

APPENDIX A

AMENDMENTS TO ICAO ANNEXES AND PROCEDURES

ANNEX 6 — OPERATION OF AIRCRAFT

PART I — INTERNATIONAL COMMERCIAL AIR TRANSPORT

AMENDMENT NO. 21, ADOPTED 8 MARCH 1995, APPLICABLE 9 NOVEMBER 1995

Sensitive altimeters

A note was added to 6.9 c) to indicate the unsatisfactory nature of drum-pointer altimeters.

Ground proximity warning systems — turbine engine aeroplanes

A new Standard, 6.15.3, was introduced which requires that all turbine engine aeroplanes of a certificated take-off mass (MCTM) in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with GPWS from 1 January 1999. The previous requirement applied to aeroplanes with MCTM in excess of 15 000 kg or authorized to carry more than thirty passengers (Part I, 6.15.1). Additionally, aeroplanes for which the certificate of airworthiness was first issued before 1 July 1979 were subject only to a Recommended Practice (Part I, 6.15.2).

Ground proximity warning systems — warning functions

A new Standard, 6.15.5, was introduced which specifies the circumstances under which a GPWS shall provide a warning from 1 January 1999.

Operations manuals — contents

A new Standard, 11.1 31), was introduced which requires instructions and training requirements for the avoidance of CFIT and policy on the use of the GPWS to be included in operations manuals.

AMENDMENT NO. 23, ADOPTED 19 MARCH 1998, APPLICABLE 5 NOVEMBER 1998

Sensitive altimeters

The Standard in 6.9.1 c) was revised to specify two sensitive pressure altimeters with counter drum-pointer or equivalent presentation. The note to 6.9.1 c) was revised to indicate that neither three-pointer nor drum-pointer altimeters satisfied the requirement for sensitive pressure altimeters.

Ground proximity warning systems — piston engine aeroplanes

A new Recommended Practice, 6.15.6, was introduced which recommends that piston engine aeroplanes with MCTM in excess of 5 700 kg or authorized to carry more than nine passengers should be equipped with GPWS.

Operations manuals — contents

The requirements for the content of an operations manual in 11.1 were relocated to a new Appendix 2. Contents of an Operations Manual; the following requirements were added:

- 2.1 Statement of safety policy and personnel responsibilities;
- 5.9 Standard operating procedures for each phase of flight;
- 5.10 Instructions for the use of checklists and timing of their use;
- 5.13 Instructions for the maintenance of altitude awareness and the use of automated or flight crew call-out;
- 5.14 Instructions on the use of auto-pilots and auto-throttles in instrument meteorological conditions (IMC);
- 5.15 Instructions on the clarification and acceptance of air traffic control (ATC) clearances, particularly where terrain clearance is involved;
- 5.16 Departure and approach briefings;
- 5.17 Route and destination familiarization;
- 5.18 Stabilized approach procedure;
- 5.19 Limitation on high rates of descent near the surface;
- 5.21 Instructions for the conduct of precision and non-precision instrument approach procedures; and
- 5.22 Allocation of flight crew duties and procedures for the management of crew workload during night and IMC instrument approach and landing procedures.

**AMENDMENT NO. 24, ADOPTED 15 MARCH 1999,
APPLICABLE 4 NOVEMBER 1999**

Aeroplanes required to be equipped with GPWS

The addition of a predictive terrain hazard warning function to the ground proximity warning system (GPWS).

**AMENDMENT NO. 25, ADOPTED 15 MARCH 2000,
APPLICABLE 2 NOVEMBER 2000**

Runway Visual Range (RVR)

A new requirement in 4.2.7.3 to provide RVR information for Category II and Category III instrument approach and landing operations.

Criteria for instrument approach operations

A new Standard in 4.4.1.2 prohibiting the continuation of an instrument approach (approach ban) beyond a specific point if the reported visibility or RVR is below the minimum specified for that approach.

**AMENDMENT NO. 26, ADOPTED 9 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001**

Definitions

Introduction of new provisions pertaining to approach with vertical guidance (APV) operations.

**AMENDMENT NO. 27, ADOPTED 15 MARCH 2002,
APPLICABLE 28 NOVEMBER 2002**

Aeroplanes required to be equipped with GPWS

Revised requirements for the ground proximity warning system and forward terrain looking function applicable to turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers, for which the individual certificate of airworthiness is first issued on or after 1 January 2004. From 1 January 2007, all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

**ANNEX 6, PART II ! *INTERNATIONAL GENERAL AVIATION*
! *AEROPLANES***

**AMENDMENT NO. 16, ADOPTED 10 MARCH 1995,
APPLICABLE 9 NOVEMBER 1995**

Ground proximity warning systems — turbine engine aeroplanes

6.9.2. and 6.9.4 introduced Standards similar to those in Part I, 6.15.3 and 6.15.5, respectively.

