EUROPEAN CIVIL AVIATION CONFERENCE

ANCAT/69-IP/3
11/10/2006
English only

GROUP OF EXPERTS ON THE ABATEMENT OF NUISANCES CAUSED BY AIR TRANSPORT

Sixty-ninth meeting (Informal)

(Budapest, 18/19 October 2006)

Agenda Item 7: Developments in other fora

OUTCOME OF CAEP STEERING GROUP JUNE 2006

SUMMARY

The Appendix reproduces the Summaries of Discussion from the CAEP Steering Group meeting held in Australia on 26-30 June 2006.

ACTION TO BE TAKEN

The meeting is invited to note the contents of the Appendix.

(47 pages)

CAEP-SG/20063-SD/1
27/06/06

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

STEERING GROUP MEETING

Queensland, 26 to 30 June 2006

SUMMARY OF DISCUSSIONS AND DECISIONS OF THE FIRST MEETING OF THE STEERING GROUP

Monday, 26 June 2006

1. INTRODUCTION

1.1 The meeting was attended by 16 CAEP members and 6 observers and their advisers, as well as the rapporteurs and vice-rapporteurs of the CAEP working groups (total of 100 participants). The members from India, Poland, the Russian Federation, South Africa, Spain and Tunisia were unable to attend the meeting.

1.2 Mr. Gerard Bekebrede, CAEP member from the Netherlands, was appointed Chairperson of the meeting.

2. AGENDA ITEM 1: ADMINISTRATIVE ARRANGEMENTS WP/1, IP/1

2.1 The meeting approved the agenda and working hours as proposed in WP/1.

3. AGENDA ITEM 2: DEVELOPMENTS SINCE THE LAST STEERING GROUP MEETING WP/2, WP/3, IP/1, IP/2

3.1 The Secretary presented the main developments since the last Steering Group meeting (Montreal, 3 to 7 October 2005). IP/1 contains the summary of discussions and decisions of that meeting.

3.2 The meeting noted the following changes in membership: Mr. Raymond Lephuthing replaced Mr. Zukile Nomvete as the member from South Africa and Mr. Philippe Ayoun replaced Mr. Dominique Gardin as the member from France. A complete list of CAEP members and observers was provided in WP/2.

3.3 The meeting was informed that following CAEP/5 Recommendation 3/5, the Noise Certification database was made available on a preliminary basis on the ICAO public website on 5 June 2006. This database had been revised and improved by the Directorate General of Civil Aviation of France in consultation with the ICAO Secretariat although WG/1 continues to revise this database. The meeting was also informed that in addition to the ICAO emissions database, the "common operations database", and the single unified global airports database are currently under construction by WG2/TG2 and it is expected that these databases will be made available on the CAEP website in the near future.

3.4 The meeting noted that information on other databases relevant to the work of CAEP was made available by the Secretariat in WP/4.

3.5 With regard to developments in other ICAO bodies, the meeting noted that the seventh meeting of the Operations Panel (OPSP/7) was held in Montreal in May 2006 during which, among other issues, they discussed extended diversion time operations and procedures for all-weather operations and that the Obstacle Clearance Panel (OCP) Working Group of the Whole (WGH) which took place in Montreal during April 2006 considered issues from two areas that relate to WG2, i.e., the restructuring of PANS OPS and the analysis of CDAs. The next meeting of OCP (OCP/15) will take place during the third quarter of 2007. It is expected that Mr. Van Boven, who replaced Mr. Jim Brooks in WG2/TG3 will now undertake the role of the CAEP focal point in these groups.

3.6 The meeting noted that the CAEP website (iforum) is in use by all CAEP groups and that the iforum includes dedicated sites created to facilitate the work of the working groups and task forces. The meeting was informed that no other website should be used to distribute documents related to CAEP or its working groups and that the same policy that relates to the publishing and distribution of ICAO documents applies to their electronic copies. Members were invited to submit any concerns or suggestions regarding the website to the Secretary of CAEP. The meeting noted that the procedures for using the CAEP website were available in IP/2.

3.7 The meeting was provided with a list of recommendations and requests from the 35th Session of the Assembly that have been incorporated into the CAEP work plan and the action currently being undertaken.

3.8 The meeting was informed that the 178th Session of the Council agreed to the convening of the seventh meeting of CAEP (CAEP/7) in Montreal from 5 to 16 February 2007. The draft provisional agenda and the working languages of the meeting were also approved. It was noted that a tentative calendar leading up to CAEP/8 would be discussed under Agenda Item 10: Future work.

3.9 The meeting was informed of developments regarding the structure of the various groups and in particular that the rapporteur of WG1 had recently retired and the position of rapporteur had been assumed by Mr. J. Willem Franken. In view of the fact that the

workload of this group exceeds the available resources, the need to provide further support to the work of this group would need to be considered by the Steering Group.

3.10 The meeting was informed that Mr. K.W. Orth, focal point for the supersonic Task Group of CAEP/WG1 – Aircraft Noise, presented an informal briefing in March to the President, Members and Observers of the Air Navigation Commission of ICAO and the ICAO Council Members. The presentation related to CAEP work on environmental aspects of new supersonic projects/aircraft.

3.11 It was noted that WG2/TG2 is working on evaluating the models and databases for potential CAEP work and the support provided from the ICAO Secretariat. CAEP members and observers had received questionnaires regarding the models/tools that may be used for local air quality greenhouse gas emissions and noise assessments (CAEP-Memo/63), questionaires relating to the economic models/tools (CAEP-Memo/65), as well as a State letter (AN 1/17-IND/06/04) requesting radar data from particular Member States.

3.12 It was noted that the Voluntary Measures focal point (VMFP) had prepared a questionnaire on this subject that was sent by e-mail on 23 May 2006.

3.13 The meeting noted that the WG2 OBO Group presented a paper at the fifth meeting of the All Planning and Implementation Regional Group (ALLPIRG/5) which was held in Montreal from 23 to 24 March 2006, which contained an update on the environmental benefits of CNS/ATM systems at a global and regional level and included "rules of thumb" for estimating environmental benefits at a national level. The meeting was also informed that Transport Canada will hold a workshop in cooperation with ICAO at ICAO Headquarters from 20 to 21 September 2006.

3.14 The meeting noted that the Montreal Climate Conference was held from 28 November to 10 December 2005. COP/11 addressed issues such as capacity building and technology development and transfer and a process was agreed upon for consideration beyond 2012 under the UNFCCC.

Developments in other UN Bodies

3.15 The meeting noted that the COP/MOP1 meeting adopted decisions on the outstanding operational details of the Kyoto Protocol including a package of decisions known as the "Marrakesh Accords". The meeting was informed that this package contained material which referred to international emissions reporting procedures. It was also noted that decisions were taken on a process for consideration of further commitments post-2012 at which time the Protocol's commitment period ends.

3.16 ICAO provided inputs to the Subsidiary Body for Scientific and Technological Advice (SBSTA/23) on methodological issues - emissions from fuel used for international aviation and maritime transport which is available on the website and a statement to the high level segment of the Conference.

3.17 The meeting was informed that the first workshop of the UN Framework Convention on Climate Change (UNFCCC) "Dialogue on long-term cooperative action to address climate change" was held in Bonn, Germany from 15 to 16 May 2006. The meeting

noted that the UNFCCC resolved to engage in a dialogue to exchange experiences and analyze strategic approaches for long-term cooperative action on climate change. It was also noted that this event was the first of up to four workshops on this topic, all to be organized by the UNFCCC Secretariat and that the next workshop will take place in November 2006.

Dialogue on long-term cooperative action

3.18 The meeting noted the importance of ICAO in assuming a leadership role with respect to long-term cooperative action for international aviation and the proposal by the Secretariat for the establishment of a "dialogue" think-tank force to collect information on possible ways for aviation to respond to its emissions growth and to evaluate the merits of the various options. It was proposed that this think-tank force would consult with the various stakeholders and that a report would be presented at CAEP/7 outlining the pros and cons of various options. The options agreed upon by CAEP could be presented to the Council, and subsequently, to the Assembly which would in turn provide guidance regarding a possible aviation input to the fourth and last workshop dialogue scheduled for November 2007.

3.19 The CAEP Secretary also explained that CAEP has been developing the building blocks of an emissions policy but that there was a need to put these building blocks together in a more structured way that could facilitate the discussions on possible policy options for aviation in this area.

3.20 In considering the proposals for a dialogue think tank force, one representative expressed the view that CAEP has been working in this field for a long time and that it has already addressed all the possible options, and that CAEP should not raise expectations that by establishing this think tank force a miraculous solution could be found. He was concerned with the limited time available for the group prior to CAEP/7 to develop new material. He also reminded the group of the ICAO action plan on emissions developed by CAEP/5. He added that any actions in this area should be within CAEP.

3.21 Another member expressed concern with the short time available for the task. He could see merits on improving the communications on what has been developed by CAEP. In his view a road map was more likely what was needed. The group should start the work on the consideration of a framework upon which all parties could agree in line with the outcome of the G8 Summit. This communication could report the actions taken in the three areas of activity in CAEP (technology, operational measures and market-based options).

3.22 Another representative expressed the view that, in addition to the proposal above, there were merits in identifying the possible measures for emissions reduction and identifying pros and cons.

3.23 The meeting considered that there was no need to establish the dialogue "think tank" force for the moment and agreed that there is a need for improved communication of the work already developed by ICAO.

Other developments

3.24 It was noted that the Subsidiary Body for Scientific and Technological Advice (SBSTA) considered issues under both the UNFCCC and the Kyoto Protocol at its last

meeting which was held in Bonn, Germany from 17 to 26 May 2006. The meeting recognized that, although SBSTA together with the Subsidiary Body for Implementation (SBI) adopted 30 conclusions and one draft decision, no substantive agreements were taken and most issues were forwarded to SB 25 for further consideration. This was the case with aviation (FCCC/SBSTA/2006/LS) where SBSTA did not complete its consideration of issues related to emissions from fuel used for international aviation and maritime transport and agreed to continue its considerations of these issues at its twenty-fifth session (November 2006).

3.25 The meeting was informed that the twenty-fifth session of the Intergovernmental Panel on Climate Change (IPCC-25) was held in Mauritius in April 2006. As the 2006 IPCC Guidelines for National Greenhouse Gas Inventories were accepted by IPCC-25 only shortly before SB 24, the parties agreed that more time was needed to give them full consideration. Consequently, the 2006 IPCC Guidelines will be further considered at the next SBSTA session in November.

3.26 Regarding the outcome of IPCC-25, the meeting recognized and welcomed the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and acknowledged contributions from ICAO/CAEP to the aviation chapter of the guidelines. It noted the work of the IPCC on the IPCC Emission Factor Database (EFDB) and on the IPCC Fourth Assessment Report (AR4) and the progress reports presented by its Working Groups (I, II and III). It was also noted that the report presented by Working Group I included some updates as requested by ICAO on contrails and cirrus clouds. However, one member expressed reservations on the extent of the information provided. The meeting was informed that the AR4 is currently under the 2nd expert review and the meeting encouraged States to provide comments on these issues to the IPCC as appropriate. The meeting noted that ICAO will continue to follow the developments in relation to the review of the AR4, on the activities related with the IPCC EFDB (emissions factors database) and on the discussion of emissions scenarios.

4. AGENDA ITEM 3: FORECAST AND ECONOMIC ANALYSIS SUPPORT GROUP (FESG) - WP/5, IP/1, IP/3, IP/12, IP/16

4.1 The meeting noted the role of the FESG and its meetings held thus far. The meeting was informed that three task groups had been established to achieve its goals, including one task group to deal with the analysis of the local charges.

Status report on FESG tasks

4.2 With regard to CAEP forecast (F4), it was noted that the Bonn Steering Group meeting had decided that the production of a new forecast was not needed for the CAEP/7 work programme. The same meeting also determined that FESG would undertake the necessary work to streamline the process for the development of a new forecast for CAEP/8.

