



WORKING PAPER

COUNCIL — 180TH SESSION

2600nd Report to Council by the President of the Air Navigation Commission

Subject No. 14.1.1: International Standards and Recommended Practices (SARPs)

ADOPTION OF AMENDMENT 31 TO ANNEX 6, PART I

(ANC Task Nos. ATM-9402, ATM-0001 and CNS-9601)

SUMMARY

This paper presents a proposal of the Air Navigation Commission for Amendment 31 to Annex 6, Part I regarding carriage requirements for ELTs, ADS-C and RCP in the provision of ATS and enhancement of the effectiveness of ACAS.

The material to be adopted/approved, as appropriate, is presented in appendices as follows:

Appendix A — Amendment to Annex 6, Part I

Appendix B — Resolution of Adoption

Appendix C — Amendment to the Foreword of Annex 6, Part I

REFERENCES

Amendment concerning mandatory carriage requirements for ELTs

AN-WP/8199

*AN Min. 173-2

*AN-WP/8152

AN Min. 170-5, 8 and 9

AN-WP/8063, Corrigendum and
DP No. 1

*Annex 6, Parts I, II and III

*State letter AN 15/12-06/12

AN-WP/7986

AN Min. 174-8

Amendment concerning the use of ADS-C and RCP in the provision of air traffic services

AN-WP/8199	AN Min. 171-9
*AN-WP/8170	*Annex 6, Parts I, II and III
AN-WP/8104	*OPLINKP/1 report (yellow cover)
AN Min. 174-8	*State letter SP 52/4-06/41
*AN Min. 173-13	

Amendment concerning pressure altitude data sources used by transponders

C-WP/12623	AN Min. 171-6 and 7
AN-WP/8199	*AN Min. 169-7
*AN-WP/8160	*Annex 6, Part I
AN-WP/8095, Addenda Nos. 1 and 2	Annex 10, Volume IV SCRSP/1 report (yellow cover)
AN-WP/8036	*State letter AN 11/1.1.27-05/79
AN Min. 174-8	State letter AN 11/1-00/36
*AN Min. 173-5 and 6	

This working paper relates to Strategic Objectives A and D.

*Principal references

1. INTRODUCTION

1.1 This report deals with a proposal of the Air Navigation Commission for the amendment of Annex 6 — *Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes* arising from:

- a) a study which itself emanated from a consultation with States and international organizations that addressed the need to amend the applicability date of 1 January 2005 of Standards concerning the mandatory carriage of emergency locator transmitters (ELTs);
- b) Recommendations 2/1 and 3/1 of the first meeting of the Operational Data Link Panel (OPLINKP/1) concerning the use of automatic dependent surveillance – contract (ADS-C) and required communication performance (RCP) in the provision of air traffic services (ATS); and
- c) recommendations of the first meeting of the Surveillance and Conflict Resolution Systems Panel (SCRSP/1) concerning pressure altitude data sources used by transponders.

2. AMENDMENT CONCERNING MANDATORY CARRIAGE REQUIREMENTS FOR ELTs

2.1 Origin and development

2.1.1 On 9 and 14 June 2005, the Air Navigation Commission (AN Min. 169-9 and 10) discussed the results of a consultation with States and international organizations on proposed amendments to Annex 6, Part I, Part II — *International General Aviation — Aeroplanes* and Part III — *International Operations — Helicopters* concerning a delay of the applicability date of 1 January 2005 of Standards for the mandatory carriage of automatic ELTs operating simultaneously on 406 /121.5 MHz. This consultation was triggered by significant difficulties in the implementation of the Standards. The Commission concluded that changing the applicability date of the Standards would not be effective in alleviating the purported implementation problems. Furthermore, some States and aircraft operators were already compliant. The Commission considered, rather, that the types of automatic ELTs suitable for carriage, their availability and respective procurement and fitment costs needed further research and closer definition. Therefore, the Commission agreed to the formation of a task force to conduct a study on issues related to the provisions requiring equipage of ELTs and, based on the group's findings, would review the need for any amendment to existing provisions.

2.1.2 On 20 October, 15 and 17 November 2005, the Air Navigation Commission (AN Min. 170-5, 8 and 9, respectively) reviewed the findings of the task force study and amendments proposed to the ELT provisions in Annex 6, Parts I, II and III contained in AN-WP/8063, Corrigendum and DP No. 1. Considering worldwide harmonization with respect to ELT carriage requirements, these proposals were a closer reflection than before of regulations in many State administrations. The Commission decided that the proposal be transmitted to States and appropriate international organizations for comment. Accordingly, State letter AN 15/12-06/12, dated 20 January 2006, was sent with a due date for replies of 28 April 2006.