**AMENDMENT NO. 18, ADOPTED 20 MARCH 1998,
APPLICABLE 5 NOVEMBER 1998**

Ground proximity warning systems — piston engine aeroplanes

6.9.5 introduced a Recommended Practice similar to that in Part I, 6.15.6.

**AMENDMENT NO. 19, ADOPTED 15 MARCH 1999,
APPLICABLE 4 NOVEMBER 1999**

Aeroplanes required to be equipped with GPWS

The addition of a predictive terrain hazard warning function to the ground proximity warning system (GPWS).

**AMENDMENT NO. 20, ADOPTED 15 MARCH 2000,
APPLICABLE 5 NOVEMBER 2000**

Criteria for instrument approach operations

4.6.4 introduced a new Standard similar to that of Part I, 4.4.1.2.

**AMENDMENT NO. 21, ADOPTED 9 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001**

Definitions

Introduction of new provisions pertaining to approach with vertical guidance (APV) operations.

**AMENDMENT NO. 22, ADOPTED 15 MARCH 2002,
APPLICABLE 28 NOVEMBER 2002**

Aeroplanes required to be equipped with GPWS

Revised requirements for the ground proximity warning system and forward terrain looking function applicable to turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers, for which the individual certificate of airworthiness is first issued on or after 1 January 2004. From 1 January 2007, all turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers, shall be equipped with a ground proximity warning system which has a forward looking terrain avoidance function.

**ANNEX 6, PART III ! INTERNATIONAL OPERATIONS
! HELICOPTERS**

SECTION II ! INTERNATIONAL COMMERCIAL AIR TRANSPORT

**AMENDMENT NO. 7, ADOPTED 15 MARCH 2000,
APPLICABLE 2 NOVEMBER 2000**

Runway Visual Range (RVR)

2.2.7.3 introduced a new Standard similar to that of Part I, 4.2.7.3.

Criteria for instrument approach operations

2.4.1.2 introduced a new Standard similar to that of Part I, 4.4.1.2.

**AMENDMENT NO. 8, ADOPTED 12 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001**

Definitions

Introduction of new provisions pertaining to approach with vertical guidance (APV) operations.

SECTION III ! INTERNATIONAL GENERAL AVIATION**AMENDMENT NO. 7, ADOPTED 15 MARCH 2000,
APPLICABLE 2 NOVEMBER 2000****Criteria for instrument approach operations**

2.6.3.2 introduced a new Standard similar to that of Part I, 4.4.1.2.

**AMENDMENT NO. 8, ADOPTED 12 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001****Definitions**

Introduction of new provisions pertaining to approach with vertical guidance (APV) operations.

**ANNEX 3 — *METEOROLOGICAL SERVICE
FOR INTERNATIONAL AIR NAVIGATION*****AMENDMENT NO. 72, ADOPTED 7 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001****Observing and reporting of runway visual range**

4.7.2 updated the Recommended Practice concerning the RVR being representative of the touchdown zone to the level of a Standard.

4.7.3 introduced a new requirement to make RVR observations on all runways intended for Category II and Category III instrument approach and landing operations.

ANNEX 4 — *AERONAUTICAL CHARTS***AMENDMENT NO. 52, ADOPTED 7 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001****Instrument approach charts — culture and topography**

11.7.2 and 11.7.4 introduced new Standards for the use of smoothed contour lines, contour values and tints to show relief and for showing contour envelopes and tinted area minimal altitude (AMA), respectively.

ANNEX 11 — *AIR TRAFFIC SERVICES*

**AMENDMENT NO. 37, ADOPTED 20 MARCH 1997,
APPLICABLE 6 NOVEMBER 1997**

Identification of SIDs and STARs

A revision to 2.11.3 upgraded to Standards the specifications which govern the identification of standard departure (SID) and arrival routes (STAR).

**AMENDMENT NO. 40, ADOPTED 12 MARCH 2001,
APPLICABLE 1 NOVEMBER 2001**

Air traffic services — units providing approach control service

7.1.3.4 and 7.1.4.4 updating of the Recommended Practices concerning the ATS units equipment and indicators permitting read-out of RVR values to the Level of Standards.

ANNEX 13 — *AIRCRAFT ACCIDENT AND INCIDENT INVESTIGATION*

**AMENDMENT NO. 9, ADOPTED 23 MARCH 1994,
APPLICABLE 10 NOVEMBER 1994**

Notification of accidents/incidents and reports

Strengthened the specifications for the notification of accidents and serious incidents for the ICAO Accident/Incident Reporting System (ADREP) preliminary and data reports and the requirements for the publication and circulation of the final report. Controlled flight into terrain only marginally avoided was included as an example of a serious incident.

