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International Civil Aviation Organization

**ELEVENTH MEETING OF THE SURVEILLANCE
IMPLEMENTATION COORDINATION GROUP
(SURICG/11)**

Bangkok, Thailand, 25 – 27 March 2026

Agenda Item 3: Review of outcomes of relevant meetings on Surveillance

**IMPACT OF POTENTIAL REMOVAL OF UNUSED PROTOCOLS IN
ICAO ANNEX 10 VOL 4**

(Presented by Singapore)

SUMMARY

This paper informs the meeting of an upcoming plan to remove unused Mode S Protocols in the ICAO Annex 10 Vol 4 and seeks the feedback from the meeting on any undesirable impact.

1. INTRODUCTION

1.1 The ICAO Annex 10 Vol 4 contains the protocols for the radars and ACAS in which States (usually through the industry) must comply to. It also serves as a reference document for technical personnel to understand the interaction between radars and aircraft as well as between two or more aircraft.

2. DISCUSSION

2.1 The ICAO Annex 10 Vol 4 contains the full suite of Mode S services, of which several of them are either not implemented or seldom used. These include Level 3, 4, 5 transponders and Extended Length Message (ELM) using Comm-C and Comm-D. In practice, most transponders are only up to Level 2 and Comm-C / Comm-D are not used.

2.2 The Surveillance Panel therefore initiated an investigation to study the requirements and impact to remove the material relating to the unused protocol. The latest paper from the Surveillance Panel on this topic is attached in Appendix A. States are encouraged to highlight if they are using any of the protocols that could be removed from the ICAO Annex 10 Vol 4.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) note the information presented in this paper;
- b) review the Appendix and highlight any concerns; and
- c) discuss any relevant matter as appropriate.



International Civil Aviation Organization

Working PAPER

SP6-ASWG23-WP/16
9/3/2026

SIXTH MEETING OF THE SURVEILLANCE PANEL (SP/6)

**Twenty-third meeting of the Aeronautical Surveillance Working Group
(SP/6-ASWG/23)**

Montreal, from 9 through 13 March 2026

ASWG23 Agenda Item 6: Mode S and Extended Squitter

Impact of Potential Removal of Unused Protocols

(Prepared and presented by **Matt Haskin**)

SUMMARY

This working paper reports progress by the TSG in deciding which of the potentially unneeded protocols in the SARPS and capabilities should be considered for removal.

This report was prepared in response to **ACTION ITEM TSG22/19-1**

ACTION

The meeting is invited to:

- a) Note the material in this working paper;
- b) Task the TSG to continue the work to develop a PfA based on removal of capabilities that are not needed and should no longer be options for implementation given the potential impact to spectrum

1. INTRODUCTION

1.1 At TSG/19, an investigation was requested into what is required to remove MSPs, Level 3, 4, 5, ELMs, etc. This paper provides a status update of the TSG work in this area.

2. DISCUSSION

2.1 Level 3

Level 3 includes ground-to-air extended length messages using the Comm-C (UF=24) and Comm-D (DF=24) formats. The data that would be transferred in these messages is not specified in the SARPS. The TSG agreed that Level 3 could be removed, but that Comm-C and Comm-D formats should be maintained to ensure backward compatibility, especially with test equipment that has been previously designed to use those formats.

2.2 Level 4

Level 4 includes air-to-ground extended length messages using the multisite Comm-D (DF=24) formats. The data that would be transferred in these messages is not specified in the SARPS. The TSG agreed that Level 4 could be removed.

2.3 Level 5

Level 5 includes enhanced air-initiated Comm-B which allows for parallel delivery of Comm-B messages to up to 16 interrogators without using reservations. It also allows for enhanced extended length messages on both the uplink and downlink for up to 16 interrogators without using reservations. The data that would be transferred in these messages is not specified in the SARPS. The TSG agreed that Level 5 could be removed.

2.4 Comm-A

Comm-A was previously a required part of the Level 2 transponder, but was made an optional capability in the latest SARPS PfA. Comm-A uses UF=20 and 21 to send data to the transponder. Previously, this message was used to transmit TCAS Sensitivity Commands, though that usage has been eliminated in the recent SARPS PfA. Any data that would be included in these messages is not specified in the SARPS. The TSG agreed that Comm-A should be maintained to ensure backward compatibility.

2.5 Air-initiated Comm-B

Air-initiated Comm-B was previously a required part of the Level 2 transponder, but was made an optional capability in the latest SARPS PfA. Air-initiated Comm-B allows an aircraft to direct a message to a specific interrogator. Note that this protocol is incompatible with the use of SI codes. The data that would be transferred in these messages is not specified in the SARPS. The TSG agreed that air-initiated Comm-B could be removed.

2.6 Maximum Cruising True Airspeed

When AQ=1, the RI field is specified to contain the maximum cruising true airspeed capability of an aircraft within a DF=0 reply (generally used by collision avoidance systems). This data is not used by any known

collision avoidance system. The TSG agreed that maximum cursing true airspeed could be removed, though coordination is also required with the AIRB as the information for this capability is also included in Chapter 4.

2.7 **MSP**

The term MSP is not defined within the SARPS and is only used three times. Per 9871, MSPs are Mode S Specific Protocols. Per ASWG TSG WP 20-04, MSPs are no longer used. Two of those times refer to the capability reports in 1D₁₆ and 1F₁₆. The third time relates to a requirement that the downlink standard length transaction interface support MSP downlink channel 3 via the dataflash application. The TSG agreed that MSPs could be removed.

3. **ACTION BY THE MEETING**

The meeting is invited to note the progress made by the TSG. The meeting is also requested to task the TSG to draft an initial PfA for TSG/23.
