**MINISTRY OF CIVIL AVIATION AND COMMUNICATION**
**MALDIVES**

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**NOTICE OF PROPOSED RULE MAKING**
**NPRM NO: 2009-14**

**30 December 2009**

# MCAR-OPS 1

## Commercial Air Transportation (Aeroplanes)

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# CONTENTS

## 1. Purpose of this NPRM

This NPRM is to consult the industry before amending MCAR OPS1.

## 2. Background to the Proposal

MCAR OPS1 is amended to comply with Annex 6 Part 1 Standards and Recommended Practices.

The material in this regulation was developed using ICAO Annex 6 part 1 as a basis.

MCAR OPS1 becomes effective on 05th January 2010.

## 3. Key Stakeholders

The following are identified by the CAD as key stakeholders in the proposed amendments to regulations contained in this NPRM:

- Island Aviation Services Ltd
- Maldivian Air Taxi Pvt Ltd
- Trans Maldivian Airways Pvt Ltd

## 4. Submissions on the NPRM

### 4.1 Submissions are invited

Interested persons are invited to participate in the making of the proposed rules by submitting written data, views, or comments. All submissions will be considered before final action on the proposed rule making is taken.

### 4.2 How to make a submission

Comments on this proposal may be forwarded *(preferably by e-mail)*, using the NPRM Submission Form given in Appendix 1. The NPRM Submission Form is also available on the CAD website www.aviainfo.gov.mv.

Submissions may be sent by the following methods:

| | |
|---|---|
| by mail: | Civil Aviation Department<br>7th Floor, P.A Complex<br>Hilaalee Magu, Male' 20307<br>Republic of Maldives |
| fax: | + 960 3323039 |
| e-mail: | safety@aviainfo.gov.mv |

### 4.3 Final date for submissions

Comments must be received before 03rd January 2010.

### 4.4 Availability of the NPRM

Any person may obtain a copy of this NPRM from:
CAD website: www.aviainfo.gov.mv/regulations/nprm.php

**or from:**

Civil Aviation Department
7th Floor, P.A Complex
Hilaalee Magu, Male' 20307
Republic of Maldives

### 4.5 Further Information

For further information contact the Regulation Project Coordinator:

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## 5. Changes to Civil Aviation Regulations

NIL.

Aminath Solih
**DIRECTOR GENERAL**

| **NPRM No:** | **Title:** |
|---|---|
| **Date of your Submission:** | **Comment Close-Off Date (as specified in NPRM):** |

**Please return this response sheet to the Ministry of Civil Aviation and Communication by comment close-off date, by e-mail to safety@aviainfo.gov.mv, by post addressed to this Ministry, 7th floor P.A Complex, Hilaalee Magu, Male', or by fax to + 960 3323039**

Please indicate your acceptance or otherwise of the proposal by ticking the appropriate box below. Any additional constructive comments, suggested amendments or alternative action will be welcome and may be provided on this response sheet or by separate correspondence.

☐ The proposal is **acceptable without change.**

☐ The proposal is **acceptable but would be improved if the following changes were made:**

_____

_____

_____

_____

☐ The proposal is **not acceptable but would be acceptable if the following changes were made:** (Please provide explanatory comment and use additional pages if required)

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☐ The proposal is **not acceptable under any circumstance:** (Explanatory comment must be provided using additional pages if required)

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| **Individual's Details (complete if your submission is on behalf of yourself)** | | **Organisation's Details (if your submission is on behalf of the organization you represent)** | |
|---|---|---|---|
| Your Name: | | Organisation: | |
| Address: | | Address: | |
| Phone: | Fax: | Phone: | Fax: |
| E-mail: | | E-mail: | |
| Mobile: | | Your Name and Position: | |
| Signature: | | Signature: | |

## SUBPART A

## APPLICABILITY

### MCAR-OPS 1.000 Effectivity

(a) This MCAR-OPS 1 is effective as of 20 March 2008.

(b) 2. i. if conducting International Operations before 31 March 2010
ii. if conduction only Domestic Operations before 31 July 2010.