***PROCEDURES FOR AIR NAVIGATION SERVICES — RULES OF THE AIR AND AIR
TRAFFIC SERVICES* (PANS-RAC, DOC 4444)**

**THIRTEENTH EDITION, APPROVED 11 MARCH 1996,
APPLICABLE 7 NOVEMBER 1996**

Radar vectoring and MSAW

Revised material on minimum vectoring altitudes to indicate that these should be sufficiently high to minimize activation of the GPWS and that the radar controller shall ensure the prescribed obstacle clearance when vectoring an IFR flight. A specification that radar services should provide for the display of safety-related warnings, including, inter alia, minimum safe altitude warning (MSAW), was introduced.

PROCEDURES FOR AIR NAVIGATION SERVICES — AIRCRAFT OPERATIONS
(PANS-OPS, Doc 8168)

PANS-OPS, VOLUME I — FLIGHT PROCEDURES

**AMENDMENT NO. 9, APPROVED 4 MARCH 1996,
APPLICABLE 7 NOVEMBER 1996**

Introduced definitions and revised material on the standard instrument departure (SID) and the standard instrument arrival (STAR).

**AMENDMENT NO. 10, APPROVED 1 MAY 1998,
APPLICABLE 5 NOVEMBER 1998**

Introduced the following:

- a) material concerning the stabilized approach procedure, under factors affecting operational minima;
- b) revision to material concerning final approach alignment;
- c) a minimum descent gradient of 4.3 per cent and an optimum descent gradient of 5.0 per cent in the final approach of a non-precision approach procedure with a final approach fix (FAF);
- d) established maximum and minimum rate of descent tables for the final approach phase of VOR and NDB on aerodrome with no FAF procedures, to control descent gradients;
- e) revised material on the location of the FAF in a non-precision approach to allow that the FAF could, if necessary, be located at a greater distance than 19 km (10 NM) from the threshold;
- f) revised material on ILS and new material on MLS for the determination of decision altitude or decision height;
- g) revised altitude correction tables for temperature;
- h) new material for ILS and MLS procedures involving glide paths greater than 3.5E, normally restricted to specifically approved operators and aircraft; and
- i) a new Chapter 7 — Area Navigation (RNAV) Approach Procedures for Basic GNSS Receivers.

**AMENDMENT NO. 11, APPROVED 29 JUNE 2001,
APPLICABLE 1 NOVEMBER 2001**

Introduction of the stabilized approach technique and constant approach slope for non-precision approaches and specification for maximum descent rates for the final approach segment in non-precision approaches and introduction of barometric vertical navigation (baro-VNAV) criteria.

PANS-OPS, Volume II — *Construction of Visual and Instrument Flight Procedures*

**AMENDMENT NO. 8, APPROVED 4 MARCH 1996,
APPLICABLE 7 NOVEMBER 1996**

Introduced definitions and revised material on SIDs and STARs. The amendment also introduced:

- a) a specification for the minimum length of an intermediate approach segment, to allow for deceleration and configuration changes;
- b) minimum, optimum and maximum glide path angles for ILS, MLS and radar approach procedures;
- c) recommendations that the descent angles for ILS and MLS glide path inoperative procedures should be the same as for the full ILS and MLS procedures;
- d) an optimum descent gradient for the final approach segment of a VOR approach with final approach fix, of 5.0 per cent;
- e) that the descent gradient used in the final approach segment of an area navigation (RNAV) approach shall be published, the optimum and maximum gradients for an RNAV approach were specified; and
- f) new material for obstacle clearance criteria en-route, for VOR and NDB routes.

**AMENDMENT NO. 10, APPROVED 1 MAY 1998,
APPLICABLE 5 NOVEMBER 1998**

Introduced the following:

- a) revision to material concerning final approach alignment;
- b) a minimum descent gradient of 4.3 per cent and an optimum descent gradient of 5.0 per cent in the final approach of a non-precision approach procedure with a final approach fix (FAF);

- c) a maximum descent gradient of 6.5 per cent for a standard non-precision approach;
- d) established maximum and minimum rate of descent tables for the final approach phase of VOR and NDB on aerodrome with no FAF procedures, to control descent gradients;
- e) revised material on the location of the FAF in a non-precision approach to allow that the FAF could, if necessary, be located at a greater distance than 19 km (10 NM) from the threshold; and
- f) a new Chapter 33 — Area Navigation (RNAV) Approach Procedures for Basic GNSS Receivers.

**AMENDMENT NO. 11, APPROVED 29 JUNE 2001,
APPLICABLE 1 NOVEMBER 2001**

1.17 Introduced new provisions for the presentation of significant obstacles and spot elevations on charts.

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