2.2 Replies to State letter

2.2.1 By the time of the final review of replies by the Air Navigation Commission on 12 October 2006, replies had been received from fifty-six Contracting States and four international organizations. A summary of replies is in Appendix A to AN-WP/8152, and detailed comments on the proposed amendments are presented in Appendix B to that paper.

2.3 Review by the Air Navigation Commission

2.3.1 On 12 October 2006, the Commission (AN Min. 173-2) reviewed the proposed amendment in light of comments by States and international organizations contained in AN-WP/8152. After lengthy debate, the Commission agreed that the proposed amendment to Annex 6, Part I, as contained in Attachment A of the State letter and as amended during discussions, be consolidated with other amendment proposals for inclusion in Amendment 31 to Annex 6, Part I.

2.4 Nature and scope of the amendment

2.4.1 The proposed amendments to Annex 6, Part I remove those requirements associated with “areas designated as being especially difficult for SAR” in relation to the carriage of ELTs, to facilitate a global approach to ELT carriage requirements that makes no distinction between the geographic areas over which aeroplanes fly. Commercial air transport aeroplanes in Annex 6, Part I have been divided into two categories in the proposed provisions: those aeroplanes with a passenger carrying capacity of more than 19 and those with a capacity of 19 or less. In both cases, differentiation is made between older

aeroplanes and those for which the individual certificate of airworthiness is first issued after 1 July 2008. The overall effect of the above is to ensure that all aeroplanes with individual certificates of airworthiness that are first issued after 1 July 2008 are equipped with at least one automatic ELT while removing the requirement to retrofit automatic ELTs to older commercial air transport aeroplanes.

2.4.2 The proposed amendments recognise the concerns expressed by various sectors of the industry with respect to the high costs of retrofitting and are more closely relevant to contemporary SAR service-related issues such as areas difficult to search and optimal emergency signalling by aeroplanes distressed at sea. Furthermore, they represent an appropriate level of support to SAR service providers in their efforts to save lives. Due account has also been taken of the economics and practicalities of international civil aircraft operations.

3. AMENDMENT CONCERNING THE USE OF ADS-C AND RCP IN THE PROVISION OF AIR TRAFFIC SERVICES

3.1 Origin and development

3.1.1 On 23 February 2006, the Air Navigation Commission (AN Min. 171-9) reviewed a proposal arising from Recommendations 2/1 and 3/1 of the first meeting of the Operational Data Link Panel (OPLINKP/1) to amend the Standards and Recommended Practices (SARPs) in Annex 6, Parts I, II and III, concerning the use of ADS-C and RCP in the provision of ATS to support harmonized developments and early implementation of data link applications (AN-WP/8104 refers).

3.1.2 The Commission agreed that the proposal, as amended by the Commission, be transmitted to States and appropriate international organizations for comment. Accordingly, State letter SP 52/4-06/41, dated 28 April 2006, was sent with a due date for replies of 18 August 2006.

3.2 Replies to State letter

3.2.1 By the time of the final review of the proposed amendment by the Commission on 5 December 2006, replies had been received from forty-two States and four international organizations. A summary of the replies is contained in Appendix A to AN-WP/8170 and detailed comments on the proposed amendment are presented in Appendix B to that paper.

3.3 Review by the Air Navigation Commission

3.3.1 On 5 December 2006, the Commission (AN Min. 173-13) reviewed the proposed amendment in light of comments by States and international organizations contained in AN-WP/8170. The Commission noted the support for the proposed amendment by States and agreed that the proposed material, as presented in the State letter, be included in Amendment 31 to Annex 6, Part I and recommended to the Council for adoption.

3.4 Nature and scope of the amendment

3.4.1 The proposed amendment to Annex 6, Part I includes the initial high-level provisions necessary to support the introduction of RCP. The introduction of provisions regarding RCP will support the efforts of States to transition to performance-based operations, a critical aspect of evolving to a safer and more efficient global air traffic management (ATM) environment. Minor editorial amendments are proposed to the term "ADS" to differentiate ADS-C from ADS-B and align the wording with other Annexes and Procedures for Air Navigation Services (PANS) provisions.

4. AMENDMENT CONCERNING PRESSURE ALTITUDE DATA SOURCES

4.1 Origin and development

4.1.1 On 2 June 2005, the Air Navigation Commission (AN Min.169-7) carried out a preliminary review of a proposal arising from recommendations of the first meeting of the Surveillance and Conflict Resolution Systems Panel (SCRSP/1) to amend Annex 6, Part I, relating to pressure altitude data sources used by transponders.

