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COMMITTEE A

Agenda Item 2: Enabling the Global Air Navigation System

2.3: Future provision of aeronautical meteorological service

IMPROVING METEOROLOGICAL SUPPORT OF CIVIL AVIATION IN THE RUSSIAN FEDERATION

(Presented by the Russian Federation)

EXECUTIVE SUMMARY

This document presents information on the main areas for improving meteorological support of civil aviation in the Russian Federation.

1. INTRODUCTION

1.1 The Russian Federation participates in the activities of the World Meteorological Organization (WMO) and the International Civil Aviation Organization (ICAO) and adheres to international Standards and Practices of these Organizations in the field of meteorology and meteorological services for aircraft operations. With a view to the implementation, at the national level, of Annex 3 — *Meteorological Service for International Air Navigation*, the Government of the Russian Federation has designated the Federal Service of Russia for Hydrometeorology and Monitoring of the Environment (Roshydromet) as the meteorological authority for the provision of meteorological services for international air navigation, and as the federal executive authority providing meteorological services for civil and experimental aviation in the Russian Federation.

1.2 The recommendations for meteorology approved by the Meteorology Divisional Meeting (MET/14) held by ICAO in conjunction with the 15th Session of the WMO Commission for Aeronautical Meteorology (CAM-XV) (Montréal, July 2014) identified the main areas for improving meteorological support for international air navigation, through the work of both ICAO and WMO working groups regarding the implementation of the *Global Air Navigation Plan* (GANP, Doc 9750), by developing new requirements and Recommended Practices, and authorized meteorological bodies of individual States.

2. GENERAL PROVISIONS

2.1 In the Russian Federation, meteorological services for aircraft operations are provided by 244 operational units of Roshydromet with a total of about 3 500 employees. Roshydromet develops the existing infrastructure for meteorological services and improves the quality of provided services within current activities in accordance with the State programs of the Russian Federation.

3. MAIN AREAS OF IMPROVEMENT

3.1 Within the implementation of the *Strategy for Activities in Hydrometeorology and Related Areas until 2030 (with consideration of climate change)* approved by the Government of the Russian Federation, and the transport strategy of the Russian Federation, systematic work is being performed to improve the meteorological services of aircraft operations.

3.2 Providing information on space weather

3.2.1 With all the technological and technical capabilities, the Russian Federation is a contender for the establishment of the ICAO space weather center in Moscow to provide the necessary current and forecast information on space weather in accordance with established Standards and Recommended Practices (SARPs). For this purpose, the national space weather center was established on the basis of the Roshydromet Institute of Applied Geophysics (IAG), which successfully passed the WMO audit for compliance with ICAO/WMO criteria for space weather centers in 2018. Activities on monitoring and forecasting space weather have been performed by IAG since 1974. IAG has many years of experience; the first regular forecast of space weather was released on 7 June 1974.

3.2.2 The space weather center of the Russian Federation (SWC Moscow) has the aim to detect processes and phenomena in the upper atmosphere of the Earth and in the near-Earth space, which are a potential hazard for aircraft operations. Space weather monitoring is provided by its own surveillance network and ground-based and space-based instruments. This network consists of ground-based ionoprobes, magnetic meters, stations that measure the characteristics of radio signals from satellites (global positioning system (GPS)/ global navigation satellite system (GLONASS)) to assess the ionosphere characteristics; a network of riometers in the polar zone; devices installed on polar and geostationary satellites measuring the density of electrojet currents.

3.2.3 In June 2018, the Agreement on Cooperation between the national space weather centers of the Russian Federation and China was signed to provide services as a single regional space weather provider for international air navigation purposes.

3.3 Provision of information on hazardous weather phenomena

3.3.1 Works on the establishment of the ICAO advisory system on selected hazardous meteorological conditions along the route are also conducted by Roshydromet in cooperation with the Federal Air Transport Agency and the Ministry of Transport of the Russian Federation.

3.3.2 At present, Roshydromet is taking measures to improve meteorological support associated with the provision of SIGMET information. The operational coordination of SIGMETs at the borders of adjacent flight information regions (FIRs) with respect to the phenomena and weather conditions required for the release of SIGMETs is provided both within the Russian Federation (including twenty-eight FIRs and relevant meteorological watch offices (MWOs)) and with neighboring States (Republic of Belarus, Republic of Latvia, Republic of Azerbaijan, Republic of Poland and others to join in the short term).