## SUBPART B

## GENERAL

### MCAR-OPS 1.020 A. Compliance by a foreign operator with laws, regulations and procedures of a State

(a) When CAD identifies a case of non-compliance or suspected non-compliance by a foreign operator with laws, regulations and procedures applicable within the Maldivian territory, or a similar serious safety issue with that operator, CAD will immediately notify the operator and, if the issue warrants it, the State of the Operator. If the State of Registry is different, such notification will also be made to the State of Registry, if the issue falls within the responsibilities of that State and warrants a notification

(b) In the case of notification to States as specified in (a), if the issue and its resolution warrant it, CAD will engage in consultations with the State of the Operator and the State of Registry, as applicable, concerning the safety standards maintained by the operator.

### MCAR-OPS 1.037 Reserved

### MCAR-OPS 1.037 (A) SAFETY MANAGEMENT

(a) States shall establish a safety programme in accordance with Air Safety Circular ASC 00-2, in order to achieve an acceptable level of safety in the operation of aircraft.

(b) The acceptable level of safety to be achieved will be established by the CAD.

(c) An operator of an aeroplane of a certificated take-off mass in excess of 20 000 kg should establish and maintain a flight data analysis programme as part of its safety management system.

(d) An operator of an aeroplane of a maximum certificated take-off mass in excess of 27 000 kg shall establish and maintain a flight data analysis programme as part of its safety management system.

(e) A flight data analysis programme shall be non-punitive and contain adequate safeguards to protect the source(s) of the data.

(f) An operator shall establish a flight safety documents system, for the use and guidance of operational personnel, as part of its safety management system.

*Note.— Guidance on the development and organization of a flight safety documents system is provided in Air Safety Circular Ops1-2*

**MCAR-OPS 1.040 Crew members**

(c) [Cabin crew should be safeguarded so as to ensure reasonable probability of their retaining consciousness during any emergency descent which may be necessary in the event of loss of pressurization and, in addition, they should have such means of protection as will enable them to administer first aid to passengers during stabilized flight following the emergency. Passengers should be safeguarded by such devices or operational procedures as will ensure reasonable probability of their surviving the effects of hypoxia in the event of loss of pressurization.]

[Note.— It is not envisaged that cabin crew will always be able to provide assistance to passengers during emergency descent procedures which may be required in the event of loss of pressurization.]

**MCAR-OPS 1.085 Crew responsibilities**

(h) [The commander shall be responsible for the journey log book or the general declaration containing the information listed in MCAR-OPS 1.1055]

**MCAR-OPS 1.170 A, Surveillance of operations by a foreign operator**

(a) CAD recognizes as valid an air operator certificate issued by another Contracting State, provided that the requirements under which the certificate was issued are at least equal to the applicable Standards specified in ICAO Annex 6.

(b) CAD will conduct surveillance of operations in Maldivian territory by a foreign operator and take appropriate action when necessary to preserve safety.

(c) An operator shall meet and maintain the requirements established by the CAD when the operations are conducted in the territory of Maldives.

## SUBPART C

## OPERATOR CERTIFICATION AND SUPERVISION

### MCAR–OPS 1.175 General rules for Air Operator Certification

(r) [An operator shall ensure that a flight will not be commenced unless it has been ascertained by every reasonable means available that the ground and/or water facilities available and directly required on such flight, for the safe operation of the aeroplane and the protection of the passengers, are adequate for the type of operation under which the flight is to be conducted and are adequately operated for this purpose.]

(s) [An operator shall meet and maintain the requirements established by the States in which the operations are conducted].

### Appendix 1 to MCAR–OPS 1.175

### Contents and conditions of the Air Operator Certificate

Note-[The operations specifications and their associated air operator certificate will follow the layout of ICAO Annex 6 part I, Appendix 6, paragraph 2 and 3].

## SUBPART D

## OPERATIONAL PROCEDURES

### MCAR-OPS 1.200 RESERVED

### MCAR-OPS 1.200A Operations manual

An operator shall provide, for the use and guidance of operations personnel concerned an operations manual in accordance with Subpart P. The operations manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual.

### MCAR-OPS 1.210 Establishment of procedures

(d) [An operator shall formulate rules to limit flight time and flight duty periods and for the provision of adequate rest periods for all its crew members. These rules shall be in accordance with Subpart Q and included in the operations manual.]

## MCAR-OPS 1.246 Extended range operations with two-engined aeroplanes (ETOPS)

(c) [En-route alternate aerodromes, required by (b) for extended range operations by aeroplanes with two turbine power-units, shall be selected and specified in the operational and air traffic services (ATS) flight plans.]

## MCAR-OPS 1.285 Passenger briefing

(a) 3. Passengers are informed of the location and general manner of use of the principal emergency equipment carried for collective use.

