
First published in the *Government Gazette*, Electronic Edition, on 20 August 2018 at 5 pm.

No. S 501

AIR NAVIGATION ACT (CHAPTER 6)

AIR NAVIGATION (125 — COMPLEX GENERAL AVIATION) REGULATIONS 2018

ARRANGEMENT OF REGULATIONS

PART 1

PRELIMINARY

Regulation

1. Citation and commencement
2. Definitions
3. Application of these Regulations

PART 2

Division 1 — General

4. Requirement for complex general aviation certificate
5. Application for, or to renew, complex general aviation certificate
6. Grant of complex general aviation certificate
7. Operations specifications
8. Validity of complex general aviation certificate
9. Variation to existing complex general aviation certificate
10. Notification of ceasing operations
11. Oversight activities by Authority
12. Operating base
13. Organisational structure
14. Safety management system
15. Restriction or suspension of operation
16. Responsibility to ensure compliance with Air Navigation (91 — General Operating Rules) Regulations 2018
17. Documents to be carried on board an aircraft
18. Manuals to be carried
19. Operational information and forms to be carried

Regulation

20. Common language
21. Stowage of baggage
22. Electronic navigation data management
23. Use and preservation of flight recorders and records

Division 2 — Operational procedures

24. Use of Operations Manual
25. Operational control
26. Duties of flight dispatcher
27. Competence of operations personnel
28. Procedure compliance
29. Flight planning
30. Flight preparation
31. Operational flight plan
32. ATS flight plan
33. Operating in icing conditions — flight procedures
34. Choosing aerodrome or landing site
35. Aerodrome operating minima — determination
36. Alternate aerodromes — general requirements
37. Take-off alternate
38. Fuel requirements
39. In-flight fuel management
40. Checklists for flight crew
41. In-flight simulation of emergency situations
42. Crew members at stations
43. Cosmic radiation
44. Flight crew communication
45. Fuelling operations
46. Reporting of reportable safety matters

Division 3 — Operating limitations

47. IFR departure limitations
48. Minimum flight altitudes
49. Instrumental approach procedures

Division 4 — Mass and balance

50. Aircraft load limitations

Division 5 — Performance

51. Performance planning — aeroplanes
52. Performance data

Regulation

- 53. Wet and contaminated runway surfaces
- 54. Performance — mass limitation
- 55. Take-off
- 56. Aeroplane climb performance
- 57. En-route mass
- 58. Landing mass

Division 6 — Instrument and equipment requirements

- 59. General
- 60. Inoperative instruments and equipment
- 61. Minimum equipment list
- 62. Marking of exits and break-in points
- 63. Location of instruments and equipment
- 64. Markings and placards
- 65. Seating and restraints
- 66. Aircraft operating under VFR
- 67. Equipment for flight in icing conditions
- 68. Aircraft operating at night or under IFR
- 69. Spare fuses
- 70. Communication equipment
- 71. Navigation equipment
- 72. Surveillance equipment
- 73. Installation of communication, navigation and surveillance equipment
- 74. Landing in instrument meteorological conditions
- 75. Category II and III precision approach equipment
- 76. Crew intercom system
- 77. Medical and emergency equipment
- 78. Emergency locator transmitter
- 79. Survival equipment
- 80. Flights over water — general requirements
- 81. Flights over water — aeroplanes
- 82. Flights over water — helicopters
- 83. Pressure-altitude reporting transponder
- 84. Passenger safety instructions
- 85. Oxygen indicators
- 86. Oxygen equipment and supplies for non-pressurised aircraft
- 87. Oxygen equipment and supplies for pressurised aircraft
- 88. Device to warn flight crew of loss of pressurisation

Regulation

- 89. Flight recorders — construction, installation and continued serviceability
- 90. Flight recorders — flight data recorders and alternatives
- 91. Flight recorders — cockpit voice recorder and cockpit audio recording system
- 92. Flight recorders — data-link recorders
- 93. Combination recorders
- 94. Ground proximity warning system
- 95. Significant weather detection
- 96. Airborne Collision Avoidance System (ACAS II)
- 97. Cosmic radiation detection equipment

Division 7 — Maintenance

- 98. Maintenance responsibilities
- 99. Use of Maintenance Control Manual

Division 8 — Crew requirements

- 100. Flight crew qualifications
- 101. Flight crew recency
- 102. Flight crew duty assignment
- 103. Cabin crew duty assignment
- 104. Task specialists

Division 9 — Training

- 105. Training programmes — general
- 106. Flight crew training
- 107. Cabin crew training
- 108. Task specialists

Division 10 — Crew member competency requirements

- 109. Operator proficiency check

Division 11 — Fatigue of crew

- 110. Fatigue management programme
- 111. Responsibilities of CGAC holder for fatigue management

Division 12 — Manuals, logs and records

- 112. Operations Manual
- 113. Maintenance Control Manual
- 114. Document retention period
- 115. Cosmic radiation records

PART 3
MISCELLANEOUS

Regulation

- 116. Fees
 - 117. Penalties
 - 118. Grant of approvals or acceptances
The Schedules
-

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:

PART 1
PRELIMINARY

Citation and commencement

1. These Regulations are the Air Navigation (125 — Complex General Aviation) Regulations 2018 and come into operation on 1 October 2018.

Definitions

2.—(1) Any term in these Regulations that is defined in the First Schedule to the Air Navigation (91 — General Operating Rules) Regulations 2018 (G.N. No. S 441/2018) has the meaning given to that term in that Schedule unless the term is otherwise defined in the First Schedule to these Regulations.

(2) For every standard in these Regulations where a value is prescribed in the International System of Units (SI) and an alternative value is prescribed in a non-SI alternative unit, the relevant standard is to be regarded as reached when either value is obtained.

Application of these Regulations

3.—(1) These Regulations apply to every flight of a person, whose principal place of business or permanent residence is in Singapore,

that is engaging in, or intending to engage in, either or both of the following operations (called in these Regulations complex general aviation operations):

- (a) a general aviation operation using a Singapore registered aeroplane —
 - (i) with an MCTOM exceeding 5,700 kg;
 - (ii) with an MAPSC exceeding 9; or
 - (iii) which is equipped with at least one turbine engine;
 - (b) a corporate aviation operation using at least 3 Singapore registered aircraft, as long as one of the aircraft is an aeroplane.
- (2) To avoid doubt —
- (a) these Regulations apply in addition to the provisions of the Air Navigation (91 — General Operating Rules) Regulations 2018 unless otherwise stated; and
 - (b) where a foreign registered aircraft is operated as part of a corporate aviation mentioned in paragraph (1)(b), these Regulations apply to that aircraft to the extent that they do not contradict the applicable law of that aircraft's State of Registry.

PART 2

Division 1 — General

Requirement for complex general aviation certificate

4. A person must not engage in a complex general aviation operation except under and in accordance with a complex general aviation certificate granted under these Regulations.

Application for, or to renew, complex general aviation certificate

5.—(1) A person applying for a complex general aviation certificate (called in these Regulations an applicant) must —

-
-
- (a) provide the Authority with the particulars, information and documents specified in paragraph (2); and
 - (b) pay to the Authority a non-refundable application fee, if specified in the Second Schedule.

(2) The particulars, information and documents required for an application mentioned in paragraph (1) are —

- (a) the name of the applicant;
- (b) the address of the applicant in Singapore;
- (c) the applicant's principal place of business or permanent residence;
- (d) the details of the aircraft involved;
- (e) the location of the applicant's operating base;
- (f) the applicant's —
 - (i) Operations Manual;
 - (ii) Maintenance Control Manual;
 - (iii) documents describing its safety management system; and
- (g) any other manuals, documents or further particulars relating to the applicant as may be required by the Authority to decide the application.

(3) The Operations Manual and Maintenance Control Manual must comply with the requirements of these Regulations and are subject to the approval of the Director-General of Civil Aviation.

[S 213/2020 wef 01/04/2020]

(4) The application mentioned in paragraph (1) must be submitted to the Authority at least 90 days before the intended date of commencement of the applicant's complex general aviation operations (or such shorter period as the Authority may allow in a particular case).

(5) The holder of a complex general aviation certificate (called in these Regulations a CGAC holder) applying to renew a complex general aviation certificate must —

-
-
- (a) provide the Authority with the particulars, information and documents specified in paragraph (2) that differ from the CGAC holder's existing complex general aviation certificate; and
 - (b) make the application to the Authority at least 30 days before the date of expiry of the existing complex general aviation certificate.
- (6) An application mentioned in paragraph (5) that is made less than 30 days before the date of expiry of an existing complex general aviation certificate is treated as an application under paragraph (1) for a new complex general aviation certificate.

Grant of complex general aviation certificate

6.—(1) Upon receiving an application under regulation 5, the Authority may —

- (a) refuse the application; or
 - (b) grant or renew (as the case may be) the complex general aviation certificate subject to such conditions as the Authority considers fit.
- (2) For the purposes of section 4A(2)(b)(iii) of the Act, the other relevant requirements for the grant or renewal of a complex general aviation certificate are as follows:
- (a) if the applicant or CGAC holder (as the case may be) is intending to engage in complex general aviation operations described by regulation 3(1)(b), the principal place of business or permanent residence (as applicable) of the applicant or the CGAC holder (as the case may be) is in Singapore;
 - (b) the applicant or CGAC holder (as the case may be) is able to meet the obligations required of a CGAC holder as specified in these Regulations;
 - (c) the applicant or CGAC holder (as the case may be) is competent to safely operate aircraft of the type or types specified in the application under regulation 5 on flights of the description and for the purposes so specified, having

regard to the applicant's or AOC holder's (as the case may be) previous conduct and experience in particular.

Operations specifications

7.—(1) When granting or renewing a complex general aviation certificate under regulation 6, the Authority must issue an operations specification that sets out the scope of the authorisation in the complex general aviation certificate.

(2) A CGAC holder must comply with the operations specifications associated with its complex general aviation certificate.

(3) The Authority may vary the operations specifications associated with a complex general aviation certificate at the following times:

- (a) when the complex general aviation certificate is varied under regulation 9;
- (b) when the Authority is satisfied that such variation is necessary for the safety of air navigation or public safety, or both.

Validity of complex general aviation certificate

8. A complex general aviation certificate that is granted or renewed under regulation 6 remains in force for the period specified in the certificate unless such period is shortened upon application or the certificate is earlier suspended or revoked by the Authority.

Variation to existing complex general aviation certificate

9.—(1) A CGAC holder must obtain the approval of the Authority to vary its complex general aviation certificate, including the associated operations specifications.

(2) A CGAC holder must apply to the Authority for the approval required under paragraph (1) at least 30 days before the date of intended implementation of the variation.

-
-
- (3) An application made under paragraph (2) to the Authority —
- (a) must be in the form and manner required by the Authority; and
 - (b) must provide sufficient detail of the variation sought.

Notification of ceasing operations

10.—(1) If a CGAC holder intends to cease its complex general aviation operations, the CGAC holder must notify the Authority in writing of such intention as soon as reasonably practicable.

(2) A CGAC holder must return its complex general aviation certificate to the Authority immediately upon the cessation of its operations.

Oversight activities by Authority

11.—(1) Subject to paragraph (2), where it is necessary for an applicant or CGAC holder (as the case may be) to undergo any audit, assessment, examination, test, inspection or investigation (called in this regulation a function) for any purpose of these Regulations, as a result of which it is necessary for a safety inspector of the Authority to travel outside Singapore to perform a function, the applicant or CGAC holder (as the case may be) must pay —

- (a) the fee for that function, if specified in the Second Schedule;
- (b) the daily fee specified in the Second Schedule for each day or part of a day that the safety inspector is outside Singapore performing a function; and
- (c) a charge equal to any additional expense reasonably incurred by the Authority.

(2) An applicant is not required to pay the daily fee mentioned in paragraph (1)(b) in respect of a safety inspector's conduct of any function if the applicant is required to pay a fee under regulation 5(1)(b).

Operating base

12.—(1) A CGAC holder must notify the Director-General of Civil Aviation if the CGAC holder intends to make any of the following changes to its operating bases:

- (a) in respect of any location listed as an operating base in the application under regulation 5, the removal of that location and substitution of a different location as an operating base;
- (b) the addition of another location as an operating base.

(2) Where a CGAC holder conducts a complex general aviation operation from an operating base in a State other than Singapore, the CGAC holder must notify the competent authority of the State in which the operating base is located.

Organisational structure

13.—(1) To ensure a CGAC holder's continued compliance with the requirements of these Regulations concerned with aircraft operations, the CGAC holder must —

- (a) employ an appropriate number of operations personnel to conduct its aircraft operations; and
- (b) establish and maintain an organisational structure that is appropriate, having regard to the size and complexity of the CGAC holder's aircraft operations.

(2) A CGAC holder must clearly define the duties and accountabilities of every member of its operations personnel that is responsible for the safe operation of its aircraft.

Safety management system

14.—(1) A CGAC holder must establish and maintain a safety management system —

- (a) that consists of all the components and elements set out in the Third Schedule; and
- (b) that is commensurate to the size and complexity of the CGAC holder's aircraft operations.

(2) A CGAC holder must describe the safety management system in such documents as the Director-General of Civil Aviation may require.

(3) A CGAC holder must obtain the Director-General of Civil Aviation's acceptance for —

- (a) the safety management system mentioned in paragraph (1);
- (b) the documents mentioned in paragraph (2); and
- (c) any change or amendment to the CGAC holder's safety management system before making that change or amendment.

