



ASSEMBLY — 39TH SESSION

TECHNICAL COMMISSION

Agenda Item 37: Other issues to be considered by the Technical Commission

REMOTE LOW LEVEL WIND SHEAR DETECTION SYSTEMS AT AERODROMES

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

This document contains brief information about the global status of developing and using ground-based low level wind shear detection systems and recommendations on further work to standardize these systems.

**Action:** The Assembly is invited to:

- a) recommend that the Council of ICAO consider the possibility of including in the agenda for the Meteorology Panel (METP) a task of developing standards for ground-based wind shear detection system that could be executed in coordination with respected organizations that develop the industrial standards, such as RTCA and/or EUROCAE<sup>2</sup>; and
- b) recommend that the Council of ICAO assign METP to develop criteria for how to mandate aerodromes to install low level wind shear detection.

<i>Strategic Objectives:</i>	This working paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	Not applicable
<i>References:</i>	Annex 3 – <i>Meteorological Service for International Air Navigation</i> Doc 9817, <i>Manual of Low-Level Wind Shear</i>

<sup>1</sup> Russian version provided by the Russian Federation.

<sup>2</sup> Draft ISO 28902-2:2016(E) (written by the “Meteorologiya” Technical Commission ISO/TC 146/SC 5) could form the basis for developing standards for a wind shear detection system based on observation methods and tools that ensure automatic and ongoing transmission of wind shear data.

## 1. INTRODUCTION

1.1 On 19 March 2016 at 00:42 UTC, a Fly Dubai Boeing 737-800 aircraft crashed at the airport in Rostov-on-Don. All 62 people on board, 55 passengers and 7 crewmembers, died. The Preliminary report from the Interstate Aviation Committee (IAC) based on results of the investigation, low-level wind shear in the approach zone impacted decisions made and subsequent crew response.

## 2. EXAMINATION OF THE ISSUE

2.1 In accordance with the current standards for meteorological flight support, “wind shear alerts” are included in the actual weather report and sent to air traffic management (ATM) agencies and Automatic Terminal Information Service (ATIS), based on information from on board the aircraft and an analysis of the meteorological situation at the forecasting aerodrome. In this way, the main source of information on wind shear in the take-off and landing zones (in the absence of technical, automated alerts at the aerodrome) is information from the aircraft crews. Therefore, having no confirmation data, after 00:01 on 19 March 2016, wind shear info received previously from crew reports was not included in the actual weather report for the Rostov-on-Don aerodrome.

2.2 The Russian Federation, the European Union, the United States, China, and other countries have developed ground-based remote tools to study the lower levels of the atmosphere with Doppler laser and radar, which make it possible to always automatically detect and give aircraft crews and ATM dispatchers information about low level wind shear, turbulence, strong jet streams near the aerodrome. These systems are being developed and deployed as per the ICAO Global Air Navigation Plan (module B0-AMET of the ABSU) in order to improve the quality of the integrated meteorological information to support strategic, pre-tactical and tactical decision-making, and to elevate the level of operational effectiveness and safety.

2.3 A Low Level Wind Shear Detection System was developed in the Russian Federation in compliance with the Concept for creating and developing an air navigation system in Russia and the Plan of measures for its implementation (para. 4.8.2). The Low Level Wind Shear Detection System has been installed at the Sochi International Airport. It ensures that the crew is provided with data about the wind level near the aerodrome and real-time alerts about low level wind shear. In addition, the Russian Federation has a Doppler X-band meteorological radar complex at a nearby aerodrome zone that was designed for automated (automatic) detection of dangerous weather phenomena, including wind shear with a priority in the take-off and landing sectors. Combining these Lidar and radar observations will weatherize the complex.

2.4 Remote sensing systems for wind fields that are installed at other airports: Hong Kong (China), Charles de Gaulle, Nice (France), Bangkok (Thailand), Narita and Haneda (Japan), San Diego, Atlanta (USA) and others have proven their capacity for detecting wind shear and tracking/monitoring.