## MCAR-OPS 1.290 Flight preparation

(a) An operational flight plan shall be completed for every intended flight. The operational flight plan shall be approved and signed by the pilot-in-command and, where applicable, signed by the flight operations officer/flight dispatcher, and a copy shall be filed with the operator or a designated agent, or, if these procedures are not possible, it shall be left with the aerodrome authority or on record in a suitable place at the point of departure.

(b) 13. a maintenance release as prescribed in MCAR-M has been issued in respect of the aeroplane

## MCAR-OPS 1.320 Seats, safety belts and harnesses

(b) Passengers

1. An operator shall ensure that, during take-off and landing and whenever considered necessary by reason of turbulence or any emergency occurring during flight, all passengers on board an aeroplane shall be secured in their seats by means of the seat belts or harnesses provided.

## MCAR–OPS 1.350 Reserved

## MCAR–OPS 1.350 A Fuel and oil supply

(a) *All aeroplanes.* A flight shall not be commenced unless, taking into account both the meteorological conditions and any delays that are expected in flight, the aeroplane carries sufficient fuel and oil to ensure that it can safely complete the flight. In addition, a reserve shall be carried to provide for contingencies.

(b) *Propeller-driven aeroplanes.* The fuel and oil carried in order to comply with (a) shall, in the case of propeller-driven aeroplanes, be at least the amount sufficient to allow the aeroplane:

(c) When a destination alternate aerodrome is required, either:

1. to fly to the aerodrome to which the flight is planned thence to the most critical (in terms of fuel consumption) alternate aerodrome specified in the operational and ATS flight plans and thereafter for a period of 45 minutes; or

2. b) to fly to the alternate aerodrome via any predetermined point and thereafter for 45 minutes, provided that this shall not be less than the amount required to fly to the aerodrome to which the flight is planned and thereafter for:

   i. 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or

   ii. two hours,

   which ever is less.

(d) When a destination alternate aerodrome is not required:

1. in terms of MCAR-OPS 1.295, 1, to fly to the aerodrome to which the flight is planned and thereafter for a period of 45 minutes; or

2. in terms of MCAR-OPS 1.295, 2, to fly to the aerodrome to which the flight is planned and thereafter for:

   i. 45 minutes plus 15 per cent of the flight time planned to be spent at the cruising level(s), or

   ii. two hours,

   whichever is less.

(e) *Aeroplanes equipped with turbo-jet engines.* The fuel and oil carried in order to comply with (a) shall, in the case of turbo-jet aeroplanes, be at least the amount sufficient to allow the aeroplane:

(f) When a destination alternate aerodrome is required, either:

1. to fly to and execute an approach, and a missed approach, at the aerodrome to which the flight is planned, and thereafter:

i. to fly to the alternate aerodrome specified in the operational and ATS flight plans; and then

ii. to fly for 30 minutes at holding speed at 450 m (1 500 ft) above the alternate aerodrome under standard temperature conditions, and approach and land; and

iii. to have an additional amount of fuel sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the CAD; or

2. to fly to the alternate aerodrome via any predetermined point and thereafter for 30 minutes at 450 m (1 500 ft) above the alternate aerodrome, due provision having been made for an additional amount of fuel sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of CAD; provided that fuel shall not be less than the amount of fuel required to fly to the aerodrome to which the flight is planned and thereafter for two hours at normal cruise consumption.

(g) When a destination alternate aerodrome is not required:

1. in terms of MCAR-OPS 1.295, 1. to fly to the aerodrome to which the flight is planned and additionally:

i. to fly 30 minutes at holding speed at 450 m (1 500 ft) above the aerodrome to which the flight is planned under standard temperature conditions; and

ii. to have an additional amount of fuel, sufficient to provide for the increased consumption on the occurrence of any of the potential contingencies specified by the operator to the satisfaction of the State of the Operator; and

2. in terms of MCAR-OPS 1.295, to fly to the aerodrome to which the flight is planned and thereafter for a period of two hours at normal cruise consumption.