Restriction or suspension of operation

15. Upon becoming aware of any condition that is a hazard to the safe operation of any of its aircraft, a CGAC holder must restrict or suspend its operations as necessary until the risks posed by the hazard have been mitigated to an acceptable level.

Responsibility to ensure compliance with Air Navigation (91 — General Operating Rules) Regulations 2018

16. A CGAC holder must establish and implement systems, policies and procedures to ensure, support and facilitate the compliance, by the pilot-in-command of an aircraft operated by the CGAC holder, with every regulation in the Air Navigation (91 — General Operating Rules) Regulations 2018 that requires the pilot-in-command's compliance.

Documents to be carried on board an aircraft

17.—(1) A CGAC holder must ensure that all the following documents are carried on board every aircraft operated for complex general aviation operations:

- (a) its Certificate of Registration;
- (b) its valid Certificate of Airworthiness;
- (c) the appropriate licence for each flight crew member;
- (d) the aircraft radio station licence;

-
-
- (e) the journey log book or equivalent record;
 - (f) a noise certificate, if applicable;
 - (g) a certified true copy of the CGAC holder's complex general aviation certificate, including the associated operations specifications and any other document containing the relevant approvals, authorisations, conditions and limitations;
 - (h) a certified true copy of any 83 *bis* agreement, or the agreement summary of such an 83 *bis* agreement, if applicable;
[S 939/2020 wef 05/11/2020]
 - (i) a certified true copy of the agreement for the lease, charter, interchange or other similar arrangement for the aircraft, if applicable;
 - (j) in the case of a Singapore registered aircraft, a copy of each certificate of maintenance review in force in respect of the aircraft;
[S 939/2020 wef 05/11/2020]
 - (k) the English translation of any document required in sub-paragraph (h) that is written in a language other than English.
[S 939/2020 wef 05/11/2020]

(2) Before commencing any complex general aviation operation, the pilot-in-command of the aircraft must ensure that the documents listed in paragraph (1) are in force and remain in force for the duration of the flight.

(3) Despite paragraph (1), the documents listed in that paragraph may be kept at the aerodrome of departure in Singapore instead of being carried on board the aircraft if it is a flight —

- (a) that is intended to begin and end at the same aerodrome; and
- (b) that does not include passage over the territory of any other State in its planned flight path.

Manuals to be carried

18. A CGAC holder must ensure that the following manuals are carried on board every aircraft operated for complex general aviation operations:

- (a) the aircraft's flight manual or equivalent;
- (b) the Operations Manual, or those parts of it that pertain to flight operations.

Operational information and forms to be carried

19. A CGAC holder must ensure that all the following documents are carried on board every aircraft operated for complex general aviation operations:

- (a) the technical log;
- (b) the operational flight plan;
- (c) a copy of the ATS flight plan;
- (d) the route-specific NOTAM and AIS briefing documentation;
- (e) the meteorological information appropriate to the flight;
- (f) the current and suitable aeronautical charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted;
- (g) any information on search and rescue services covering the route of the proposed flight;
- (h) the passenger and cargo manifests;
- (i) the information concerning any dangerous goods that are on board the aircraft;
- (j) a copy of the procedures to be followed by the pilot-in-command of an intercepted aircraft, as published in an official publication by the AIS provider (such as an AIC, AIP or NOTAM);
- (k) a copy of the published visual signals for use by intercepting and intercepted aircraft, as published in an

official publication by the AIS provider (such as an AIC, AIP or NOTAM).

Common language

20. A CGAC holder must ensure that every person to be assigned duty as a crew member for a complex general aviation operation is able to communicate effectively in the English Language.

Stowage of baggage

21. A CGAC holder must establish procedures to ensure that every item of baggage carried onto an aircraft it operates for complex general aviation operations, and taken into the passenger cabin of that aircraft, is adequately and securely stowed.

Electronic navigation data management

22.—(1) A CGAC holder must not use any electronic navigation data product for any complex general aviation operation unless the Director-General of Civil Aviation has approved the procedures for ensuring that —

- (a) the process applied and the data product delivered meet acceptable standards of integrity; and
- (b) the data product is compatible with, and meets the specifications of, the intended function of the equipment that will use the data product.

(2) A CGAC holder must ensure that the process and the electronic navigation data product mentioned in paragraph (1)(a) are continuously monitored to ensure that they meet with the standards of integrity.

(3) A CGAC holder that uses electronic navigation data product must implement procedures to ensure the timely distribution and insertion of current and unaltered navigation data to each aircraft requiring insertion of such data.

Use and preservation of flight recorders and records

23. A CGAC holder must establish appropriate procedures to ensure that the requirements of regulation 21 of the Air Navigation

(91 — General Operating Rules) Regulations 2018 are complied with.

Division 2 — Operational procedures

Use of Operations Manual

24.—(1) A CGAC holder must carry out its complex general aviation operations in accordance with the procedures and limitations specified in an Operations Manual that has been approved by the Director-General of Civil Aviation under these Regulations.

(2) Before an Operations Manual, or an amendment to the Operations Manual, is relied on for a complex general aviation operation, the CGAC holder must obtain the approval of the Director-General of Civil Aviation for the Operations Manual or the amendment, as applicable.

(3) A CGAC holder must —

- (a) provide every member of its operations personnel with a copy of the approved Operations Manual containing all the instructions and information necessary for the performance of that member's duties; and
- (b) ensure that every member of its operations personnel has ready access to a copy of the Operations Manual, or to those parts of the Operations Manual that relate to that member's duties.

Operational control

25.—(1) A CGAC holder must establish and maintain a system of operational control.

(2) A CGAC holder must describe the system of operational control in its Operations Manual.

(3) A CGAC holder must exercise operational control over every complex general aviation operation and ensure that operational control is only delegated to —

- (a) a flight dispatcher;
- (b) the pilot-in-command; or

(c) a designated member of its operations personnel that is accepted by the Director-General of Civil Aviation.

(4) Regulation 22 of the Air Navigation (91 — General Operating Rules) Regulations 2018 does not apply to a complex general aviation operation unless operational control for that flight is delegated to the pilot-in-command pursuant to paragraph (3)(b).

Duties of flight dispatcher

26.—(1) For every complex general aviation operation by a CGAC holder, the CGAC holder must ensure that the pilot-in-command of the aircraft is assisted by at least one flight dispatcher in conjunction with a method of operational control and supervision of flight operations.

(2) The assistance to be rendered by a flight dispatcher under paragraph (1) includes —

- (a) during pre-flight preparation —
 - (i) providing the pilot-in-command with information relevant to flight preparation;
 - (ii) preparing the operational and ATS flight plans; and
 - (iii) submitting the ATS flight plan to every appropriate air traffic services unit;
- (b) during flight, providing the pilot-in-command, by appropriate means, information that may be necessary for the safe conduct of the flight; and
- (c) in the event of an emergency —
 - (i) initiating the emergency procedures, as outlined in the CGAC holder's Operations Manual, without taking any action that would conflict with air traffic control procedures;
 - (ii) conveying to the pilot-in-command safety-related information that may be necessary for the safe conduct of the flight, including information related to any amendment to the flight plan that becomes necessary in the course of the flight; and

- (iii) notifying the appropriate authorities without delay, and requesting for assistance from such authorities if required.

Competence of operations personnel

27.—(1) A CGAC holder must ensure that every person assigned to, or directly involved in, the ground and flight operations of the CGAC holder's complex general aviation operations as a member of its operations personnel —

- (a) is properly instructed;
- (b) has demonstrated the person's abilities in the person's assigned duties; and
- (c) is aware of the person's responsibilities and the relationship of the person's duties to the operation as a whole.

(2) Where the member of its operations personnel that is carrying out functions relating to the safety of an aircraft used for complex general aviation operations is an employee of an organisation that the CGAC holder has contracted or sub-contracted the functions to, the CGAC holder must —

- (a) clearly define, in the contract or agreement with the contractor or sub-contractor, the responsibilities of the organisation and its employees that will be deployed under the contract or agreement; and
- (b) clearly define the relevant duties and accountabilities of every such employee.

(3) Where a member of its operations personnel is required to prepare the operational flight plan for a complex general aviation operation, the CGAC holder must ensure that the member —

- (a) is trained and competent to perform the task;
- (b) is informed as soon as practicable of relevant changes in —
 - (i) equipment;
 - (ii) operating procedures or facilities; and

- (iii) known hazards to flight; and
- (c) is provided, where necessary, with the Operations Manual (or relevant portions of it) for each aircraft type being operated.

(4) A CGAC holder must ensure that a person does not continue to perform any duty or function as a member of its operations personnel if the person is under the influence of any psychoactive substance that may render the person unable to perform such duty or function in a safe and proper manner.

Procedure compliance

28. A CGAC holder must ensure that every member of its operations personnel complies with the procedures relevant to the member's duties, as specified in its Operations Manual and other relevant documents.

Flight planning

29. Before the commencement of any complex general aviation operation, the CGAC holder must ensure that the pilot-in-command is provided with the necessary information —

- (a) to complete the preparation for the intended flight; and
- (b) to ensure the adequacy of the facilities at any aerodrome or heliport that may be used for the flight.

Flight preparation

30.—(1) Before the commencement of any complex general aviation operation, the CGAC holder must ensure that the pilot-in-command completes a statement to certify that the requirements of regulation 24 of the Air Navigation (91 — General Operating Rules) Regulations 2018 have been satisfied.

(2) A CGAC holder must ensure that the pilot-in-command is provided with the information required to comply with paragraph (1).

Operational flight plan

31.—(1) Before the commencement of any complex general aviation operation, the CGAC holder must ensure that —

- (a) the operational flight plan for the flight has been prepared; and
- (b) if the operational flight plan is prepared by a person other than the pilot-in-command, the pilot-in-command is advised of its contents.

(2) A CGAC holder must ensure that its Operations Manual specifies flight planning procedures to provide for the safe conduct of the flight based on considerations of aircraft performance, other operating limitations and relevant expected conditions on the route to be followed and at the aerodromes concerned.

ATS flight plan

32. Before the commencement of any complex general aviation operation, the CGAC holder must ensure that the ATS flight plan for that flight is submitted to all appropriate air traffic services units, in accordance with the Rules of the Air.

Operating in icing conditions — flight procedures

33.—(1) A CGAC holder must establish procedures for every complex general aviation operation that involves flight in expected or actual icing conditions.

(2) A CGAC holder must ensure that no complex general aviation operation is made in expected or actual icing conditions unless the aircraft to be used for such a flight is certificated and equipped to cope with such conditions.

Choosing aerodrome or landing site

34. Before selecting an aerodrome or a landing site for use in any complex general aviation operation, a CGAC holder engaging in the complex general aviation operation must assess, in accordance with the procedures specified in the Operations Manual of the CGAC holder, the aerodrome or landing site as being adequate in terms of its

facilities and services for the aircraft type and the conditions under which the aircraft is to be operated in the complex general aviation operation, taking into account —

- (a) the procedures applicable at the aerodrome or landing site; and
- (b) the level of safety risk associated with the aircraft type and the nature of the complex general aviation operation, in relation to the availability of rescue and firefighting services at the aerodrome or landing site.

[S 824/2022 wef 03/11/2022]

Aerodrome operating minima — determination

35.—(1) A CGAC holder must establish aerodrome operating minima for every aerodrome that is selected as a departure, destination or alternate aerodrome for its complex general aviation operations.

(2) A CGAC holder must specify in its Operations Manual —

- (a) the aerodrome operating minima for every aerodrome mentioned in paragraph (1); and
- (b) the method used to determine the aerodrome operating minima.

(3) The method of determination mentioned in paragraph (2)(b) must involve the consideration of the following matters:

- (a) the type, performance and handling characteristics of the aircraft and any relevant conditions in the aircraft's Certificate of Airworthiness;
- (b) the composition of the flight crew, their competence and experience;
- (c) the dimensions and characteristics of each runway or helipad which may be selected for use;
- (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, acquisition of visual references or control of the flight path 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) any obstacles in the climb-out areas and necessary clearance margins.

(4) For the purpose of establishing the aerodrome operating minima of any aerodrome mentioned in paragraph (1), the CGAC holder may use the operating minima specified for that aerodrome in a commercially available flight guide unless the specified operating minima is lower than that established using the method of determination specified in the CGAC holder's Operations Manual.

(5) The aerodrome operating minima determined in accordance with the method specified in paragraph (3) for a selected aerodrome must not be lower than the aerodrome operating minima that is established for that aerodrome by the State of the Aerodrome, except in any particular case where the State of the Aerodrome has specifically approved the CGAC holder's use of a lower aerodrome operating minima.

(6) A CGAC holder must not use any head-up display, enhanced vision system, synthetic vision display, or combined vision system, where equipped, to gain operational credits for operations in conditions of lower visibilities than normally associated with the aerodrome operating minima, except under and in accordance with an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 (G.N. No. S 442/2018) for that purpose.

(7) A CGAC holder must not use aerodrome operating minima lower than Category I except under and in accordance with an approval granted by the Director-General of Civil Aviation under the

Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

(8) In this regulation, “aerodrome operating minima” includes the minimum weather conditions appropriate to each set of circumstances which can be reasonably expected at every runway or helipad that may be selected for use.

Alternate aerodromes — general requirements

36. A CGAC holder must ensure that an aerodrome is not nominated as an alternate for any complex general aviation operation unless the aerodrome meets the requirements in regulation 35 of the Air Navigation (91 — General Operating Rules) Regulations 2018.

