emissions charges related to local air quality. The focus of the work on market-based measures to reduce global emissions had been on emissions trading, as this was the area where most progress could be expected. Guidance had therefore been developed for integrating international aviation into States' emissions trading systems. In its report the Council indicated that this guidance was adopted on a provisional basis (draft guidance), due to the fact that there was a difference of conception among States on the issue of implementation without mutual consent of the States involved. This issue had to be considered at the level of the Assembly.

17.4.2.3 The paper also reported on other developments that had taken place or were underway, such as the carbon offset programmes that were increasingly proposed to the travelling public, the use of the Clean Development Mechanism (CDM) provided for under the Kyoto Protocol which would permit the use of such a mechanism for aviation-related projects in developing countries, or the United Nations Initiative on Climate Change in which ICAO was invited to participate.

17.4.2.4 The paper also presented the areas in which further work would be needed in order to progress in the field of aviation emissions.

17.4.2.5 Finally, three restructured appendices to the Consolidated Statement of continuing ICAO policies and practices related to environmental protection on the subjects addressed above were proposed for consideration by the Assembly (Appendices A, H and I). Appendix A covered general aspects, Appendices H and I were restructured to address aviation impact on local air quality and aviation impact on global climate, respectively. Although great efforts had been undertaken by the Organization to bridge differences of views on specific aspects of the Resolution, such as geographic scope for the emissions trading schemes or the definition of possible targets for the emissions performance of aviation, these items remained unresolved. They were shown in brackets in the revised wording of the Resolution and needed to be resolved by the Assembly.

17.4.2.6 Australia's position on the establishment of a strategic framework by ICAO on the management of greenhouse gas emissions from aviation was outlined in WP/182. The paper suggested that the Assembly should resolve to expedite the development of a strategic framework to manage aviation emissions, and that under the framework, practical operational and technical measures should be given priority. The Assembly should encourage the development of a balanced approach for aviation emissions that also promoted other complementary measures, such as voluntary offset schemes and open emissions trading options. Furthermore, the Assembly should resolve to support the principles of

multilateral cooperation in encouraging emissions trading options for international aviation that would be implemented on the basis of mutual agreement by affected parties.

17.4.2.7 Chile considered in WP/285 that emissions trading should be dealt with in the context of international law and that it was important to adopt approaches which had been taken in other multilateral fora which had addressed environmental issues, such as establishing common but differentiated responsibilities, and distinguishing the treatment given to highly vulnerable countries. This meant that States with differently developed economies should assume other kinds of responsibilities, and that the contribution to reduction measures should be different for more vulnerable States. It was also important to take account of the geographic isolation of countries such as Chile, for whose economic development and international connections air transport was of vital importance. The European scheme could significantly increase aviation operational costs, thereby harming Chile's economic development. It called for support of the work of CAEP and of the work of ICAO on emissions trading.

17.4.2.8 China noted, in WP/235, that with the growth of global air transport, the issue of aviation emissions and its impact on climate change was generating increasing concerns from the international community. Technology, operations and infrastructure improvement were the measures focussed on by industry stakeholders to address aviation emissions, while market and government-based economic measures would be a much more challenging core issue in future. The adoption of economic measures to address aviation emissions should be discussed by States within the framework of ICAO. ICAO should take the lead in researching and assessing these economic measures and addressing aviation emissions based on the principle of "common but differentiated responsibilities" and the principles of consensus, active participation and broad cooperation. It should oppose any unilateral action and non-differentiated coercive emissions-reduction measures, oppose the adoption of non-differentiated global emissions trading, and urge the inclusion of civil aviation into the Clean Development Mechanism (CDM) as soon as possible.

17.4.2.9 In WP/88, Egypt presented its viewpoint, as a developing country, on the effects that the unilateral application of an emissions trading scheme by a State or group of States would have on developing countries. The paper recommended, *inter alia*, that no decision concerning emissions trading for aviation should be taken unilaterally by a State or group of States, and that priority should be given to a balanced approach for emissions, similar to that followed with regard to noise, taking into consideration the interests of both developing and developed countries.

17.4.2.10 India provided in WP/137 an update on several recent initiatives it had taken to conserve fuel and enhance environmental protection.

17.4.2.11 In WP/172, Indonesia provided general information regarding its position on environmental management, including emissions, and also its efforts and achievements in dealing with international aviation safety and environmental requirements in the local cultural situation.

17.4.2.12 A number of States<sup>1</sup> jointly presented WP/166 in which they noted that, in order to meet the environmental challenges that aviation's growth posed in an effective manner, it was imperative that ICAO continue to maintain its leadership role of establishing a well-structured, long-term, and globally-acceptable approach, which would allow growth of aviation while managing the associated environmental

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<sup>1</sup> Argentina, Brazil, Canada, Colombia, Ecuador, Japan, Mexico, Pakistan, Panama, Saint Lucia, Singapore, the United Arab Emirates and the United States

impacts. This approach should include fostering cost-effective solutions based on international consensus for use by Contracting States to achieve ICAO's environmental goals. ICAO should endorse guidance on emissions trading that supported the principle of mutual agreement and urged States to refrain from unilateral implementation of greenhouse gas charges. ICAO should also recognize the need to take account of the implications of environmental measures on the economic circumstances of the developing world and with full respect for the agreed principles contained in the applicable provisions of international aviation law.

17.4.2.13 In WP/251, Nigeria presented the views of African States<sup>2</sup>. It noted that the European Union (EU) had recently decided to include aviation in the Emissions Trading Scheme (ETS). The decision affected not just EU carriers but included all carriers operating into EU airports. This decision was viewed by many non-EU States as a unilateral imposition which should be reconsidered. It considered that no studies had been carried out to assess the issue of noise and emissions in Africa and that such a study was necessary. This study should include a review of the effect of the ICAO emissions trading guidelines on African airlines. African States believed that since the Kyoto Protocol did not set emissions targets for developing countries, inclusion of airlines from developing countries in the Emissions Trading Scheme of the European Union would amount to setting targets through the back door. ICAO and Contracting States should adhere to the principle of common but differentiated responsibilities and capabilities. The emphasis should be on those measures that reduce emissions without impacting the growth of air transport. They supported the work of ICAO on technical issues.

17.4.2.14 In WP/70, Portugal, on behalf of the Member States of the European Union, together with the other States Members of the European Civil Aviation Conference (ECAC) and EUROCONTROL stressed the importance of addressing global and local environmental impacts through the application of a comprehensive approach that would comprise technical standards, research and technological development, air traffic management modernisation and market-based measures. However, technical measures would not be sufficient and the recourse to market-based measures was necessary. The paper explained Europe's position on emissions charges and emissions trading, notably with respect to the principle of non-discrimination. It was also mentioned that the European project was ready to accommodate the concerns that developing countries may have, including the principle of common but differentiated responsibilities and capabilities. Furthermore it was stressed that most airlines from third countries would not be affected, or little affected, since the bulk of the burden would be borne by European airlines.

17.4.2.15 In WP/240, the Assembly was invited by Bahrain and Egypt, on behalf of the Arab Civil Aviation Commission (ACAC), to convene an International Conference under the auspices of ICAO to explore measures for reducing the adverse impact of civil aviation on the environment. It was also invited to urge member States to refrain from imposing taxes on aircraft fuel and to urge member States that had imposed taxes to reconsider their position so as to reduce the burden on airlines. The paper further urged ICAO to act promptly to develop clear and precise controls and guidelines regarding an emissions trading

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<sup>2</sup> Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Togo, Tunisia, Uganda, United Republic of Tanzania, Zambia, Zimbabwe



scheme so as not to hinder the progress of air transport or restrict the participation of airlines from developing countries in the air transport industry.

17.4.2.16 ACAC, in WP/236, noted that the Arab States had been working hard with the international community on the issue of environmental protection in civil aviation, in order to establish an environment which was free from pollution. The States had also been abiding by the international conventions and agreements in this context. Through this paper, the Arab States were inviting the international community, through ICAO, to respect these agreements and to apply the relevant Standards, by giving sufficient time and opportunities for more research and studies. They also invited manufacturing States to improve the performance of engines to avoid increasing costs and to provide an environmentally-friendly air transport product that would be consistent with the specifications developed by CAEP and ICAO.