4.3 The SG endorsed the methodology outlined for the development of a CAEP/8 forecast and noted that the report in IP/16 is the final report on the subject.

4.4 The meeting noted that an extension of the forecast time horizon was not previously feasible. The two methods for extending the 20-year forecast another 10 years had

been reviewed and it had been concluded that one of the two approaches, the mathematical extrapolation approach, provided a reasonable possibility. It was also noted that Airbus is updating their corporate model to accommodate this extension to produce a 30 year fleet forecast. The SG was informed that an evaluation of the process to conduct a sensitivity analysis around the forecast was done and FESG will also be able to produce a sensitivity analysis around the traffic growth. WG2 specified the need for a forecast by January/February 2008 and that it be informed of any format changes as soon as possible.

4.5 The issue of providing a new forecast earlier in the next cycle was discussed. It was agreed to defer a decision on this issue until more insight on future work is available.

4.6 Regarding the review work on modelling assumptions used in the past (F5), the SG noted that the FESG formed the Industry Response Task Group (IRTG) to complete the work for CAEP/7. This task had been developed in three phases: 1) scoping study to identify analytical methods and assumptions used in the economic analysis of stringency options for CAEP/4, CAEP/5 and CAEP/6 through review of relevant documents; 2) review and validation of analytical methods and assumptions; and 3) identification of industry responses and key drivers influencing them. Also noted were the key modelling issues necessary for the conduct of CAEP economic analyses of stringency options which were key methods and assumptions, including those important to the fleet forecast, benefit assessment methods and assumptions; and cost assessment methods and assumptions. The meeting was informed about the status of the work and a final report can be expected at CAEP/7.

4.7 With regard to the cost effectiveness of local air quality charges, the meeting was informed that FESG formed the Local Charges Task Group (LCTG) to complete Task F7 which had been added to the CAEP/7 Work Programme at the Bonn SG meeting.

4.8 The meeting noted that the FESG plans to assess the cost-effectiveness of the NOx related local emissions at the Zurich and Stockholm airports as the aircraft emission charges have been in place for years at these two locations. The analysis will focus on NOx emissions because it is the basis of the local air quality charges currently in place and the analysis will be limited to aviation emissions only. The meeting acknowledged the challenges encountered by FESG in relation to the analysis of the cost-effectiveness of the local air quality charges particularly with respect to obtaining the appropriate data to conduct the analysis and the time dimension. The meeting also noted that the analytical framework that FESG has developed has two parts; one part with the methodology for the study that is being conducted and a separate part with a methodology for how one might conduct a study if one could stipulate all the data parameters.

4.9 The meeting was informed of the data collected for Zurich and Stockholm and the difficulties and delays in obtaining the detailed data from Stockholm, and noted that the analysis had not yet begun. It also noted that the level of details at which data could be provided by the two airports with local air quality charges will not differentiate the impact of the charge by carriers and therefore the analyses will not be able to differentiate the impact between developed and developing countries. After discussions, the meeting was informed that IATA would try to help resolve this issue.

4.10 The meeting was informed that the analytical framework focuses on two elements: the change (reduction) in emissions caused by the introduction of the charge, and the costs of the mitigation measures adopted by airlines in response to the charges.

4.11 Several important issues will not be addressed by the FESG as they are beyond the scope of the timeframe of the CAEP/7 cycle as well as beyond the expertise of FESG, such as: the question of dispersion of NOx emissions; the measure and characterization of damage to the environment from particulate emissions coming from aircraft (still being debated within the scientific community); and the identification of hazardous air pollutants.

4.12 The meeting was informed that only an initial, partial and preliminary assessment of the cost-effectiveness of emission charges will be possible within the CAEP/7 cycle, due to the late assignment of tasks and the late delivery of data. Noting difficulties of the FESG, the meeting requested that Sweden provides the remaining data needed for the analyses as soon as possible and that IATA's proposal and offer to approach carriers directly to help with the data also be pursued. The meeting's suggestions aimed at allowing FESG to do the necessary analysis for presentation to CAEP/7.

Coordination needs

4.13 The meeting was informed that as CAEP moves towards interdependency assessments, the importance of consistency of the scope covered by the different databases and assumptions used in the analysis will be of critical importance. The meeting agreed that the scope issues will have to be addressed at a very early stage of the CAEP/8 cycle.

4.14 The meeting acknowledged that the coordination between WG2/TG2 and FESG needs to continue and that other working groups will also need to be included in the work. Formal coordination relationships between WG2/TG2 and FESG, as well as liaison with WG1 and WG3, will be necessary.

Future work

4.15 The meeting agreed that an early determination of the expected work from the various working groups for the CAEP/8 cycle is essential for the successful completion of the work within the three-year cycle, and that this should be dealt with further under Agenda Item 10.

IATA presentation

4.16 The meeting noted the basic principles of airline fleet planning (IP/20). Also noted were the key factors that influence fleet planning decisions by airlines and how ICAO standards may influence these decisions.

5. AGENDA ITEM 4: NOISE TECHNICAL ISSUES – WG1, WP/6, WP/7, WP/38, WP/40, IP/4

5.1 The meeting was presented with the report of activities of WG1. The meeting reviewed the initial proposals for amendment to Annex 16 Vol I and the ETM as contained in

WP/6 (in paragraphs 2.3.4.4; 2.3.4.6; 2.5.4i; 2.5.7; 2.5.1.5; 2.5.2.1 in Appendix B and C). No detailed comments were provided but it was acknowledged that not all of the issues have been agreed in WG1 and the meeting agreed that these issues should be further discussed and be brought to final consideration at CAEP/7.

5.2 On a general note, the CAEP Secretary requested that any amendment to Annex 16 be clearly substantiated in the paper containing the proposals to CAEP/7. Previous experience shows that there is a need to clearly state the reason for requesting a change in SARPs or for the proposal of new one, and provide, among others, information on the implications of not doing it, the magnitude/significance of the change and any practical difficulties with its implementation.

5.3 The meeting agreed to the need for an additional WG1 meeting from 5 to 9 September 2006 at ICAO Headquarters, in Montreal in order to progress the work items and finalise proposals for CAEP/7.

5.4 Regarding the study of the correlation between noise certification levels and operational levels, the meeting agreed that the study has not revealed an underlying problem with the current noise certification process.

5.5 In noting that two aircraft types in the study have been identified as outliers when compared with other aircraft, WG1 considered that further examination of these outliers could be undertaken with the aim of demonstrating the robustness of the current certification requirements. The proprietary nature of such a study would make it impossible to be conducted within WG1 itself. The Steering Group welcomed the initiative of ICCAIA to review with the appropriate certification authorities the issue above and to inform WG1 of any possible problems related to the certification scheme.

5.6 In relation to the Noise Certification database, the Secretariat informed the Steering Group meeting that the database was on the CAEP website.

5.7 The meeting agreed that WG1 should consider as soon as possible, but no later than at its upcoming meeting, the procedures for updating/validating the database.

5.8 The meeting also agreed that in the meantime the ICAO Secretariat should include a caveat on the database to inform that it is still in a preliminary stage.

5.9 It was also agreed that following completion of the WG1 considerations of the database and its approval process, the Secretariat should take necessary steps to raise public awareness of the database.

5.10 In concluding its considerations of the WG1 activities, the meeting welcomed the nomination of Mr James Skalecky from the US/FAA as the co-rapporteur of WG1.

New work item for WG1

5.11 The meeting considered the proposal from France for a new future work item on the need for increasing the stringency of Chapter 10 standards for light twin engined propeller driven airplanes. Some members were of the view that it did not constitute a problem at the

global scale, but more so, an issue limited to a few airports and in this case it would be more appropriate to follow the Balanced Approach and seek possible solutions under all elements before addressing specific proposals for restricting noise at source.

5.12 Other members expressed the view that the Balanced Approach is an appropriate tool for noise management at an airport but not to justify the need for otherwise a new stringency. They were of the opinion that the subject should be first explored in its technical merits and in terms of resource availability to undertake the task.

5.13 The meeting agreed that the French representative, the proponent of this item, should pursue a study to identify its need, welcoming for this purpose, inputs coming from members and observers particularly regarding the extent of the problem. If it is a specific airport issue then possibly the answer would be related with the use of the Balanced Approach. If it is found to be a problem on a worldwide scale then the need to explore possible further stringency of the certification levels for these aircraft should be considered.

5.14 The French representative agreed on taking over the study and report on its merits for a decision on this item at CAEP/7.

6. AGENDA ITEM 5: OPERATIONS (WG2): WP/8, IP/1, IP/3, IP/5, IP/6, IP/7, IP/13,

Structure and developments - WP/8

6.1 The meeting noted that WG2 – Operations was created in response to an ICAO Council request to review CAEP structure and working methods. This group is addressing issues relating to noise and emissions and has worked extensively with other CAEP groups. The meeting was informed that since the last SG meeting, Mr. Roger Gardner from the UK and Mr. Alec Simpson from Canada have headed WG2. It was also noted that as a result of the departure of Mr. John Gulding from the FAA, the coordination of TG2 and the tasks associated with modelling activities have been assumed by Mr. Gregg Fleming and Mr. Stephen Arrowsmith. Mr. Michel Von Boven assumed the role of coordinator of TG3 after the retirement of Mr. Jim Brooks (Delta Airlines). The meeting recognised the many years of work and acknowledged the great contribution from Mr. Dominique Gardin, Mr. Jim Brooks and Mr. John Gulding in CAEP WG2.

6.2 The meeting was provided with the Terms of Reference for WG2 and the Task Groups (TGs) and focal points. It was noted that the next working group meetings are planned for 11 to 20 September 2006 in ICAO Headquarters.

Summary of Task Group 1 (TG1) – Land Use Planning and Management
WP8, WP/11, WP/12,WP/31, WP/32, IP13

6.3 The meeting noted the paper presented by TG1 concerning the update of The Guidance on the Balanced Approach to Aircraft Noise (WP/11).

6.4 The meeting was informed that one of the main discussions in TG1 regarding the guidance on balanced approach to noise management was regarding the nature of the guidance and whether it should be proactive or reactive.

6.5 The Steering Group provided views on the update of the Balanced Approach Guidance document and agreed with the changes proposed to the Balanced Approach Guidance as proposed in WP/11. It agreed that inclusion of text on proactive strategies was not necessary at this time. Use of the Balanced Approach could take into account forecasts when dealing with an identifiable noise problem. Consultation was already contemplated in the Guidance.

6.6 The meeting noted delays in the work on the Encroachment Analysis Methodology and recognized that this item would not be ready for presentation to the Assembly in 2007 and should continue at CAEP/8.

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CAEP-SG/20063-SD/2
27/6/06

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

STEERING GROUP MEETING

Queensland, 26 to 30 June 2006

SUMMARY OF DISCUSSIONS AND DECISIONS OF THE SECOND MEETING OF THE STEERING GROUP

Tuesday, 27 June 2006

1. APPROVAL OF SUMMARY OF DISCUSSIONS AND DECISIONS

1.1 The meeting approved the summary of discussions and decisions of the first meeting.

2. AGENDA ITEM 5: OPERATIONS (WG2): WP/8

2.1 Summary of Task Group 1 (TG1) – Land Use Planning and Management WP/11, WP/12, WP/31, WP/32, IP/13

2.1.1 The meeting continued with its deliberations regarding the activities of WG2/TG1.

2.1.2 Regarding night curfews, TG1 was tasked to undertake a study on the magnitude of this problem. The meeting was informed that the data presented in IP/13 was based on the information available on the Boeing company website and that the group has identified some data inaccuracies. In some cases information was outdated by many years. There was a general consensus that the errors in the data should be adjusted.

2.1.3 The meeting was informed by Boeing that the database was initially developed for their own use and that the information included in the database was a reflection of the information received from airports.

2.1.4 The meeting invited Boeing to consider helping the Group's task by trying to update some of the information contained in the database. Also, the meeting recognised a role for ACI in helping TG1 to update this information. ACI informed the meeting of its intention to cooperate in this task.