3.3.3 In order to improve meteorological support at aerodromes, areas related to the introduction of very short-range forecasting (nowcasting) systems are being developed. Nowcasting systems are used in a number of aerodromes of the Russian Federation: Irkutsk (since August 2014), St. Petersburg-Pulkovo (since February 2018); from September 2018 the nowcasting system will be used at the Tolmachevo aerodrome in Novosibirsk.

3.4 Assessment of the competence of aeronautical meteorological personnel

3.4.1 In order to introduce an appropriately organized quality system (Amendment 75 to Annex 3) a quality management system has been introduced in Roshydromet since 2011 regarding aeronautical meteorological services for civil and experimental aviation. In addition, in accordance with the ISO 9000 standard, the procedure for assessing the competence of aeronautical meteorological personnel (AMP) has been introduced in Roshydromet since 2013. When assessing the AMP competence, an “extraordinary assessment” procedure is foreseen for specialists who, for valid reasons, could not participate in the planned assessment of the AMP competence, as well as a “reassessment” procedure for specialists who do not fully demonstrate the necessary competencies. The planned assessment of the AMP competence was performed twice, in 2013 (2 352 specialists) and 2015 (2 254 specialists). As a result of these, all the aeronautical meteorological personnel of Roshydromet received the “qualified” assessment, of which Roshydromet informed the WMO Secretariat. Since 1 December 2016, the WMO qualification standard has become an obligatory practice for Roshydromet. The next planned assessment of the AMP competence within the Roshydromet system will take place in 2019.

3.4.2 In 2016, Roshydromet agencies providing aeronautical meteorological support performed work on the implementation of the WMO qualification standard for aeronautical meteorologists and forecasters in accordance with the provisions of WMO Technical Regulation No. 49.

3.5 Future system-wide information management (SWIM) environment

3.5.1 Roshydromet specialists work together with the ICAO and WMO expert groups tasked with developing the concept of system-wide information management (SWIM) to ensure that SWIM meteorological elements comply with the objectives of the GANP.

3.5.2 In order to enable the inclusion of aeronautical meteorological information in the future SWIM environment, as well as to monitor its provision and use only for air navigation purposes, the Russian Federation finishes the process of establishing an information and communication network for the collection and distribution of meteorological data based on internet protocol technology (IP-technology) connections to aeronautical fixed telecommunication network (AFTN) and aeronautical message handling system (AMHS) channels.

3.5.3 The infrastructure and model for the exchange of aviation meteorological data using ICAO meteorological information exchange model (IWXXM) are being improved, including information exchange mechanisms, such as the national and regional operational meteorological (OPMET) data centers (NOC and ROC, respectively) and WEB services.

3.5.4 Currently, the Russian OPMET data collection and distribution center (Moscow) has the status of a national center for OPMET data (NOC) within the ICAO structure. At the same time, the center collects, assembles and transfers OPMET data bulletins not only from the Russian Federation, but

also from neighboring States (Armenia, Kazakhstan, Kyrgyzstan, Tajikistan) to regional OPMET data centers (ROC London, Vienna, Toulouse) and regional OPMET data banks (RODB Brussels, Vienna, Toulouse), thus performing the ROC functions.

3.5.5 In order to eliminate the functional disagreements and streamline OPMET data flows in the European and North Atlantic (EUR-NAT) Region of ICAO, the coordination with relevant ICAO expert groups is continuously provided on the management of OPMET data (Data Management Group (DMG)) and meteorology (Meteorology Group (METG)) to make organizational arrangements for the establishment of the ROC Moscow.

3.5.6 Web-technologies for the provision of aeronautical meteorological information through specialized secure internet services are implemented and being further developed. Internet services are designed to receive flight documentation and view other additional meteorological information for the purpose of pre-flight briefing. Separate WEB-geographic information system (GIS)-services provide visualization of various types of data and their integration for the purposes of situational awareness for both meteorologists and aircraft crews; keeping aircraft weather logbooks for specific FIRs with the possibility, if necessary, of automatic generation and issuance of messages in the air-report (AIREP) special format, etc.

4. **CONCLUSION**

4.1 The Air Navigation Conference is invited to take note of the information contained in this document.

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