



WORKING PAPER

**SECOND HIGH-LEVEL SAFETY CONFERENCE 2015 (HLSC 2015)
PLANNING FOR GLOBAL AVIATION SAFETY IMPROVEMENT**

Montréal, 2 to 5 February 2015

Theme 1: Reviewing the current situation

Topic 1.2: Emerging safety issues

EXTREME METEOROLOGICAL CONDITIONS

(Presented by Latvia on behalf of the European Union and its Member States¹
and the other Member States of the European Civil Aviation Conference²; and by EUROCONTROL)

SUMMARY

More and more often, occurrences concerning extreme/unusual meteorological conditions are being observed either due to increasing traffic, or more severe meteorological events. Potentially, an increase in the number and severity of such dangerous events is expected.

Action: The conference is invited to:

- a) support the implementation of the relevant recommendations resulting from the 2014 Meteorology Divisional Meeting linked to extreme meteorological conditions;
- b) recommend that ICAO, notably through its relevant panels, study data and information from accident and incident investigations as well as data and information provided by aircraft manufacturers, linked to unusual/extreme weather events, including relevant studies and programmes from the World Meteorological Organization (WMO) concerning evolution of extreme weather; and
- c) recommend that ICAO, based on the study results, evaluate the need for improved ICAO airworthiness and operations related provisions in order to further mitigate changing meteorological risks and takes appropriate action.

1. INTRODUCTION

1.1 More and more often, occurrences concerning extreme/unusual meteorological conditions are being observed either due to increasing traffic, or more severe meteorological events. Potentially, an increase in the number and severity of such dangerous events is expected.

¹ Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom. All these 28 States are also Members of ECAC.

² Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

2. DISCUSSION

2.1 The inappropriate management of degraded weather conditions constitutes one of the main contributory factors to serious incidents or accidents to commercial air transport. Indeed, accident and incident investigations have for example demonstrated that:

- a) current on-board technologies still do not always allow detection of rapidly developing isolated convective cells;
- b) despite the latest generation of pitot probes, which meet much higher criteria than certification requirements, the risk of icing of probes by ice crystals is not totally removed;
- c) encounters with vertical or horizontal high altitude windshear may infringe current certification envelopes; and
- d) during storm activity parked aircraft can be subjected to mean wind speeds that are higher than the certification requirements for the aircraft.

2.2 Accident and incident investigations have identified the need to collect more data and information to understand events for the development of detection systems. Airframe manufacturers and operators through flight data monitoring and incidents analysis may provide useful information that may complement data gathered during safety investigations following serious incidents or accidents.

2.3 Extreme meteorological events and their outcome should lead to a more complete analysis of their impact on flight safety. Aircraft manufacturers should pursue their efforts to gather and share data and information on extreme meteorological events based on analysis of events reported to them by operators. Equipment manufacturers should pursue their efforts to develop more effective means of detection of intense convective cells. ICAO and airworthiness authorities should review this data and information to assess the need to upgrade aircraft certification standards to reflect more severe meteorological threats. ICAO should conduct preliminary studies for the possible deployment of the latest technology regarding detection of convective cells throughout the whole commercial air transport fleet.

3. ACTIONS

3.1 The conference is invited to support the implementation of the relevant Recommendations resulting from the 2014 Meteorology Divisional Meeting linked to extreme meteorological conditions; recommend ICAO, notably through its relevant panels, study data and information from accident and incident investigations as well as data and information provided by aircraft manufacturers, linked to unusual/extreme weather events, including relevant studies and programmes from the World Meteorological Organization concerning evolution of extreme weather; and recommend that ICAO, based on the study results, evaluates the need for improved ICAO airworthiness and operations related provisions in order to further mitigate changing meteorological risks and takes appropriate action.