Australian Government
Civil Aviation Safety Authority

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, make this instrument under subregulation 21A (1) of the *Civil Aviation Regulations 1988*.

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

17 December 2007

Civil Aviation Order 103.19 Instrument 2007

1 Name of instrument

This instrument is the *Civil Aviation Order 103.19 Instrument 2007*.

2 Commencement

This instrument commences on the day after it is registered.

3 New Civil Aviation Order 103.19

Civil Aviation Order 103.19 is repealed and a new Civil Aviation Order 103.19 substituted as set out in Schedule 1.

Schedule 1 Civil Aviation Order 103.19

Equipment standards — flight data recorders

1 Application

1.1 This Civil Aviation Order applies to flight data recording equipment installed in aircraft in compliance with Civil Aviation Order 20.18.

1.2 A flight data recorder installed in an aircraft of maximum take-off weight in excess of 29 000 kg which:

(a) receives its initial issue Australian certificate of airworthiness after 1 July 1977; or

(b) is of a type first certificated in its country of manufacture after 30 September 1969, must record at least the parameters 1 to 20 inclusive listed in Appendix I to this Order.

Federal Register of Legislative Instruments F2007L04696

1.3 A flight data recorder installed in an aircraft other than one defined in paragraph 1.2 must record at least parameters 1 to 6 inclusive listed in Appendix I to this Order.

2 System requirements

2.1 The flight data recorder system must comply with Appendix I to this Order in respect of:

(a) parameter identity; and

(b) range over which each parameter is to be recorded; and

(c) accuracy of recording for each parameter; and

(d) maximum interval in seconds between recorded readings of each parameter.

Note Installations approved before 1 January 1984 which do not record press to transmit need not be modified, providing that time correlation with the cockpit voice recorder can be established.

2.2 Analogue type recorders which employ mechanically inscribed recording mediums will not be approved for fitment to aircraft which receive their initial issue Australian certificate of airworthiness after 1 January 1984.

Note The prohibition on the issue of an initial certificate of airworthiness to aircraft with an analogue type recorder which employs mechanically inscribed recording medium has been in force since 1 January 1984. The prohibition was notified to industry in July 1983.

2.3 The components of the flight data recorder system, including the recording unit, acquisition unit, sensors and accessories, must comply with the appropriate requirements of Technical Standards Order C51a or later amendment "Aircraft Flight Recorder" of the Federal Aviation Administration of the United States of America.

2.4 The flight data recorder system must include a means of monitoring that valid data is being recorded and must present this information on the system control panel which must be accessible for preflight check by the flight crew.

2.5 The flight data recorder specified by this subsection must be fitted with an approved underwater locating device installed in such a manner that it is not likely to be separated from the recorder by crash impact.

Note Acceptable performance standards for an underwater locating device are described in Advisory Circular AC No. 21-10, *Flight Recorder Underwater Locating Device*, issued by the Federal Aviation Administration of the United States of America.

2.6 The flight data recorder container must be either bright orange or bright yellow, and reflective tape must be affixed to the external surface of the container to facilitate its location underwater.

2.7 The flight recorder system must have an automatic means of stopping the recorder within 10 minutes after crash impact and prevent any data erasure feature from functioning.

Note Installations approved before 1 January 1986 need not be modified to comply with this requirement providing that, should the aircraft be involved in an accident, the recorder is deactivated as soon as practicable after the aircraft comes to rest.

2.8 The flight data recorder system must be supplied with airspeed, altitude and magnetic direction data obtained from sources that meet the accuracy requirements

of sections 25.1323, 25.1325 and 25.1327, as appropriate, of Federal Aviation Regulations Part 25 of the United States of America.

2.9 A correlation must be established between the flight data recorder readings of airspeed, altitude and heading and the corresponding readings (taking into account correction factors) of the pilot in command's instruments, and that correlation:

(a) must cover the airspeed range over which the aircraft is to be operated, the range of altitude to which the aircraft is limited 360 degrees of heading; and

(b) may be established on the ground as appropriate.

2.10 The flight data recorder must receive its electrical power from the bus that provides the maximum reliability for operation of the flight data recorder without jeopardising service to essential or emergency loads.

2.11 The vertical acceleration sensor must be rigidly attached and located longitudinally either within the approved centre of gravity limits of the aircraft, or at a distance forward or aft of these limits that does not exceed 25% of the aircraft's mean aerodynamic chord.

2.12 Each non-ejectable record container must be located and mounted so as to minimise the probability of container rupture resulting from crash impact and subsequent damage to the record from fire. In particular, the record container must be located as far aft as practicable, but need not be aft of the pressurised compartment, and must not be located where an aft-mounted engine may crush the container upon impact.

Appendix I

Flight data recorders — parameters, ranges, accuracy and recording intervals

No.	Parameter	Range	Accuracy (minimum recorder and readout)	Maximum recording intervals (seconds)
1	Time	See Note	See Note	60
2	Altitude	— 1 000 ft to max. certificated altitude of aircraft	± 100 to ± 700 ft - see TSO-C51a	1
3	Airspeed	100 to 450 knots IAS or 100 knots IAS to 1.0VD whichever is the greater	±10 knots at room temperature ±12 knots at low temperature *see* TSO-C51a	1
4	Vertical acceleration	-3g to +6g	±0.2g stabilised ±10% transient *see* TSO-51a	0.125
5	Heading	360°	±2°	1
6	Press to transmit fir each transceiver	On/Off	—	1
7	Pitch attitude	± 750	±2°	1
8	Roll attitude	±180°	±2°	1
9	Thrust of each engine	Full range	±2%	4
10	Flap position	Full range	±3°	2
11	Longitudinal acceleration	±1.0g	+0.02g	0.5
12	Undercarriage squat or tilt switch	On/Off	—	0.5
13	Thrust reverser stowed/deployed (each engine)	On/Off	—	4
14	Leading edge devices stowed/deployed	On/Off	—	2
15	Angle of attack (if sensor fitted)	-20° to +40°	±1°	0.5
16	Lateral acceleration	± 1.0g	±0.05g stabilised ±10% transient	0.25
17	Pitch trim	Full range	±1° or ±5%	2

No.	Parameter	Range	Accuracy (minimum recorder and readout)	Maximum recording intervals (seconds)
			whichever is greater	
18	Control column or pitch control surface position	Full range	±2°	1
19	Control wheel or roll control surface position	Full range	±2°	1
20	Rudder pedal or yaw control surface position	Full range	±2°	0.5

Note Sufficient time data is required to permit determination of the relationship between recorded information and Universal Coordinated Time. Accuracy of the same standard as the aircraft clock is adequate.