Take-off alternate

37.—(1) A CGAC holder must select, and specify in its operational and ATS flight plans, a take-off alternate aerodrome for a complex general aviation operation if —

- (a) the meteorological conditions at the aerodrome of departure are below the CGAC holder’s established aerodrome landing minima for that operation; or
- (b) it would not be possible for the aircraft to return to the aerodrome of departure for other reasons.

(2) A CGAC holder must ensure that the take-off alternate aerodrome selected in accordance with paragraph (1) is located —

- (a) within one hour of flight time of the departure aerodrome at a one-engine inoperative cruise speed, if the aircraft is an aeroplane that has 2 engines; or
- (b) within 2 hours of flight time of the departure aerodrome at an all-engine operating cruise speed, if the aircraft is an aeroplane that has 3 or more engines.

(3) For the purposes of paragraph (2), flight time is calculated in International Standard Atmosphere and still air conditions using the relevant cruise speed as determined from the CGAC holder’s Operations Manual and the aeroplane’s actual take-off mass.

Fuel requirements

38.—(1) A CGAC holder must establish a fuel policy for every complex aviation operation for the purposes of flight planning and en-route re-planning, and to ensure that every aircraft operated for such an operation carries an amount of usable fuel that is sufficient to complete the planned flight safely (including allowances for deviations from the planned flight).

(2) A fuel policy established in accordance with paragraph (1) must be based on the following planning requirements:

- (a) either of the following sets of data:
 - (i) current aircraft-specific data derived from a fuel consumption monitoring system for that aircraft, if such data is available;
 - (ii) data provided by the aircraft manufacturer, if current aircraft-specific data is not available;
- (b) the operating conditions under which the planned flight is to be conducted, including but not limited to —
 - (i) the anticipated aeroplane mass;
 - (ii) the route-specific NOTAM;
 - (iii) the current meteorological reports or a combination of current reports and forecasts;
 - (iv) the procedures, restrictions and anticipated delays as informed by the appropriate air traffic services units; and
 - (v) the effects of deferred maintenance items or configuration deviations, or both.

(3) Where an aeroplane is to be operated for a complex general aviation operation, the CGAC holder must ensure that the pre-flight calculation of usable fuel includes all of the following:

- (a) taxi fuel, which is an amount of fuel not less than the amount expected to be consumed before take-off, taking into account local conditions at the departure aerodrome and the auxiliary power unit fuel consumption;

-
-
- (b) trip fuel, which is the amount of fuel required to enable the aeroplane to fly from take-off until landing at the destination aerodrome, taking into account the operating conditions listed in paragraph (2)(b);
 - (c) contingency fuel, which is an amount of fuel sufficient to compensate for unforeseen factors, and is equivalent to —
 - (i) 5% of the planned trip fuel calculated in accordance with sub-paragraph (b); or
 - (ii) 5% of the fuel required from the point of re-planning;
 - (d) destination alternate fuel, which is as follows:
 - (i) for a flight requiring the nomination of a destination alternate aerodrome, the amount of fuel required for the aeroplane to —
 - (A) perform a missed approach at the destination aerodrome;
 - (B) climb to the expected cruising altitude;
 - (C) fly the expected routing;
 - (D) descend to the point where the expected approach is initiated; and
 - (E) conduct the approach and landing at the destination alternate aerodrome;
 - (ii) for a flight not requiring the nomination of a destination alternate aerodrome, the amount of fuel required for the aeroplane to fly for 15 minutes at holding speed in standard conditions at an elevation of 450 m (or 1,500 ft) above the destination aerodrome;
 - (iii) for a flight where the aerodrome of intended landing is an isolated aerodrome —
 - (A) if the aeroplane is a reciprocating engine aeroplane, the lesser of the amount of fuel required for the aeroplane to fly for 2 hours, or 45 minutes plus 15% of the flight time planned

to be spent at the cruising level (including the final reserve fuel); or

- (B) if the aeroplane is a turbine-powered aeroplane, the amount of fuel required for the aeroplane to fly for 2 hours at normal cruise consumption above the destination aerodrome (including the final reserve fuel);
- (e) final reserve fuel, which is the amount of fuel calculated using the estimated mass of the aeroplane on arrival at the destination alternate aerodrome (or the estimated mass of the aeroplane on arrival at the destination aerodrome when no destination alternate aerodrome is required) and is the following, where applicable:
- (i) if the aeroplane is a reciprocating engine aeroplane, an amount of fuel required for the aeroplane to fly for 45 minutes at an appropriate speed and in appropriate altitude conditions; or
 - (ii) if the aeroplane is a turbine-powered aeroplane, an amount of fuel required for the aeroplane to fly for 40 minutes at holding speed in standard conditions at an elevation of 450 m (or 1,500 ft) above the aerodrome;
- (f) additional fuel, which is the supplementary amount of fuel required for the aeroplane to descend as necessary and proceed to land at an alternate aerodrome in the event of engine failure or loss of pressurisation, whichever requires a greater amount of fuel, on the assumption that such failure occurs at the most critical point along the route;
- (g) discretionary fuel, which is an extra amount of fuel that is carried on the aeroplane at the pilot-in-command's discretion.
- (4) A CGAC holder must ensure that, when fuel is used for any purpose other than the originally intended purpose (as decided during pre-flight planning) after the commencement of a complex general

aviation operation, a re-analysis of the fuel required is performed and, if necessary, an adjustment of the planned operation is made.

(5) Nothing in this regulation precludes the in-flight amendment of a flight plan for a complex general aviation operation to re-plan that flight to another aerodrome, provided that the requirements in this regulation can be complied with from the point at which the flight is re-planned.

(6) Regulation 37 of the Air Navigation (91 — General Operating Rules) Regulations 2018 does not apply to any aeroplane that is engaged in complex general aviation operations under these Regulations.

In-flight fuel management

39.—(1) A CGAC holder must establish policies and procedures in its Operations Manual to ensure that in-flight fuel checks and fuel management are carried out for each complex general aviation operation to ensure that the aircraft can proceed to an aerodrome or landing site where a safe landing can be made.

(2) The pilot-in-command of an aircraft engaged in complex general aviation operations must request delay information from the appropriate air traffic control services unit when the aircraft encounters unanticipated circumstances that may result in the aircraft landing at the destination aerodrome with an amount of fuel that is less than —

- (a) the final reserve fuel plus any fuel required to proceed to an alternate aerodrome; or
- (b) the final reserve fuel plus any fuel required to proceed to an isolated aerodrome.

Checklists for flight crew

40.—(1) A CGAC holder must ensure that every person assigned duty as a flight crew member for a complex general aviation operation is provided with checklists of aircraft procedures for normal, abnormal and emergency situations, respectively.

(2) A CGAC holder must ensure that every checklist provided in accordance with paragraph (1) is designed in accordance with human factors principles and contains sufficient information to enable a flight crew member to comply with the requirements of —

- (a) the aircraft's flight manual;
- (b) the Operations Manual; and
- (c) such other documents as may be associated with the Certificate of Airworthiness.

(3) A CGAC holder must ensure that the flight crew operating procedures incorporate the use of appropriate checklists for normal, abnormal and emergency situations in all phases of aircraft operations.

(4) A CGAC holder must ensure that every flight crew member for a complex general aviation operation uses the appropriate checklists before, during and after every phase of aircraft operation.

In-flight simulation of emergency situations

41. For any complex general aviation operation involving the carriage of at least one passenger, the CGAC holder must ensure that —

- (a) no emergency or abnormal situations are simulated; and
- (b) no simulated instrument flight is conducted.

Crew members at stations

42.—(1) If cabin crew is required to be carried for a complex general aviation operation, the CGAC holder must ensure that every person assigned as a cabin crew member for the flight is seated in a cabin crew seat with the person's seat belt, or safety harness when provided, fastened during take-off, landing and such other times as the pilot-in-command may require.

(2) In this regulation, "cabin crew seat" means a seat provided in accordance with regulation 65(4).

Cosmic radiation

43.—(1) A CGAC holder must establish procedures in its Operations Manual for the operation of any aircraft at an altitude above 49,000 ft during a complex general aviation operation.

(2) The procedures established in accordance with paragraph (1) must include —

- (a) procedures for the use of equipment to monitor the amount of cosmic radiation on a flight which is operated above 49,000 ft; and
- (b) procedures for recording the total cosmic radiation dose received over a period of 12 consecutive months by any person who is assigned duty as a crew member of a flight which is operated above 49,000 ft.

Flight crew communication

44. A CGAC holder must ensure that every person assigned duty as a flight crew member of an aeroplane to be operated for a complex general aviation operation, and who is required to be on flight deck duty on the aeroplane, communicates through boom or throat microphones when the aeroplane is flying at an altitude that is below the higher of —

- (a) 15,000 ft; or
- (b) the transition level or altitude.

Fuelling operations

45.—(1) A CGAC holder must ensure that an aircraft it operates for a complex general aviation operation is not refuelled or defuelled whenever a passenger is embarking, disembarking or on board the aircraft unless —

- (a) the aircraft is properly attended by qualified personnel ready to initiate and direct an evacuation by the most practical and expeditious means available; and
- (b) two-way communication is maintained by use of the aircraft inter-communication system or other suitable

means between the ground crew supervising the refuelling or defuelling and the qualified personnel on board the aircraft.

(2) Regulation 45 of the Air Navigation (91 — General Operating Rules) Regulations 2018 does not apply to an aircraft operated under these Regulations.

Reporting of reportable safety matters

46.—(1) A CGAC holder must obtain the acceptance of the Director-General of Civil Aviation for the procedures established and maintained by the CGAC holder —

- (a) to report any reportable safety matter to the Authority, as required under regulation 50 of the Air Navigation (91 — General Operating Rules) Regulations 2018;
 - (b) to report maintenance-related occurrences to the Authority, as specified in the Singapore Airworthiness Requirements;
 - (c) to ensure that the relevant design organisation of an aircraft type, or for each modification of an aircraft type, used by the CGAC holder for complex general aviation operations receives adequate reports of any occurrence involving that aircraft type for the design organisation to issue appropriate service instructions or recommendations, if necessary; and
 - (d) to conduct the necessary investigations after a reportable safety matter or maintenance-related occurrence occurs.
- (2) The procedures required under paragraph (1) must specify the roles and responsibilities of all personnel who are involved in —
- (a) coordinating action for the reporting of reportable safety matters or maintenance-related occurrences;
 - (b) overseeing the necessary investigations; and
 - (c) communicating with the Director-General of Civil Aviation.

*Division 3 — Operating limitations***IFR departure limitations**

47.—(1) A CGAC holder must ensure that a complex general aviation operation that is to be carried out in accordance with the Instrument Flight Rules is not commenced when weather conditions at the departure aerodrome are below the prescribed IFR landing minima, unless meteorological reports and forecasts indicate that a successful approach and landing can be made at the take-off alternate aerodrome.

(2) A CGAC holder must not conduct any low visibility operation during a complex general aviation operation unless the low visibility operation is conducted under and in accordance with an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

(3) In this regulation, “low visibility operation” means —

- (a) a Category II or III approach and landing; or
- (b) a take-off with an RVR of less than 400 m, or such higher value that is specified by the competent authority of the State of the Aerodrome.

Minimum flight altitudes

48. A CGAC holder must specify in its Operations Manual the method for establishing terrain clearance altitudes for every flight that the CGAC holder conducts in accordance with the Instrument Flight Rules.

Instrumental approach procedures

49. A CGAC holder must specify in its Operations Manual the instrument approach procedures as part of the standard operating procedures.

*Division 4 — Mass and balance***Aircraft load limitations**

50. For every aircraft a CGAC holder operates for its complex general aviation operations, the CGAC holder must comply with all of the limitations described in the aircraft's flight manual, or any other approved document, relating to the mass and balance of the aircraft.

*Division 5 — Performance***Performance planning — aeroplanes**

51.—(1) A CGAC holder must take into account the following factors when developing procedures for an aeroplane to perform its complex general aviation operations safely:

- (a) the mass of the aeroplane;
- (b) the aeroplane configuration;
- (c) the aeroplane operating techniques;
- (d) the operation of systems which may have an adverse effect on performance;
- (e) the runway gradient;
- (f) the condition of runway;
- (g) the water surface state, where relevant;
- (h) the pressure altitude and temperature;
- (i) any wind;
- (j) any other environmental conditions which may have an adverse effect on performance;
- (k) the accuracy of the charts and other data used.

(2) When developing procedures for obstacle avoidance during take-off, landing and balked landing, the CGAC holder must take into account aerodrome obstacle data.

Performance data

52. A CGAC holder must ensure that the performance data for every aircraft it operates for complex general aviation operations —

- (a) is contained in the aircraft's flight manual or an equivalent document acceptable to the Director-General of Civil Aviation; and
- (b) is available to every person who is a flight crew member, or who is responsible for flight planning or aircraft dispatch.

Wet and contaminated runway surfaces

53. When it is necessary for an aeroplane to take off from a contaminated or wet runway for a complex general aviation operation, the CGAC holder must take into account —

- (a) the runway overrun area;
- (b) the local wind conditions, including any element of tailwind or crosswind; and
- (c) the height of any snow banks adjacent to the runway.