**MCAR-OPS 1.390 Cosmic radiation**

(c) For each flight of an aeroplane above 15 000 m(49 000 ft), the operator shall maintain records so that the total cosmic radiation dose received by each crew member over a period of 12 consecutive months can be determined

## SUBPART E

## ALL WEATHER OPERATIONS

### MCAR-OPS 1.440 Low visibility operations – general operating rules

(c) An operator shall not conduct instrument approach and landing operations, if the aerodrome minima is below 800 m visibility unless RVR information is provided

## SUBPART F

## PERFORMANCE GENERAL

### MCAR-OPS 1.470 Applicability

(e) This subpart ensures that the general level of safety contemplated by ICAO Annex 6 Part I is maintained under all expected operating conditions, including those not covered specifically by the provisions of chapter 5 of the said Annex.

### MCAR–OPS 1.475 General

(f) In no case shall the mass at the start of take-off, or at the expected time of landing at the aerodrome of intended landing and at any destination alternate aerodrome, exceed the relevant maximum masses at which compliance has been demonstrated with the applicable noise certification Standards in ICAO Annex 16, Volume I, unless otherwise authorized in exceptional circumstances for a certain aerodrome or a runway where there is no noise disturbance problem, by the competent authority of the State in which the aerodrome is situated.

## SUBPART K

## INSTRUMENTS AND EQUIPMENT

### MCAR-OPS 1.630 General introduction

(f) An aeroplane shall be equipped with instruments which will enable the flight crew to control the flight path of the aeroplane, carry out any required procedural manoeuvres and observe the operating limitations of the aeroplane in the expected operating conditions.

## MCAR–OPS 1.640 Aeroplane operating lights

Note.— Specifications for lights meeting the requirements of ICAO Annex 2 for navigation lights are contained in Appendix 1 of ICAO Annex 6 Part1. The general characteristics of lights are specified in Annex 8. Detailed specifications for lights meeting the requirements of Annex 2 for aircraft in flight or operating on the movement area of an aerodrome are contained in the Airworthiness Manual (Doc 9760).

## MCAR-OPS 1.650 Day VFR operations – flight and navigational instruments and associated equipment

(q) VFR flights which are operated as controlled flights shall be equipped in accordance with MCAR-OPS 1.652

## MCAR-OPS 1.665

(d) All piston-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers shall be equipped with a ground proximity warning system which provides the warnings in excessive descent rate and excessive attitude loss after take-off or go-around, warning of unsafe terrain clearance and a forward looking terrain avoidance function.

## MCAR-OPS 1.668 Airborne Collision Avoidance Systems

(b) An airborne collision avoidance system shall operate in accordance with the relevant provisions of Annex 10, Volume IV.

## MCAR-OPS 1.700 Reserved

## MCAR-OPS 1.700 A, Flight recorders

Note 1. — Flight recorders comprise two systems, a flight data recorder (FDR) and a cockpit voice recorder (CVR).

Note 2.— Combination recorders (FDR/CVR) can only be used to meet the flight recorder equipage requirements as specifically indicated in this Annex.

Note 3.— Detailed guidance on flight recorders is contained in ICAO Annex 6 Part 1- Attachment D.

(a) Flight data recorders — types

1. A Type I FDR shall record the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation.

2. Types II and IIA FDRs shall record the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power and configuration of lift and drag devices.

3. The use of engraving metal foil FDRs shall be not be used.

4. The use of analogue FDRs using frequency modulation (FM) shall be used.

    i. The use of photographic film FDRs shall not be used.

5. All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2005, which utilize data link communications and are required to carry a CVR, shall record on a flight recorder, all data link communications to and from the aeroplane. The minimum recording duration shall be equal to the duration of the CVR, and shall be correlated to the recorded cockpit audio.

    i. From 1 January 2007, all aeroplanes which utilize data link communications and are required to carry a CVR shall record on a flight recorder, all data link communications to and from the aeroplane. The minimum recording duration shall be equal to the duration of the CVR, and shall be correlated to the recorded cockpit audio.

    ii. Sufficient information to derive the content of the data link communications message and, whenever practical, the time the message was displayed to or generated by the crew shall be recorded.

Note.— Data link communications include, but are no limited to, automatic dependent surveillance — contract (ADS-C), controller-pilot data link communications (CPDLC), data link-flight information services (D-FIS) and aeronautical operational control (AOC) messages.

6. All aeroplanes of a maximum certificated take-off mass over 5 700 kg, required to be equipped with an FDR and a CVR, may alternatively be equipped with two combination recorders (FDR/CVR).

7. All multi-engined turbinepowered aeroplanes of a maximum certificated take-off mass of 5 700 kg or less, required to be equipped with an FDR and/or a CVR, may alternatively be equipped with one combination recorder (FDR/CVR).