2.1.5 The meeting requested WG2/TG1 to update the information regarding curfews and complete the study on the magnitude of the problem by CAEP/7.

2.1.6 On the issue of providing this information through the ICAO website, the meeting noted that ICAO would have no restrictions in providing this information through its public website, once it is finalized and approved by CAEP/7. However, if the intention is to not only have a snap-shot but a complete and periodically updated set of information, then the procedures for this update should be addressed beforehand by TG1. Also any relevant administrative aspects regarding the linkage of the ICAO site with the Boeing database should be discussed before the decision is taken.

2.1.7 The Steering Group agreed that the proposed amendments to the Airport Planning Manual, Part 2: Land Use and Environmental Control (Doc 9184) should be referred to CAEP/7 for approval and likewise, so should the paragraph on the Balanced Approach for inclusion in the Land Use Planning Manual.

2.1.8 On the generic presentation to be used for promoting the guidance information, the meeting endorsed the presentation contents, while recognising that it shall be periodically updated to reflect the developments in this area. It was agreed that the use of the presentation was subject to the prior approval by ICAO. Such approval would be applied to the credentials of the individuals that would provide the presentation on behalf of ICAO and on the appropriateness of the event where the presentation will be delivered.

2.2 Summary of Task Group 3 (TG3) – Operational Measures: WP/2, WP/8, WP/10, WP/13, WP/34, WP/37 and IP/10, IP/19 and IP/21

2.2.1 The meeting was informed that TG3 is in the process of reviewing the effects on noise and emissions for Noise Abatement Departure Procedures (NADPs) with respect to the revised guidance in PANS OPS, Part V, Chapter 3. The meeting endorsed a draft version of a Circular on Noise Abatement Departure Procedures (NADP) noise and emissions effects based on datasets supplied by ICCAIA as presented in WP/13. The meeting was informed that additional datasets will be incorporated in a final draft version to be completed by September 2006.

2.2.2 The meeting was informed that TG3 has also been undertaking the review of the practices and the outcome of research and development with regard to noise abatement operational procedures with a view to assessing the effect on noise and emissions. The meeting was informed that a draft report, contained in WP/34, has been prepared on the basis of a survey conducted by the group. The final version of the report will be available by September 2006. The Steering Group endorsed the outline of the report to CAEP on NAP/R&D and implementation activities. It also noted that it might take the form of a circular in the future. On the issue of benefits accrued from the use of CDAs, one member highlighted that having

noise corridors was not necessarily a benefit and that, in his State, experience demonstrated the contrary effect. He offered to provide the group with the necessary data related to this issue.

2.2.3 The meeting agreed that TG3 should follow up, coordinate with and monitor the activities regarding guidance material developed by ICAO bodies (in particular OPSP and OCP) regarding noise abatement operational procedures. It also supported the suggestion that the TG3 rapporteur, Mr. Van Boven become the OPSP and OCP liaison representative in order to facilitate coordination of relevant items and also encouraged that he share information on the CAEP TG3 activities with these groups.

2.2.4 The meeting reviewed the report prepared by TG3 with respect to the assessment of noise and emissions reduction accrued from the use of CDA. The meeting recognized the difficulties in assessing CDA benefits due to the problems from lack of harmonized definition, etc and noted the proliferation of local CDA rules. It was stressed that CDA was a valuable environmental technique, as well as ICAO's role with regard to harmonization of CDA guidance. The meeting also noted that a global definition for CDA is required and that the relevant ICAO groups with the cooperation of WG2 should address it further. Development of a CDA definition should not only explore what is possible today but what might be possible with advances in technology.

2.2.5 The meeting agreed that TG2 and TG4 continue the work on developing assessment and interdependency methodologies that can account for operational modules such as CDA and requested WG2 to revisit CDA assessment once sufficient progress has been made in the above operational and assessment items. Regarding the structure of TG3, the meeting acknowledged the need for further support from the members and observers to enable the completion of the work, and requested, in light of the departure of Jim Brooks, that IATA provide a nomination for TG3 co-rapporteur, as soon as possible.

OBO activities

2.2.6 In relation to the activities of the OBO group, the meeting noted that information on the activities in relation to ALLPIRG/5 were already covered in WP/2 by the Secretary.

2.2.7 The meeting was informed that an "Operational Opportunities to Minimize Fuel Use and Reduce Emissions Workshop" will be jointly hosted by Transport Canada and ICAO/CAEP at ICAO Headquarters from 20 to 21 September 2006. It was noted that the workshop is open to all Contracting States and observer organizations of ICAO and that the goal of the workshop is to highlight information on fuel and emissions reductions contained in Circular 303 and to share experiences and successful programmes that have contributed to emissions reductions. A tentative programme of the workshop was provided in IP/21.

2.2.8 The meeting was informed of the activities on voluntary measures. The Focal Point in Voluntary Measures (FPVM) has begun collecting information on voluntary activities through the CAEP Secretariat with the aim of preparing a report of such initiatives that could be disseminated to States and the aviation community.

2.2.9 The voluntary measures questionnaire was distributed to CAEP on 23 May 2006. WP/37 contains an initial compilation of the answers received. The meeting welcomed

the initiative and agreed that this activity should be further discussed not only in relation to the States activities in this area but also expanded to cover the action taken by airlines, airports etc.

2.2.10 The meeting noted with interest the possibility of having a "living table" on the ICAO website with information on the measures to reduce emissions from aviation undertaken by different States and organizations. The meeting requested the Secretariat to send, as soon as possible, a State letter with the questionnaires requesting information on voluntary measures, expanding the scope of the study that at present was limited to the participants in CAEP and measures using the ICAO template.

2.2.11 The meeting noted the information on the US Voluntary Airport Low Emissions (VALE) Program contained in IP/10, and the role of the VALE Program in shaping the US strategy for tackling aviation's environmental impacts.

2.3 Summary Task Group 2 (TG2) – modelling and assessment WP/4, WP/14, WP/15, WP/26, WP/27, WP/29, WP/30 and IP/6, IP/7, and IP/12

2.3.1 The meeting was informed that WG2/TG2 has made substantial progress in several key area regarding modelling and assessment, such as the update of Circular 205 material, activities related to model evaluation, the goals assessment and databases.

Goals assessment

2.3.2 The meeting was presented with the work undertaken by WG2 in cooperation with other CAEP working groups. For the noise assessment, the Steering Group agreed to use the MAGENTA model (AEDT/MAGENTA). In support of the initial CAEP/7 goals assessment, AEDT/MAGENTA will be used to compute global noise exposure for the baseline years of 2000, 2001, 2002, 2003, 2004 and 2005. The 2000 and 2001 results will be based on the 1998 baseline and input data used for CAEP/5. The 2002, 2003, and 2004 results will be based on the 2002 baseline and input data used for CAEP/6. The 2005 results will be based on a Doc.29 compliant version of AEDT/MAGENTA, a new 2005 IOAG schedule, and the recently updated Campbell-Hill (CH) Fleet and Best Practices (BP) databases, which are expected to be ready for use in June 2006. In addition, AEDT/MAGENTA will be used to predict global noise exposure for the forecast years of 2010, 2015, 2020 and 2025, using the updated CH and BP databases and the fleet and operations module (FOM) originally developed for MAGENTA, and now integrated into AEDT. Note that the 2010 and 2020 forecast years were selected to maintain consistency with previous CAEP/5 and CAEP/6 goals assessments for noise and 2015 and 2025 were added for consistency with the Long Term Technology Goals (LTTG) work currently ongoing in WG3. For 2005 a sensitivity test will be conducted to quantify the changes associated with Doc. 29 compliant MAGENTA.

2.3.3 The AEDT/MAGENTA results will be presented in terms of population exposed to the 65, 60 and 55 dB DNL sound levels. Aggregate global population exposure data will be presented, as well as results by ICAO region. For consistency and comparability, the CAEP/7 results will be presented in a similar graphic and tabular format to the one used in the CAEP/5 assessment.

2.3.4 The meeting noted that for various reasons, previous MAGENTA results excluded Commonwealth of Independent State (CIS) Airports. For the 2000 through 2004 results presented to CAEP/7, this will remain the case. However, for the new 2005 AEDT/MAGENTA results, the former CIS Airports will be included. For 2005, results will be presented both with and without the CIS Airports so more appropriate comparisons can be made to the 2000 through 2004 information. This will allow for more appropriate comparisons with the local air quality and greenhouse gas results, since they have traditionally been reported for all airports represented in the IOAG, including CIS Airports.

2.3.5 Expanding the emissions goals assessments, the meeting noted that, due to the limited time available to proceed with the evaluation of all possible models, as an interim measure, CAEP existing models offered by CAEP Member States will be used to provide the information required for assessment of progress towards the two emissions goals for CAEP/7. For the GHG Goal, information will be available from four such models, namely AEDT/SAGE, AERO2k, AEM and FAST (WP/14 and WP/15 refer), which are currently under evaluation.

2.3.6 Since the greenhouse gas tools compute emissions and fuel burn from an aircraft operating gate-to-gate (including taxi in/out), in addition to the information for the en-route portion of flight, they effectively provide aircraft-related local air quality information. Consequently, it was agreed that for the purposes of this initial analysis supporting CAEP/7, AEDT/SAGE, AERO2K, AEM and FAST will be used and the results will be presented by flight regime, ie above and below 3,000 feet so as to preserve the output of interest for local air quality.

2.3.7 Since the greenhouse gas modeling systems are slightly different from local air quality in terms of scope/capability, the meeting noted that the results presented will be slightly different, as shown in Table 1 below. In terms of temporal scope, AEDT/SAGE will present global fuel burn and emissions for the baseline years of 2000, 2001, 2002, 2003, 2004 and 2005. In addition, AEDT/SAGE will be used to predict global fuel burn and emissions for the forecast years of 2010, 2015, 2020 and 2025, using the AEDT FOM and the existing FESG fleet and traffic forecasts. AERO2K will present similar data for a baseline year of 2002, plus the same forecast years of 2010, 2015, 2020 and 2025, again using the FESG forecast and a methodology consistent with that of the AEDT FOM. AEM will present similar data for baseline years 2002, 2003, 2004 and 2005 along with the same forecast years. Likewise, FAST will present global fuel burn and emissions for baseline years 2000 and 2005 plus the same forecast years.

Table 1. CAEP/7 Local Air Quality and Greenhouse Gas Environmental Goals Analyses

Year of Study	**Study Type**	**Model Notes for Quantifying Fuelburn, Emissions and Fuel Burn Efficiency**
2000	Baseline	AEDT/SAGE FAST
2001	Baseline	AEDT/SAGE
2002	Baseline	AEDT/SAGE AERO2K

		AEM
2003	Baseline	AEDT/SAGE AEM
2004	Baseline	AEDT/SAGE AEM
2005	Baseline	AEDT/SAGE AEM FAST (but from 2000 prediction via FESG data)
2010, 2015, 2020, 2025	Future	AEDT/SAGE using FOM, and FESG fleet & traffic forecast AERO2K using methodology similar to AEDT/FOM, and FESG fleet & traffic forecast AEM using methodology consistent with AEDT/FOM, and FESG fleet & traffic forecast FAST using methodology similar to AEDT/FOM, and FESG fleet & traffic forecast

2.3.8 Regarding the methodology to be used to generate the future fleet for the purpose of computing local air quality and greenhouse gases, the meeting agreed that it would not be possible to use simple "rules of thumb" for taking into account technology advances in time to conduct assessments for CAEP/7 and prefer to be consistent with the future fleet methodology utilized in the noise domain, acknowledge that this undersells what aviation is expected to be able to achieve. For CAEP/8 and beyond, WG2 will work with WG1 and WG3 to see if a more robust approach could be developed for considering future technological advances.

2.3.9 The meeting also agreed that all models will present global aggregate fuel burn and emissions as well as fuel burn and emissions by ICAO region. In addition, fuel burn efficiency will be presented in terms of total fuel burn per unit length travelled (kg/nmi). The meeting endorsed the format shown in Table 2 of WP/14 for presenting the fuel burn and fuel burn efficiency results.

