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First published in the *Government Gazette*, Electronic Edition, on 23 November 2018 at 5 pm.

**No. S 769**

AIR NAVIGATION ACT  
(CHAPTER 6)

AIR NAVIGATION  
(121 — COMMERCIAL AIR  
TRANSPORT BY LARGE AEROPLANES)  
(AMENDMENT NO. 2) REGULATIONS 2018

In exercise of the powers conferred by section 3A of the Air Navigation Act, the Civil Aviation Authority of Singapore, with the approval of the Minister for Transport, makes the following Regulations:

**Citation and commencement**

1. These Regulations are the Air Navigation (121 — Commercial Air Transport by Large Aeroplanes) (Amendment No. 2) Regulations 2018 and come into operation on 24 November 2018.

**Amendment of regulation 68**

2. Regulation 68 of the Air Navigation (121 — Commercial Air Transport by Large Aeroplanes) Regulations 2018 (G.N. No. S 444/2018) (called in these Regulations the principal Regulations) is amended by deleting paragraph (3) and substituting the following paragraph:

“(3) For every flight of a large aeroplane, the AOC holder must ensure that the load sheet for that flight contains the following information:

- (a) the date of the operation;
- (b) the aircraft registration;
- (c) the flight number;
- (d) the departure aerodrome and the destination aerodrome;

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- (e) the total number of crew members;
  - (f) evidence that the centre of gravity of the aeroplane is within specified limits, except when the AOC holder records this information in another document;
  - (g) the actual mass of the aeroplane for the operation, including the aeroplane's actual zero fuel mass, take-off mass and landing mass for the operation;
  - (h) the maximum allowable mass for the operation, including the maximum allowable zero fuel mass, take-off mass and landing mass for the operation;
  - (i) the actual mass of take-off fuel and trip fuel;
  - (j) the difference between the allowed traffic load mass and the actual traffic load mass;
  - (k) the total number of seats in each class occupied by passengers;
  - (l) the total number of passengers on board the aeroplane;
  - (m) the edition number of the load sheet used for that flight, if the load sheet is in an electronic format.”.

### **Amendment of regulation 84**

#### **3. Regulation 84 of the principal Regulations is amended —**

- (a) by deleting the words “with an MCTOM exceeding 45,500 kg or an MAPSC exceeding 60” in paragraph (1) and substituting the words “of a type described in paragraph (1A)”;
- (b) by inserting, immediately after paragraph (1), the following paragraph:
  - “(1A) The aircraft types mentioned in paragraph (1) are —
    - (a) any aeroplane with an MCTOM exceeding 54,500 kg;

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- (b) any aeroplane with an MCTOM exceeding 45,500 kg and an MAPSC exceeding 19; and
  - (c) any aeroplane with an MAPSC exceeding 60.”.

#### **Amendment of regulation 116**

4. Regulation 116(2) of the principal Regulations is amended by deleting the words “Flight Records” and substituting the words “Flight Recorders”.

#### **Deletion and substitution of regulation 117**

5. Regulation 117 of the principal Regulations is deleted and the following regulation substituted therefor:

**“Flight recorders — flight data recorders (FDRs) and alternatives for aeroplanes**

**117.—(1)** An AOC holder must ensure that every large aeroplane that corresponds to one of the following descriptions is equipped with a flight data recorder of the type specified for an aeroplane of that description:

- (a) for a multi-engine turbine-powered aeroplane with an MCTOM not exceeding 5,700 kg, for which the Certificate of Airworthiness was first issued on or after 1 January 1990 but before 1 January 2016 — an FDR that records at least the first 16 parameters specified in Table 1-1 of the Aviation Specifications 2 — Flight Recorders issued by the Director-General of Civil Aviation;
- (b) for a turbine-engined aeroplane with an MCTOM not exceeding 5,700 kg, for which the Certificate of Airworthiness was first issued on or after 1 January 2016 — one of the following flight data recorders:
  - (i) an FDR that records at least the first 16 parameters specified in Table 1-1 of the Aviation Specifications 2 — Flight Recorders;

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- (ii) a Class C airborne image recorder (AIR) or airborne image recording system (AIRS) that records at least the flight path and speed parameters displayed to the pilot, as defined in the Aviation Specifications 2 — Flight Recorders;
  - (iii) an aircraft data recording system (ADRS) that records at least the first 7 parameters specified in Table 1-3 of the Aviation Specifications 2 — Flight Recorders;
- (c) for an aeroplane with an MCTOM exceeding 5,700 kg but not exceeding 27,000 kg, for which the Certificate of Airworthiness was first issued on or before 1 January 2005 — an FDR that records at least the first 16 parameters specified in Table 1-1 of the Aviation Specifications 2 — Flight Recorders;
  - (d) for an aeroplane with an MCTOM exceeding 27,000 kg, for which the Certificate of Airworthiness was first issued on or before 1 January 2005 — an FDR that records at least the first 32 parameters specified in Table 1-1 of the Aviation Specifications 2 — Flight Recorders;
  - (e) for an aeroplane with an MCTOM exceeding 5,700 kg, for which the Certificate of Airworthiness was first issued after 1 January 2005 and the application for type certificate was submitted to a Contracting State before 1 January 2023 — an FDR that records at least the first 78 parameters specified in Table 1-1 of the Aviation Specifications 2 — Flight Recorders;
  - (f) for an aeroplane with an MCTOM exceeding 5,700 kg, for which the application for type certification was first submitted to a Contracting State on or after 1 January 2023 — an FDR that records at least the first 82 parameters specified in

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Table 1-1 of the Aviation Specifications 2 — Flight Recorders.