17.4.2.17 The Latin American Civil Aviation Commission (LACAC) presented its position in WP/130 with respect to the emissions trading scheme. Special emphasis was placed on geographic scope and the possibility that States or groups of States would unilaterally impose obligations on civil aviation companies from third countries, including those not considered under Annex B to the Kyoto Protocol, as was the case in the emissions trading project under consideration by the European Union (EU). LACAC was of the view that the member States of the EU were ignoring the principle of common but differentiated responsibilities foreseen in the multilateral climate change instruments to which they are also signatories.

17.4.2.18 In WP/131, LACAC also noted the responsibility of States to mitigate the harmful environmental effects of civil aviation and the parallel challenge of finding appropriate means to do so in the context of the growth of this activity. LACAC member States recognised that ICAO had made important progress in limiting or reducing the emissions produced by international aviation. They also considered that it was both necessary and possible to make additional progress by applying duly integrated measures. These measures should include the dissemination of, and timely access to, technological developments in goods and services applicable to civil aviation; use of more appropriate operating procedures; appropriate air traffic organisation and management and use of airport planning mechanisms; land use planning and management; and use of market measures to control or reduce emissions. All of these measures should be integrated into specific ICAO guidelines and be part of an acceptable global plan that would include emissions trading under a mutual consent approach. It was considered essential to apply the principle of common but differentiated responsibilities which was enshrined in the United Nations Framework Convention of Climate Change and the Kyoto Protocol.

17.4.2.19 In WP/75, the UNWTO explained that it was seeking ways for tourism to both adapt to climate change and to mitigate emissions while reinforcing the contribution of the sector to socio-economic development in general and actions undertaken by the United Nations system in particular. A key element in this respect would be to enhance coordination of market-based climate change mitigation initiatives between aviation and tourism authorities, in consultation with the private sector.

17.4.2.20 In WP/116, Airports Council International (ACI) indicated that local air quality was considered by airports as a significant issue, as it could influence, for example, the approval process for infrastructure expansion. Guidance provided by ICAO in that respect was, therefore, supported. In addition, ACI called for a review of NO<sub>x</sub> stringency standards on a regular basis. ACI also considered that climate change issues should be dealt with at a global level under the leadership of ICAO, although

regional solutions could be supported as an interim step to a global solution. To that effect, it called on ICAO to develop a roadmap to address aviation emissions that contribute to climate change with a long-term strategy. ACI looked to ICAO for leadership in achieving global action.

17.4.2.21 In WP/85, the International Air Transport Association (IATA), while recognizing the past achievements of the air transport industry, noted that aviation's carbon footprint continued to grow. The paper explained that IATA's vision was to put aviation on a gradual path towards carbon neutral growth and, eventually, a zero-carbon future. In order to achieve such objectives, a number of policy actions required immediate attention in the areas of technology, aircraft operations, infrastructure and economic measures based on the principle that coverage of airlines from various States be only on the basis of mutual consent. Economic investments should be explored as incentives to drive new technology programmes. Offset-type programmes could be further used to engage airline customers in climate change initiatives. ICAO's leadership should be further asserted and all necessary measures should be taken to facilitate and accelerate additional progress in these areas.

17.4.2.22 With regard to differing views, the meeting noted that an informal group would be assisting the Chair of the Executive Committee in developing the best way forward.

17.4.2.23 In addition to the working papers presented either on an individual basis or collectively, a number of States, including Algeria, Argentina, Brazil, China, France, India, Nigeria, the United Kingdom, the United States and the Commission of the European Union made statements specifying their positions on the subject of addressing the ways of limiting or reducing aircraft engine emissions.

17.4.2.24 There was general agreement that market-based measures should not be considered in isolation, but as one of the three possible approaches (technology and standards, operational measures and market-based measures) to be applied. However, there were diverging views as to the relative importance to give to each of these measures. The majority of States expressed the view that discussions should focus on reaching consensus on the best way to address the reduction of emissions.

17.4.2.25 The view was expressed by several States that in current international climate change instruments, developing countries were not required to achieve quantified emissions reduction objectives and, consequently, that they should not be included in an emissions trading scheme to be applied without distinction to all airlines. In any case, implications for developing countries should be given high consideration before any measures were taken that could affect them, no unilateral measure should be imposed and due attention should be paid to the principle of common but differentiated responsibilities and capabilities that was enshrined in the UNFCCC instrument. In addition, any measures taken to reduce emissions should not restrict aviation's growth, especially in countries where this sector highly contributed to the general economic development.

17.4.2.26 The majority of States re-affirmed their opposition to the application of an emission trading scheme without mutual consent of States concerned.

17.4.2.27 There was general consensus on and support for the notion that climate change was a global concern and that a global response should be given to it; for that reason ICAO should play a leadership role. The issue was not if something should be done about it but how it should be done. A suggestion was made to establish an international task group to look further into that matter.

17.4.2.28 One State expressed the view that attention should be given to practical programmes that were already reducing emissions. Emissions trading did not make sense for all States at this time. For example, in his country the increase in the price of an airline ticket would shift passengers to cars that would produce greater GHG emissions. In its view, a comprehensive approach based on technological advances and air traffic reform reducing congestion and emissions, was the way forward in a multilateral context. The State also made clear that while supportive of the concept of emissions trading, the only acceptable manner for its application to another State's airlines was by mutual consent.

17.4.2.29 Other States indicated that long-term goals for different emissions should be defined. In their view, an emissions trading scheme was a highly effective mechanism for reducing emissions at the lowest cost in the sector concerned. Such a system, implemented on a non discriminatory basis, was able to ensure that environmental goals are met, and offered aviation the best opportunity for achieving sustainable growth. The same States also felt that environmental charges were also a valid market-based measure, and that the moratorium they had accepted in 2004 was supposed to end in 2007 at this Assembly. Contracting States should be free to take the measures they consider necessary to fulfil their international obligations to combat climate change.

17.4.2.30 As mentioned in paragraph 17.4.2.22 above, a working group with appropriate geographical representation (including Argentina, Australia, Brazil, Canada, China, India, Japan, Nigeria, Portugal, Russian Federation, Saudi Arabia, South Africa, United Kingdom, United States) was established by the Chairman of the Executive Committee to revise the appendices dealing with ICAO's emissions policy (Appendices A, H and I) of the Consolidated statement of continuing ICAO policies and practices related to environmental protection presented in A36-WP/39.

17.4.2.31 At the eleventh meeting of the Executive Committee, the Chairman of the Committee announced that this working group had been able to bridge most of the gaps in the various positions. The Committee was therefore presented with a revised text for the Consolidated resolution which contained four new Appendices I, J, K and L, resulting from a division of the former long Appendix I of A36-WP/39.

17.4.2.32 The proposed consolidated resolution therefore included the following appendices:

- Appendix A – General (as initially presented in A36-WP/39)
- Appendices B to G – (already adopted, as mentioned in paragraph 17.3.17 above)
- Appendix H – Aviation impact on local air quality (as presented in A36-WP/39)
- Appendix I – ICAO programme of action on international aviation and climate change
- Appendix J – Aviation impact on global climate – Cooperation with UN and other bodies
- Appendix K – Aviation impact on global climate – Scientific understanding
- Appendix L – Market-based measures, including emissions trading

17.4.2.33 The Committee reviewed, on an individual basis, the appendices other than those previously agreed.

17.4.2.34 Appendix A was accepted with minor editorial changes and additional language for the seventh Resolving clause (“and urges Contracting States to support activities not foreseen in the budget by providing a reasonable level of voluntary contributions”).

17.4.2.35 Appendix H was approved with the deletion of the fourth Whereas clause. Appendix I was approved as such.

17.4.2.36 Appendix J was approved with the alignment of text in the second Whereas clause on the similar text in Appendix L (third Whereas clause), and with the deletion of the square brackets and of the words “and clear goals” in the sixth Whereas clause.