8. Type IA FDR shall record the parameters required to determine accurately the aeroplane flight path, speed, attitude, engine power, configuration and operation. The parameters that satisfy the requirements for a Type IA FDR are listed in the paragraphs below. The parameters without an asterisk (*) are mandatory parameters which shall be recorded. In

addition, the parameters designated by an asterisk (*) shall be recorded if an information data source for the parameter is used by aeroplane systems or the flight crew to operate the aeroplane.

9. The following parameters satisfy the requirements for flight path and speed:
   iii. Pressure altitude
   iv. Indicated airspeed or calibrated airspeed
   v. Air-ground status and each landing gear air-ground sensor when practicable
   vi. Total or outside air temperature
   vii. Heading (primary flight crew reference)
   viii. Normal acceleration
   ix. Lateral acceleration
   x. Longitudinal acceleration (body axis)
   xi. Time or relative time count
   xii. Navigation data*: drift angle, wind speed, wind direction, latitude/longitude
   xiii. Groundspeed*
   xiv. Radio altitude*

10. The following parameters satisfy the requirements for attitude:
   i. Pitch attitude
   ii. Roll attitude
   iii. Yaw or sideslip angle*
   iv. Angle of attack*

11. The following parameters satisfy the requirements for engine power:
   i. Engine thrust/power: propulsive thrust/power on each engine, cockpit thrust/power lever position
   ii. Thrust reverse status*
   iii. Engine thrust command*
   iv. Engine thrust target*
   v. Engine bleed valve position*
   vi. Additional engine parameters*: EPR, N1, indicated vibration level, N2, EGT, TLA, fuel flow, fuel cut-off lever position, N3

12. The following parameters satisfy the requirements for configuration:
   i. – Pitch trim surface position
   ii. – Flaps*: trailing edge flap position, cockpit control selection
   iii. – Slats*: leading edge flap (slat) position, cockpit control selection
   iv. – Landing gear*: landing gear, gear selector position
   v. – Yaw trim surface position*
   vi. – Roll trim surface position*
   vii. – Cockpit trim control input position pitch*

viii. – Cockpit trim control input position roll*
ix. – Cockpit trim control input position yaw*
x. – Ground spoiler and speed brake*: Ground spoiler position, ground spoiler selection, speed brake position, speed brake selection
xi. – De-icing and/or anti-icing systems selection*
xii. – Hydraulic pressure (each system)*
xiii. – Fuel quantity*
xiv. – AC electrical bus status*
xv. – DC electrical bus status*
xvi. – APU bleed valve position*
xvii. – Computed centre of gravity*

13. The following parameters satisfy the requirements for operation:
i. – Warnings
ii. – Primary flight control surface and primary flight control pilot input: pitch axis, roll axis, yaw axis
iii. – Marker beacon passage
iv. – Each navigation receiver frequency selection
v. – Manual radio transmission keying and CVR/FDR synchronization reference
vi. – Autopilot/autothrottle/AFCS mode and engagement status*
vii. – Selected barometric setting*: pilot, first officer
viii. – Selected altitude (all pilot selectable modes of operation)*
ix. – Selected speed (all pilot selectable modes of operation)*
x. – Selected Mach (all pilot selectable modes of operation)*
xi. – Selected vertical speed (all pilot selectable modes of operation)*
xii. – Selected heading (all pilot selectable modes of operation)*
xiii. – Selected flight path (all pilot selectable modes of operation)*: course/DSTRK, path angle
xiv. – Selected decision height*
xv. – EFIS display format*: pilot, first officer
xvi. – Multi-function/engine/alerts display format*
xvii. – GPWS/TAWS/GCAS status*: selection of terrain display mode including pop-up display status, terrain alerts, both cautions and warnings, and advisories, on/off switch position
xviii. – Low pressure warning*: hydraulic pressure, pneumatic pressure
xix. – Computer failure*
xx. – Loss of cabin pressure*
xxi. – TCAS/ACAS (traffic alert and collision avoidance system/ airborne collision avoidance system)*
xxii. – Ice detection*
xxiii. – Engine warning each engine vibration*
xxiv. – Engine warning each engine over temperature*
xxv. – Engine warning each engine oil pressure low*
xxvi. – Engine warning each engine over speed*
xxvii. – Wind shear warning*

