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## No. S 21

### AIR NAVIGATION ACT (CHAPTER 6)

#### AIR NAVIGATION (AMENDMENT) ORDER 2015

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

#### **Citation and commencement**

1. This Order may be cited as the Air Navigation (Amendment) Order 2015 and shall come into operation on 26 January 2015.

#### **Amendment of paragraph 2**

2. Paragraph 2 of the Air Navigation Order (O 2) (referred to in this Order as the principal Order) is amended —

(a) by inserting, immediately before the definition of “accredited medical conclusion” in sub-paragraph (1), the following definitions:

““2D instrument approach operation” means an instrument approach operation using lateral navigation guidance only;

“3D instrument approach operation” means an instrument approach operation using both lateral and vertical navigation guidance;”;

(b) by inserting, immediately after the definition of “alerting service” in sub-paragraph (1), the following definition:

““alternate aerodrome” means an aerodrome to which an aircraft may proceed to when it becomes either impossible or inadvisable to proceed to, or to

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land at, the aerodrome of intended landing and which meets all of the following requirements:

- (a) the necessary services and facilities are available;
  - (b) the aircraft performance requirements can be met;
  - (c) the aerodrome is operational at the expected time of use;”;
- (c) by inserting, immediately after the definition of “crew” in sub-paragraph (1), the following definition:
- ““decision altitude” or “DA”, or “decision height” or “DH”, in relation to the operation of an aircraft at an aerodrome, means a specified altitude or height in a 3D instrument approach operation at which the pilot-in-command must initiate a missed approach if the visual reference to continue the approach has not been established;”;
- (d) by inserting, immediately after the definition of “designated medical examiner” in sub-paragraph (1), the following definition:
- ““destination alternate aerodrome” means an alternate aerodrome at which an aircraft would be able to land in the event that it becomes either impossible or inadvisable to land at the aerodrome of intended landing;”;
- (e) by inserting, immediately after the definition of “engine” in sub-paragraph (1), the following definition:
- ““en-route alternate aerodrome” means an alternate aerodrome at which an aircraft would be able to land in the event that a diversion becomes necessary while en-route;”;
- (f) by inserting, immediately after the definition of “gyroplane” in sub-paragraph (1), the following definition:

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““heavier-than-air aircraft” means any aircraft deriving its lift in flight chiefly from aerodynamic forces;”;

(g) by inserting, immediately after the definition of “human performance” in sub-paragraph (1), the following definitions:

““instrument approach operation” means an approach and landing using instruments for navigation guidance based on an instrument approach procedure, executed either by a 2D or 3D instrument approach operation;

“instrument approach procedure”, as classified in the Eleventh Schedule, means a series of predetermined manoeuvres by reference to flight instruments with specified protection from obstacles from —

(a) the initial approach fix; or

(b) the beginning of a defined arrival route, where applicable,

to a point from which a landing can be completed and thereafter, if a landing is not completed, to a point at which holding or en-route obstacle clearance criteria apply;”;

(h) by inserting, immediately after the definition of “military aircraft” in sub-paragraph (1), the following definition:

““minimum descent altitude” or “MDA”, or “minimum descent height” or “MDH”, means a specified altitude or height in a 2D instrument approach operation or circling approach operation below which the pilot-in-command must not continue the descent without the required visual reference;”;

(i) by inserting, immediately after the definition of “survival ELT” in sub-paragraph (1), the following definition:

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““take-off alternate aerodrome” means an alternate aerodrome at which an aircraft would be able to land if landing becomes necessary shortly after take-off and it is not possible to use the aerodrome of departure;”; and

(j) by inserting, immediately after sub-paragraph (8), the following sub-paragraph:

“(9) In this Order, for every standard where a value is prescribed in the International System of Units (SI) and an alternative value is prescribed in a non-SI alternative unit of measurement in parentheses, the relevant standard is to be regarded as reached when either value is obtained.”.

### **Amendment of paragraph 29**

3. Paragraph 29 of the principal Order is amended —

(a) by deleting sub-paragraph (3) and substituting the following sub-paragraph:

“(3) The requirements specified in Part D of the Ninth Schedule in respect of the meteorological conditions required for take-off, en-route, approach to landing and landing must be complied with in respect of every aircraft to which paragraph 25 applies.”; and

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

“(5) Except under and in accordance with any written permission granted by the Chief Executive to the operator, a Singapore aeroplane having 2 or more turbine engines must not be flown for the purpose of public transport on a route where the diversion time from any point on that route to an en-route alternate aerodrome exceeds the threshold time.