17.4.2.37 Appendix K was approved with the following amendments:

- a) the alignment of text in the third Whereas clause on the similar text in Appendix L (third Whereas clause);
- b) the replacement in b) of the second Resolving clause of the phrase “but not prior to” by “taking into account the fact that” and the insertion of “will be held” between “UNFCCC” and “in December 2009”;
- c) editorial adjustments in Resolving clauses 6 and 9 so that the resolution is addressed to States and not directly to “the industry” or “airport operators”; and
- d) the deletion of the words “with annual reports to ICAO” in the ninth Resolving clause.

17.4.2.38 Appendix L was adopted by the Committee with the deletion of square brackets and text in the second paragraph of 1. b) 1), as well as the removal of square brackets in all other parts of the Appendix. The delegation representing the European Union and the other States of the European Civil Aviation Conference (ECAC), that is forty-two States in total, expressed its reservation on the text contained in Appendix L (the full text of this statement will be reflected in the minutes of the Executive Committee). In their view, the resolving clauses in Appendix L lacked legal foundation in the Chicago Convention and could not be used to diminish their rights; accordingly, they reserved the right to apply market-based measures of the type referred to in Appendix L on a non-discriminatory basis to all operators of all States providing services to, from or within their territories.

17.4.2.39 The Chairman of the Committee took note of this position and thanked the European delegation for having challenged the Organization to address the important issue of climate change. This has produced the Programme of Action contained in Appendix K of the new Resolution which, in his view, was the most important.

17.4.2.40 The Committee also took note of the statements and comments made during the discussion of the various appendices, such as the leading role of ICAO in addressing aircraft engine emissions, the important contribution of technological and operational measures in this endeavour, while not compromising safety of aviation, the careful consideration of the impacts of measures on States’ economies, especially in the developing countries, and the necessity to collectively address the global problem at stake, taking into account the principle of common but differentiated responsibilities and respective capabilities.

17.4.2.41 The majority of States re-stated their view that ICAO should only implement emissions trading for international aviation on the basis of mutual agreement.

17.4.2.42 The Committee submitted for adoption by the Plenary Resolution 17/1, including Appendices A through L, to supersede Resolution A35-5.

**Resolution 17/1: Consolidated statement of continuing ICAO policies and practices related to environmental protection**

*Whereas* in Resolution A35-5 the Assembly resolved to continue to adopt at each ordinary Session a consolidated statement of continuing ICAO policies and practices related to environmental protection;

*Whereas* Resolution A35-5 consists of an introductory text and a number of Appendices concerning specific but interrelated subjects;

*Considering* the need to reflect developments that have taken place since the 35th Session of the Assembly in the field of aircraft noise and engine emissions, including new ICAO guidance material on market-based measures to limit or reduce emissions from aviation; and

*Considering* the need to define specific appendices to reflect ICAO's policy to address aviation's impact on local air quality (Appendix H) and global climate (Appendices I, J, K and L);

*The Assembly:*

1. *Resolves* that the Appendices attached to this Resolution and listed below constitute the consolidated statement of continuing ICAO policies and practices related to environmental protection, as these policies exist at the close of the 36th Session of the Assembly:

Appendix A — General

Appendix B — Development of Standards, Recommended Practices and Procedures and/or guidance material relating to the quality of the environment

Appendix C — Policies and programmes based on a “balanced approach” to aircraft noise management

Appendix D — Phase-out of subsonic jet aircraft which exceed the noise levels in Volume I of Annex 16

Appendix E — Local noise-related operating restrictions at airports

Appendix F — Land-use planning and management

Appendix G — Supersonic aircraft — The problem of sonic boom

Appendix H — Aviation impact on local air quality

Appendix I — Aviation impact on global climate — Scientific understanding

Appendix J — Aviation impact on global climate — Cooperation with UN and other bodies

Appendix K — ICAO Programme of Action on international aviation and climate change

Appendix L — Market-based measures, including emissions trading

2. Requests the Council to submit at each ordinary session of the Assembly for review a consolidated statement of continuing ICAO policies and practices related to environmental protection; and
3. Declares that this resolution supersedes Resolution A35-5.

## APPENDIX A

### General

*Whereas* the preamble to the *Convention on International Civil Aviation* states that “the future development of international civil aviation can greatly help to create and preserve friendship and understanding among the nations and peoples of the world . . .” and Article 44 of that Convention states that ICAO should “develop the principles and techniques of international air navigation and . . . foster the planning and development of international air transport so as to . . . meet the needs of the peoples of the world for safe, regular, efficient and economical air transport”;

*Whereas* many of the adverse environmental effects of civil aviation activity can be reduced by the application of comprehensive measures embracing technological improvements, more efficient air traffic management and operational procedures and the appropriate use of airport planning, land-use planning and management and market based measures;

*Whereas* all ICAO Contracting States agreed to continue to pursue all aviation matters related to the environment and also maintain the initiative in developing policy guidance on these matters, and not leave such initiatives to other organizations;

*Whereas* other international organizations are emphasising the importance of environmental policies affecting air transport;

*Whereas* the sustainable growth of aviation is important for future economic growth and development, trade and commerce, cultural exchange and understanding among peoples and nations; therefore prompt action must be taken to ensure that it is compatible with the quality of the environment and develops in ways that alleviate adverse impacts;

*Whereas* reliable and best available information on the environmental effects of aviation is essential for the development of policy by ICAO and its Contracting States;

*Whereas* as far as there are recognized interdependencies of the environmental effects from aviation, such as noise and engine emissions, they need to be considered when defining source control and operational mitigation policies;

*Whereas* airspace management and design can play a role in addressing the impacts of aviation greenhouse gas emissions on the global climate, and that the related economic and institutional issues need to be addressed by States, either individually or collectively on a regional basis;

*Whereas* cooperation with other international organizations is important to progress the understanding of aviation's impacts on the environment and in order to develop the appropriate policies to address these impacts;

*Recognizing* the importance of research and development in fuel efficiency and alternative fuels for aviation that will enable international air transport operations with a lower environmental impact;

*The Assembly:*

1. *Declares* that ICAO, as the lead United Nations Agency in matters involving international civil aviation, is conscious of and will continue to address the adverse environmental impacts that may be related to civil aviation activity and acknowledges its responsibility and that of its Contracting States to achieve maximum compatibility between the safe and orderly development of civil aviation and the quality of the environment. In carrying out its responsibilities, ICAO and its Contracting States will strive to:

- a) limit or reduce the number of people affected by significant aircraft noise;
- b) limit or reduce the impact of aviation emissions on local air quality; and
- c) limit or reduce the impact of aviation greenhouse gas emissions on the global climate;

2. *Emphasizes* the importance of ICAO continuing to demonstrate its leadership role on all international civil aviation matters related to the environment and *requests* the Council to maintain the initiative in developing policy guidance on these matters, which recognises the seriousness of the challenges which the sector faces;

3. *Requests* the Council to regularly assess the present and future impact of aircraft noise and aircraft engine emissions and to continue to develop tools for this purpose;

4. *Requests* the Council to maintain and update knowledge of the interdependencies and trade-offs related to measures to mitigate the impact of aviation on the environment so as to optimise decision making;

5. *Requests* the Council to establish a set of aviation environmental indicators which States could use to evaluate the performance of aviation operations and the effectiveness of standards, policies and measures to mitigate aviation's impacts on the environment;

6. *Requests* the Council to disseminate information on the present and future impact of aircraft noise and aircraft engine emissions and on ICAO policy and guidance material in the environmental field, in an appropriate manner, such as through regular reporting and workshops;

7. *Invites* States to continue their active support for ICAO's environment-related activities, and urges Contracting States to support activities not foreseen in the budget by providing a reasonable level of voluntary contributions;

8. *Invites* States and international organizations to provide the necessary scientific information to enable ICAO to substantiate its work in this field;

9. *Encourages* the Council to continue to cooperate closely with international organizations and other UN bodies on the understanding of aviation impacts on the environment and on the establishment of policies to address such impacts; and

10. *Urges* States to refrain from environmental measures that would adversely affect the orderly and sustainable development of international civil aviation.