Performance — mass limitation

54.—(1) For every complex general aviation operation by a CGAC holder, the CGAC holder must ensure that the mass of the aircraft at the start of its take-off does not exceed any of the following limits:

- (a) the mass at which regulation 55 can be complied with;
- (b) the mass at which regulations 57 and 58 can be complied with, after making allowances for —
 - (i) the expected reductions in mass as the flight proceeds;
 - (ii) any fuel jettisoning that may be envisaged; and
 - (iii) the use of alternate aerodromes;
- (c) the maximum take-off mass specified in the aircraft's flight manual for the pressure altitude appropriate to the aerodrome elevation and any other local atmospheric

condition that is used as a parameter to determine the maximum take-off mass;

- (d) the maximum mass specified in the applicable noise certificate granted in respect of the aircraft under the Air Navigation Order (O 2), unless otherwise authorised by the Director-General of Civil Aviation.

(2) For every complex general aviation operation by a CGAC holder, the CGAC holder must ensure that the estimated mass of the aircraft at the expected time of landing at the planned destination aerodrome, and at any destination alternate aerodrome, does not exceed any of the following limits:

- (a) the maximum landing mass specified in the aircraft's flight manual for the pressure altitude appropriate to the aerodrome elevation and any other local atmospheric condition that is used as a parameter to determine the maximum landing mass;
- (b) the maximum mass specified in the applicable noise certificate granted in respect of the aircraft, unless otherwise authorised by the competent authority of the State of the Aerodrome.

Take-off

55.—(1) For every aeroplane with an MCTOM exceeding 5,700 kg that a CGAC holder operates for its complex general aviation operations, the CGAC holder must ensure that, in the event of a critical engine failure at any point during take-off, the aeroplane is able —

- (a) to discontinue the take-off and stop within either the accelerate-stop distance available or the runway available;
or
- (b) to continue the take-off and clear all obstacles along the flight path by an adequate margin until the aeroplane is in a position to comply with regulation 57.

(2) When calculating the distance of a runway that is available for take-off by an aeroplane that is being operated for a complex general

aviation operation, the CGAC holder must take into account any length of the runway which will necessarily be used to line up the aeroplane in the direction of take-off.

Aeroplane climb performance

56.—(1) For every aeroplane that a CGAC holder operates for its complex general aviation operations, the CGAC holder must provide the pilot-in-command with operating instructions and information on the aeroplane climb performance.

(2) The information provided in accordance with paragraph (1) —

- (a) must be sufficient for the pilot-in-command to determine the climb gradient that can be achieved during the departure phase in the existing take-off conditions and using the intended take-off technique; and
- (b) must be described in the CGAC holder's Operations Manual.

En-route mass

57. For every aeroplane with an MCTOM exceeding 5,700 kg that a CGAC holder operates for its complex general aviation operations, the CGAC holder must ensure that, in the event of the critical engine becoming inoperative at any point along the route or any planned diversion route, the aeroplane is able to continue the flight to an aerodrome at which the requirements of regulation 58 can be met, without flying below the minimum obstacle clearance altitude at any point.

Landing mass

58.—(1) A CGAC holder must ensure that every aeroplane it operates for complex general aviation operations is able to clear all obstacles in the approach path by a safe margin and land at the planned destination aerodrome, and at any alternate aerodrome, with the assurance that —

- (a) if the aeroplane is a seaplane, the seaplane is able to come to a satisfactorily low speed within the landing distance available at the aerodrome; or

- (b) if the aeroplane is any other aeroplane, the aeroplane is able to come to a stop within the landing distance available at the aerodrome.

(2) In determining whether an aeroplane is able to comply with paragraph (1), a CGAC holder must give allowance for expected variations in the approach and landing techniques used by different pilots-in-command.

Division 6 — Instrument and equipment requirements

General

59.—(1) A CGAC holder must ensure that it does not operate an aircraft for complex general aviation operations unless —

- (a) the aircraft is equipped with the type and number of instruments and equipment required in this Division; and
- (b) the required instruments and equipment, and their installation, are approved or accepted by the aircraft's State of Registry.

(2) Where the State of Registry is Singapore, the CGAC holder must further ensure that —

- (a) a prescribed instrument or item of equipment (other than a prescribed instrument or item of equipment listed in the Fourth Schedule) that is installed on the aircraft; and
- (b) the manner of installation of the instrument or item of equipment described in sub-paragraph (a),

are approved or accepted by the Director-General of Civil Aviation in accordance with the Air Navigation Order.

(3) The Director-General of Civil Aviation may, in any particular case, direct a CGAC holder to carry on an aircraft that is operated for complex general aviation operations such additional or special equipment or supplies as the Director-General of Civil Aviation may specify —

- (a) to facilitate the navigation of the aircraft;
- (b) to carry out search and rescue operations; and

(c) for the survival of any person carried on board the aircraft.

Inoperative instruments and equipment

60.—(1) Subject to paragraphs (2) and (3), a CGAC holder must not commence a complex general aviation operation if any instrument or item of equipment that the aircraft is required under these Regulations to be carried on the aircraft in the circumstances of the intended flight is not carried or is not in a fit condition for use.

(2) The Director-General of Civil Aviation may, subject to such conditions as the Director-General of Civil Aviation thinks fit, permit a CGAC holder to operate an aircraft for a complex general aviation operation in specified circumstances even if the aircraft does not carry a required instrument or item of equipment or that instrument or item of equipment is not in a fit condition for use.

(3) When a permission is granted under paragraph (2), the CGAC holder may commence a complex general aviation operation and operate the aircraft in the circumstances specified in the permission if —

- (a) the CGAC holder has provided the particulars of the permission to the pilot-in-command of the aircraft;
- (b) the pilot-in-command has reviewed the particulars of the permission and determined that compliance with regulation 24 of the Air Navigation (91 — General Operating Rules) Regulations 2018 is possible; and
- (c) every inoperative instrument or item of equipment is conspicuously marked “inoperative” and the details of its required maintenance is recorded in the technical log.

(4) To avoid doubt, a permission granted under paragraph (2) in respect of a foreign registered aircraft does not affect the CGAC holder’s responsibility to comply with the airworthiness requirements of the State of Registry.

Minimum equipment list

61.—(1) A CGAC holder must establish a minimum equipment list for every aircraft in its fleet that —

-
-
- (a) is operated for complex general aviation operations; and
 - (b) has a master minimum equipment list established for its aircraft type.
- (2) The minimum equipment list established under paragraph (1) —
- (a) must be based upon, but no less restrictive than, the relevant master minimum equipment list;
 - (b) must include any permission granted by the Director-General of Civil Aviation under regulation 60; and
 - (c) must be described in the CGAC holder's Operations Manual and approved by the Director-General of Civil Aviation.

Marking of exits and break-in points

62.—(1) For every aircraft in its fleet that a CGAC holder operates for complex general aviation operations, the CGAC holder must ensure that —

- (a) every exit from the aircraft is marked with —
 - (i) a universal symbolic exit sign approved by the Director-General of Civil Aviation or the words “EXIT” or “EMERGENCY EXIT” or equivalent symbols; and
 - (ii) instructions in English and diagrams to indicate the correct method of opening the exit; and
 - (b) the markings required under sub-paragraph (a) —
 - (i) are red or green in colour;
 - (ii) are placed on or near the inside surface of the door or other closure of the exit; and
 - (iii) if the door can be opened from the outside of the aircraft, are also placed on or near the exterior surface.
- (2) For every passenger-carrying aircraft that a CGAC holder operates for complex general aviation operations, the CGAC holder

must ensure that every exit from the aircraft for use by passengers in an emergency is marked on the exterior of the aircraft by a band outlining the exit that —

- (a) is not less than 5 cm in width; and
- (b) is in a colour clearly contrasting with the background on which it appears.

(3) For every aircraft with an MCTOM exceeding 3,600 kg that a CGAC holder operates for complex general aviation operations, the CGAC holder must ensure that every area of the aircraft fuselage that is suitable for break-in by rescue crews in the event of an emergency (called in this regulation a break-in area) —

- (a) is rectangular in shape;
- (b) is marked upon the exterior surface of the aircraft's fuselage by right-angled corner markings, each arm of which is 10 cm in length along the outer edge and 3 cm in width; and
- (c) is marked across the centre with the words "CUT HERE IN EMERGENCY".

(4) Where a break-in area mentioned in paragraph (3) has corner markings that are more than 2 m apart, the CGAC holder must ensure that the break-in area is marked with intermediate lines 10 cm in length and 3 cm in width, such that the distance between adjacent markings does not exceed 2 m.

(5) A CGAC holder must ensure that, apart from a marking required under paragraph (1) or (2), every marking required under this regulation —

- (a) is red in colour; and
- (b) in any case in which the colour of the adjacent background is such as to render red markings not readily visible, is outlined in white or some other contrasting colour in such a manner as to render the marking readily visible.

(6) A CGAC holder must ensure that every marking required under this regulation —

- (a) is painted, or affixed by other equally permanent means; and
- (b) is kept at all times clean and unobscured.

Location of instruments and equipment

63. For every aircraft that a CGAC holder operates for complex general aviation operations, the CGAC holder must ensure that —

- (a) any instrument or item of equipment installed on the aircraft, that is to be operated or used by a single pilot, can be readily seen and operated from the pilot's normal sitting position with the minimum practicable deviation from the pilot's normal line of sight along the flight path; and
- (b) any single instrument or item of equipment installed on the aircraft, that is to be operated or used by 2 pilots, is installed so that the instrument or item of equipment can be readily seen and operated from each pilot's normal sitting position.

Markings and placards

64. A CGAC holder must ensure that, for every aircraft it operates for complex general aviation operations —

- (a) any placard, listing or instrument marking containing prescribed operating limitations is displayed —
 - (i) in a conspicuous place in the aircraft; and
 - (ii) in such a manner as to minimise the risk of erasure, disfigurement, obscuring or removal;
- (b) each unit of measure used on a placard, listing or instrument marking is the same as that on any related instrument or in the related flight manual;
- (c) each fuel contents gauge is clearly marked to indicate the units to which the gauge is calibrated;
- (d) a placard or marking is displayed in the immediate vicinity of each fuel and oil filler with the specification or grade, or both, of fuel or oil, as appropriate; and

- (e) any placard or marking required under any certificate issued in respect of the aircraft is present at the designated location and remains legible.

Seating and restraints

65.—(1) Subject to paragraph (3), a CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with —

- (a) a seat or berth for each individual on board; and
- (b) a safety belt for each seat or restraining belts for each berth.

(2) A CGAC holder must ensure that each seat provided for a flight crew member in an aircraft operated for complex general aviation operations —

- (a) is equipped with a safety harness or, if the aircraft type certificate allows, a seat belt with a diagonal shoulder strap; and
- (b) incorporates a means —
 - (i) to automatically restrain the occupant in the event of rapid deceleration; and
 - (ii) to prevent an incapacitated occupant from interfering with the controls, where practicable.

(3) A CGAC holder must ensure that every passenger under 2 years of age on board an aircraft being operated for a complex general aviation operation is provided with a child restraint device.

(4) For every aircraft with a Certificate of Airworthiness that is issued on or after 1 January 1981 that a CGAC holder operates for complex general aviation operations, the CGAC holder must ensure that, when cabin crew members are required in accordance with regulation 103, the aircraft is equipped with a forward or rearward facing seat for each cabin crew member that —

- (a) is fitted with a safety harness;
- (b) is within 15 degrees of the longitudinal axis of the aircraft;
- (c) is located near the floor level exits; and

(d) is close to other emergency exits, if any.

Aircraft operating under VFR

66. A CGAC holder must ensure that every aircraft that is to be flown in accordance with the Visual Flight Rules during a complex general aviation operation is equipped with a means of measuring and displaying —

- (a) magnetic heading;
- (b) the time in hours, minutes and seconds;
- (c) barometric altitude;
- (d) indicated airspeed; and
- (e) mach number, if the speed limitation stated in the aircraft flight manual is expressed in terms of mach number.

Equipment for flight in icing conditions

67. A CGAC holder must ensure that every aircraft that, during a complex general aviation operation, is to be flown in circumstances where icing conditions are reported to exist or are expected to be encountered, is certificated and equipped to operate in icing conditions.

Aircraft operating at night or under IFR

68.—(1) For every aircraft that is to be flown at night, in accordance with the Instrument Flight Rules or when the surface is not in sight during a complex general aviation operation, the CGAC holder must ensure that the aircraft is equipped with a means of measuring or displaying —

- (a) magnetic heading;
- (b) the time in hours, minutes and seconds;
- (c) barometric altitude, from 2 independent altimetry sources, at least one of which must be a sensitive pressure altimeter;
- (d) airspeed, with a means of preventing malfunctioning due to either condensation or icing;

-
-
- (e) mach number, if the speed limitation prescribed by the aircraft flight manual is expressed in terms of mach number;
 - (f) aircraft attitude indicator for each required pilot;
 - (g) stabilised aircraft heading;
 - (h) the adequacy of the power supply to any gyroscopic instrument;
 - (i) the outside air temperature; and
 - (j) the rate of climb and descent.
- (2) A CGAC holder must ensure that each attitude indicator required under paragraph (1)(f) —
- (a) is powered by a separate source that is capable of automatically continuing to power the indicator for at least 30 minutes after total failure of the main electrical generating system; and
 - (b) has an indicator on the instrument panel of the aircraft to inform the pilot when the attitude indicator is being operated by emergency power.
- (3) Where an aircraft is to be flown at night during a complex general aviation operation, the CGAC holder must ensure that the aircraft is equipped with the following lights:
- (a) lights as required by the Rules of the Air;
 - (b) illumination for all flight instruments and equipment that are essential for the safe operation of the aircraft;
 - (c) lights in all passenger compartments;
 - (d) a landing light if the aircraft is an aeroplane, or a landing light trainable in the vertical plane if the aircraft is a helicopter;
 - (e) an independent portable light for each crew member.
- (4) Where the aircraft mentioned in paragraph (1) is an aeroplane, the CGAC holder —

-
-
- (a) must ensure that the aeroplane is equipped with a means of measuring and displaying turn and slip (called in this paragraph a turn and slip indicator); and
 - (b) may, in lieu of an aircraft attitude indicator required under paragraph (1)(f), equip the aeroplane with a turn and slip indicator in addition to the requirement in sub-paragraph (a).
- (5) Where the aircraft mentioned in paragraph (1) is a helicopter, the CGAC holder must ensure that the helicopter is equipped with —
- (a) a slip indicator; and
 - (b) an aircraft attitude indicator in addition to the requirement in paragraph (1)(f).
- (6) In this regulation, “the surface is not in sight” means that —
- (a) the flight crew is not able to see sufficient surface features; or
 - (b) the surface illumination is insufficient to enable the flight crew to maintain the aircraft at a desired attitude without reference to any flight instrument.