(6) For the purpose of sub-paragraph (5) —

(a) diversion time from any point to an en-route alternate aerodrome is calculated under

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International Standard Atmosphere and still air conditions —

- (i) at the one-engine inoperative cruise speed, for aeroplanes with 2 turbine engines; and
  - (ii) at the all-engine operating cruise speed, for aeroplanes with more than 2 turbine engines; and
- (b) the threshold time is —
- (i) 60 minutes for aeroplanes with 2 turbine engines; and
  - (ii) 180 minutes for aeroplanes with more than 2 turbine engines.”.

#### **Amendment of paragraph 50B**

4. Paragraph 50B of the principal Order is amended —

(a) by inserting, immediately after the definition of “cargo aircraft”, the following definition:

““consignment” means one or more packages of dangerous goods received and accepted as a single lot by an operator from a single shipper on a single occasion for conveyance from a single address to a single consignee at a single destination;”; and

(b) by deleting the word “cargo” in the definition of “State of Origin” and substituting the word “consignment”.

#### **Amendment of Sixth Schedule**

5. The Sixth Schedule to the principal Order is amended —

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

“2.

<i>Aircraft and Circumstances of Flight</i>	<i>Scale of Equipment Required</i>										
	A	B	C	D	E	F	G	H	I	J	K
(1) All aircraft within Singapore:											
(a) when flying under Instrument Flight Rules within controlled airspace	A	B									
(b) when flying at night	A										
(c) where required by Rules of the Air to comply in whole or in part with Instrument Flight Rules in Visual Meteorological Conditions	A*	B*			E*						
(d) when flying within any airspace in respect of which special rules are made in relation to a particular aerodrome, so as to require 2-way radio communication with that aerodrome	A*										
(e) when making an approach to landing at an aerodrome notified for the purpose of this sub-paragraph						F*					
(f) on extended flights over water or on flights over designated land areas	A**										
(2) In respect of —											
(a) all aeroplanes that are not flying for the purpose of public transport and all helicopters	A*	B*			E*		G(i)*				
(b) all aeroplanes flying for the purpose of public transport for which the individual Certificate of Airworthiness is issued (in Singapore or elsewhere) before 1 January 2009	A*	B*			E*		G(i)*				
(c) all aeroplanes flying for the purpose of public transport for which the individual Certificate of Airworthiness is issued (in Singapore or elsewhere) on or after 1 January 2009	A*	B*			E*		G(ii)*				
(d) all aeroplanes flying for the purpose of public transport on or after 1 January 2012	A*	B*			E*		G(ii)*				



<i>Aircraft and Circumstances of Flight</i>	<i>Scale of Equipment Required</i>										
	A	B	C	D	E	F	G	H	I	J	K
(7) All Singapore aeroplanes:											
(a) over 5,700 kg maximum total weight authorised											K
(b) authorised to carry more than 19 passengers											K
(c) operated for the purpose of public transport											K

\* Unless the appropriate air traffic control unit otherwise permits in relation to the particular flight and provided that the aircraft complies with any instruction which the air traffic control unit may give in the particular case.

\*\* The radio equipment shall provide for communications on the aeronautical emergency frequency.”;

(b) by inserting, immediately after Scale J in paragraph 3, the following Scale:

“Scale K.

Such equipment for Automatic Dependent Surveillance — Broadcast (out) (ADS-B (out)) capability.”; and

(c) by inserting, immediately before the definition of “Mode A” in paragraph 4, the following definition:

““Automatic Dependent Surveillance — Broadcast (out) (ADS-B (out)) capability” means the function by which aircraft, aerodrome vehicles and other objects may automatically transmit data — such as aircraft identification, position and additional information, as appropriate — in a broadcast mode via a data link;”.