## APPENDIX B

### **Development of Standards, Recommended Practices and Procedures and/or guidance material relating to the quality of the environment**

*Whereas* the problem of aircraft noise in the vicinity of many of the world's airports, which continues to arouse public concern and limit airport infrastructure development, requires appropriate action;

*Whereas* the Council has adopted Annex 16, Volume I — *Aircraft Noise*, which comprises noise certification standards for subsonic aircraft (except Short Take Off and Landing /Vertical Take Off and Landing) and has notified Contracting States of this action;

*Recognizing* noise and Local Air Quality -related charges are in use at some airports and ICAO policy guidance exists on this subject (*ICAO's Policies on Charges for Airports and Air Navigation Services*, Doc 9082);

*Whereas* aircraft engine emissions have an environmental impact at both the local and global levels which, while not fully understood, is a cause of concern;

*Whereas* the Council has adopted Annex 16, Volume II — *Aircraft Engine Emissions*, which comprises emissions certification standards for new aircraft engines and has notified States of this action;

*Whereas* the Council has established a Committee on Aviation Environmental Protection (CAEP) for the purpose of assisting in the further development of Standards, Recommended Practices and Procedures and/or guidance material on aircraft noise and aircraft engine emissions; and

*Noting* Resolution A35-14 (Appendix Q), drawing the attention of aircraft manufacturers and operators to the need for future generations of aircraft to be designed so that they are capable of being operated efficiently, and with the least possible environmental disturbance, from aerodromes used for the operation of present-day jet aircraft;



*The Assembly:*

1. *Welcomes* the adoption by the Council in June 2001 of the new, more stringent aircraft noise standard in Annex 16, Volume I, Chapter 4 and the new, more stringent standards for emissions of oxides of nitrogen to be implemented on 1 January 2008;
2. *Requests* the Council, with the assistance and cooperation of other bodies of the Organization and of other international organizations, to continue with vigour the work related to the development of Standards, Recommended Practices and Procedures and/or guidance material dealing with the impact of aviation on the environment;
3. *Welcomes* the adoption by the Council in March 2007 of the medium- and long-term technology goals for Nitrogen Oxides (NO<sub>x</sub>);
4. *Requests* the Council, with the assistance and cooperation of other bodies of the Organization and of other international organizations, to establish medium and long term technology and operational goals related to noise and fuel burn, in addition to the recent development of NO<sub>x</sub> goals;
5. *Requests* the Council to ensure that its Committee on Aviation Environmental Protection (CAEP) pursues its work programme in the noise and emissions fields expeditiously in order that appropriate solutions can be developed as quickly as possible, and that the necessary resources are made available to do so;
6. *Urges* Contracting States from regions of the world that are currently under-represented in CAEP to participate in the Committee's work;
7. *Requests* the Council to provide States and International Organizations information on available measures to reduce the impact of aviation operations on the environment so that action can be taken using the appropriate measures;
8. *Urges* Contracting States to follow, where appropriate, the ICAO provisions developed pursuant to Clause 2 of this Appendix; and
9. *Requests* the Council to continue the work on developing and employing scenarios for assessing the future environmental impact of aviation emissions and to cooperate with the IPCC in this area.

## **APPENDIX C**

### **Policies and programmes based on a “balanced approach” to aircraft noise management**

*Whereas* a goal of ICAO is to promote the highest practicable degree of consistency in international civil aviation, including environmental regulations;

*Whereas* the uncoordinated development of national and regional policies and programmes for the alleviation of aircraft noise could hinder the role of civil aviation in economic development;

*Whereas* the severity of the aircraft noise problem at many airports has given rise to measures which limit aircraft operations and has provoked vigorous opposition to the expansion of existing airports or construction of new airports;

*Whereas* ICAO has accepted full responsibility for pursuing a course aimed at achieving maximum compatibility between the safe, economically effective and orderly development of civil aviation and the quality of the environment, and is actively pursuing the concept of a “balanced approach” for the reduction of aircraft noise and guidance on how States might apply such an approach;

*Whereas* the balanced approach to noise management developed by ICAO consists of identifying the noise problem at an airport and then analysing the various measures available to reduce noise through the exploration of four principal elements, namely reduction at source, land-use planning and management, noise abatement operational procedures and operating restrictions, with the goal of addressing the noise problem in the most cost-effective manner;

*Whereas* the assessment of present and future impact of aviation noise is an essential tool for the development of policy by ICAO and its Contracting States;

*Whereas* the process for implementation and decisions between elements of the balanced approach is for Contracting States and it is ultimately the responsibility of individual States to develop appropriate solutions to the noise problems at their airports, with due regard to ICAO rules and policies;

*Whereas*, the ICAO guidance developed to assist States in implementing the balanced approach (*Guidance on the Balanced Approach to Aircraft Noise Management* (Doc 9829)) has been subsequently updated;

*Recognizing* that solutions to noise problems need to be tailored to the specific characteristics of the airport concerned, which calls for an airport-by-airport approach, and that similar solutions could be applied if similar noise problems are identified at airports;

*Recognizing* that measures to address noise may have significant cost implications for operators and other stakeholders, particularly those from developing countries;

*Recognizing* that States have relevant legal obligations, existing agreements, current laws and established policies which may influence their implementation of the ICAO “balanced approach”;

*Recognizing* that some States may also have wider policies on noise management; and

*Considering* that the improvements in the noise climate achieved at many airports through the replacement of Chapter 2 compliant aircraft (aircraft which comply with the noise certification standards in Volume I, Chapter 2 of Annex 16 but which exceed the noise levels in Volume I, Chapter 3 of Annex 16) by quieter aircraft should be safeguarded by taking account of the sustainability of future growth and should not be eroded by incompatible urban encroachment around airports;

*The Assembly:*

1. *Calls upon* all ICAO Contracting States and international organizations to recognize the leading role of ICAO *in dealing with the problems of aircraft noise*;
2. *Urges* States to:
  - a) adopt a balanced approach to noise management, taking full account of ICAO guidance (Doc 9829), relevant legal obligations, existing agreements, current laws and established policies, when addressing noise problems at their international airports;
  - b) institute or oversee a transparent process when considering measures to alleviate noise, including:
    - 1) assessment of the noise problem at the airport concerned based on objective, measurable criteria and other relevant factors;
    - 2) evaluation of the likely costs and benefits of the various measures available and, based on that evaluation, selection of measures with the goal to achieve maximum environmental benefit most cost-effectively; and
    - 3) provision for dissemination of the evaluation results, for consultation with stakeholders and for dispute resolution;
3. *Encourages* States to:
  - a) promote and support studies, research and technology programmes aimed at reducing noise at source or by other means;
  - b) apply land-use planning and management policies to limit the encroachment of incompatible development into noise-sensitive areas and mitigation measures for areas affected by noise, consistent with Appendix F to this Resolution;
  - c) apply noise abatement operational procedures, to the extent possible without affecting safety; and
  - d) not apply operating restrictions as a first resort but only after consideration of the benefits to be gained from other elements of the balanced approach and in a manner which is consistent with Appendix E to this Resolution and taking into account the possible impact of such restrictions at other airports;
4. *Requests* States to:
  - a) work closely together to ensure the harmonization of programmes, plans and policies to the extent possible;

- 
- b) ensure that the application of any measures to alleviate noise are consistent with the non-discrimination principle in Article 15 of the Chicago Convention; and
  - c) take into consideration the particular economic conditions of developing countries;
5. *Invites* States to keep the Council informed of their policies and programmes to alleviate the problem of aircraft noise in international civil aviation;
6. *Requests* the Council to:
- a) assess continuously the evolution of the impact of aircraft noise;
  - b) ensure that the guidance on the balanced approach in Doc 9829 is current and responsive to the requirements of States; and
  - c) promote the use of the balanced approach, for example through workshops; and
7. *Calls upon* States to provide appropriate support for this work on ICAO guidance and any additional work on methodologies, and for the assessment of the impact or effectiveness of measures under the balanced approach as necessary.