Spare fuses

69.—(1) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations carries on board a quantity of spare fuses for every fuse of an electrical circuit that is accessible to the flight crew for replacement while in flight.

(2) The quantity of spare fuses required under paragraph (1) is the higher of —

- (a) 10% of the total number of fuses in each rating of fuses that are accessible for replacement while the aircraft is in flight; or
- (b) 3 fuses of such description.

Communication equipment

70.—(1) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with —

-
-
- (a) radio communication equipment that is capable of providing continuous two-way communication with an appropriate air traffic services unit or aeronautical telecommunications facility, and for receiving meteorological information, at any time during flight; and
 - (b) a headset with a boom or throat microphone.
- (2) The radio communication equipment required under paragraph (1) must provide for communication on the emergency frequency 121.5 MHz.
- (3) A CGAC holder must not operate an aircraft in a defined portion or airspace or on a route where the appropriate air services authority has specified a required communication performance for performance-based communication during a complex general aviation operation unless —
- (a) the aircraft is equipped to operate in accordance with the specified required communications performance; and

-
-
- (b) the CGAC holder has an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

Navigation equipment

71.—(1) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with a navigation system that enables the aircraft to proceed in accordance with —

- (a) the operational flight plan; and
- (b) the requirements of an appropriate air traffic services authority.

(2) A CGAC holder must not carry out a specified navigation performance operation during a complex general aviation operation unless —

- (a) the aircraft is equipped for the capability of operating in accordance with the specified navigation performance; and
- (b) the CGAC holder has an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

(3) A CGAC holder must not operate any aircraft in RVSM airspace during a complex general aviation operation unless —

- (a) the aircraft is equipped with the capability of —
- (i) indicating to the flight crew the flight level being flown;
- (ii) automatically maintaining a selected flight level;
- (iii) providing an alert to the flight crew when the altitude of the aircraft deviates from the selected flight level by more than 300 ft (90 m); and
- (iv) automatically reporting pressure-altitude; and

- (b) the CGAC holder has an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

(4) In this regulation, “specified navigation performance operation” has the meaning given by the Air Navigation (98 — Special Operations) Regulations 2018.

Surveillance equipment

72.—(1) A CGAC holder must equip every aircraft it operates for complex general aviation operations with surveillance equipment that enables the aircraft to operate in accordance with the requirements of the appropriate air traffic services authority.

(2) A CGAC holder must not operate any aircraft in an area where the appropriate air traffic services authority has specified a required surveillance performance for performance-based surveillance during a complex general aviation operation unless —

- (a) the aircraft is equipped with the capability of operating in accordance with the required surveillance performance specification; and
- (b) the CGAC holder has an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018 for that purpose.

Installation of communication, navigation and surveillance equipment

73. For every aircraft that a CGAC holder operates for complex general aviation operations, the CGAC holder must ensure that the installation of any equipment required for communication, navigation or surveillance purposes on the aircraft is such that the failure of any single unit of such equipment, or any combination of such equipment, will not result in the failure or another unit of equipment required for communications, navigation or surveillance purposes.

Landing in instrument meteorological conditions

74.—(1) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations that may be required to land in instrument meteorological conditions is provided with appropriate navigation equipment.

(2) The navigation equipment provided in accordance with paragraph (1) must be capable of receiving signals to provide guidance to a point from which a visual landing can be made at any aerodrome of intended landing and any designated alternate aerodrome.

Category II and III precision approach equipment

75. A CGAC holder must not conduct a Category II or III precision approach procedure during a complex general aviation operation unless —

- (a) the aircraft is equipped with the capability to conduct such operations; and
- (b) the CGAC holder has an approval granted by the Director-General of Civil Aviation under the Air Navigation (98 — Special Operations) Regulations 2018.

Crew intercom system

76. A CGAC holder must ensure that every aircraft it operates for complex general aviation operations, other than an aircraft certified for single pilot operations, is equipped with a crew member intercom system.

Medical and emergency equipment

77.—(1) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with at least one first-aid kit.

(2) A CGAC holder must ensure that the first-aid kit provided in accordance with paragraph (1) —

- (a) is stowed in an accessible place in the aircraft; and

-
-
- (b) contains medical supplies that —
- (i) are appropriate to the number of passengers the aircraft is certified to carry and the nature of the flight; and
 - (ii) are suitable to treat minor injuries.
- (3) A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with —
- (a) at least one fire extinguisher that is located in reach of a flight crew member; and
 - (b) at least one fire extinguisher in each compartment that is separate from the flight deck.
- (4) A CGAC holder must ensure that every fire extinguisher provided in accordance with paragraph (3) —
- (a) is of a type that will not cause dangerous contamination of the air within the aircraft; and
 - (b) is filled with extinguishing agent that is not of a type listed in Annex A, Group II of the Montreal Protocol on Substances That Deplete the Ozone Layer (8th Edition, 2009) if the fire extinguisher is —
 - (i) a portable fire extinguisher in an aircraft for which the Certificate of Airworthiness is first issued (whether in Singapore or elsewhere) on or after 31 December 2018; or
 - (ii) a built-in fire extinguisher for each lavatory disposal receptacle for towels, paper or waste in an aircraft for which the Certificate of Airworthiness is first issued (whether in Singapore or elsewhere) on or after 31 December 2011.
- (5) A CGAC holder must ensure that every item of equipment provided in accordance with paragraphs (1) and (3) is marked to clearly indicate its method of operation.

(6) If an item of equipment required under paragraph (1) or (3) is stored in a compartment or container, the CGAC holder must ensure that the compartment or container is marked to indicate its contents.

Emergency locator transmitter

78.—(1) A CGAC holder must ensure that every aeroplane that it operates for complex general aviation operations that corresponds to one of the following descriptions is equipped with emergency locator transmitters of the description and quantity specified for that aeroplane:

- (a) an aeroplane for which the Certificate of Airworthiness was first issued (whether in Singapore or elsewhere) before 1 July 2008 must be equipped with at least one emergency locator transmitter of any type;
- (b) an aeroplane for which the Certificate of Airworthiness was first issued (whether in Singapore or elsewhere) on or after 1 July 2008 must be equipped with at least one automatic ELT.

(2) A CGAC holder must ensure that every helicopter that it operates for complex general aviation operations is equipped with —

- (a) at least one automatic ELT; and
- (b) if the helicopter is to be operated over water as described in regulation 80, at least one survival ELT which is stowed in a life raft or with a life jacket.

(3) A CGAC holder must ensure that every emergency locator transmitter that is provided in accordance with paragraph (1) or (2) —

- (a) operates in accordance with the requirements of Volume III of Annex 10 to the Chicago Convention; and
- (b) is capable of transmitting on 121.5 MHz and 406 MHz.

(4) A CGAC holder must ensure that every emergency locator transmitter that is capable of transmitting on 406 MHz —

- (a) is coded in accordance with Annex 10, Volume III of the Chicago Convention; and

-
-
- (b) is registered with the agency responsible for the maintenance of the aircraft register in respect of the aircraft in which the emergency locator transmitted is installed.

Survival equipment

79. Before a CGAC holder commences any complex general aviation operation, the CGAC holder must ensure that the aircraft carries survival equipment and signalling devices appropriate to the areas to be overflown and to the circumstances of the flight.

Flights over water — general requirements

80.—(1) A CGAC holder must ensure that every aircraft to be flown over water during a complex general aviation operation is equipped with —

- (a) a life jacket for every individual on board;
- (b) life rafts of sufficient numbers to carry every person on board; and
- (c) equipment for making the distress signals described in the Rules of the Air.

(2) Every life jacket provided in accordance with paragraph (1)(a) —

- (a) must be equipped with a survivor locator light;
- (b) must be equipped with a whistle, except for a life jacket constructed and carried on board solely for the use by a child under 4 years of age; and
- (c) must be stowed in a place that is easily accessible from the seat or berth of the person for whom the life jacket is provided.

(3) Every life raft provided in accordance with paragraph (1)(b) —

- (a) must be stowed in an accessible location so as to facilitate its ready use in the event of an emergency; and

- (b) must be provided with such life saving equipment as is appropriate to the flight to be undertaken, which may include a suitable means of sustaining life.

(4) A CGAC holder must ensure that every life jacket, life raft or signalling device provided in accordance with this regulation and regulations 81 and 82 —

- (a) is installed in a conspicuously identified location with its contents clearly indicated; and
- (b) is easily accessible in the event of a ditching.

Flights over water — aeroplanes

81. Before a CGAC holder operates a seaplane or an amphibian aeroplane over water during a complex general aviation operation, the CGAC holder must equip the aeroplane with —

- (a) equipment for making sound signals, as specified in rule 33 of the Schedule to the Merchant Shipping (Prevention of Collisions at Sea) Regulations (Cap. 179, Rg 10);
- (b) equipment necessary for mooring, anchoring or manoeuvring the aircraft on water, appropriate to the size, mass and handling characteristics of the specific seaplane or amphibian aeroplane; and
- (c) one sea anchor.

Flights over water — helicopters

82.—(1) A CGAC holder must ensure that every person on board a helicopter being operated for complex general aviation operations wears a life jacket, or an integrated survival suit that includes the functionality of the life jacket, during the following periods:

- (a) if the helicopter is operating in Performance Class 1 or 2, when the helicopter —
 - (i) is flying over water in a hostile environment; or
 - (ii) is flying over water at a distance from land corresponding to more than 10 minutes at normal cruise speed;

-
-
- (b) if the helicopter is operating in Performance Class 3, when the helicopter is flying beyond auto-rotational range or safe forced landing distance from land;
- (c) at any other time the pilot-in-command of the helicopter so decides, based on the pilot-in-command's determination of the risk to survival of the persons on board the helicopter in the event of ditching.
- (2) Before a helicopter is flown over water during a complex general aviation operation, the CGAC holder must ensure that the helicopter —
- (a) if required under regulation 80(1)(b) to carry more than one life raft —
- (i) has at least 50% of the life rafts deployable by remote control; and
- (ii) has equipped any other required raft, with a mass of more than 40 kg and which is not deployable by remote control with some means of mechanically assisted deployment; or
- (b) if fitted with 2 life rafts, each raft is able to carry all occupants in the overload state.
- (3) Before a helicopter is flown over water in a hostile environment, or over water at a distance from land corresponding to more than 10 minutes at normal cruise speed, during a complex general aviation operation, the CGAC holder must equip the helicopter with —
- (a) a permanent or rapidly deployable means of flotation so as to ensure a safe ditching of the helicopter;
- (b) a survival suit for each crew member; and
- (c) any additional equipment decided by reference to a survival risk assessment completed by the CGAC holder.
- (4) Where a helicopter is flown in the circumstances described in paragraph (3), the CGAC holder must ensure that the survival suit mentioned in paragraph (3)(b) is worn by every crew member during the following periods:

- (a) when the sea temperature is less than 10°C;
- (b) when the estimated rescue time exceeds the calculated survival time.

Pressure-altitude reporting transponder

83. A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with a pressure-altitude reporting transponder which operates in accordance with the provisions of Volume IV of Annex 10 to the Chicago Convention.

Passenger safety instructions

84. A CGAC holder must ensure that every aircraft it operates for complex general aviation operations is equipped with a means of conveying the following information and instructions to passengers:

- (a) when seat belts are to be fastened;
- (b) when and how any oxygen equipment that is required to be carried is to be used;
- (c) any restrictions on smoking;
- (d) the location and use of life jackets, and lifecots if carried;
- (e) the location of emergency equipment;
- (f) the location and method of opening emergency exits;
- (g) any other information that the Director-General of Civil Aviation may from time to time specify.

Oxygen indicators

85.—(1) A CGAC holder must ensure that every aircraft corresponding to one of the following descriptions is equipped in accordance with paragraph (2):

- (a) an aircraft that is to be operated at an altitude above flight level 130 during a complex general aviation operation;

-
-
- (b) an aircraft that is to be operated for more than 30 minutes between flight level 100 up to and including flight level 130 during a complex general aviation operation.
- (2) The equipment required to be installed under paragraph (1) are —
- (a) a means of indicating to the flight crew —
 - (i) whether the passenger oxygen system is activated;
 - (ii) the amount of oxygen available in each source of supply, if the oxygen system is supplied by a gaseous system; and
 - (iii) if the aircraft is a pressurised aircraft, by visual or aural warning, when the cabin pressure altitude exceeds 10,000 ft; and
 - (b) a means of indicating to each user of an individual dispensing unit, the amount of oxygen available and whether the oxygen is being delivered to the dispensing unit.

