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FOURTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 26 August to 6 September 2024

**Agenda Item 1: Update on the ICAO 2023-2025 Business Plan and Long-term Strategic Planning
1.1: Reprioritization of the ICAO 2023-2025 Business Plan**

**EXAMINING THE CRITICAL ROLE OF AVIATION EMERGENCY MANAGEMENT IN THE
FACE OF EXTREME CLIMATE EVENTS**

(Presented by Brazil)

EXECUTIVE SUMMARY

This Paper presents information related to the major flood occurred in the southern region of Brazil and its impact on air transport. The event is a reminder that extreme weather and climate phenomena can threaten the development of a safe, regular, efficient, and economical air transport. Experience showed that it is essential to consider all phases of extreme events in aviation service providers' contingency plans.

The Conference is invited to agree that ICAO include the following actions as part of Crisis preparedness and response Priority Focus Area (PFA):

- a) promote and facilitate the sharing of expertise in the development of strategies to reduce vulnerability of air transport to natural disasters and environmental hazards related to extreme climate events; and
- b) promote the development of provisions and actions to raise awareness on the subject through ICAO Regional Groups and Headquarters' ANC Panels and foster the establishment of mechanisms to develop locally and regionally integrated contingency plans for aviation service providers that comprise Forecast, Active Warning Systems, Preparation, Response Phase, and Return to Normal Operations.

1. INTRODUCTION

1.1 Climate crisis can manifest itself very significantly and affect our lives. The Intergovernmental Panel on Climate change (IPCC) states that anthropogenic influence on climate change is unequivocal. The aviation industry also contributes to the production of greenhouse gas emissions that intensify global warming.

1.2 On the other hand, climate change can affect aviation. The expected impacts of climate change on aviation result from changes in temperature, precipitation, storms, sea level, wind, and occurrence of hazardous weather phenomena. Those impacts may include reduced aircraft performance, changes in the structure of demand, potential damage to airport infrastructure, airport capacity loss, flight schedules disruptions and impacts on air traffic safety.

1.3 Although a direct causality relationship between a specific event and global warming is hard to establish, extreme event impacts are occurring and threaten the development of a safe, regular, efficient, and economical air transport.

2. DISCUSSION

2.1 An example of those impacts in aviation occurred in Brazil earlier this year in a high intensity event. At the end of April and beginning of May, a major flood in the southern region of Brazil affected 478 cities and caused 176 confirmed deaths, 39 missing and more than 800 injured. The number of displaced people exceeded 580,000 and the sheltered population exceeded 80,000.

2.2 In the first days after the disaster, aviation played a key role in rescuing and assisting those affected. More than 80 helicopters have been used to rescue stranded people and to transport essential items to isolated areas. Most of these helicopters were privately owned and were provided by their owners to assist the victims. A similar situation occurred with fixed-wing aircraft, used to transport goods and professionals from all over the country to assist the affected population, in a major mobilization of government authorities and civil society. An aerodrome flight information service (AFIS) Station (“Taquari Radio”) had to be temporarily established by the Brazilian air navigation services provider (ANSP) to raise awareness and safety levels for air operations.

2.3 The main cause of the flooding was the record-breaking rainfall observed — 800 millimetres in some locations. The data shows that, in less than 15 days, it has rained the same as in five months. The most important city in the region, Porto Alegre, is located in a very low-lying area on the shores of Guaíba lake. On May 5, the Guaíba lake has reached a record 5.3 meters. The greatest flooding before that was in 1941, when the level of the lake reached 4.75 meters.

2.4 Two days earlier, the water reached the runway and passenger terminal of Porto Alegre Airport and the operations were suspended. Radar service for Porto Alegre TMA was interrupted as well due to the flooding in the technical shelters. The airport served more than 7.5 million passengers in 2023. At the time of writing, no date is defined for resuming operations and we are waiting the results of tests and procedures on the runway, taxiways, runway strip, and air navigation services (ANS) equipment and facilities.

2.5 Operations were partially moved to a military air base, with the transfer of the aerodrome operator personnel and ground handling teams and equipment from Porto Alegre Airport. Other airports in the region complemented an emergency air network. The Brazilian ANSP established a temporary and transportable Radar System in the military airfield to recover the Radar service for Porto Alegre TMA in about 20 days after the hit. APP facility was transferred from Porto Alegre city to Curitiba, which is 750 km away, from where air traffic controllers (ATCOs) are operating remotely.

2.6 It is important to highlight that similar situations occurred recently in other parts of the world. Fort Lauderdale-Hollywood International Airport (United States) was affected in April 2023 by a flash flood event. The airport remained closed for more than 40 hours. In June of this year, another flood affected the airport, this time with less impact. Another emblematic example is the flooding that occurred in April this year at Dubai Airport (United Arab Emirates), one of the busiest in the world.

2.7 Initiatives must be adopted to reduce the impact of aviation on the environment, but also so that the aviation system can deal with these extreme climate scenarios. ICAO work on long-term aspirational goal (LTAG) already addresses the issues related to reduction of CO₂ emissions for international aviation through technological advancements, sustainable fuels, and operational improvements.

2.8 With regard to tackling the effects of climate events, it can be seen that the Priority Focus Area (PFA) for the 2023-2025 Business Plan includes *Crisis preparedness and response* as one of the priorities. This subject aims to establish and maintain a framework within ICAO that will support States in situations of Global crisis. It also seeks to improve response capabilities by States in the face of various crises.

2.9 This PFA is associated with Assembly Resolution A41-13: *Strategy on disaster risk reduction and response mechanism in aviation*, which, among other provisions: urges States to take into consideration the disaster risk reduction priorities as contained in the Sendai Framework for Disaster Risk Reduction 2015–2030, as well as the best practices of Member States, in the development of their State emergency response plans, as well as in the emergency response plan requirements for aviation service providers; and directs the Council to assist States in implementing disaster risk reduction strategies in aviation with priority given to Least Developed Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS).

2.10 Standards and Recommended Practices (SARPs) for States relating to emergency planning and response are included in Annex 1 — *Personnel Licensing*, Annex 6 — *Operation of Aircraft*, Annex 9 — *Facilitation*, Annex 11 — *Air Traffic Services*, Annex 14 — *Aerodromes* and Annex 19 — *Safety Management*.

2.11 It can be said that the current provisions, including guidance material, do not adequately cover these emergencies arising from climate crises, at local level in general.

3. CONCLUSION

3.1 Recent events remind us that the frequency and intensity of extreme weather and climate phenomena could be increasing and threaten the development of a safe, regular, efficient, and economical air transport.

3.2 Crisis preparedness and response is already included as a Priority Focus Area (PFA) for the 2023-2025 Business Plan. In light of the above, the Conference is invited to agree that ICAO include the following actions as part of Crisis preparedness and response PFA:

- a) promote and facilitate the sharing of expertise in the development of strategies to reduce vulnerability of air transport to natural disasters and environmental hazards related to climate events; and
- b) promote the development of provisions and actions to raise awareness on the subject through ICAO Regional Groups and Headquarters' ANC Panels and foster the establishment of mechanisms to develop locally and regionally integrated contingency plans for aviation service providers that comprise Forecast, Active Warning Systems, Preparation, Response Phase, and Return to Normal Operations.

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