xxviii. – Operational stall protection, stick shaker and pusher activation*
xxix. – All cockpit flight control input forces*: control wheel, control column, rudder pedal cockpit input forces
xxx. – Vertical deviation*: ILS glide path, MLS elevation, GNSS approach path
xxxi. – Horizontal deviation*: ILS localizer, MLS azimuth, GNSS approach path
xxxii. – DME 1 and 2 distances*
xxxiii. – Primary navigation system reference*: GNSS, INS, VOR/DME, MLS, Loran C, ILS
xxxiv. – Brakes*: left and right brake pressure, left and right brake pedal position
xxxv. – Date*
xxxvi. – Event marker*
xxxvii. – Head up display in use*
xxxviii. – Para visual display on*

Note 1.— Parameter requirements, including range, sampling, accuracy and resolution, are as contained in the Minimum Operational Performance Specification (MOPS) document for Flight Recorder Systems of the European Organization for Civil Aviation Equipment (EUROCAE) or equivalent documents.

Note 2.— The number of parameters to be recorded will depend on aeroplane complexity. Parameters without an (*) are to be recorded regardless of aeroplane complexity. Those parameters designated by an (*) are to be recorded if an information source for the parameter is used by aeroplane systems and/or flight crew to operate the aeroplane.

(b) Flight data recorders — duration

All FDRs shall be capable of retaining the information recorded during at least the last 25 hours of their operation, except for the Type IIA FDR which shall be capable of retaining the information recorded during at least the last 30 minutes of its operation.

(c) Flight data recorders — aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1989

1. All aeroplanes of a maximum certificated take-off mass of over 27 000 kg shall be equipped with a Type I FDR.

2. All aeroplanes of a maximum certificated take-off mass of over 5 700 kg, up to and including 27 000 kg, shall be equipped with a Type II FDR.

3. All multi-engined turbinepowered aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 1990 should be equipped with a Type IIA FDR.

(d) Flight data recorders — aeroplanes for which the individual certificate of airworthiness was first issued on or after 1 January 1987 but before 1 January 1989

1. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg, except those in 3., shall be equipped with an FDR which shall record time, altitude, airspeed, normal acceleration and heading.

2. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg, except those in 2., should be equipped with an FDR which shall record time, altitude, airspeed, normal acceleration, heading and such additional parameters as are necessary to determine pitch attitude, roll attitude, radio transmission keying and power on each engine.

3. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with a Type II FDR.

(e) Flight data recorders — aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1987

1. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg shall be equipped with an FDR which shall record time, altitude, airspeed, normal acceleration and heading.

2. All turbine-engined aeroplanes of a maximum certificated take-off mass of over27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 should be equipped with an FDR which should record, in addition to time, altitude, airspeed, normal acceleration and heading, such additional parameters as are necessary to meet the objectives of determining:

   i. the attitude of the aeroplane in achieving its flight path; and

   ii. the basic forces acting upon the aeroplane resulting in the achieved flight path and the origin of such basic forces.

(f) Flight data recorders — aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2005 All aeroplanes of a maximum certificated take-off mass of over 5 700 kg shall be equipped with a Type IA FDR.

(g) Cockpit voice recorders — aeroplanes for which the individual certificate of airworthiness is first issued on or after 1 January 1987

1. All aeroplanes of a maximum certificated take-off mass of over 5 700 kg shall be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

2. All multi-engined turbinepowered aeroplanes of a maximum certificated take-off mass of 5 700 kg or less for which the individual certificate of airworthiness is first issued on or after 1 January 1990 should be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

(h) Cockpit voice recorders — aeroplanes for which the individual certificate of airworthiness was first issued before 1 January 1987

Note.— CVR performance requirements are as contained in the Minimum Operational Performance Specification (MOPS) document for Flight Recorder Systems of the European Organization for Civil Aviation Equipment (EUROCAE) or equivalent documents.

1. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 shall be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

2. All turbine-engined aeroplanes of a maximum certificated take-off mass of over 5 700 kg up to and including 27 000 kg that are of types of which the prototype was certificated by the appropriate national authority after 30 September 1969 should be equipped with a CVR, the objective of which is the recording of the aural environment on the flight deck during flight time.

(i) Cockpit voice recorders — duration

1. A CVR shall be capable of retaining the information recorded during at least the last 30 minutes of its operation.

2. A CVR, installed in aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued on or after 1 January 1990, should be capable of retaining the information recorded during at least the last two hours of its operation.

