



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

**PROGRESS REPORT ON GLOBAL FLIGHT TRACKING, INCLUDING AN INITIAL PLAN
FOR THE DEVELOPMENT OF SARPs**

(Presented by the ICAO Secretariat)

SUMMARY

This paper outlines the progress to date on the work related to the outcomes, conclusions and recommendations of the special meeting on global flight tracking held in Montréal from 12 to 13 May 2014, in particular with regard to the ad hoc working group (AHWG) established by the President of the Air Navigation Commission and the Director of the Air Navigation Bureau, and the Aircraft Tracking Task Force (ATTF) led by IATA.

Action: The conference is invited to:

- a) note progress of the ad hoc working group as well as the Aircraft Tracking Task Force; and
- b) recommend that ICAO continue its work in developing and implementing provisions for a global flight tracking concept.

1. INTRODUCTION

1.1 Following the disappearance of Malaysia Airlines flight MH370, a special Multidisciplinary Meeting regarding Global Flight Tracking was held at ICAO Headquarters from 12 to 13 May 2014. Participants at this meeting included ICAO Council and Air Navigation Commission (ANC) States, as well as representatives from the industry and ICAO panels. A list of participants is available at <http://www.icao.int/Meetings/GTM/Pages/Documentation.aspx>.

1.2 The Multidisciplinary Meeting concluded that global tracking of airline flights will be pursued as a matter of priority to provide early notice of, and response to, abnormal flight behaviour. It also concluded that a draft concept of operations (CONOPS) on flight tracking be developed that includes a clear definition of the objectives of flight tracking, ensuring that information is provided in a timely fashion to the right people to support search and rescue, recovery and accident investigation activities, and also includes the roles and responsibilities of all stakeholders.

1.3 To develop the CONOPS as the guiding document for the overarching efforts, the President of the ANC and Director of the Air Navigation Bureau (ANB) established an ad hoc working group (AHWG). The Multidisciplinary Meeting also concluded that an industry-led initiative under the ICAO framework would be the most expeditious means to promote flight tracking implementation. In this regard, the Aircraft Tracking Task Force (ATTF), led by IATA, was established to identify potential solutions for routine flight tracking. ICAO is supporting this collaborative effort.

2. DISCUSSION

2.1 Near-term initiatives

Ad Hoc Working Group progress

2.1.1 The draft concept of operations document (CONOPS) developed by the AHWG specifies the high-level requirements and objectives for what is referred to as the Global Aeronautical Distress and Safety System. The CONOPS is intended to apply to commercial aircraft operators but takes an overall system approach and, consequently, is not restricted to a particular type of operation. The CONOPS describes: the target concept, including the key characteristics needed to deliver on the high-level requirements; areas for improvement in the current operating environment; high-level concept requirements; and an implementation roadmap, including steps and timeframes necessary to transition to the target concept.

2.1.2 The CONOPS provides high-level system specifications, including a description of stakeholders and usages of flight tracking information during all phases of flight including normal, abnormal and distress flight conditions. The document does not prescribe specific technical solutions for flight tracking but provides scenarios that can be used to verify whether a specific solution complies with the concept. (HLSC/15-WP/2 refers).

Aircraft Tracking Task Force progress

2.1.3 The ATTF has developed a document, which outlines the characteristics of a routine flight tracking system or capability. The ATTF document (ATTF report and recommendations) also defines its relation to the broader CONOPS which addresses the role of governments, airlines, and air navigation service providers in both routine and non-routine aircraft tracking situations. It describes aircraft tracking in terms of existing coverage, practices, and technologies. It has an assessment of capabilities section which describes information received from vendors who currently, or plan to, offer aircraft tracking products and/or services. The ATTF document outlines performance criteria which establish a baseline for airlines that elect to implement or enhance aircraft tracking capabilities in the near term. (HLSC/15-WP/11 refers).

2.1.4 The ATTF has yet to conclude its final report. It is reviewing existing technologies and practices installed and available and, based on this review, it is developing a report which contains performance-based criteria and recommendations to industry. The ATTF report will be presented to IATA's governing bodies in early December. It is expected that the final report will be available by the end of 2014.

Collaboration between the AHWG and ATTF

2.1.5 The AHWG focused on developing a clear definition of the objectives of flight tracking to ensure that information is provided in a timely fashion to support search and rescue, recovery and

accident investigation activities, as well as on developing the roles and responsibilities of all stakeholders. The work of the ATTF has been on the near-term objective of flight tracking using existing technologies. Both the ad hoc working group and the task force recognized that the CONOPS and the industry recommendations would need to encompass a fully integrated concept and, consequently, the two groups have worked in close coordination. The ATTF concept of operations for near-term flight tracking has also been fully incorporated into the high-level CONOPS.