4.1.2 The Commission agreed that the proposal be transmitted to States and appropriate international organizations for comments. Accordingly, State letter AN 11/1.1.27-05/79, dated 12 August 2005, was sent with a due date for replies of 30 November 2005.

4.2 Replies to State letter

4.2.1 By the time of the final review of replies by the Air Navigation Commission on 2 February 2006, replies had been received from fifty-six States and three international organizations. A summary of replies is in Appendix A to AN-WP/8095 and Addendum No. 1, and detailed comments on the proposed amendments are presented in Appendix B to that paper.

4.3 Review by the Air Navigation Commission

4.3.1 On 2 and 3 February 2006, the Commission (AN Min 171-6 and 7) reviewed the proposed amendments in light of comments by States and international organizations contained in AN-WP/8095 and Addendum No. 1. The Commission agreed that the proposed amendments, as contained in the attachment to the State letter and as amended during discussions, be consolidated with other amendment proposals for inclusion in Amendment 30 to Annex 6, Part I.

4.3.2 Consequently, the proposal was incorporated in C-WP/12623 which presented a consolidated amendment proposal for Annex 6, Part I, to the Council. However, replies to the aforementioned State letter and other information continued to be received. Although the majority of replies, including most of the ten late ones, showed support for the proposal, some indicated possible complexity and cost concerns. The proposal was then withdrawn shortly before being considered by the Council pending further investigation.

4.3.3 On 25 and 26 October 2006, the Commission (AN Min. 173-5 and 173-6), consecutively, undertook another review of the proposal in light of further investigation and analysis that had been undertaken by the Secretariat and presented in AN-WP/8160. The Commission again found the proposal to be important for safety and technically sound. It was also confirmed that many aircraft operating agencies had already implemented the proposed amendment to take advantage of its safety and operational benefits. It was acknowledged that there may be cost implications for certain types of aircraft including non-ACAS equipped aircraft with Mode A/C transponders, but the majority view of the Commission was that since the proposed amendment seeks to rectify a well-known and documented safety-related problem with encoder-transponder interface, it should be processed without any further delay. The compliance dates in the proposal were duly adjusted to account for the delay already incurred in its adoption.

4.4 **Nature and scope of the amendment**

4.4.1 The proposed amendment to Annex 6, Part I, as contained in Appendix A, would enhance the accuracy and effectiveness of airborne collision avoidance system (ACAS) and ground surveillance with secondary surveillance radar (SSR) Mode S by requiring the carriage of altitude encoders with higher resolution. It would also rectify the well-known encoder-transponder interface problem which had been communicated to States via State letter AN 11/1-00/36, dated 14 April 2000. The proposed amendments also include a new recommendation requiring the Mode S transponder to provide airborne/on-the-ground status in aeroplanes that are already equipped with an automatic means of detecting such status, further enhancing the effectiveness of ACAS and ground surveillance.

5. **METHOD OF PRESENTATION OF THE AMENDMENT**

5.1 The proposed amendments to Annex 6, Part I arising from the foregoing are presented in Appendix A to this paper. Notes on the method of presentation and an indication of the source of the amendments are shown on the first page of Appendix A.

6. **APPROVAL OF REPORT TO COUNCIL**

6.1 On 22 February 2007, the Air Navigation Commission (AN Min. 174-8) reviewed AN-WP/8199, containing the draft report to Council on the adoption of Amendment 31 to Annex 6, Part I, and approved the report.

7. **DATE OF APPLICABILITY**

7.1 The Air Navigation Commission, having examined the technical circumstances associated with the implementation of these amendments, considers that the common applicability date of 22 November 2007 would be suitable for Amendment 31 to Annex 6, Part I.

8. **ACTION BY THE COUNCIL**

8.1 The Council is invited to:

- a) adopt, as Amendment 31 to Annex 6, Part I, the amendments to the definitions and to the Standards and Recommended Practices as contained in Appendix A to this paper;
- b) approve, as part of the said amendment, the amendment to Notes as contained in Appendix A to this paper;

- c) approve the Resolution of Adoption to Annex 6, Part I in Appendix B to this paper;
and
- d) approve, as part of the said amendment, the amendment to the Foreword to Annex 6, Part I as contained in Appendix C to this paper.