## APPENDIX D

### **Phase-out of subsonic jet aircraft which exceed the noise levels in Volume I of Annex 16**

*Whereas* certification standards for subsonic jet aircraft noise levels are specified in Volume I of Annex 16;

*Whereas* for the purpose of this Appendix, a phase-out is defined as withdrawal of a noise-based category of aircraft from international operations at all airports in one or more States;

*Whereas* the Committee on Aviation Environmental Protection has concluded that a general phase-out of Chapter 3 aircraft operations by all the countries which imposed a phase-out on operations of Chapter 2 aircraft is not supported on cost-benefit grounds;

*Whereas* some States have implemented or initiated phase-outs of aircraft which exceed the noise levels in Volume I, Chapter 3 of Annex 16, or are considering so doing;

*Recognizing* that the noise standards in Annex 16 are not intended to introduce operating restrictions on aircraft;

*Recognizing* that operating restrictions on existing aircraft may increase the costs of airlines and could impose a heavy economic burden, particularly on aircraft operators which may not have the financial resources to re-equip their fleets, such as those from developing countries; and

*Considering* that resolution of problems due to aircraft noise must be based on the mutual recognition of the difficulties encountered by States and a balance among their different concerns;

*The Assembly:*

1. *Urges* States not to introduce any phase-outs of aircraft which exceed the noise levels in Volume I, Chapter 3 of Annex 16 before considering:

- a) whether the normal attrition of existing fleets of such aircraft will provide the necessary protection of noise climates around their airports;
- b) whether the necessary protection can be achieved by regulations preventing their operators from adding such aircraft to their fleets through either purchase, or lease/charter/interchange, or alternatively by incentives to accelerate fleet modernization;
- c) whether the necessary protection can be achieved through restrictions limited to airports and runways the use of which has been identified and declared by them as generating noise problems and limited to time periods when greater noise disturbance is caused; and
- d) the implications of any restrictions for other States concerned, consulting these States and giving them reasonable notice of intention;

2. *Urges* States which, despite the considerations in Resolving Clause 1 above, decide to phase out aircraft which comply with the noise certification standards in Volume I, Chapter 2 of Annex 16 but which exceed the noise levels in Volume I, Chapter 3 of Annex 16:

- a) to frame any restrictions so that Chapter 2 compliant aircraft of an individual operator which are presently operating to their territories may be withdrawn from these operations gradually over a period of not less than 7 years;
- b) not to restrict before the end of the above period the operations of any aircraft less than 25 years after the date of issue of its first individual certificate of airworthiness;
- c) not to restrict before the end of the period the operations of any presently existing wide-body aircraft or of any fitted with engines that have a by-pass ratio higher than 2 to 1; and
- d) to inform ICAO, as well as the other States concerned, of all restrictions imposed;

3. *Strongly encourages* States to continue to cooperate bilaterally, regionally and inter-regionally with a view to:

- a) alleviating the noise burden on communities around airports without imposing severe economic hardship on aircraft operators; and

- b) taking into account the problems of operators of developing countries with regard to Chapter 2 aircraft presently on their register, where they cannot be replaced before the end of the phase-out period, provided that there is proof of a purchase order or leasing contract placed for a replacement Chapter 3 compliant aircraft and the first date of delivery of the aircraft has been accepted;

4. *Urges* States not to introduce measures to phase out aircraft which comply, through original certification or recertification, with the noise certification standards in Volume I, Chapters 3 or 4 of Annex 16;

5. *Urges* States not to impose any operating restrictions on Chapter 3 compliant aircraft, except as part of the balanced approach to noise management developed by ICAO and in accordance with Appendices C and E to this Resolution; and

6. *Urges* States to assist aircraft operators in their efforts to accelerate fleet modernization and thereby prevent obstacles and permit all States to have access to lease or purchase aircraft compliant with Chapter 3, including the provision of multilateral technical assistance where appropriate.

## APPENDIX E

### Local noise-related operating restrictions at airports

*Whereas* certification standards for subsonic jet aircraft noise are specified in Volume I of Annex 16;

*Whereas* for the purposes of this Appendix an operating restriction is defined as any noise-related action that limits or reduces an aircraft's access to an airport;

*Whereas* Appendix C to this Resolution calls for States to adopt a balanced approach to noise management when addressing noise problems at their international airports;

*Whereas* the scope for further reductions in noise at source is limited in that past improvements in noise reduction technology are being gradually assimilated into the fleet but no significant breakthroughs in technology are anticipated in the foreseeable future;

*Whereas* at many airports, land-use planning and management and noise abatement operational procedures are already being used and other noise mitigation measures are in place, although urban encroachment continues in certain cases;

*Whereas* implementation of the phase-out of aircraft which comply with the noise certification standards in Volume I, Chapter 2 of Annex 16 but which exceed the noise levels in Volume I, Chapter 3 of Annex 16 (as provided for in Appendix D to this Resolution) has been completed in some States and, assuming continued growth in aviation activity, without further action the number of people exposed to aircraft noise at some airports in those States may increase;

*Whereas* there are significant regional differences in the extent to which aircraft noise is expected to be a problem over the next two decades and some States have consequently been considering placing operating restrictions on certain aircraft which comply with the noise certification standards in Volume I, Chapter 3 of Annex 16;

*Whereas* if operating restrictions on Chapter 3 aircraft are introduced at certain airports, this should be based on the balanced approach and relevant ICAO guidance (Doc 9829) and should be tailored to the specific requirements of the airport concerned;

*Whereas* these restrictions could have a significant economic impact on fleet investments of aircraft operators from States other than those in which the restrictions are imposed;

*Recognizing* that these restrictions go beyond the policy established in Appendix D to this Resolution and other relevant policy guidance developed by ICAO;

*Recognizing* that ICAO places no obligation on States to impose operating restrictions on Chapter 3 aircraft;

*Recognizing* that the noise standards in Annex 16 were not intended to introduce operating restrictions on aircraft and, specifically, that the new standard contained in Annex 16, Volume I, Chapter 4 is based on the understanding that it is for certification purposes only; and

*Recognizing* in particular that States have legal obligations, laws, existing arrangements and established policies which may govern the management of noise problems at their airports and could affect the implementation of this Appendix;

*The Assembly:*

1. *Urges* States to ensure, wherever possible, that any operating restrictions be adopted only where such action is supported by a prior assessment of anticipated benefits and of possible adverse impacts;

2. *Urges* States not to introduce any operating restrictions at any airport on aircraft which comply with Volume I, Chapter 3 of Annex 16 before:

- a) completing the phase-out of aircraft which exceed the noise levels in Volume I, Chapter 3 of Annex 16, at the airport concerned; and
- b) fully assessing available measures to address the noise problem at the airport concerned in accordance with the balanced approach described in Appendix C;

3. *Urges* States which, despite the considerations in Resolving Clause 2 above, permit the introduction of restrictions at an airport on the operations of aircraft which comply, either through original certification or recertification, with Volume I, Chapter 3 of Annex 16:

- a) to base such restrictions on the noise performance of the aircraft, as determined by the certification procedure conducted consistent with Annex 16, Volume I;

- b) to tailor such restrictions to the noise problem of the airport concerned in accordance with the balanced approach;
- c) to limit such restrictions to those of a partial nature wherever possible, rather than the complete withdrawal of operations at an airport;
- d) to take into account possible consequences for air transport services for which there are no suitable alternatives (for example, long-haul services);
- e) to consider the special circumstances of operators from developing countries, in order to avoid undue hardship for such operators, by granting exemptions;
- f) to introduce such restrictions gradually over time, where possible, in order to take into account the economic impact on operators of the affected aircraft;
- g) to give operators a reasonable period of advance notice;
- h) to take account of the economic and environmental impact on civil aviation; and
- i) to inform ICAO, as well as the other States concerned, of all such restrictions imposed; and

4. *Further urges* States not to permit the introduction of any operating restrictions aimed at the withdrawal of aircraft that comply, through either original certification or recertification, with the noise standards in Volume I, Chapter 4 of Annex 16.