(2) Where a large aeroplane is equipped with any FDR, ADRS, AIR or AIRS, the AOC holder must ensure that the FDR, ADRS, AIR or AIRS (as the case may be) does not use any of the following types of recording technology:

- (a) engraving metal foil;
- (b) frequency modulation;
- (c) photographic film;
- (d) magnetic tape.”.

**Amendment of regulation 118**

6. Regulation 118 of the principal Regulations is amended —

(a) by deleting sub-paragraph (a) of paragraph (2) and substituting the following sub-paragraph:

“(a) the cockpit voice recorder installed in accordance with paragraph (1), and its associated cockpit area microphone components, is provided with an alternate power source;”; and

(b) by deleting paragraphs (4) and (5) and substituting the following paragraph:

“(4) Where a large aeroplane is equipped with any cockpit voice recorder, the AOC holder must ensure that the cockpit voice recorder does not use any of the following types of recording technology:

- (a) magnetic tape;
- (b) wire.”.

**Amendment of regulation 119**

7. Regulation 119(1) of the principal Regulations is amended —

(a) by inserting, immediately before the words “flight recorder”, the word “crash-protected”; and

- (b) by deleting the word “Airworthiness” in sub-paragraph (b) and substituting the word “Airworthiness”.

### **Amendment of regulation 120**

8. Regulation 120 of the principal Regulations is amended by inserting, immediately after paragraph (2), the following paragraph:

“(3) Where a large aeroplane is installed with combination recorders in accordance with paragraph (1)(a), the AOC holder must ensure that the forward combination recorder —

- (a) is a combination recorder with CVR functions; and
- (b) is provided with an alternate power source that meets the requirements of regulation 118(2).”.

### **New regulation 120A**

9. The principal Regulations are amended by inserting, immediately after regulation 120, the following regulation:

#### **“Flight crew-machine interface recordings**

**120A.**—(1) An AOC holder must ensure that every aeroplane with an MCTOM exceeding 27,000 kg for which the application for type certification is submitted to a Contracting State on or after 1 January 2023 must be equipped with a crash-protected flight recorder that records —

- (a) the information displayed to the flight crew from electronic displays; and
- (b) the operation of switches and selectors by the flight crew,

that are specified in the Aviation Specifications 2 — Flight Recorders issued by the Director-General of Civil Aviation as matters to be recorded in the flight recorder.

(2) An AOC holder must ensure that, for the recordings made in accordance with paragraph (1) (called in this regulation the flight crew-machine interface recordings) —

- (a) the minimum duration of the flight crew-machine interface recordings is at least for the last 2 hours; and

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(b) the flight crew-machine interface recordings can be correlated to the recorded cockpit audio.”.

### **Amendment of regulation 138**

10. Regulation 138(8) of the principal Regulations is amended by deleting the words “operator proficiency check” in the definition of “base training flight” and substituting the words “an Operator Proficiency Check”.

### **Amendment of regulation 178**

11. Regulation 178(2) of the principal Regulations is amended by deleting the words “duty period and rest period limitations” in sub-paragraph (a) and substituting the words “duty period limitations and rest period requirements”.

### **Amendment of regulation 179**

12. Regulation 179 of the principal Regulations is amended by deleting the word “operator” in the regulation heading and substituting the words “AOC holder”.

### **Amendment of regulation 188**

13. Regulation 188(6) of the principal Regulations is amended by deleting the word “operator” in the definition of “annual revenue” and substituting the words “AOC holder”.

### **Amendment of regulation 189**

14. Regulation 189(5) of the principal Regulations is amended by deleting the word “operator” and substituting the words “AOC holder”.

### **Amendment of First Schedule**

15. The First Schedule to the principal Regulations is amended by deleting the definition of “Flight duty period” and substituting the following definition:

““Flight duty period” means a period which commences when a flight or cabin crew member is required to report for any duty that includes a flight or series of flights and which finishes when the aircraft finally

comes to rest and the engines are shut down at the end of the last flight on which he or she is a crew member.”.

*[G.N. No. S 679/2018]*

Made on 19 November 2018.

EDMUND CHENG WAI WING  
*Chairman,*  
*Civil Aviation Authority of*  
*Singapore.*

[LE/LGN/A1.8; AG/LLRD/SL/6/2010/10 Vol. 7]

(To be presented to Parliament under section 3A(8) of the Air Navigation Act).