B. Ramfjord
President
Air Navigation Commission

APPENDIX A
PROPOSED AMENDMENT TO
INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES
OPERATION OF AIRCRAFT
ANNEX 6
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION
PART I
INTERNATIONAL COMMERCIAL AIR TRANSPORT — AEROPLANES
NOTES ON THE PRESENTATION OF THE PROPOSED AMENDMENT

1. The text of the amendment is arranged to show deleted text with a line through it and new text highlighted with grey shading, as shown below:

- | | |
|---|-----------------------------------|
| 1. Text to be deleted is shown with a line through it. | text to be deleted |
| 2. New text to be inserted is highlighted with grey shading. | new text to be inserted |
| 3. Text to be deleted is shown with a line through it followed
by the replacement text which is highlighted with grey shading. | new text to replace existing text |

2. The sources of the proposed amendments have been indicated as follows:

Source	Annotation
Amendment arising from Recommendations 2/1 and 3/1 of the OPLINKP/1 meeting concerning the use of RCP in the provision of air traffic services	Source A
Amendment arising from a study by the Secretariat concerning mandatory carriage requirements for emergency locator transmitters (ELTs)	Source B
Amendment arising from recommendations of the SCRSP/1 meeting concerning pressure altitude data sources	Source C

**INTERNATIONAL STANDARDS
AND RECOMMENDED PRACTICES**

OPERATION OF AIRCRAFT

**ANNEX 6
TO THE CONVENTION ON INTERNATIONAL CIVIL AVIATION**

**PART I
INTERNATIONAL COMMERCIAL AIR TRANSPORT — AEROPLANES**

Source A

CHAPTER 1. DEFINITIONS

...

Required communication performance (RCP). A statement of the performance requirements for operational communication in support of specific ATM functions.

...

RCP type. A label (e.g. RCP 240) that represents the values assigned to RCP parameters for communication transaction time, continuity, availability and integrity.

...

**CHAPTER 6. AEROPLANE INSTRUMENTS, EQUIPMENT
AND FLIGHT DOCUMENTS**

...

6.3 Flight recorders

...

6.3.1.5.2 Sufficient information to derive the content of the data link communications message and, whenever practical, the time the message was displayed to or generated by the crew shall be recorded.

Note.— Data link communications include, but are not limited to, automatic dependent surveillance contract (ADS-C), controller-pilot data link communications (CPDLC), data link-flight information services (D-FIS) and aeronautical operational control (AOC) messages.

...

Source B

...

6.17 Emergency locator transmitter (ELT)

~~6.17.1 Except as provided for in 6.17.2, until 1 January 2005 all aeroplanes operated on long range over water flights as described in 6.5.3 shall be equipped with at least two ELT(S).~~

~~6.17.7.1 Recommendation.— All aeroplanes should carry an automatic ELT.~~

~~6.17.2 All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2002, operated on long range over water flights as described in 6.5.3, shall be equipped with at least two ELTs, one of which shall be automatic.~~

6.17.2 Except as provided for in 6.17.3, from 1 July 2008, all aeroplanes authorized to carry more than 19 passengers shall be equipped with at least one automatic ELT or two ELTs of any type.

6.17.3 From 1 January 2005, all aeroplanes operated on long range over water flights as described in 6.5.3 authorized to carry more than 19 passengers for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least two ELTs, one of which shall be automatic.

6.17.4 Except as provided for in 6.17.5, from 1 July 2008, all aeroplanes authorized to carry 19 passengers or less shall be equipped with at least one ELT of any type.

~~6.17.4 Except as provided for in 6.17.5, until 1 January 2005 aeroplanes on flights over designated land areas as described in 6.6 shall be equipped with at least one ELT(S).~~

6.17.5 All aeroplanes authorized to carry 19 passengers or less for which the individual certificate of airworthiness is first issued after 1 July 2008 shall be equipped with at least one automatic ELT.

~~6.17.5 All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2002, on flights over designated land areas as described in 6.6, shall be equipped with at least one automatic ELT.~~

~~6.17.6 From 1 January 2005, aeroplanes on flights over designated land areas as described in 6.6 shall be equipped with at least one automatic ELT.~~

~~6.17.8~~ 6.17.6 ELT equipment carried to satisfy the requirements of 6.17.1, 6.17.2, 6.17.3, 6.17.4 and 6.17.5, ~~6.17.6 and 6.17.7~~ shall operate in accordance with the relevant provisions of Annex 10, Volume III.

Note.— The judicious choice of numbers of ELTs, their type and placement on aircraft, and associated floatable life support systems, will ensure the greatest chance of ELT activation in the event of an accident for aircraft operating over water or land, including areas especially difficult for search and rescue. Placement of transmitter units is a vital factor in ensuring optimal crash and fire protection. The placement of the control and switching devices (activation monitors) of automatic fixed ELTs and their

associated operational procedures will also take into consideration the need for rapid detection of inadvertent activation and convenient manual switching by crew members.