## **APPENDIX F**

### **Land-use planning and management**

*Whereas* land-use planning and management is one of the four principal elements of the balanced approach to noise management;

*Whereas* the number of people affected by aircraft noise is dependent on the way in which the use of land surrounding an airport is planned and managed, and in particular the extent to which residential development and other noise sensitive activities are controlled;

*Whereas* activity may increase significantly at most airports and there is a risk that future growth may be constrained by inappropriate land use near airports;

*Whereas* the phase-out of subsonic jet aircraft which comply with the noise certification standards in Volume I, Chapter 2 of Annex 16 but which exceed the noise levels in Volume I, Chapter 3 of Annex 16 has succeeded at many airports in reducing the size of the noise contours depicting the areas where people are exposed to unacceptable noise levels as well as in reducing the total number of people exposed to noise;



*Considering* it essential that these improvements should be preserved to the greatest extent practicable for the benefit of local communities;

*Whereas* it is also expected that the new standard contained in Annex 16, Volume I, Chapter 4 will increase the opportunities for operators to replace aircraft in their fleets by quieter aircraft;

*Recognizing* that while land-use management includes planning activities that may primarily be the responsibility of local authorities, it nevertheless affects airport capacity, which in turn has implications for civil aviation; and

*Whereas* guidance material on appropriate land-use planning and noise mitigation measures is included in the Airport Planning Manual (Doc 9184), Part 2 — Land Use and Environmental Control, which has recently been updated;

*The Assembly:*

1. *Urges* States that have phased out operations of Chapter 2 aircraft at their airports as provided for in Appendix D to this Resolution, whilst preserving the benefits for local communities to the greatest extent practicable, to avoid inappropriate land use or encroachment whenever possible in areas where reductions in noise levels have been achieved;

2. *Urges* States to ensure that the potential reductions in noise levels to be gained from the introduction of quieter aircraft, particularly those complying with the new Chapter 4 standard, are also not avoidably compromised by inappropriate land use or encroachment;

3. *Urges* States, where the opportunity still exists to minimize aircraft noise problems through preventive measures, to:

- a) locate new airports at an appropriate place, such as away from noise-sensitive areas;
- b) take the appropriate measures so that land-use planning is taken fully into account at the initial stage of any new airport or of development at an existing airport;
- c) define zones around airports associated with different noise levels taking into account population levels and growth as well as forecasts of traffic growth and establish criteria for the appropriate use of such land, taking account of ICAO guidance;
- d) enact legislation, establish guidance or other appropriate means to achieve compliance with those criteria for land use; and
- e) ensure that reader-friendly information on aircraft operations and their environmental effects is available to communities near airports; and

4. Requests the Council to:
  - a) ensure that the guidance on land use in Doc 9184 is current and responsive to the requirements of States; and
  - b) consider what steps might be taken to promote land-use management, particularly in those parts of the world where the opportunity may exist to avoid aircraft noise problems in the future.

## APPENDIX G

### Supersonic aircraft — The problem of sonic boom

*Whereas* since the introduction of supersonic aircraft in commercial service action has been taken to avoid creating unacceptable situations for the public due to sonic boom, such as interference with sleep and injurious effects to persons and property on land and at sea caused by the magnification of the sonic boom; and

*Whereas* the States involved in the manufacture of such supersonic aircraft, as well as other States, continue to carry out research into the physical, physiological and sociological effects of sonic boom;

*The Assembly:*

1. *Reaffirms* the importance it attaches to ensuring that no unacceptable situation for the public is created by sonic boom from supersonic aircraft in commercial service;
2. *Instructs* the Council, in the light of the available information and availing itself of the appropriate machinery, to review the Annexes and other relevant documents, so as to ensure that they take due account of the problems which the operation of supersonic aircraft may create for the public and, in particular, as regards sonic boom, to take action to achieve international agreement on measurement of the sonic boom, the definition in quantitative or qualitative terms of the expression “unacceptable situations for the public” and the establishment of the corresponding limits; and
3. *Invites* the States involved in the manufacture of supersonic aircraft to furnish ICAO in due course with proposals on the manner in which any specifications established by ICAO could be met.

## APPENDIX H

### Aviation impact on local air quality

*Whereas* there are growing concerns about the impact of aviation on the atmosphere with respect to local air quality and the associated human health and welfare impacts;

*Whereas* many pollutants affecting local and regional air quality from aircraft engines have declined dramatically over the last few decades;

*Whereas* the impacts of aviation emissions of NO<sub>x</sub> (nitrogen oxides), PM (particulate matter), and other gaseous emissions need to be further assessed and understood;

*Whereas* the impacts of aviation emissions on local and regional air quality is part of the total emissions in the affected area and should be considered in the broader context of all sources that contribute to the air quality concerns;

*Whereas* the actual local air quality and health impacts of aviation emissions depend on a series of factors among which are the contribution to the total concentrations and the number of people exposed in the area being considered;

*Whereas* ICAO has established technical standards and fostered the development of operational procedures that have reduced significantly local air quality pollution from aircraft;

*Whereas* Article 15 of the *Convention on International Civil Aviation* contains provisions regarding airport and similar charges, including the principle of non-discrimination, and ICAO has developed policy guidance for Contracting States regarding charges (*ICAO's Policies on Charges for Airports and Air Navigation Services*, Doc 9082) including specific guidance on noise-related charges and emissions-related charges for local air quality;

*Whereas* the ICAO Council had adopted on 9 December 1996 a policy statement of an interim nature on emission-related charges and taxes in the form of a resolution wherein the Council strongly recommends that any such levies be in the form of charges rather than taxes, and that the funds collected should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions;

*Whereas* such charges should be based on the costs of mitigating the environmental impact of aircraft engine emissions to the extent that such costs can be properly identified and directly attributed to air transport;

*Whereas* the ICAO Council has adopted policy and guidance material related to the use of emission-related charges to address the impact of aircraft engine emissions at or around airports; and

*Noting* that the Council has agreed that it would be useful to develop a report that would consider the application of all measures relating to local air quality emissions, using technological, operational and market-based approaches and that ICAO is currently working on this issue;

*The Assembly:*

1. *Requests* the Council to monitor and develop its knowledge of, in cooperation with other relevant international bodies such as WHO, the effects of aviation emissions of particulate matter, nitrogen oxides and other gases on human welfare and health, and to disseminate information in this regard;
2. *Requests* the Council to continue its work to develop technologically feasible, environmentally beneficial and economically reasonable standards to further reduce the impact of local air pollution from aircraft;
3. *Requests* the Council continue its work to develop long-term technology and operational goals with respect to aviation environmental issues, including nitrogen oxides from aircraft;
4. *Requests* the Council continue to foster operational and air traffic improvements that reduce the impact of local air pollution from aircraft;
5. *Encourages* action by Contracting States, and other parties involved, to limit or reduce international aviation emissions affecting local air quality through voluntary measures and to keep ICAO informed;
6. *Welcomes* the development and promotion of guidance material on issues related to the assessment of airport-related air quality and requests the Council to actively pursue this activity, aiming for the completion of the Airport Air Quality guidance in 2010;
7. *Requests* the Council to work with States and stakeholders in promoting and sharing best practices applied at airports in reducing the adverse effects of aviation emissions on local air quality;
8. *Welcomes* the development of the guidance on emission charges related to local air quality and *requests* the Council to keep up-to-date such guidance and *urges* Contracting States to share information on the implementation of such charges; and
9. *Urges* Contracting States to ensure the highest practical level of consistency and take due account of ICAO policies and guidance on emissions charges related to local air quality.

