



International Civil Aviation Organization

INFORMATION PAPER

GIACC/3-IP/2

9/02/09

English only

**GROUP ON INTERNATIONAL AVIATION AND CLIMATE CHANGE (GIACC)
THIRD MEETING**

Montréal, 17 to 19 February 2009

Agenda Item 2: Review of aviation emissions related activities within ICAO and internationally

BUSINESS AVIATION CLIMATE CHANGE MITIGATION PROPOSALS

The attached paper is presented by the International Business Aviation Council, Ltd. (IBAC), for the information of the Group on International Aviation and Climate Change.



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30 December 2008

Mr. John Begin
Secretary, GIACC
International Civil Aviation Organization
999 University Street
Montreal, Quebec
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Re: Business Aviation Climate Change Mitigation Proposals

Dear John:

My response to your request for business aviation input to the Group on International Aviation and Climate Change (GIACC) dated 29 June 2008 advised that the business aviation community would provide a more detailed proposal by the end of the year. I am writing to provide that input, although I must emphasize that work to refine the proposal is ongoing.

I would like to re-state the business aviation community's appreciation for the willingness of GIACC to involve the aviation industry in deliberations towards a broad aviation proposal to reduce the aviation impact on climate change. Business aviation recognizes the need to contribute and to be part of an aviation solution towards global sustainability. We also understand the need to develop the aviation position in a timely manner given the prospective inclusion of aviation in the targets to be set pursuant to the United Nations Framework Convention on Climate Change at its Copenhagen meeting in 2009. It is in the spirit of the time pressures faced by ICAO and the global aviation community that business aviation is submitting an update at this time and is confirming willingness to work with GIACC to develop the aviation wide position. At the same time we will continue to work on the detail of the proposal. Furthermore, as I am sure you are well aware, the economic downturn has had a significant impact on business aviation that is without doubt resulting in a reduction in GHG emissions for the short term. It is likely that programmes for long term GHG reduction will be maturing by the time economic recovery is realized.

As you know, aviation has many sectors with differing operational perspectives. We feel that climate change programs should be appropriate to the size and complexity of the operation. Given business aviation's distinct structural and operational features, we have developed proposals for an action plan that best applies to business aviation; however, at the same time business aviation supports in principle the proposal and action plan submitted by ATAG on behalf of IATA, CANSO, ACI and ICCAIA. We are very supportive of the technology and operational objectives stated by ATAG. However, given that business aviation largely consists of non-commercial



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operations and whole aircraft charter, "revenue-tonne kilometres" is not a relevant metric for the expression of goals pertaining to business aviation. It is for that reason business aviation is focusing on the absolute level of carbon production. We urge that, in addressing the matter of metrics, GIACC take care to adopt metrics that are appropriate and acceptable to each of the aviation sectors. It is our firm belief that the proposal contained in this letter will serve to mitigate the business aviation climate change impact, albeit very small, in a fair and equitable way.

The business aviation proposal recognizes that there must be a multi-path approach to mitigating aviation's impact on climate change. The proposal is based on three principle goals, which will be outlined in the following paragraphs relating to:

1. Market Based Measures for the short term;
2. Reduce carbon emissions in the short to long term; and
3. Enhanced data collection, reporting and promotion.

Market-Based Measures

Goal: Carbon neutral flight operations, instituted through performance-based operator programmes

Business aviation contributes a very small amount of Green House Gas emissions, estimated at less than .04% of global anthropogenic CO₂ production. Nevertheless, business aviation is resolved to contribute to the solution appropriate to the size and structure of the community. Business aviation features many companies, approximately 17,000, operating their own aircraft where the average number of aircraft per company is between one and two. The average annual CO₂ production per company is in the vicinity of 2 K tonnes. Given the small amounts of CO₂ production per operator, it is a challenge to find the optimum mechanism for business aviation to contribute in a meaningful and cost effective way, without placing an un-economic administrative burden on both operators and regulators

Performance-based provisions are proving very effective for aviation safety, hence the business aviation community proposes a similar approach for managing a market-based emissions scheme. Business aviation is proposing a programme whereby operators will institute a carbon neutral programme and document it in their operations manuals. At the present time a number of larger business aircraft operators and manufacturers already participate in carbon offset programmes, or flight departments are part of their parent company's global offset programmes, so these flight departments have already reached our goal. It is the intent of the business aviation community to develop other model programmes that flight departments can introduce on a selective basis.