2.3.10 The meeting expressed concerns with the lack of experience with the assessment of emissions goals but agreed that the proposal put forward by TG2 for the assessment is the best approach possible for the time being, and that the necessary caveats would need to be incorporated in the report to reflect the assumptions and limitations of this first exercise.

2.3.11 It was clarified that the request of the last Assembly was in terms of assessing the evolution of the emissions climate, and that for this purpose the use of "trends" to demonstrate such evolution would be a consistent approach. It was agreed that TG2 should attempt to provide a sensitivity test to examine the effect of fuel and emissions technology improvements relative to the base case. This sensitivity case would be reported to CAEP/7.

2.3.12 There was general agreement that the report should put the assessment in context as much as possible by expressing its results in terms of appropriate metrics or performance indicators and the meeting was requested to provide suggestions in this area to TG2. However, on the proposal for comparing aviation results with other transport modes, the meeting noted that this might be difficult to do due to limits in time and data.

2.3.13 In summary, the meeting agreed to use "trends" to demonstrate the evolution of noise and emissions, to clearly state in the report the limitations and preliminary nature of these emissions assessments to put the results in context, to the extent possible and also to identify the issues that need further improvement. The report shall convey the message that more information will be possible as these tools and methods are improved.

2.3.14 Regarding the issue of inclusion of HC and CO emissions in the goals assessment, the meeting agreed on the importance of expanding the scope of the goals assessment that will be delivered to CAEP/7 to include HC and CO emissions in addition to NOx emissions, while noting that the forecast for these emissions are more uncertain. One member, while agreeing with the proposal, expressed the view that the responsibility of these gases as regards pollution seems to be lower than that of NOx and the particulates.

2.3.15 WP/26 addressed two other suggestions for future work that were welcomed by the meeting, namely the definition of the term "impacts" in the context of CAEP goals assessment and the need for further exploring metrics and defining the intent of methodologies, in consultation with the RFPs, that might be considered for assessing aircraft emissions beyond that which is entailed with assessing inventories. These two items and the schedule for their consideration would be subject to further considerations under agenda item 10 – future work.

Databases

2.3.16 The meeting noted that the various databases, ie; global airports, global movements, global fleets are an important feature for the models. ICAO had solicited radar data from selected States to further enhance the global movements database in use by CAEP. The request was issued to countries not covered by the FAA's Enhanced Traffic Management System (ETM) or EUROCONTROL's Enhanced Tactical Flow Management System (ETMS). It was noted that substantial progress has been made with respect to the supporting databases and the meeting agreed on the approach presented in WP/29 for finalizing the databases and encouraged States to provide additional radar data. It was noted that work would continue into the early part of CAEP/8.

2.3.17 In relation to the distribution and access to the information in the databases, the meeting was informed that some of these databases, such as the CH database are subject to commercial agreements and participants in CAEP can only access them through IATA for use in the work of CAEP. In response to questions raised, the meeting was informed that the databases will be available for CAEP purposes to all CAEP participants.

2.3.18 The meeting was presented with information on ICAO database initiatives (WP/4). It noted the work being carried out by the CAST/CICTT group to develop common "target" taxonomies and definitions for phase of flight, occurrence categories and aircraft description, and the latest developments in this area. It agreed with the importance of using the database standards developed by ICAO in the development of the CAEP databases.

2.3.19 The meeting noted other databases currently available in ICAO and the current ICAO activities regarding the harmonisation of aviation-related databases.

2.3.20 The meeting welcomed the offer by the ICAO Secretariat to provide a presentation on ICAO databases at the next meeting of WG2/TG2 as it will offer an opportunity for better information on ICAO's work in this issue and will allow for enhancement of cooperation in this area. CAEP working groups were requested to further explore the possibility of using the database standards developed by ICAO in databases under their respective responsibilities.

Model evaluation

2.3.21 With regard to model evaluation activity, the meeting noted that States and international organizations has been invited to provide input (CAEP Memorandum/63) on noise, local air quality and greenhouse gas models for evaluation by TG2 for possible use under the CAEP/8 work programme. The meeting noted that they have also been requested to provide input (CAEP memorandum/65) on economic models to be evaluated for possible use under the CAEP/8 work programme.

2.3.22 The meeting approved the model evaluation framework contained in WP/15 and recognized that additional work was required. The Steering Group supported the preliminary evaluation that multiple models will be acceptable for use on the emissions assessments under the CAEP/8 work programme. While the use of multiple models provided the ability to cross-check the information it was noted that running multiple models on a tight schedule might be challenging as the time needed to assess the reasons for any differences in the results might not be sufficient.

2.3.23 The meeting agreed that in general, there were more advantages in pursuing the use of multiple models and that the most important issue was the correct assessment and interpretation of the results. It was noted by the meeting that since multiple models will be presented, it is critical that the Steering Group clearly defines the specific analyses that are expected to be undertaken as part of the CAEP/8 work programme.

2.3.24 Regarding the noise assessment, the meeting considered the use of AEDT/MAGENTA as the tool to be used for assessments. It was agreed that due to its characteristics and potential to respond to the CAEP needs and that it was already vetted and approved by CAEP, it should, in principle, be adopted as the CAEP noise assessment tool during CAEP/8 subject to completion of the model evaluation task. An observer voiced concern that, where needed to support CAEP work, the data used in MAGENTA should be available, subject to appropriate arrangements to safeguard confidentiality. It was noted that proprietary agreements represented an obstacle in this respect. Approaches to those organizations holding data subject to these agreements would be required. ACI agreed to a request from the Chairman to assist. The meeting was reassured that the same degree of transparency used in the process during previous rounds of CAEP analysis will be maintained in the future.

2.3.25 Regarding the economic assessment of economic models, FESG agreed to take up the validation not before October 2006, while the TG2/FESG Ad Hoc group continues to evaluate the economic models.

Coordination issues

2.3.26 Regarding the coordination issues and possible changes in the CAEP structure (WP/27), the meeting noted the need to consider how best the coordination between the forecasting (FESG) and modelling (TG2) activities will be undertaken and agreed that the rapporteurs of WG2 and FESG, in coordination with the rapporteurs of WG1 and WG3 and in light of the future work programme for the CAEP, present a proposal for the consideration at CAEP/7 on how best to coordinate these activities.

Other modelling initiatives

2.3.27 The meeting noted the information in IP/6 and IP/7 on a variety of tools currently being developed in the US that will allow for thorough assessment of the environmental effects of aviation. The main goal of these tools is to develop capability to access interdependencies between evaluation-related noise, emissions and cost evaluation.

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ANCAT/69-IP/3
English only
Appendix

CAEP-SG/20063-SD/3
28/06/06

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

STEERING GROUP MEETING

Queensland, 26 to 30 June 2006

SUMMARY OF DISCUSSIONS AND DECISIONS OF THE THIRD MEETING OF THE STEERING GROUP

Wednesday, 28 June 2006

1. **AGENDA ITEM 5: OPERATIONS (WG2): WP/8 (Cont'd)**

1.1 **Summary Task Group 2 (TG2) – Modelling and Assessment: WP/4, WP/14, WP/15, WP/26, WP/27, WP/29, WP/30; and IP/6, IP/7, and IP/12**

Sample problem

1.1.1 The meeting noted that TG2 had been given the task to evaluate the use of candidate models for use in CAEP. With model evaluations progressing, and substantial progress achieved towards developing a common database, TG2 decided to initiate a process in order to better understand models to conduct interdependency assessments and agreed on the framework for a sample model problem.

1.1.2 The sample problem selected regards reduced thrust take-off as compared to using the industry-wide modelling standard of assuming full power take-off. The meeting agreed that noise, NOx and fuel burn be examined as part of this sample problem.

1.1.3 An observer noted the questionable value in the fuel burn results by limiting the analysis to 10,000 ft and it was agreed that further consideration should be given to the appropriateness of expanding the scope of the analyses to higher flight levels.

1.1.4 The meeting noted that not all CAEP candidate models were participating in the sample study. The meeting encouraged the modellers to participate in this effort as it helped to understand how the models work, adding transparency to the process and identifying

difficulties in their modelling system, i.e. databases and modules could help demonstrate and test their basic modelling capabilities. However, the meeting noted that this exercise was not intended to be a qualification test. One member noted that if modellers are unable to participate in this exercise due to resource constraints, this would bring into question whether they are able to participate in the assessment.

1.1.5 One member expressed the view that this was a valuable and beneficial step in the process, but it was not supposed, as a process, to vet a model, since without clearly knowing what kind of assessments the models will be required to perform it would be difficult to know the real value of this sample problem.

1.1.6 The meeting noted that the sample problem has been presented and agreed to by WG2/TG2 and FESG coordination group as a viable precursor to the assessment of interdependencies and an acceptable sample problem demonstration for the purpose of identifying possible deficiencies in candidate modelling systems.

1.1.7 The meeting agreed that the sample problem should be undertaken by interested modellers within WG2/TG2 and FESG coordination group with results to be presented preferably at CAEP/7 and that TG2 should address the possibility of adding other sample problems.

Circular 205

1.1.8 The meeting noted that at its 6th meeting, CAEP tasked WG2 with updating the information contained in ICAO Circular 205 on computing noise contours around airports and was informed of the status of this activity.

1.1.9 It endorsed the strategy to update Circular 205, building on the work undertaken by ECAC in updating ECAC Document 29.

1.1.10 It agreed with the WG2 recommendation that the new guidance material be published as an ICAO “Manual” rather than a “Circular”, as it was expected that further updates of the information would be necessary.

1.1.11 While noting that the Secretariat has secured the services of a consultant to support the update of the guidance material, the meeting requested WG2 to expedite its work, deliver the necessary information to the consultant, and ensure that the necessary steps be taken for the completion of the guidance by CAEP/7.

1.1.12 In relation to the recommendation to refer to the Aircraft Noise and Performance (ANP) database in future updates of this guidance material, the meeting agreed to the reference and acknowledged the work of EUROCONTROL in developing this database and encouraged their continued support of the database.

1.1.13 The meeting requested that WG2, the ICAO Secretariat and EUROCONTROL continue to develop a strategy for the ANP database to become an ICAO approved database and report on options for long-term hosting of the database, preferably on the ICAO public website, at CAEP/7.

1.2 Summary of Task Group 4 (TG4) – Airport Air Quality: WP/9

1.2.1 The meeting noted the guidance document framework and draft text for chapters being delivered for CAEP/7 as presented in WP/9 and was made aware of some of its outstanding issues.

1.2.2 The meeting was informed that, regarding "emerging" issues in the aircraft emissions section, that progress towards a solution had been made since the last meeting. In this regard, WG2/TG4 rapporteurs recommended that the body of the document should not contain any material that was not fully agreed and considered mature for inclusion as guidance to States. Also, it agreed that the "emerging" issues would be covered only in the preface of the document, where it will be explained that some potential issues relevant to the guidance are not mature enough to be incorporated at this stage (e.g. aircraft start-up emissions) and are the subject of further investigation by CAEP experts and international organizations, and when mature, they could be incorporated in the document.

1.2.3 The meeting was also informed and welcomed the US member's initiative to provide additional support for the completion of the aircraft emissions inventory chapter.

1.2.4 The meeting noted the cooperation between WG3 and TG4 and the list of items from the aircraft emissions section that require further work. These will be further considered under agenda item 10 – future work.

1.2.5 The meeting agreed to provide inputs to the document structure and to the draft of the guidance by 1 August 2006.

1.2.6 The meeting noted that TG4 has also recognised needs for coordinating its activities with other CAEP Groups (e.g. ECTF, WG2 TGs and FESG) and external scientific bodies (e.g. SAE). Regarding ECTF, the meeting noted that the underlying concern was to ensure the correct linkage between the guidance on charges and the supporting technical information contained in the air quality guidance.