## APPENDIX I

### Aviation impact on global climate - Scientific understanding

*Whereas* a comprehensive assessment of aviation's impact on the atmosphere is contained in the special report on *Aviation and the Global Atmosphere*, published in 1999, which was prepared at ICAO's request by the Intergovernmental Panel on Climate Change (IPCC) in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer;

*Whereas* the IPCC special report recognized that the effects of some types of aircraft emissions are well understood, it revealed that the effects of others are not, and identified a number of key areas of scientific uncertainty that limit the ability to project aviation's full impacts on climate and ozone;

*Whereas* ICAO requested that the IPCC include an update of the main findings of the special report in its Fourth Assessment Report, published in 2007;

*The Assembly:*

1. *Requests* the Council to:
  - a) continue to take initiatives to promote information on scientific understanding of aviation's impact and action undertaken to address aviation emissions and to continue to provide the forum to facilitate discussions on solutions to address aviation emissions; and
  - b) continue to cooperate closely with the IPCC and other organizations involved in the assessment of aviation's contribution to environmental impacts on the atmosphere.
2. *Urges* States to:
  - a) promote scientific research aimed at continuing to address the uncertainties identified in the IPCC special report on Aviation and the Global Atmosphere and in the recently released Fourth Assessment report; and
  - b) ensure that future international assessments of climate change undertaken by IPCC and other relevant United Nations bodies include updated information on aircraft-induced effects on the atmosphere;
3. *Encourages* the Council to promote improved understanding of the potential use, and the related emissions impacts, of alternative aviation fuels; and
4. *Encourages* the Council and States to keep up to date and cooperate in the development of predictive analytical models for the assessment of aviation impacts.

## **APPENDIX J**

### **Aviation impact on global climate - Cooperation with UN and other bodies**

*Whereas* the ultimate objective of the United Nations Framework Convention on Climate Change (UNFCCC) is to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system;

*Acknowledging* the principles of non-discrimination and equal and fair opportunities to develop international civil aviation set forth in the Chicago Convention, as well as the principles and provisions on

common but differentiated responsibilities and respective capabilities under the UNFCCC and the Kyoto Protocol;

*Whereas* the Kyoto Protocol, which was adopted by the Conference of the Parties to the UNFCCC in December 1997 and entered into force on 16 February 2005, calls for developed countries (Annex I parties) to pursue limitation or reduction of greenhouse gases from “aviation bunker fuels” (international aviation) working through ICAO (Article 2.2);

*Whereas* the Kyoto Protocol provides for different flexible instruments (such as the Clean Development Mechanism – CDM) which would benefit projects involving developing States;

*Whereas* the first commitment period of the Kyoto Protocol expires in 2012 and discussions on the follow up to this instrument are being undertaken and ICAO will need to continue to address its responsibility and demonstrate leadership to limit or reduce GHG emissions from international civil aviation;

*Whereas* all stakeholders expect ICAO to demonstrate leadership in mitigating the negative effects of GHG emissions by aviation, and to develop a vision to integrate these and the environmental objectives into ICAO’s Business Plan and other ICAO programmes;

*Recognizing*, the relevance of climate change and economic development in the context of the UN Millennium Development Goals (MDGs) and the role of aviation in helping achieve these goals;

*Noting* it is important to address aircraft emissions without losing sight of their proper context in assessing overall GHG emissions from aviation, the transportation sector, and general economic activity; and

*Noting* that different regions of the world are experiencing wide differences in absolute levels of aviation emissions and aviation emissions growth rates both internationally and domestically;

*The Assembly:*

1. *Requests* the Council to:

- a) ensure that ICAO exercise continuous leadership on environmental issues relating to international civil aviation, including GHG emissions;
- b) continue to study policy options to limit or reduce the environmental impact of aircraft engine emissions and to develop concrete proposals and provide advice as soon as possible to the Conference of the Parties of the UNFCCC, encompassing technical solutions and market-based measures, and taking into account potential implications of such measures for developing as well as developed countries; and
- c) continue to cooperate with organizations involved in policy-making in this field, notably with the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) and its Subsidiary Body for Scientific and Technological Advice (SBSTA);

## APPENDIX K

### ICAO Programme of Action on international aviation and climate change

*Whereas* ICAO and its Contracting States recognize the critical importance of providing continuous leadership to international civil aviation in limiting or reducing its emissions that contribute to global climate change;

*Whereas* the rapid growth of civil aviation, has generally increased the aviation industry's contribution to greenhouse gas emissions;

*Acknowledging* the principles of non-discrimination and equal and fair opportunities to develop international civil aviation set forth in the Chicago Convention, as well as the principles and provisions on common but differentiated responsibilities and respective capabilities under the UNFCCC and the Kyoto Protocol;

*Whereas* the ICAO Council has developed policy options to limit or reduce the environmental impact of aircraft engine emissions from civil aviation and work is in progress on technology and standards, on operational measures and on market-based measures to reduce emissions;

*Noting* that, to promote sustainable growth of aviation, a comprehensive approach, consisting of work on technology and standards, and on operational and market-based measures to reduce emissions is necessary;

*Noting* that emphasis should be on those policy options that will reduce aircraft engine emissions without negatively impacting the growth of air transport especially in developing economies;

*Acknowledging* the significant progress made in the aviation sector, with aircraft produced today being about 70 percent more fuel efficient per passenger kilometre than 40 years ago, with airlines of some Contracting States achieving net reductions in emissions over the past several years despite a simultaneous increase in operations, and with the commitment of the international airline industry to achieving a further 25 percent fuel efficiency improvement between 2005 and 2020;

*Noting* that the next generation of aircraft technology and modernization of air traffic systems are expected to deliver additional improvements in flight and fuel efficiency that can be encouraged by ICAO through its Global Air Navigation Plan;

*Recognizing* that ICAO Standards and goals for NO<sub>x</sub>, although intended to address local air quality, will also help reduce the impact of aviation on climate;

*The Assembly:*

1. *Requests* that the Council facilitate action by States by vigorously developing policy options to limit or reduce the environmental impact of aircraft engine emissions, developing concrete proposals and providing advice as soon as possible to the Conference of the Parties of the UNFCCC, encompassing technical solutions and market-based measures, while taking into account potential implications of such measures for developing as well as developed countries;

2. *Requests* the Council to:

- a) form a new Group on International Aviation and Climate Change composed of senior government officials representative of all ICAO regions, with the equitable participation of developing and developed countries, with technical support provided by the Committee on Aviation Environmental Protection, for the purpose of developing and recommending to the Council an aggressive Programme of Action on International Aviation and Climate Change, based on consensus, and reflecting the shared vision and strong will of all Contracting States, including:
  - 1) an implementation framework consisting of economically efficient and technologically feasible strategies and measures that Contracting States can use to achieve emissions reductions, encompassing *inter alia*:
    - voluntary measures (e.g. offsetting);
    - effective dissemination of technological advances both in aircraft and in ground based equipment;
    - more efficient operational measures;
    - improvements in air traffic management;
    - positive economic incentives; and
    - market-based measures;
  - 2) identification of means by which progress can be measured;
  - 3) identification of possible global aspirational goals in the form of fuel efficiency for international aviation and possible options for their implementation; and
  - 4) reporting progress resulting from the actions implemented by Contracting States and Stakeholders;
- b) convene at an appropriate time, taking into account the fact that the fifteenth meeting of the Conference of the Parties (COP15) of UNFCCC will be held in December 2009, a high-level meeting to review the Programme of Action recommended by the Group;

3. *Requests* that the Council, working through the Committee on Aviation Environmental Protection, continue to develop and keep up-to-date the guidance for Contracting States on the application of measures aimed at reducing or limiting the environmental impact of aircraft engine emissions and to conduct further studies, with respect to mitigating the impact of aviation and climate change;



4. *Encourages* Contracting States and the Council, taking into account the interests of all parties concerned, including potential impacts on the developing world, to evaluate or continue evaluating the costs and benefits of the various measures, including existing measures, with the goal of addressing aircraft engine emissions in the most cost-effective manner;

5. *Requests* that the Council provide the necessary guidance and direction to ICAO's Regional Offices to assist Contracting States with studies, evaluations and development of procedures, in collaboration with other States in the region, to limit or reduce GHG emissions on a global basis and work together collaboratively to optimize the environmental benefits that can be achieved through their various programmes;

6. *Requests* States to encourage the industry to establish challenging goals to constantly improve its performance in aviation emissions reduction;

7. *Requests* Contracting States to accelerate investments on research and development to bring to market even more efficient technology by 2020;