Other near-term initiatives

2.1.6 In addition to the development of the CONOPS, the AHWG determined that, at present, there is no consolidated contact list of worldwide aircraft operators, air traffic service units and rescue coordination centres to enable rapid identification and contact between these stakeholders. The development of such a contact list, as well as a communications protocol to support rapid communications between the stakeholders, is one of the key areas for improvement. The development of a consolidated contact list will require follow-on work on the part of the aviation community.

2.1.7 The Multidisciplinary Meeting recommended that ICAO increase its resources allocated to search and rescue in order to improve the effectiveness across national and regional boundaries. In that regard, ICAO is grateful to the government of Australia who has nominated an expert, shortly to report to the Secretariat to assist in conducting a thorough review of provisions of Annex 12 — *Search and Rescue*, incorporating lessons learned from States that were recently involved in accidents where flight tracking could have facilitated search and rescue operations. Additionally, we are giving consideration to provisions which would require States to regularly run practice exercises involving airlines operations centres, air navigation service providers and rescue coordination centres to test and verify their ability to respond and coordinate together in an integrated manner. (HLSC/15-WP/21 refers).

2.1.8 In conjunction with this initiative, we thank Australia for seconding a search and rescue expert to ICAO who will help develop regional practice exercises to maintain the ability to respond in an integrated manner to abnormal flight behaviour scenarios. We expect to complete one regional drill in each region over the next two years.

2.2 Mid-term initiatives

Initial plan for the development of Standards and Recommended Practices (SARPs)

2.2.1 The Multidisciplinary Meeting recommended that in the medium-term, ICAO performance-based provisions should be developed on flight tracking and should be flexible enough to accommodate regional needs and be commensurate with operational situations.

2.2.2 Based on the operational experience that will be gained from near-term flight tracking initiatives, an initial timeframe for the development and implementation of SARPs related to flight tracking is proposed to coincide with the implementation of Block 1 of the Aviation System Block Upgrades (i.e. 2018). Consequentially, the work to develop the amendment proposals would need to begin in the 2015 timeframe. The industry experience gained in implementing the voluntary flight tracking measures will be taken into consideration in the formulation of any future SARPs on this subject.

2.2.3 Independently of the aforementioned, current initiatives to draft SARPs for Annex 6 — *Operation of Aircraft* regarding the capability to locate an accident site within 6 NM have benefited from the CONOPS. Distress flight tracking performance-based provisions using the Minimum Operational Performance Standards (MOPS) for the next generation of emergency locator transmitters (ELTs) being developed by EUROCAE and RTCA have been considered by the Flight Recorder Panel. It is expected

that the panel will take advantage of this work and recommend non-technology specific performance-based SARPs for Annex 6.

2.2.4 The Multidisciplinary Meeting recommended that ICAO encourage States and the International Telecommunications Union (ITU) to take action, at the earliest opportunity, to provide the necessary spectrum allocations as emerging needs are identified. ICAO has relayed this message to the ITU, and urged ITU to facilitate a greater understanding of spectrum needs for aviation safety.

2.3 Long-term initiatives

ITU-T Focus Group on Aviation Applications of Cloud Computing for Flight Data Monitoring

2.3.1 The Multidisciplinary Meeting recommended that ICAO work in coordination with the International Telecommunication Union (ITU) to develop aviation requirements for network communications associated with remote storage of flight information. To that end, the ITU set up a focus group to identify requirements for telecommunication standards for an aviation cloud for real-time monitoring of flight data based on the operational requirements for real-time monitoring of flight data identified by ICAO. Given the highly interdependent and complementary nature of the work of this group with that of ICAO, the Secretariat is working very closely with ITU in order to ensure that there is no duplication of effort, that there is common approach to the issues and that the solutions are compatible with the objectives of both organizations. Desired levels of security and privacy, including definition and feasibility for such a project, have yet to be defined. ICAO will host the ITU focus group meetings in Montréal and keep ITU up to date with relevant developments, including that of the new Information Management Panel.

3. CONCLUSIONS

3.1 Both the AHWG and ATTF were nearing the completion of their efforts at the time this paper was published. The groups have worked collaboratively to enable an integrated approach to derive information from a flight tracking system and to ensure the dissemination of such information in a timely manner to detect abnormal or distress situations, as well as to support search and rescue, recovery and accident investigation activities. Progress has also been made on related near-, mid- and long-term elements, outlined above. While an initial timeframe has been outlined for the development of SARPs related to flight tracking, the proposed timeframe may need to be reconsidered when additional experience is gained through the implementation of industry flight tracking measures.