1.2.7 The meeting noted the advice provided by TG4 to FESG regarding the use of aircraft times-in-mode (TIM), and that ICAO's times-in-mode and thrust setting were specified for certification purposes and as such, provided conservative results higher than actual TIM.

1.2.8 As the use of actual data is not practical in many cases and may be difficult to obtain, the use of performance-based data and methods is considered by TG4 as the most adequate solution for TIM input into the CAEP assessments. The times-in-mode and methods used in the MAGENTA analysis and planned assessments (e.g. goals) by TG2 are performance based.

1.2.9 The meeting was informed that prior FESG stringency analysis used the ICAO TIM. The ensuing discussions clarified that for assessments such as air quality and operational measures, for example, the use of the best possible values that reflect the actual operation was important. However, for the purpose of stringency analysis it was more important to ensure that the methodology allowed for the best assessment of the technical design consideration, and that the use of ICAO TIM could permit isolation of these factors from those related to the

operation of the aircraft. It was also noted that it may not be necessary to have the same approach for the use of TIM for all types of assessment.

1.2.10 The meeting agreed that WG2, with the support of FESG, WG1 and WG3, perform sensitivity tests of the ICAO times-in-mode versus performance based data and methods for the purpose of stringency analysis to further clarify this issue. The meeting also agreed that performance based data and methods should be used if available for all other types of CAEP analyses.

1.2.11 With this item, WG2 concluded the presentation of its activities. The meeting acknowledged the substantial work performed by the group and commended, in particular, the dedication of the WG2 rapporteurs and task group rapporteurs. It noted that there was still a great effort necessary for the completion of the tasks, especially the work on the goals assessment in TG2, on R&D Assessment in TG3, completion of the aircraft inventory section from the Local Air Quality Guidance by TG4 and the preparations for the Montreal workshop on aviation operational measures for fuel and emissions reduction. The meeting agreed on the need for States and international organizations to strengthen their participation and contributions in CAEP and to provide the necessary support to WG2.

2. AGENDA ITEM 6: EMISSIONS TECHNICAL ISSUES (WG3): WP/16, WP/17, WP/18, WP/19, WP/20, WP/21, WP/22 and IP/3

2.1 Report of WG/3

2.1.1 The meeting noted that following the CAEP Steering Group Meeting in Montreal (October 2005), WG3 has met twice and its Task Groups have met three times in continuation of its work programme. The rapporteur provided a review of the activities of the group, by adding the status of the various work items.

2.2 AEMTG Progress - Validation of the cruise-climb methodology for NOx (WP/18)

Correlation between LTO NOx and cruise/climb NOx

2.2.1 The Task of WG3 was to quantify, to the extent possible, the consequences of relying purely on the LTO engine NOx emission certification for control of NOx emissions. The meeting received a presentation from an ICCAIA representative, on behalf of the WG3, on the study performed to evaluate the correlation between NOx emissions in LTO cycle and cruise/climb.

2.2.2 Based on the data presented in WP/18 and the work performed earlier on the Weighted NOx Concept (WNC), the meeting considered the conclusions and endorsed three of them as reproduced below:

> Altitude NOx emissions for current engines are controlled by LTO NOx emission certification.

Altitude average EINOx are correlated with average LTO EINOx within about +/-15%. The use of more sophisticated methods, may offer some reduction in data scatter (the WNC was aiming at +/-10%, but it is based on an extremely complex process).

Future engines potential new technologies, e.g. staged combustion, might behave in a different manner. This has not been verified so far, because the existing DAC engines are very difficult to model (the WNC was facing the same issue).

Due to strong correlation for existing engines, a potential additional altitude standard bears the strong risk of setting a conflicting double standard for the manufacturer.

2.2.3 The meeting was satisfied with the evidence that correlation between LTO NOx and cruise/climb NOx does exist for today's engine technologies and did not see a reason for continuing to study this item. It agreed that if a new aircraft/engine combination is identified, WG3 shall consult with the Steering Group for the inclusion of an item in its work programme to undertake this specific new assessment. One member expressed the view that work in this area will be necessary. WG3 should therefore be suitably prepared.

2.2.4 The meeting was updated on other tasks under development by AEMTG such as the appropriate characterisation of particulates and their contribution to local air quality and global climate. The meeting noted that the work has focussed on the understanding of ongoing developments, on the consideration of the right metrics to be used, and the development of a "First Order Approximation"(FOA) as an interim method for estimation of particulate emissions from aircraft engines for environmental assessment purposes. WG3 has been cooperating with SAE-E31 on the development of recommended practices for sampling and measurement of particulates. A report is being prepared on this subject, with the inputs from the scientific focal points for presentation in CAEP/7, but the meeting noted that much work still needs to be done, and will consider it under agenda item 10 – future work.

2.2.5 The meeting noted that AEMTG has also been working on the provision of guidance on assessing and quantifying aircraft source emissions, considering modern operational practices in support of WG2/TG4. This ongoing work involves the identification of available data sources for characterizing emissions for various operations, including reduced take-off thrust, reverse thrust, less than all engine taxi, APUs, particulate matter emissions and engine start-up. The meeting was informed that some information has been made available to WG2 and several issues were still being worked on. WG3 agreed to consider further work required from WG3 by WG2/TG4 during agenda item 10 – future work.

2.2.6 Regarding the publication of the material on the use of LTO emission certification data for estimation of emissions under operational conditions, the meeting agreed that this material be included in the Local Air Quality Guidance, instead of being a stand alone publication, and noted that further work on some items was expected after CAEP/7.

2.3 CTG Activities

2.3.1 The meeting noted the work in preparation for the consideration of a more stringent LTO emission standard for CAEP/8 and approved the definition of "Technological

Feasibility" as included below, taking account of the specific linkage that has been established between the goal and standard setting process.

"In the context of technology for improved emissions environmental performance to be used as part of the basis for ICAO certification standard setting, technological feasibility refers to any technology demonstrated to be safe and airworthy proven to TRL8, and available for application in the short term over a sufficient range of newly certificated aircraft. Technologies demonstrated up to and including TRL7 are appropriate for consideration in medium and long-term goal-setting and review process".

2.3.2 The meeting noted that CTG has also been active in developing the appropriate databases that would be needed in any consideration of further stringency measure (e.g. the Linking Database), and on the work on standards for SST aircraft emissions. The meeting noted the work on the modernisation of current emissions certification methods and the proposed changes in Annex 16 Volume II, as contained in WP/19, and agreed that they be sent to CAEP/7 for approval. In summary, they address:

1) amendments to current gaseous emissions corrections to reference day conditions;

2) amendments to current fuel specification requirements for naphthalene and aromatic content;

3) clarification of thrust condition to be used to define Foo;

4) amendment to permit use of appropriate alternate sample probe materials in addition to stainless steel;

5) improvements in sampling and measuring equipment, e.g. optical smoke meter;

6) clarification to the certification criteria applicable to modification of currently certified engines; and

7) clarifications to the definition of the term "mixing probe" used in Annex 16.

2.3.3 The meeting noted the progress of the work on measuring and sampling and that this is an ongoing activity to feed into the modernization and ETM activities.

2.3.4 Regarding the development of an Environmental Technical Manual (ETM) on aircraft engine emissions certification, the meeting noted the draft of the manual as contained in WP/20, and agreed with the submission of the current proposals to CAEP/7 for approval and publication, while acknowledging that the ETM might be further developed to include additional items up to CAEP/7.

2.3.5 The meeting noted that the ICAO emissions databank continues to be maintained and supported by the United Kingdom CAA.

2.4 **LTTG activities**

2.4.1 The meeting was informed on the developments on the LTTG Technology Review. The Review report, being prepared by the team of impartial experts (IEs), is still in draft form and when complete, it will record their recommendation for 10 and 20 year NOx technology goals. The meeting noted that the final version will be made available to WG3 in August and more widely after the WG3 meeting in 2006.

2.4.2 The meeting noted that the LTTG Technology Review has been performed successfully and that the Review process has worked well to date. Any goals defined as a result of this Review will be reported to CAEP/7. It was agreed that the IE Chair be invited to undertake this presentation and prepare a tutorial. Members were encouraged to advise on specific issues to be covered by this tutorial. One member expressed the wish that the report to be presented to CAEP/7 would provide some preliminary information on the interdependencies between NOx and fuel consumption.

2.4.3 The meeting also noted the suggestions for future work in this area, and agreed to consider it in agenda item 10 – future work (subject that the recommended goals are accepted by CAEP/7).

2.5 **Research**

2.5.1 The meeting was informed that the Science Focal Points and the LAQ Research Focal Point have continued to provide high quality scientific input to WG3 and that an update of the science review paper along the same lines as the one presented at CAEP/6 was expected by CAEP/7.

2.6 **United Nation bodies support**

2.6.1 The meeting noted the WG3 contributions to the work of the IPCC on the update of the 1996 IPCC/NGGIP and in particular in providing updated emissions factors for aircraft. The guidance is now accepted by the IPCC and will be considered for approval in SB25, in November 2006 (SD-1 refers).

2.7 **Interdependencies**

2.7.1 The Technology Interdependencies Group (TIG), under the responsibility of both WG1 and WG3 rapporteurs has worked in three main areas:

1) linking between the ICAO noise and emissions certification databases;

2) developing a common approach for assessing the impact on noise, NOx and CO_2 of technological responses to future policy options; coordinating with FESG on the cost functions and with WG2 in development of models;

3) review of the Campbell-Hill (CH) airline fleet Database (year end 2004).

2.7.2 Details of the work were presented to the Steering Group (WP/21 and IP/3 refers). The meeting:

— noted the terms of reference and membership for the WG1-WG3 TIG;

— noted the work being coordinated by the WG1-WG3 TIG on linking the certification databases and assessing technological responses to stringency options;

— approved the terms of reference regarding the assessment of technological responses to stringency options as follows – "evaluate the Environmental Design Space concept, the Technology Evaluator and other candidate systems as potential tools to assess technological responses and identify technology trade-offs. Provide the necessary inputs to WG2 and FESG to integrate technology responses and trade-offs into the CAEP benefit-cost modelling";

— noted the WG1 approval of noise data within the CH Database (year end 2004) for use by WG2/TG2 in performing the CAEP/7 noise goals assessment; and

— approved the continued review of emissions data and certified weights within CH in order to determine whether any changes are needed, and for any identified improvements to be ready for CAEP/8.

2.7.3 The meeting noted that the guidance on the policy option to be addressed in CAEP/8 would only be possible once the work programme was agreed, and that items related to future work needed to be discussed under agenda item 10 – future work.

2.7.4 One member expressed the view that a road map on the work expected for the interdependencies task was necessary for the better understanding of the process and how this framework was going to develop.

2.7.5 The meeting was informed that the TIG had fulfilled the request from the last Steering Group meeting and presented an improved Interdependencies Framework (IP/3) which showed market-based options more clearly. However, the last Steering Group meeting also suggested that a chart in the same spirit as the CAEP Interdependencies Framework, showing the flow of the database work to feed the modelling activities, should be developed to help in understanding clearly the process (IP/1; SD-3 para 4.17 refer). This was still pending and should be provided for consideration at CAEP/7.

2.7.6 The meeting noted the information on IP/5 regarding the development of the Environmental Design Space (EDS) and the role of TIG in evaluating EDS and of the technology response assessment concepts.

2.8 Supersonic goals and timelines

2.8.1 The meeting considered the development of the work on SSTs. The meeting noted the framework proposed for noise and emissions related with the developments of standards for future SSTs and considered that it was premature to decide on a timeline. It was noted that SST operation over land was prohibited in some States and that, in others, a specific impact assessment approval was requested before any operations could take place.

2.8.2 The meeting was informed that it was estimated that some of these new airplanes currently under consideration could be flying by 2010. It was suggested that in addition to the work already on course, the Secretariat should interact with the Montreal Protocol on possible issues regarding stratosphere ozone.