Oxygen equipment and supplies for non-pressurised aircraft

86.—(1) Subject to paragraph (2), a CGAC holder operating an aircraft with a non-pressurised cabin for a complex general aviation operation that involves flight at an altitude above flight level 100 must ensure that the aircraft is equipped in accordance with the following Table 1 with a supply of oxygen sufficient for the duration of time specified for the circumstances that the aircraft is to be operated in.

Table 1: Oxygen supply for a non-unpressurised aircraft

Circumstances	Supply for	Duration
(1) When flying above flight level 100 but not exceeding flight level 120	(a) All flight crew members	Any period during which the aircraft flies above flight level 100.
	(b) All cabin crew members and 10% of passengers	For any continuous period exceeding 30 minutes during which the aircraft flies above flight level 100 but not exceeding flight level 120, the period by which 30 minutes is exceeded.
(2) When flying above flight level 120	All crew members and all passengers	Any period during which the aircraft flies above flight level 120.

(2) A CGAC holder may, in lieu of complying with paragraph (1), comply with paragraph (3) if the aircraft with a non-pressurised cabin to be operated for a complex general aviation operation has a Certificate of Airworthiness that was first issued (whether in Singapore or elsewhere) before 1 January 1989.

(3) The supply of oxygen to be provided for the purposes of paragraph (2) is —

(a) a supply of oxygen sufficient for continuous use by —

- (i) all cabin crew members and, if passengers are carried, by 10% of the number of passengers, for any period exceeding 30 minutes during which the aircraft flies above flight level 100 but not above flight level 130; and
- (ii) all flight crew members for any period during which the aircraft flies above flight level 100; and

(b) a supply of oxygen sufficient for continuous use by all persons on board for the whole time during which the aircraft flies above flight level 130.

(4) A CGAC holder must ensure that the aircraft is equipped with suitable and sufficient apparatus to enable its passengers and crew members to use the oxygen provided.

(5) The quantity of oxygen required to comply with paragraphs (1) and (3) is computed in accordance with the information and instructions specified for that aircraft in the CGAC holder's Operations Manual.

Oxygen equipment and supplies for pressurised aircraft

87.—(1) Subject to paragraph (3), a CGAC holder operating a pressurised aircraft for a complex general aviation operation that involves flight at an altitude above flight level 100 must ensure that the aircraft carries a supply of oxygen sufficient for a duration of time that is the greater of —

- (a) the duration of time that is calculated in accordance with the Operations Manual before the commencement of the flight, being the period or periods which it is reasonably anticipated that the aircraft will be flown in the circumstances of the intended flight at an altitude where a supply of oxygen is required, and in calculating that period or those periods of time, the following factors must be taken into account:
 - (i) the possibility of depressurisation when flying above flight level 100;
 - (ii) the possibility of failure of one or more of the aircraft engines;
 - (iii) the restrictions due to required minimum safe altitude;
 - (iv) the fuel requirements;
 - (v) the performance of the aircraft;
- (b) the duration of time that is calculated in accordance with the following Table 2 for the circumstances that the aircraft is to be operated in:

Table 2: Oxygen supply for a pressurised aircraft

Circumstances	Supply for	Duration
(1) When flying above flight level 100 but not exceeding flight level 250	(a) All flight crew members	30 minutes or for so long as the cabin pressure altitude exceeds 10,000 ft, whichever is the longer.
	(b) All cabin crew members and 10% of passengers	<p>(i) When the aircraft is capable of descending and continuing to its destination as specified in Capability 1, 30 minutes or for so long as the cabin pressure altitude exceeds 10,000 ft, whichever is the longer.</p> <p>(ii) When the aircraft is not capable of descending and continuing to its destination as specified in Capability 1, for so long as the cabin pressure altitude is greater than 10,000 ft but does not exceed 12,000 ft.</p>
	(c) All cabin crew members and all passengers	When the aircraft is not capable of descending and continuing to its destination as specified in Capability 1, and the cabin pressure altitude exceeds 12,000 ft, the duration is the period

		the cabin pressure altitude exceeds 12,000 ft or 10 minutes, whichever is the longer.
(2) When flying above flight level 250	(a) All flight crew members	2 hours or for so long as the cabin pressure altitude exceeds 10,000 ft, whichever is the longer.
	(b) All cabin crew members	For so long as the cabin pressure altitude exceeds 10,000 ft and a portable supply for 15 minutes.
	(c) 10% of passengers	For so long as the cabin pressure altitude exceeds 10,000 ft, but does not exceed 12,000 ft.
	(d) 30% of passengers	For so long as the cabin pressure altitude exceeds 12,000 ft, but does not exceed 15,000 ft.
	(e) All passengers	If the cabin pressure altitude exceeds 15,000 ft, the duration is the period the cabin pressure altitude exceeds 15,000 ft or 10 minutes, whichever is the longer.
	(f) 2% of passengers or 2 passengers, whichever is the greater, being supply of first-aid oxygen which must be available for simultaneous	For so long as after decompression, cabin pressure altitude exceeds 8,000 ft.

	first-aid treatment of 2% or 2 passengers, wherever the passengers are seated in the aircraft.	
--	--	--

(2) In Table 2, “Capability 1” means that, at the time a failure to maintain cabin pressure occurs, the aircraft is capable of —

- (a) descending to flight level 130 within 4 minutes, in accordance with the emergency descent procedures specified in the relevant flight manual and without flying below the minimum altitudes for safe flight specified for the aircraft in the CGAC holder’s Operations Manual; and
- (b) continuing at or below that flight level to its place of intended destination or any other place at which a safe landing can be made.

(3) A CGAC holder may, in lieu of complying with paragraph (1), comply with paragraph (4) if the pressurised aircraft to be operated for a complex general aviation operation —

- (a) has a Certificate of Airworthiness that was first issued (whether in Singapore or elsewhere) before 1 January 1989; and
- (b) is provided with means for maintaining a pressure greater than 700 hPa throughout the flight in the flight crew compartment and in the compartments in which passengers are carried.

(4) The supply of oxygen to be provided for the purposes of paragraph (3) is —

- (a) in every case where the aircraft is to be flown above flight level 350, a supply of oxygen in a portable container sufficient for the simultaneous first-aid treatment of 2 passengers; and

(b) in the event of failure to maintain a pressure greater than 700 hPa in accordance with paragraph (3)(b) in the circumstances specified in columns 1 and 2 of the following Table 3, a supply of oxygen sufficient for the continuous use by the persons specified in column 3 for the period specified in column 4 of the Table:

Table 3: Alternative oxygen supply

Column 1	Column 2	Column 3	Column 4
Aircraft to operate at altitudes	Capability of aircraft to descent (where relevant)	Person for whom oxygen is to be provided	Period of supply of oxygen
(1) Above flight level 100		All crew members and every passenger for whom oxygen is provided as specified below	30 minutes or the period specified at Condition A, whichever is the longer.
(2) Above flight level 100 but not above flight level 300	(a) Aircraft is either flying at or below flight level 150 or is capable of descending and continuing to destination as specified at Condition X	10% of passengers	30 minutes or the period specified at Condition A, whichever is the longer.
	(b) Aircraft is flying above flight level 150 and is not capable of descending and	(i) All passengers	10 minutes or the period specified at Condition B, whichever is the longer.
		(ii) 10% of passengers	30 minutes or the period specified

	continuing to destination as specified at Condition X		at Condition C, whichever is the longer.
(3) Above flight level 300 but not above flight level 350	(a) Aircraft is capable of descending and continuing to destination as specified at Condition Y	15% of passengers	30 minutes or the period specified at Condition A, whichever is the longer.
	(b) Aircraft is not capable of descending and continuing to destination as specified at Condition Y	(i) All passengers	10 minutes or the period specified at Condition B, whichever is the longer.
		(ii) 15% of passengers	30 minutes or the period specified at Condition C, whichever is the longer.
(4) Above flight level 350		(i) All passengers	10 minutes or the period specified at Condition B, whichever is the longer.
		(ii) 15% of passengers	30 minutes or the period specified at Condition C, whichever is the longer.

(5) In Table 3 —

“Condition A” means the whole period during which the aircraft flies above flight level 100 after a failure to maintain a pressure greater than 700 hPa in the control department and in the compartments in which passengers are carried has occurred;

“Condition B” means the whole period during which the aircraft flies above flight level 150 after a failure to maintain a pressure greater than 700 hPa in the control department and in the compartments in which passengers are carried has occurred;

“Condition C” means the whole period during which the aircraft flies above flight level 100, but not above flight level 150, after a failure to maintain a pressure greater than 700 hPa in the control department and in the compartments in which passengers are carried has occurred;

“Condition X” means, at the time when a failure to maintain a pressure greater than 700 hPa in the control department and in the compartments in which passengers are carried has occurred, the aircraft is capable of —

(a) descending to flight level 150 within 6 minutes, in accordance with the emergency descent procedure specified in the relevant flight manual and without flying below the minimum altitudes for safe flight specified for the aircraft in the CGAC holder’s Operations Manual; and

(b) continuing at or below that flight level to its place of intended destination or any other place at which a safe landing can be made;

“Condition Y” means, at the time when a failure to maintain a pressure greater than 700 hPa in the control department and in the compartments in which passengers are carried has occurred, the aircraft is capable of —

(a) descending to flight level 150 within 4 minutes, in accordance with the emergency descent procedure

specified in the relevant flight manual and without flying below the minimum altitudes for safe flight specified for the aircraft in the CGAC holder's Operations Manual; and

- (b) continuing at or below that flight level to its place of intended destination or any other place at which a safe landing can be made.

(6) A CGAC holder must ensure that every aircraft required to be equipped with oxygen supply under this regulation is also equipped with suitable and sufficient apparatus to enable the person for whom the oxygen is supplied to use the oxygen, which includes —

- (a) an on-demand oxygen mask for each flight crew member, which is a quick-donning type and readily accessible to a flight crew member from the flight crew member's normally seated position if the aircraft is to be operated at altitudes above flight level 250; and
- (b) automatically deployable oxygen equipment with a quantity of oxygen dispensing units that exceeds the number of seats in the cabin by at least 10%.

Device to warn flight crew of loss of pressurisation

88. A CGAC holder must ensure that every pressurised aeroplane that is to be operated at any altitude above 25,000 ft during a complex general aviation operation is equipped with a device to provide positive warning to the flight crew of any dangerous loss of pressurisation.

Flight recorders — construction, installation and continued serviceability

89.—(1) A CGAC holder must ensure that any flight recorder required to be installed in accordance with regulations 90, 91, 92 and 93 is constructed, located and installed so as to provide maximum practical protection for the recordings in order that the recorded information may be preserved, recovered and transcribed.

(2) A CGAC holder must ensure that any flight recorder mentioned in paragraph (1) meets the requirements specified by the

Director-General of Civil Aviation in Aviation Specifications 2 — Flight Recorders for the respective type of flight recorder in respect of —

- (a) crashworthiness and fire protection;
- (b) performance;
- (c) parameters or information to be recorded;
- (d) duration of recording; and
- (e) continued serviceability.

Flight recorders — flight data recorders and alternatives

90.—(1) A CGAC holder must ensure that every aeroplane that it operates for complex general aviation operations, and which 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;
 - (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 for which the application for type certification was first 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 Table 1-1 of the Aviation Specifications 2 — Flight Recorders.

(2) A CGAC holder must ensure that every helicopter, that it operates for complex general aviation operations, and which corresponds to one of the following descriptions, is equipped with a flight data recorder of the type specified for a helicopter of that description:

- (a) for a helicopter with an MCTOM exceeding 3,175 kg but not exceeding 7,000 kg, for which the Certificate of Airworthiness was first issued on or after 1 January 1989

but before 1 January 2016 — an FDR that records at least the first 15 parameters specified in Table 2-1 of the Aviation Specifications 2 — Flight Recorders;

- (b) for a helicopter with an MCTOM exceeding 7,000 kg, for which the Certificate of Airworthiness was first issued on or after 1 January 1989 but before 1 January 2016 — an FDR that records at least the first 30 parameters specified in Table 2-1 of the Aviation Specifications 2 — Flight Recorders;
- (c) for a helicopter with an MAPSC exceeding 19, for which the Certificate of Airworthiness was first issued on or after 1 January 1989 — an FDR that records at least the first 30 parameters specified in Table 2-1 of the Aviation Specifications 2 — Flight Recorders;
- (d) for a helicopter with an MCTOM exceeding 3,175 kg, for which the Certificate of Airworthiness was first issued on or after 1 January 2016 — an FDR that records at least the first 48 parameters specified in Table 2-1 of the Aviation Specifications 2 — Flight Recorders.

(3) Where an aircraft that a CGAC holder operates for complex general aviation operations is equipped with any FDR, ADRS, AIR or AIRS, the CGAC 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.

[S 770/2018 wef 24/11/2018]

Flight recorders — cockpit voice recorder and cockpit audio recording system

91.—(1) A CGAC holder must ensure that a cockpit voice recorder is installed in each aircraft that it operates for complex general

aviation operations that corresponds to one of the following descriptions:

- (a) an aeroplane with an MCTOM exceeding 5,700 kg;
- (b) a turbine-powered aeroplane with an MCTOM not exceeding 5,700 kg or for which the application for type certification is submitted to the Contracting State on or after 1 January 2016, and which requires more than one pilot to operate;

[S 770/2018 wef 24/11/2018]

- (c) a helicopter with an MCTOM exceeding 3,175 kg for which the Certificate of Airworthiness was first issued on or after 1 January 1987;

- (d) a helicopter with an MCTOM exceeding 7,000 kg.