8. *Requests* States to elaborate and report on a set of actions and plans to reduce by 2020 airspace congestion that is contributing to delays and unnecessary fuel burn;

9. *Request* States to encourage airport operators to improve efficiency of airside operations and to implement ground side efficiency measures to reduce carbon intensity;

10. *Requests* that the Council, working through the Committee on Aviation Environmental Protection:

- a) report on an annual basis on the progress achieved in average in-service fleet fuel efficiency and the aggregate annual amount of fuel burned in international civil aviation working in close cooperation with the industry;
- b) forecast the overall potential for aviation emissions reduction in the in-service fleet; and
- c) evaluate and quantify further reduction opportunities for consideration by the upcoming session of the Assembly;

11. *Requests* the Council, to undertake the necessary action in support of the ICAO emissions initiative, including the pursuit of the ICAO objectives to limit or reduce the impact of aircraft emissions, to foster collaboration among its Contracting States, and to monitor and report on progress made in this area. In particular, the Council should:

- a) explore relevant parameters and develop medium and long term technology goals for aircraft fuel burn and report back by the next Assembly;
- b) continue to develop the necessary tools to assess the benefits associated with ATM improvements, and to promote the use of the operational measures outlined in ICAO

guidance (Cir 303) as a means of limiting or reducing the environmental impact of aircraft engine emissions;

- c) implement an emphasis on increasing fuel efficiency in all aspects the ICAO's Global Air Navigation Plan;
- d) foster, as appropriate, regional, inter-regional and global initiatives with Contracting States to enhance air traffic efficiencies to reduce fuel consumption;
- e) encourage Contracting States to improve air traffic efficiency, which leads to emissions savings and to report on progress in this area;
- f) request Contracting States to submit an inventory of actions they are taking to reduce aviation emissions in their respective countries; and
- g) promote the use of new procedures and technologies that have a potential to provide environmental benefits on the operation of aircraft;

12. *Requests* the Council to encourage States and stakeholders in promoting and sharing best practices applied at airports in reducing the adverse effects of GHG emissions of civil aviation;

13. *Requests* the Council to encourage States and stakeholders to develop models of flow control and air traffic management that optimize environmental benefits;

14. *Requests* States to:

- a) encourage the necessary research and development to provide more environmentally efficient engine and aircraft designs;
- b) accelerate the development and implementation of fuel efficient routings and procedures to reduce aviation emissions;
- c) accelerate efforts to achieve environmental benefits through the application of satellite-based technologies that improve the efficiency of air navigation and to work with ICAO to bring these benefits to all regions and States;
- d) promote effective coordination between their authorities involved in aviation in designing more environmentally beneficial air routes and improved operational procedures for international civil aviation;
- e) reduce legal, security, economic and other institutional barriers to enable implementation of the new ATM operating concepts for the environmentally efficient use of airspace; and
- f) cooperate in the development of a regional measurement and monitoring capability in order to allow for the assessment of the environmental benefits accrued from the measures above;

15. *Encourages* action by Contracting States, and other parties involved, to limit or reduce international aviation emissions through voluntary measures, and to keep ICAO informed, and *requests* the Council to instruct the Secretary General to keep up-to-date guidelines that ICAO has developed for such measures, including a template voluntary agreement, and to make available such experience to all parties concerned.

## APPENDIX L

### **Market-based measures, including emissions trading**

*Whereas* market-based measures, including the use of emissions trading, are policy tools that are designed to achieve environmental goals at a lower cost and in a more flexible manner than traditional regulatory measures;

*Recognizing* that Contracting States are responsible for making decisions regarding the goals and most appropriate measures to address aviation's greenhouse gas emissions taking into account ICAO's guidance;

*Acknowledging* the principles of non-discrimination and equal and fair opportunities to develop international civil aviation set forth in the Chicago Convention, as well as the principles and provisions on common but differentiated responsibilities and respective capabilities under the UNFCCC and the Kyoto Protocol;

*Recognizing* that the majority of the Contracting States endorses the application of emissions trading for international aviation only on the basis of mutual agreement between States, and that other Contracting States consider that any open emissions trading system should be established in accordance with the principle of non-discrimination;

*Recognizing* the need to engage constructively to achieve a large degree of harmony on the measures which are being taken and which are planned to provide an appropriate response to the challenge of aviation and climate change while respecting the principles above;

*Whereas* ICAO policies make a conceptual distinction between a charge and a tax, in that "a charge is a levy that is designed and applied specifically to recover the costs of providing facilities and services for civil aviation, and a tax is a levy that is designed to raise national or local government revenues which are generally not applied to civil aviation in their entirety or on a cost-specific basis";

*Whereas* ICAO has developed policy guidance to Contracting States on taxation (*ICAO's Policies on Taxation in the Field of International Air Transport*, Doc 8632), which recommends *inter alia* the reciprocal exemption from all taxes levied on fuel taken on board by aircraft in connection with international air services, a policy implemented in practice through bilateral air services agreements, and also calls on Contracting States to the fullest practicable extent to reduce or eliminate taxes related to the sale or use of international air transport;

*Whereas* the ICAO Council had adopted on 9 December 1996 a policy statement of an interim nature on emission-related charges and taxes in the form of a resolution wherein the Council strongly

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recommends that any such levies be in the form of charges rather than taxes, and that the funds collected should be applied in the first instance to mitigating the environmental impact of aircraft engine emissions;

*Whereas* such charges should be based on the costs of mitigating the environmental impact of aircraft engine emissions to the extent that such costs can be properly identified and directly attributed to air transport;

*Noting* that there remains a number of issues of a legal and policy nature regarding the implementation of GHG charges and the integration of aviation into existing emissions trading systems that have not been resolved;

*Noting* that ICAO has issued *Draft Guidance on the Use of Emissions Trading for Aviation* (Doc 9885);

*Whereas* Contracting States have legal obligations, existing agreements, current laws and established policies; and

*Whereas* the establishment of carbon offset schemes has helped to raise public awareness of climate change, and may contribute to emissions reductions in the short term;

*The Assembly:*

1. *Encourages* Contracting States and the Council to adopt measures consistent with the framework outlined below:

a) Emission-related charges and levies

- 1) Affirms the continuing validity of Council's Resolution of 9 December 1996 regarding emission-related levies;
- 2) *Recognizes* that existing ICAO guidance is not sufficient at present to implement greenhouse gas emissions charges internationally, although implementation of such charges by mutual agreement of States members of a regional economic integration organization on operators of those States is not precluded; and
- 3) *Urges* Contracting States to refrain from unilateral implementation of greenhouse gas emissions charges;

b) Emissions trading

- 1) *Urges* Contracting States not to implement an emissions trading system on other Contracting State's aircraft operators except on the basis of mutual agreement between those States;
- 2) *Requests* States to report on new developments, results and experiences in this area; and

- 3) *Requests* the Council to:
- a) finalize and keep up-to-date for use by Contracting States, as appropriate, and consistent with this and subsequent Resolutions, the guidance developed by ICAO for incorporating emissions from international aviation into Contracting States' emissions trading schemes consistent with the UNFCCC process; and
  - b) conduct further studies, as appropriate, on various aspects of the implementation of emissions trading systems and evaluate the cost effectiveness of any systems put in place, taking into account the effect on aviation and its growth in developing economies in line with the principles stated above;
  - c) conduct an economic analysis of the financial impact of including international aviation in existing trading schemes and undertake literature review of cost-benefit analysis of existing trading systems with a special emphasis on how it has been applied to other sectors in order to draw some pertinent lessons learned for the aviation sector;
- c) Carbon offsets
- 1) *Requests* the Council to examine the potential for carbon offset mechanisms as a further means of mitigating the effect of aviation emissions on local air quality and climate change; and
  - 2) *Requests* the Council to collect and disseminate information on the results of carbon-offset programmes implemented by States and other Organizations regarding aviation emissions;
- d) Clean Development Mechanism (CDM)
- 1) *Invites* Contracting States to explore the use of the Clean Development Mechanism (CDM) related to international aviation.

— END —