2.8.3 The meeting agreed that much work was still required. It agreed with the proposed changes in the roles and responsibilities matrix as proposed in Appendix A of WP/42, and while noting the difficulties associated with establishing schedules for supersonic airplanes, agreed with some flexibility in the terms of reference to be formulated at CAEP/7 for development of such standards.

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CAEP-SG/20063-SD/4
29/6/06

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

STEERING GROUP MEETING

Queensland, 26 to 30 June 2006

SUMMARY OF DISCUSSIONS AND DECISIONS OF THE FOURTH MEETING OF THE STEERING GROUP

Thursday, 29 June 2006

1. APPROVAL OF SUMMARY OF DISCUSSIONS AND DECISIONS

1.1 The meeting approved the summary of discussions and decisions of the second and third meetings.

2. AGENDA ITEM 7: EMISSION CHARGES WP/23, WP/33; and IP/1

Background

2.1 The Steering Group was informed that, following a direction from the ICAO 35th Assembly and discussions in the ICAO Council, a new task force - ECTF was established in October 2005 with the remit of developing guidance for Contracting States on emissions charges related to local air quality (LAQ). The remit stipulated that the ECTF should take account of past experience from States and the guidance developed by ICAO for noise charges, take inspiration from the concept of the balanced approach for noise, and also take account of the CAEP Action Plan on Aircraft Engine Emissions.

2.2 The meeting noted that ECTF has developed draft guidance on emissions charges related to LAQ which covers topics ranging from “ICAO Policies on Aircraft Charges Related to LAQ”, “The Process for Implementing Local Emissions Charges”, to the “Administration of Emission Charges”.

2.3 In the process of developing this guidance, the ECTF has identified two issues that need to be drawn to the Steering Group's specific attention:

1) the scope of the guidance: to address levies only or to put emissions levies in context with other types of emissions management measures (such as operating procedures, land-use etc); and

2) the potential approach to the publication format of the ECTF guidance.

2.4 Regarding the first point, IATA presented the view (WP/33) that guidance on how local emissions charges relate to other emissions measures would be of value. It highlighted that as the draft guidance covers only levies but does not address other types of emissions measures that might affect local air quality from aviation, it assumes that a State will already have undertaken analysis of various potential measures, having chosen to proceed with a local emissions charge on aircraft before the point that the ICAO guidance begins. IATA believed that there would be value in putting local aviation levies in context with other measures and would like to see the scope of the guidance broadened to include this aspect.

2.5 The meeting noted that ICAO produced SARPs and guidance material in all three main emissions areas, namely: reduction at source, operational measures and market-based measures to reduce emissions, and that CAEP, during the activities leading to CAEP/7, is also producing deliverables in all these areas. IATA acknowledged this, but noted that there could be benefit to further guidance on how to compare and mix various types of emissions measures. Several meeting participants supported this in concept. Several other members considered that ICAO guidance on charges as proposed would put emissions charges in a wider context.

2.6 In the ensuing discussions it was noted that the Assembly, referring to local air quality charges, requested two actions from the Council (and CAEP): to undertake a study on the effectiveness of, and to develop guidance on, emissions levies by the next Assembly. Some members were of the opinion that unless it was concluded that LAQ charges are an effective measure, the guidance was not a helpful insight from CAEP.

2.7 Another opinion expressed was that the issue at stake was a local problem (local air quality) and that one should not globalize the outcome of the cost-effectiveness study. Different airports would need to address their local air quality differently and as a consequence these measures could be cost-effective in some cases but would not in others.

2.8 It was noted that both the cost-effectiveness study of the existing LAQ charges and the guidance should be considered at the next CAEP meeting and that efforts should be dedicated to accomplish both tasks, as they were a request from the Assembly.

2.9 The meeting, after substantial discussion, agreed that ECTF should continue to develop the guidance according to its working assumption; the members and observers should provide their comments back to ECTF before 1 August 2006 (with copy to all CAEP).

2.10 Regarding the possible future work on guidance having a much broader scope, including other measures to manage LAQ, it was agreed that this should be addressed under agenda item 10 – future work items.

2.11 On the second point raised by the rapporteur regarding the guidance publication format, the meeting requested ECTF to further explore, with the ICAO Secretariat, the various possibilities and report back to CAEP/7. One member expressed his preference that it be a stand alone document with key points of the guidance included in document 9082 - ICAO Policies on Charges for Airports and Air Navigation Services.

2.12 The ECTF rapporteur stated to the meeting the need for ensuring sufficient resources are allocated to WG2/TG4 for the timely completion of the aircraft section of its air quality guidance document. Without this resource assurance, as noted by the ECTF rapporteur, the ECTF CAEP/7 deliverable would not be submitted by the prescribed date of October 1.

3. AGENDA ITEM 8: EMISSION TRADING
WP/18, WP/24, WP/39, WP/41; and IP/14, P/17

3.1 The meeting noted that the ETTF's mandate included two primary deliverables:

i. To provide guidance for use by Contracting States, as appropriate, and to incorporate emissions from international aviation into Contracting States' emissions trading schemes consistent with the UNFCCC process (*"integrated trading"*); and

ii. To support the development of a voluntary open emissions trading system that interested Contracting States and international organizations might propose (*"voluntary trading"*).

In addition, ETTF intended to disseminate general information on aviation and emissions trading issues through the ICAO website as appropriate.

Guidance on integration trading

3.2 The meeting noted that ETTF identified a range of emissions trading issues with specific relevance for aviation and it was observed that ICAO might be able to provide guidance and add value to the existing body of knowledge and developed guidance material drawing on the expertise from a wide range of aviation, climate change and emissions trading experts from various parts of the world. At its last meeting, ETTF undertook an initial discussion of the full document but, due to time constraints, was unable to carry out a complete and in-depth revision of all chapters. The meeting also noted that, in particular, chapters 2.2 (emissions sources), 2.3 (emissions species) and the glossary were not discussed comprehensively.

3.3 The meeting was informed that a major outstanding point in the guidance document is the geographical scope of emissions trading for aviation. Strongly diverging views exist among ETTF participants as to the degree of freedom States have in applying trading rules to foreign aircraft operators. The differences extend beyond legal issues and include political issues as well. For this reason, ETTF has not provided draft guidance under geographical scope, has removed from the text any description of the diverging views and has

bracketed disputed text. The meeting noted that, nevertheless, diverging views on geographical scope did not hold back development of other parts of the guidance.

3.4 The meeting noted that the current draft version of the guidance, as presented to the CAEP Steering Group in IP/18 is clearly a work in progress and more work needs to be done before CAEP/7 and before the guidance is ready for adoption by ICAO. It was also noted that, given the limited practical experience that currently exists in emissions trading, it is recognized that this guidance may need to be revised as the world of emissions trading and aviation develops over time.

3.5 The rapporteur explained to the meeting the various guidance elements contained in the guidance as listed below, and their current development status:

1) accountable entities/emissions sources;

2) emission species;

3) international and domestic emissions;

4) geographical scope;

5) trading units (allowance);

6) base year, base line and targets;

7) allowance distribution (bench marking);

8) changes in operation (including new elements);

9) monitoring, reporting, restrictions and enforcement.

3.6 The meeting was informed that the ET guidance should be considered a living document and that the guidance needed to go through a thorough revision for accuracy and consistency. The meeting was asked to provide advice on “geographic scope” and to endorse the basic outline and content of the draft guidance.

3.7 On the issue of geographic scoping, the meeting was presented with the views of the EC and the European CAEP members (WP/39) and with the views of the CAEP members from Australia, Brazil, Japan and United States (WP/41). Canada, Egypt, and Singapore also voiced support to WP/41.

3.8 In addition, the EC presented information to the meeting, about developments in Europe in this subject, as reflected below:

“In December 2005 the European Council of Ministers adopted conclusions that were largely supportive of the approach set out in the European Commissions Communication. “Reducing the Climate Change Impact of Aviation”, which was adopted in September 2005. The report of an Aviation Working Group (AWG) which discussed the pros and cons of different design options for including aviation in the ETS was published in late April 2006.”

Looking ahead, the EC observer reported that:

- the European Parliament was expected to adopt its response to the Communication in July;

- the report of a review of initial experience of the operation of the EU emissions trading for other non-aviation sectors was expected during the summer; and

- further technical and legal analysis with regard to ETS for aviation, promised in the Communication and during the AWG is in progress and should conclude towards the end of the year.

3.9 The Commission is aiming to table a legislative proposal, together with an associated impact analysis, by the end of 2006 and would consider the concerns of Steering Group members and observers and invited them to communicate these and any suggestions, if possible, by the end of July. The Commission would continue to keep both the Steering Group and ETTF informed of developments. In light of these ongoing developments the EC observer informed the meeting that it would be premature for the European Commission and European Member States to make a judgement on the proposal in WP/41.

3.10 In response to the EC observer's report, another member raised questions about the basis of the need articulated. He noted in the case of his country's airlines, they consumed less fuel today than in 2000 and the growth of their international emissions since 1990 were at 1/3 the level compared to European airlines. In addition this member noted that given the legislative timeline outlined by the EC observer, the EU has chosen not to await the outcome of the upcoming Assembly discussions on emissions trading.

3.11 IATA expressed that for airlines it would be a very difficult situation not having a clear guidance on the geographic scope. The possibility of having more than one option on geographical scope in the guidance would mean that various approaches could be followed. IATA was of the opinion that there should not be guidance if this issue was not solved and that if this could not be solved in CAEP it should be brought to the ICAO Council.

3.12 The ICAO Secretariat was requested to provide clarifications regarding the role of CAEP and the requests and expectations from the Assembly. After lengthy discussion, during which members and observers expressed their views on the issue of geographical scope and other related clarifications, the meeting agreed that the best course of action was to form a drafting team comprised of representatives from Australia, Brazil, France, US, UK, EC as well as the ETTF rapporteurs and Secretariat to propose a text to be conveyed to the ICAO Council that would describe, in a clear and balanced way, the opinions of the group on this project and to seek its consideration. It was agreed that the proposal from the drafting team would be brought to the group for approval on the last day of the Steering Group meeting.

3.13 It was also agreed that ETTF would continue to work on this item, and on the guidance in general, with a view to present the final guidance for consideration to CAEP/7.

3.14 Some members provided comments on other issues of relevance to the guidance, that ETTF should further consider. These included recognition in the guidance of the difference between the responsibilities in relation to emissions and regarding emission reporting; the potential applicability of the multiplier effects for emissions trading and the potential conflicts with what has been agreed under the UNFCCC in this regard; and the need to characterize some issues more adequately (e.g. text related with military operations, which needs to be consistent with the broader position of ICAO on this topic). The meeting was requested to provide more detailed comments on the guidance back to ETTF as soon as possible.

VETS report

3.15 The meeting was informed that the VETS report, presented in IP/14, aims to provide relevant information to States and organizations that might be interested in using a voluntary open emissions trading system to address aviation emissions.

3.16 It was noted that it describes the general nature of various types of voluntary emissions trading and reports on a number of practical experiences. The UK representative called the attention of the meeting to the measures implemented by central government departments in the UK to offset aviation emissions from their travel as mentioned in proposal 2.6.1 of the guidance. One suggestion for improvement offered by the meeting was to spell out the process outlined in the ETTF draft guidance in this document instead of referring to it repeatedly in the text.

3.17 The meeting, while noticing that the VETS report requires additional work before final approval at CAEP/7, endorsed its basic outline and content and requested that it take the comments provided on board.

Dissemination of general information

3.18 The meeting was informed that in order to keep the text in the draft guidance and VETS report to the extent possible aviation related, concise and to the point, and to help facilitate broader understanding within the ICAO community, ETTF has proposed to present more general information on emissions trading separately and make this available as background material to Contracting States through a web resource hosted on the ICAO website and possibly maintained by the ICAO Environmental Unit.

3.19 The meeting noted the outline of the scope of this web resource and the next steps under consideration by ETTF (described in IP/17) and requested that more information be developed and presented to the CAEP (e.g. the contents, disclaimers, maintenance of the website) before a decision is made.