3. A CVR, installed in aeroplanes of a maximum certificated take-off mass of over 5 700 kg for which the individual certificate of airworthiness is first issued after 1 January 2003,

shall be capable of retaining the information recorded during at least the last two hours of its operation.

(j) Flight recorders — construction and installation Flight recorders shall be 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. Flight recorders shall meet the prescribed crashworthiness and fire protection specifications.

*Note.— Industry crashworthiness and fire protection specifications can be found in documents such as the European Organization for Civil Aviation Equipment (EUROCAE) documents ED55 and ED56A.*

(k) Flight recorders — operation

1. Flight recorders shall not be switched off during flight time.

2. To preserve flight recorder records, flight recorders shall be deactivated upon completion of flight time following an accident or incident. The flight recorders shall not be reactivated before their disposition as determined in accordance with Annex 13.

Note 1.— The need for removal of the flight recorder records from the aircraft will be determined by the investigation authority in the State conducting the investigation with due regard to the seriousness of an occurrence and the circumstances, including the impact on the operation.

Note 2.— The operator's responsibilities regarding the retention of flight recorder records are contained in MCAR OPS 1.160

(l) Flight recorders — continued serviceability Operational checks and evaluations of recordings from the FDR and CVR systems shall be conducted to ensure the continued serviceability of the recorders.

Note.— Procedures for the inspections of the FDR and CVR systems are given in ICAO Annex 6 Part 1, Attachment D.

**MCAR-OPS 1.705 Reserved**

**MCAR-OPS 1.710 Reserved**

**MCAR–OPS 1.715 Reserved**

**MCAR-OPS 1.720 Reserved**

**MCAR-OPS 1.725 Reserved**

**MCAR-OPS 1.727 Reserved**

**MCAR OPS 1.770**

(a) 4. Pressurized Aeroplanes intended to be operated at flight altitudes at which the atmospheric pressure is less than 376 hPa shall be equipped with a device to provide positive warning to the pilot of any dangerous loss of pressurization.

## SUBPART L

## COMMUNICATION AND NAVIGATION EQUIPMENT

**MCAR-OPS 1.845 General introduction**

(c) For flights in defined portions of airspace or on routes where an RCP type has been prescribed, an aeroplane shall, in addition to the requirements specified in MCAR 1.850

1. be provided with communication equipment which will enable it to operate in accordance with the prescribed RCP type(s); and

2. be authorized by the State of the Operator for operations in such airspace.

*Note.— Information on RCP and associated procedures, and guidance concerning the approval process, are contained in the* Manual on Required Communications Performance (RCP) *(Doc 9869). This document also contains references to other documents produced by States and international bodies concerning communication systems and RCP.*

(d) [An aeroplane shall be provided with navigation equipment which will enable it to proceed:

1. in accordance with its operational flight plan; and
2. in accordance with the requirements of air traffic services;

except when, if not so precluded by the appropriate authority, navigation for flights under the visual flight rules is accomplished by visual reference to landmarks.]

### MCAR-OPS 1.845 A, Microphones

All flight crew members required to be on flight deck duty shall communicate through boom or throat microphones below the transition level/altitude.

### MCAR-OPS 1.850 Radio equipment

(d) On flights in which it is intended to land in instrument meteorological conditions, an aeroplane shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance for each aerodrome at which it is intended to land in instrument meteorological conditions and for any designated alternate aerodromes.

### MCAR-OPS 1.866 Reserved

### MCAR-OPS 1.866 A, Transponder equipment

(a) All aeroplanes shall be equipped with a pressure altitude reporting transponder which operates in accordance with the relevant provisions of Annex 10, Volume IV.

(b) All aeroplanes for which the individual certificate of airworthiness is first issued after 1 January 2009 shall be equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft), or better.

(c) After 1 January 2012, all aeroplanes shall be, equipped with a data source that provides pressure-altitude information with a resolution of 7.62 m (25 ft), or better.

(d) The Mode S transponder should be provided with the airborne/on-the-ground status if the aeroplane is equipped with an automatic means of detecting suchstatus.

Note 1.— These provisions will improve the effectiveness of airborne collision avoidance systems as well as air traffic services that employ Mode S radar. In particular, tracking processes are significantly enhanced with a resolution of 7.62 m (25 ft), or better.

Note 2.— Mode C replies of transponders always report pressure altitude in 30.50 m (100 ft) increments irrespective of the resolution of the data source.