### **Amendment of Ninth Schedule**

6. Part D of the Ninth Schedule to the principal Order is amended —

(a) by deleting the definition of “approach to landing” in paragraph (1) and substituting the following definition:

““approach to landing” means that portion of the flight of the aircraft in which it is descending below 300 m (1,000 ft) above the aerodrome elevation or entering the final approach segment;”;



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(b) by deleting paragraphs (b), (c) and (d) of the definition of “aerodrome operating minima” in paragraph (1) and substituting the following paragraphs:

“(b) landing in 2D instrument approach operations, expressed in terms of visibility or runway visual range, or both, minimum descent altitude or height (MDA/H) and, if necessary, cloud conditions; and

(c) landing in 3D instrument approach operations, expressed in terms of runway visual range or visibility, or both, and decision altitude or height (DA/H), as appropriate to the type or category of operations, or both;”;

(c) by deleting the definition of “decision height” in paragraph (1) and substituting the following definition:

““final approach segment” means the segment of an instrument approach procedure in which alignment and descent for landing are accomplished;”;

(d) by deleting the colon in paragraph (2) and substituting a full-stop;

(e) by deleting the proviso to paragraph (2);

(f) by inserting, immediately after paragraph (2), the following paragraph:

“(2A) Despite paragraph (2), where a Singapore aeroplane having 2 or more turbine engines and flown for the purpose of public transport does not require the written permission of the Chief Executive under paragraph 29(5) of the Order, it is sufficient to include in the operations manual —

(a) data and instructions by means of which the appropriate aerodrome operating minima can be calculated by the pilot-in-command of the aircraft, in respect of aerodromes to be used on a flight which is not a scheduled journey or any part thereof; and

(b) general directions to pilots concerning aerodrome operating minima for safe operations, in respect of aerodromes at which meteorological observations cannot be communicated to the pilot-in-command of an aircraft in flight.”;

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(g) by deleting sub-paragraphs (b) to (f) of paragraph (4) and substituting the following sub-paragraphs:

- “(b) the composition of the flight crew and their competence and experience;
- (c) as applicable, the dimensions and other characteristics of the runways or heliports, which may be selected for use, and the direction of approach to the heliport;
- (d) the adequacy and performance of the available visual and non-visual ground aids;
- (e) the equipment available on the aircraft for the purpose of navigation or control of the flight path, or both, during the approach to landing and the missed approach;
- (f) the obstacles in the approach and missed approach areas, and the obstacle clearance altitude or height for the instrument approach procedures;
- (g) the means used to determine and report meteorological conditions;
- (h) the obstacles in the climb-out areas and necessary clearance margins,”; and

(h) by deleting paragraphs (5) and (6) and substituting the following paragraphs:

“(5) With reference to paragraph 29(3) of the Order, the pilot-in-command must not —

- (a) commence a flight from the departure aerodrome in accordance with visual flight rules unless current meteorological reports, or a combination of current reports and forecasts, indicate that the meteorological conditions along the whole or part of the route to be flown under the visual flight rules will, at the appropriate time, be such as to enable compliance with these rules possible;
- (b) commence a flight from the departure aerodrome in accordance with the instrument flight rules unless the meteorological conditions, at the time of use, are at or above the operator’s established aerodrome operating minima for that operation; and

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(c) commence a flight from the departure aerodrome, or continue beyond the point of in-flight re-planning in accordance with instrument flight rules, unless at the aerodrome of intended landing or at each alternate aerodrome current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions will be, at the estimated time of use, at or above the operator's established aerodrome operating minima for that operation.

(6) To ensure that an adequate margin of safety is observed in determining whether or not an approach and landing can be safely carried out at each alternate aerodrome, the operator of the aircraft must specify appropriate incremental values, acceptable to the Chief Executive, for height of cloud base and visibility to be added to the operator's established aerodrome operating minima.

(6A) The operator of the aircraft referred to in paragraph (5) must submit a margin of time, with the estimated time of use, for each alternate aerodrome referred to in paragraph (5)(c) to the Chief Executive for approval before commencing a flight.

(6B) With reference to paragraph 29(3) of the Order, a pilot-in-command conducting an instrument approach operation must not continue below 300 m (1,000 ft) above the aerodrome elevation or into the final approach segment unless the reported visibility or controlling runway visual range is at or above the aerodrome operating minima.

(6C) If the reported visibility or controlling runway visual range falls below the specified aerodrome operating minima after the aircraft referred to in paragraph (6B) has entered the final approach segment or after descending below 300 m (1,000 ft) above the aerodrome elevation, the approach may be continued to decision altitude/height (DA/H) or minimum descent altitude/height (MDA/H).

(6D) An aircraft must not in any case continue an approach to landing at any aerodrome beyond a point at which the limits of the aerodrome operating minima specified for that aerodrome will be infringed.”.

