International Civil Aviation Organization

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WORKING PAPER

ASSEMBLY — 40TH SESSION

EXECUTIVE COMMITTEE

Agenda Item 15: Environmental Protection – General provisions, Aircraft Noise and Local Air Quality– Policy and Standardization

POSITION OF THE RUSSIAN FEDERATION ON THE PROBLEM OF DEVELOPING ICAO STANDARDS FOR PROMISING SUPERSONIC PASSENGER AIRPLANES

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

One of the International Civil Aviation Organization's (ICAO) main objectives is the timely development of international Standards for all types of civil aviation aircraft; in particular, for supersonic transport (SST). The world is facing a challenge related to the creation of promising, environmentally acceptable and cost-effective SST. Several companies have already made great strides in developing supersonic airplanes and presumably, they will be certified as early as 2023-2025.The Russian Federation is actively participating in comprehensive research for future SST and their propulsion systems, both inside Russia and within the ICAO's Committee on Aviation Environmental Protection (CAEP). Right now, individual subgroups and ICAO groups are working hard on SST problems, trying to develop international norms for these aircrafts in a timely manner.

Action: The Assembly is invited to:

a) Assign the Council to consider the possibility of prioritizing the development of ICAO standards and recommended practices (SARPs) for SST, considering the need, meanwhile, for CAEP and ANC expert teams to have close and effective coordination; and

b) Note that the Russian Federation, relying on its rich experience of building first-generation SST and the results of subsequent research into promising new-generation SST (HISAC and RUMBLE projects), is prepared, if necessary, to provide resources to support this important ICAO direction.

Strategic Objectives:	This working paper relates to Strategic Objective E – Environmental Protection
Financial implications:	This will not require additional financial resources.

[1] English and Russian versions provided by the Russian Federation.

References:	• Resolution of the 39th session of the ICAO Assembly, A39-1 "Consolidated statement of continuing ICAO policies and practices related to environmental protection – General provisions, noise and local air quality" Appendix G — Supersonic aircraft — The problem of sonic boom • Annex 6: Operation of Aircraft. Part I. International Commercial Transport - Aeroplanes. Tenth Edition, ICAO, 2016.

1. INTRODUCTION

1.1 The first flight of a Soviet Tu-144 supersonic passenger aeroplane took place on 31 December 1968. Three months later, the British-French airliner the Concorde took off into the sky. They led the way to supersonic transport. At that time, the development of these aeroplanes was a genuine technological breakthrough.

1.2 Now the world faces a challenge related to building new, promising, environmentally acceptable, and cost-effective supersonic transport (SST). Several companies have made significant advances in developing commercial supersonic aeroplanes and they intend to put them into operation as soon as 2025-2030.

1.3 One of ICAO's primary objectives is to develop, in a timely manner, international Standards for all types of civil aviation aircraft; in particular, for SST. In the '60s, there was a special committee for SST, and in the '70s, there was a technical committee on operational problems of SST. They effectively coordinated the work of different groups of ICAO experts to develop requirements for SST, including problems of flight safety, ecology, and operations.

1.4 Right now, certain ICAO subgroups and groups have been working intensively on SST, trying to develop international norms for these aircrafts, including for airworthiness, Standards on sonic boom, environmental noise, engine emissions near the airport, CO_2 emissions, etc.

1.5 Pursuant to a decision from the CAEP/11, a coordination group was formed that links CAEP Working Groups WG1, WG3, MDG-FESG and ISG to support integrated SST research (ICAO Doc 10126, Report of the Eleventh Meeting of the Committee on Aviation Environmental Protection, Paragraph 12.1.18).

1.6 At the last ICAO 13th Air Navigation Conference (AN-Conf/13) in October 2018, a timely question was raised about the need to develop airworthiness norms for SST (AN-Conf/13-WP/61).

2. DISCUSSION

2.1 The development of environmental Standards for SST in practice also requires its close coordination with safety matters, with airworthiness norms, which haven't yet been developed and are outside the purview of CAEP. Some contact between CAEP and ANC are already underway. In particular, this coordination is required to develop a noise certification procedure while accounting for safety constraints, while solving problems associated with sonic boom abatement, safety requirements if the cabin is depressurized, or an engine fails at cruising altitudes, etc. Therefore, it is advisable for the

Council to prioritize the task of coordinating work to develop standards and recommended practices (SARPs) for SST at ANC and CAEP to hasten this work and make it more effective.

2.2 The Russian Federation is participating actively in complex research on promising SST and their propulsion systems, including within Russia and CAEP. This research is devoted to the sonic boom (the RUMBLE international project), environmental noise from SST (CAEP WG1) and interdependencies of noise and emissions (CAEP WG1-WG3), and is being done in Russian at organizations like the N. Y. Zhukovsky Central Aerohydrodynamic Institute, the P. I. Baranov Central Institute of Aviation Motor Development (part of the N. Y. Zhukovsky Institute), the Tupolev Public Stock Company, and other organizations.

3. CONCLUSION

3.1 The Russian Federation supports CAEP's decision to create a coordination group that will ensure the coordination of CAEP Working Groups in developing SST Standards.

3.2 The Russian Federation invites the Assembly to assign the Council to consider the possibility of prioritizing issues related to developing ICAO SARPs for SST, mindful of the need for close and effective coordination between ANC and CAEP expert groups. This process will speed up the development of ICAO SARPs for SST, by ensuring that we consider all interactions among safety, flight specifications and environmental factors and will boost the effectiveness of cooperation among different ICAO experts within the SST problem.

3.3 The Russian Federation, relying on its rich experience of building first-generation SST and the results of subsequent research into promising new-generation SST (HISAC and RUMBLE projects), is prepared, if necessary, to provide resources to support this important ICAO direction.

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