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The concept of carbon neutral flight operations through use of performance based provisions that allow an operator to state how the goal has been realized not only is of direct benefit to the environment, but it does it in a fair, verifiable and cost effective way.

Reduction in Carbon Emissions

Goal **Reduce carbon emissions through a multi-path program consisting of: 1) operator practices; 2) Air Traffic Management; 3) engine design; 4) airframe design; and 5) alternate fuels.**

Business aviation proposes to reduce carbon emissions in the short through to long term. The magnitude of the reduction is dependent on ongoing research and development through many agencies and product manufacturers. Some estimates of the reductions possible for each of the paths of the multi-path programme are shown where possible, but these estimates will be transitioned to more firm aspirational goals as research is refined. Carbon reduction is proposed based on five paths.

1) **Operator Practices**

Business aviation is refining guidelines for operator fuel reduction programs with resulting reduction in emissions. Initial tests demonstrate potential of up to 40% reduction using engine handling techniques and applying some procedures and technologies available today, including application of continuous descent approaches. It is expected that when testing is completed, the average will be more modest; however, initial analysis demonstrates that significant improvement can be achieved with widespread voluntary action by operators.

2) **Air Traffic Management**

Significant savings can be expected with the implementation of modernized air navigation services such as Next Gen in the USA and SESAR in the EU. Rough global estimates of CO2 reduction for all aviation are in the vicinity of 10%. Business Aviation is working with air navigation service providers to determine more accurately the specific expectation for business aviation operations. The results of these studies will be available in a couple of months.

3) **Engine Design**

Business aircraft engine manufacturers have made significant improvements in turbine engine specific fuel consumption, and hence emissions over the last



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four decades. This improvement in specific fuel consumption for business jet engines has been in the order of 50% since the mid-1960s. Engine manufacturers are firmly committed to continue to work toward engine design changes that will further improve engine efficiency and thus emissions.

4) Airframe Design

As with engines, significant improvements have been made over the past 20 – 30 years in airframe design. New aircraft being built today incorporate airframe and engine technology improvements that yield improvements in efficiency and thus emissions. Many techniques are being applied to reduce drag, such as winglets, and aircraft weight is being significantly reduced through use of composites and other innovations. It is also clear that aircraft operators are phasing out old aircraft as new technology aircraft become available.

5) Alternate Fuels

Development of alternate fuels is a challenge for all transportation providers and manufacturers. Significant resources are being applied by a large number of organizations to the research and development of alternative fuels for aircraft engines. Results of this research will undoubtedly benefit business aviation in the same way it will benefit all aviation sectors.

Enhanced Data Collection, Reporting and Promotion

Goal: **Develop within business aviation an improved method for data collection, reporting and promotion of the considerable improvements being made in addressing mitigation of climate change.**

The broad aviation community and business aviation as part of that community must do more to explain the significant progress aviation has made in improving operational efficiencies. Aviation is of critical importance to the health of global economies and if economies are to flourish so must aviation. Therefore, aviation must be in a better position to demonstrate that in spite of its continuing growth, the system of the future will result in continuous reduction in Green House Gas emissions. Improved data collection and reporting is needed so that the positive story that aviation can tell is clear to the public. This goal does not purport to have a direct impact on carbon reduction, but is designed to ensure a better understanding which in turn will lead to intelligent decision making in the future.

In summary, the proposals included in this letter serve as the business aviation input to preliminary considerations of GIACC in development of the



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aviation plan to address climate change. As indicated, we have more work to do and we will continue to further refine our aspirational goals as work currently underway is completed. We will advise you as work proceeds. In the meantime, it is sincerely hoped that GIACC will continue to consult the aviation community.

Thank you again for the opportunity to provide input to GIACC.

Sincerely,

Donald Spruston
Director General

cc: Mr. Roberto Kobeh, President of the Council
Ms Birgita Gravitis-Beck, Chair of GIACC Working Group 1
Mr John Doherty, Chair of GIACC Working Group 2

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- END -