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## Amendment of Eleventh Schedule

7. The Eleventh Schedule to the principal Order is amended —

- (a) by deleting the definition of “Alternate aerodrome” in Chapter 1 of Part I;
- (b) by deleting the definition of “Instrument approach procedure” in Chapter 1 of Part I and substituting the following definition:

**“Instrument approach procedure.** An instrument approach procedure is as defined in paragraph 2 of Part I of the Order, and is classified as follows:

*Non-precision approach (NPA) procedure.* An instrument approach procedure designed for 2D instrument approach operations Type A.

*Approach procedure with vertical guidance (APV).* A performance-based navigation (PBN) instrument approach procedure designed for 3D instrument approach operations Type A.

*Precision approach (PA) procedure.* An instrument approach procedure based on navigation systems (ILS, MLS, GLS and SBAS Cat I) designed for 3D instrument approach operations Type A or Type B.

Where:

A Type A instrument approach operation refers to an instrument approach operation where the minimum descent height (MDH) or decision height (DH) is at or above 75 m (250 ft).

A Type B instrument approach operation refers to an instrument approach operation where the minimum descent height (MDH) or decision height (DH) is below 75 m (250 ft), and is further determined by the category of operation.”; and

- (c) by inserting, immediately after paragraph 17.2. in Part II, the following paragraph:

**“Helicopter operations**

18.1 Except as provided for in 18.2 and 18.3, a person must not operate a helicopter —

(a) within the Changi Control Zone; or

(b) overland and outside of an established heli-route,

except with, and in accordance with the terms of, the permission of the Chief Executive.

18.2 18.1 does not apply where, due to an emergency involving the operation of the helicopter, it is not reasonable or practicable —

(a) to first obtain permission from the Chief Executive; or

(b) to comply with the terms of that permission, if obtained.

18.3 18.1(b) does not apply to a person operating a helicopter for training, or for a test flight, within an area designated for such purpose in the Aeronautical Information Publication.

18.4 In this paragraph, “Changi Control Zone” means the control zone of that name, of such vertical and horizontal limits as notified in the Aeronautical Information Publication.”.

### **Amendment of Twelfth Schedule**

**8.** Paragraph 12 of the Twelfth Schedule to the principal Order is amended —

(a) by inserting, immediately after the words “application for” in sub-paragraph (1B), the words “a Multi-crew Pilot’s Licence,”;

(b) by deleting sub-paragraph (b) of sub-paragraph (2);

(c) by deleting the words “which consists of not more than two parts — for each part of the examination, on occasion when that part is taken” in sub-paragraph (2)(d);

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

“(f) for any other technical examination —

(i) for the examination of Aviation Law for flight engineers \$33

(ii) for the examination of Human Performance and Limitations for flight engineers \$165”;

(e) by deleting sub-paragraphs (i) and (j) of sub-paragraph (2); and

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

- “(k) for any examination or re-examination paper to be taken —
- |  |         |
|--|---------|
| (i) in respect of the grant or renewal of a Private Pilot’s Licence  | \$124   |
| (ii) in respect of the grant or renewal of a Multi-crew Pilot’s Licence, Commercial Pilot’s Licence or Airline Transport Pilot’s Licence | \$155   |
| (iii) for the inclusion of a rating other than an aircraft rating in any licence to act as a member of a flight crew                     | \$155”. |

### **Amendment of Nineteenth Schedule**

9. Part II of the Nineteenth Schedule to the principal Order is amended —

(a) by deleting sub-paragraph (k) of paragraph 3 and substituting the following sub-paragraph:

“(k) packages of munitions of war or dangerous goods bearing the “Cargo aircraft only” label must be loaded in accordance with the provisions in the Technical Instructions; and”;

(b) by deleting sub-paragraph (2) of paragraph 4 and substituting the following sub-paragraph:

“(2) The operator of any aircraft on which munitions of war or dangerous goods are to be carried as cargo, or any agent of the operator, must ensure that, as soon as practicable and before any flight begins, the pilot-in-command of the aircraft is provided with such information as is specified in Part 7 of the Technical Instructions.”.

*[G.N. Nos. S 573/91; S 49/92; S 60/92; S 180/92; S 61/93;  
S 199/93; S 8/94; S 67/98; S 325/2000; S 384/2000;  
S 166/2002; S 56/2003; S 440/2003; S 581/2003;  
S 331/2005; S 781/2005; S 487/2006; S 640/2006;  
S 299/2009; S 278/2010; S 423/2010; S 729/2010;  
S 162/2011; S 570/2011; S 124/2012; S 617/2012;  
S 348/2013]*

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