### MCAR-OPS 1.874 A Electronic Navigation Data

(a) An operator shall not employ electronic navigation data products that have been processed for application in the air and on the ground unless CAD has approved the operator's procedures for ensuring that the process applied and the products delivered have met acceptable standards of integrity and that the products are compatible with the intended

function of the equipment that will use them. CAD will ensure that the operator continues to monitor both process and products.

Note.- Guidance relating to the processes that data suppliers may follow is contained in RTCA DO-200A/EUROCAE ED-76 and RTCA DO-201A/EUROCAE ED-77.

(b) An operator shall implement procedures that ensure the timely distribution and insertion of current and unaltered electronic navigation data to all aircraft that require it.

## SUBPART N

## FLIGHT CREW

### MCAR-OPS 1.940 Composition of flight crew

8. The flight crew shall include at least one member who holds a valid licence, issued or rendered valid by the State of Registry, authorizing operation of the type of radio transmitting equipment to be used.

9. The flight crew shall include at least one member who holds a flight navigator licence in all operations where, as determined by CAD, navigation necessary for the safe conduct of the flight cannot be adequately accomplished by the pilots from the pilot station.

### MCAR-OPS 1.975 Route and aerodrome competence qualification

(e) [An operator shall not utilize a pilot as pilot-in command of an aeroplane on a route or route segment for which that pilot is not currently qualified until such pilot has complied with b and c.]

(f) [Each such pilot shall demonstrate to the operator an adequate knowledge of:

1. the route to be flown, and the aerodromes which are to be used. This shall include knowledge of:

i. the terrain and minimum safe altitudes;

ii. the seasonal meteorological conditions;

iii. the meteorological, communication and air traffic facilities, services and procedures;

iv. the search and rescue procedures; and

v. the navigational facilities and procedures, including any long-range navigation procedures, associated with the route along which the flight is to take place; and

2. procedures applicable to flight paths over heavily populated areas and areas of high air traffic density, obstructions, physical layout, lighting, approach aids and arrival, departure, holding and instrument approach procedures, and applicable operating minima.]

[Note.— That portion of the demonstration relating to arrival, departure, holding and instrument approach procedures may be accomplished in an appropriate training device which is adequate for this purpose.]

(g) [A pilot-in-command shall have made an actual approach into each aerodrome of landing on the route, accompanied by a pilot who is qualified for the aerodrome, as a member of the flight crew or as an observer on the flight deck, unless:

1. the approach to the aerodrome is not over difficult terrain and the instrument approach procedures and aids available are similar to those with which the pilot is familiar, and a margin to be approved by the State of the Operator is added to the normal operating minima, or there is reasonable certainty that approach and landing can be made in visual meteorological conditions; or
2. the descent from the initial approach altitude can be made by day in visual meteorological conditions; or

3. the operator qualifies the pilot-in-command to land at the aerodrome concerned by means of an adequate pictorial presentation; or

4. the aerodrome concerned is adjacent to another aerodrome at which the pilot-in-command is currently qualified to land.]

**Appendix 1 to MCAR-OPS 1.940**

**In-flight relief of flight crew members**

(g) [When a cruise relief pilot is flying several variants of the same type of aeroplane or different types of aeroplanes with similar characteristics in terms of operating procedures, systems and handling,MCAR OPS 1.980.]

## Appendix 2 to MCAR-OPS 1.940

## Single pilot operations under IFR or at night

(a) 6. [An aeroplane shall not be operated under the IFR or at night by a single pilot unless:

a. the flight manual does not require a flight crew of more than one;
b. the aeroplane is propeller-driven;
c. the maximum approved passenger seating configuration is not more than nine;
d. the maximum certificated take-off mass does not exceed 5 700 kg;
e. the aeroplane is equipped as described in MCAR-OPS 1.655; and
f. the pilot-in-command has satisfied requirements of experience, training, checking and recency described in this Appendix.]

## SUBPART P

## MANUALS, LOGS AND RECORDS

### Appendix 1 to MCAR–OPS 1.1065

### Document storage periods

### Table 1

### Information used for the preparation and execution of a flight

| | |
|---|---|
| Fuel and Oil records | 3 months |

### Appendix 1 to MCAR–OPS 1.1065

### Table 2 Reports

| Reports | |
|---|---|
| Journey log | Continuous record of the last 6 months' operations. |