Australian Government

Civil Aviation Safety Authority

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, make this instrument under subregulations 174A (1) and 177 (1) of the *Civil Aviation Regulations 1988*.

[Signed Bruce Byron]
Bruce Byron
Director of Aviation Safety and
Chief Executive Officer

11 December 2007

Civil Aviation Order 100.37 Instrument 2007

1 Name of instrument

This instrument is the *Civil Aviation Order 100.37 Instrument 2007*.

2 Commencement

This instrument commences on the day after it is registered.

3 New Civil Aviation Order 100.37

Civil Aviation Order 100.37 is repealed and a new Civil Aviation Order 100.37 substituted as set out in Schedule 1.

Schedule 1 Civil Aviation Order 100.37

Administration and procedure — approval of airborne radio systems

1 Application

1.1 This Civil Aviation Order specifies the evidence required under regulations 35 and 36 of the *Civil Aviation Regulations 1988* and the procedures to be followed to obtain approval of modifications to aircraft by the installation of, or changes to, airborne radio systems, including portable radio equipment.

1.2 Unless otherwise directed by the Director, any radio system approved for installation in an Australian aircraft prior to the approval date of this Order must be deemed to meet the requirements of this Order.

2 Definitions

In this Order:

airborne radio system means an integral part of an aircraft which provides a communication or radio navigation function.

I.F.R. aircraft means an aircraft which is approved to operate under Instrument Flight Rules.

portable radio equipment means radio equipment which operates from its own self-contained power supply and is not fitted as a permanent installation in an aircraft.

3 Specification

3.1 Fixed installations

Airborne radio systems must comply, as appropriate, with the standards relating to equipment, installation and performance specified in subsections 3 to 17 of Civil Aviation Order 108.34.

3.2 Portable equipment

(1) Any portable radio equipment intended to be used for communication with the aeronautical mobile radio service must be of a type approved by the Director and must be connected to an external antenna system complying with the requirements of subsection 9 of Civil Aviation Order 108.34.

Note 1 Such equipment will not be approved for use in an aircraft with an electrical system except where the Director agrees that a permanent radio system would be undesirable or impracticable, such as in the case of an agricultural aircraft or a small aircraft engaged on a ferry flight.

Note 2 A survival beacon is not classified as portable radio equipment for this paragraph.

Note 3 Portable radio navigation equipment will not be approved.

(2) The method of installation of all portable radio equipment and associated antennas must be approved by the Director or a person authorised for that purpose. In particular, provision must be made for secure mounting and protection against excessive vibration and shock. The requirements of subparagraph 4.4 (c) and paragraph 4.5 of Civil Aviation Order 108.34 must also be observed.

4 Documents

All airborne radio systems must be installed in accordance with approved drawings, diagrams or other documents which specify the parts, materials and methods of installation used.

Note 1 Radio equipment manufacturers' wiring diagrams, which are frequently only schematic in form, are not acceptable unless specifically approved for the purpose in accordance with regulation 45 of the *Civil Aviation Regulations 1988*.

Note 2 A radio system designed for general application, however good in itself, may not be acceptable when integrated with other systems where the effect of each system on all others must be considered. As approval is given in isolation to each standard procedure or wiring diagram, the radio data sheet or equivalent document, which shows the integration of individual systems in any aircraft, must be separately approved.

Note 3 Drawings are required for all structural work made necessary by the addition of radio equipment. Strength justification of the work may also be required.

Note 4 The requirements of Civil Aviation Order 100.7, *Administration and procedures — weight control of aircraft*, are also applicable if the aircraft weight or balance alters as a result of a radio installation.

Note 5 An electrical load analysis may be required to determine that the aircraft's electrical power supply would provide the most onerous combination of electrical loads.

5 Equipment — adjustment and calibration

The Director may require radio equipment to be specially adjusted or calibrated to perform satisfactorily with either the Australian system of Air Traffic Control or with international facilities, as applicable. Information on such adjustment or calibration must be recorded in the appropriate log book or included in the aircraft maintenance system, as applicable.

6 Flight evaluation and simulator performance checks

6.1 All radio systems, except those specified in paragraph 6.2, installed in I.F.R. or limited I.F.R. aircraft, must be evaluated in flight prior to entering the approved equipment in the aircraft's flight manual or equivalent document, unless:

(a) radio system ground and flight test report summaries, acceptable to the Director, are supplied by the aircraft manufacturer; or

(b) a simulator or ground check, as applicable, is substituted for the flight evaluation, where it can be certified by an appropriately licensed aircraft maintenance engineer that:

(i) for an ADF system, the antenna system configuration, loop and sense cables on an aircraft are identical to those on another aircraft of the same type and series or subsequent series of the type and that identical loop correction has been applied; and

(ii) for a VOR, VAR, Localiser, Glide-Slope, DME, or other system agreed by the Director, the antenna system configuration on an aircraft is identical to the configuration on another aircraft of the same type and series or subsequent series of the type or a type having essentially the same airframe dimensions and shape; and

(iii) for a Marker system, the antenna tuning is optimum, the marker antenna type and configuration on an aircraft is identical to that on another aircraft

of the same type and series or subsequent series of the type or a type having essentially the same airframe dimensions and shape and that its receiver sensitivities as adjusted are identical;

the Director has evidence that such antenna configuration has previously been approved for I.F.R. operation; or

(c) otherwise exempted by the Director.

6.2 The following systems, unless otherwise required by the Director, need not be evaluated in flight:

(a) HF and VHF communication;

(b) audio, including intercom, passenger entertainment and voice recorder;

(c) 1 000 MHz DME, except where the owner desires such system to be listed in the flight manual as approved for flight planning purposes;

(d) ATC transponder;

(e) doppler;

(f) weather radar;

(g) any system containing an item of radio equipment that does not have an I.F.R. or limited I.F.R. rating;

(h) any system which will not be used for navigation of the aircraft nor for communications with the aeronautical mobile radio service.

7 Submission of data

7.1 Prior to the issue of an Australian Certificate of Airworthiness, or a Permit to Fly issued under the provision of regulation 135A of the *Civil Aviation Regulations 1988*, the owner of the aircraft, or a person or organisation acting on his behalf, must provide the Director with a schedule giving the type or model numbers and description of the major items of equipment comprising the radio systems in the aircraft.

7.2 For each proposed new system installation or modification to an existing system, a radio installation data sheet or equivalent document must be prepared for approval by the Director or a person authorised to approve the design. The radio installation data sheet or equivalent document must specify the following and must be signed by the person co-ordinating the system design:

(a) name of the organisation responsible for the design, data sheet serial number and date;

(b) aircraft registration;

(c) proposed installation details and procedures;

(d) identification of the installation drawing(s);

(e) any variations made to the procedures and drawings with respect to the particular aircraft;

(f) proving tests to be made.

7.3 Within 28 days of certification being made in a log book or equivalent document for the installation or modification of a part of a radio system in an aircraft, the owner of the aircraft, or a person or organisation acting on his behalf, must forward to a field office of the Civil Aviation Safety Authority a schedule giving the type or model number and description of the major items of equipment which were installed in, and/or removed from, the aircraft.