[S 770/2018 wef 24/11/2018]

(2) Despite paragraph (1), a CGAC holder may equip an aeroplane of the type described in paragraph (1)(b) with a cockpit audio recording system instead of a cockpit voice recorder.

(3) Where a helicopter described in paragraph (1)(c) or (d) is not equipped with a flight data recorder, the CGAC holder must ensure that the cockpit voice recorder also records the main rotor speed of the helicopter.

(4) Where an aircraft that a CGAC holder operates for complex general aviation operations is equipped with any cockpit voice recorder or any cockpit audio recording system, the CGAC holder must ensure that the cockpit voice recorder or cockpit audio recording system (as the case may be) does not use any of the following types of recording technology:

- (a) magnetic tape;
- (b) wire.

[S 770/2018 wef 24/11/2018]

Flight recorders — data-link recorders

92.—(1) A CGAC holder must ensure that every aircraft that it operates for complex general aviation operations, and which corresponds to one of the following descriptions, is equipped with

a crash-protected flight recorder to record data-link communications (called in this regulation a data-link recorder):

- (a) an aircraft for which a Certificate of Airworthiness was first issued on or after 1 January 2016, and which utilises any of the data-link communications applications specified by the Director-General of Civil Aviation, and which is required to carry a cockpit voice recorder under regulation 91;
- (b) an aircraft —
 - (i) for which the Certificate of Airworthiness is first issued before 1 January 2016;
 - (ii) which is modified on or after 1 January 2016 to install and utilise any of the data link communications applications specified by the Director-General of Civil Aviation;
 - (iii) which is required to carry a cockpit voice recorder under regulation 91; and
 - (iv) which is not modified on or after 1 January 2016 to install any data link communications equipment which complies with —
 - (A) the type design of the aircraft that is approved by the State of Design before 1 January 2016; or
 - (B) a modification to the aircraft that is approved by the State of Design or the State of Registry before 1 January 2016.

[S 939/2020 wef 05/11/2020]

[S 770/2018 wef 24/11/2018]

(2) A CGAC holder must ensure that the minimum recording duration of the data-link communications required for an aircraft described in paragraph (1)(a) or (b) is equal to the minimum recording duration of the cockpit voice recorder.

(3) A CGAC holder must ensure that the recordings of the data-link recorder can be correlated to the recorded cockpit audio.

Combination recorders

93. A CGAC holder may, in lieu of complying with regulations 90 and 91, equip an aircraft that it operates for complex general aviation operations that corresponds to one of the following descriptions with the flight recorder system specified for that aircraft:

- (a) an aeroplane with an MCTOM exceeding 5,700 kg, that is required to be equipped with a flight data recorder and a cockpit voice recorder, may be equipped with 2 combination recorders (one forward and one aft);
- (b) a multi-engined turbine-powered aeroplane with an MCTOM not exceeding 5,700 kg, that is required to be equipped with a flight data recorder or a cockpit voice recorder, or both, may be equipped with one combination recorder;
- (c) a helicopter that is required to be equipped with a flight data recorder or a cockpit voice recorder, or both, may be equipped with one combination recorder.

Ground proximity warning system

94.—(1) A CGAC holder must ensure that an aircraft that corresponds to one of the following descriptions is equipped with a ground proximity warning system which has a forward-looking terrain avoidance function if the aircraft is to be operated for its complex general aviation operations:

- (a) a turbine-powered aeroplane with an MCTOM not exceeding 5,700 kg and with an MAPSC exceeding 5 but not exceeding 9 seats;
- (b) a turbine-powered aeroplane with an MCTOM exceeding 5,700 kg, or with an MAPSC exceeding 9 seats;
- (c) a piston engine aeroplane with an MCTOM exceeding 5,700 kg, or with an MAPSC exceeding 9 seats.

(2) Subject to paragraph (3), the ground proximity warning system required to be installed in any aeroplane described in paragraph (1) —

-
-
- (a) must provide an automatic and distinctive warning to the flight crew when the aircraft is in potentially hazardous proximity to the earth's surface; and
 - (b) must provide warnings in the following circumstances:
 - (i) excessive descent rate;
 - (ii) excessive altitude loss after take-off or go-around;
 - (iii) unsafe terrain clearance.

(3) If the aeroplane described in paragraph (1)(b) has a Certificate of Airworthiness that is first issued after 1 January 2011, the ground proximity warning system required to be installed in accordance with paragraph (1) —

- (a) must provide an automatic and distinctive warning to the flight crew when the aircraft is in potentially hazardous proximity to the earth's surface; and
- (b) must provide warnings in the following circumstances:
 - (i) excessive descent rate;
 - (ii) excessive terrain closure rate;
 - (iii) excessive altitude loss after take-off or go-around;
 - (iv) unsafe terrain clearance while not in the landing configuration:
 - (A) gear not locked down;
 - (B) flaps not in a landing position;
 - (v) excessive descent below the instrument glide path.

Significant weather detection

95. A CGAC holder must ensure that every pressurised aeroplane it operates for complex general aviation operations with at least one passenger on board is equipped with an operative weather radar or other equipment capable of detecting thunderstorms or other potentially hazardous weather conditions whenever the aeroplane is to be or is being operated —

- (a) in areas where such conditions may be expected to exist along the route in instrument meteorological conditions; or
- (b) at night.

Airborne Collision Avoidance System (ACAS II)

96.—(1) A CGAC holder must ensure that an airborne collision avoidance system (ACAS II) is installed in every turbine-powered aeroplane that it operates for complex general aviation operations that also corresponds to one of the following descriptions:

- (a) an aeroplane for which the Certificate of Airworthiness was first issued after 24 November 2005 with —
 - (i) an MCTOM exceeding 15,000 kg; or
 - (ii) an MAPSC exceeding 30;
- (b) an aeroplane for which the Certificate of Airworthiness was first issued after 1 January 2008 with —
 - (i) an MCTOM exceeding 5,700 kg but not exceeding 15,000 kg; or
 - (ii) an MAPSC exceeding 19.

(2) The ACAS II provided in accordance with paragraph (1) must operate in accordance with the relevant provisions of Volume IV of Annex 10 to the Chicago Convention.

Cosmic radiation detection equipment

97. A CGAC holder must ensure that every aircraft that is to be flown at an altitude above 49,000 ft during a complex general aviation operation carries equipment to measure and continuously indicate the dose rate of total cosmic radiation being received and the cumulative dose for every such flight.

Division 7 — Maintenance

Maintenance responsibilities

98. A CGAC holder must not operate a foreign registered aircraft for its complex general aviation operations unless the aircraft has

been maintained and released to service under a system acceptable to the aircraft's State of Registry.

Use of Maintenance Control Manual

99.—(1) A CGAC holder must maintain the airworthiness of the aircraft it operates for complex general aviation operations in accordance with a Maintenance Control Manual that is approved by the Director-General of Civil Aviation under these Regulations.

(2) Before the Maintenance Control Manual, or an amendment to the Maintenance Control Manual, is relied on for the maintenance of any aircraft a CGAC holder operates for complex general aviation operations, the CGAC holder must obtain the approval of the Director-General of Civil Aviation for the Maintenance Control Manual or the amendment, as applicable.

(3) A CGAC holder must —

- (a) provide every member of its maintenance and operations personnel concerned with the maintenance of an aircraft used for complex general aviation operations with the approved Maintenance Control Manual containing all the instructions and information necessary for the member to perform the member's duties; and
- (b) ensure that the approved Maintenance Control Manual is readily available to all personnel concerned with the maintenance or operation of an aircraft for complex general aviation operations.

Division 8 — Crew requirements

Flight crew qualifications

100. A CGAC holder must ensure that every person assigned to flight crew member duty as a pilot-in-command of an aircraft being operated for a complex general aviation operation meets the requirements of a flight crew member specified in regulation 105 of the Air Navigation (91 — General Operating Rules) Regulations 2018.

Flight crew recency

101. For every complex general aviation operation involving an aircraft that is carrying at least one passenger, the CGAC holder must not assign a person to flight crew member duty as a pilot operating the flight controls of the aircraft during take-off and landing unless the person has, in the 90 days immediately preceding the flight, operated the flight controls during at least 3 take-offs and 3 landings of an aircraft of the same type or variant to be used for the flight or in a flight simulation training device that —

- (a) is representative of that aircraft type or variant; and
- (b) is specifically approved, in accordance with paragraph 23A of the Air Navigation Order, to be used by the CGAC holder for this purpose.

[S 680/2018 wef 09/10/2018]

Flight crew duty assignment

102.—(1) For every complex general aviation operation by a CGAC holder, the CGAC holder must designate —

- (a) a flight crew member as the pilot-in-command; and
- (b) the number of individuals required as additional flight crew members to augment the minimum crew specified in the aircraft's flight manual due to —
 - (i) the type of aircraft operated;
 - (ii) the type of operation to be performed; and
 - (iii) the duration of the flight.

(2) A CGAC holder must assign each flight crew member to the functions that the flight crew member is to carry out in the event of an aircraft emergency, including when an emergency evacuation is necessary.

(3) If an aircraft operated for a complex general aviation operation has a separate flight engineer's station, the CGAC holder must ensure that the assigned flight crew includes at least one flight engineer who is especially assigned to that station.

(4) Paragraph (3) does not apply when the duties associated with the separate flight engineer's station can be adequately performed by another flight crew member holding a flight engineer licence without interference with that flight crew member's regular duties.

Cabin crew duty assignment

103.—(1) For every complex general aviation operation involving an aircraft carrying at least one passenger, the CGAC holder must determine the number of cabin crew members required by taking into account —

- (a) the seating capacity of the aircraft or the number of passengers to be carried;
- (b) the necessary functions to be performed in an emergency or a situation requiring emergency evacuation; and
- (c) the need to effect a safe and expeditious evacuation of the aircraft.

(2) A CGAC holder must assign to each cabin crew member to the functions that the cabin crew member is to carry out in the event of an aircraft emergency, including when an emergency evacuation is necessary.

Task specialists

104. A CGAC holder may assign to a task specialist the functions to be carried out in the event of an aircraft emergency (including when an emergency evacuation is necessary) if the task specialist —

- (a) is assigned duty for the complex general aviation operation; and
- (b) is appropriately trained to undertake the assigned functions.

*Division 9 — Training***Training programmes — general**

105.—(1) A CGAC holder must have a training programme for its operations personnel that is approved by the Director-General of Civil Aviation.

(2) The training programme established for the purposes of paragraph (1) must ensure that every person who is assigned duties in relation to the safe operation of an aircraft operated for complex general aviation operations is adequately trained and competent to perform the person's assigned duties.

(3) A CGAC holder must include the training programme in its Operations Manual either directly or by reference to a training manual.

Flight crew training

106.—(1) In accordance with regulation 105(1), a CGAC holder must have a training programme for every person that may be assigned duty as a flight crew member for its complex general aviation operations.

(2) The training programme established and maintained for the purposes of paragraph (1) must consist of ground and flight training on every type of aircraft that the person may be assigned duty as flight crew member.

(3) The training programme mentioned in paragraph (1) must include training in —

- (a) the procedures for normal, abnormal and emergency situations (including the emergency evacuation of the aircraft);
- (b) the use of the CGAC holder's standard operating procedures;
- (c) the required competency for all equipment installed on the aircraft, on a permanent or temporary basis, or for the purpose of carrying out a specific task; and

- (d) knowledge of crew resource management, threat and error management, the carriage of dangerous goods and such particular requirements that may apply to a complex general aviation operation that the person is to be assigned to.

(4) A CGAC holder must not assign a person to duty as a flight crew member for any of its complex general aviation operations unless the person has satisfactorily completed the training programme mentioned in paragraph (1).

(5) To avoid doubt, the pilot training mentioned in these Regulations does not include any training that leads to an endorsement of new ratings for the pilot.

Cabin crew training

107.—(1) In accordance with regulation 105(1), a CGAC holder must have a training programme for every person that may be assigned duty as a cabin crew member for its complex general aviation operations.

(2) The training programme established and maintained for the purposes of paragraph (1) must include training in —

- (a) the procedures for normal, abnormal and emergency situations (including the emergency evacuation of the aircraft); and
- (b) the actions and responsibilities of each cabin crew member with respect to the carriage of dangerous goods.

(3) A CGAC holder must not assign a person to duty as a cabin crew member for any of its complex general aviation operations unless the person has satisfactorily completed the training programme mentioned in paragraph (1).

Task specialists

108.—(1) In accordance with regulation 105(1), a CGAC holder must have a training programme for every person that may be assigned duty as a task specialist for its complex general aviation operations.

(2) The training programme established and maintained for the purposes of paragraph (1) must include training in —

- (a) the procedures for normal, abnormal and emergency situations (including the emergency evacuation of the aircraft); and
- (b) the actions and responsibilities of a task specialist with respect to the carriage of dangerous goods.

(3) A CGAC holder must not assign a person to duty as a task specialist for any of its complex general aviation operations unless the person has satisfactorily completed the training programme mentioned in paragraph (1).

Division 10 — Crew member competency requirements

Operator proficiency check

109. A CGAC holder must ensure that every person who is on the CGAC holder's roster to be assigned duty as a pilot for its complex general aviation operations undergoes a test or check at least once every 12 months to demonstrate the person's competence in —

- (a) piloting technique;
- (b) use of standard operating procedures; and
- (c) ability to execute emergency procedures.