3.20 The meeting was informed of the possible limitations and difficulties that the ICAO Secretariat could have with this proposal and requested that ETTF in coordination with the ICAO Secretariat, further develop this suggestion and refer it to the consideration of CAEP/7.

4. AGENDA ITEM 9: OTHER ISSUES
IP/8, IP/9, IP/10; and IP/15

4.1 The meeting received an update on research conducted by the PARTNER Center for Excellence. The Center, jointly sponsored by Canada and the United States, seeks to enhance the understanding of aerospace environmental issues and foster breakthrough technical, operational and workforce capabilities enabling a quieter and cleaner aviation sector. The meeting noted the information and PARTNER's efforts to expand its international collaborative research efforts. CAEP members and observers were encouraged to take steps to benefit from the knowledge base this Center is generating and collaborate in its research efforts. The meeting also noted the information on a workshop on the impacts of aviation on climate change undertaken as part of this initiative (IP/15 refers).

4.2 The meeting also received information on a report presented by the Secretary of the US Department of Transportation to the US Congress in February 2006 addressing ways of mitigating aviation's environmental impact. The report proposed a US national vision of net reductions in the significant impacts of aircraft noise and emissions on local communities by the year 2025, notwithstanding anticipated growth in movement of people and goods. The vision says that by that date, uncertainties regarding both the contribution of aviation to climate change and the impacts of aviation particulate matter and hazardous air pollutants will be reduced to levels that enable appropriate action. The meeting was informed that the full report can be downloaded at http://partner.aero.

4.3 The meeting noted with interest the information on the potential use of alternative fuels for aviation as contained in IP/11 and that concerns about rising fuel costs, energy supply security and the environmental effects of aviation are providing a significant stimulus to take a fresh look at the use of alternative fuels for aviation. It noted that the ICAO Council had previously requested information on this subject and that the upcoming workshop on operational opportunities would address. It agreed that this is an item that CAEP could further explore and to further consider it under agenda item 10 – further work.

CAEP-SG/20063-SD/5
30/6/06
FINAL

COMMITTEE ON AVIATION ENVIRONMENTAL PROTECTION (CAEP)

STEERING GROUP MEETING

Queensland, 26 to 30 June 2006

SUMMARY OF DISCUSSIONS AND DECISIONS OF THE FIFTH MEETING OF THE STEERING GROUP

Friday, 30 June 2006

1. APPROVAL OF SUMMARY OF DISCUSSIONS AND DECISIONS

1.1 The meeting approved the summary of discussions and decisions of the fourth meeting.

2. AGENDA ITEM 8: EMISSION TRADING (Cont'd) WP/18, WP/24, WP/39, WP/41; and IP/14, IP/17

2.1 The meeting was informed of the results of the drafting team (comprised of representatives from Australia, Brazil, France, US, UK, EC as well as the ETTF rapporteurs and Secretariat) and considered a proposed text describing the views of the Steering Group on the issue of geographical scope (see Appendix A). The meeting agreed that the text should be conveyed to the ICAO Council at the earliest opportunity.

3. ITEM 10: FUTURE WORK WP/25, WP/35, WP/36; and IP/1, IP/22

3.1 The Secretary of CAEP provided the group with a presentation on a preliminary study regarding attendance at CAEP-related meetings. This study would help evaluate States and international organizations' participation in the work of CAEP and identify areas where improvement is needed. Rapporteurs of the various groups were invited to cooperate with the study. The final study is planned to be ready by CAEP/7.

3.2 The meeting was informed that the CAEP Secretary requested the rapporteurs to cover the following points while presenting the results of the work of the various working groups:

a) the status of each task of the work programme as contained in the CAEP/6 report and subsequent modifications approved by CAEP;

b) the review of the list of deliverables;

c) the need for any further meetings prior to CAEP/7 to finalize the work programme; and

d) any difficulties in attaining the expected results by CAEP/7.

3.3 Regarding the update of the CAEP/6 work programme, the final list of tasks and information on their development status, including those tasks requested by Assembly/Council after CAEP/6, will be presented to CAEP/7, and will help in the discussions on CAEP future work.

3.4 The list of deliverables (IP/22) was updated (see revised list in Appendix B). All the items were maintained, however, some were merged and now appear as a single deliverable as they would be presented in one final report. An item on "emissions trading web information material" was added to the previous list of deliverables.

3.5 Regarding the CAEP calendar in preparation to CAEP/7, the meeting noted that it was preferable for all meetings to be held in Montreal, allowing for participation of other Secretariat officers in the discussion of the recommendations to be addressed by CAEP/7, and also allowing CAEP rapporteurs to provide briefings to Council members and members of the Air Navigation Commission (ANC) on the status of CAEP work. These briefings could be of value by providing information on CAEP activities prior to the final decisions at CAEP/7, allowing a better understanding of the CAEP proposals and facilitating the consideration of the final CAEP recommendations. In the past, the ICAO Council highlighted the need to be adequately informed on the developments in CAEP. The CAEP Secretary will explore planning possible informal briefings with the rapporteurs of the various groups and with ICAO management, in order to ensure a satisfactory level of information to the Council and ANC, whilst ensuring that no unnecessary additional workload be imposed on the rapporteurs. The meeting agreed that the Secretariat should keep CAEP informed of the need for CAEP rapporteurs to provide CAEP-related briefings to members of the Council and ANC. Rapporteurs' briefings should focus on working group-agreed material. If briefing material or discussion extends beyond working group-agreed material, then this should be clearly conveyed to the audience.

3.6 The meeting agreed with the following schedule of meetings to be held during the last quarter of 2006 in preparation to CAEP/7 (Montreal, 5 to 16 February 2007):

1) CAEP WG/1 – Noise – Montreal, 5 to 8 September;

2) CAEP Emissions Trading Task Force (ETTF) – Montreal, 4 to 6 September; and Paris, 10 to 12 October;

3) CAEP Emissions Charges Task Force (ECTF) – Montreal, 7 to 8 September;

4) CAEP WG/2 – Modelling and Operations – Montreal, 11 to 19 September, followed by the ICAO/Transport Canada Workshop on Aviation Operational Measures for Fuel and Emissions Reductions, 20 to 21 September;

5) CAEP WG/3 – Emissions – Montreal, 2 to 6 October 2006; and

6) CAEP Forecast and Economic Analysis Support Group (FESG) — Montreal, 24 to 25 October.

3.7 The meeting was informed that ICAO is planning an event on aviation emissions, most probably in the format of a colloquium, from 23 to 27 April 2007. The event will cover all areas in the work of ICAO on emissions (technology and standards, operational measures and market-based options) as well as the latest information on modelling, and technological and scientific research, including fuel alternatives. The event is aimed at providing the best available information on the work of the aviation and scientific community and of ICAO on this issue, to help prepare States for their consideration of aviation-emissions related subjects during the 36th Session of the ICAO Assembly, in the same vein as the last environmental Colloquium held in ICAO in April 2001. The timing of the workshop is planned so that the ICAO Council may undertake its consideration of the CAEP recommendations first and then provide States with the information at the earliest opportunity prior to the Assembly, allowing the necessary time to undertake any additional steps to help achieve a positive outcome at the Assembly.

3.8 There was general support for the event. While considering the subject, a member voiced concerns with the limited time between the CAEP/7 meeting and the emissions event, and a rapporteur also expressed that since substantial involvement of the CAEP rapporteurs was expected, it should be noted that there would be little more than two months to prepare the event material (presentations etc.). ICAO should be in the forefront of providing the information to its member States. If a later date to hold the ICAO event is selected, it could enable similar events to be held prior to the ICAO event to convey this information. Secretariat was invited to consider all the aspects above while continuing to plan the event.

3.9 The meeting discussed the list of potential items for the work programme of CAEP/8 using the outline provided in the Appendix to WP/35 as a basis. The proposals contained in this outline were received from the CAEP rapporteurs and from the Secretariat and included items being carried-over from the current work programme either because further study is required or because it was envisaged as a multi-phase task.

3.10 The meeting noted that the outline was developed to serve as the basis to facilitate the initial discussions on future work and not intended to be prescriptive, and that much improvement and discussion would be needed before a final work programme was agreed. The rapporteurs were instructed to take on board the comments from the meeting in their respective fields and discuss the proposals during their upcoming meetings, with a view to preparing their final proposal for CAEP/7. In their considerations they should harmonize and maintain coherence on the level of detail of the tasks included.

3.11 Two other papers containing future work proposals presented by ACI (WP/25) and IATA (WP/36) were considered in conjunction with WP/35.

3.12 The meeting had an initial discussion on the general philosophy that should drive the decisions on future work. A member expressed the view that CAEP was already working at full capacity and it would be impossible to keep stretching the resources to accommodate new tasks, and suggested that the group, when deciding on the addition of new future work tasks, should consider dropping an existing task. CAEP should use the principle of “replacing” instead of “adding” tasks in light of their priorities. Another point raised was the determination of whether a new task was of global concern. In this regard it was agreed that a proponent of a task would need to present its proposal with an initial assessment of the scope of the problem. It was agreed that the consideration of a future emerging issue should be documented by relevant data or realistic projections. Only problems considered as being of global interest should be added by the Committee. Other more local or regional problems could still be considered by the Committee but it should be ensured that the main resources for their development would come from the proponent.

3.13 The meeting conducted a preliminary review of the list of tasks taking into account its final product or deliverable and the amount of resources required to accomplish the work. It was agreed that, at CAEP/7, experts from States and international organizations will inform the Secretariat and the rapporteurs of the groups of their intention to participate in the tasks agreed to as part of the work programme.

3.14 Regarding the coordination of the work, it was agreed that this should not be seen as a task but as a procedure needed to facilitate the task. Also, tasks that were a direct request from the Assembly and those related to SARPs amendments should receive priority consideration. There was general acceptance of including an item on alternative fuels for aviation following a proposal by the Secretariat.

3.15 After revising the entire list of tasks and providing comments on it, the meeting agreed that rapporteurs should take these comments into consideration while revising the list at their upcoming meeting and should report back to CAEP/7.

3.16 Regarding future modelling activities, it was agreed that, by CAEP/7, a decision on the possible CAEP/8 scenarios to be investigated would need to be taken. The sooner assessment needs were defined, the better it would be for FESG and WG2/TG2 to prepare work plans for undertaking such assessments.

3.17 Members and observers were invited to present their case for the inclusion of specific items in the work programme by preparing papers elaborating on their proposals for submission to the upcoming meeting of the CAEP. In particular, the members from Australia, France, and Italy agreed to present papers proposing work items related to: distant noise; twin engine propeller noise stringency and the investigation of achieving reductions in all noise certification points; and the proposal to introduce the concept of “environment case” on assessments of environmental benefits of ATM plans, respectively.

3.18 ACI agreed to further expand some of the proposals contained in WP/25 and IATA agreed to present a proposal for the work on a framework for the various aviation emissions measures addressed by ICAO. The Secretariat was requested to further elaborate its proposal to include a task in the work programme regarding environmental indicators for aviation.

3.19 The meeting noted that, with regard to specific databases and models to be used by CAEP, a complete list will be prepared by CAEP/7 which, in addition, will provide the names of States and international organizations that are committing these resources.

3.20 Regarding the future CAEP structure, the meeting noted that the CAEP structure leading to CAEP/8 needed to be reassessed. It was noted that noise and emissions certification issues and related technical and operational aspects have been dealt with by WG1 and WG3 respectively and that these groups would most probably remain in this role. It was agreed that States would notify by CAEP/7 of their willingness to provide rapporteurs for these groups. Working groups were also invited to provide advice to CAEP/7 on the most appropriate structure to undertake the proposed work in order to assist members and observers in their consideration of resource allocation.