...

Source C

...

6.19 Aeroplanes required Requirements to be equipped with a for pressure-altitude reporting transponders

6.19.1 All aeroplanes shall be equipped with a pressure-altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.

6.19.2 All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2009 shall be equipped with a data source that provides pressure altitude information with a resolution of 7.62 m (25 ft), or better.

6.19.3 After 1 January 2012, all aeroplanes shall be equipped with a data source that provides pressure altitude information with a resolution of 7.62 m (25 ft), or better.

6.19.4 Recommendation.— *The Mode S transponder should be provided with the airborne/on-the-ground status if the aeroplane is equipped with an automatic means of detecting such status.*

Note 1.— ~~This~~ *These provisions is will intended to improve the effectiveness of airborne collision avoidance systems air traffic services as well as air traffic services that employ Mode S radars airborne collision avoidance systems. In particular, tracking processes are significantly enhanced with a resolution of 7.62 m (25 ft), or better.*

Note 2.— *Mode C replies of transponders always report pressure altitude in 30.50 m (100 ft) increments irrespective of the resolution of the data source.*

...

Source A

...

CHAPTER 7. AEROPLANE COMMUNICATION AND NAVIGATION EQUIPMENT

7.1 Communication equipment

...

7.1.2 The radio communication equipment required in accordance with 7.1.1 shall provide for communications on the aeronautical emergency frequency 121.5 MHz.

7.1.3 For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall, in addition to the requirements specified in 7.1.1:

- a) be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP type(s); and
- b) be authorized by the State of the Operator for operations in such airspace.

Note.— Information on RCP and associated procedures, and guidance concerning the approval process, are contained in the Manual on Required Communication Performance (RCP) (in preparation). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.

...

APPENDIX B
AMENDMENT 31 TO THE INTERNATIONAL STANDARDS AND
RECOMMENDED PRACTICES

ANNEX 6 — OPERATION OF AIRCRAFT

PART I — INTERNATIONAL COMMERCIAL
AIR TRANSPORT — AEROPLANES

RESOLUTION OF ADOPTION

The Council

Acting in accordance with the Convention on International Civil Aviation, and particularly with the provisions of Articles 37, 54 and 90 thereof,

1. *Hereby adopts* on [D] Amendment 31 to the International Standards contained in the document entitled *International Standards and Recommended Practices, Operation of Aircraft, International Commercial Air Transport — Aeroplanes* which for convenience is designated Annex 6, Part I to the Convention;

2. *Prescribes* [*] July 2007 as the date upon which the said amendment shall become effective, except for any part thereof in respect of which a majority of the Contracting States have registered their disapproval with the Council before that date;

3. *Resolves* that the said amendment or such parts thereof as have become effective shall become applicable on 22 November 2007;

4. *Requests the Secretary General:*

a) to notify each Contracting State immediately of the above action and immediately after [*] July 2007 of those parts of the amendment which have become effective;

b) to request each Contracting State:

1) to notify the Organization (in accordance with the obligation imposed by Article 38 of the Convention) of the differences that will exist on 22 November 2007 between its national regulations or practices and the provisions of the Standards in the Annex as hereby amended, such notification to be made before 22 October 2007, and thereafter to notify the Organization of any further differences that arise;

2) to notify the Organization before 22 October 2007 of the date or dates by which it will have complied with the provisions of the Standards in the Annex as hereby amended;

c) to invite each Contracting State to notify additionally any differences between its own practices and those established by the Recommended Practices, when the notification of such differences is important for the safety of air navigation, following the procedure specified in subparagraph b) above with respect to differences from Standards.

APPENDIX C

AMENDMENT TO THE FOREWORD OF ANNEX 6, PART I

Add the following at the end of Table A:

<i>Amendment</i>	<i>Source(s)</i>	<i>Subject</i>	<i>Adopted/Approved Effective Applicable</i>
31	First meeting of the Operational Data Link Panel (OPLINKP/1), First meeting of the Surveillance and Conflict Resolution Systems Panel (SCRSP/1) and Air Navigation Commission Study.	<ul style="list-style-type: none"> a) amendments to Standards to facilitate implementation of the available technology in relation to the use of automatic dependent surveillance – contract (ADS-C) and to the introduction of required communication performance (RCP) in the provision of air traffic services (ATS); b) amendment of existing provisions related to the mandatory carriage requirements of emergency locator transmitters (ELTs); and c) changes to Standards related to pressure altitude data sources used by transponders. 	<p style="text-align: center;">D *</p> <p>22 November 2007</p>

— END —