Division 11 — Fatigue of crew

Fatigue management programme

110.—(1) A CGAC holder must have a fatigue management programme for its complex general aviation operations to ensure that no member of its operations personnel for those operations is fatigued when carrying out the member's assigned duties.

(2) The fatigue management programme established and maintained in accordance with paragraph (1) must specify the flight and duty times for flight and cabin crew members.

(3) A CGAC holder must include details of the fatigue management programme in its Operations Manual.

Responsibilities of CGAC holder for fatigue management

111.—(1) A CGAC holder must not cause or permit any person to be assigned duty as a crew member on any of its complex general aviation operations if the CGAC holder knows or has reason to believe that the person is suffering from or, having regard to the circumstances of the flight to be undertaken, is likely to suffer from, such fatigue during flight so as to endanger the safety of the aircraft or its occupants.

(2) For every person that is on the CGAC holder's roster to be assigned duty as a crew member for its complex general aviation operations, the CGAC holder must keep an accurate record of the person's flight times, flight duty periods, duty periods and rest periods.

Division 12 — Manuals, logs and records

Operations Manual

112.—(1) A CGAC holder must have an Operations Manual that is approved by the Director-General of Civil Aviation.

(2) The Operations Manual mentioned in paragraph (1) —

- (a) must be in English;
- (b) must be developed taking into account human factors principles; and
- (c) must contain the details listed in paragraph (3), organised in a manner that is acceptable to the Director-General of Civil Aviation.

(3) A CGAC holder must ensure that its Operations Manual contains the following details:

- (a) a table of contents;
- (b) the details of amendment control;
- (c) a list of effective pages;
- (d) the duties, responsibilities and succession for every member of its management and operating personnel;

-
-
- (e) the details of the CGAC holder's safety management system;
 - (f) the system of operational control;
 - (g) the minimum equipment list procedures, where applicable;
 - (h) the normal flight operations;
 - (i) any standard operating procedures;
 - (j) any weather limitations;
 - (k) the fatigue management programme, including flight and duty time limitations;
 - (l) the emergency operations;
 - (m) the considerations in the event of an accident or incident;
 - (n) the personnel qualifications and training;
 - (o) the details of record keeping;
 - (p) a description of the maintenance control system;
 - (q) the details of any security programme that may be required to be established under regulations made under the Act;
 - (r) the performance operating limitations;
 - (s) the use and protection of records by a flight recorder (where applicable);
 - (t) the handling of dangerous goods;
 - (u) the details of any operations that are required to be approved in accordance with the Air Navigation (98 — Special Operations) Regulations 2018.
- (4) The standard operating procedures mentioned in paragraph (3)(i) —
- (a) must be consistent with the aircraft's flight manual and the aircraft checklists to be used; and
 - (b) must include procedures relating to the operation of aircraft during all types of normal, abnormal and emergency circumstances.

(5) A CGAC holder must update its approved Operations Manual in a timely manner, except that no amendment or revision may be made to the Operations Manual unless the Director-General of Civil Aviation —

- (a) requests that the amendment or revision be made to the Operations Manual; or
- (b) approves the amendment or revision to be made to the Operations Manual.

(6) A CGAC holder must establish procedures to ensure that the Operations Manual being used by its personnel contains current information.

Maintenance Control Manual

113.—(1) A CGAC holder must have a Maintenance Control Manual that is approved by the Director-General of Civil Aviation.

(2) The Maintenance Control Manual mentioned in paragraph (1) —

- (a) must be in English;
- (b) must be developed taking into account human factors principles; and
- (c) must contain the details listed in paragraph (3), organised in a manner acceptable to the Director-General of Civil Aviation.

(3) A CGAC holder must ensure that its Maintenance Control Manual contains the following details:

- (a) the means for complying with the procedures required by Division 7 of Part 2 of the Air Navigation (91 — General Operating Rules) Regulations 2018;
- (b) the means of recording the names and duties of any person assigned by the CGAC holder to ensure that maintenance is carried out in accordance with the Maintenance Control Manual;
- (c) the maintenance programme;

-
-
- (d) the methods used for the completion and retention of the CGAC holder's maintenance records;
[S 770/2018 wef 24/11/2018]
- (e) the procedures for complying with the service information reporting requirements;
- (f) the procedures for implementing action resulting from mandatory continuing airworthiness information;
- (g) a system of analysis and continued monitoring of the performance and efficiency of the maintenance programme, in order to correct any deficiency in that programme;
- (h) the aircraft types and models to which the manual applies;
- (i) the procedures for ensuring that unserviceabilities affecting airworthiness are recorded and rectified;
- (j) procedures for advising the Director-General of Civil Aviation, or relevant State of Registry as applicable, of any significant in-service occurrences.
- (4) A CGAC holder must update its approved Maintenance Control Manual in a timely manner, except that no amendment or revision may be made to the Maintenance Control Manual unless the Director-General of Civil Aviation —
- (a) requests that the amendment or revision be made to the Maintenance Control Manual; or
- (b) approves the amendment or revision to be made to the Maintenance Control Manual.
- (5) A CGAC holder must establish procedures to ensure that the Maintenance Control Manual being used by its personnel contains current information.

Document retention period

114. A CGAC holder must ensure that the documents, information or records listed in the Sixth Schedule to the Air Navigation (91 — General Operating Rules) Regulations 2018 are stored for their respective retention periods prescribed in that Schedule.

Cosmic radiation records

115. For every complex general aviation operation during which the aircraft operates at an altitude above 49,000 ft, the CGAC holder must keep a record of the total dose of cosmic radiation to which the aircraft is exposed during the flight and the name of every person assigned as a crew member for that flight.

PART 3**MISCELLANEOUS****Fees**

116.—(1) The Second Schedule sets out the fees for the following:

- (a) the issue, validation, renewal, extension or variation of any certificate, licence or other document (including an application for, or the issue of a copy of any such document) under these Regulations;
- (b) the undergoing of any audit, inspection or investigation required by these Regulations;
- (c) the grant of any permission or approval required by, or for the purpose of, these Regulations.

(2) The Director-General of Civil Aviation may, in any particular case, waive or refund in whole or in part any fee payable under these Regulations where the Director-General of Civil Aviation thinks fit.

Penalties

117.—(1) Subject to paragraphs (2) and (3), where the Authority is of the opinion that a CGAC holder is contravening, has contravened or has failed to comply with any provision in Part 2, being a contravention that is not an offence under the Act, the Authority may impose on the CGAC holder a financial penalty not exceeding the higher of the following:

- (a) \$500,000;
- (b) 5% of the CGAC holder's annual revenue derived from the regulated activity.

(2) Before exercising any power under paragraph (1), the Authority must give written notice to the CGAC holder concerned —

- (a) stating that the Authority intends to impose on the CGAC holder a financial penalty under this regulation;
- (b) specifying each instance of non-compliance that is the subject of the financial penalty; and
- (c) specifying the time (being not less than 14 days after the service of the notice on the CGAC holder) within which written representation may be made to the Authority with respect to the non-compliance that is the subject of the financial penalty.

(3) The Authority may, after considering any written representations under paragraph (2)(c), decide to impose such financial penalty under paragraph (1) as the Authority considers appropriate.

(4) Where the Authority has made any decision under paragraph (3) against any CGAC holder, the Authority must serve on the CGAC holder concerned a notice of its decision.

(5) To avoid doubt, this regulation does not affect the operation of section 4C, 4D or 4E of the Act.

(6) In this regulation —

“annual revenue” means the amount of money received by a CGAC holder in the calendar year, during which the CGAC holder contravened or failed to comply with a provision in Part 2, being a provision that is not an offence under the Act;

“regulated activity” means the flights or operations conducted by a CGAC holder under its complex general aviation certificate.

Grant of approvals or acceptances

118.—(1) To avoid doubt, other than a complex general aviation certificate granted or renewed by the Authority under regulation 6, an approval or acceptance that is granted by the Director-General of Civil Aviation when an Operations Manual, Maintenance Control

Manual or any other manual or document is approved is not an aviation safety instrument.

(2) Where an application is made for an approval or acceptance granted by the Director-General of Civil Aviation under these Regulations, the application must —

- (a) be made by the relevant person in such form and manner as the Director-General of Civil Aviation requires; and
- (b) provide such information as the Director-General of Civil Aviation may require.

(3) The Director-General of Civil Aviation may grant an approval or acceptance under these Regulations subject to such conditions as the Director-General of Civil Aviation considers necessary or expedient.

(4) The Director-General of Civil Aviation may withdraw an approval or acceptance, or impose, add, delete, substitute or modify conditions in respect of any such approval or acceptance if —

- (a) the Director-General of Civil Aviation considers such action necessary to ensure compliance with these Regulations or any other applicable aviation safety subsidiary legislation; or
- (b) the Director-General of Civil Aviation is satisfied that there is or is likely to be a failure to comply with these Regulations or any other applicable aviation safety legislation.

(5) In this regulation, “relevant person” means —

- (a) a CGAC holder’s employee who is responsible for applying to the Authority for a specific approval or acceptance under these Regulations; or
- (b) in the absence of any such person mentioned in sub-paragraph (a), the CGAC holder.

FIRST SCHEDULE

Regulation 2

DEFINITIONS

“Complex general aviation certificate” means an aviation safety instrument issued under these Regulations which authorises the holder of the certificate to conduct a complex general aviation operation.

“Contaminated”, in relation to a runway, means the runway has more than 25% of the runway surface area (whether isolated or not) within the required length and width of the runway surface being used covered with the following:

- (a) surface water or slush more than 3 mm (0.125”) deep;
- (b) loose snow, equivalent to more than 20 mm (0.75”) of water;
- (c) compacted snow or ice, including wet ice.

“Cosmic radiation” means the ionising and neutron radiation of galactic and solar origin that an aircraft is exposed to.

“Dry”, in relation to a runway, means a runway that is clear of contaminants and visible moisture within the required length and width of the runway surface being used.

“Human factors principles” means the principles which —

- (a) apply to aeronautical design, certification, training, operations and maintenance; and
- (b) seek safe interface between the human and other system components by giving proper consideration to human performance.

“Maintenance Control Manual” means a manual of that name, or an equivalent document, which describes the CGAC holder’s procedures to ensure that all scheduled and unscheduled maintenance is performed on the CGAC holder’s aircraft on time and in a controlled and satisfactory manner.

“Operating base” means a location where a CGAC holder exercises operational control and may contain one or more of the facilities for operational scheduling, flight planning or training.

“Operations Manual” means a manual of that name, or an equivalent document, containing procedures, instructions and guidance for use by operations personnel in the execution of their duties.

FIRST SCHEDULE — *continued*

“Safety management system” means a systematic approach to managing safety, including the necessary organisational structures, accountabilities, policies and procedures of a CGAC holder.

“Task specialist” means a crew member who is not part of the flight crew or cabin crew and who carries out duties on board the aircraft which are essential to the purpose of the flight.

“Wet”, in relation to a runway, means a runway that is neither dry nor contaminated.

SECOND SCHEDULE

Regulations 5(1)(b), 11(1) and 116(1)

FEES

<i>Item</i>	<i>Fee payable</i>
1. Fee for the evaluation of a person’s competency in order to grant a complex general aviation certificate.	\$28,000
2. Daily fee for a function carried out by a safety inspector	
(a) where the function is performed before 1 April 2019 —	
(i) by a flight operations safety inspector;	\$1,400
(ii) by any other safety inspector;	\$700
(b) where the function is performed on or after 1 April 2019 but before 1 April 2020 —	
(i) by a flight operations safety inspector;	\$1,700
(ii) by any other safety inspector;	\$900
(c) where the function is performed on or after 1 April 2020 but before 1 April 2021 —	
(i) by a flight operations safety inspector;	\$2,000

SECOND SCHEDULE — *continued*

<i>Item</i>	<i>Fee payable</i>
(ii) by any other safety inspector;	\$1,200
(d) where the function is performed on or after 1 April 2021 —	
(i) by a flight operations safety inspector;	\$2,400
(ii) by any other safety inspector.	\$1,500
3. Issue of a copy or a replacement of any document issued under these Regulations.	\$33 per copy

THIRD SCHEDULE

Regulation 14(1)

COMPONENTS AND ELEMENTS OF
SAFETY MANAGEMENT SYSTEM

1. The safety management system (called in this paragraph the SMS) required under regulation 14 must comprise the following components and elements:

<i>First column</i>	<i>Second column</i>
<i>Components</i>	<i>Elements</i>
1. Safety policy and objectives	<ul style="list-style-type: none"> (a) Management commitment (b) Safety accountability and responsibilities (c) Appointment of key safety personnel (d) Coordination of emergency response planning (e) SMS documentation
2. Safety risk management	<ul style="list-style-type: none"> (a) Hazard identification (b) Safety risk assessment and mitigation
3. Safety assurance	<ul style="list-style-type: none"> (a) Safety performance monitoring and measurement (b) The management of change

THIRD SCHEDULE — *continued*

	(c) Continuous improvement of the SMS
4. Safety promotion	(a) Training and education (b) Safety communication

[S 675/2022 wef 15/08/2022]

FOURTH SCHEDULE

Regulation 59(2)

EQUIPMENT THAT DO NOT REQUIRE APPROVAL

1. A time piece.
2. A whistle.
3. A sea anchor and any equipment necessary for mooring, anchoring or manoeuvring the aircraft on water.
4. Any equipment required for making distress signals.

Made on 16 August 2018.

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

[LE/LGN/A1.8; AG/LLRD/SL/6/2010/16 Vol. 2]

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