3.21 Regarding WG2 activities related to balanced approach/land use planning, operational procedures, local air quality and operational benefits outreach, it was noted that, after the CAEP/6 changes, these tasks now seemed to be well structured within this group. However with regard to modelling activities, the meeting agreed that this activity is likely to expand and that goals assessment will remain a core task for CAEP. The meeting determined that further consideration of the activities of the modelling group and the activities of FESG would be discussed by the WG2/TG2 and FESG rapporteurs in consultation with the WG1 and WG3 rapporteurs and a proposal be provided by CAEP/7.

3.22 The meeting noted that a major problem in accomplishing the work leading to CAEP/7 was the disruption of the work caused by numerous changes in the leadership of the groups and task groups. It was agreed that States and international organizations, in offering the nomination of experts for the role of rapporteurs or to participate in the working groups, should assume that the commitment with the CAEP group would be for at least a three-year period.

3.23 The meeting noted that market-based options are addressed by two specific task groups and a focal point with specific assignments with a CAEP/7 deadline. It was agreed that any expansion of the guidelines under production in this field, or new studies on possible use of market-based options, need to be considered in the light of the subsequent developments, since it would be premature to surmise any outcomes for the time being.

3.24 The meeting noted the need to continue with the assistance of the research focal points in WG3 and the scientific focal points currently nominated to assist CAEP as well as the need for focal points to report directly to the Steering Group (rather than to working groups) in the future. The SG agreed with the need for a GHG scientific focal point and the maintenance of the support currently provided by members. Further discussions on the structure of CAEP were expected to be undertaken at CAEP/7.

3.25 The meeting noted the proposal for establishing a preliminary calendar of activities leading to CAEP/8 in order to avoid conflicts in scheduling the various CAEP support groups activities. It was agreed that the tentative calendar would facilitate activities by allowing better integrated planning of the CAEP activities. Rapporteurs were requested to provide by CAEP/7 a tentative calendar of activities in view of the proposed work programme. A sample of the calendar was provided in WP/35.

3.26 The meeting expressed its appreciation to the Australian Government, Department of Transport and Regional Services, for their support and hospitality, and acknowledged the excellent work of the chair and the ICAO Secretariat enabling a very productive meeting. The meeting was adjourned at 17:45 hours.

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ATTACHMENT

Emissions Trading- Note on Geographical Scope

This note sets out the different views on geographical scope that were outlined to the CAEP Steering Group, without making a judgment on whether one view has more merit than the other.

Background

As the basis for discussion on geographical scope, it was assumed that the aircraft operators would be the accountable entities responsible for the emissions. The fact that, by definition, international aviation is not geographically contained to the territory of one State would add complexity to any emissions trading scheme that includes emissions from international aviation. Including emissions from stationary sources in an emissions trading scheme is geographically simple – it only covers those emissions physically occurring within the territory of the State. However, this is not the case for emissions from non-stationary sources, such as from international aviation.

Discussion

The Emissions Trading Task Force (ETTF) briefed the CAEP Steering Group that in developing guidance, very strong differences emerged regarding the geographical scope of emissions trading for international aviation. This centered on the degree of freedom Contracting States have in applying trading rules to foreign aircraft operators. The differences extend beyond legal issues and include political ones as well. In subsequent discussions at the CAEP Steering Group, these strong differences remained. It was agreed for the ETTF to continue its work on developing other portions of the guidance and that Council should be advised on the different views on geographical scope.

The central point of dispute on geographical scope is whether Contracting States can integrate international aviation emissions from aircraft operators of other Contracting States in their emissions trading schemes without mutual agreement.

The European CAEP Participants considered that:

- Nothing in the Convention on International Civil Aviation or in Assembly Resolution A35-5 requires that the participation of foreign aircraft operators in integrated trading schemes be subject to the agreement of the States of those aircraft operators;

- If, in effect, States could only apply integrated trading to their own aircraft operators, there is no role for ICAO - including the proposed guidance;

- Leaving it to individual States that wish to take action to obtain agreement on the question of foreign aircraft operator participation, and the delay that such an approach would cause for the implementation of such measures, would be inconsistent with ICAO taking a leadership role on environmental protection as called for by the Assembly; and

- If, in effect, States could only apply measures to their own aircraft operators they would have a *disincentive* to take action to combat climate change as foreign aircraft operators would enjoy unfair competitive advantages. This would run counter both to the obligation to limit or reduce emissions from international aviation in Article 2.2 of the Kyoto Protocol and to the spirit of equality of opportunity on which the Convention on International Civil Aviation is based.

It is important that the Council is aware that the guidance needs to recognize in this context that different ICAO Contracting States have different legal obligations. The guidance must assist- not obstruct- those States that have obligations under the Kyoto Protocol and the Convention on International Civil Aviation, as well as those that only have obligations under the latter. Both sets of States must have regard to the principle of non-discrimination enshrined in the Convention, for example in Article 11.

Given current and expected progress on emissions trading in Europe, which includes the opportunity for engagement by other States, European CAEP members consider it would be premature for the Council to make a judgment on geographical scope.

In conclusion, the European CAEP members noted that, without prejudging whatever text may eventually emerge, it is very unlikely they could agree to any proposed guidance that required agreement by other Contracting States for inclusion of those States aircraft operators to their emission trading system.

A number of other CAEP members including those from Argentina, Australia, Brazil, Canada, Egypt, Japan, Singapore, South Africa and the United States expressed the view that inclusion of aircraft operators in another Contracting State's trading scheme should only be done on the basis of mutual agreement between States. This is based on:

- The nature and complexity of international aviation operations- crossing multiple borders of many countries would be aided by such an approach.

- As reflected in the last Assembly, there exists no agreed scientific assessment among Contracting States about the directly attributable contribution to climate change from international aviation emissions (Assembly report 15:40).

- The fact that Contracting States are taking a wide variety of technological, operational and other measures- and there is no agreement on the priority or utility of particular approaches.

- That this approach would best reflect the guidance provided by the ICAO Assembly Resolution that encouraged work on emissions trading guidance "take into account the interests of all parties concerned," including the developing countries.

- The fact that if a Contracting State were to attempt to include the aircraft operators of another Contracting State in its emissions trading scheme without agreement from that other Contracting State, it would raise serious legal questions under Articles 15 and 24 of the Convention on International Civil Aviation and many bilateral air service agreements.

- That a mutual agreement approach provides the greatest opportunity to ensure concerns and differences among various Contracting States are resolved on how to best apply emissions trading to international aviation while respecting the sovereignty of Contracting States.

In conclusion, the CAEP members from these States stated that ICAO will only be able to adopt guidance on emissions trading if there is agreement on geographical scope. Further, they invited the Steering Group to seek guidance from the Council on which approach should underpin the guidance being developed by CAEP for the Council and the upcoming Assembly.

Action

Having considered the different views above, the Steering Group requests the Council consider the issues in this note and transmit the results of its deliberations back to CAEP.

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APPENDIX B

CAEP/7 DELIVERABLES

CAEP Work Programme Reference	TASK	Assembly Resolution Reference
Working Group 1		
N1 a) to d) and f)	a) Amendments to Annex 16, Volume I;	**A35-5 App B 2)**
N1 e)	b) Amendments to ETM;	**A35-5 App B 2)**
N1 g)	c) Workshops on Noise Certification – 2 workshops;	**A35-5 App A 4)**
N4 b)	d) Noise Technology Report (TTG);	**A35-5 App A 4) and B 2)**
N4 a)	e) Joint Report on Technology Interdependencies (with WG3);	**A35-5 App B 2) and C a)**
N2 a), b), c) and d)	f) Report on Future of the Noise Certification Scheme;	**A35-5 App B 2)**
N2 e) and f) and E5	g) SST activities Status Report (WG1/WG3);	**A35-5 App G**
N3 a) to d)	h) Noise dB available on the ICAO web.	**A35-5 App A 4) and B 2)**
Working Group 2		
N7 g)	a) Report on Interdependence – Interdependencies framework;	**A35-5 App A 4) and B 2)**
E11 c)	b) Updated Chapter for Doc 9750, *Global Air Navigation Plan for CNS/ATM Systems;*	**A35-5 App H d) and A 35-15**
N5 a) and b)	c) Update of Doc 9184, *Airport Planning Manual*, Part 2 — *Land Use and Environmental Control;*	**A35-5 App E a)**
N5 c) and f)	d) Update of Doc 9829, *Guidance on the Balanced Approach to Aircraft Noise Management;*	**A35-5 App C b)**
N6 CAEP/6 task	e) New Circular on Noise and Emissions reductions accrued from the use of Noise Abatement Departure Procedures;	**A35-5 App E a)**
N6	f) Amendments to PANS OPS on noise abatement procedures;	**A35-5 App C b)**
N7	g) Assessment report of the evolution of noise climate around airports;	**A35-5 App A 3) and C 6) a)**
E1	h) Assessment report of the evolution of aviation emissions related to local air quality;	**A35-5 App A c)**
E1	i) Assessment report of the evolution of aviation greenhouse gas emissions;	**A35-5 App A 3)**
N7 g) 9836/4.1.1.6.4	j) Review of models for use in CAEP;	**A35-5 App A 3)**
E11 a) and b)	k) Plan to disseminate information on operational opportunities for fuel and emissions savings including a workshop;	**A35-5 App A 4)**

E7 and E8 a)	l) New guidance material on local air quality; **(**including report on the use of LTO emissions certification data for estimation of missions under operational conditions (WG3));	**A35-5 App B 2)**
N7 d)	m) New guidance material to replace Circ 205, *Recommended Method for Computing Noise Contours around Airports*	**A35-5 App B 2), C 6) b) and F 4 a)**
E11 a) and c)	n) "Rules of thumb" for the conversion of CNS/ATM fuel benefits into emissions savings;	**A35-5 App H d)**
N6 c)	o) Report on noise and emissions reductions associated with CDAs.	**A35-5 App B 2)**
N5 d)	p) Study on curfews; and	**A35-5 App C b)**
N5 e)	q) Generic presentation on the Balanced Approach.	**A35-5 App C c)**
Working Group 3		
E5 h), E9	a) Changes to Annex 16, Volume II;	**A35-5 App B 2)**
E8 b)	b) Emissions sections for an Emissions ETM related to Annex 16, Volume II;	**A35-5 App B 2)**
E6, E5 c) & d), E2	c) Report on the characterization of particulates;	**A35-5 App B 2)**
E5 g) linked toWG1 N2 e) & f)	d) Report on emissions Standards for SST aircraft;	**A35-5 App G**
E10	e) Updated ICAO emissions databank.	**A35-5 App B 2)**
E3.1 and 3.2 b) & c)	f) Updated emissions factors for aviation for inclusion in the IPCC Guidelines; and report on the revision of Tier methodologies for aviation;	**A35-5 App H 1 b) and 2 c)**
E4	g) Long Term technology Review Report (including the conclusions of the NO_x goal review process)	**A35-5 App A 4) and B 2)**
E5 a) and b)	h) Quantifying the potential consequences of relying purely on LTO engine NO_x emissions certification for control of missions emissions of NO_x and report accordingly.	**A35-5 App B 2)**
Emissions Trading Task Force		
M2 b)	a) Guidance for implementation of emissions trading for aviation;	**A35-5 App I 2) c)**
M2 a)	b) Report on voluntary emissions trading schemes; and	**A35-5 App I 2 c)**
M2 c)	c) Develop an agreed proposal for web-based emissions trading information.	**A35-5 App A 4)**
Focal Point on Voluntary Measures		
M1	a) Report on voluntary measures for emissions reduction and proposal for web based public information.	**A35-5 App I 2) a)**
Charges Task Group		
M4	a) Guidance on Local Emissions Charges.	**A35-5 App I 2) b)**
FESG		
F 4	a) Review of the accuracy of CAEP/6 traffic forecast;	**A35-5 App I**
F 5)	b) Report on industry response; and	

F 7)	c) Analysis of the efficiency of local emissions charges.	**A35-5 App I 2) b)**
CAEP		
	a) CAEP/7 Report; and	**A35-5 App A 4)**
9836/4.1.1.6.3	b) Contributions to the ICAO Environmental Report	**A35-5 App A 4)**

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